



Marine Stewardship Council fisheries assessments

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New Zealand Ling Longline Fishery Public Certification Report



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Assessment Data Sheet

CAB details

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2. Glossary

ACAP	Agreement on Conservation of Albatross and Petrels
ACE	Annual Catch Entitlement
ACCOBAMS	Agreement on the Conservation of Small Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
AEEF	Assessment of the Environmental Effects of Fishing
AEWA	African-Eurasian Migratory Waterbird Agreement
ALC	Automatic Location Communicator
AOP	Annual Operational Plan
ARR	Annual Review Report
BLL	Bottom Ling Longline
BMA	Benthic Management Areas
B0	Unfished Equilibrium Biomass
BOMECA	Benthic Optimised Marine Environment Classification
BP	Bounty Platform
BPA	Benthic Protection Area
BRT	Boosted Regression Tree
CAY	Current Annual Yield
CASAL	C++ Algorithmic Stock Assessment Laboratory
CASAL2	C++ Algorithmic Stock Assessment Laboratory (version 2)
CITES	Convention on International Trade in Endangered Species
CLR	Catch Landing Return
CMM	Conservation Management Measures
CMS	Convention on Migratory Species
CPUE	Catch Per Unit Effort
CP	Campbell Plateau
CR	Chatham Rise
CS	Cook Strait
CSP	Conservation Services Programme
CV	Coefficient of Variation
DFAWG	Deepwater Fisheries Assessment Working Group
DOC	New Zealand Department of Conservation
DSCC	Deep Sea Conservation Coalition
DV	Deemed Value
DWC	Deepwater Council
DWG	Deepwater Group Limited
DWWG	Deep Water Working Group
ECO	Environment and Conservation Organisation
ECNI	East Coast North Island
ECSI	East Coast South Island
ELO	Environmental Liaison Officer
ESCR	East and South Chatham Rise
EEZ	Exclusive Economic Zone
ELR	Electronic Reporting
ERF	Evidence Requirements Framework
ETP	Endangered, Threatened, Protected Species
FARs	Fishery Assessment Reports
FAWGs	Fishery Assessment Working Groups
FCV	Foreign Charter Vessel
FMA	Fishery Management Areas
FPAG	Fish Plan Advisory Group
FNZ	Fisheries New Zealand-entity within MPI responsible for fisheries science and management

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GPR	Geospatial Position Reporting
HCR	Harvest Control Rule
HSS	Harvest Strategy Standard for New Zealand Fisheries
IQANZ	Independent Quality Assurance New Zealand
IQF	Individual Quick Freezing
IUCN	International Union for Conservation of Nature
LFR	Licensed Fish Receiver
LMA	Large Marine Reserve
M	Natural mortality
MLS	Minimum Legal Size
MPA	Marine Protected Area
MPSA	Monitor, Pause, Survey and Assess (Benthic Management framework)
MPI	Ministry for Primary Industries (representing the Crown and its statutory obligations to the public). Formerly the Ministry of Agriculture and Forestry and before that the Ministry of Fisheries.
MSE	Management Strategy Evaluation
MSY	Maximum Sustainable Yield
MTRP	Medium Term Research Plan (Deepwater Fisheries)
NGO	Non-Governmental Organisation
NWCR	Northwest Chatham Rise
NZ	New Zealand
OOS	Out of Scope
PST	Population Sustainability Threshold
QMA	Quota Management Area
QMS	Quota Management System
RCP	Regions of Common Profile
RF	Random Forest
SA	Sub-Antarctic
SCA	Seamount Closure Area
SNZ	Seafood Nz
SEFRA	Spatially Explicit Fisheries Risk Assessment
SMART	Seafloor Monitoring, Automated Recording of Trawls
SPRFMO	South Pacific Regional Fisheries Management Organisation
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TCEPR	Trawl Catch Effort and Processing Returns
TCER	Trawl Catch Effort Returns
TOKM	Te Ohu Kai Moana
UoA	Unit of Assessment (see MSC-MSCI Vocabulary for MSC defined terms)
UoC	Unit of Certification
UNCLOS	United Nations Convention on the Law of the Sea
UTF	Underwater Topographic Features (including hills, knolls, and seamounts)
VADE	Voluntary, Assisted, Directed and Enforced Compliance operating model
VME	Vulnerable Marine Environment
VMP	Vessel Management Plan
VMS	Vessel Monitoring System
WCPFC	Western & Central Pacific Fisheries Commission
WCSI	West Coast South Island

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3. Executive summary

This report provides details of the MSC re-assessment of the New Zealand Ling Longline Fishery that operate in the New Zealand Exclusive Economic Zone (EEZ). This report is one of three reports for the combined reassessment of NZ hoki, hake and ling trawl, southern blue whiting trawl and ling longline fisheries. Five Units of Certification (UoC) have been assessed:

13. LIN 3 Chatham Rise (LIN 3 & 4)
14. LIN 4 Chatham Rise (LIN 3 & 4)
15. LIN 5 Sub Antarctic (LIN 5 & 6)
16. LIN 6 Sub Antarctic (LIN 5 & 6)
17. LIN 7 West Coast South Island (WCSI) (LIN 7 WC).

The fishery was previously assessed against the MSC standard and certified in September 2014. In 2018 it was reassessed at the same time as the New Zealand hoki, hake, ling and the southern blue whiting trawl fisheries to make cost and time efficiencies and because the management and governance regimes are the same. It was recertified with no conditions.

In this Public Certification Report (PCR), the NZ longline ling fishery (UoA 13-17) is reassessed against the MSC Fisheries Standard v 3.1. with a modified assessment tree to score shark finning under FS v2.01- SI 2,1,2d, instead of FS v3.1- SI 2.1.2d and SI 2.2.2d. This reassessment is again being combined with NZ fisheries, hoki trawl (UoA 1-2) hake trawl (UoA 3-5), ling trawl (UoA 6-10) and southern blue whiting trawl (UoA 11-12) fisheries. Three separate reports have been prepared, 1. hoki, hake and ling trawl, 2. southern blue whiting trawl and this report 3 ling longline.

The information in this PCR is a combination of information gathered and updated as part of the process of compiling the Announcement Comment Draft Report (ACDR) and preparing for the 5th annual surveillance audit for the current certification cycle. Also, most importantly new information obtained during the site visit.

Stakeholders were encouraged to review the ACDR and to provide information to the assessment team and raise any concerns with the indicative scoring. The draft scoring ranges in the ACDR were based on a review of information and documents submitted by the fishery client.

Following this, this report has been through peer and client review. The assessment team have reviewed all comments and revised scores appropriately.

The PCDR gave stakeholders a further chance to review the report and scoring. The Final Draft Report was the final presentation of our certification decision and scores.

Stakeholders had the opportunity to submit an objection to our Certification Decision presented in the Final Draft Report by following [the MSC Objections Process](#). An objection was not received.

Therefore, LRQA confirms this fishery meets the MSC requirements and hereafter is certified, subject to successful outcomes of annual surveillance audits.

The **Eligibility Date** for this assessment is the recertification date, 6th February 2026

The assessment team for this fishery assessment comprised of Jo Akroyd who acted as team leader and primary Principle 3 specialist; Andre Punt who was primarily responsible for evaluation of Principle 1 and Stewart Norman who was primarily responsible for evaluation of Principle 2.

Principle 1 strengths

- Assessments of the major stocks are conducted regularly using a stock assessment method (CASAL / CASAL2) that is capable of using all of the types of data available for assessment purposes and producing the types of outputs needed to evaluate stock status relative to target and limit reference points in a probabilistic manner.
- Surveys are conducted regularly for all stocks and generally have good coverage. Age-composition data are available for surveys and most major fishery components.
- Assessments regularly explore the assumptions underlying the models used to provide management advice. These include reviews of stock structure, biological parameters and fishery specifications.

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Principle 2 strengths

- The level of observer coverage allows confidence that all species with which the UoAs interact are represented in the data available
- Representative observer coverage offers high accuracy (trueness and precision) of catch estimates.
- Spatially Explicit Fishery Risk Assessments (SEFRAs) provide clear and precise estimates of total mortality for ETP/OOS bycatch species and are suitable to inform the conservation status of those species.
- ETP/OOS species management measures support a comprehensive strategy to manage the impacts of the fishery.
- Static fishing gear limit impacts of the UoAs on less and more sensitive habitats.

Principle 3 strengths

- Management of the ling longline fisheries continued the strong management regime described in the previous full assessment. Improvements since the previous assessment include implementation of digital monitoring, which provides the Ministry for Primary Industries (MPI) with daily access to data, greater opportunity to target compliance risk, and therefore further reduces the potential for unreported catch and area misreporting

Principle 1 weaknesses

- Management Strategy Evaluation work has been undertaken for ling, but it has not been based on the HCRs used when providing management advice and the HCRs that have been evaluated are not used for management purposes.

Principle 2 weaknesses

- Spatially Explicit Fishery Risk Assessments (SEFRAs) for seabirds and marine mammals are not UoA-specific
- Investigations of alternative measures to reduce unwanted catch of main in-scope species are not available to the assessment team at this point.
- Habitats impacts research and information is deprioritised for bottom longline static gears in New Zealand
- Ecosystem research and information focuses on the Chatham Rise, a fraction of the area within which the UoAs operate.

Principle 3 weaknesses

- The hoki, hake and ling chapters of the National Fisheries Plan are all outdated by more than 10 years. However there is evidence that this is being addressed.
- An updated external review of the fishery specific management system has not been completed but there is progress underway on this.

Determination

Following this assessment team's work, and review by stakeholders and peer-reviewers, and no objection, the determination is that this fishery has passed its assessment and should be certified. This has been confirmed by LRQA's decision making entity.

For interested readers, the report also provides background to the target species and fishery covered by the assessment, the wider impacts of the fishery and the management regime, supported by full details of the assessment team, a full list of references used and details of the stakeholder consultation process.

LRQA confirms that this fishery is within scope.

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4. Report details

4.1. Authorship and peer review details

Peer reviewer information to be completed at Public Comment Draft Report stage

Table 1: Authorship and assessment team

Role	Name	Area of expertise
Team leader	Jo Akroyd	Principle 3
Team members (Insert and delete rows as appropriate)	André Punt	Principle 1
	Stewart Norman	Principle 2

Table 2: Peer reviewers

Peer reviewers	Chris Grieve
	Peter Trott

4.2. Version details

The report shall include a statement on the versions of the fisheries program documents used for this assessment.

Table 3: Fisheries program documents versions

Document/Assessment Tree	Version number/Type
MSC Fisheries Certification Process	Version 3.1
MSC Fisheries Standard	Version 3.1 (and v2.01 – see assessment tree modification)
Assessment tree	Modified to score shark finning using FS v2.01 - SI 2.1.2.d, instead of FS v3.1 - SI 2.1.2d and SI 2.2.2d.
MSC General Certification Requirements	Version 2.7
MSC Reporting Template	Version 2.1

5. Unit(s) of Assessment and Unit(s) of Certification

5.1. Unit(s) of Assessment

Table 4: Unit(s) of Assessment (UoA)

UoA 13	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 3 Chatham Rise (LIN 3 & 4)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.

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UoA 14	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 4 Chatham Rise (LIN 3 & 4)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoA 15	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 5 Sub-Antarctic (LIN 5 & 6)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoA 16	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 6 Sub-Antarctic (LIN 5 & 6)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoA 17	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 7 WCSI (LIN 7WC)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.

5.2. Unit(s) of Certification

Table 5: Unit(s) of Certification (UoC)

UoC 13	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 3 Chatham Rise (LIN 3 & 4)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.

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UoC 14	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 4 Chatham Rise (LIN 3 & 4)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoC 15	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 5 Sub-Antarctic (LIN 5 & 6)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoC 16	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 6 Sub-Antarctic (LIN 5 & 6)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
UoC 17	
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	LIN 7 WCSI (LIN 7WC)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	(From previous report) New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.

6. Confirmation of scope

LRQA confirms that the UoAs under assessment are in scope and meets the requirements of the MSC Fisheries Standard Section 1.

- The target species are not amphibians, reptiles, birds or mammals (MSC Fisheries Standard v 3.1, 1.1.1)
- The UoAs do not use poisons or explosives (MSC Fisheries standard v3.1, 1.1.2)
- The UoAs are not enhanced fisheries (MSC Fisheries Standard v3.1, 1.1.3)
- The fisheries are not an introduced species-based fishery (MSC Fisheries Standard v3.1, 1.1.4)
- None of the client group vessels have been implicated in the conviction of a serious crime for an offence listed in MSC Fisheries Standard v3.1, Table 3 List of offences, while undertaking fishing operations in the last two year
- The client or client group does not include any vessel that has been implicated in a conviction for a shark-finning violation in the last two years (MSC Fisheries Standard v3.1, 1.1.6)

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- LRQA confirms that the client group has submitted the completed MSC At Sea Labour Eligibility Requirements Reporting Template.

7. Overview of the fishery

7.1. Client Group

Seafood New Zealand, Deepwater Council formally Deepwater Group Limited (DWG) <http://deepwatergroup.org> – was formed in September 2005. This non-profit organisation is an amalgamation of EEZ fisheries quota owners in New Zealand. Species targeted by DWG are usually fished at depths between 200 and 1,200 m within the New Zealand Exclusive Economic Zone (EEZ). These include hoki, hake, ling, southern blue whiting, orange roughy, oreo dory, squid and jack mackerel. The client group catches about 87% of the recorded ling landings.

Other eligible fishers are those operators who have been fully assessed against the MSC's Principles and Criteria for Sustainable Fishing as part of the UoCs and are not currently part of the client group but may become eligible to join the client group under a certificate sharing arrangement. The client group has stated their willingness to enter into certificate sharing arrangements.

7.2. Fishing Method and Vessels

The autoline system used to fish for ling uses lines set on the bottom, predominantly from 5 to 15 km long. The main line can be 7 mm, 9 mm or 11.5 mm in diameter, and has swivels (where snood and hook attaches) at set spacing of 1.3 m to 1.5 m. The 11.5 mm line is often an integrated weighted line (IWL), which enables the line to sink faster, reducing bird bycatch risk. Most of the larger autoliners operate under CCAMLR (Commission for the Conservation of Antarctic Marine living Resources) conservation measures, which have various bird bycatch mitigation controls on the operation. The smaller longline vessels, which do not at any time operate in the CCAMLR jurisdiction, do not necessarily have these measures but must meet the statutory operating requirements within the New Zealand EEZ, which includes tori lines at all times, offal management, and night setting or line weighting for day setting.

Hook size to target for ling are generally 12/0s. Gear is deployed from the stern of the larger vessels with a float attached to a grapple to take the line to the bottom and anchor it in place. There is a float and grapple on each end. Some vessels use what are called “droppers”, which is a line set so hooks are about 10 meters off the bottom, although this may be used more to target bluenose and hapuka groper or to avoid bycatch of sharks or bait depredation by starfish, etc.

Table 1. Table showing the fleet characterisation for the ling longline fishery (Source: DWG)

	<28m	28-43m		>43m
Year	Fresher	Fresher	Limited processing	Fillet
2011/12	17	2	40	2
2012/13	20	5	0	1
2013/14	23	4	1	3
2014/15	22	2	1	2
2015/16	23	2	1	2
2016/17	23	2	1	2
2017/18	23	2	1	2
2018/19	22	2	1	2
2019/20	21	1	1	2
2020/21	20	1	1	4
2021/22	20	1	1	4
2022/23	18	1	1	3
2023/24	17	1	0	3

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7.3. Operation of the fishery

Figure 1 shows maps of the location of the stocks and fisheries.

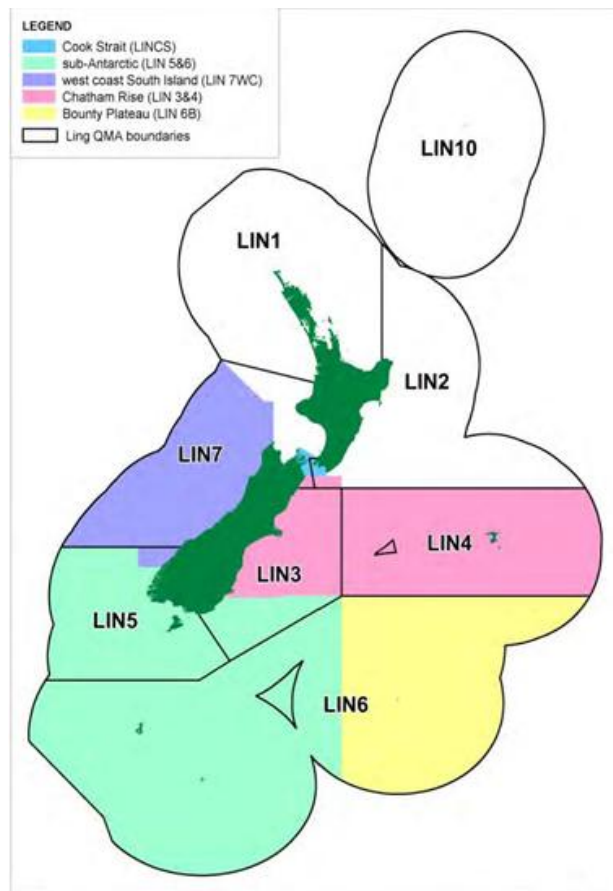


Figure 1. The management units for ling. The outer boundary represents the New Zealand 200 mile EEZ.

7.4 Monitoring of the fishery

The ling longline management system has documented a comprehensive and effective monitoring, control and surveillance system through:

1. compulsory use of satellite-based Vessel Monitoring System (VMS) with an onboard automatic location communicator (ALC);
2. government observers who may be placed on board to observe fishing, transshipment and transportation to collect any information on hoki, hake and ling fisheries resources. This includes information to monitor the effects of hoki, hake and ling fishing on the aquatic environment; and,
3. accurate recordkeeping and recording requirements to establish auditable and traceable records to ensure all catches are counted and do not exceed the ACE held by each operator.

Deepwater and middle-depth fisheries are those generally between 12 nautical miles and 200 nautical miles offshore. Fisheries are categorised into three tiers:

- Tier 1 – high volume, high value quota management system stocks that commercial fishers usually target;
- Tier 2 –quota management system stocks that are smaller or less valuable bycatch fisheries, or are only targeted at certain times of the year; and
- Tier 3 – bycatch species that are not managed through the quota management system.

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The hoki, hake and ling trawl fishery, considered one combined trawl fishery, the southern blue whiting trawl fishery and the ling bottom longline fishery all fall under Tier 1.

The management of the majority of New Zealand's deepwater fisheries takes an evidence-based approach, supported by a robust and comprehensive monitoring and research programme. Information and data come from a variety of sources including independent Fisheries New Zealand Observer data, industry reporting, contracted fisheries independent research surveys, and contracted projects (FNZ, 2024). Research needs to inform management of New Zealand's deepwater fisheries are reflected in the medium term research plan ([MTRP](#)). The MTRP is a living document, updated regularly to reflect changes in management priorities where these occur, and identification of new information requirements. The MTRP should be read alongside the National Fisheries Plan for Deepwater and Middle depth fisheries (FNZ (2019), National Deepwater Plan). Annual research plans are consulted with stakeholders through the Deepwater Fish Plan Advisory Group and reported in the Annual Operational Plans and Annual Review Reports for deepwater fisheries.

The basic information for each species (see Section 10.1) needed when conducting stock assessments relates to information on stock structure, biological parameters such as natural mortality, length as function of age, weight as a function of age, and fecundity as a function of age. The species descriptions (see Section 10.1) refer to whether these parameters depend on sex and for natural mortality whether there is evidence for age or length dependence. The stock assessment for hoki involves specifications related to how movement occurs. The stock assessment may pre-specify the values for these parameters based on monitoring data or estimate them as part of the model-fitting process. In addition, the stock assessment may examine the evidence for changes over time in some of the biological parameters such as length and weight as functions of age.

7.4.1 At sea scientific observers

Fisheries New Zealand plans at-sea observer coverage based on biological sampling targets for stock monitoring (e.g. length frequencies (LF) and otolith samples) and percentage coverage targets for the estimation of protected species interactions. Observer coverage is planned and delivered based on the number of 'observer days' required for each fishery on a financial year basis. Fisheries New Zealand and the Department of Conservation work together each year to develop a sea days plan ([Fisheries observer services | NZ Government \(mpi.govt.nz\)](#)). See Section 9.3.2 in the [Annual Operational Plan for deepwater fisheries](#).

The number of observer days necessary to achieve biological sampling requirements are calculated using the following information from the most recent fishing year:

- the total number of target tows in each area.
- the number of observed target tows in each area
- the number of samples collected by observers for each species/area combination; and
- the number of sea days delivered for each area.

It is challenging to plan required observer coverage in advance because of the variability in fishing effort over the range of fisheries each year, and delivery can be affected by fishing activities during a year (e.g. if there is no fishing in a particular fishery, it will appear that coverage in terms of observed tows and length/age samples did not meet the target).

The National Institute of Water and Atmospheric Research (NIWA) currently carries out the role of Data Manager and Custodian for the fisheries research data owned by the Ministry for Primary Industries (MPI) formerly the Ministry of Fisheries. The Scientific Observer Programme (SOP) was created in 1986 to send observers, contracted to the then MAF Fisheries, to monitor the catches of commercial trawlers. Since then observer duties have extended to a number of fisheries and collecting observations for a range of data sets. The Scientific Observer Programme was later renamed to the Observer Programme, and in late 2004 re-branded as 'Observer Services'. The Centralized Observer Database (COD) is dedicated to information collected by these Ministry Observers (Sanders and Fisher, 2023).

The COD database contains the catch and effort information for observed commercial fishing vessels, ageing materials, length frequency and biological data for commercial species as measured by the observers, as well as relevant trip and tow information. Observers on each vessel are responsible for completing their Observer Catch Effort forms typically contained in a logbook. Each logbook documents details for every trawl shot, line set or other fishing effort by the vessel

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such as position, time, total catch; the composition and weight of each catch; and the details of all fish processing carried out on board the vessel. In 1990, the format of the trawl logbooks changed slightly, and was revised again in 2007 as version 3.

Since 2007 when version 3 of the trawl catch effort logbook was introduced, NIWA has received zip files from MFish, and subsequently MPI containing the observer trawl catch effort logbook data, which is loaded into the load tables of cod. The cod database is the major source of length frequency data from commercial fishing operations and so plays a major role in the stock assessment process. Currently the cod database holds information for over 100 species, with the major species including hoki, southern blue whiting, orange roughy, scampi, oreos, ling, jack mackerels, hake, barracouta, and silver warehou.

Access to this database and data are restricted to specific Nominated Personnel as specified in the current Data Management contract between the Ministry for Primary Industries and NIWA.

Observer coverage statistics are available from multiple platforms including the Annual Operational Plans for each sector, the Aquatic Environment and Biodiversity Annual Review (AEBAR), the protected species captures summary website, and various scientific research works presenting mathematical analyses and extrapolations of mortality for each fishing sector based off observer records. Ultimately though all data are held by the Ministry for Primary Industries (MPI) and subsequent reports summarise those datasets. Each of the aforementioned platforms publish at different intervals and aggregate the various components of the fisheries differently (e.g. by area, gear type, taxon or taxon groups). The MPI publishes annual planned observer sea days and days achieved for the financial year period 01 July to 30 June each year, with the most recent full 12 month period being the 2023/24 period up until 30 June 2024 ([58306-2022-2023-observer-seadays \(mpi.govt.nz\)](https://www.mpi.govt.nz/58306-2022-2023-observer-seadays)). The MPI reports do not indicate the proportion of commercial fishing effort observed, and plans coverage based on fishery, fishing area and depth of fishing activity. That is not exactly in line with the manner in which the Units of Assessment are defined as target species/stock and gear type are not always apparent.

The most recent year for which observer coverage statistics are reported and for which data have been used to collate mortality statistics appears to be the 2020/21 fishing season (October 2020 to September 2021), though data are available as far back as 1990, and some fisheries do not run for the full 12-month period. Observer coverage in the UoAs is presented for the five-year period covering the 2016/17 to 2020/21 fishing seasons in Table 6 and fisheries are aggregated based on the gear type and declared target species. Updated, to 2022/23 fishing season, observer coverage statistics were provided to the assessment team through the Situation Reports published by SeaFood New Zealand, Deepwater Council (SNZ, 2024) and are reported under Principle 2 scoring.

Table 6. Observer coverage (percentage of tows observed) in the hoki, hake, and ling trawl fishery (reported separately, boxed in bold), the ling longline fishery, the southern blue whiting trawl fishery fisheries for the period 2016/17 to 2020/21. Source: Protected Species Captures Version 7, <https://protectedspeciescaptures.nz/PSCv7/download/>.

Fishery	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	Average
Hoki trawl	22.45	34.57	28.71	40.82	42.08	33.726
Hake trawl	83.52	58.37	46.91	76.49	62.74	65.606
Ling trawl	20.54	29.78	24.74	25.56	20.75	24.274
Southern blue whiting trawl	100	100	99.87	100	77.1	95.394
Ling longline	14.48	22.9	9.8	14.94	5.04	13.432

7.4.2 Land-based catch sampling

For most deepwater fisheries, at-sea observers provide adequate sampling to support stock assessments. However, for some fisheries, getting sufficient observer coverage to collect representative samples can be challenging. Where fish are not fully processed at sea, research providers can be contracted to visit the landing sites and collect the required samples at that point.

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Results from the sampling of commercial catches is a key input to several stock assessments. For these stocks, sufficient, representative samples of the length and/or age of the commercial catch must be available for the stock assessments to accurately estimate stock status. This mechanism is currently in place for the hoki fishery to collect samples from the Cook Strait and the West Coast South Island within 25nm of the coast. This project is scheduled to be completed annually.

7.4.3 Surveys

The research required to manage deepwater fisheries is detailed in the Medium-Term Research Plan for Deepwater Fisheries. Some research is contracted on an annual basis, while other research, such as trawl surveys, are contracted via multi-year contracts. Surveys provide important fishery-independent information for monitoring several deepwater fish stocks. Table 7 lists the surveys planned for 2024/25 to 2027/28.

Table 7. Future survey schedules (Source:FNZ<https://www.mpi.govt.nz/dmsdocument/21746-medium-term-research-plan-for-deepwater-fisheries-report>).

	2024/25	2025/26	2026/27	2027/28
Wide-area trawl surveys				
Chatham Rise		Jan 2026		Jan 2028
Sub-Antarctic	Dec 2024		Dec 2026	
WCSI	June/July 2024		June/July 2027	
Acoustic survey				
HOK1 1 (Cook Strait/Pegasus Canyon/Conway Canyon)	July/Aug 2025		July/Aug 2027	
SBW 6B	Aug 2025	Aug 2025	Aug 2026	Aug 2027
SBW 6I	Sep 2025			Sep 2028

7.4.3.1 Trawl surveys

Wide-area trawl surveys collect biological information and provide abundance indices for a wide range of species. There are three deepwater and middle-depth wide-area trawl surveys that cover the three main deepwater fishing grounds: Chatham Rise, Sub-Antarctic, and the West Coast of the South Island (WCSI). The surveys are optimised to provide information on relevant Tier 1 middle-depth fish stocks, but also provide valuable information on a range of Tier 2 and non-QMS species, including data that informs risk assessments for sharks, and important ecosystem data (e.g. sea temperature, stomach sampling) in these key fishery areas.

The Chatham Rise wide-area trawl survey is carried out in January every other year. The survey series provides biomass trend and distribution information on 142 species, which are included as data inputs to stock assessments for several species, including hoki, hake and ling.

The Sub-Antarctic trawl survey is carried out in December every other year in the alternate financial year to the Chatham Rise trawl survey. The Sub-Antarctic trawl survey provides information on 134 species and data inputs to stock assessments for several Tier 1 species, including hoki, hake and ling.

The last West Coast South Island (WCSI) wide-area trawl survey was completed in 2021 and is scheduled for completion in June/July every third year thereafter. The WCSI trawl survey was initially developed and designed as an acoustic survey focused on indexing spawning hoki abundance on the WCSI each winter. The survey methodology was amended in 2016 to focus on hake and ling rather than hoki following a review of the hoki model which concluded that the west coast acoustic index was not significantly influential in the model. The importance of the trawl survey to other species, including hake and ling, is the key reason the survey has continued.

7.4.4 Digital monitoring

The current digital monitoring framework for the deepwater fleet comprises:

- ER - electronic reporting of catch, effort, protected species captures, and landing information; and
- GPR - electronic position reporting.

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Currently in development is the Deepwater Info Portal, a digital system developed by the Deepwater Council (DWC) and Dragonfly Data Science for vessels to access protected species information and other documents, to:

- provide more relevant and easy-to-access information based on the fishery;
- replace paper-based systems with digital ones to save costs and avoid version issues; and
- enhance connectivity and communication between DWC and vessel.

The InfoPortal will help skippers, crew and vessel managers to maintain good environmental performance and improve efficiency. The InfoPortal has been tested on some vessels and will be rolled out to the deepwater trawl fleet once the next steps for the system have been planned in 2023/24.

7.4.5 Stock assessments

Stock assessments have been accepted to guide management for around 70% of Tier 1 (including hoki, hake, ling and southern blue whiting) deepwater fisheries (by both volume and value). Annual Fisheries Assessment Plenary reports, organised by fish stock, provide summaries of the available fisheries and scientific information and are in turn supported by 70–100 more detailed reports published on-line each year, with a cumulative total of almost 2000 such supporting, detailed documents. The plenary reports summarise fisheries, biological, environmental, stock assessment and stock status information for 83 of New Zealand's commercial fish species or species groups in a series of Science Working Group (SWG) or Plenary reports.

Each species or species group is split into 1–10 stocks for management purposes. However, the boundaries of biological stocks often differ from the management boundaries. In general, biological stocks tend to occur at smaller scales than management boundaries, although in a few instances the reverse is true. Most stock assessments are conducted at biologically meaningful scales.

Science Working Group (SWG) and Plenary meetings have continued the effort to populate the Status of the Stocks summary tables, which are used to provide comprehensive summary information about current stock status and the prognosis for these stocks, to evaluate fisheries performance relative to the 2008 Harvest Strategy Standard for New Zealand Fisheries and other management measures, and to rank the quality of stock assessment inputs and outputs based on the 2011 Research and Science Information Standard for New Zealand Fisheries. Even when complete information is not available, it is sometimes possible to at least make scientifically sound statements about recent trends in stock size and fishing intensity levels.

Over time, continual improvements have been made in data acquisition, stock assessment techniques and the development of reference points to guide fisheries management decisions. SWG and Plenary meetings have continued the effort to populate the Status of the Stocks summary tables, which are used to provide summary information about current stock status and the prognosis for these stocks, to evaluate fisheries performance relative to the 2008 Harvest Strategy Standard for New Zealand Fisheries and other management measures, and to rank the quality of stock assessment inputs and outputs based on the 2011 Research and Science Information Standard for New Zealand Fisheries. Even when complete information is not available, it is sometimes possible to at least make scientifically sound statements about recent trends in stock size and fishing intensity levels.

The Plenary reports take into account the most recent data and analyses available to SWGs and Fisheries Assessment Plenary meetings, and also incorporate relevant analyses undertaken in previous years. Due to time and resource constraints, recent data for some stocks may not yet have been fully analysed by the SWGs or the Plenary. Table 8 lists the schedule for assessments of various hoki, hake, ling and southern blue whiting stocks.

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Table 8. Summary of the recent and planned assessments of the stocks.

	Before	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29
HOK 1		Yes	Yes	Yes	Planned	Planned	Planned	Planned	Planned
HAK 1	2020/21				Planned			Planned	
HAK 4	2020/21								
HAK 7				Yes			Planned		
LIN 3&4		Yes			Planned			Planned	
LIN 5&6				Yes ¹			Planned		
LIN 7WC			Yes			Planned			Planned
SBW 6B				HCR ²	HCR ²	HCR ²	HCR ²	HCR ²	HCR ²
SBW 6I			Yes			Planned			Planned

1: First assessment to include LIN 6B; 2: Application of the HCR

The information needed to assess stock status relative to the limit and target reference points (ling, hake, and southern blue whiting) or the management target range (hoki), and to conduct projections are an estimate of recent abundance, B_{current} , an estimate of the unfished biomass B_0 , and estimates of recruitment. This information is obtained from quantitative stock assessments based on fitting population dynamics models to monitoring data. The stock assessment process is open to anyone who elects to participate. The process is managed by Fisheries New Zealand and supported by quota owners through DWG.

The review of stock assessments has been conducted primarily through meetings of the MPI Deepwater Fisheries Assessment Working Group, which consists of scientists from NIWA, MPI, representatives of environmental NGOs, and industry (FNZ, 2024b).

The objectives of the FNZ Assessment Working Groups (SWGs) are to:

1. review new research information on stock structure, productivity, abundance and related topics for each fish stock/issue under the purview of individual Stock Assessment Working Groups;
2. where possible, derive appropriate MSY-compatible reference points for use as reference points for determining stock status, based on the Harvest Strategy Standard for New Zealand Fisheries;
3. conduct stock assessments or evaluations for selected fish stocks in order to determine the status of the stocks relative to MSY-compatible reference points and associated limits, based on the "Guide to Biological Reference Points for Fisheries Assessment Meetings", the Harvest Strategy Standard, and relevant management reference points and performance measures set by fisheries managers;
4. for stocks where the status is unknown, use existing data and analyses to draw logical conclusions about likely future trends in biomass levels and/or fishing mortality (or exploitation) rates if current catches and/or TACs/TACCs are maintained, or if fishers or fisheries managers are considering modifying them in other ways;
5. where appropriate and practical, conduct projections of likely future stock status using alternative fishing mortality (or exploitation) rates, or catches, or other relevant management actions, based on the Harvest Strategy Standard and input from the Stock Assessment Working Group and fisheries managers;
6. for stocks that are deemed to be depleted or collapsed, develop alternative rebuilding scenarios based on the Harvest Strategy Standard and input from the Stock Assessment Working Group and fisheries managers; and
7. for fish stocks for which new stock assessments or analyses are not conducted in the current year, review the existing Fisheries Assessment Plenary report text on the "Status of the Stocks" in order to determine

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whether the latest reported stock status summary is still relevant; else to revise the evaluations of stock status based on new data or analyses, or other relevant information.

The SWG process includes protocols for member and participation (FNZ, 2024b). The reports of Stock Assessment Working Groups are available through annual summaries, with the results of detailed analyses reported in Fishery Assessment Reports (FARs). The assessment process for hoki, hake, ling and southern blue whiting is conducted through the Deepwater Working Group. Participation in the SWGs is restricted to members of the Stock Assessment Working Groups, which consist of NIWA scientists, representative of Fisheries New Zealand, consultant scientists, industry and members of conservation NGOs. The possibility of external review of the stocks exist, and an external international review of hoki was conducted in 2017 by external reviewers from Australia, the USA, and South Africa. The NZ Plenary also include independent reviewers for some assessment (e.g. Alistair Dunn and Jim Roberts – hoki; Jim Roberts and Kevin Sullivan – ling).

The New Zealand stock assessment plenary identifies research tasks during its review of the stock assessments (the FNZ medium term research plan for deepwater fisheries also outlines potential research projects that involve methodological development). This section repeats some of the key research tasks identified by the plenary during 2024 related to ling.

- Revisit maturity ogives and biological parameters for all stocks.
- Apply updates in fishery definitions and fishery seasons to the ageing project.
- Obtain additional observer-collected length data and age readings to develop an age frequency and associated selectivity for the pot fishery in LIN 3&4, LIN 5&6, and LIN 7WC.
- Further investigate spatial-temporal standardisation of commercial and Chatham Rise survey data.
- Conduct further work on the most appropriate implementation of *M* for LIN 5&6 and LIN 6B.
- Collect more data to further explore the links between LIN 5&6 and LIN 6B.
- Conduct Ageing of the otoliths that were collected in Statistical Area 025 to better delineate the LIN 3&4 and LIN 5&6 stock.
- Include the *Tangaroa* Sub-Antarctic trawl survey biomass estimate (but not age compositions) for 2016 future stock assessments for LIN 5&6 and LIN 6B.
- Investigate ways to monitor LIN 5 and LIN 6 separately to help inform management, including trawl survey data or spatial CPUE analysis
- Longline age frequencies are currently calculated based on data collected between May and August. However, most of the fishery and observer data collection happens at other times of the year. The sampling of length and ages to estimate age frequencies should be reevaluated and sampled at more appropriate times of the year.
- Determine how to best represent mean weights-at-age in the projections for SBW 6I given the negative relationship between year-class strength and growth.
- Update the HCR for the Bounty Plateau stock to account for catch being above or below the TACC. Explicit allowance within the HCR for a minimum catch for surveys should also be evaluated; this would require a revised simulation approach because risk is currently estimated without reference to absolute catch levels.

Target stocks

Section 10.1 of this report provides species summaries for the target stocks and section 10.1.3 provides a summary of the assessments by UoA.

Tier 2 stocks

Tier 2 species and stocks are typically less valuable bycatch fisheries or are only target fisheries at certain times of the year. Because of the nature of these fisheries, Tier 2 fisheries are often data limited making full stock assessments problematic. The abundance of Tier 2 stocks may be monitored using a number of approaches including stock assessment, CPUE indices, age and/or size structure, and trawl survey indices. Reviews of stock status for Tier 2 stocks are primarily undertaken based either on significant changes in catch volume (e.g. decrease in bycatch in another target fishery suggesting a potential sustainability issue or an increase suggesting an increase in abundance), or when specific concerns are raised by stakeholders. In addition, trends in the bycatch of Tier 2 (and non-QMS) species and stocks will

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continue to be monitored through bycatch reports prepared through the Aquatic Environment research stream, and the three wide area multi-species trawl surveys.

7.4.6 Aquatic Environment specific to Deepwater

Under the Fisheries Act 1996, significant adverse impacts on the aquatic environment should be avoided, remedied, or mitigated. In addition, the biological diversity of the aquatic environment must be maintained. Drivers of research in this area also include the National Plan of Action (NPOA)-Seabirds, NPOA-Sharks, Threat Management Plan (TMP) for New Zealand Sea Lions and TMP for Hector's and Maui Dolphins.

Projects to monitor impacts of fisheries on the aquatic environment are planned and contracted through the Aquatic Environment research planning process. Fisheries New Zealand is currently developing a multi-year research plan for Aquatic Environment Research which will be incorporated to the MTRP when completed.

Some information is available to assess the nature and extent of any adverse effects on the marine environment on a case by case basis, and data to support the estimation of effects from fishing is limited to areas with high observer coverage and those issues with a high public profile. Over the past few years, stock-specific plenary reports have included sections on environmental and ecosystem considerations that have been developed for some species by the SWGs that oversee aquatic environment and biodiversity issues associated with New Zealand fisheries and the ocean environment in which they reside. Chapter sections on how ocean warming, ocean acidification and other ecosystem trends affect, for example, productivity and fish distributions will be incorporated as new information becomes available (see species summary for ling in Section 10.1).

Data and information collection is prioritised to reduce uncertainty in formal, quantitative risk assessments for protected species, and to provide information on issues where there is public interest in of risks from fishing to the aquatic environment. Implementation of a risk-based approach has enabled prioritisation of areas on which to focus mitigation or data collection efforts.

The Aquatic environment and biodiversity annual review ([AEBAR, 2021](#)) last updated in 2021, with Chapter 10 chondrichthyans updated 2024, primarily addresses interactions between the seafood sector, biodiversity, and the aquatic environment. The AEBAR is supported by more detailed reports and science papers published on-line each year. The information contained within the AEBAR informs decision-making in Fisheries New Zealand. The AEBAR is organised by topic (e.g., protected species, bycatch, benthic impacts, etc.), and almost all topics involve more than one fish stock or fishery.

Fisheries New Zealand Science Working Groups contribute substantially to the AEBAR. These are primarily the Aquatic Environment Working Group (AEWG), the Antarctic Working Group (ANTWG), and the Biodiversity Research Advisory Group (BRAG). Over time, relationships with industry, recreational, and environmental interests have been developed through the working groups and it has become expedient to finalise AEBAR chapters through the Science Working Group processes. The AEBAR 2021 was led by the Science Group within the Directorate of Fisheries Science and Information in Fisheries New Zealand.

Research and science standards and the terms of reference for each working group have been developed to ensure a high quality and consistent peer review process. A wide variety of relevant, peer-reviewed research that has not been contracted through Fisheries New Zealand is summarised in the AEBAR. This work is included only when it meets the [Fisheries New Zealand Research and Science Information Standard](#).

8. Assessment results overview

8.1 Determination

- 9 Following this assessment team's work, and review by stakeholders and peer-reviewers, and no objection, the determination is that this fishery has passed its assessment and should be certified. This has been confirmed by LRQA's decision making entity.

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9.1 Principle level scores

To be drafted at Client and Peer Review Draft Report stage

The CAB shall include in the report the scores for each of the three MSC principles in the table below.

Reference(s): FCP v3.1 Section 7.15

Table 9: Principle level scores

Principle	UoA 13	UoA 14	UoA 15	UoA 16	UoA 17
Principle 1: Target species	95.0	95.0	95.0	95.0	95.0
Principle 2: Ecosystem impacts	85.4	85.4	85.4	85.4	85.4
Principle 3: Management system	96.3	96.3	96.3	96.3	96.3

9.2 Summary of Performance Indicator level scores

The table below shows draft scoring ranges which may change during the assessment process.

Table 10. Performance Indicator Scoring Table

Principle	Component	Performance Indicator (PI)	UoA 13	UoA 14	UoA 15	UoA 16	UoA 17
One	Outcome	1.1.1 Stock status	100	100	100	100	100
	Management	1.2.1 Harvest strategy	100	100	100	100	100
		1.2.2 Harvest control rules & tools	95	95	95	95	95
		1.2.3 Information & monitoring	85	85	85	85	85
		1.2.4 Assessment of stock status	90	90	90	90	90
Two	In-Scope species	2.1.1 Outcome	75	75	75	75	75
		2.1.2 Management strategy	85	85	85	85	85
		2.1.3 Information/Monitoring	85	85	85	85	85
	ETP/Out of Scope Species	2.2.1 Outcome	100	100	100	100	100
		2.2.2 Management strategy	100	100	100	100	100
		2.2.3 Information/Monitoring	90	90	90	90	90
	Habitats	2.3.1 Outcome	80	80	80	80	80
		2.3.2 Management strategy	75	75	75	75	75
		2.3.3 Information strategy	85	85	85	85	85
	Ecosystem	2.4.1 Outcome	80	80	80	80	80

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		2.4.2	Management strategy	80	80	80	80	80
		2.4.3	Information	90	90	90	90	90
Three	Governance and policy	3.1.1	Legal &/or customary framework	100	100	100	100	100
		3.1.2	Consultation, roles & responsibilities	100	100	100	100	100
		3.1.3	Long term objectives	100	100	100	100	100
	Fishery specific management system	3.2.1	Fishery specific objectives	90	90	90	90	90
		3.2.2	Decision making processes	90	90	90	90	90
		3.2.3	Compliance & enforcement	100	100	100	100	100
		3.2.4	Monitoring & management performance evaluation	90	90	90	90	90

The MSC Fisheries Standard Toolbox was used in the reassessment.

Evidence required framework was applied to

P1 1.2.1 SI (e).

P2 2.1.3 SI (a) 2.1.3 SI (b) 2.2.3 SI (a) 2.3.2 SI (c) 2.3.3 SI (b)

P3 3.2.3 SI (c)

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9.3 Summary of conditions

Table 11: Summary of conditions

Condition number	Condition	PI	Deadline	Exceptional circumstances?	Carried over from previous certificate?	Related to previous condition?
1	By the fourth surveillance audit, information shall be gathered to show that main in-scope species are highly likely to be above the PRI, by determining stock status reference points derived either from analytical stock assessment or using empirical approaches, or by reducing the susceptibility of the main in-scope species currently assessed as "Medium" risk in the Risk Based Framework such that "Low" risk is attained.	2.1.1	2029	No	No	NA
2	By the fourth surveillance audit, a partial management strategy shall be in place that is expected to achieve the habitat outcome SG80 level or above, including consideration of overlapping MSC UoAs/non-MSC fishery protection measures for more sensitive habitats.	2.3.2	2029	No	No	NA

9.3.1 Recommendations

To be drafted at Client and Peer Review Draft Report stage

Principle 2

Recommendation (#1) Sharp (2025) updated cryptic mortality multipliers used in the Edwards et al 2023 Seabirds SEFRA, parcelled out the mortality attributable to the longline UoAs under assessment and used updated observer data from the most recent 5-year period accounting for improvements in reporting and seabird bycatch mitigation measures. Sharp (2025) focused on the three most at risk species: southern Buller's albatross, Salvin's albatross and white-capped albatross. It is Recommended that a similar approach is applied to the balance of the seabird species that interact with the longline UoAs.

Recommendation (#2) That the fishery client conduct a spatial assessment of the degree of overlap of the ling longline UoAs with each of the 9 bioregions identified by Stephenson et al 2023 and likewise provide a quantitative spatial assessment of the degree of overlap with the distribution of sessile benthic invertebrates associated with more sensitive habitats.

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Recommendation (#3) The fishery review and collate available research trawl information/data that may be used to provide up to date determinations of changes to key ecosystem indicators.

Principle 3

Recommendation (#4) Progress on the update to the fishery specific chapters are to be completed. Progress to be provided at each surveillance audit

Recommendation (#5) Progress on an external review of the fishery specific management system. Progress to be provided at each surveillance audit

10 Traceability and eligibility

10.1 Eligibility date

The **Eligibility Date** for this assessment is the recertification date, 6th February 2026

10.2 Traceability within the fishery

Table 12: Traceability within the fishery

Statement on fishery's ability to track and trace to each Unit of Certification
Systems allow the fishery client to track to trace any fish or fish products sold as MSC certified back to the individual UoC.
Movement of fish and fish product between harvest and landing <i>An illustration of movement of product between harvest and landing. Include when any of the following happen: Harvesting, At-Sea processing, Translocation, Transshipment, Offloading, Landing.</i>
Factory vessels are equipped with fully integrated weighing and labelling systems in which every carton is barcoded on production and before storage in the hold. This system allows non-certified product to be barcoded as non-certified and to be trackable and separable by scanning at any subsequent stage. In port, vessel product data are reconciled with landing figures to arrive at a final inventory. There is no transshipment .
Movement of fish and fish products between landing and start of the CoC if relevant. <i>An illustration of movement of product between landing and start of CoC. Include when any of the following is happening: Transport, Storage, Sorting/ Grading, Packing, Auction.</i>
All fish and fish product is landed to Licenced Fish Receivers (LFR) who hold Chain of Custody certification
Description of any processing and sorting/ grading prior to change of ownership
All fish and fish product is landed to Licenced Fish Receivers (LFR) who hold Chain of Custody certification requiring strict, approved procedures to ensure certified and non-certified products are separately stored and are identifiable as certified or non-certified throughout the landing, processing, storage and transportation stages. In addition, MPI regulations require all packaged fish on a LFR's premises to be labelled such that the species name, date of landing, LFR name, processed state and area caught are clearly displayed. The process is considered to be well managed.
For the critical tracking events (i.e. where in the product flow this data needs to be transferred) of all fish and fish product handling and sale not covered by CoC describe: • Process of segregating to each Unit of Certification • Key data elements (i.e. the data or documents to identify the UoC such as species, catch area, gear)

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Existing fisheries management requirements include the clear identification of species, quantity, fishing method and area of capture by all vessels landing fish from the fishery. All catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage also monitors, cross checks and verifies catches and landings with the vessel's logbook.

Cross referencing of VMS data with logbooks, observer and aerial and at-sea surveillance reports also ensures that fish is reported from the correct area of capture. All landings are monitored by a dockside monitoring program. Vessels must advise MPI before landing and may be subject to monitoring by enforcement officers.

Where there are IPI stock(s) within the scope of certification, describe the verification of traceability systems

NA

Other relevant information on the systems to track and trace to each UoC

Where there is potential for mixing, these risks are managed by the operators who have their own protocols in place to separate these catches. They are legally required to record in catch and effort logbooks catch weight by position, and method, as well as on the official catch landing form. Further, the operators have their own internal reporting systems that record the date and time of fishing activities against the packaged product (if processed).

10.3 Traceability risks and mitigations

Table 13: Traceability risks and mitigation within the fishery

Factor	Description of the traceability risk factors and details of the risk mitigation and management <i>Include in each description:</i> - Whether each factor occurs - When it occurs and how frequently (e.g. regularly, seasonally, rarely) - How any potential traceability risks are mitigated and any risk management - If covered by information provided elsewhere in the assessment report (such as table 9 for segregation or in section 5 MSC Fisheries Standard – Principle 3 – Effective management for regulatory frameworks), cross reference as needed.
Will the fishery use gears that are not part of the UoC? If Yes, include in the description: - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated.	The only other gear used to catch the ling on long line vessels is long-line.
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, include in the description: - If this may occur on the same trip; - How any risks are mitigated.	New Zealand vessels do not fish for outside New Zealand's EEZ. The processes and procedures for reporting and landing fish in New Zealand will ensure that ling caught in geographic area LIN2 (lower east coast North Island and Cook Strait) are never sold as MSC-certified. If a vessel were fishing outside the UoC there are systems in place to record that fact. All factory trawlers in New Zealand are operating under New Zealand Food Safety Authority (NZFSA) and New Zealand Fisheries Act rules and regulations. As such, they are required to both land all catch of QMS species and ensure that any fish that will not be fit for human consumption, e.g. through damage or accidental contamination, is not able to be inadvertently sold into market.

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Factor	Description of the traceability risk factors and details of the risk mitigation and management <i>Include in each description:</i> • Whether each factor occurs • When it occurs and how frequently (e.g. regularly, seasonally, rarely) • How any potential traceability risks are mitigated and any risk management • If covered by information provided elsewhere in the assessment report (such as table 9 for segregation or in section 5 MSC Fisheries Standard – Principle 3 – Effective management for regulatory frameworks), cross reference as needed.
Do vessels from outside the UoC and/or client group ever fish on the same stock?	NZ Seafood, DWC represents quota owners who own the majority (~90%) of the allowable catch for each of the UoCs. For those not a part of the DWG, they are required to have a certificate sharing agreement
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities and should reflect those listed in product movement in Table 9. It includes: • Translocation • Transshipment • Transport • Storage • Processing • Sorting/ grading • Packing • Landing • Auction	Existing fisheries management requirements include the clear identification of species, quantity, fishing method and area of capture by all vessels landing fish from the fishery. All catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage also monitors, cross checks and verifies catches and landings with the vessel's logbook. Cross referencing of VMS data with logbooks, observer and aerial and at-sea surveillance reports also ensures that fish is reported from the correct area of capture. All landings are monitored by a dockside monitoring program. Vessels must advise MPI before landing and may be subject to monitoring by enforcement officers. Where there is potential for mixing, these risks are managed by the operators who have their own protocols in place to separate these catches. They are legally required to record in catch and effort logbooks catch weight by position, and method, as well as on the official catch landing form. Further, the operators have their own internal reporting systems that record the date and time of fishing activities against the packaged product (if processed).
Does transshipment occur within the fishery? If yes, include in the description: • What is the type of transshipment in-port/ high seas/ other • What are the systems used to track and trace to UoC For high seas transshipment include in the description how the systems to track and trace to the UoC: • Are verified independently of the fishery client	No No transshipments have occurred in New Zealand waters in recent years and any transshipment would require the presence of fisheries officers or government observers

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Factor	Description of the traceability risk factors and details of the risk mitigation and management <i>Include in each description:</i> • Whether each factor occurs • When it occurs and how frequently (e.g. regularly, seasonally, rarely) • How any potential traceability risks are mitigated and any risk management • If covered by information provided elsewhere in the assessment report (such as table 9 for segregation or in section 5 MSC Fisheries Standard – Principle 3 – Effective management for regulatory frameworks), cross reference as needed.
• Cover all fishing and receiving vessels involved in transshipment • Apply to all transshipment events If any of these 3 criteria above are not met for high seas transshipment CoC certification is required for both the fishing and receiving vessels involved in this transshipment.	
Are trading agents to be covered within the fishery certificate? If yes, include in the description: • How information on UoC is passed through	No
Are there any other risks of mixing or substitution between certified and non-certified fish? If No, refer to the section describing product movement and segregation which demonstrates this.	No. If there is any doubt whether ling longline landed into an LFR is from a certified fishery the product is treated as non-certified. Factory vessels are equipped with fully integrated weighing and labelling systems in which every carton is barcoded on production and before storage in the hold. This system allows non-certified product to be barcoded as non-certified and to be trackable and separable by scanning at any subsequent stage. In port, vessel product data are reconciled with landing figures to arrive at a final inventory.
Are there any other risks of mixing between different Units of Certification? If Yes, include in the description: • link to any relevant variations relating to this If No, refer to the section describing product movement and segregation which demonstrates this.	No. All fish and fish product is landed to Licenced Fish Receivers who hold Chain of Custody certification requiring strict, approved procedures to ensure certified and non-certified products are separately stored and are identifiable as certified or non-certified throughout the landing, processing, storage and transportation stages. In addition, MPI regulations require all packaged fish on a LFR's premises to be labelled such that the species name, date of landing, LFR name, processed state and area caught.

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10.4 Eligibility to enter further chains of custody

Table 14: Eligibility to enter Chain of Custody

Determination on whether fish and fish products from the certified UoC(s) can go onto be sold as certified. Including: <i>Whether the ability for fish and fish products to be sold as certified is conditional upon CoC certification;</i> <i>If traceability systems still need to be established prior to either CoC certification OR revised fishery determination.</i>				
It is determined that fish and fish products from the certified Units of Certification can go onto be sold as certified				
The point of change of ownership of product to any party not covered by the fishery certificate and detail of any trading between client group members prior to this				
The scope of this certification ends at the points of landing. Downstream certification of the product would require appropriate certification of storage and handling facilities at these locations.				
The point from which subsequent Chain of Custody (CoC) is required				
<i>The latest this can happen is the point of change of ownership of fish or fish product to any party not covered by the fishery certificate (reference section above) but it may happen sooner in which case describe as per the product flow (in table 9). Note the requirement for when CoC is required to start on High Seas Transhipment.</i>				
In order for subsequent links in the distribution chain to be able to use the MSC logo, ling products must enter into a separate chain of custody certification from the point of landing forward.				
The entities, or categories of entities, at the point of landing and/or sale required to have separate CoC including any auctions, selling agents, offloaders or storage facilities and so not covered in the above tables				
The subsequent links must be able to prove that they can trace ling products back to the permitted vessels which landed the product. The main points of landing for this fishery are all major New Zealand ports.				
A list of entities, or categories of entities, eligible to access the certificate and sell product as certified including: <i>Confirm if all vessels within the geographic area and gear of the UoC are eligible to sell fish and fish products as certified</i> <i>Any other limits to vessel types, ownership, client group membership</i> <i>Include any trading agents used</i>				
The eligible parties to use the fisheries certificate are shareholders of the NZ Seafood Deepwater Council. DWC represents quota owners who own the majority (~90%) of the allowable catch for each of the UoCs. Anyone who owns hoki, hake or ling quota has the opportunity to become a DWC shareholder. Those not a part of the DWC are required to have a certificate sharing agreement. Traceability of fishing activity within New Zealand is largely provided by the statutory requirements to record and report estimated catches in near-real-time via the Ministry’s Electronic Reporting (ELR) system and through the Ministry’s monitoring and compliance programmes. All vessels in the UoAs are equipped with Geospatial Position Reporting (GPR) equipment as well as being subject to monitoring by MPI observers and fisheries enforcement officers. Extensive record keeping is required for reporting landings and processing activity and this information is reported electronically to MPI. Fishing beyond the New Zealand EEZ requires special permitting prior to the activity of fishing and MPI observers on board during fishing operations. All EEZ and high seas fishing activities must be reported to MPI. No transshipment or motherships are used and no change of ownership of any orange roughy (raw or finished product) occurs prior to landing				
Points of landing, auctions or other transfer which may be used for the sale of fish from the certified fishery into further chains of custody, either: <i>The geographic region where all landing points are possible, or</i> <i>Named landing points, auctions or other transfer sites if there are limits</i>				
	<table><tr><td>LING</td></tr><tr><td>Nelson</td></tr><tr><td>Timaru</td></tr></table>	LING	Nelson	Timaru
LING				
Nelson				
Timaru				

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	<table><tr><td>Dunedin</td></tr><tr><td>Lytteton</td></tr><tr><td>Greymouth</td></tr><tr><td>Napier</td></tr><tr><td>Jackson Bay</td></tr><tr><td>Picton</td></tr><tr><td>Wellington</td></tr><tr><td>Westport</td></tr><tr><td>Kaikoura</td></tr><tr><td>Careys Bay</td></tr><tr><td>Christchurch</td></tr><tr><td>Waitangi</td></tr><tr><td>South Bay</td></tr></table>	Dunedin	Lytteton	Greymouth	Napier	Jackson Bay	Picton	Wellington	Westport	Kaikoura	Careys Bay	Christchurch	Waitangi	South Bay
Dunedin														
Lytteton														
Greymouth														
Napier														
Jackson Bay														
Picton														
Wellington														
Westport														
Kaikoura														
Careys Bay														
Christchurch														
Waitangi														
South Bay														
Any specific eligibility criteria for product to be sold as certified, or where to find this information where relevant, including: • <i>Product form</i> • <i>Trip type (e.g. includes outside EEZ)</i> • <i>Need for Chain of Custody</i> • <i>Need for trading through client group members</i>														
NA														
How fish or fish products can be identified or can be confirmed as certified at the point it enters certified CoC, including: • <i>How information on gear, species, stock, area, vessel (where relevant) client group member (where relevant) is provided</i> • <i>Any segregation to UoC required of first buyers (e.g. sort batches by species)</i> • <i>Where relevant how any specific eligibility criteria can be confirmed by the first buyer (as per section above)</i>														
Existing fisheries management requirements include the clear identification of species, quantity, fishing method and area of capture by all vessels landing fish from the fishery. All catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage also monitors, cross checks and verifies catches and landings with the vessel's logbook. Cross referencing of VMS data with logbooks, observer and aerial and at-sea surveillance reports also ensures that fish is reported from the correct area of capture. All landings are monitored by a dockside monitoring program. Vessels have to advise MPI before landing and may be subject to monitoring by enforcement officers. All fish and fish product is landed to Licenced Fish Receivers (LFR) who hold Chain of Custody certification requiring strict, approved procedures to ensure certified and non-certified products are separately stored and are identifiable as certified or non-certified throughout the landing, processing, storage and transportation stages. In addition, MPI regulations require all packaged fish on a LFR's premises to be labelled such that the species name, date of landing, LFR name, processed state and area caught are clearly displayed. The process is considered to be well managed.														
How IPI is identified to first buyers at the point it enters certified CoC where relevant														
NA														

10.5 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

There are no IPI stocks

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11 Scoring

Principle 1

10.1 Principle 1 background

10.1.1 Biology and ecological role

Ling are widely distributed throughout the 200-800m depth range within the New Zealand EEZ, particularly to the south of 40°S. Horn (2005) examined stock structure of New Zealand ling using morphometrics, genetics, growth, population age structures, and reproductive biology and behaviour, and indicated that there are at least five ling stocks (i.e., east coast South Island (ECSI), Chatham Rise (CR), Cook Strait (CS), Bounty Platform (BP), and the Southern Plateau (including the Stewart-Snares shelf on Puyesgur Bank (PB)). Stock affinities of ling in CS are unknown, but spawning is known to occur there (FNZ, 2024). Horn (2022) suggested that LIN 5&6 and LIN 6B are a single stock, with some area seasonal movement. The stock structure of Sub-Antarctic ling was further investigated in 2024 (Mormede et al. 2024a), with differences in growth suggesting that LIN 3&4, LIN 5&6, and LIN 7WC were likely different stocks, and that the current boundaries between those stocks were likely adequate. Based on available catch rate, age structure, and growth information, LIN 6B was considered unlikely to be part of LIN 3&4, with only relatively weak evidence (differences in longline length frequencies, in growth curves for older animals, and in the length of spawning – more protracted for LIN 6B, Mormede et al., 2024a) that it was not part of LIN 5&6. Because of the paucity of data available to assess LIN 6B as a separate stock, and the similarities in the information between LIN 5&6 and LIN 6B, the Deepwater Working Group decided to include LIN 6B with LIN 5&6 as a single Sub-Antarctic ling stock (LIN 5&6 and LIN 6B) (FNZ, 2024).

Ling live to a maximum age of about 30 years; fewer than 0.2% of successfully aged ling have been older than 30 years. A growth study of ling from five areas (west coast South Island (WCSI), CR, BP, Campbell Plateau (CP), and CS) showed that females grew significantly faster and reached a greater size than males in all areas, and that growth rates are significantly different between areas (FNZ, 2024). Ling grow fastest in CS and slowest on the CP (Horn, 2005). Maturity has been recently re-estimated by Mormede et al. (2024a) for LIN 5&6 (Table 15), with no evidence for changes over time.

Natural mortality (M) varies among stocks (Horn, 2008; Edwards, 2017). Although M has been estimated for all areas, the estimates are very imprecise, so a common value is assumed for all areas (Table 15). Spawning appears to vary among areas: August to October on the CR, September to December on the CP and Puysegur Bank, September to February on the BP, and July to September off the WSCI and in CS. Little of known regarding the distribution of juveniles (<40cm).

Ling appear to be mainly bottom dwellers feeding on crustaceans and also on fish, with commercial fishing discards being a significant dietary component (Dunn et al., 2010). However, they can be caught well above the bottom, e.g. when feeding on hoki during the hoki spawning season.

Table 15. Estimates of biological parameters. (Source: FNZ, 2024).

1. Natural mortality (M)									
All stocks	0.18								
2. Weight = a (length) ^{b} (Weight in g, length in cm total length)									
	Female			Male					
	A	B	a	b					
LIN 3&4	0.00138	3.271	0.00128	3.294	Chatham Rise				
LIN 5&6	0.00132	3.293	0.00213	3.179	Southern Plateau				
LIN 6B	0.00114	3.318	0.001	3.354	Bounty Platform				
LIN 7WC	0.00098	3.362	0.00131	3.292	West Coast S.I.				
LIN 7CK	0.000934	3.368	0.001146	3.318	Cook Strait				
3. von Bertalanffy growth									
				Female				Male	
FMA	K	t_0	L_∞	CV	K	t_0	L_∞	CV	
LIN 3&4	0.09	-0.71	153.3	0.09	0.13	-0.65	112.2	0.09	Chatham Rise
LIN 5&6	0.13	-1.53	110.6	0.08	0.19	-1.16	91.2	0.07	Southern Plateau
LIN 6B	0.12	-0.1	138.9	0.08	0.15	-0.1	117.1	0.07	Bounty Platform
LIN 7WC	0.08	-0.86	164.1	0.08	0.08	-1.08	140	0.08	West Coast S.I.
LIN 7CK	0.097	-0.54	163.6		0.08	-1.94	158.9		Cook Strait

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Ling were caught in a large foreign (Japanese and Korean) longline fishery on the CR from 1975 to 1980. Since 1980 ling have been caught by large trawlers, both domestic and foreign owned, and by small domestic longliners. The latter vessels tend to operate on the WCSI and the east coast of both main islands south of East Cape. The larger trawlers take most of their catches on the Puysegur Bank and the slope of the Stewart-Snares shelf and waters in the Auckland Islands area and the CR, primarily as bycatch in the fisheries for hoki.

The domestic fleet was increased by the addition of several larger longliners with autoline equipment during the 1990s, which led to increased catches of ling off the east and south of the South Island (LIN 3, 4, 5 and 6). Potting for ling represented less than 1% until recently, but it represented 10-16% of the catch in LIN 3&4 between 2018 and 2022 and 31% of the total catch in the 2023 fishing year (Table 19). Potting has also increased in other areas, constituting 22% of the 2023 total catch in LIN 7WC and 12% of the total catch in Lin 5&6 (Table 19). Small amounts of ling are taken by recreational fishers, but the estimates are small and highly uncertain (FNZ, 2024).

FNZ (2024) notes that it is believed that some ling bycatch from the west coast hoki fishery was not reported up to the mid-1990s. The catch estimates include non-reported catches. Furthermore, FNZ (2024) notes that some catch from LIN 7 (250-400t; Dunn, 2003) was reported against other fish stocks (probably LIN 3, 5 and 6)

Table 16 lists the catches for the QMAs considered in this report from 1931-32 to 1982, with catches reported by nation given in Table 17. and reported landings and TACCs in Table 18. The catch histories by assessed stock (separated by fishing method [trawl, longline, or pot]) are given in Table 19.

Table 16. Reported landings (t) for the main QMAs from 1931 to 1982. (Source: FNZ, 2024).

Year	LIN 3	LIN 4	LIN 5	LIN 6	LIN 7
1931–32	11	0	1	0	0
1932–33	14	0	2	0	35
1933–34	59	0	1	0	67
1934–35	70	0	1	0	94
1935–36	124	0	1	0	66
1936–37	103	0	1	0	61
1937–38	320	0	1	0	57
1938–39	280	0	24	0	37
1939–40	320	0	16	0	26
1940–41	286	0	21	0	46
1941–42	308	0	22	0	40
1942–43	254	0	24	0	29
1943–44	264	0	19	0	40
1944	224	0	13	0	46
1945	199	0	13	0	80
1946	348	0	9	0	78
1947	474	0	24	0	96
1948	403	0	24	0	66
1949	402	0	20	0	67
1950	352	0	29	0	61
1951	230	0	16	0	34
1952	235	0	16	0	36
1953	212	0	19	0	34
1954	208	0	7	0	44
1955	160	0	6	0	27

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1956	155	0	4	0	15
1957	175	0	8	0	19
1958	178	0	15	0	28
1959	157	0	13	0	27
1960	196	0	21	0	19
1961	230	0	20	0	19
1962	211	0	13	0	16
1963	213	0	14	0	11
1964	223	0	16	0	13
1965	195	0	24	0	13
1966	141	0	16	0	17
1967	106	0	14	0	36
1968	88	0	11	0	42
1969	154	0	10	0	23
1970	167	0	14	0	51
1971	203	0	20	1	37
1972	522	6	22	0	33
1973	1 425	0	23	0	41
1974	575	42	335	44	82
1975	1 770	15	1 513	344	224
1976	1 567	14	2 630	0	1 739
1977	1 149	466	1 683	0	2 810
1978	487	0	2 515	391	240
1979	799	246	4 400	1 431	454
1980	265	182	4 064	933	928
1981	427	444	3 576	636	1 020
1982	924	435	2 109	317	1 208

Table 17. Reported landings (t) from 1975 to 1987-88. Data from 1975 to 1983 from MAF; data from 1983-84 to 1985-86 from FSU; data from 1986-87 to 1987-88 from QMS. – indicates no data available. (Source: FNZ, 2024).

Fishing year	New Zealand		Total	Foreign Licensed					Grand total
	Domestic	Chartered		Longline (Japan + Korea)	Trawl Japan	Korea	USSR	Total	
1975*	486	0	486	9 269	2 180	0	0	11 499	11 935
1976*	447	0	447	19 381	5 108	0	1 300	25 789	26 236
1977*	549	0	549	28 633	5 014	200	700	34 547	35 096
1978–79#	657	24	681	8 904	3 151	133	452	12 640	13 321
1979–80#	915	2 598	3 513	3 501	3 856	226	245	7 828	11 341
1980–81#	1 028	–	–	–	–	–	–	–	–
1981–82#	1 581	2 423	4 004	0	2 087	56	247	2 391	6 395
1982–83#	2 135	2 501	4 636	0	1 256	27	40	1 322	5 958
1983†	2 695	1 523	4 218	0	982	33	48	1 063	5 281
1983–84§	2 705	2 500	5 205	0	2 145	173	174	2 491	7 696
1984–85§	2 646	2 166	4 812	0	1 934	77	130	2 141	6 953
1985–86§	2 126	2 948	5 074	0	2 050	48	33	2 131	7 205

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1986–87§	2 469	3 177	5 646	0	1 261	13	21	1 294	6 940
1987–88§	2 212	5 030	7 242	0	624	27	8	659	7 901

* Reported by calendar year; # Reported April 1 to March 31(except domestic vessels, which reported by calendar year); † Reported April 1 to September 30 (except domestic vessels, which reported by calendar year); § Reported October 1 to September 30

Table 18. Reported landings (t) of ling by Fishstock from 1983–84 to present and actual TACCs (t) from 1986–87 to present. Estimated landings for LIN 7 from 1987–88 to 1992–93 include an adjustment for ling bycatch of hoki trawlers, based on records from vessels carrying observers. QMS data from 1986-present. (Source: FNZ 2024).

	LIN 3		LIN 4		LIN 5		LIN 6		LIN 7		
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Reported Landings	Estimated Landings	TACC
1983–84*	1 306	–	352	–	2 605	–	869	–	1 552	–	–
1984–85*	1 067	–	356	–	1 824	–	1 283	–	1 705	–	–
1985–86*	1 243	–	280	–	2 089	–	1 489	–	1 458	–	–
1986–87	1 311	1 850	465	4 300	1 859	2 500	956	7 000	1 851	–	1 960
1987–88	1 562	1 909	280	4 400	2 213	2 506	1 710	7 000	1 853	1 777	2 008
1988–89	1 665	1 917	232	4 400	2 375	2 506	340	7 000	2 956	2 844	2 150
1989–90	1 876	2 137	587	4 401	2 277	2 706	935	7 000	2 452	3 171	2 176
1990–91	2 419	2 160	2 372	4 401	2 285	2 706	2 738	7 000	2 531	3 149	2 192
1991–92	2 430	2 160	4 716	4 401	3 863	2 706	3 459	7 000	2 251	2 728	2 192
1992–93	2 246	2 162	4 100	4 401	2 546	2 706	6 501	7 000	2 475	2 817	2 212
1993–94	2 171	2 167	3 920	4 401	2 460	2 706	4 249	7 000	2 142	–	2 213
1994–95	2 679	2 810	5 072	5 720	2 557	3 001	5 477	7 100	2 946	–	2 225
1995–96	2 956	2 810	4 632	5 720	3 137	3 001	6 314	7 100	3 102	–	2 225
1996–97	2 963	2 810	4 087	5 720	3 438	3 001	7 510	7 100	3 024	–	2 225
1997–98	2 916	2 810	5 215	5 720	3 321	3 001	7 331	7 100	3 027	–	2 225
1998–99	2 706	2 810	4 642	5 720	2 937	3 001	6 112	7 100	3 345	–	2 225
1999–00	2 799	2 810	4 402	5 720	3 136	3 001	6 707	7 100	3 274	–	2 225
2000–01	2 330	2 060	3 861	4 200	3 430	3 001	6 177	7 100	3 352	–	2 225
2001–02	2 164	2 060	3 602	4 200	3 295	3 001	5 945	7 100	3 219	–	2 225
2002–03	2 529	2 060	2 997	4 200	2 939	3 001	6 283	7 100	2 918	–	2 225
2003–04	1 990	2 060	2 618	4 200	2 899	3 001	7 032	7 100	2 926	–	2 225
2004–05	1 597	2 060	2 758	4 200	3 584	3 595	5 506	8 505	2 522	–	2 225
2005–06	1 711	2 060	1 769	4 200	3 522	3 595	3 553	8 505	2 479	–	2 225
2006–07	2 089	2 060	2 113	4 200	3 731	3 595	4 696	8 505	2 295	–	2 225
2007–08	1 778	2 060	2 383	4 200	4 145	3 595	4 502	8 505	2 282	–	2 225
2008–09	1 751	2 060	2 000	4 200	3 232	3 595	2 977	8 505	2 223	–	2 225
2009–10	1 718	2 060	2 026	4 200	3 034	3 595	2 414	8 505	2 446	–	2 474
2010–11	1 665	2 060	1 572	4 200	3 856	3 595	1 335	8 505	2 800	–	2 474
2011–12	1 292	2 060	2 305	4 200	3 649	3 595	2 047	8 505	2 771	–	2 474
2012–13	1 475	2 060	2 181	4 200	3 610	3 595	3 102	8 505	3 010	–	2 474
2013–14	1 442	2 060	2 373	4 200	3 935	3 955	3 221	8 505	3 200	–	3 080
2014–15	1 325	2 060	2 246	4 200	3 924	3 955	3 115	8 505	3 343	–	3 080
2015–16	1 440	2 060	2 659	4 200	3 868	3 955	2 222	8 505	3 340	–	3 080
2016–17	1 808	2 060	2 565	4 200	3 356	3 955	2 473	8 505	3 428	–	3 080
2017–18	2 171	2 060	2 636	4 200	4 034	3 955	4 846	8 505	3 487	–	3 080

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2018–19	2 016	2 060	2 044	4 200	4 596	4 735	3 706	8 505	3 059	–	3 080
2019–20	1 685	2 060	1 778	4 200	4 678	4 735	3 972	8 505	3 216	–	3 387
2020–21	1 489	2 060	2 129	4 200	4 949	4 735	3 916	8 505	3 308	–	3 387
2021–22	1 175	2 060	2 604	4 200	5 044	5 208	3 881	8 505	3 325	–	3 387
2022–23	1 366	2 060	1 892	4 200	4 906	5 208	4 780	8 505	3 540	–	3 387

Table 19. Estimated catch histories (t) for LIN 3&4 (Chatham Rise), LIN 5&6 (Campbell Plateau), LIN 6B (Bounty Platform), and LIN 7WC (WCSI section of LIN 7). Landings have been separated by fishing method (trawl or longline). The catch histories for LIN 3&4, LIN 5&6 & LIN 6B and LIN 7WC are expressed in calendar year. (Source: FNZ, 2024).

Year	LIN 3&4			LIN 5&6		LIN6B	LIN 7WC	
	trawl	line	pot	trawl	line	line	trawl	line
1972	0	0	0	0	0	0	0	0
1973	250	0	0	500	0	0	85	20
1974	382	0	0	1 120	0	0	144	40
1975	953	8 439	0	900	118	0	401	800
1976	2 100	17 436	0	3 402	190	0	565	2 100
1977	2 055	23 994	0	3 100	301	0	715	4 300
1978	1 400	7 577	0	1 945	494	10	300	323
1979	2 380	821	0	3 707	1 022	0	539	360
1980	1 340	360	0	5 200	0	0	540	305
1981	673	160	0	4 427	0	10	492	300
1982	1 183	339	0	2 402	0	0	675	400
1983	1 210	326	0	2 778	5	10	1 040	710
1984	1 366	406	0	3 203	2	6	924	595
1985	1 351	401	0	4 480	25	2	1 156	302
1986	1 494	375	0	3 182	2	0	1 082	362
1987	1 313	306	0	3 962	0	0	1 105	370
1988	1 636	290	0	2 065	6	0	1 428	291
1989	1 397	488	0	2 923	10	9	1 959	370
1990	3 170	243	2	5 004	0	14	2 173	229
1991	3 979	1 786	16	3 537	407	139	2 025	425
1992	3 851	3 388	37	7 663	1 026	1 244	1 572	873
1993	2 836	3 963	13	6 202	1 166	1 260	1 590	699
1994	2 374	4 241	11	6 782	1 423	652	1 312	1 003
1995	2 680	5 391	7	5 064	2 032	534	1 759	994
1996	3 375	4 699	1	6 872	2 101	614	2 019	994
1997	3 901	4 182	38	7 468	3 588	312	2 034	1 323
1998	5 140	3 299	40	5 771	3 267	493	1 995	1 065
1999	4 306	2 994	41	6 013	2 952	707	2 389	916
2000	3 826	3 228	23	7 506	2 328	1 175	2 479	947
2001	2 941	3 082	2	5 701	1 819	1 061	2 400	1 007
2002	3 637	2 330	1	7 720	1 264	859	2 475	762
2003	3 563	2 150	1	8 423	668	988	2 094	926
2004	2 714	1 731	4	8 016	1 509	422	2 092	764
2005	2 250	2 259	10	7 295	892	48	1 595	845

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2006	1 890	1 489	54	7 118	781	110	1 773	781
2007	2 841	1 571	55	8 083	890	218	1 323	1 161
2008	2 432	2 034	15	5 345	659	446	1 150	1 021
2009	1 459	1 897	12	4 425	550	232	1 216	992
2010	1 530	1 973	39	4 391	1 064	2	1 386	1 199
2011	1 030	1 658	33	4 445	842	55	1 606	1 143
2012	1 470	2 087	11	6 608	1 168	4	1 697	1 285
2013	1 125	2 394	24	5 535	259	219	1 959	1 089
2014	1 349	2 443	58	6 075	925	75	1 914	1 444
2015	1 513	1 685	46	5 735	759	38	2 092	1 350
2016	1 551	2 695	164	4 482	618	214	2 159	1 487
2017	1 811	2 432	201	7 309	761	970	2 451	1 470
2018	1 330	2 870	543	7 355	768	149	2 440	1 239
2019	1 347	1 877	674	7 264	1 286	171	1 834	1 408
2020	1 060	1 627	402	6 168	2 033	255	1 687	1 752
2021	765	1 598	360	7 338	1 205	636	1 406	2 057
2022	–	–	–	7 198	1 378	249	1 440	1 464
2023	–	–	–	6 325	3 318	303	–	–

10.1.2 Assessment Process and Review

The information needed to assess stock status relative to the limit and target reference points, and to conduct projections are an estimate of recent abundance, B_{current} , an estimate of the unfished biomass B_0 , and estimates of recruitment. This information is obtained from quantitative stock assessments based on fitting population dynamics models to monitoring data. The stock assessment process is open to anyone who elects to participate. The process is managed by Fisheries New Zealand and supported by quota owners through DWG.

Stock assessments for the stocks of ling have been conducted using the general stock assessment package CASAL (Bull et al., 2012) and more recently Casal2 (Casal2 Development Team, 2022, 2024; Doonan et al., 2016). CASAL and Casal2 have many of the features of modern state-of-the-art stock assessment methods, including the ability to consider spatial structure, multiple fisheries and surveys, and populations divided by sex, location and maturity state. CASAL and Casal2 can use a variety of data sets for model-fitting purposes, with the most common data sources being catches by fishery, survey and CPUE-based indices of relative abundance, and fishery and survey age-composition data. The model fitting procedure allows for “additional variance” when fitting to the survey indices of abundance and the catch and fishery age compositions. The assessment sections for each stock in the Plenary Report document the basis for the extent of additional variance.

CASAL/Casal2 can estimate the key biological parameters of a population dynamics model (e.g., natural mortality, growth parameters, stock-recruitment steepness and unfished biomass) as well as those related to fishery selectivity and survey catchability. Informative prior (or penalty) distributions can be placed on the parameters of the model. However, it is not uncommon the pre-specify the values of some of these parameters based on auxiliary information. The results of the assessment can be provided as Maximum Posterior Density (MPD) estimates and as well as samples from a Bayesian posterior for the final models. The results of the Bayesian analyses provide the basis to estimate the probability of stock biomass being above or below management reference points and the likelihood of declines in the future given pre-specified time-trajectories of catches.

Assessments generally involve the selection of the data sets for inclusion in the assessment. The Stock Assessment Working Group then examines a variety of candidate model specifications and agrees to a base

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model (or base models) and a set of sensitivity analyses. Some of the results are based on MPD estimates but the primary focus of the results section of the summary report are the Bayesian results.

10.1.3 Assessments and Stock status

Table 20. Summaries of stock status (biomass relative to B_0) and the probability of being below the limit and target reference points based on the base model runs.

Stock	Most recent assessment	Depletion [Year]	P < Limit	P < Target
LIN 3 & 4	2022	56 (47-66) [2022]	< 1%	< 1%
LIN 5 & 6*	2024	66 (55-78) [2024]	< 1%	< 1%
LIN 7WC	2023	55 (38-64) [2023]	< 1%	5%

* Lower limit of the target range

10.1.3.1 Ling (LIN 3&4; Chatham Rise)

The most recent assessment of ling on the Chatham Rise was updated during 2022 (Mormede et al., 2023a). The 2022 assessment considered the period 1972 to 2022 and was conducted using Casal2.

Model structure

The 2022 assessment was based on a two-sex age-structured population dynamics model, with the model year taken to be October to September. The stock assessment considered three fisheries (trawl, longline, and pot), with the catch history for the assessment given in Table 21.

Table 21. Landings (t) for fishing years 1975 to 2022 for LIN3&4. Year is model year, which is calendar year. Longline is bottom longline, trawl is bottom trawl, and pot is all potting methods combined. (Source: Mormede et al. 2022).

Year	Longline	Trawl	Pot	Year	Longline	Trawl	Pot
1990	243	3 170	2	2006	1 489	1 890	54
1991	1 786	3 979	16	2007	1 571	2 841	55
1992	3 388	3 851	37	2008	2 034	2 432	15
1993	3 963	2 836	13	2009	1 897	1 459	12
1994	4 241	2 374	11	2010	1 973	1 530	39
1995	5 391	2 680	7	2011	1 658	1 030	33
1996	4 699	3 375	1	2012	2 087	1 470	11
1997	4 182	3 901	38	2013	2 394	1 125	24
1998	3 299	5 140	40	2014	2 443	1 349	58
1999	2 994	4 306	41	2015	1 685	1 513	46
2000	3 228	3 826	23	2016	2 695	1 551	164
2001	3 082	2 941	2	2017	2 432	1 811	201
2002	2 330	3 637	1	2018	2 870	1 330	543
2003	2 150	3 563	1	2019	1 877	1 347	674
2004	1 731	2 714	4	2020	1 627	1 060	402
2005	2 259	2 250	10	2021	1 598	765	360

The model considered ages 3-25yr, with age 25 taken to be a plus-group. The population was assumed to be at unfished equilibrium at the start of the modelled period (1972) and recruitments for the years 1973-2015 were estimated. Table 22 summarizes the annual cycle of the model. Maturity and growth were pre-specified based on auxiliary analyses, with natural mortality assumed to be constant, sex-dependent and independent of time (see Table 23 for the values for the biological parameters).

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Table 22. Annual cycle of the model for LIN 3&4, showing the processes taking place at each time step, their sequence within each time step, and the available observations. Fishing and natural mortality that occur within a time step occur after all other processes, with half of the natural mortality for that time step occurring before and half after the fishing mortality. (Source: FNZ, 2024).

Step	Period	Processes	M ¹	Age ²	Observations	
					Description	%Z ³
1	Jan-Jun	Recruitment	0.9	0.5	Trawl survey (summer)	0.2
2	Jul-Dec	Spawning	0.1	0	-	
		fisheries			Longline CPUE	
		(longline			Longline catch-at-age/length	
		and trawl)			Trawl catch-at-age	0.5
		Increment in ages		0.5		

1: M is the proportion of natural mortality that was assumed to have occurred in that time step; 2: Age is the age fraction, used for determining length-at-age, that was assumed to occur by the start of that time step; 3: %Z is the percentage of the total mortality in the step that was assumed to have taken place at the time each observation was made.

Table 23. Biological parameters for LIN 3&4. (Source: Mormede et al., 2023a).

(a) Natural mortality, growth, and stock-recruitment

Relationship	Reference	Parameter			
		(units)	Both	Male	Female
von Bertalanffy growth	Mormede et al. (2022)	t_0 (y)		-0.65	-0.71
		k (yr ⁻¹)		0.130	0.090
		L_{∞} (cm)		112.2	153.3
		CV		0.09	0.09
Length-weight	Mormede et al. (2022)	a (g.cm-1)		1.28e ⁻⁹	1.38e ⁻⁹
		b		3.294	3.271
Stock recruitment relationship					
Stock recruitment steepness	Holmes (2019)	h	0.86		
Recruitment variability		σ_R	0.6		
Ageing error	Holmes (2019)	CV	0.05		
Proportion male at birth			0.5		
Proportion of mature that spawn			1.0		
Maximum exploitation rate		$U_{\max}$	0.6		

(b) Maturity-at-age (Horn, 2005)

Age	3	4	5	6	7	8	9	10	11	12	13	14	15
Male	0.0	0.03	0.063	0.14	0.28	0.48	0.069	0.85	0.93	0.97	0.99	1.00	1.00
Female	0.0	0.00	0.003	0.01	0.014	0.033	0.08	0.16	0.31	0.54	0.76	0.93	1.00

The selectivity patterns were all assumed to be logistic, with those for the trawl fishery and the trawl survey fitted as double normal, but with the right-hand limb fixed so the resulting patterns were close to asymptotic. The left-hand limb of the selectivity ogive was fixed at its MPD values due its high uncertainty. Selectivity for the pot fishery was set to that of the longline fishery because of lack of age data for the pot fishery and based on trip limit frequency (Mormede et al., 2022). Selectivity was assumed to be time-invariant.

The model was fitted to time-series of survey estimates of biomass, survey age-composition data, and fishery age-composition data (Table 24). The longline age-composition for 2019, although available, was omitted from the model-fitting process owing to low sample size and high uncertainty. In addition, although available, the time-series of biomass

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indices from the *Kaharoa* survey were not included in the assessment owing to inadequate spatial coverage (FNZ, 2024).

Table 24. Summary of the relative abundance series applied in the models for LIN 3&4, including source years (Years). (Source: FNZ, 2024).

Data series	Year
Trawl survey biomass (Tangaroa, Jan)	1992–2014, 2016, 2018, 2020, 2022
Trawl survey proportion at age (Tangaroa, Jan), sexed	1992–2014, 2016, 2018, 2020
CPUE (longline, all year) (sensitivity only)	1991–2021
Commercial longline proportion-at-age (Jun–Oct), sexed	2002–09, 2013–2018, 2020
Commercial trawl proportion-at-age (Oct–May), sexed	1992, 1994–2020

The model on which the assessment was based estimated unfished biomass, year-class strengths for 1975 to 2013, and the fishery and survey selectivity patterns. An informative prior was assumed for the trawl survey *Q*. This prior was determined assuming that survey *Q* was a product of areal availability (0.5–1.0), vertical availability (0.5–1.0), and vulnerability between the trawl doors (0.03–0.40). The resulting (approximately lognormal) distribution had mean 0.13 and CV 0.70, with bounds assumed to be 0.02 to 0.30 (FNZ, 2024).

Three model runs were undertaken: (1) a base model that used age-frequency and survey index data, (2) a sensitivity model that used the age-frequency data and longline CPUE data, and (3) a sensitivity model in which natural mortality was fixed to the values used in the model fitted to the longline CPUE data. The base model excluded the longline CPUE data, given the trawl survey was assumed to provide a better index than the CPUE data.

The fits to the biomass indices were reasonable (Figure 2) as well as those to the age-composition data (Mormede et al., 2023). The trawl survey biomass index was found to be in conflict with the age data (FNZ, 2024) because the longline CPUE index dropped from 1991 to 1997, but the trawl survey index remained relatively flat. The MPD analyses suggested that the age-composition data were in agreement with the longline fishery CPUE series rather than the trawl survey index.

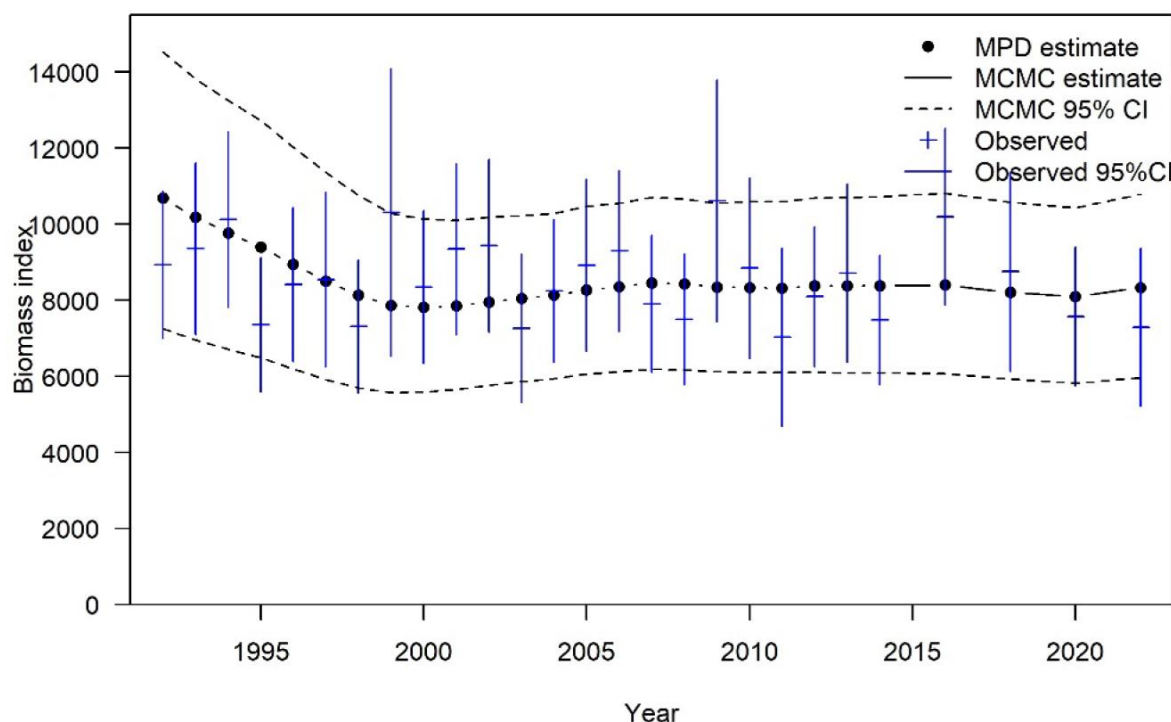


Figure 2. Fits to the survey biomass index at the MCMC level for LIN 3&4. Black dots and vertical lines are the observed estimates and 95% credible intervals, blue is expected and grey band the 95% credible interval. (Source Mormede et al., 2023a).

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Biomass and recruitment

The biomass was estimated to have fluctuated essentially without trend (Figure 3), with recruitment deviations relatively constant over time although the posterior median for recent recruitment was below the long-term average (Figure 4). Biomass is estimated to have varied over time but to have consistently been larger than $0.4B_0$ (Figure 3), with exploitation rates well below those corresponding to target biomass (Figure 5). The estimates of 2022 biomass relative to B_0 (Table 20) differ markedly between the base model and the model that fits to the longline CPUE data. The Working Group considered that the sensitivity run with the longline CPUE not to be reliable because the longline CPUE showed a marked drop in the early 1990s that is not reflected in the survey index (Mormede et al., 2023a).

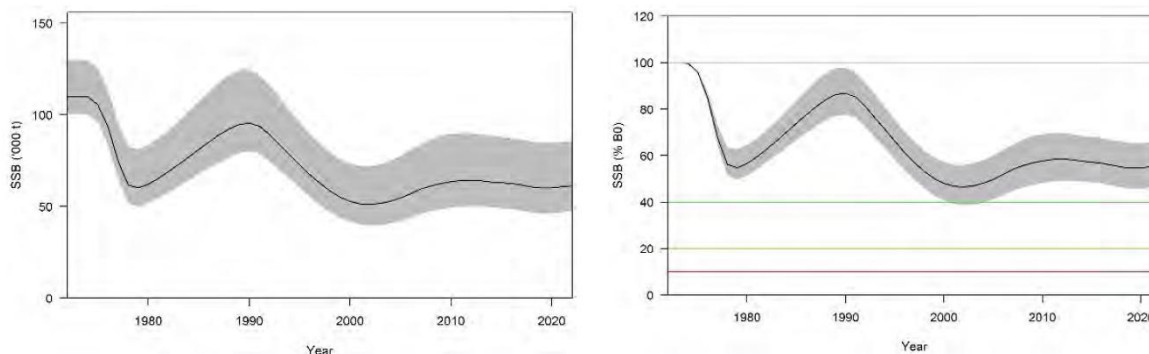


Figure 3. Estimated median trajectories (with 95% credible intervals shown as grey band) for absolute biomass and biomass as a percentage of B_0 from the base-case run for LIN 3&4. The red horizontal line at $0.1B_0$ represents the hard limit, the orange line at $0.2B_0$ is the soft limit, and the green line is the biomass target, $0.4B_0$. (FNZ, 2024).

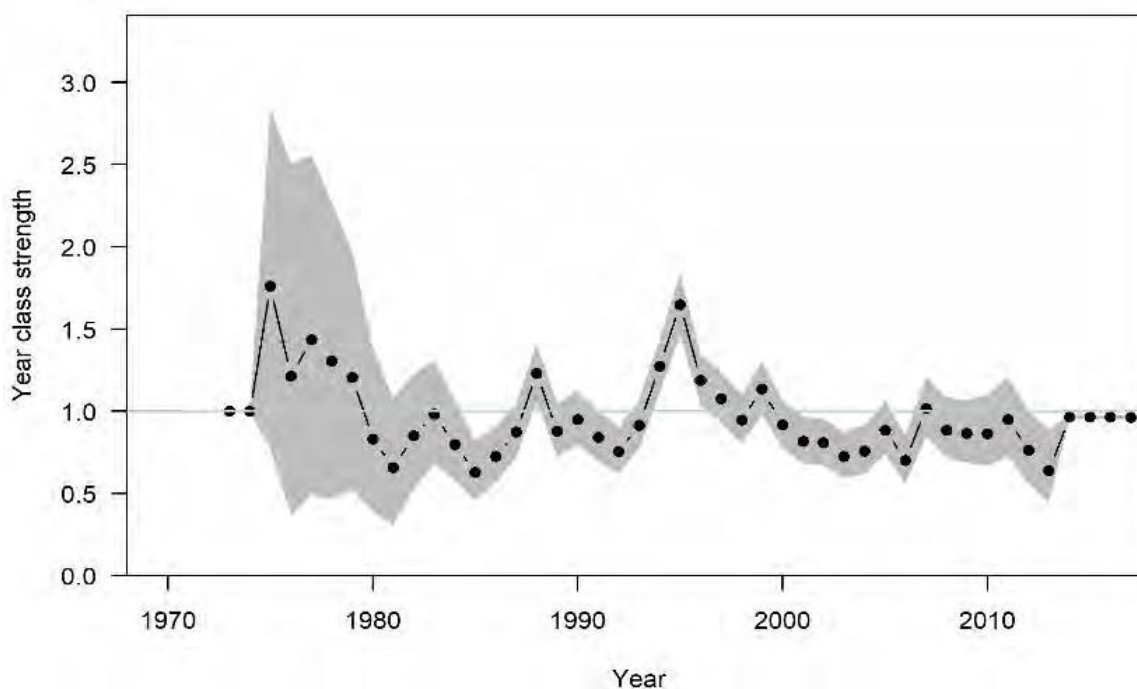


Figure 4. Estimated posterior distributions of year-class strength from the base case run for LIN 3&4, with median (line and individual points) and 95% credible intervals (grey band). The horizontal line indicates a year-class strength of one. (Source: FNZ, 2024).

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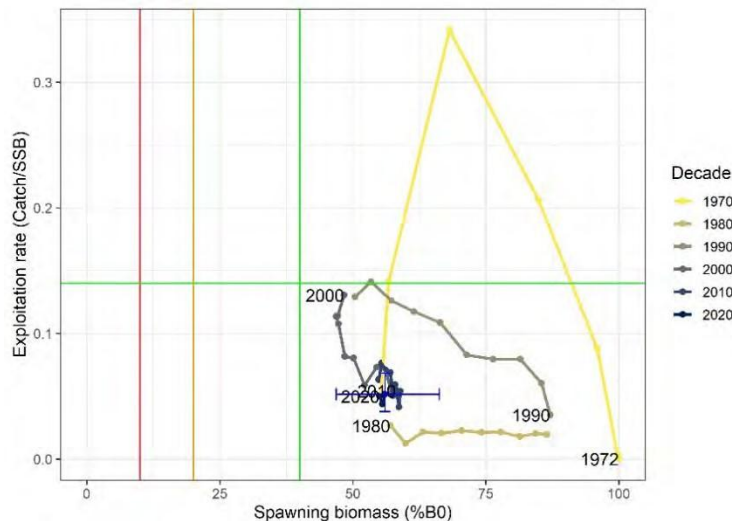


Figure 5. Trajectory over time of exploitation rate (U) and spawning biomass ($\% B_0$), for the LIN 3&4 base model from the start of the assessment period in 1972 to 2022. The red vertical line at $0.1B_0$ represents the hard limit, the orange line at $0.2B_0$ is the soft limit, and green lines are the biomass target ($0.4B_0$) and the corresponding exploitation rate ($U_{40} = 0.14$ calculated using CASAL CAY function) (source: FNZ, 2024).

Biomass and exploitation rate estimates are medians from MCMC posteriors for the base model. The blue cross represents the limits of the 95% confidence intervals of the estimated ratio of the spawning biomass to B_0 and exploitation rate in 2022. (Source, FNZ, 2024).

Table 25. Bayesian median and 95% credible intervals (in parentheses) of B_0 and B_{2022} (in tonnes, and as a percentage of B_0) for the base model run for LIN 3&4 and a sensitivity model, along with the probability that B_{2022} is below $0.4B_0$ or below $0.2B_0$ (FNZ, 2024).

Model run	B_0 ('000t)	B_{2022}	B_{2022} ($\%B_0$)	$P(<0.4B_0)$	$P(<0.2B_0)$
Base case	110 (111 – 130)	62 (47 – 86)	56 (47 – 66)	<0.01	<0.01
Sensitivity (CPUE)	92 (88 – 96)	31 (25 – 39)	34 (27 – 41)	>0.95	<0.01

Projections

Three-year projections (2023–2027) were undertaken assuming two scenarios for future catches (divided among fleets based on the actual catch split for 2019–2021): (1) the average of 2019–2021 (1,057t) and (2) the TACC (2,044t). Future recruitment deviates were sampled from either all years (1975–2013) or for the most recent eleven years (2003–2013). The biomass was predicted to increase under all four scenarios, with the rate of increase greatest if recruitments increased to the earlier levels.

10.1.3.2 Ling (LIN 5&6; Sub Antarctic)

The most recent assessment for ling in the Sub-Antarctic area was undertaken during 2024 (Mormede et al., 2024b,c). The 2024 assessment considered the period 1973 to 2024 and was conducted using Casal2.

Model structure

The 2024 assessment was based on a two-sex age-structured population dynamics model, with the model year taken to be October to September. The stock assessment considered three fisheries (trawl, longline, and pot), with the catch history for the assessment given in Table 26.

Table 26. Landings (t) for fishing years 1975 to 2023 for LIN5&6 and LIN 6B. Year was model year, which was defined as the calendar year. Bottom longline includes bottom longline and all potting methods, and bottom trawl includes all other catches. (Source: Mormede et al., 2024c).

Year	LIN 5&6	LIN 6B	Year	LIN 5&6	LIN 6B
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	Bottom trawl	Bottom longline	Bottom longline		Bottom trawl	Bottom longline	Bottom longline
1972	0	0	0	1998	5 771	3 267	493
1973	500	0	0	1999	6 013	2 952	707
1974	1 120	0	0	2000	7 506	2 328	1 175
1975	900	118	0	2001	5 701	1 819	1 061
1976	3 402	190	0	2002	7 720	1 264	859
1977	3 100	301	0	2003	8 423	668	988
1978	1 945	494	10	2004	8 016	1 509	422
1979	3 707	1 022	0	2005	7 295	892	48
1980	5 200	0	0	2006	7 118	781	110
1981	4 427	0	10	2007	8 083	890	218
1982	2 402	0	0	2008	5 345	659	446
1983	2 778	5	10	2009	4 425	550	232
1984	3 203	2	6	2010	4 391	1 064	2
1985	4 480	25	2	2011	4 445	842	55
1986	3 182	2	0	2012	6 608	1 168	4
1987	3 962	0	0	2013	5 535	259	219
1988	2 065	6	0	2014	6 075	925	75
1989	2 923	10	9	2015	5 735	759	38
1990	5 004	0	14	2016	4 482	618	214
1991	3 537	407	139	2017	7 309	761	970
1992	7 663	1 026	1 244	2018	7 355	768	149
1993	6 202	1 166	1 260	2019	7 264	1 286	171
1994	6 782	1 423	652	2020	6 168	2 033	255
1995	5 064	2 032	534	2021	7 338	1 205	636
1996	6 872	2 101	614	2022	7 198	1 378	249
1997	7 468	3 588	312	2023	6 325	3 318	303

The model on which the assessment was based considered ages 3-28yr, with age 28 taken to be a plus-group. The population was assumed to be at unfished equilibrium at the start of the modelled period (1973), and recruitments for the years 1973-2017 were estimated. Table 27 summarizes the annual cycle of the model. Maturity and growth were pre-specified based on auxiliary analyses, with natural mortality assumed to be constant, and independent of time (see Table 28 for the values for the biological parameters).

Table 27. Annual cycle of the model for LIN 5&6 and LIN 6B, showing the processes taking place at each time step, their sequence within each time step, and the available observations. Fishing and natural mortality that occur within a time step occur after all other processes, with half of the natural mortality for that time step occurring before and half after the fishing mortality. (Source: FNZ, 2024).

Step	Period	Processes	M ¹	Age ²	Observations	
					Description	%Z ³
1	Jan-Aug		0.67	0.5	Trawl survey (autumn)	0.5
2	Sep-Dec	Spawning	0.33	0.0	Longline CPUE	0.5
		Trawl and longline fisheries			Longline catch-at-age	0.5
		Increment in ages		0.5	Trawl catch-at-age	0.5
					Trawl survey (summer)	0.9

1: M is the proportion of natural mortality that was assumed to have occurred in that time step; 2: Age is the age fraction, used for determining length-at-age, that was assumed to occur by the start of that time step; 3: %Z is the percentage of the total mortality in the step that was assumed to have taken place at the time each observation was made.

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Table 28. Biological parameters for LIN 5&6. (Source: FNZ, 2024).

(a) Natural mortality, growth, and stock-recruitment

(d) Natural mortality, growth, and stock recruitment

Relationship	Reference	Parameter (units)	Both	Male	Female
Natural mortality	FNZ (2024)	M (yr ⁻¹)	0.18		
von Bertalanffy growth	FNZ (2024)	t_0 (y)		-1.16	-1.53
		k (yr ⁻¹)		0.19	0.13
		L_∞ (cm)		91.2	110.6
		CV		0.07	0.08
Length-weight	Mormede et al. (2022)	a (g.cm-1)		0.00213	0.00132
		b		3.179	3.293
Stock recruitment relationship					
Stock recruitment steepness	Holmes (2019)	H	0.84		
Recruitment variability		σ_R	0.7		
Ageing error	Holmes (2019)	CV	0.06		
Proportion male at birth			0.5		
Proportion of mature that spawn			1.0		
Maximum exploitation rate		$U_{\max}$	0.6		

(b) Maturity-at-age (Mormede et al., 2024c)

Age	3	4	5	6	7	8	9	10	11	12	13
Male	0.0	0.04	0.16	0.41	0.72	0.91	0.98	0.99	1.00	1.00	
Female	0.0	0.01	0.01	0.12	0.28	0.55	0.78	0.91	0.97	0.99	1.00

The selectivity patterns were all assumed to be logistic, with those for the trawl fishery taken to be double normal, but with the value of right-hand limb parameter set to 100. Selectivity for the pot fishery was set to that of the longline fishery. Selectivity was assumed to be time-invariant.

The model was fitted to time-series of survey estimates of biomass, survey age-composition data, and fishery age-composition data (Table 29).

Table 29. Summary of the relative abundance series applied in the models for LIN 5&6 and LIN 6B, including source years (Model years). The estimate of biomass for 2016 from the trawl survey and its associated age-composition data were not included in the assessment. (Source: FNZ, 2024).

Data series	Model year
Trawl survey biomass (<i>Tangaroa</i> , Nov–Dec)	1991–93, 2000–09, 2011–12, 2014, 2018, 2020, 2022
Trawl survey proportion at age (<i>Tangaroa</i> , Nov–Dec)	1991–93, 2000–09, 2011–12, 2014, 2018, 2020, 2022
Trawl survey biomass (<i>Tangaroa</i> , Mar–May)	1992–93, 1996, 1998
Trawl survey proportion at age (<i>Tangaroa</i> , Mar–May)	1992–93, 1996, 1998
LIN 5&6 CPUE (longline) —sensitivity	1991–2023
LIN 5&6 commercial longline proportion-at-age	1996, 1998–2012, 2014, 2016–2020, 2022
LIN 5&6 commercial trawl proportion-at-age	1993, 1996, 1998–2022

The model estimated unfished biomass, survey catchability, year-class strengths for 1975 to 2013, and the fishery and survey selectivity patterns. The assessment explored sensitivity to:

- $M=0.16$ / $M=0.20$: Changing natural mortality to 0.16yr⁻¹ and 0.20yr⁻¹.
- Length-based M : Allowing for length-based (Lorenzen) natural mortality.
- Base + CPUE: Including the longline CPUE index in the model fitting process.
- Additional catch: Increasing the historical catches (5% prior to 1986 and 2% thereafter).

The fits to the biomass indices were reasonable (Figure 6) and to the age-composition data (Figures A.2 and A.3 of Mormede et al., 2024b).

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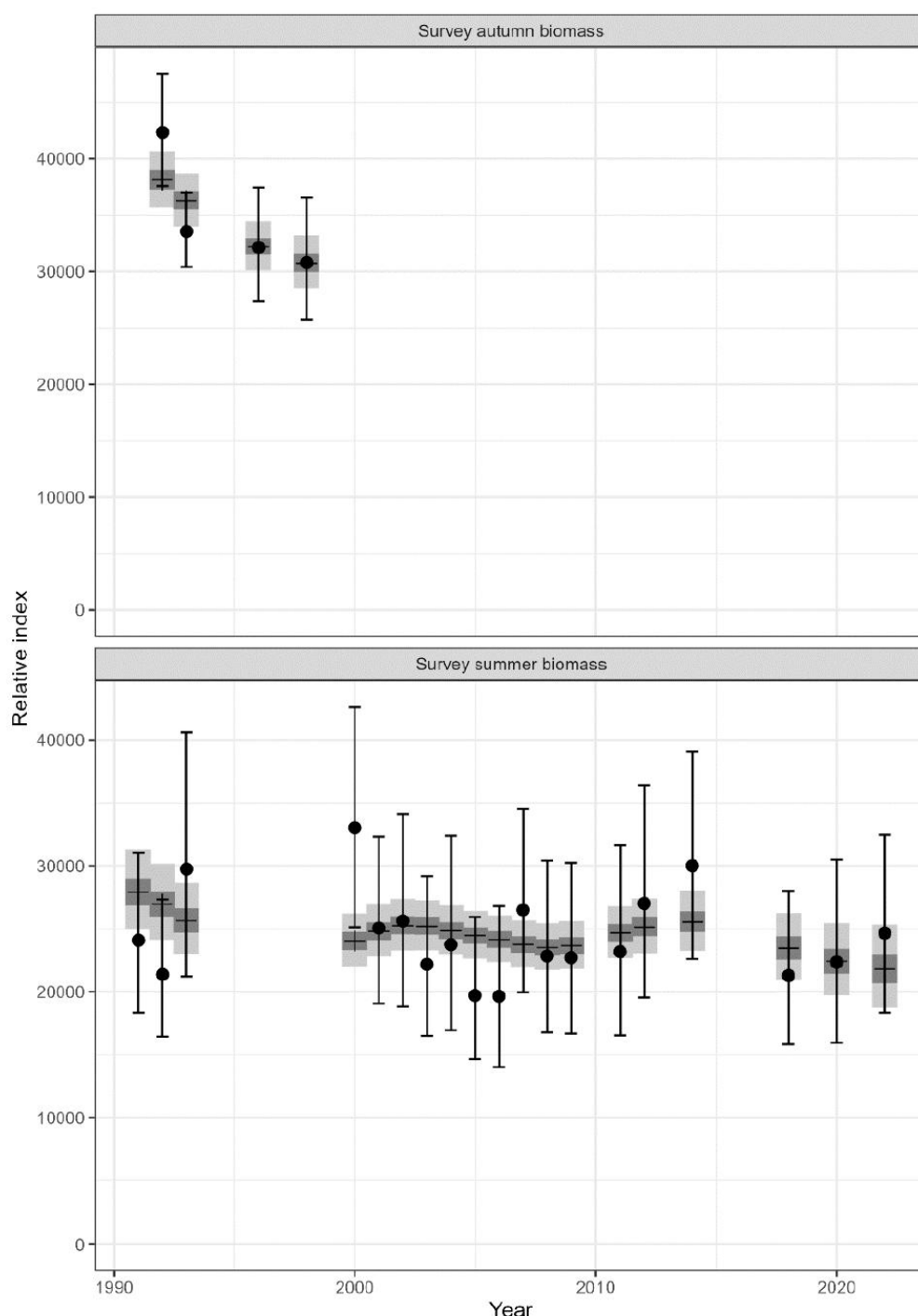


Figure 6. Fits to the survey biomass index at the MCMC level for LIN 5&6. Fits to the abundance indices with the interquartile range (dark grey) and 95% credible interval (light grey). (Source Mormede et al., 2024b).

Biomass and recruitment

All models were taken through to MCMC (Table 29). The biomass shows a declining trend over time, but stock size was estimated to be well above the management target (Figure 7), with no evidence for trends over time in the deviations in recruitment about the stock-recruitment relationship (Figure 8). The estimated exploitation rates are increasing over time, but are well below that corresponding to biomass target of $0.4B_0$ (Figure 9).

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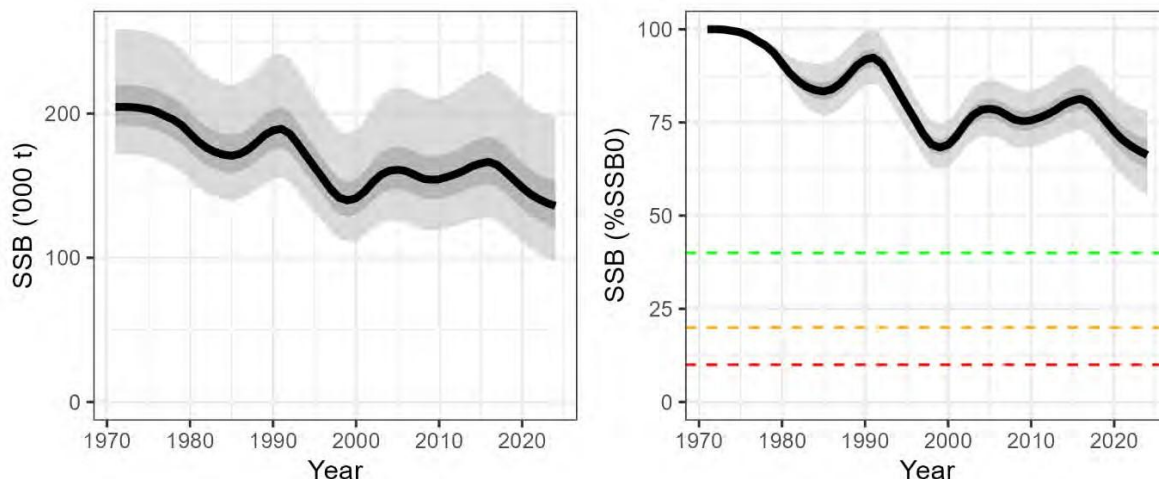


Figure 7. Estimated median trajectories (with interquartile range shown as dark grey bands and 95% credible intervals as light grey bands) for absolute biomass and biomass as a percentage of B_0 for LIN 5&6 and LIN 6B. The red horizontal line at $0.1B_0$ represents the hard limit, the orange line at $0.2B_0$ is the soft limit, and the green line is the biomass target, $0.4B_0$. (Source: FNZ, 2024).

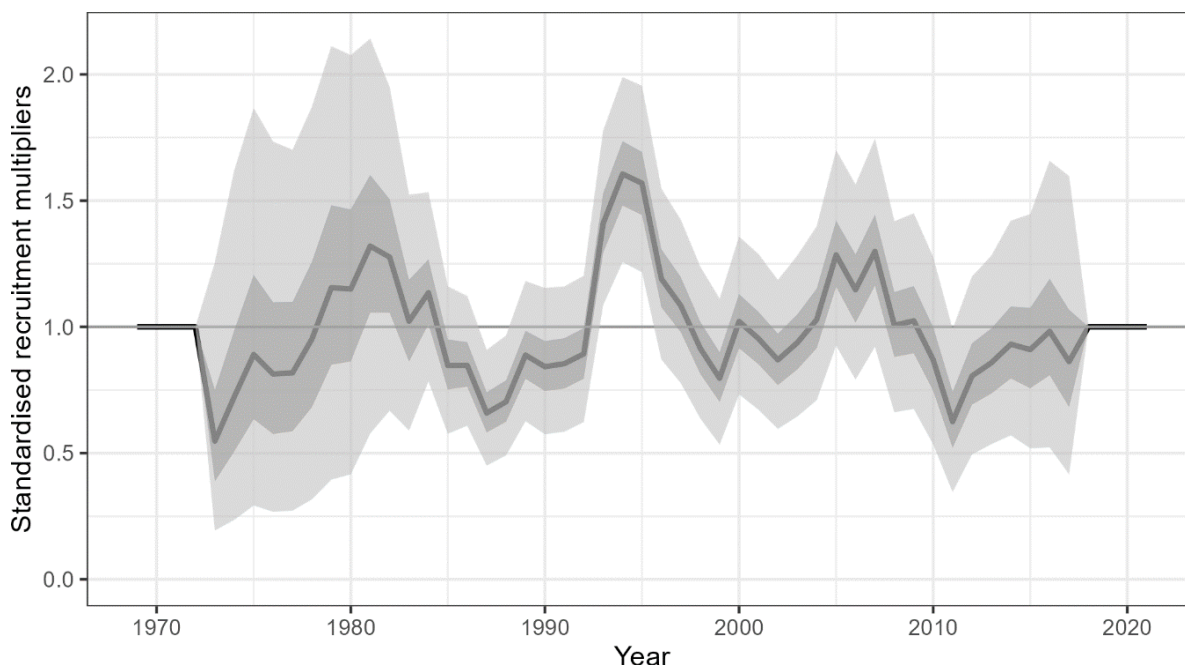


Figure 8. Estimated posterior distribution of year class strength from the base case run, with median (line and individual points), interquartile range (dark grey band) and 95% credible interval (light grey band) for LIN 5&6 and LIN 6B. The horizontal line indicates a year class strength of one. (Source: FNZ, 2024).

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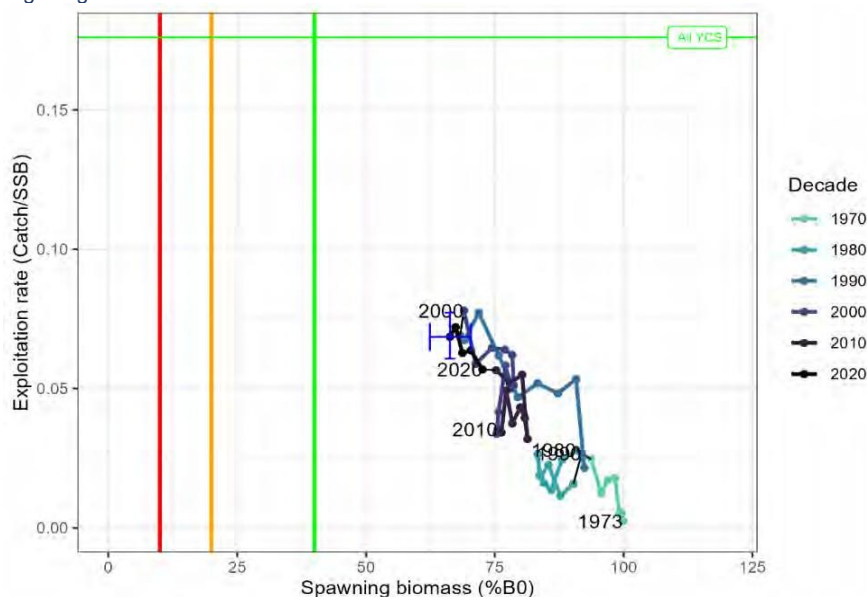


Figure 9. Trajectory over time of exploitation rate (catch / SSB) and spawning biomass ($%B_0$), for the LIN 5&6 and LIN 6B base model from the start of the assessment period in 1973 to 2024. The red vertical line at $0.1B_0$ represents the hard limit, the orange line at $0.2B_0$ is the soft limit, and green lines are the biomass target ($0.4B_0$) and the corresponding exploitation rate (catch divided by SSB $U_{40} = 0.176$ under average recruitment assumptions). Biomass and exploitation rate estimates are medians from MCMC results. The blue cross represents the limits of the 95% credible intervals of the estimated ratio of the biomass to B_0 and exploitation rate in 2024. (Source: FNZ, 2024).

Table 30. Bayesian median (95% credible intervals) (MCMC) of B_0 and B_{2024} (t), and B_{2024} as a percentage of B_0 for LIN 5&6 and LIN 6B for the five model runs (Source: FNZ, 2024).

Case	B_0 ('000t)	B_{2024} ('000t)	B_{2024} ($%B_0$)	$P(<40%B_0)$	$P(<20%B_0)$
Base case	205 [172, 258]	135 [97, 198]	66 [55, 78]	<0.01	<0.01
$M=0.16$	158 [142, 179]	98 [73, 134]	52 [42, 62]	<0.01	<0.01
$M=0.20$	305 [226, 429]	147 [104, 221]	77 [65, 88]	<0.01	<0.01
Length-based M	206 [174, 256]	82 [61, 110]	65 [54, 76]	<0.01	<0.01
Base + CPUE	181 [157, 215]	133 [96, 188]	54 [46, 64]	<0.01	<0.01
Additional catch	209 [175, 2063]	139 [99, 202]	66 [55, 78]	<0.01	<0.01

Projections

Five-year projections (2025-2029) were undertaken with catches set equal to the average catch during 2020-2023 (6,954t) or the TACC (10,235t). Biomass was estimated to remain about $0.4B_0$ in 2029 with high probability (FNZ, 2024d).

10.1.3.3 Ling (LIN 7WC; west coast South Island)

The most recent assessment of ling off the west coast of South Island occurred during 2023 (Mormede et al., 2024d). This assessment considered the period 1972-2023 and was conducted using Casal2.

Model structure

The 2023 assessment was based on a two-sex age-structured population dynamics model, with the model year taken to be October to September. The stock assessment considered three fisheries (trawl, longline, and pot), with the catch history for the assessment given in Table 31.

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Table 31. Landings (t) for fishing years 1975 to 2022 for LIN7WC. Longline includes bottom longline and all potting methods, and trawl represents all other catches. (Source: Mormede et al., 2024d).

Year	Trawl	Longline	Year	Trawl	Longline
1972	0	0	1998	1 995	1 065
1973	85	20	1999	2 389	916
1974	144	40	2000	2 479	947
1975	401	800	2001	2 400	1 007
1976	565	2 100	2002	2 475	762
1977	715	4 300	2003	2 094	926
1978	300	323	2004	2 092	764
1979	539	360	2005	1 595	845
1980	540	305	2006	1 773	781
1981	492	300	2007	1 323	1 161
1982	675	400	2008	1 150	1 021
1983	1 040	710	2009	1 216	992
1984	924	595	2010	1 386	1 199
1985	1 156	302	2011	1 606	1 143
1986	1 082	362	2012	1 697	1 285
1987	1 105	370	2013	1 959	1 089
1988	1 428	291	2014	1 914	1 444
1989	1 959	370	2015	2 092	1 350
1990	2 173	229	2016	2 159	1 487
1991	2 025	425	2017	2 451	1 470
1992	1 572	873	2018	2 440	1 239
1993	1 590	699	2019	1 834	1 408
1994	1 312	1 003	2020	1 687	1 752
1995	1 759	994	2021	1 406	2 057
1996	2 019	994	2022	1 440	1 464
1997	2 034	1 323			

The model on which the assessment was based considered ages 1-28yr, with age 28 taken to be a plus-group. The population was assumed to be at unfished equilibrium at the start of the modelled period (1972) and recruitments for the years 1973-2014 were estimated. Table 32 summarizes the annual cycle of the model. Maturity and growth were pre-specified based on auxiliary analyses, with natural mortality assumed to be constant, and independent of time (see Table 33 for the values for the biological parameters).

Table 32. Annual cycle of the model for LIN 7WC, showing the processes taking place at each time step, their sequence within each time-step, and the available observations. Fishing and natural mortality that occur within a time-step occur after all other processes, with half of the natural mortality for that time step occurring before and half after the fishing mortality. (Source: FNZ, 2024).

Step	Period	Processes	M ¹	Age ²	Observations	
					Description	%Z ³
1	Jan-Dec	Recruitment	1.0	0.0		
		Spawning fishery (longline)			Longline catch-at-age	0.5
					Longline CPUE	0.5
					Trawl catch-at-age	0.5
					Trawl CPUE	0.5
					Trawl survey biomass	0.5
		Trawl fishery			Trawl survey catch-at-age	0.5
1	End of Dec	Increment in ages	0.0	0.1		

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1: M is the proportion of natural mortality that was assumed to have occurred in that time step; 2: Age is the age fraction, used for determining length-at-age, that was assumed to occur in that time step; 3: %Z is the percentage of the total mortality in the step that was assumed to have taken place at the time each observation was made.

Table 33. Biological parameters for LIN 7WC. (Source: Mormede et al., 2024d).

(a) Natural mortality, growth, and stock-recruitment

Relationship	Reference	Parameter (units)	Both	Male	Female
Natural mortality		M (yr ⁻¹)	0.18		
von Bertalanffy growth	Mormede et al. (2023b)	t_0 (y)		-1.08	-0.86
		k (yr ⁻¹)		0.08	0.08
		L_∞ (cm)		140.0	164.1
		CV		0.08	0.09
Length-weight	Mormede et al. (2023b)	a (g.cm ⁻¹)		$1.31e^{-9}$	$0.98e^{-9}$
		B		3.292	3.362
Stock recruitment relationship					
Stock recruitment steepness	Kienzle (2021)	h	0.84		
Recruitment variability		σ_R	0.6		
Ageing error	FNZ (2024)	CV	0.05		
Proportion male at birth			0.5		
Proportion of mature that spawn			1.0		
Maximum exploitation rate		U_{max}	0.6		

(b) Maturity-at-age (Horn, 2005)

Age	3	4	5	6	7	8	9	10	11	12
Male	0.0	0.015	0.095	0.39	0.77	0.95	1.00	1.00	1.00	1.00
Female	0.0	0.004	0.017	0.06	0.18	0.39	0.65	0.85	0.94	1.00

Selectivity for the longline fishery and the mature fish trawl survey were assumed to be logistic while selectivity for the immature fish trawl survey was assumed to be a capped logistic function. Selectivity for the commercial trawl fishery was assumed to be double-normal. Selectivity was assumed to be time-invariant.

The model was fitted to time-series of survey estimates of abundance, survey age-composition data, and fishery age-composition data (Table 34). Although available, the 2024 assessment did not make use of the estimates of biomass based on the *Kaharoa* surveys as these had been deemed not be useful (Stevenson, 2007).

Table 34. Summary of the relative abundance and stock composition series applied in the models, including source years (Years) for LIN 7WC. (Source: FNZ, 2024).

Data series	Model year
Commercial trawl CPUE	1997–2022
Commercial trawl proportion-at-age (Jun–Sep)	1991, 1994–2008, 2012–2022
Commercial longline CPUE (aggregated)	1991–2022
Commercial longline proportion-at-age (May-Aug, Oct-Dec for 2021)	2003, 2006, 2007, 2012, 2015, 2021
Trawl survey biomass (Tangaroa, Jul)	2000, 2012–13, 2016, 2018, 2021
Trawl survey age data	2000, 2012–13, 2016, 2018, 2021

The model on which the assessment was based estimated unfished biomass, survey catchability, year-class strengths for 1975 to 2014, and the fishery and survey selectivity patterns. The prior for survey Q was lognormal with mean of 0.07 and a CV of 0.7.

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The various model runs explored (a) the effects of alternative indices of abundance and how they are fitted, (b) a different value (0.6) for the steepness parameter, (c) different values for the rate of natural mortality M (0.15, 0.18 and 0.21yr^{-1}), and a different prior for survey Q (mean 0.043, CV 0.7).

The fits to the biomass indices and age data were reasonable (Figure 10), although the selectivity patterns were somewhat unexpected because the survey was estimated to select older fish than the commercial trawl fishery. The fits to the age-composition data were adequate (Figs A.2 and A.3 of Mormede et al., 2024d).

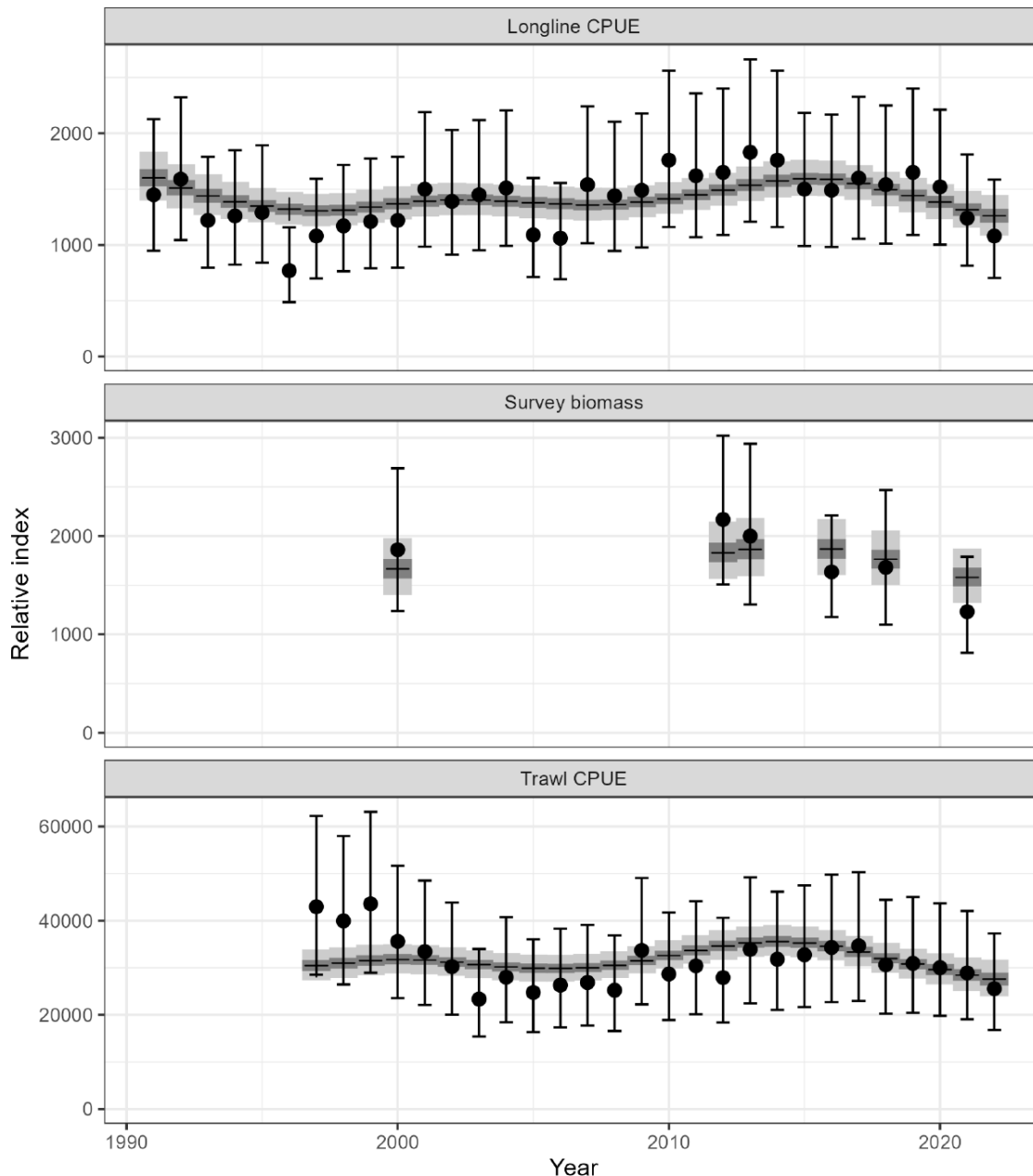


Figure 10. Fits to the abundance indices with the interquartile range (dark grey) and 95% credible interval (light grey) for the LIN 7WC base model. (Source: Mormede et al., 2024d).

Biomass and recruitment

The trend in biomass is downward but the stock was estimated to continue to be larger than $0.4B_0$, with recruitment relatively constant throughout the period of the assessment (Figure 11 and Figure 12). Exploitation rates were estimated to be less than that corresponding to the biomass target of $0.4B_0$ (Figure 13), although the exploitation rate due to

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longline fishing has increased. The estimates of biomass and biomass relative to B_0 were moderately sensitive to steepness and dropping the trawl CPUE data, but quite sensitive to a lower value for M of 0.15yr^{-1} (Table 35).

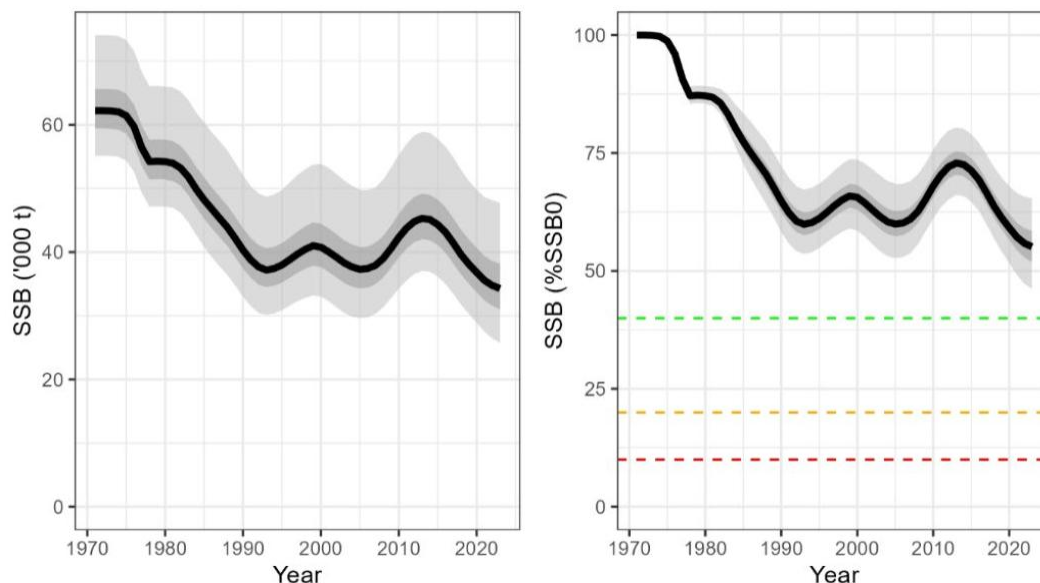


Figure 11. Estimated posterior distribution of the spawning stock biomass (SSB in tonnes, left) for the LIN 7WC base case and of the proportion of initial spawning biomass ($\%B_0$, right) trajectory and estimated unfished spawning stock biomass reference points (0.4 , 0.2 , and $0.1B_0$) for the base case model. The solid black line represents the median values and the dark grey shading interquartile range and light shading 95% credible interval. (Source: FNZ, 2024).

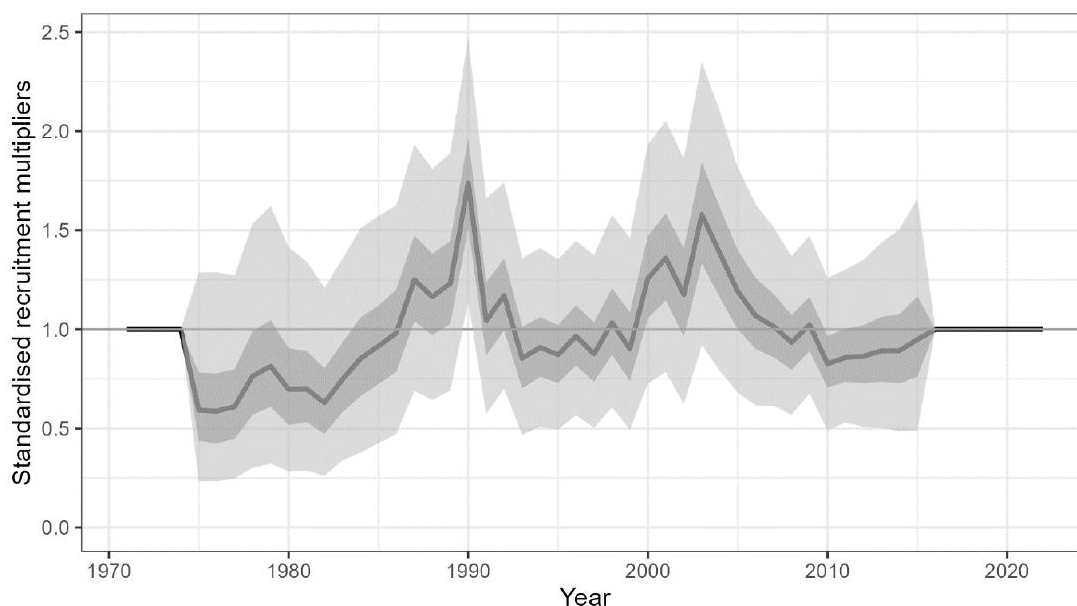


Figure 12. Estimated posterior distributions for standardised recruitment multipliers from the base case run for LIN 7WC, with median (line), the interquartile range (dark grey), and 95% credible interval (light grey). The horizontal line indicates a recruitment multiplier value of one. (Source: FNZ, 2024).

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Table 35. Bayesian median (95% credible intervals) (MCMC) of B_0 and B_{2023} (t), and B_{2023} as a percentage of B_0 for LIN 7WC for the five model runs. (Source: FNZ, 2024).

Case	B_0	B_{2023}	B_{2023} (% B_0)	$P(<40\%B_0)$	$P(<20\%B_0)$
Base case	62,168 [55,007-74,122]	34,265 [25,711-47,751]	51 [38-64]	0.05	<0.01
No Trawl	59,725 [53,183-70,139]	30,970 [23,237-42,440]	52 [43-62]	<0.01	<0.01
CPUE $h=0.6$	66,716 [59,468-78,689]	34,803 [26,105-48,449]	52 [44-62]	<0.01	<0.01
$M=0.15$	58,067 [54,568-62,211]	20,776 [17,255-24,804]	36 [32-40]	0.97	<0.01
$M=0.21$	72,175 [59,611-96,155]	47,907 [31,186-72,670]	66 [56-78]	<0.01	<0.01

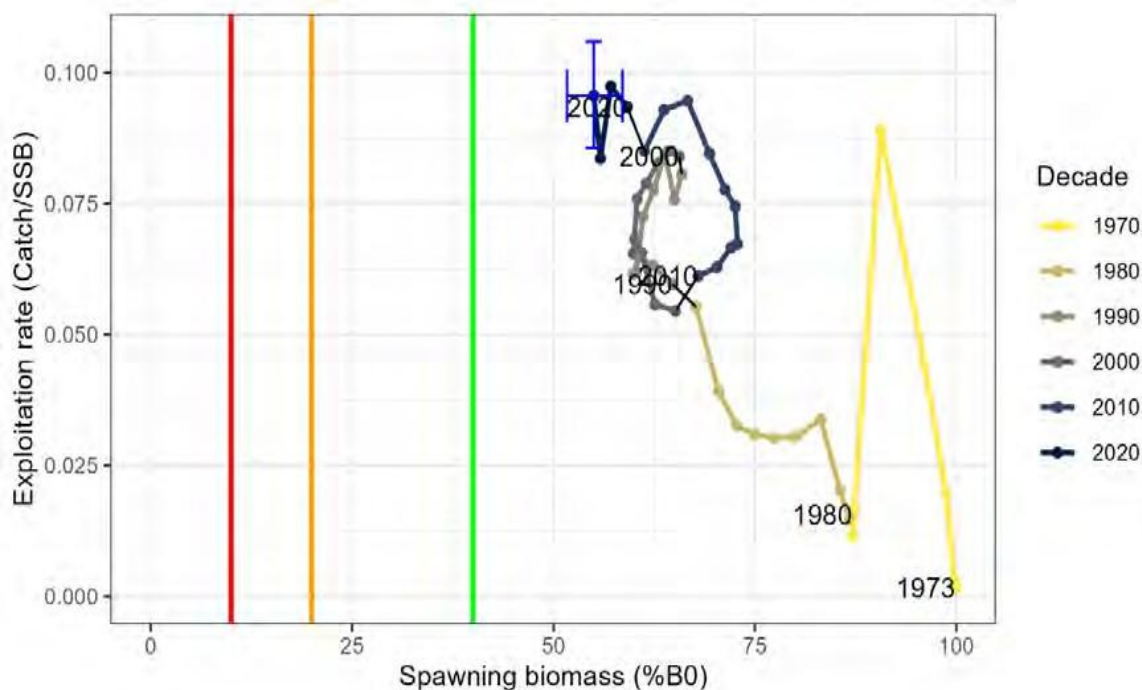


Figure 13. Trajectory over time of exploitation rate (U) and spawning biomass (% B_0), for the LIN 7WC base model from the start of the assessment period in 1972 to 2023 (in blue). The red vertical line at $0.1B_0$ represents the hard limit, the orange line at $0.2B_0$ is the soft limit, and the green line is the biomass target ($0.4B_0$). Biomass and exploitation rate estimates are medians from MCMC results. The blue cross represents the limits of the 95% confidence intervals of estimated the ratio of the biomass to B_0 and exploitation rate in 2023 (FNZ, 2024).

Projections

Projections out to 2028 for LIN 7WC using the base-case model indicated that biomass is likely to reduce slightly with future catches equal to the average of catch in 2020–2022 (3,269 t), which includes Statistical Area 032 and excludes Cook Strait, and year-class strengths resampled over the entire range of the model. Under those assumptions, the probability of biomass in 2028 being above $0.4B_0$ is 0.97 and the probability of being below $0.2B_0$ is 0.

10.1.4 Harvest strategies

10.1.4.1 Reference points and harvest strategy

Management advice on setting TACs for hoki, hake, and ling has to be broadly consistent with the Harvest Strategy Standard for New Zealand Fisheries (HSS). The HSS (MPI, 2008, 2011) aims to:

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“provide a consistent and transparent framework for setting fishery and stock targets and limits and associated fisheries management measures, so that there is a high probability of achieving targets, a very low probability of breaching limits, and acceptable probabilities of rebuilding stocks that nevertheless become depleted, in a timely manner”.

The HSS specifies probabilities for each of these outcomes. The HSS is consistent with the 2008 Amendments to the Fisheries Act 1996. The Standard (i.e., not the Fisheries Act) includes the need for a target reference point, a soft limit and a hard limit. Stocks that are assessed to be depleted to below the soft limit require a formal, time-constrained rebuilding plan, while stocks that are depleted to below the hard limit should be considered for closure. Under the HSS, stocks depleted to below the soft limit should be rebuilt (with an acceptable probability) to at least the target level/range between T_{MIN} and $2 \times T_{\text{MIN}}$ where T_{MIN} is the theoretical minimum number of years required to rebuild a stock to the target level/range in the absence of fishing (MPI, 2008). The HSS was established following extensive consultation and review (including international peer-review of a draft of the standard). The Standard is not, however, a management strategy because it does not specify, for example, the form of the HCR, and the monitoring requirements, although both monitoring and some form of an HCR are needed to implement the HSS.

The TAC is set by the Minister for Oceans and Fisheries (who executes the responsibilities of the Minister of Fisheries) through a public process. The Minister, under Section 13 of the Fisheries Act 1996, sets a TAC for a quota management species that:

- a) *maintains the stock at or above a level that can produce the maximum sustainable level; or,*
- b) *enables the level of any stock whose current level is below that which can produce the maximum sustainable level to be altered:*
 - i. *in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable level and*
 - ii. *within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock or*
- c) *enables the level of any stock whose current level is above that which can produce maximum sustainable level to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield.*

The Fisheries Act 1996 does not refer to harvest strategies or HCRs. However, the HSS refers to both. MPI (2011) outlines the generic Harvest Control Rule (HCR), which is used to inform sustainable harvesting of all New Zealand fisheries. It consists of three core elements:

- Specified target based upon MSY-compatible reference points (B_{MSY} and F_{MSY}) or better about which a fishery or stock should fluctuate with at least a 50% probability of achieving the target
- Soft limit (default of $0.5B_{\text{MSY}}$ or $0.2B_0$ whichever is higher) that triggers a requirement for a formal, time-constrained rebuilding plan when probability that stock biomass is below this soft limit is greater than 50% probability.
- Hard limit (default of $0.25B_{\text{MSY}}$ or $0.1B_0$ whichever is higher) below which fisheries should be considered for closure when the probability that stock biomass is below this hard limit is greater than 50% probability

The status of fisheries and stocks is characterised according to these reference points:

- If the MSY-compatible fishing mortality rate, F_{MSY} , or an appropriate proxy is exceeded on average (over 3.5 years), **overfishing** is deemed to have been occurring, as stocks fished at rates exceeding F_{MSY} will ultimately be depleted below B_{MSY} .
- A stock that is determined to be below the soft limit will be designated as **depleted** and in need of rebuilding.
- A stock that is determined to be below the hard limit is designated as **collapsed**.

Actions when current biomass is likely to be above soft and hard limits but below targets (or thresholds):

1. Stock Assessment Working Groups will provide best estimates and confidence intervals for current biomass

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- and/or fishing mortality (or related biological reference points).
2. If current biomass is estimated to be between the target (or the threshold) and the soft limit, SWGs should work with fisheries managers to define and evaluate the TACC consequences of:
 - a. reducing fishing mortality proportionately to the estimated decrease in biomass below the target or threshold (or taking steps to approximate this for low information stocks), in order to avoid breaching either the soft or hard limits, and/or
 - b. reducing catch super-proportionately to the estimated decrease in biomass below the target or threshold (or taking steps to approximate this for low information stocks), in order to avoid breaching either the soft or hard limits.
 3. If current biomass is estimated to be above some threshold, Stock Assessment Working Groups will work with fisheries managers to define and evaluate the TACC consequences of:
 - a. maintaining a constant F that will achieve the target biomass on average (or taking steps to approximate this for low information stocks), and/or
 - b. reducing catch proportionately to the estimated decrease in biomass towards the threshold (or taking steps to approximate this for low information stocks), and/or
 - c. increasing catch proportionately to the estimated increase in biomass above the threshold (or taking steps to approximate this for low information stocks).

Stocks will be considered to have been fully rebuilt when it can be demonstrated that there is at least a 70% probability that the target has been achieved and there is at least a 50% probability that the stock is above the soft limit. The form of the biomass – fishing mortality relationship is an emergent property of the above HCR and is not a proscribed analytical function. This (and the genetic HCR outline in Fig. 6 of MPI, 2011) is consistent with HCR reduces exploitation rates as the limit reference point is approached.

The effective HCR for ling is consistent with the HSS and associated Operational Guidelines and consists of the following:

- Assessment by the Deepwater Fisheries Assessment Working Group every 1-3 years to estimate probability of current biomass and/or fishing mortality relative to limit and target reference points.
- Conduct of 5-year projections to evaluate the probability of stock biomass being below the management target (or management target range), the hard limit and the soft limit; these are done for a base case model and for models that explore the main uncertainties in the assessment; these are made using the Markov Chain Monte Carlo (MCMC) samples from the stock assessment, with recruitment drawn randomly from the distribution of year-class strengths over the assessment time period, or more recently (e.g., 10 years) as deemed appropriate by the Deepwater Fisheries Assessment Working Group.
- Decision by the New Zealand Minister of Fisheries on TAC (and associated TACC) during projection period, consistent with HSS and informed by Stock Assessment Working Group and stakeholder engagement; consultation during this step can result in additional projections undertaken by MPI.
- Monitoring of stock performance during projection period to ensure that stock status is not being compromised by the management actions.

The approach outlined above is not a formal (well-specified) harvest control rule but contains the elements of such. There is evidence based on the hoki fishery that the TACC (and exploitation rate) for a fish stock will be reduced when its biomass drops below the target level (and is hence starting to approach the New Zealand soft limit). In this case, the 2021 stock assessment for hoki found that five-year projections of biomass under the current catch limits would lead to the stock being predicted to drop below the management target range the following year. A series of options for TACCs for HOK1 were consulted on (FNZ, 2021) and the Minister of Fisheries selected an option that reduced the catch limit for HOK1W by 10,000t and increased the catch limit for HOK1E by 5,000t (Minister of Fisheries, 2021). This option was predicted to have a 56% probability of the HOK1W stock being within the management target range (FNZ, 2021).

The process for setting TACs first involves Fisheries New Zealand providing a discussion document that outlines a set of options for the TAC (and other management controls including TACCs and other catch limits), and provides the context for the Minister's decision and other relevant background material such as previous management decisions and the results of the stock assessment, including the main uncertainties (e.g., FNZ, 2022). The discussion document also outlines for how each option is consistent with the Fisheries Act 1996 and with the

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harvest strategy (e.g. FNZ, 2022). Regarding the latter, in its consideration of TACC options, MPI explicitly addresses whether or not illegal catch and misreporting are issues. Determination on whether or not adjustment to the TACC is required is based upon risk analyses undertaken by MPI as part of its compliance monitoring. The discussion document is then released for a four- to six-week public consultation period during which submissions are received from stakeholders, including industry and non-governmental organizations. These submissions are incorporated into a decision document, which forms the basis for the Minister's decision (e.g., Minister of Fisheries, 2022, 2024).

MPI (2025) outlines a series of proposed amendments to the Fisheries Act. These proposals include the ability for the Minister of Fisheries to set TACs in advance for up to five years and approve procedures that specify how and why catch limits would be adjusted for a period up to five years (essentially formal harvest control rules). The procedures would be consulted on prior to approval, with the decision on catch limits (within the bounds of the procedure) delegated to the MPI Chief Executive. The procedures would include: (a) the objectives for the stocks concerned, (b) the biomass target (if any), (c) performance measure(s), (d) an equation that calculates the appropriate catch limit based on the performance measures, and (e) operating specifications and parameters about how it would operate (including provision for exceptional circumstances where a procedure may not be allowed).

10.1.4.2 Informing B_{MSY} and the limit reference point

The default values for the hard and soft limits are $0.1B_0$ and $0.2B_0$. A limit reference point of $0.2B_0$ is consistent with the MSC guidance on the limit reference point is used in this assessment for scoring purposes. Values for B_{MSY} are not routinely calculated during stock assessments for New Zealand fish stocks, *inter alia* because these are usually based on deterministic dynamics and can lead to maximum production being inferred to occur at very small fractions of the unfished level). Rather "management targets" are established. The proxy for B_{MSY} has been defined as $0.35B_0$ for medium productivity species and $0.4-0.5B_0$ for low productivity species (MPI, 2011).

The current B_{MSY} proxy for ling is $0.4B_0$.

10.1.4.3 Management strategy evaluations

Management strategy evaluation (MSE) is the use of simulation to evaluate the extent to which management strategies (combinations of monitoring schemes, stock assessment approaches and harvest control rules) are able to satisfy the management objectives (Punt et al., 2016). MSE involves the development of operating models (OMs) that represent the system being managed. The OMs aim to be realistic and plausible to capture a range of uncertainties. OMs are often divided into a 'reference set' on which final recommendations regarding the management strategy to adopt is based and a 'robustness set', which is used to evaluate whether the management strategy behaves as expected given a situation that may be less likely than the OMs in the reference set but nevertheless not entirely implausible.

The work to select harvest control rules (HCRs) aimed to identify HCRs that involve the following elements (Seafood New Zealand, 2025):

- Developing a stock assessment approximately every four years, with peer review provided by the relevant Assessment Working Group, to estimate the probability of current biomass and/or fishing mortality relative to target and limit reference points.
- Conducting multi-year projections to evaluate, in a probabilistic manner, where the stock is and will be in future years in relation to reference points. This would be done for a base model case as well as for models that explore key uncertainties in the assessment.
- Making decisions on the TAC by the Minister of Oceans and Fisheries in a manner consistent with HSS and informed by Assessment Working Group advice and stakeholder engagement. Consultation during this step may result in additional projections being undertaken by Fisheries New Zealand.
- Monitoring of the fishery and stock performance during the projection period to ensure that stock status is not being compromised by the management actions.

The research conducted to evaluate candidate HCRs aimed to identify HCRs that achieve a variety of management objectives, including those related to biological objective as well as the resilience of the management measures under uncertainty and potential socio-economic implications (Seafood New Zealand, 2025). The HSS specifies minimum performance criteria to be met by MSEs: (a) $a \geq 50\%$ probability of achieving the MSY-compatible target or better, (b) $a \leq 10\%$ probability of breaching the soft limit, and (b) $a \leq 2\%$ probability of breaching the hard limit. This will involve: (a)

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providing the output from running the selected HCR to inform the formulation of TAC and TACC options, (b) grounding the advice to the Minister of Fisheries in the results of the HCR projections alongside the scientific and stakeholder input, and (c) where there is divergence between the HCR-recommended catch and a Ministerial decision, the Deepwater Council will implement the lower of the two as a precautionary measure (Seafood New Zealand, 2025).

Mormede (2024) conducted an evaluation of harvest control rules (HCRs) linked to a CASAL-based estimation method ("full MSE") for three ling stocks (LIN 3&4, 5&6, and 7WC). The operating models were the current stock assessments, with parameter uncertainty accounted for by sampling parameter vectors from the results of MCMC-based stock assessments. The operating models considered uncertainty in natural mortality, stock-recruit steepness and future recruitment. Future data were simulated based on the levels of error for the last observed year for the assessment. The HCRs were of the threshold form with a target exploitation rate of $U_{40\%}$ and options for the low and top inflection points. The candidate HCRs involved a ramp starting at $0.1B_0$ with full fishing mortality applied at $(1-M) \times 0.4 B_0$ as well as catch constraints (either no limit or a $\pm 20\%$ cap).

The results of the MSE were based on performance metrics related to catches, catch variability, and the probabilities of dropping below various biomass reference points, including the New Zealand soft and hard limits of $0.2B_0$ and $0.1B_0$. The analyst identified a set of HCRs (in conjunction with industry and Fisheries New Zealand representatives), in particular those with a low inflection point of $0.1B_0$ and a top inflection point of $(1-M) \times 0.4B_0$ for final analyses. This type of HCR reduces exploitation rate as the soft limit is approached - none of the HCRs considered in the final analyses breached the soft limit (Mormede, 2024).

Mormede (2024) also assessed a potential management target range for the NZ ling stocks based on the results of the simulations and identified $0.33-55B_0$, such that control rules with a lower target would not achieve a 50% probability of being above the lower end of the target range given the uncertainties considered in the MSE.

The methods and results were reviewed by the deepwater working group. No HCRs have yet been adopted by the NZ government (Seafood New Zealand, 2025). Industry have voluntarily committed to following an HCR with a target level of fishing mortality corresponding to $0.4B_0$, which is achieved when spawning biomass exceeds 33% of unfished spawning biomass, with TACs set to zero at 10% of unfished spawning biomass (Seafood New Zealand, 2025).

The guidelines for applying the HSS (MPI, 2011) refer to the fisheries management targets accounting for ecosystem (and other) considerations and that catch levels should be set more conservatively than those that meet single-species considerations alone. Ling would not be considered low trophic level species. However, the MSE work has not referenced how ecological role was accounted for.

10.1.4.4 Tools

The tools to control fishing to achieve the objectives of the harvest strategy have not changed since the last recertification. To summarize, since 1986, the 636 fish stocks harvested by the major commercial fisheries in New Zealand fisheries waters, have been managed through a quota management system (QMS) using individual transferable quotas (ITQs). Each fish stock has 100,000,000 quota shares issued in perpetuity. The quota shares are a property right. This system is fully described on MPI's website (<https://fs.fish.govt.nz/>). Within the QMS, fisheries sustainability objectives are achieved by setting an overall annual total allowable catch (TAC) that is consistent with the productivity of a fishery. The TAC is apportioned amongst user groups such as the TACC for the commercial fishery, allocations for Maori and the recreational sector and an allocation to address other fishing-related mortality such as illegal fishing or accidental loss of fish from nets.

Each license holder owns a set of tradable shares associated with a particular fish stock. The TACC for each fishery is split across these shares and thus apportioned amongst quota owners. The sum of these shares is the licensee's Annual Catch Entitlement (ACE). The ACE is a hard limit. Each commercial fishing permit holder must balance their catch against their ACE holding. If the permit holder does not hold ACE, they must purchase ACE from another ACE holder. Some ACE is held by entities that do not intend to fish but sell their ACE to fishers who need to balance their catch against ACE. If a licensee catches more fish than their ACE, a charge is levied as per a Deemed Value (DV) determined annually by MPI on an increasing scale above the ACE. Thus, while TACC overruns can occur, there is a large financial incentive for licensees to maintain their catch within their allotted ACEs.

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The boundaries for some of the stocks do not conform to the management boundaries used by MPI for catch control. In the case of the Chatham Rise ling stock, the TACCs are apportioned to areas LIN 3 and LIN 4 based on an analysis of the biological distribution of the stock in survey data. In the case of the Sub-Antarctic ling stock, the TACCs are apportioned to areas LIN 5 and LIN 4, again based upon an analysis of the biological distribution of the stock in survey data. For LIN 7, MPI uses the results of the West Coast South Island (LIN 7WC) stock assessment as the basis of the TACC.

The 1996 Fisheries Act and associated regulations describe a wide array of effort-based tools (e.g. gear configuration, time and area closures, etc.), which are used in addition to quotas to control fishing mortality.

10.1.5 Catch

Table 16, Table 17, Table 18 and Table 19 summarize the catch data for ling by area and FishStock.

10.1.5.1 Principle 1 catch

Table 36. TACC (agreed catch proportion) and catch data for ling (LIN 3).

TACC / Catch Data	Year	Amount
TACC	Year (2022-23)	2,060 t
UoA share of TACC	Year (2022-23)	2,060 t
Total catch by UoC (most recent year)	Year (2022-23)	2,264 t
Total catch by UoC (second most recent year)	Year (2021-22)	2,252 t

Table 37. TACC (agreed catch proportion) and catch data for ling (LIN 4).

TACC / Catch Data	Year	Amount
TACC	Year (2022-23)	4,200 t
UoA share of TACC	Year (2022-23)	4,200 t
Total catch by UoC (most recent year)	Year (2022-23)	4,619 t
Total catch by UoC (second most recent year)	Year (2021-22)	4,626 t

Table 38. TACC (agreed catch proportion) and catch data for ling (LIN 5).

TACC / Catch Data	Year	Amount
TACC	Year (2022-23)	5,208 t
UoA share of TACC	Year (2022-23)	5,208 t
Total catch by UoC (most recent year)	Year (2022-23)	4,906 t
Total catch by UoC (second most recent year)	Year (2021-22)	5,049 t

Table 39. TACC (agreed catch proportion) and catch data for ling (LIN 6).

TACC / Catch Data	Year	Amount
TACC	Year (2022-23)	8,505 t
UoA share of TACC	Year (2022-23)	8,505 t
Total catch by UoC (most recent year)	Year (2022-23)	4,780 t

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Total catch by UoC (second most recent year)	Year (2021-22)	3,881 t
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Table 40. TACC (agreed catch proportion) and catch data for ling (LIN 7).

TACC / Catch Data	Year	Amount
TACC	Year (2022-23)	3,387 t
UoA share of TACC	Year (2022-23)	3,387 t
Total catch by UoC (most recent year)	Year (2022-23)	3,540 t
Total catch by UoC (second most recent year)	Year (2021-22)	3,325 t

10.1.6 Principle 1 species

Fishing method	Species	Management Area	Stock	UoC
Longline	Ling (<i>Genypterus blacodes</i>)	LIN 3	Chatham Rise (LIN 3 & 4)	1
		LIN 4	Chatham Rise (LIN 3 & 4)	2
		LIN 5	Sub-Antarctic (LIN 5 & 6)	3
		LIN 6	Sub-Antarctic (LIN 5 & 6)	4
		LIN 7	West Coast South Island (LIN 7WC)	5

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10.1.7 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level that maintains high productivity and has a low probability of recruitment overfishing		
Scoring issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guidepost	It is likely that the stock is above the point of recruitment impairment (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	LIN 3&4: Y LIN 5&6: Y LIN 7WC: Y	LIN 3&4: Y LIN 5&6: Y LIN 7WC: Y	LIN 3&4: Y LIN 5&6: Y LIN 7WC: Y
Rationale		For the purposes of this assessment the PRI is taken to be the soft limit in the New Zealand Harvest Strategy Standard (20% of unfished spawning stock biomass). The stock assessments, which account for the biology and fisheries for the stocks concerned, estimate stock status relative to the estimate of unfished spawning biomass for a range of model configurations and identify a base-model. MCMC sampling is used to compute posterior distributions for current spawning biomass and current spawning biomass relative to unfished spawning biomass (i.e. $B_{current}/B_0$). Based on section 10.1.3, the probability that the spawning biomass from the most recent assessment is below $0.2B_0$ is LIN 3&4: <1%; LIN 5&6: <1%; LIN 7WC: <1% (Table 20). The probabilities of being above the PRI exceed 0.95 for all UoA so SG 60, 80 and 100 are met.		
b	Stock status in relation to achievement of maximum sustainable yield (MSY)			
	Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		LIN 3&4: Y LIN 5&6: Y LIN 7WC: Y	LIN 3&4: Y LIN 5&6: Y LIN 7WC: Y
Rationale		For the purposes of this assessment whether the stock is fluctuating at a level consistent with the biomass level corresponding to MSY is based on the biomass relative to the management target for the stocks ($0.4B_0$ for ling). This range is larger than the estimate of B_{MSY} that would be computed from the stock assessments based on the assumption of deterministic dynamics given the assumed values for stock-recruitment steepness but is not inconsistent with the management targets for similar species. The stock assessments estimate stock status relative to the estimate of unfished spawning biomass for a range of model configurations and identifies a base-model. MCMC sampling is used to compute posterior distributions for current spawning biomass and current spawning biomass relative to unfished spawning biomass (i.e. $B_{current}/B_0$). Based on section 10.1.3 the probability that the spawning biomass from the most recent assessment is below the management target is LIN 3&4: <1%; LIN 5&6: <1%; LIN 7WC: 5% (Table 20). SG 60 and 80 are met for all UoA as stock status exceeds the management target with greater than 50% probability. All UoAs have all been above the management target for several years so SG 100 is met.		

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Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (Sla)	LIN 3&4: Spawning biomass LIN 5&6: Spawning biomass LIN 7WC: Spawning biomass	LIN 3&4: $0.2B_0$ LIN 5&6: $0.2B_0$ LIN 7WC: $0.2B_0$	LIN 3&4: $0.56B_0$ LIN 5&6: $0.66B_0$ LIN 7WC: $0.55B_0$
Reference point used in scoring stock relative to MSY (Sib)	LIN 3&4: Spawning biomass LIN 5&6: Spawning biomass LIN 7WC: Spawning biomass	LIN 3&4: $0.4B_0$ LIN 5&6: $0.4B_0$ LIN 7WC: $0.4B_0$	LIN 3&4: $0.56B_0$ LIN 5&6: $0.66B_0$ LIN 7WC: $0.55B_0$

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	LIN 3&4: ≥ 80 LIN 5&6: ≥ 80 LIN 7WC: ≥ 80
Information gap indicator	None

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	LIN 3&4: 100 LIN 5&6: 100 LIN 7WC: 100
Condition number (if relevant)	N/A

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PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1/PI 1.1.1A SG80.
	Met?	Yes	Yes	Yes
Rationale		The harvest strategy for ling involves monitoring (generally catches, estimates of biomass from surveys, and fishery and survey age-compositions), application of an integrated age-structured method of stock assessment (CASAL/Casal2) to determine stock status relative to the biomass reference points on which the evaluation of PI1.1.1 can be based, and use of projections to assess the consequences of the future catches. For stocks assessed to be below the soft limit, a time-constrained rebuilding analysis is required based on the NZ Harvest Strategy Standard. The HCR selected by industry which was selected using a Management Strategy Evaluation process, involves a target level of fishing mortality corresponding to $0.4B_0$, which is achieved when spawning biomass exceeds 33% of unfished spawning biomass, with TACs set to zero at 10% of unfished spawning biomass. These elements are responsive to stock status and are designed to move stocks towards to the management target / management target range. The MSE results suggest that spawning biomass will remain about the estimate of B_{MSY} from the stock assessment with very high probability (>80%) although B_{MSY} as inferred from the stock assessment is a low proportion of unfished biomass. The harvest strategy has led to changes to the TACCs for stocks. TACCs for ling stocks have not been reduced due to conservation concerns, but the TACC for LIN 5 was increased given its high status relative to the target level. All UoAs meet SG 60, 80 and 100.		
b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy has been tested and is expected to meet the objectives reflected in PI 1.1.1/ PI 1.1.1A SG80 or there is evidence that the harvest strategy is achieving its objectives reflected in PI 1.1.1/ PI 1.1.1A SG80.	The performance of the harvest strategy has been evaluated and evidence exists to show that it is achieving the objectives reflected in PI 1.1.1/ PI 1.1.1A SG80, including being clearly able to maintain stocks at target levels.
	Met?	Yes	Yes	Yes
Rationale		The harvest strategy for ling is well defined and responsive to the state of the stock. It is consistent with the NZ Harvest Strategy Standard as well as the Fisheries Act (Section 10.1.1.4.1). Many of the TACCs have not been adjusted based on this harvest strategy as the associated stocks are assessed to be above their management targets, but the TACCs for other stocks (e.g., hoki and hake) to which the harvest strategy is applied have been modified in recent years given the results of the stock assessments and projections, providing evidence that the harvest strategy is achieving its objectives as reflected in PI 1.1.1. Given the nature of the assessment/projection approach to providing advice, there is no explicit aim to increase exploitation rates to “drive” stocks to the		

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PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		management target, with the consequence that LIN3&4, LIN 5&6, and LIN 7WC are currently well above their management targets. MSE analyses have been conducted for ling (Section 10.1.4.3). These MSEs examined the primary sources of uncertainty appropriate to the scale and intensity of the fishery (e.g. natural mortality, obtained uncertainty, process uncertainty, and productivity). The results of the MSEs provided the basis for selecting the HCRs that will support management decision making for ling, Thus, there is evidence that the harvest strategy is achieving its objectives so SG 60 and 80 is met for all UoAs , HCRs have been evaluated using MSE and show that they are able to maintain stocks at target levels, so all UoAs achieve SG 100 .		
c	Harvest strategy monitoring			
	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Yes		
Rationale		Survey estimates of abundance are available for all UoAs on a regular basis, which provide the primary manner for tracking changes over time in biomass (Section 7.4). The assessments also make use of fishery and survey age-compositions, which are collected regularly from the primary fishery sectors and during surveys. The medium-term research plan for deepwater fisheries (FNZ, 2024b) includes data collection at the level needed to support the assessments. All UoAs consequently meet SG 60.		
d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			No
Rationale		The HCR for ling was revised in 2025 based on analyses in 2024 but the harvest strategy itself was not reviewed, which means that SG 100 was not met.		
e	Shark finning			
	Guide post	There is a high degree of certainty that shark finning is not taking place.		
	Met?	NA		
Rationale		Not scored - shark is not a target species in any of the fisheries concerned.		
f	Review of alternative measures			
	Guide post	There has been a review of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a review every 5 years of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a review that happens every 2 years of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	N/A	N/A	N/A

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PI 1.2.1	There is a robust and precautionary harvest strategy in place
Rationale	Not scored – the unwanted catch of ling in the ling longline fishery is essentially negligible with a percentage discard of less than 1% (Finucci et al., 2020).

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	LIN 3&4: ≥ 80 LIN 5&6: ≥ 80 LIN 7WC: ≥ 80
Information gap indicator	None

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	LIN 3&4: 95 LIN 5&6: 95 LIN 7WC: 95
Condition number (if relevant)	N/A

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PI 1.2.2 – Harvest control rules and tool

PI 1.2.2		There are well-defined and effective HCRs in place		
Scoring issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	Generally understood HCRs are in place that are expected to reduce the exploitation rate as the PRI is approached .	Well-defined HCRs are in place that ensure the exploitation rate is reduced as the PRI is approached, and are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species at levels consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level most of the time, taking into account the ecological role of the stock.
	Met?	Yes	Yes	No
Rationale		The New Zealand system is well structured to ensure that catches remain below the catch limits. The harvest strategy for ling involves projections under different levels of catch and an assessment of the probability whether a stock is projected to drop below the soft limit. Stocks assessed to be below the soft limit are required to have rebuilding plans in place that rebuild them, where the time to recover is time-constrained. If current biomass is estimated to be between the target (or the threshold) and the soft limit, Stock Assessment Working Groups should work with fisheries managers to define and evaluate the TACC consequences of (a) reducing fishing mortality proportionately to the estimated decrease in biomass below the target or threshold (or taking steps to approximate this for low information stocks), in order to avoid breaching either the soft or hard limits, and/or (b) reducing catch super-proportionately to the estimated decrease in biomass below the target or threshold (or taking steps to approximate this for low information stocks), in order to avoid breaching either the soft or hard limits. The industry-selected HCR reduces fishing mortality if spawning biomass is less than 33% of unfished spawning biomass, with TACs set to zero at 10% of unfished spawning biomass. Thus, generally understood HCRs are in place that are expected to reduce the exploitation rate as the PRI is approached so SG 60 is met . In addition, the exploitation is reduced as the PRI is approached under the selected HCR, meaning that SG 80 is met . The MSE-based simulations show that the stocks of ling should fluctuate about $0.4B_0$. However, the MSE did not account for the ecological role of the stocks so SG 100 is not met .		
b	The robustness of HCRs to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		Yes	No
Rationale		The assessments for ling account for the main uncertainties related to the biology and monitoring of the stocks. Projections are usually conducted for two recruitment scenarios: (a) the entire period of estimated recruitments, and (b) recent recruitment, with parameter values selected from the Bayesian posterior distributions. Uncertainty in future recruitment is usually the main source of uncertainty when conducting projections under future catches. Assessments include multiple sensitivity tests and the results of these tests are presented to the DWWG and their results are reviewed by the members of the group, who include members of the FNZ management team and their advisors. These sensitivity tests are documented in detail in the final Fishery Assessment		

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PI 1.2.2		There are well-defined and effective HCRs in place		
		Reports, which are also available to mangers. Managers can, and do, request additional projections, including for different recruitment periods and for different catch assumptions. Thus, the application of the harvest strategy takes a wide range of uncertainties into account. Therefore, the HCRs are likely to be robust to the main uncertainties meeting SG 80 . The MSE accounts for some sources of uncertainties but not a wide range so SG 100 is not met .		
c	Evaluation of HCRs			
	Guide post	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Yes	Yes	Yes
Rationale		The primary tool in the NZ system are the TACCs are the associated monitoring programs. However, the 1996 Fisheries Act and associated regulations describe a wide array of effort-based tools (e.g. gear configuration, time and area closures, etc.), which can be used in addition to catch limits to control fishing mortality (Section 10.1.4.4) Catches in New Zealand fisheries are at or below agreed catch limits (Section 10.1). While there is some evidence that catches for some deepwater species have been mis-reported in the past, there is no evidence for substantial mis-reporting. Thus, the evidence clearly shows that the tools are effective at achieving the exploitation levels consistent with the HCR. All UoAs meet SG 60, 80 and 100.		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	LIN 3&4: ≥ 60 LIN 5&6: ≥ 60 LIN 7WC: ≥ 60
Information gap indicator	None

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	LIN 3&4: 85 LIN 5&6: 85 LIN 7WC: 85
Condition number (if relevant)	N/A

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PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	Some relevant information related to stock structure, stock productivity, and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition, and other data are available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals, and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Yes	Yes	No
Rationale		The stocks of ling have been subject to considerable biological and ecological research. Stock structure assumptions are based on the outcomes of the analysis of a variety of data types including genetic studies, morphology, and trends in demographic parameters such as age-structure. The stock structure hypotheses on which assessments and management advice are based are reviewed as part of the annual stock assessment process. Information is available on length as a function of age, weight as a function of age, and maturity at the level needed to support the stock assessments. Information on the rate of natural mortality, <i>M</i>, is less certain, and assessments explore whether it is possible estimate <i>M</i> as a part of the model fitting process, and some assessments consider length-specific natural mortality in the tests of sensitivity. Knowledge of the fleet is comprehensive. Some of the assessments report knowledge of environmental information pertinent to the stocks. Knowledge of the population dynamics of the species is sufficient to support the harvest strategy hence SG 60 and 80 are met. The most notable gap in knowledge relates to the form and parameters of the stock-recruitment relationship, which remains assumed. This means information is not comprehensive so SG 100 is not met, but given recruitment deviations are estimated, the information is sufficient to support the harvest strategy. There is a plan for when surveys and assessments are to be conducted (Table 7 and Table 8), but no such plan exists regarding improving biological knowledge, including stock structure and environmental impacts on population dynamics.		
b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least 1 indicator is available and monitored with sufficient frequency to support the harvest strategy.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest strategy , and 1 or more indicators are available and monitored with sufficient frequency to support the harvest strategy.	All information required by the harvest strategy is monitored with high frequency and a high degree of certainty , and there is a good understanding of the inherent uncertainties in the information (data) and the robustness of assessment and management in dealing with this uncertainty.
	Met?	Yes	Yes	No

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Rationale	Catches of ling are reported to Fisheries New Zealand. Reporting requirements are set out in the Fisheries (Reporting) Regulations 2001, most notably in sections 5 and 6. Trawl Catch, Effort and Processing Returns (TCEPRs) provide information about each fishing operation, with tow-by-tow records of latitude and longitude and date-time for the start and end of each tow, target species, tow duration, tow speed, and gear parameters, amongst others. The Trawl Catch Effort returns (TCERs) provide similar tow-by-tow data, but with start of the tow position information only which necessitates the generation of an endpoint. The Electronic Reporting System (ERS) collects data similar to the TCEPR; however, the position data are at a finer resolution – TCER and TCEPR data are generally recorded in degrees to one or two decimal places, whereas ERS data are recorded to four decimal places. Fisheries New Zealand observers have recorded details of catch and discards by species or species groups for the fleet of vessels involved in the ling longline fishery in every fishing year since 1992-93. Only a minority of the fishing effort can be covered, however, and the allocation of observers on commercial vessels considers a range of data collection requirements and compliance issues for multiple fisheries, as well as the capacity of vessels to accommodate additional personnel. Although it is not possible to achieve a perfectly representative or random spread of observer effort across the fishery, the analyses used in, for example, Anderson et al (2019), Spatially Explicit Fisheries Risk Assessments (SEFRAs e.g. Edwards et al 2023) and Finnuci et al. (2020), find that the observer coverage closely matches the overall spatial and temporal spread of the commercial fisheries. Under the Fisheries Act 1996 no species in the Quota Management System (QMS) may be discarded at sea unless the species is listed on Schedule 6 (of the Fisheries Act), the return to the sea is recorded, and the specified conditions are met, or an MPI observer on the vessel authorizes the discard. As ling is a QMS species, all catch of this species is recorded and reported with a high degree of accuracy. Finucci et al. 2020, in their analysis of non-target fish and invertebrate catch and discards in New Zealand ling longline fisheries from 2002–03 to 2017–18, reported that discarding of ling was generally low, less than 100 t per year in all years except for 2003–04 and 2004–05 and that annual levels of discarding have declined over time, with a low of 11 t reported in 2017–18. The biomasses of the stocks are monitored using surveys. Most stocks have one indicator of stock biomass, while some have multiple indicators (section 10.1). Surveys are conducted regularly (usually every 2-3 years; Table 7). Overall, stock abundance of UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest strategy, and one or more indicators are available and monitored with sufficient frequency to support the harvest strategy. A 2-3-year survey frequency is sufficient to support the assessments but is not high compared to some similar species. Thus, SG60 and 80 are met for all UoAs but not SG100.			
c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		Yes	
Rationale	As QMS stocks, ling are monitored across all sectors that take these species – reporting is required by the Fisheries (Reporting) Regulations 2001. Therefore, there is good information on all removals. According to the NZ plenary (FNZ, 2024), the estimates of recreation take and catches by customary users for these species is considered negligible, although small catches of ling by recreational fishers have been reported. Thus, SG 60 and 80 are met.			

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

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Draft scoring range	LIN 3&4: ≥ 80 LIN 5&6: ≥ 80 LIN 7WC: ≥ 80
Information gap indicator	None

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	LIN 3&4: 80 LIN 5&6: 80 LIN 7WC: 80
Condition number (if relevant)	N/A

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PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an assessment of the stock status		
Scoring issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest strategy.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Yes	Yes
Rationale		The most recent assessments involve fitting an age-structured population dynamics model to catch and monitoring data. The parameters governing growth and stock-recruitment steepness are pre-specified, while natural mortality is pre-specified in some assessments and estimated in others. All assessments for ling involve estimating fishery and survey selectivity patterns. Key inputs to the assessments include prior distributions for survey catchability (Q). The assessments involve multiple model runs to identify a base model, which is then fitted using Bayesian techniques. The assessment then explores sensitivity (usually based on MPD estimation) to various assumed parameters and data set choices. The assessments then form the basis for projections under future catch scenarios, with sensitivity explored to the level of future recruitment. The assessments are configured within the CASAL / Casal2 package to take key specifics, including the biology of the species and the nature of the fishery, into account. All UoAs meet SG 80 and 100.		
b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Yes	Yes	
Rationale		The assessment estimates stock status relative to the hard limit, soft limit and management target/management target range (see Table 20 for a summary), thus meeting SG 60 and 80.		
c	Uncertainty in the assessment			
	Guide post	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment evaluates stock status relative to reference points in a probabilistic way.
	Met?	Yes	Yes	Yes
Rationale		The assessment method is Bayesian, and the results are expressed in terms of posterior distributions for quantities of management interest such as current spawning biomass and current spawning biomass relative to B_0. The uncertainty in the assessment is also quantified using sensitivity tests, and some of those sensitivity tests are carried forward to form the basis for projections. The number of sensitivity tests reported in the assessment reports and the plenary report are fairly low compared to the numbers that would be seen in other assessments for some similar methods, but sufficient to support the harvest strategy.		

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		The assessments provide the ability to assess stock status in probabilistic terms using Bayesian methods (Table 20). Consequently, the assessments take uncertainty into account and evaluate stock status relative to reference points in a probabilistic way. Therefore, all UoAs meet SG 60, 80 and 100.		
d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			No
Rationale		The basic assessment method (integrated analysis) is used for many fisheries around the world and simulation studies have led to an understanding of how assessment methods of this type perform. However, no formal evaluations of an assessment method that is identical to CASAL/Casal2 have been undertaken. In particular, no evaluation of the implications of errors in specifying priors for key parameters has been undertaken. The assessment method (CASAL/Casal2) has yet to be formally tested using simulations and hence not tested the way it is configured for ling, thus not meeting SG 100.		
e	Peer review of assessment			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Yes	No
Rationale		The assessment is reviewed by the Deepwater Working Group, which has a broad range of members, including those from government, industry and NGOs, meeting SG80. However, the assessments have not recently been formally reviewed by scientists external to the New Zealand assessment process. Thus, the SG80 is met for all UoAs but not SG100.		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	LIN 3&4: ≥ 80 LIN 5&6: ≥ 80 LIN 7WC: ≥ 80
Information gap indicator	None

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	LIN 3&4: 90 LIN 5&6: 90 LIN 7WC: 90
Condition number (if relevant)	N/A

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Principle 2

10.2 Principle 2 background

Deepwater and middle-depth fisheries are those generally between 12 nautical miles and 200 nautical miles offshore. Fisheries are categorised into three tiers:

- Tier 1 – high volume, high value quota management system stocks that commercial fishers usually target;
- Tier 2 – quota management system stocks that are smaller or less valuable bycatch fisheries, or are only targeted at certain times of the year; and
- Tier 3 – bycatch species that are not managed through the quota management system.

Each species or species group is split into 1–10 stocks for management purposes. However, the boundaries of biological stocks often differ from the management boundaries. In general, biological stocks tend to occur at smaller scales than management boundaries, although in a few instances the reverse is true (Table 41).

The hoki, hake and ling trawl fishery, considered one combined trawl fishery, the southern blue whiting trawl fishery and the ling bottom longline fishery all fall under Tier 1. The ling longline fleet characteristics are presented in Table 42.

The management of the majority of New Zealand's deepwater fisheries takes an evidence-based approach, supported by a robust and comprehensive monitoring and research programme. Information and data come from a variety of sources including independent Fisheries New Zealand Observer data, industry reporting, contracted fisheries independent research surveys, and contracted projects (FNZ, 2024). Research needs to inform management of New Zealand's deepwater fisheries are reflected in the medium term research plan (MTRP; FNZ 2024). The MTRP is a living document, updated regularly to reflect changes in management priorities where these occur, and identification of new information requirements. The MTRP should be read alongside the National Fisheries Plan for Deepwater and Middle depth fisheries (National Deepwater Plan; FNZ, 2019). Annual research plans are consulted with stakeholders through the Deepwater Fish Plan Advisory Group, and reported in the Annual Operational Plans and Annual Review Reports for deepwater fisheries.

Table 41. New Zealand general Fishery Management Areas (FMAs) in relation to Quota Management Areas (QMAs) for stocks of hoki, hake and ling.

FMA		Hoki	Hake	Ling
1	Auckland (east)	HOK1E	HAK1	LIN1
2	Central (east)			LIN2
3	South-east coast			LIN3
4	South-east (Chatman Rise)		HAK4	LIN4
5	Southland	HOK1W	HAK1	LIN5
6	Sub-Antarctic			LIN6
7	Challenger/Central (plateau)		HAK7	LIN7
8	Central (Egmont)		HAK1	
9	Auckland (west)			LIN1
10	Kermadec	HOK10	HAK10	LIN10

Table 42. Fleet characteristics, 2023/24, for the ling longline fleet targeting one or more UoA stocks – ling 3-7 (Rob Tilney pers comm.)

Vessel Size (LOA)	Autoliner	Hand bait	No. Vessels
> 34 m	3	0	3
21 - 34 m	0	6	6

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< 20 m	0	11	11
Totals	3	17	20

10.2.1 In-scope species

Finucci et al. (2020) reviewed observer data for nearly 70 000 longlines set by 132 vessels between the 2002–03 and 2017–18 fishing years. Annual estimates of non-target catch and discards for all species and for the key combined species categories (with confidence intervals) were plotted for the time series examined. In addition, annual non-target catch of the main individual QMS and non-QMS species were also estimated. The overall average observer coverage included 17% of ling catch, 12% of sets, and 17% of hooks observed.

Finucci et al. (2020) showed that ling accounted for about 65% of the total estimated catch from all observed bottom longline sets targeting ling between 1 October 2002 and 30 September 2018 (Figure 14). The main non-target species were spiny dogfish (17% of total estimated catch), ribaldo (3.3%), rough skate (2.7%), black cod (1.7%), smooth skate (1.5%), sea perch (1.4%), and pale ghost shark (1.2%), (Figure 14).

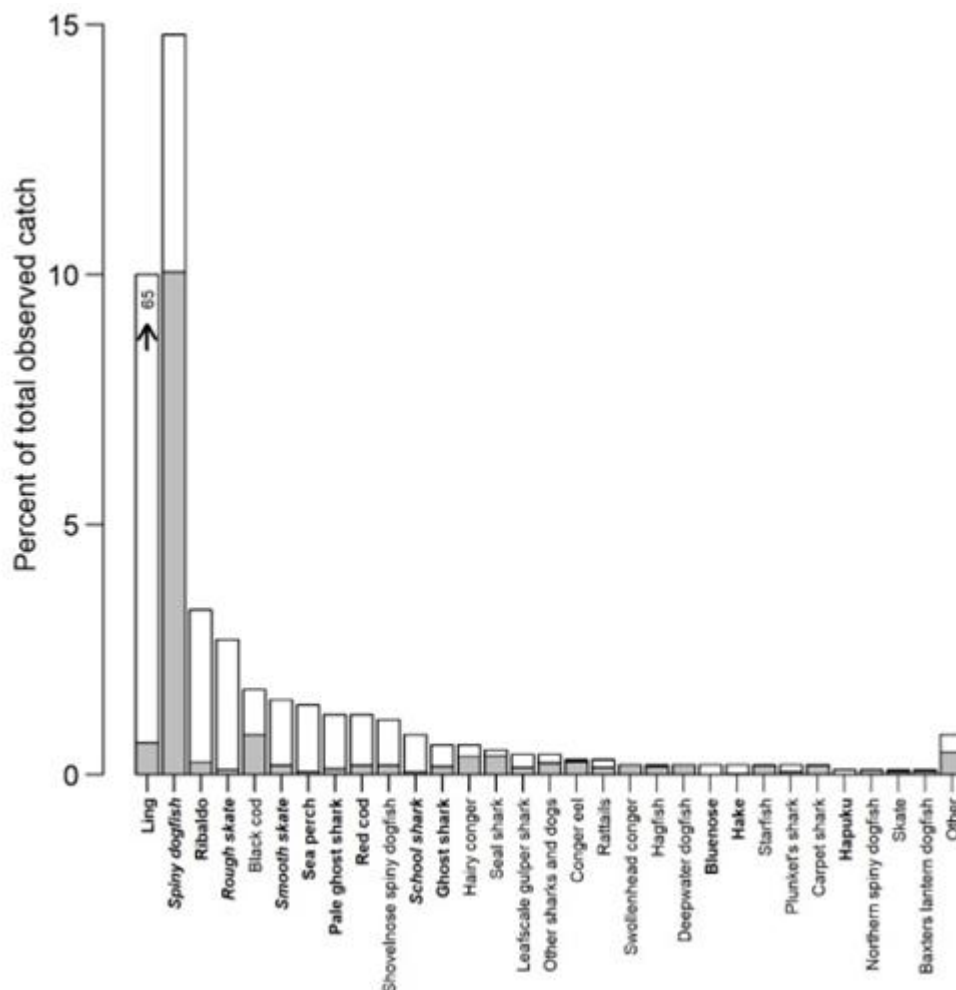


Figure 14. Percentage of the total catch contributed by the main non-target species (those representing 0.02% or more of the total catch) in the observed portion of the ling longline fishery for fishing years 2002-03 to 2017-18 (white bar), and the percentage discarded (grey bar). The Other category is the sum of all non-target species representing less than 0.02% of the total catch. Names in bold are QMS species and names in *italics* are QMS species that can be legally discarded under Schedule 6 of the Fisheries Act (1996) (since 1996 for spiny dogfish, 2003 for rough and smooth skate, and 2012 for school shark). Source: Finucci et al. (2020).

Finucci et al. (2020) noted that observer coverage has been reasonably well spread over the spatial extent of the fishery, with observer coverage highest among the sub-Antarctic (SUBA, 27%) and Stewart-Snares shelf (STEW, 28%) (Table

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43). Coverage was relatively low in the east coast North Island (EAST), west coast North Island (WCNI), and Northland (NORTH) areas. In general, these areas with low coverage were fished by smaller vessels that would not normally be able to carry observers. These areas also attributed to small proportions of the total effort of the fishery (Table 43).

Table 43. Summary statistics for the ling target longline fishery, by area, including observer coverage and major data quality factors for 2002–03 to 2017–18 (e.g., number of sets with positional data). There was no reported fishing in the Kermadec region (KERM). Source: Finucci et al. (2020).

Area	Median vessel length (m)	Total effort		Percent of sets with position data	Percent of sets by vessels not observed
		Number of sets	Number of hooks ('000)		
CHAT	34.6	31 378	163 971	11.5	94.9
SUBA	46.5	7 090	59 466	26.7	81.0
EAST	18.3	12 440	20 121	1.7	98.6
STEW	46.5	2 769	18 340	28.3	85.1
WCSI	17.7	6 145	13 671	3.0	46.3
PUYS	19.2	2 459	10 297	9.3	91.8
COOK	22.5	1 802	6 071	13.5	99.3
NORTH	21.3	2 711	4 527	4.2	99.3
WCNI	23.8	2 209	3 255	1.3	100
KERM	NA	NA	NA	NA	NA

To objectively assess spatial observer coverage, Finucci et al. (2020) compared the latitude and longitude of observed sets with all commercial sets recorded with position data, using density plots and summarised in Figure 15. The spread of observed sets over the longitudinal and latitudinal extent of the fishery was well matched for all years combined, although regions centred between 45° S and 40° S (relating to the centre of effort on Chatham Rise) were slightly over-represented by observer sampling in all periods.

Comparisons made between vessel sizes in the commercial fleet and the observed portion showed that, across all years, observer coverage of sets was over-represented in vessels over 40 m in length and particularly under-represented in vessels up to about 30 m in length (Figure 16).

The spread of observer effort throughout each fishing year was compared with the spread of total effort in the fishery by applying a density function to the numbers of sets per day (Figure 17). The commercial ling longline fishery has been evenly spread over the fishing year, but with usually slightly more effort at the beginning and end of the fishing year. In recent years, observer coverage tended to over-sample these time periods, with a lesser extent of observer coverage between the months of December and April. For all years combined, however, the observer coverage closely matched the overall temporal spread of the commercial fishery (all years combined).

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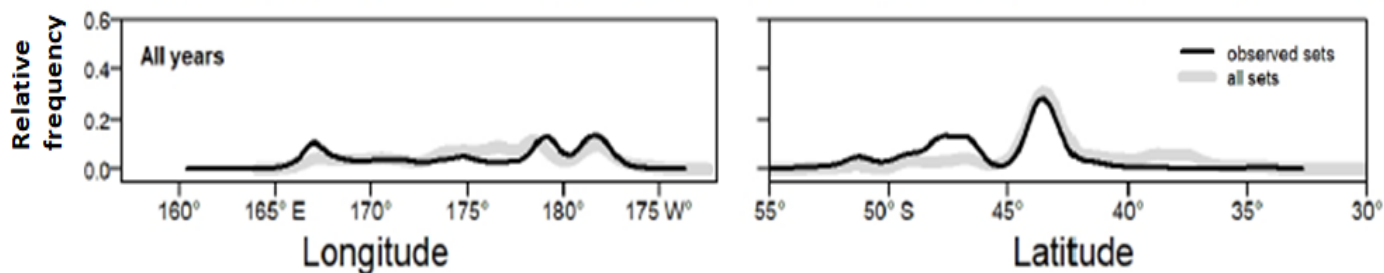


Figure 15. Comparison of start positions (latitude and longitude) of observed sets with those of all commercial set in the ling target longline fishery for all years combined. The relative frequency was calculated from a density function which used linear approximation to estimate frequencies at a series of equally spaced points. Adapted from Finucci et al 2020.

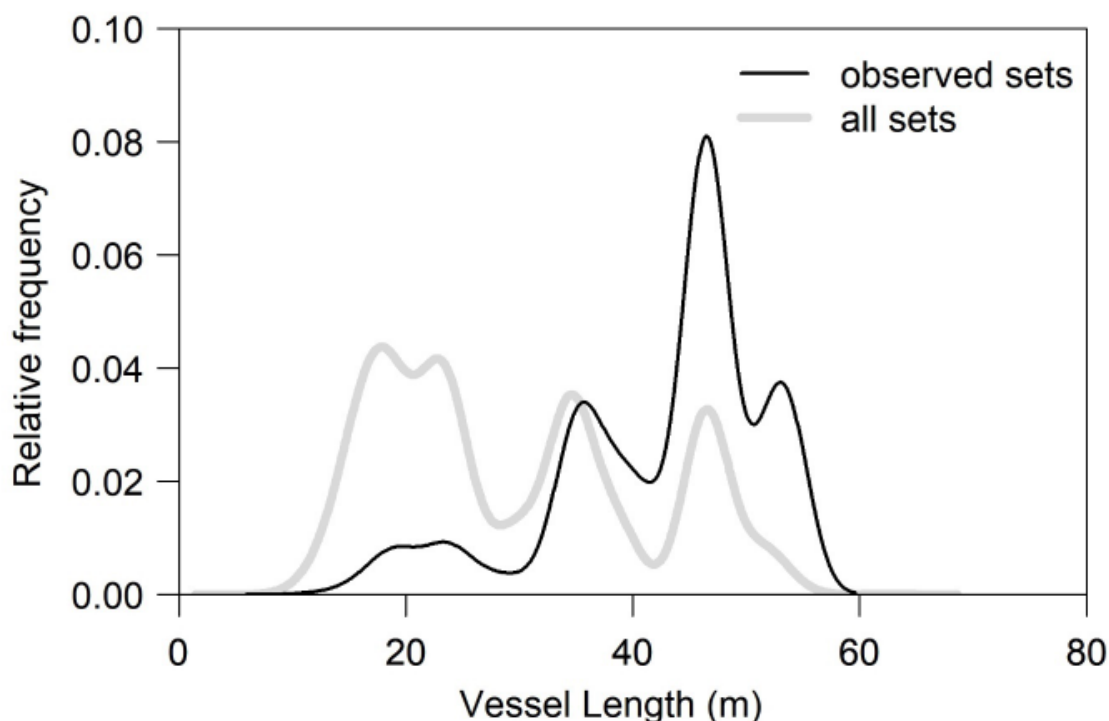


Figure 16. Comparison of vessel length (m) in observed sets versus all recorded commercial sets, standardised for the number of hooks per set, for the period 1 October 2002 to 30 September 2018, in the ling longline fishery. The relative frequency was calculated from a density function which used linear approximation to estimate frequencies at a series of equally spaced points. Finucci et al 2020.

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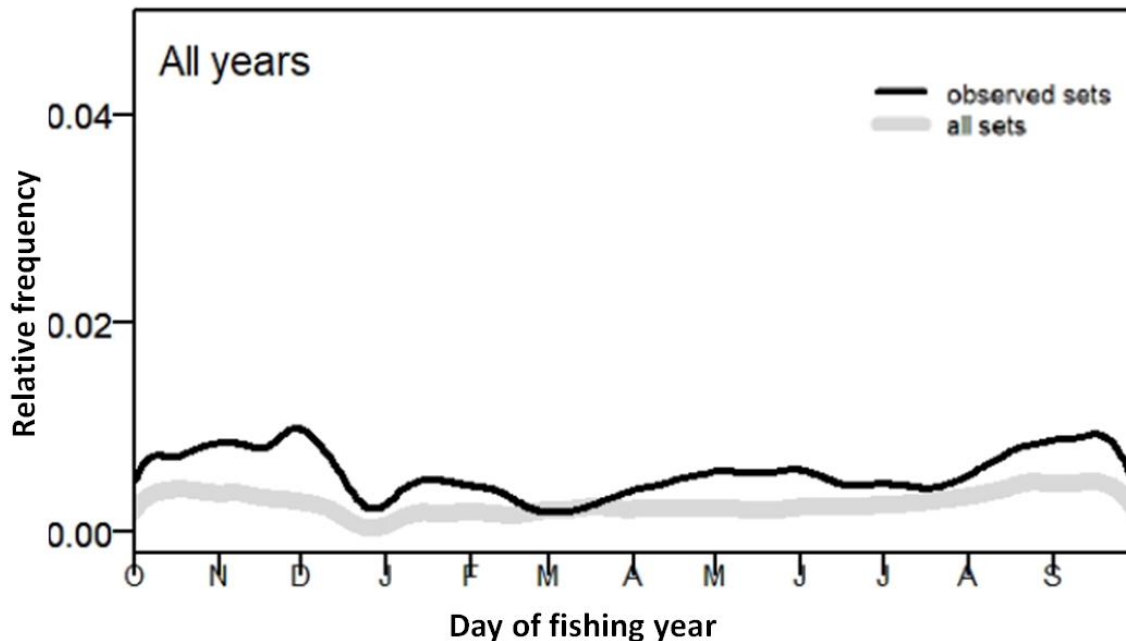


Figure 17. Comparison of the temporal spread of observed sets with all recorded commercial sets in the target ling longline fishery for all years combined. The relative frequency of the numbers of sets was calculated from a density function which used linear approximation to estimate frequencies at a series of equally spaced points. Adapted from Finucci et al 2020.

The representativity of the observer data is relevant to the determination of the negligible component of the catch (MSC 2024, V3.1, Figure SA3, SA3.1.1d.ii). Finucci et al 2020 provides the observed estimated total catch and total bycatch for target species ling, for non-target catch and discards for all species and for the key combined species categories. In addition, annual non-target catch of the main individual QMS and non-QMS species were also estimated. Considering the observer data are representative of the fishery in time and space (though noting vessel under 30m are underrepresented) there is limited potential for bias to exist in the information.

Noting the extent of the analysis undertaken by Finucci et al (2020), and assuming the operation of the fishery and deployment of observers has not changed significantly since the end of the time series analysed, but that the time series analysed runs until the 2017-2018 season, more recent observer data provided to the assessment team were used to generate the catch profile of the ling longline fishery (Table 45). Despite the more recent data not presenting raised catch estimates for the fishery, the observed proportionate catch of non-target species relative to the total catch is, based on the representativity of the observer program, presumed to be accurate (true and precise) and is used to categorise species as in-scope main or in-scope minor.

This is demonstrated by the similarity between the proportionate catch presented by Finucci et al. (2020) and the more recent observer data with ling accounting for about 65% of the total estimated catch from all observed bottom longline sets targeting ling between the 2002/03 and 2017/18 fishing seasons and 61.34% on average over the 2018/19 to 2022/23 fishing seasons. Per Finucci et al. (2020, Figure 14) the main nontarget species were spiny dogfish (17% of total estimated catch), ribaldo (3.3%), rough skate (2.7%), black or small scaled cod (1.7%), smooth skate (1.5%) and sea perch (1.4%). Likewise per the recent observer data (Table 45) the main nontarget species were spiny dogfish (16.28%), ribaldo (5.45%), rough skate (2.55%), black or small scaled cod (2.18%), smooth skate (2.18%) and sea perch (1.21%).

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10.2.2 Observer-reported catch composition 2018-19 to 2022-23

For the LIN 3 – 7 fisheries combined over the period 2018-19 to 2022-23, observer coverage ranged between 5.7% and 26.4% per annum, with the 5-year average being 15.9% of hooks observed (Table 44), (SNZ, 2024).

Table 44: Annual observer coverage for the LIN 3 – 7 longline fisheries combined over the period 2018-19 to 2022-23. SNZ, 2024

October Fishing Year	Target Species Code	Fishing Method Code	Estimated Catch Greenweight (tonnes)	Total Hook Count	Number of Hooks Observed	Hooks Observed (%)
2018-19	LIN	BLL	4,244	20,380,992	2,402,614	11.8%
2019-20	LIN	BLL	4,847	20,875,203	3,401,265	16.3%
2020-21	LIN	BLL	5,088	20,799,036	1,181,698	5.7%
2021-22	LIN	BLL	4,821	22,471,403	4,697,419	20.9%
2022-23	LIN	BLL	3,481	16,501,009	4,356,332	26.4%
		Totals	22,482	101,027,643	16,039,328	15.9%

Catch composition data from the MPI Fishery Observer Services programme from 2018-19 to 2022-23 was used to determine species categories (e.g., in-scope or out-of-scope). While observer data contained ~140 individual species, 20 species comprised 98.2% of the total catch (Table 45). All shark species in the observer data were cross-checked against CITES, CMS, IUCN red list and NZ national legislation to determine their designation (Table 45 and see also Table 50).

Per MSC Standard V3.1, SA2.4.3.1, *The team shall interpret the term “shark” to refer to any species within the taxonomic groups Selachimorpha and Rhinopristiformes.*

In New Zealand two shark definitions are used:

- 1) The Fisheries (Commercial Fishing) Regulations 2001 defines sharks as ‘a fish of the class Chondrichthyes, but excludes Batoidea’.
- 2) New Zealand’s NPOA Sharks uses the term ‘sharks’ generally to include all species in the class Chondrichthyes (sharks, rays, skates and chimaeras).

In New Zealand, under Fisheries (commercial) fishing regulations 2001, shark is defined as a fish of the class Chondrichthyes but excludes Batoidea which is much broader than MSC definition (i.e. it includes Chimaerids). However using the MSC definition chimaeras are not considered ‘sharks’. New Zealand’s NPOA Sharks uses the term ‘sharks’ generally to include all species in the class Chondrichthyes (sharks, rays, skates and chimaeras).

Recognising the difference in shark definitions within New Zealand for different purposes it precautionary to apply the more comprehensive definition of the NPOA Sharks.

Per SA3.6.3, Species are considered ‘main’ if:

- a. *The catch of a species by the UoA comprises 5% or more by weight of the total catch of all species by the UoA, or*
- b. *The species is classified as ‘less resilient’ and the catch of the species by the UoA comprises 2% or more by weight of the total catch of all species by the UoA, or*
 - i. *The team shall identify a species as “less resilient” if:*
 - A. *The productivity of the species indicates that it is intrinsically of low resilience, and/or*
 - B. *Its intrinsic resilience is high and existing knowledge of the species indicates that its resilience has been lowered because of anthropogenic or natural changes to its life history.*
- c. *The species is a shark and the fishery trades in shark fins (SA3.5.2.1).*

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Per GSA3.6.3.b the assessment team are directed to Fishbase which provides designations for some species as being either of low, medium or high resilience/productivity. In the case of rough skate and smooth skate with proportionate catches <5% but >2% (Table 45), both are designated by Fishbase as having 'low' resilience and are therefore assessed as 'main' species.

Per SA3.1.1d.ii, *For fish or invertebrate species, negligible means the UoA mortalities represent less than 2% of total UoA catch, except where the total catch of the UoA is exceptionally large.* Guidance is provided that assessment teams should (GSA3.1.1.d.ii), *interpret "exceptionally large" as being when the UoA catch is equal to or greater than 400,000mt.* The fishery under assessment does not meet the criteria for exceptionally large catches, therefore any in-scope species contributing less than 2% of the total catch meets the definition of negligible.

Table 45: Catch composition (tonnes) from MPI Fishery Observer Services data for targeted ling longline sets in the LIN 3-7 UoA fisheries. Species comprising the top 98.2% of the observed catch are represented. Green rows are QMS species, white rows are non-QMS species. (SNZ, 2024).

Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-yr avg (t)	5-yr avg %	MSC Category
Ling <i>Genypterus blacodes</i>		498	874	239	980	682	655	61.34%	SA3.2.4.1 Principle 1
Spiny dogfish <i>Squalus acanthias</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - Northern Hemisphere populations	204	129	21	246	270	174	16.28%	SA3.2.10 In-scope, main
Ribaldo <i>Mora moro</i>	NA	37	36	82	61	75	58	5.45%	SA3.2.10 In-scope, main
Rough skate <i>Dipturus nasutus</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	3	104	0	14	14	27	2.55%	SA3.2.10 In-scope, main (less resilient)
Smallscaled cod <i>Notothenia microlepidota</i>	NA	12	28	-	42	12	23	2.18%	SA3.2.10 In-scope, minor
Smooth skate <i>Dipturus innominatus</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	31	23	22	28	13	23	2.18%	SA3.2.10 In-scope, main (less resilient)
Sea perch <i>Helicolenus</i> spp.	NA	18	10	4	19	15	13	1.21%	SA3.2.10 In-scope, SA3.2.3 Negligible
Shovelnose spiny dogfish <i>Deania calcea</i>	Chondrichthyes IUCN - NT National legislation - NA CITES II – NA CMS II - NA	15	4	22	14	3	12	1.08%	SA3.2.10 In-scope, SA3.2.3 Negligible

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Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-yr avg (t)	5-yr avg %	MSC Category
School shark <i>Galeorhinus galeus</i>	Chondrichthyes IUCN - CR	18	12	2	16	4	11	0.99%	SA3.2.5 ETP, SA3.2.3 Negligible
Pale ghost shark <i>Hydrolagus bemisi</i>	NA	5	23	1	6	14	10	0.94%	SA3.2.10 In- scope, SA3.2.3 Negligible
Hairy conger <i>Bassanago hirsutus</i>	NA	11	9	6	10	5	8	0.74%	SA3.2.10 In- scope, SA3.2.3 Negligible
Red cod <i>Pseudophycis bachus</i>	NA	2	19	0	6	2	6	0.56%	SA3.2.10 In- scope, SA3.2.3 Negligible
Swollenhead conger <i>Bassanago bulbiceps</i>	NA	5	5	6	6	4	5	0.48%	SA3.2.10 In- scope, SA3.2.3 Negligible
Other sharks and dogs	NA	4	2	2	1	15	5	0.46%	SA3.2.10 In- scope, SA3.2.3 Negligible
Leafscale gulper shark <i>Centrophorus squamosus</i>	Chondrichthyes IUCN - EN	1	4	2	6	8	4	0.40%	SA3.2.5 ETP, SA3.2.3 Negligible
Hake <i>Merluccius australis</i>	NA	4	5	4	3	2	4	0.35%	SA3.2.10 In- scope, SA3.2.3 Negligible
Seal shark <i>Dalatias licha</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - NA	4	5	2	2	2	3	0.29%	SA3.2.10 In- scope, SA3.2.3 Negligible
Baxters lantern dogfish <i>Etmopterus baxteri</i>	Chondrichthyes IUCN - NA National legislation - NA CITES II – NA CMS II - NA	3	1	2	9	1	3	0.28%	SA3.2.10 In- scope, SA3.2.3 Negligible
Lucifer dogfish <i>Etmopterus lucifer</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	1	1	0	0	10	3	0.23%	SA3.2.10 In- scope, SA3.2.3 Negligible
Bluenose <i>Hyperoglyphe antarctica</i>	NA	3	3	0	4	0	2	0.20%	SA3.2.10 In- scope, SA3.2.3 Negligible
Other < 0.20% (120 spp.)	NA	21	23	14	21	10	19	1.81%	SA3.2.10 In- scope, SA3.2.3 Negligible
Totals		900	1,319	431	1,496	1,161	1,067	100.00 %	

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In-scope main species

There are four in-scope 'main' species in the UoA catch, all of which are QMS species: spiny dogfish, ribaldo, rough skate and smooth skate (Table 46). Whilst there are multiple stocks identified for management purposes there is little or nothing known about the biological structure of the stocks. The assessment team therefore treated each of the main in-scope species as single biological stocks for assessment purposes. This approach was endorsed by stakeholders at the Risk-Based Framework (RBF) workshop held during the site visit. Stakeholders in fact overrode the initial assessment of multiple stocks of each species, despite the availability of some stock status indicators for some species in some Fishery Management Areas (FMAs), advising the sensibility of assessing the stocks at the combined spatial scale of the UoAs when little or nothing is known about biological stock structure.

Table 46: Total observed catches (tonnes) of In-scope 'Main' species by the ling longline UoA fisheries and by Fishery Management Area (FMA) during the period 2018-19 to 2022-23.

Species	FMA 3	FMA 4	FMA 5	FMA 6	FMA 7	Total
Spiny dogfish <i>Squalus acanthias</i>	35.8	665.8	10.9	128.8	26.1	867.4
Ribaldo <i>Mora moro</i>	38.4	65.6	2.9	78.7	80.1	265.6
Rough skate <i>Dipturus nasutus</i>	1.6	2.6	0.1	131.3	0.1	135.7
Smooth skate <i>Dipturus innominatus</i>	18.3	54.7	6.1	14.5	19.4	113.0

Spiny dogfish (*Squalus acanthias*)

Spiny dogfish, a QMS species, are found throughout the southern half of New Zealand, extending to East Cape and Manukau Harbour on the east and west coasts of the North Island respectively. They are most abundant off the east coast of the South Island and the Stewart-Snares shelf and are found on the continental shelf and upper slope down to a depth of at least 500 m. All of the spiny dogfish caught by the ling longline fleet is taken as bycatch, mainly in FMA 4 (Chatham Rise) and in FMA 6 (Sub-Antarctic). Because of their sheer abundance they can at times severely hamper fishing operations for targeted commercial species.

Males mature at 58 cm TL at age 6, and females mature at 73 cm TL at age 10. The maximum ages and lengths in a study of east coast South Island dogfish were 21 years and 90 cm TL for males, and 26 years and 111 cm TL for females. Parturition occurs biennially and the number of young per litter ranges from 1 to 19 (FNZ, 2024c).

No specific research on the stock structure of spiny dogfish has been carried out. Based on trawl survey catch rates by area, FNZ deems it appropriate to manage spiny dogfish with the following fishstocks:

- SPD 1: FMAs 1 & 2
- SPD 3: FMA 3
- SPD 4: FMA 4
- SPD 5: FMAs 5 & 6
- SPD 7 and SPD 8: FMAs 7, 8, & 9

Estimates of fishery parameters and abundance

No estimates of current or reference biomass are available, but trawl survey estimates of abundance have been calculated for a number of years. Based on a combination of CVs, variability in biomass indices, and the time span of each series, it is concluded that surveys provide reliable indices of spiny dogfish abundance on the Chatham Rise (SPD 4), off the east coast of the South Island (SPD 3), and off the west coast of the South Island (SPD 7), (FNZ, 2024c). While a lack of suitable information has precluded estimation of virgin and current biomass for spiny dogfish, most of the necessary biological parameters, relative indices of abundance and data required to estimate fishing selectivity for the larger fisheries are now available. Robust stock assessments will additionally require estimates of historical,

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unreported discarding and discard mortality so that an accurate history of fishery related removals can be constructed (FNZ, 2024c).

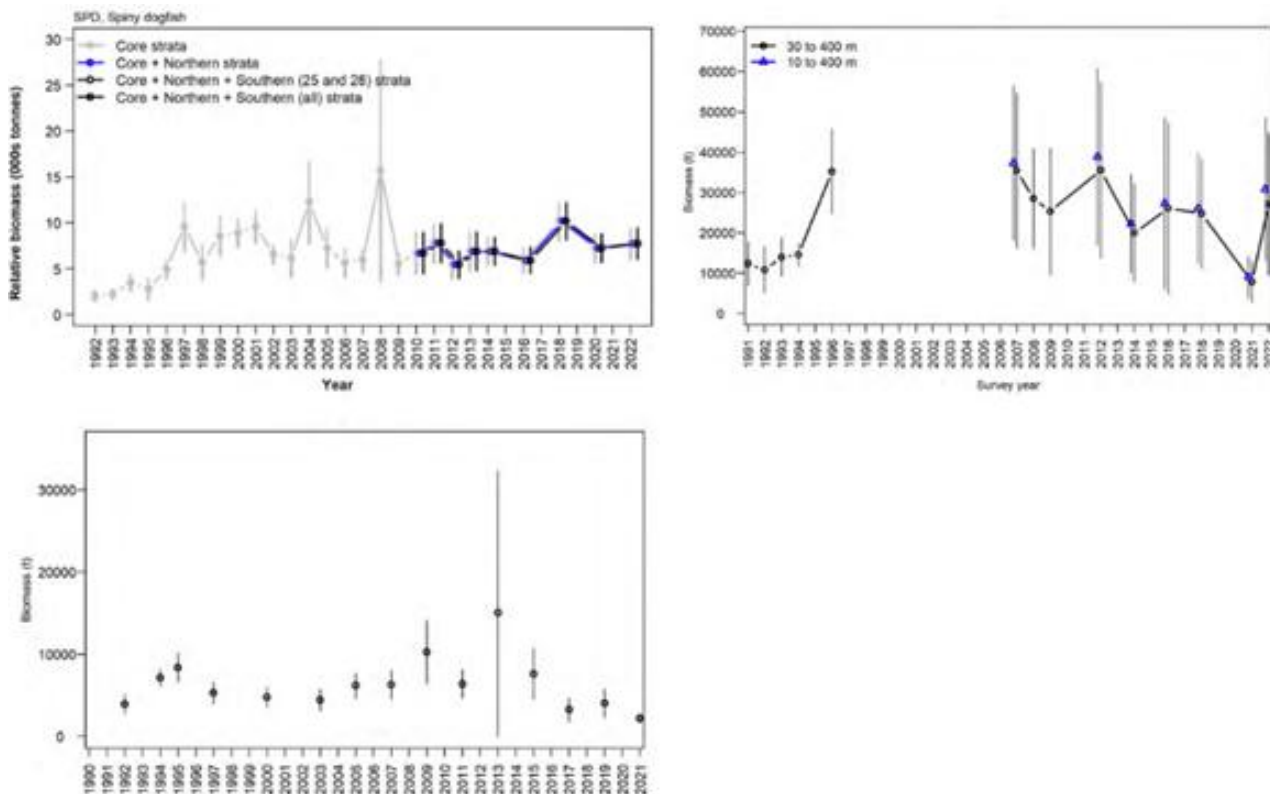


Figure 18. Spiny dogfish biomass for the Chatham Rise (Top left) and East Coast South Island (Top right) and West Coast South Island (Bottom) trawl survey time series (error bars are $\pm$ two standard deviations). Source: FNZ, 2024c.

Ribaldo (*Mora moro*)

Ribaldo is a QMS species and is common throughout the New Zealand Exclusive Economic Zone. It is caught by a variety of fishing methods in different target fisheries but mainly as bycatch in bottom trawls targeting hoki, hake and ling and bottom longlines for ling. It occurs at depths from 400 - 1 300 m but appears to be most common at 600–700 m. The relatively high catch by bottom longline suggests that it scavenges and may favour rough bottom habitats.

They reach 50% sexual maturity at ~45 cm TL and reach maximum lengths of ~ 75 cm and 65 cm FL and maximum ages of 37 and 39 years for females and males respectively (FNZ, 2023d).

The Working Group (FNZ, 2024d) had previously agreed on five fishstocks based on the four main fishing areas plus the Kermadec area, i.e., the east coast of the North Island (QMAs 1 and 2), Chatham Rise and east coast South Island (QMAs 3 and 4), Southland and Sub-Antarctic (QMAs 5 and 6), the west coast of New Zealand (QMAs 7, 8 and 9) and QMA 10.

Estimates of fishery parameters and abundance

East coast North Island (RIB 1 & 2)

There are no stock monitoring indices available for RIB 1 & 2.

Chatham Rise and east coast South Island (RIB 3 & 4)

- Abundance index based on Chatham Rise RV *Tangaroa* research trawl survey
- Interim reference points:

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- Target: B_{MSY} proxy based on arithmetic mean survey index for the period 1995 to 2005
- Soft Limit: 50% B_{MSY} proxy
- Hard Limit: 25% B_{MSY} proxy
- About as Likely as not (40-60%) to be at or above the target
- Unlikely (< 40%) to be below soft limit
- Unlikely (< 40%) to be below hard limit
- The relative biomass index declined between 2014 and 2020 and then increased substantially in 2022 (FNZ, 2024d).

Sub-Antarctic (RIB 5 & 6)

- Abundance index based on Sub-Antarctic RV *Tangaroa* research trawl survey
- Interim reference points:
 - Target: B_{MSY} proxy based on arithmetic mean survey index for the period 1991 to 2004
 - Soft Limit: 50% B_{MSY} proxy
 - Hard Limit: 25% B_{MSY} proxy
- About as Likely as not (40-60%) to be at or above the target.
- Unlikely (< 40%) to be below soft limit
- Unlikely (< 40%) to be below hard limit
- The relative biomass index declined between 2010 and 2016 and then increased to a relatively high level in 2020 (FNZ, 2024d).

West Coast South Island (RIB 7)

- Abundance index based on west coast South Island RV *Tangaroa* research trawl survey
- Reference points:
 - Management Target: 40% B_0
 - Soft Limit: 20% B_0
 - Hard Limit: 10% B_0
- Status in relation to target, soft and hard limits is unknown.
- The relative biomass index has been stable since 2013.

West coast (RIB 8 and 9)

There are no stock indices available for RIB 8 or 9.

Rough skate (*Dipturus nasutus*)

Rough skates are QMA species and occur throughout New Zealand from the Three Kings Islands to Campbell Island and the Chatham Islands, including the Challenger Plateau, Chatham Rise, and Bounty Plateau. Rough skates have not been recorded from QMA 10. They are most abundant around the South Island in depths down to 500 m. Most of the catch is taken as bycatch by bottom trawlers, but skates are also taken by longliners.

Rough skates grow to at least 79 cm pelvic length and females grow larger than males. The greatest reported age is 9 years for a 70 cm pelvic length female. There are no apparent differences in growth rate between the sexes. Males reach 50% maturity at about 52 cm and 4 years, and females at 59 cm and 6 years (FNZ, 2024e).

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The plenary for rough skates acknowledges that QMAs would form appropriate management units in the absence of any information on biological stocks (FNZ, 2024e).

Estimates of fishery parameters and abundance

No estimates of current and reference biomass are available for RSK 1, RSK 7, RSK 8, and RSK 10.

East Coast South Island, Chatham Rise & Sub-Antarctic (RSK 3), (FMAs 3, 4, 5 & 6)

- Abundance index based on ECSI research trawl survey (10– 400 m)
- Reference points:
 - Interim Target: B_{MSY} proxy based on geometric mean survey index for the period 2007 - 2018
 - Soft Limit: 50% B_{MSY} proxy
 - Hard Limit: 25% B_{MSY} proxy
- About as Likely as Not (40–60%) to be at or above the target
- Soft Limit: Unlikely (< 40%) to be below
- Hard Limit: Very Unlikely (< 10%) to be below
- Relative biomass was stable around the target between 2007 and 2018, increased to above the target in 2021 and then returned to the target level in 2022 (FNZ, 2024e).

Smooth skate (*Dipturus innominatus*)

Smooth skates are QMS species and occur throughout New Zealand, but are most abundant around the South Island in depths down to 500 m. Most of the catch is taken as bycatch by bottom trawlers, but skates are also taken by longliners.

The greatest reported age is 28 years for a 155 cm pelvic length female. Females grow larger than males and appear to live longer but there are no apparent differences in growth rate between the sexes. Males reach 50% maturity at about 93 cm and 8 years, and females at 112 cm and 13 years (FNZ, 2024f).

The plenary for smooth skates acknowledges that QMAs would form appropriate management units in the absence of any information on biological stocks (FNZ, 2024f).

Estimates of fishery parameters and abundance

No estimates of current or reference biomass are available for SSK 1, SSK 8 and SSK 10.

East Coast South Island, Chatham Rise & Sub-Antarctic (SSK 3), (FMAs 3, 4, 5 & 6)

- Abundance index based on Chatham Rise RV *Tangaroa* research trawl survey
- Reference points:
 - Target: B_{MSY} proxy
 - Soft Limit: 50% B_{MSY} proxy
 - Hard Limit: 25% B_{MSY} proxy
- Status in relation to target unknown
- Soft Limit: Unknown
- Hard Limit: Unknown
- Relative biomass rose to its highest recorded level in the early 2000s before declining back to the same level seen in the early 1990s by 2012. After another rise then fall, biomass in 2020 was again at the same level as in the early 1990s.

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West Coast South Island (SSK 7), (FMA 7)

- Abundance index based on WCSI RV *Tangaroa* research trawl survey
- Reference points:
 - Interim Target: B_{MSY} proxy based on arithmetic mean survey index for the period 2012 - 2021
 - Soft Limit: 50% B_{MSY} proxy
 - Hard Limit: 25% B_{MSY} proxy
- About as Likely as Not (40-60%) to be at or above the target
- Soft Limit: Unlikely (< 40%) to be below
- Hard Limit: Very Unlikely (< 10%) to be below
- Relative biomass was stable between 2012 and 2021.

In-scope minor species

All in-scope species that are not considered 'main' according to the criteria listed above are considered 'minor' species (SA3.6.4). In addition, 'minor' species that make up <2% of total UoA catch are considered 'negligible'.

Small scaled cod, a non-QMS species, is the only 'minor' species that comprises >2% of the total UoA catch (Table 45) with observed catches from FMA 6 (Table 47). The remaining species individually comprise <2% of the total catch and are classified as 'negligible' (SA3.5.2.2), with the vast majority (i.e., ~120 species) individually comprising <0.20% of the total catch of the UoA.

Table 47: Total observed catch (tonnes) of In-scope 'Minor' species by the ling longline UoA fisheries and by Fishery Management Area (FMA) during the period 2018-19 to 2022-23. Source: SNZ, 2024.

Species	FMA 3	FMA 4	FMA 5	FMA 6	FMA 7	Total
Smallscaled cod <i>Notothenia microlepidota</i>				93.2		93.2

Small scaled cod (*Notothenia microlepidota*)

Notothenia microlepidota, a non-QMS species, have a distribution restricted to southern New Zealand waters. They have been found in depths of a few metres off Campbell Island and have been trawled down to a depth of 1,000 m.

It reaches a length of 70 cm TL. No other biological information is currently available.

Catches have been recorded in FMA 6 (Sub-Antarctic) only and have ranged between zero and 42.2 tonnes during the period 2018-19 to 2022-23 (Table 48). No biomass index or indication of stock status are currently available.

Table 48: Observed catches of small scaled cod in FMA 6 (Sub-Antarctic) during the period 2018-19 to 2022-23. Source: SNZ, 2024.

Species	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (t)
Small scaled cod <i>Notothenia microlepidota</i>	11.6	27.8	0	42.2	11.7	18.7

10.2.3 In-scope species management

The Fisheries Act 1996 provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for setting and varying sustainability measures such as TACCs. The management of New Zealand's

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deepwater fisheries is a collaborative arrangement between Fisheries New Zealand and the commercial fishing industry, represented by Seafood New Zealand's Deepwater Council (DWC).

The management of deepwater fisheries encompasses all target and bycatch stocks and the environmental effects of fishing. All 28 deepwater species/species groups in the quota management system (QMS), have been categorised into two tiers according to their commercial value and volume of catch. Tier 1 fisheries are high volume and/or high value fisheries and are the targets of dedicated fisheries. Tier 2 fisheries are typically less commercially valuable, may comprise the bycatch component of Tier 1 fisheries, or are only targeted periodically throughout the year (Fisheries New Zealand, 2019b). Tier 3 species are non-QMS and are generally of little or no commercial value (Table 49).

Table 49: Categorisation of commercial deepwater fish stocks by tier.

	Stocks ²	
Tier 1	Hake: all Hoki : all Jack mackerel: JMA3, JMA7 Ling: LIN3 - LIN7 Orange roughy: all	Oreos: all Scampi: all Southern blue whiting: all Squid: all
Tier 2	Alfonsino: all Barracouta: BAR4, BAR5, BAR7 Black cardinalfish: all Deepwater crabs (CHC/GSC/KIC); all English mackerel: EMA3, EMA7 Frostfish: FRO3-FRO9 Gemfish: SKI3, SKI7 Ghost shark, dark: GSH4-GSH6 Ghost shark, pale: all Lookdown dory: all	Patagonian toothfish: all Prawn killer: all Redbait: all Ribaldo: RIB3-RIB8 Rubyfish: all Sea perch: SPE3-SPE7 Silver warehou: all Spiny dogfish: SPD4, SPD5 White warehou: all
Tier 3	Non-QMS species	

10.2.4 Observer-reported chondrichthyan catch composition

Around 39 chondrichthyan species/species groups have been observed in catches over the most recent five-year period. Spiny dogfish (*Squalus acanthias*) is the most abundant species caught and comprises ~16.6% of the overall total catch. Rough and smooth skate (*Dipturus nasutus* & *D. innominatus*) are the second- and third-most abundant chondrichthyans at 2.6% & 2.2% of the overall catch. All three species are managed under the Quota Management System. All other chondrichthyan species individually comprise <2% of the catch (Table 50).

Table 50: Observed chondrichthyan catch composition (t) by ling longline fisheries. Percentages based on total catch of all species. Green rows are QMS species, white rows are non-QMS species. Data source: SNZ (2024).

Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (t)	5-Year Avg. (%)	MSC Category
Spiny dogfish <i>Squalus acanthias</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - Northern Hemisphere populations	204	129	21	246	270	174	16.28%	SA3.2.10 In-scope, main

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Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (t)	5-Year Avg. (%)	MSC Category
Rough skate <i>Dipturus nasutus</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	3	104	0	14	14	27	2.55%	SA3.2.10 In-scope, main (less resilient)
Smooth skate <i>Dipturus innominatus</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	31	23	22	28	13	23	2.18%	SA3.2.10 In-scope, main (less resilient)
Shovelnose spiny dogfish <i>Deania calcea</i>	Chondrichthyes IUCN - NT National legislation - NA CITES II – NA CMS II - NA	15	4	22	14	3	12	1.08%	SA3.2.10 In-scope, SA3.2.3 Negligible
School shark <i>Galeorhinus galeus</i>	Chondrichthyes IUCN - CR	18	12	2	16	4	11	0.99%	SA3.2.5 ETP, SA3.2.3 Negligible
Pale ghost shark* <i>Hydrolagus bemisi</i>	NA	5	23	1	6	14	10	0.94%	SA3.2.10 In-scope, SA3.2.3 Negligible
Other sharks and dogs	NA	4.4	2.4	1.7	1.0	14.8	4.9	0.46%	SA3.2.10 In-scope, SA3.2.3 Negligible
Leafscale gulper shark <i>Centrophorus squamosus</i>	Chondrichthyes IUCN - EN	1	4	2	6	8	4	0.40%	SA3.2.5 ETP, SA3.2.3 Negligible
Seal shark <i>Dalatias licha</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - NA	4	5	2	2	2	3	0.29%	SA3.2.10 In-scope, SA3.2.3 Negligible
Baxters lantern dogfish <i>Etmopterus baxteri</i>	Chondrichthyes IUCN - NA National legislation - NA CITES II – NA CMS II - NA	3	1	2	9	1	3	0.28%	SA3.2.10 In-scope, SA3.2.3 Negligible
Lucifer dogfish <i>Etmopterus lucifer</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	1	1	0	0	10	3	0.23%	SA3.2.10 In-scope, SA3.2.3 Negligible

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Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (t)	5-Year Avg. (%)	MSC Category
Ghost shark* <i>Hydrolagus</i> spp.	NA	2.2	1.8	0.6	2.9	1.1	1.7	0.16%	SA3.2.10 In-scope, SA3.2.3 Negligible
Plunket's shark <i>Scymnodon plunketi</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - NA	1.3	1.2	1.6	0.7	2.7	1.5	0.14%	SA3.2.10 In-scope, SA3.2.3 Negligible
Carpet shark <i>Cephaloscyllium isabellum</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	2.1	1.1	2.2	1.3	0.4	1.4	0.14%	SA3.2.10 In-scope, SA3.2.3 Negligible
Northern spiny dogfish <i>Squalus griffini</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	0.8	1.1	1.0	2.9	0.5	1.2	0.12%	SA3.2.10 In-scope, SA3.2.3 Negligible
Sixgill shark <i>Hexanchus griseus</i>	Chondrichthyes IUCN - NT National legislation - NA CITES II – NA CMS II - NA	0.1	0.7	0.6	2.1	0.7	0.8	0.08%	SA3.2.10 In-scope, SA3.2.3 Negligible
Rough skin dogfish <i>Centroscymnus owstoni</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - NA	0.1	0.0	0.5	1.8	0.0	0.5	0.05%	SA3.2.10 In-scope, SA3.2.3 Negligible
Porbeagle shark <i>Lamna nasus</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – yes CMS II - yes	1.1	0.4	0.0	0.2	0.3	0.4	0.04%	SA3.2.5 ETP, SA3.2.3 Negligible
Longnose velvet dogfish <i>Centroselachus crepidater</i>	Chondrichthyes IUCN - NT National legislation - NA CITES II – NA CMS II - NA	1.0	0.0	0.1	0.0	0.6	0.3	0.03%	SA3.2.10 In-scope, SA3.2.3 Negligible
Giant chimaera* <i>Chimera lignaria</i>	NA	0.1	0.3	-	0.0	0.9	0.3	0.03%	SA3.2.10 In-scope, SA3.2.3 Negligible
Blue shark <i>Prionace glauca</i>	Chondrichthyes IUCN - NT	0.2	0.3	0.3	0.5	0.2	0.3	0.03%	SA3.2.5 ETP,

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Species	Listing	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (t)	5-Year Avg. (%)	MSC Category
	National legislation - NA CITES II – NA CMS II - yes								SA3.2.3 Negligible
Deepwater dogfish <i>sp.</i>	NA	0.0	0.6	0.2	-	-	0.3	0.03%	SA3.2.10 In-scope, SA3.2.3 Negligible
Broadnose sevengill shark <i>Notorynchus cepedianus</i>	Chondrichthyes IUCN - VU National legislation - NA CITES II – NA CMS II - NA	0.1	0.9	0.1	0.1	0.0	0.2	0.02%	SA3.2.10 In-scope, SA3.2.3 Negligible
Mako shark <i>Isurus oxyrinchus</i>	Chondrichthyes IUCN - EN National legislation - NA CITES II – yes CMS II - yes	0.1	0.5	0.0	0.1	-	0.2	0.02%	SA3.2.5 ETP, SA3.2.3 Negligible
Sharpnose sevengill shark <i>Hepranchias perlo</i>	Chondrichthyes IUCN - NT National legislation - NA CITES II – NA CMS II - NA	-	0.1	0.1	0.1	0.2	0.1	0.01%	SA3.2.10 In-scope, SA3.2.3 Negligible
Shark	NA	0.1	-	-	-	-	0.1	0.01%	SA3.2.10 In-scope, SA3.2.3 Negligible
Slender smooth-hound <i>Gollum attenuatus</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	0.0	0.1	0.1	0.2	0.1	0.1	0.01%	SA3.2.10 In-scope, SA3.2.3 Negligible
Dawson's catshark <i>Bythaelurus dawsoni</i>	Chondrichthyes IUCN - LC National legislation - NA CITES II – NA CMS II - NA	0.0	-	-	0.1	0.1	0.1	0.01%	SA3.2.10 In-scope, SA3.2.3 Negligible
Other (x 11 spp.)	NA	0.1	0.0	0.1	0.1	0.0	0.1	0.01%	SA3.2.10 In-scope, SA3.2.3 Negligible
Totals		299.3	316.8	83.3	356.6	360.4	283.7	27.07%	
*note that chimaerids are not classified as sharks per MSC Standard V3.1 SA2.4.3.1									

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10.2.5 Bait species and quantities

Per SA3.2.10, *The team shall categorise a species as a scoring element under the in-scope species component if:*

- d. The species is used as bait in the UoA, whether caught by the UoA or purchased from elsewhere*

An analysis of bait use by the LIN 3 – 7 UoA fisheries was prepared in a separate 'Ling longline bait use' report provided to the assessment team and covering a single year 2022-23 (SNZ, 2024a). The report provides a breakdown of bait use by ling longline vessels representing approximately 95% of the effort during the 2022-23 fishing year and an evaluation of the status of bait as a "bycatch" species in relation to the overall catch composition by the ling longline fishery in UoAs LIN 3 – 7.

Per SNZ (2024a), DWC's Environmental Liaison Officer identified 26 vessels identified as being involved in ling longline fishing. Many of those are also involved in bottom longline fisheries other than ling (e.g. bluenose, hapuku, snapper, ribaldo, school shark and surface longlining for tuna species). The analysis of bait use focused on vessels with effort directed primarily at ling, of which 19 vessels were identified. For one of the vessels, for which no data were received, bait use was estimated based on data from three similar-sized vessels, all of which are full-time ling vessels. Three vessels were large autoliners and 16 were hand-baiters. In total, it is estimated they represented ~95% of the fishing effort by ling longliners in FMAs LIN 3-7.

Feedback received from companies and vessel owners covered a total of 18 ling-targeting longliners. Six bait types are used (Table 51):

- Barracouta (BAR): Used by all of the hand-baiting vessels (skin-on fillets, purchased frozen in 10-20 kg boxes, trawl-caught).
- Jack mackerel (JMA): Used by autoline vessels. Most sourced from New Zealand and a small quantity from Chile. All New Zealand JMA was categorised as trawl-caught and assumed to be either *T. declivis* or *T. murphyi*. No JMA bait used was caught by purse seine.
- Atlantic/English mackerel (EMA): Imported, used by two autoliners as part of their bait complement.
- Squid (SQU): A small quantity of New Zealand-caught squid was used by one hand-baiter. One Autoline vessel used squid bait sourced from Chile.
- One vessel used two species of bycatch from their longlining as bait; hairy conger (HCO) and hoki (HOK).

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Table 51. Local and imported bait species and the estimated annual quantity used by ling longline vessels during the 2022-23 fishing year. Source: SNZ, 2024a.

Bait Species	Capture Method	Origin	Quantity (t)	Proportion (%)
Jack mackerel	Trawl	New Zealand	584	61.9%
Atlantic mackerel	Trawl?	Imported	74	7.8%
Squid	Trawl	New Zealand	2	0.2%
Squid	Jig?	Imported	31	3.3%
Barracouta	Trawl	New Zealand	246	26.1%
Hairy conger	Longline	New Zealand	5	0.5%
Hoki	Longline	New Zealand	2	0.2%
Total - all			944	100.0%
Total - NZ			839	88.9%

To determine the in-scope species categorisation of bait as either 'main' or 'minor' the SNZ (2024a) analysis produced an estimate of the total targeted ling longline catch from LIN 3-7 based on the average annual observed catch over the 5-year period 2018-19 to 2022-23 (i.e. 655 t, raised by the average rate of observer coverage for this period (i.e. 15.8%), to give a total ling catch of 4,146 t (Data sourced from FNZ (D. Fisher, pers. comm. as per SNZ, 2024a).

The overall species catch composition by the ling bottom longline fleet was determined from observer data, sourced from Fisheries New Zealand (RDM Rep Log 15659, SNZ2024a). The process applied for the analysis was as follows:

- The observed catch estimates for the top 20 species, representing 98% of the catch, and a group of 120 minor species representing the remaining 2% of the catch for the period 2018-19 to 2022-23, were raised using the average rate of observer coverage (i.e. 15.8%)
- The bait usage estimates for the 2022-23 fishing year were then added to the catch composition and their contributions calculated as a percentage of the overall estimated ling longline catch (i.e. the bait species were treated as 'bycatch' in the LIN longline fishery).

The ling longline catch composition, modified to include bait as 'bycatch', indicates that JMA, BAR, EMA (imported), SQU (imported), SQU, HCO and HOK, respectively comprise 7.49%, 3.16%, 0.95%, 0.40%, 0.03%, 0.06% and 0.03% of the total estimated commercial catch (Table 52).

Table 52. Estimated ling longline catch composition for the 2022-23 fishing year by target, QMS bycatch, non-QMS bycatch and New Zealand-caught 'bait bycatch' species. Including the MSC categorisation of bait species per SA3.2.10, SA3.2.3 and SA3.6.3. Source: Adapted from SNZ (2024a) to include imported species.

Category	Raised Catch (t)	Proportion (%)	MSC Category
Targeted LIN catch	4146	53.20%	NA
QMS bycatch	2146	27.54%	NA
Non-QMS bycatch	557	7.15%	NA

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JMA bait	584	7.49%	SA3.2.10 In-scope, SA3.6.3 main
BAR bait	246	3.16%	SA3.2.10 In-scope, SA3.6.3 minor
EMA bait (imported)	74	0.95%	SA3.2.10 In-scope, SA3.2.3 Negligible
SQU bait (imported)	31	0.40%	SA3.2.10 In-scope, SA3.2.3 Negligible
SQU bait	2	0.03%	SA3.2.10 In-scope, SA3.2.3 Negligible
HCO bait	5	0.06%	SA3.2.10 In-scope, SA3.2.3 Negligible
HOK bait	2	0.03%	SA3.2.10 In-scope, SA3.2.3 Negligible
Total	7793	100.00%	

Jack mackerel (*Trachurus declivis* and *T. murphyi*)

All New Zealand JMA was categorised as trawl-caught and assumed to be either *T. declivis* or *T. murphyi* (SNZ, 2024a). *T. declivis* and *T. murphyi* are taken mainly by trawl gear in waters deeper than 150 m in the JMA 3 and JMA 7 management areas (SNZ, 2024).

Stock assessments for jack mackerel are complicated by the reporting and management of three species under a single code (FNZ, 2024). Separate stocks of *T. declivis* (JMD) are assumed to occur in each jack mackerel Quota Management Area (other than JMA 10). *T. murphyi* (JMM) in New Zealand waters is not considered to represent an independent biological stock as current evidence favours a single, extensive trans-Pacific stock, an extensive stock between latitudes 35° and 50° S linking the coasts of Chile and New Zealand (FNZ, 2024)

Estimates of fishery parameters and abundance (FNZ, 2024)

JMA 3

- Reference points:
 - Management Target: 40% B₀
 - Soft Limit: 20% B₀
 - Hard Limit: 10% B₀
- Status in relation to limits:
 - Soft Limit: Unknown
 - Hard Limit: Unknown

JMA 7 – *T. declivis*

- Reference points
 - Management Target: 35% B₀; the geometric mean CPUE for the period 2004–2011 (a conceptual proxy for BMSY)
 - Soft Limit: 20% B₀; scaled from management target
 - Hard Limit: 10% B₀; scaled from management target Overfishing threshold: not established
- Status in relation to limits:
 - Status in relation to target: Likely (> 60%) to be at or above the target
 - Status in relation to limits: Very Unlikely (< 10%) to be below both the soft and hard limits

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10.2.6 ETP/OOS Species

Information on incidental captures of ETP species reported by the MPI Observer Programme are published on the Dragonfly website (<https://protectedspeciescaptures.nz/PSCv7/>), which enable the incidental captures of seabirds, chondrichthyans, marine mammals and turtles by the commercial fisheries to be monitored on an ongoing basis.

Observed captures include distinction of the capture method (deck, hook, tangled, other, unknown), the identification method (observer, necropsy, imputation, photograph), the status (dead, alive or decomposed), the fishing method and declared target species (which allows distinction between UoAs), vessel size category (17-28m, 28-43m, 43m+), fishing area, location of capture, mitigation equipment used (noting all records are blank) and whether the record is included in further analysis. These data are not presented in full in this report. Observed interactions with all ETP species, their status (alive/dead/decomposed) for sets targeting ling for the most recent five years fishing seasons from 2016/17-2020/21 are presented in Table 53. Data are available for each gear-target species combination such that the impact of the UoA(s) can be estimated for each ETP/OOS unit (as required by the scoring guideposts under PI2.3.3a).

Observer data were not provided to the assessment team for bottom longline sets targeting ling for ETP species after the 2020/21 fishing season. Additional data were provided to the assessment team by the client for the more recent years (2021/22, 2022/23 and the first two quarters of 2023/24) but were not disaggregated to target fishery (i.e. for all bottom longline fisheries combined). Nevertheless 5-years of observer data were available to determine the average interactions and mortalities, Environmental Liaison Officer reports reflected captures and life status to the end of the 2022/23 fishing season and seabird mortality was re-evaluated for the most at risk species by Sharp (2025).

Table 53. Observed interactions with all ETP species (grand total and annual average), their status (alive/dead/decomposed) for sets targeting ling for the most recent five years fishing seasons for which data are available from 2016/17-2020/21. Records are ordered by decreasing annual average observed mortalities. Data extracted from <https://protectedspeciescaptures.nz/PSCv7/download/protected-species-captures-v7-released.zip> /protected_species_captures.csv

ETP Taxon	Status			Grand Total	Observed 5-year average	
	alive	dead	decomposed		Interactions	Mortalities
White-chinned petrel	4	132	1	137	27.4	26.4
Westland petrel	6	21		27	5.4	4.2
Sooty shearwater	1	11		12	2.4	2.2
Grey petrel		4		4	0.8	0.8
Salvin's albatross		4		4	0.8	0.8
New Zealand white-capped albatross	6	3		9	1.8	0.6
Chatham Island albatross		2		2	0.4	0.4
Fulmars, petrels, prions and shearwaters		1		1	0.2	0.2
Grey-backed storm petrel		1		1	0.2	0.2
Small seabirds		1		1	0.2	0.2
Southern royal albatross	1	1		2	0.4	0.2
Black-browed albatrosses	2			2	0.4	0
Buller's albatross	1			1	0.2	0
Cape petrel	1			1	0.2	0
Common diving petrel	13			13	2.6	0
Fairy prion	2			2	0.4	0
Mottled petrel	5			5	1	0
New Zealand white-faced storm petrel	2			2	0.4	0
Northern giant petrel	2			2	0.4	0
Wandering albatrosses	1			1	0.2	0

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Per SA3.1.1d, "Negligible" has two specific definitions depending on the taxa of a species:

- i. For amphibians, birds, mammals and reptiles (out-of-scope species), negligible means the average estimates of total mortality from the UoA are less than 10 individuals per year, and the lower bound of estimated breeding population size is equal to or greater than 5,000 individuals.
- ii. For fish or invertebrate species, negligible means the UoA mortalities represent less than 2% of total UoA catch, except where the total catch of the UoA is exceptionally large.

Where observed captures are useful to determine the species with which the fishery interacts, raised estimates to ascertain average total annual mortality are required to determine whether the UoA(s) impacts are negligible. Further analysis is conducted through Dragonfly protected species captures that includes estimation of total captures in some fisheries for seabirds. 'Cryptic mortalities' (unobserved) are not included in the estimates of total captures and any mortalities not directly associated with the fishing gear are also excluded (for example where an individual is decomposed or interacted with the deck). Whilst those total capture estimates can be a helpful indication of the trend in captures over time and the proportion of animals released alive as a proxy for uptake of mitigation and release procedures, spatially explicit risk assessments provide a more accurate estimate of fishing related captures and crucially, mortality. However in both cases, through the analytical and modelling approaches applied, the representativity of observer coverage is tested and a degree of confidence or coefficient of variation is determined for total mortality estimate point or mean values. Where available, both spatially explicit assessments raised mortality estimates and Dragonfly data protected species raised capture estimates are used during this assessment.

Seabirds

All New Zealand seabird species, with one exception, are protected species under the Wildlife Act 1953 and the Fisheries Act 1996. The one that is not protected is the black-backed gull (*Larus dominicanus*).

Edwards et al 2023 (Spatially Explicit Fisheries Risk Assessment – SEFRA) supplies the annual estimated mortality, including cryptic mortality, for each commercial fishery and fishery group, attempting to quantify the impact of commercial fisheries on New Zealand populations of 71 seabird species. This allowed the assessment team to distinguish the ling longline UoAs impacts. The SEFRA also provides summary statistics for the annual number of breeding pairs, proportion of adults breeding, current age at first reproduction and optimum survivorship (see Table 13 of Edwards et al 2023). In combination this permits the assessment team to determine which of the top thirty at risk seabirds have negligible interaction with the UoAs.

Edwards et al 2023 also provide total annual estimated mortality for seabirds outside of the top 30 at risk species, but do not breakdown estimated mortality for each fishery and fishery group. Where these species are included in estimated mortalities for the bottom longline sector as a whole, they are treated as scoring elements for the ling longline UoAs.

Data extracted from Edwards et al 2023 for the total annual estimated mortality of seabirds alongside the annual number of breeding pairs is presented in Table 54.

It is clear that for a number of species where the total bottom longline mortality is used and the annual estimated mortality is only slightly greater than 10, that if ling longline-specific mortality was available that interactions with these species would likely be negligible for the UoAs. This applies to three species with non-negligible levels of catch (Table 54). For the remaining eight seabird species with non-negligible levels of catch the mean annual mortality is derived only from the sub-set of data representing large Autoline with IWL, large Autoline, small Autoline (LIN, RIB) and small manual (LIN, RIB) – taken to be the sub-group of bottom longline vessels targeting ling. It is however still likely that even this sub-set includes vessels not part of the UoAs, for example per Table 42, there are no small autoliners targeting ling in the UoAs under assessment

This was investigated at the site visit at the same time as the fishery client supplied a critical re-evaluation of Edwards et al 2023 SEFRA estimates of fisheries deaths and risk in key deepwater fisheries, with reference to southern Buller's albatross, Salvin's albatross, and white-capped albatross (Sharp, 2025). The main reason for the re-assessment was to address outdated estimates of 'cryptic mortality' used in Edwards et al 2023 and to estimate seabird captures by target deepwater fisheries that capture southern bullers albatross. This is a useful review in that it uses observer data

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from 2019-2024 focusing on the three most at risk seabird species, that it provides mortality estimates for the fisheries separately (excluding vessels not part of the UoAs), and critically updates the cryptic mortality multipliers that ignore substantial changes to fishery operations, including a major focus on developing and implementing seabird capture mitigation. The revised, lower, estimates from Sharp (2025) are used in scoring PI2.2.1 for those three most at risk seabird species whilst a Recommendation (#1) is raised to apply the same revised approach to the remaining seabird species that interact with the fishery UoAs in assessment.

Table 54. Mean annual deaths (>0) of seabirds that interact with the bottom longline fisheries in New Zealand. Species in **bold** represent all bottom longline fisheries, all other species represent mortalities only large Autoline with IWL, large Autoline, small Autoline (LIN, RIB) and small manual (LIN, RIB) – taken to be the sub-group of bottom longline vessels targeting ling, i.e., UoA vessels in assessment. Species in *italics* meet the criteria for a negligible mortality rate per SA3.1.1.d.ii. The mean annual number of breeding pairs is taken to be the estimated breeding population size, with the lower and upper bounds of the breeding population size presented with 95% CI. Data extracted from Edwards et al 2023.

Code	Species name	Scientific name	Mean annual deaths	Mean annual number of breeding pairs	95% CI
XWC	White-chinned petrel	<i>Procellaria aequinoctialis</i>	535	247117	[207810-294036]
XSA	Salvin's albatross	<i>Thalassarche salvini</i>	50	41062	[28886-55978]
XWP	Westland petrel	<i>Procellaria westlandica</i>	31	5180	[3001-8362]
XWM	New Zealand white-capped albatross	<i>Thalassarche cauta steadi</i>	29	86856	[70655-104919]
XGP	<i>Grey petrel</i>	<i>Procellaria cineria</i>	27	47439	[32476-70499]
XCI	Chatham Island albatross	<i>Thalassarche eremita</i>	26	5295	[5145-5442]
XBG	Southern black-backed gull	<i>Larus dominicanus dominicanus</i>	21	1215308	[710470-2623469]
XFL	Fluttering shearwater	<i>Puffinus gavia</i>	17	198297	[102102-447085]
XWF	New Zealand white-faced storm petrel	<i>Pelagodroma marina maoriana</i>	15	1942863	[802859-2944297]
XSH	Sooty shearwater	<i>Puffinus griseus</i>	11	3123462	[1696071-5270288]
XBM	Southern Buller's albatross	<i>Thalassarche bulleri bulleri</i>	10	14951	[13798-16227]
XGF	<i>Grey-faced petrel</i>	<i>Pterodroma macroptera gouldi</i>	8	238890	[201513-295234]
XRA	<i>Southern royal albatross</i>	<i>Diomedea epomophora</i>	4	8611	[7049-10445]
XNB	<i>Northern Buller's albatross</i>	<i>Thalassarche bulleri platei</i>	3	20293	[19339-21291]
XDP	Common diving petrel	<i>Pelecanoides urinatrix</i>	3	1114330	[379547-2060986]
XFP	Fairy prion	<i>Pachyptila turtur</i>	2	1465686	[1202255-1772379]
XWH	White-headed petrel	<i>Pterodroma lessonii</i>	1	140918	[77083-231948]
XPH	Hutton's shearwater	<i>Puffinus huttoni</i>	1	105042	[69719-151766]
XMP	Mottled petrel	<i>Pterodroma inexpectata</i>	1	344456	[301932-396127]
PTCO	Cook's petrel	<i>Pterodroma cookii</i>	1	279970	[217888-399754]

The SEFRA approach uses a limit reference to measure the likely risk of population decline given estimated deaths. The reference point is dependent on the intrinsic growth rate for each species. This reference point is referred to as the Population Sustainability Threshold (PST). The default objective is that Risk = 1 corresponds to a median population-stabilisation outcome of 75% of the unimpacted level (Richard et al., 2020; Fisheries New Zealand, 2020; Sharp, 2017).

The results from the 2023 SEFRA show that only southern Buller's albatross (code XBM) was estimated to have a risk metric of greater than one, indicating that current captures are higher than can be sustained by the population over the long term (Table 55), noting that the SEFRA considered captures by all trawl, longline and setnet fisheries in the EEZ

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and did not specifically include a category for ling-targeting bottom longline sets. All of the captures by the UoAs would be accounted for within the Large Autoline and Small Manual (LIN, RIB) which accounted for 6 (0.76%) of the 785 observed captures of all southern Buller's captures over the period 2006-07 to 2019-20 (Edwards et al., 2023a).

Sharp (2025) generated estimates of seabird captures summed by fishing method, by FMA, and by target species and updated the estimation of seabird cryptic mortality (i.e. unobservable fisheries deaths) in key deepwater fisheries to generate improved fishery-specific estimates of seabird deaths and population-level risk, using new fisheries observer data not utilized by the 2023 SEFRA (Edwards et al 2023). Sharp (2025) estimated total annual mortality using observer data from 2019-2024 rather than pooling data across the full history of the protected species captures database extending back to 2006. Sharp (2025) estimated mean annual deaths attributable to the bottom longline fishery and the risk that the equilibrium population size will be reduced as follows:

- Southern buller's albatross: 13.2 individuals; risk = 0.022
- Salvin's albatross: 56.3 individuals; risk = 0.022
- White-capped albatross: 35.6 individuals; risk = 0.007

These updated results indicate that the mortalities caused by the BLL UoAs in assessment targeting ling, are lower than can be sustained by the populations over the long-term.

The revised, lower, estimates from Sharp (2025) are used in scoring PI2.2.1 for those three most at risk seabird species whilst a Recommendation (#1) is raised to apply the same revised approach to the remaining seabird species that interact with the fishery UoAs in assessment.

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Table 55: Annual observable captures, deaths and risk per species, ranked from highest to lowest median risk for the top 31 species. Red: risk ratio with a median over 1 or upper 95% credible limit (u.c.l.) over 2; dark orange: median over 0.3 or u.c.l. over 1; light orange: median over 0.1 or u.c.l. over 0.3; yellow: u.c.l. over 0.1.

Code	C_s		D_s		Risk	
	Mean	95% CI	Mean	95% CI	Median	95% CI
XBM	242.2	[208.0-280.7]	728.5	[554.5-938.7]	1.19	[0.71-2.65]
XSA	299.5	[256.0-349.0]	1706.3	[1291.0-2258.5]	0.69	[0.35-1.69]
XWM	570.0	[506.3-638.3]	2634.8	[2071.1-3334.1]	0.50	[0.29-1.07]
XBP	221.8	[180.3-279.0]	256.1	[177.6-352.2]	0.49	[0.30-0.82]
XWP	89.9	[65.7-121.3]	143.3	[91.2-220.5]	0.38	[0.17-0.88]
XCI	26.9	[14.7-43.0]	61.5	[33.5-98.7]	0.27	[0.13-0.68]
XFS	253.0	[211.7-296.7]	368.1	[264.3-493.5]	0.22	[0.12-0.44]
XNB	63.2	[43.3-88.7]	173.8	[109.3-262.9]	0.19	[0.10-0.43]
XAU	33.0	[20.7-48.0]	41.9	[22.9-68.4]	0.16	[0.08-0.37]
XAN	31.8	[21.0-44.0]	38.3	[21.8-60.3]	0.16	[0.08-0.35]
XWC	895.8	[820.0-975.0]	1694.3	[1295.3-2319.9]	0.09	[0.06-0.18]
XRA	22.5	[12.7-36.3]	49.6	[25.9-84.6]	0.08	[0.04-0.17]
XNP	6.2	[1.7-14.3]	16.0	[4.1-35.0]	0.08	[0.02-0.22]
XCM	30.9	[18.7-46.7]	68.5	[37.8-117.6]	0.05	[0.03-0.14]
XYP	11.2	[5.3-18.7]	10.6	[5.0-17.9]	0.04	[0.02-0.08]
XPP	188.5	[131.0-257.0]	226.1	[149.3-337.9]	0.04	[0.02-0.10]
XNR	5.9	[1.7-12.3]	13.0	[2.6-35.2]	0.04	[0.01-0.15]
XLM	4.7	[1.0-11.3]	14.8	[2.3-43.8]	0.03	[0.01-0.14]
XGM	4.4	[1.0-10.7]	12.5	[1.6-37.0]	0.03	[0.01-0.14]
XGP	52.3	[35.0-73.0]	78.1	[50.7-113.4]	0.02	[0.01-0.05]
XCA	2.1	[0.3-6.0]	29.8	[0.4-120.4]	0.02	[0.00-0.13]
XSI	2.9	[0.0-10.0]	3.2	[0.0-12.1]	0.01	[0.00-0.06]
XBS	30.2	[15.7-49.0]	79.0	[22.2-240.5]	0.01	[0.00-0.04]
XKS	0.7	[0.0-4.3]	0.8	[0.0-5.0]	0.01	[0.00-0.18]
XBC	3.2	[0.0-12.7]	3.6	[0.0-13.7]	0.01	[0.00-0.04]
XFC	2.7	[0.3-6.7]	2.8	[0.3-7.3]	0.01	[0.00-0.02]
XPS	5.5	[0.7-15.0]	6.0	[0.9-16.4]	0.00	[0.00-0.01]
XPV	12.4	[4.0-26.0]	173.7	[24.5-613.6]	0.00	[0.00-0.02]
XFX	1.0	[0.0-5.0]	1.1	[0.0-6.3]	0.00	[0.00-0.04]
XSH	275.7	[238.7-316.7]	688.7	[469.8-1024.6]	0.00	[0.00-0.01]
XFL	43.7	[14.7-96.7]	51.3	[16.0-117.2]	0.00	[0.00-0.01]

Reviewing the 2015 (Richard and Abraham, 2015), 2017 (Richard et al., 2017), 2020 (Richard et al., 2020) and 2023 (Edwards et al 2023) risk assessment results indicates, overall, a continued reduction in risk, indicating that ongoing operational mitigation is resulting in beneficial outcomes (Table 56).

The median risk ratios of the seabirds most at risk and interacting with the ling longline UoAs, from the 2015, 2017, 2020 and the 2023 Spatially Explicit Fisheries Risk Assessment (SEFRA) are provided below (Table 56). Species with a median risk ratio <1 are not expected to hinder the achievement of population management (Richard et al., 2020). While the risk ratio for southern Buller's albatross is currently assessed to be >1, it is clear that estimates for this species have been highly variable over the last four risk assessments, and it is important to note that these risk assessments consider impacts by all fisheries in New Zealand waters, not just the UoA fisheries which have accounted for <1% of all observed captures of the species from 2006-07 to 2019-20 (Edwards et al., 2023a).

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Table 56: Median risk ratios (and 95% CIs) and SEFRA risk classifications for captures of the top 5 seabird species across all trawl, longline and setnet fisheries in New Zealand waters.

Species	2015 risk ratio (data to 2012-13)	2017 risk ratio (data to 2014-15)	2020 risk ratio (data to 2016-17)	2023 risk ratio (data to 2019-20)	2023 SEFRA Risk Classification (all fisheries combined)	Risk Ratio Trend
Southern Buller's albatross	1.82 (0.97-3.67)	0.4 (0.22-0.69)	0.37 (0.21-0.6)	1.19 (0.71-2.65)	Very high	Variable
Salvin's albatross	3.44 (1.82-6.50)	0.79 (0.52-1.12)	0.65 (0.42-0.94)	0.69 (0.35-1.69)	High	Steady
White-capped albatross	1.10 (0.59-1.97)	0.38 (0.22-0.62)	0.29 (0.18-0.46)	0.50 (0.29-1.07)	High	Variable
White-chinned petrel	0.28 (0.14-0.64)	0.05 (0.03-0.09)	0.07 (0.04-0.11)	0.09 (0.06-0.18)	Low	Steady
Westland petrel	0.53 (0.21-1.38)	0.55 (0.21-1.28)	0.54 (0.26-1.12)	0.38 (0.17-0.88)	High	Steady

DOC's conservation status classifications (Robertson et al., 2012; 2016; 2021), and putative 2023 classifications, are provided below (Table 57) for the main species incidentally captured by New Zealand ling longline fisheries.

Table 57. Change in DOC threat classifications for the most prevalent incidental seabird captures by ling longline fisheries. From Department of Conservation publications¹, summarised in SNZ, 2024.

Species	DOC Threat Classification 2012	DOC Threat Classification 2016	DOC Threat Classification 2021	DOC Threat Classification 2023	Status change
Southern Buller's albatross	Naturally Uncommon	Naturally Uncommon	At Risk - Declining	Nationally Critical	Worse
Salvin's albatross	Nationally Critical	Nationally Critical	Nationally Critical	At Risk - Declining	Better
White-capped albatross	At Risk - Declining	At Risk - Declining	At Risk - Declining	At Risk - Declining	No change
White-chinned petrel	At Risk - Declining	Not Threatened	Not Threatened	Not Threatened	No change
Westland petrel	Naturally Uncommon	Naturally Uncommon	Naturally Uncommon	Naturally Uncommon	No change

The white-chinned petrel is by far and away the species with the highest number of captures by ling longliners (accounting for around 59.8% of observed interactions and 73% of observed mortalities over the last five years, Table

¹ <https://www.doc.govt.nz/about-us/science-publications/conservation-publications/nz-threat-classification-system/>

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53). Nevertheless the species is classified as having 'very low' fisheries risk according to the most recent update of the Spatially Explicit Fisheries Risk Assessment for seabirds (Edwards, et al., 2023).

For all other seabird species with which the ling longline fishery has non-negligible interactions (Table 54), apart from the southern buller's albatross, the SEFRA (Edwards et al 2023) assesses each to have a median risk ratio of <1, indicating that the current captures are lower than can be sustained by the population over the long term (Table 55).

Seabird capture rate reduction targets were established under the NPOA Seabirds for use in comparing them to baseline capture rates. The latter were defined as the average estimated capture rates across the three-year block leading up to the implementation of the NPOA Seabirds 2013 (i.e. the 2010-11 to 2012-13 fishing years), with at least 10% observer coverage and an estimated seabird capture rate coefficient of variation (CV) of less than 0.30. For vessels >28 m length in the ling bottom longline fisheries, a baseline capture rate of 0.022 estimated captures per 1000 hooks was determined.

The National Plan of Action Seabird report 2020/21 provides a breakdown of the observed seabird captures by ling longline vessels, illustrating that small albatross species (i.e. mollymawks), petrels & shearwaters are the most abundant groups caught (FNZ, 2023). Historical capture rates for the ling bottom longline fisheries show that the estimated capture rate has fluctuated above and below the baseline (Figure 19), (FNZ, 2023).

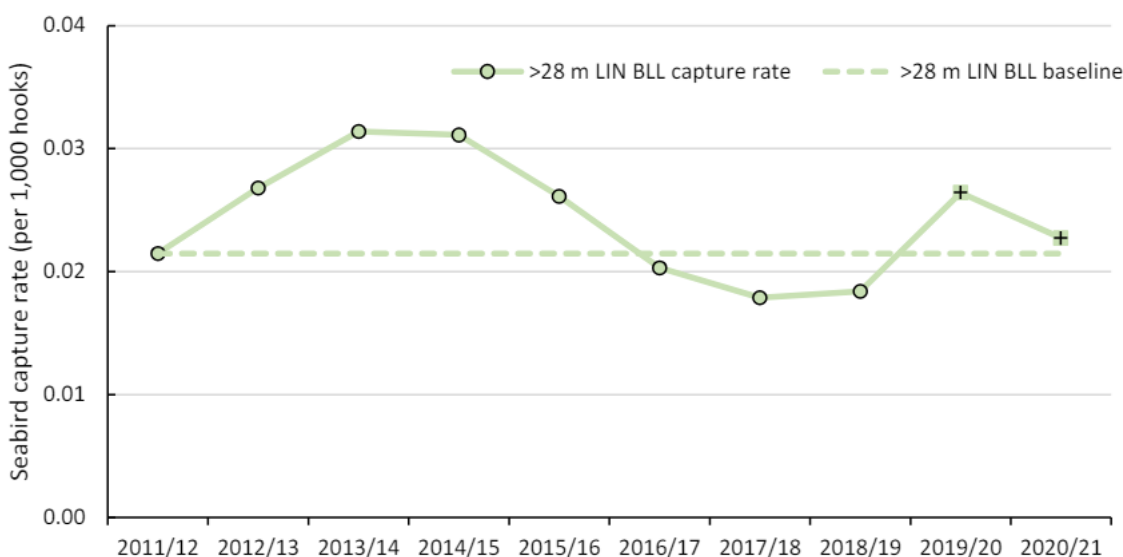


Figure 19: Estimated seabird capture rates (captures per 1000 hooks set) relative to baseline capture rates for the >28 m ling bottom longline (LIN BLL) fishery, since the 2010/11 fishing year. Seabird capture rates are expressed as three-year rolling averages. For example, data for 2018/19 represents the average for the 2017/18, 2018/19, and 2019/20 years. Data taken from the Protected Species Capture webpage except for the 2020/21 and 2021/22 fishing years (indicated with a '+'). Source: FNZ, 2023.

Sharks

The Wildlife Act 1953 protects seven species of chondrichthyans:

- Basking shark (since 2007)
- White pointer shark (since 2007)
- Whale shark (since 2010)
- Deepwater nurse shark / small toothed sand tiger shark (since 2010)
- Oceanic whitetip shark (since 2013)
- Spine-tailed devil ray (since 2010)

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Though none of the above appear in the observer catch records for the long longline fishery, the MSC Standard V3.1 has additional criteria for classification for species as Endangered, Threatened or Protected (ETP) under SA3.2.5 and SA3.2.7. Species classified as ETP per SA3.2.5 cannot be modified including, as it relates to this assessment, chondrichthyans on the IUCN Red List and classified globally as “Endangered (En)”. For species classified as ETP per SA3.2.7, *The team shall determine if the categorisation of a species as a scoring element under the ETP/OOS component following SA3.2.7, is eligible for modification as per SA3.2.9.*

Five chondrichthyan species are designated as ETP based on the decision tree for species categorisation ([Figure SA3](#)) and all five have ‘negligible’ status (Table 50). School shark, leafscale gulper shark and short-fin mako shark are classified as ETP per SA3.2.5 and are not eligible for modification to score under in-scope species components. For porbeagle and blue shark, despite both species catch meeting the negligible criteria (being <2% of the total catch), modification to score as in-scope species was tested per SA3.2.9 as shown below.

School shark

Per Finucci et al 2020 the catches of school shark amount to just 0.8% of the total ling longline UoAs catch. This is accordant with the more recent 2018/19-2022/23 observer data (Table 50) indicating the species accounts for just 0.99% of the catch on average. Therefore, per SA3.1.1d.ii, catches of this species are negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

Leafscale gulper shark

Per Finucci et al 2020 the catches of Leafscale gulper shark amount to just 0.4% of the total ling longline UoAs catch. This is accordant with the more recent 2018/19-2022/23 observer data (Table 50) indicating the species accounts for just 0.4% of the catch on average. Therefore, per SA3.1.1d.ii, catches of this species are negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

Short finned mako shark

Per Finucci et al 2020 the catches of Short finned mako amount to <0.1% of the total ling longline UoAs catch. This is accordant with the more recent 2018/19-2022/23 observer data (Table 50) indicating the species accounts for just 0.02% of the catch on average. Therefore, per SA3.1.1d.ii, catches of this species are negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

Porbeagle shark

Table 58. Productivity attributes for porbeagle shark. Biological characteristics from Fish Base (<https://www.fishbase.se/summary/Lamna-nasus.html>).

Productivity		
Scoring element (species)	Porbeagle	
Attribute	Justification	Score
Average age at maturity	8-11 years males 15-18 years females	2
Average maximum age	65	3
Fecundity	4 pups per year	3
Average maximum size Not scored for invertebrates	200cm	2
Average size at maturity Not scored for invertebrates	186.5cm	3

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Reproductive strategy	viviparous	3
Trophic level	4.6	3
Productivity score from RBF	2.71	

Management status

The porbeagle is managed as part of the QMS, there are some specific provisions for the species, regarding the removal of fins and returning individuals to the water (i.e., Schedule 6). However, there are no other management measures in place and the species is not managed using LRP or TRP (or equivalent) therefore the species does not meet the modification criteria for management status (SA3.2.9b).

Stock status

The stock structure of porbeagle sharks in the Southern Hemisphere is unknown (Fisheries New Zealand, 2019c) however, it seems likely that sharks in the south-west Pacific comprise a single stock. The stock status of porbeagle sharks from the entire Southern Hemisphere range of the species was assessed in 2017 (Hoyle, et al, 2017). The assessment noted that although the stock status of the species is currently unknown the results of the assessment show that fishing mortality on the Southern Hemisphere stock is very low, and that it decreases eastward from the waters off South Africa to the waters off New Zealand. Although the stock status of the species is currently unknown there is a very low risk that the Southern Hemisphere porbeagle shark is subject to overfishing anywhere within its range. A qualitative risk assessment was completed on all chondrichthyans (sharks, skates, rays and chimaeras) at the New Zealand scale in 2017 (Ford et al, 2018). Porbeagle sharks had a risk score of 15 and were ranked second equal lowest risk of the eleven QMS chondrichthyan species.

Porbeagle does not meet any of the three modification criteria and therefore is classified as ETP/OOS in accordance with SA3.2.9. Nevertheless per Finucci et al. (2020) porbeagle shark catches accounted for <0.01% of the total observed catch in the ling longline UoAs. This is accordant with the more recent 2018/19-2022/23 observer data (Table 50) indicating the species accounts for just 0.04% of the catch on average. Therefore, per SA3.1.1d.ii, catches of this species are negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

Blue shark

Table 59. Productivity attributes for blue shark. Biological characteristics from Fish Base (<https://www.fishbase.se/summary/SpeciesSummary.php?ID=898&AT=blue+shark>).

Productivity		
Scoring element (species)	Blue shark	
Attribute	Justification	Score
Average age at maturity	4 years	1
Average maximum age	20 years	2
Fecundity	4-63 young in a litter, gestation 9-12 months	3
Average maximum size Not scored for invertebrates	400cm	3
Average size at maturity Not scored for invertebrates	199 (range 170 – 221)	3

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Reproductive strategy	viviparous	3
Trophic level	4.4 ±0.2 se; based on diet studies	3
Productivity score from RBF	2.57	

Management Status

Blue shark is a QMS, Schedule 6 species and be returned to the water alive or dead and if dead, balanced against ACE. Blue shark was introduced into the QMS on 1 October 2004 under a single QMA, BWS 1, with allowances, TACC (1 860t), and TAC (2 080t) however, it is unclear what information these metrics were based on. There are no other management measures in place and the species is not managed using LRP or TRP (or equivalent) therefore the species does not meet the modification criteria for management status (SA3.2.9b)

Stock status

Blue shark in the southwest Pacific is considered a single stock (Neubauer et al., 2021). A recent stock assessment found that 90% of model runs indicated that fishing mortality at the end of the assessment period was below F_{MSY} and 96% of model runs show that the biomass is above SB_{MSY} (Neubauer et al., 2021). Fishing mortality had declined over the last decade and is currently relatively low, as blue sharks are not retained by most longline fleets. Neubauer, et al., (2021) concluded that the stock on average does not appear to be overfished and overfishing is not occurring. Therefore, the stock assessment criteria are met in accordance with SA3.2.9c.

Blue shark does not meet at least two of the modification criteria and is therefore assessed as ETP/OOS in accordance with SA3.2.9. Nevertheless per Finucci et al. (2020) blue shark catches accounted for <0.01% of the total observed catch in the ling longline UoAs. This is accordant with the more recent 2018/19-2022/23 observer data (Table 50) indicating the species accounts for just 0.03% of the catch on average. Therefore, per SA3.1.1d.ii, catches of this species are negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

Marine mammals

There have been no reported incidental captures of New Zealand sea lions, New Zealand fur seals, whales or dolphins by ling longline fisheries over the period 2016-17 to 2020-21 (Table 53, <https://protectedspeciescaptures.nz/>).

The Deepwater Group Environmental Liaison Officer (ELO) Report for 2022-23 Fishing Year (Cleal, 2023) does however refer to a single trigger event whereby a killer whale (*Orcinus orca*) was tangled in the line during hauling and subsequently released alive. This is the only marine mammal capture event reported by the ELO from the 2018/19 through 2022/23 fishing years (Cleal, 2019; 2020; 2021; 2022; 2023).

Killer whale

The killer whale/orca (*Orcinus orca*) is classified 'Threatened – nationally critical' by the New Zealand Department of Conservation (Baker et al 2019). Mackenzie et al 2022 estimated the global stock population size at 48750 individuals with 0.021% (1024 individuals) of the worldwide stock within New Zealand waters. A total of one live release was reported through the ELO (Cleal, 2023) in the ling longline fishery over the period 2018/19-2022/23 and no observed interactions were reported in the past 5-years (Table 53).

For killer whale the following results from Mackenzie et al 2022:

r_{max} : 0.028 (95% credible interval, 0.010 - 0.045)

Derived annual deaths: 1.04 (95%, 0.2-2.7)

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Predicted exploitation rate: stock 0.00 (95%, 0.0-0.0), NZ population 0.10 (95%, 0.0-0.3)

Predicted equilibrium status: stock 99.91 (95%, 99.8 – 100.0), NZ population 95.83 (95%, 88.9-99.3)

Based on the low level of interactions, the live release of the single interaction and the predicted equilibrium status close to 1.00 estimated by Mackenzie et al 2022, it is clear that the killer whale is not at risk of being hindered in its recovery due to the impacts of the ling longline fishery. According to SA3.1.1d the impact of the UoAs collectively, and individually, is deemed negligible and there is no requirement for further assessment (MSC 2024, V3.1, Figure SA3).

10.2.7 ETP/OOS Management

A range of management measures, including industry-led, non-regulatory initiatives, are employed to monitor environmental interactions in deep water fisheries and to reduce the risk of any adverse effects on protected species populations. Measures relating to the deepwater industry's monitoring of ETP species are described in DWG's Operational Procedures (OPs) and Vessel Management Plans (VMPs), (DWG, 2024), which include as related to the ling longline UoAs:

- Ling Bottom Longline OPs
- Marine Mammals OPs
- Reporting OPs
- Seabirds OPs
- Sharks OPs
- Benthic OPs (implemented in 2021-22)
- Ten Commandments for:
 - Marine Mammals
 - Saving Seabirds
- Ten Golden Rules for Protected Species Reporting.

The Operational Procedures (OPs) for each species-group include elements of identifying and mitigating risk, safe handling and release following capture, reporting and event response, audit and review. They are monitored and administered by the Deepwater Council (DWC) with performance and conformance audited by Fisheries New Zealand Observers. The OPs are underpinned by New Zealand legislation and National Plans of Action (NPOAs).

Key legislation includes :

- Fisheries (Seabird Mitigation Measures – Bottom Longlines) Circular (No. 2) 2021 (Notice No. MPI 1375) [Bottom Longline Seabird Mitigation Regs 2021](#)
- Fisheries Act 1996: requires that:
 - measures are taken to avoid, remedy or mitigate any adverse effects of fishing-related mortality on any protected species.
 - This Act also includes requirements to report captures of protected species.
 - All catch be reported
 - All QMS-species be landed if taken, except where Schedule 6 applies and provides for their return to the sea (e.g. blue, mako, porbeagle, rig, school shark and spiny dogfish)
 - Adherence to the prohibition of Shark Finning
- Wildlife Act 1953 states it is an offence to deliberately take, or attempt to take, harass, injure, mutilate or retain all or any part of any Protected Species
- Animal Welfare Act 1999

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- Marine Mammals Protection Act 1978: the accidental capture of any marine mammal is permitted provided that the capture is reported to the appropriate authority without delay. It is an offence to accidentally capture a marine mammal and to not report it.

National Plans of Action

New Zealand has a responsibility to act in accordance with the objective of International Plans of Action for Seabirds and Sharks. The two NPOAs applicable to deepwater fisheries are:

NPOA-Sharks 2022 (FNZ, 2022)

New Zealand's first NPOA-Sharks was in 2008 and the most recent one was NPOA-Sharks 2013. The 2013 NPOA has been reviewed and the NPOA-Sharks 2022 has been consulted on and a draft NPOA circulated. The final NPOA-Sharks 2022 is imminent with consultations having closed in September 2022.

The NPOA sharks 2022's vision is New Zealanders work toward ensuring the long-term viability, biodiversity and functional role of sharks, and that any utilisation of sharks in Aotearoa is sustainable. Its seven goals are:

- 1) Maintaining biodiversity and ecological long-term viability of shark populations;
- 2) Ensuring full utilisation of sharks and maintaining the prohibition on shark finning in New Zealand;
- 3) Avoiding protected and unwanted shark captures, and maximising post release survival;
- 4) Minimising anthropogenic effects other than direct fisheries impacts;
- 5) Better Integration of Tangata Whenua Perspectives and Value;
- 6) International engagement through enhanced monitoring, data collection and information sharing; and
- 7) Continuous improvement in the research, data and information to conserve and manage sharks, guided by the SEFRA framework and conservation threat status.

NPOA Seabirds (FNZ, 2020)

New Zealand's first NPOA was published in 2004 and a revised NPOA-Seabirds published in 2013. The NPOA Seabirds 2020 is New Zealand's third iteration of a national plan of action.

The NPOA Seabirds 2020's vision is New Zealanders work towards zero fishing-related seabird mortalities. Its four goals are:

- 1) Avoiding bycatch — effective bycatch mitigation practices are implemented in New Zealand fisheries;
- 2) Healthy seabird populations — direct effects of New Zealand fishing do not threaten seabird populations or their recovery;
- 3) Research and information — information to effectively manage direct fisheries effects on seabirds is continuously improved; and
- 4) International engagement — New Zealand actively engages internationally to promote measures and practices that reduce impacts on New Zealand seabirds.

10.2.8 Habitats

According to the MSC Standard V3.1, the assessment of the habitats component of the Standard shall be done in relation to the effects of the UoA on the structure and function of the habitats impacted by the UoA.

As per MSC V3.1 SA3.2.2 *The team shall categorise any invertebrate species that is benthic-habitat forming as a scoring element under the habitats component, irrespective of the species endangered, threatened or protected (ETP) status and irrespective of its catch proportions.* This contradicts SA3.12.1a *The team shall score each habitat as a separate scoring element* as per SA3.13.2 (MSC V2.01) and SA3.12.2 (MSC V3.1): If a benthic habitat is being assessed, the team shall recognise habitats based on the following habitat characteristics:

- a) Substratum – sediment type.

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- b) Geomorphology – seafloor topography.
- c) Biota – characteristic floral and/or faunal group(s).

Habitats, as defined by the MSC Standard are not single benthic habitat-forming invertebrate species, rather they are a combination of substratum, geomorphology and community of biota. In response to this apparent contradiction the assessment team follow that all benthic habitat-forming invertebrates are listed as scoring elements but distinct broader habitat types are assessed under PI2.3.1.

MSC V3.1 SA3.12.6 stipulates that “When assessing the status of habitats and the impacts of fishing, the team shall consider the full area managed by the local, regional, national, or international body(ies) responsible for fisheries management in the area(s) where the UoA operates, otherwise known as the “managed area”.

and SA3.12.6.4 (V3.1) “If a habitat’s range extends beyond the “managed area”, the team shall consider the habitat’s range both inside and outside the “managed area”.

10.2.8.1 Habitat Distribution

In New Zealand the Benthic-Optimised Marine Environment Classification, BOMEC (Leathwick et al. 2012), used a combination of environmental predictors and distributional data for eight taxonomic groups (Table 60) to train an environmental classification for New Zealand’s Exclusive Economic Zone (EEZ) with depths of 3000m or less. The combination of these predictors and biota meets the requirements SA3.12.2 (MSC V3.1) for recognising distinct benthic habitat types.

Table 60. Environmental predictors and taxonomic groups used in the BOMEC analysis (Leathwick et al 2012).

Environmental predictors	Taxonomic groups
Depth (m)	Asteroids
Temperature (°C)	Bryozoans
Salinity (psu)	Benthic fish
SST gradient (°C km ⁻¹)	Foraminiferans
Productivity (mgC m ⁻² d ⁻¹)	Octocorals
Tidal current(m s ⁻¹)	Polychaetes
Sediment size (mm)	Matrix-forming scleratinian corals
Orbital velocity (dm s ⁻¹)	Sponges
Sediment resuspension	
Suspended particulate matter	
Dissolved organic matter	
Seabed relief	

Fifteen groups were recognised by the BOMEC as providing an appropriate level of detail for broad-scale classification of New Zealand’s EEZ to depths of 3000m. The groups showed strong separation in relation to depth, comprising three inshore groups (A, B and D), three shelf groups (C, E and F) and nine deeper water groups (G-O) (Figure 20).

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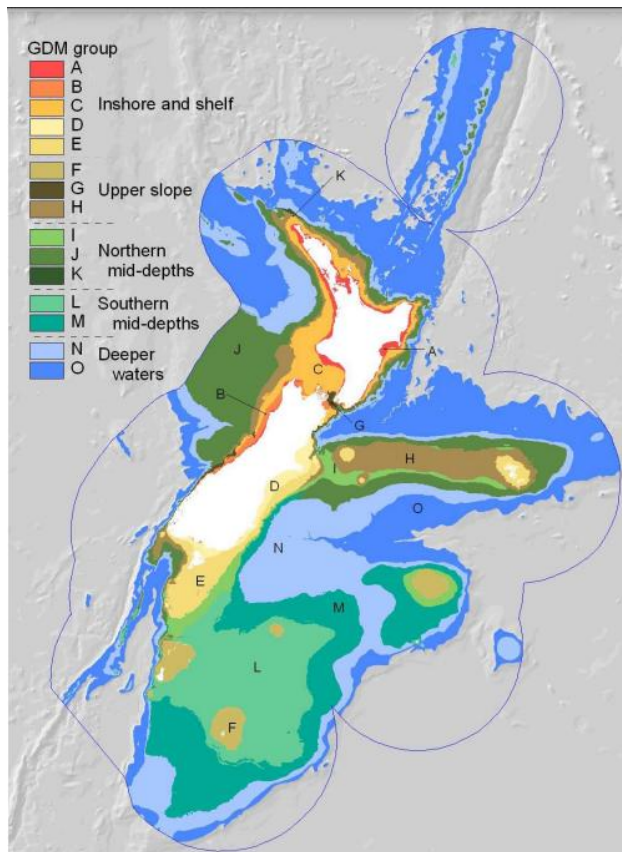


Figure 20. Map of the distribution of Benthic-Optimised Marine Environment Classification (BOMEC) classes defined by multivariate classification of environmental data transformed using results from GDM analyses of relationships between environment and species turnover averaged across eight taxonomic groups of benthic species. [From Leathwick et al. (2012).]

The Department of Conservation recently commissioned a Seafloor Community Classification (SCC, Stephenson et al. 2022). Like the previous classifications, the SCC is a numerical classification, and it provides advances on both the MEC and BOMEC because substantially more biological and environmental data were used. Whilst the BOMEC classes are informative for the classification of substratum and geomorphology the Seafloor Community Classification (SCC) of Stephenson et al 2022 provides a clearer description of species compositional turnover. The classification used a broad suite of biotic groups [benthic invertebrates, macroalgae, reef fish and demersal fish] and transformed 33 environmental variables to represent spatial patterns of taxa compositional turnover (Figure 21). For each of the 75 SCCs classified a detailed description of the characterising demersal fish, benthic invertebrate, macroalgae, and reef fish characterising taxa is provided in Supplementary materials as a useful and interpretable reference for stakeholders (Peterson et al 2020).

Subsequently Stephenson et al 2023 developed a 9-class New Zealand Seafloor Bioregionalisation. During the site visit stakeholders, including co-authors of the report, recommended this 9-class characterization would be more appropriate than the 12 Class BOMEC to determine the impact of the fishing on benthic habitat types as it includes additional biological ground-truthing data as used in the SCC described above. This was only possible on an indicative, qualitative level (Figure 27) because the overlap of the ling longline UoAs has not been assessed to the same degree as has been done by MacGibbon & Mules, 2023 for the BOMEC and trawl fishery.

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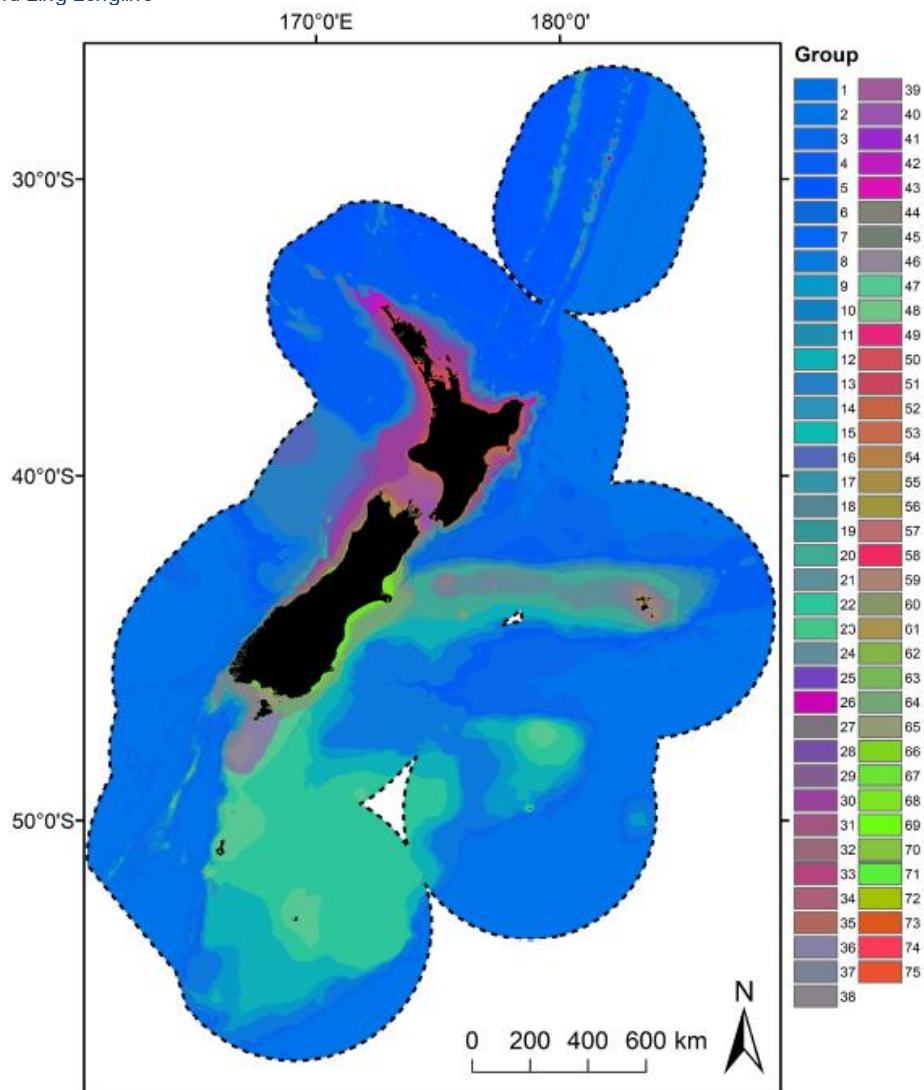


Figure 21. Geographic distribution of the Seafloor Community Classification (75 groups) derived from combined bootstrapped Gradient Forest model. Colours are based on the first three axes of the PCA analysis applied to the group means for each of the transformed predictor variables, so that similarities/differences in colour correspond broadly to similarities/differences in predicted compositional turnover. Stephenson et al 2022.

Despite this classification of different habitat types, it is not immediately clear which of them are considered less or more sensitive per MCS V3.1. What is important to recall is the fundamental distinction between: i) habitat types, ii) defined or *known* VME habitats within those habitat types, and iii) the VME indicator taxa that are known or likely to occur in some habitat types but not others and in varying densities where they do occur. When referring to VMEs, in fact reference should be made to finer scale Vulnerable Marine Communities (VMCs) (Watling and Auster, 2021). Broad benthic habitat types support communities of several kinds. Simply because VME indicator taxa occur within a BOMECEC habitat type does not warrant that the entire extent of the BOMECEC should be considered as a VME habitat.

All black, gorgonian, stony, and hydrocorals are protected under the Wildlife Act 1953. However, SA3.2.2 requires that all benthic species should be assessed under habitats. Therefore, benthic species including protected corals are assessed under habitats and considered more sensitive habitats.

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For the purpose of this assessment, less sensitive habitats are considered to be gravel, mud, and sand, upper and mid-slope, with more sensitive habitats designated as sand covered hard substrate with emergent fauna (i.e., sponges, bryozoans, corals).

The estimated distribution of protected coral species within the New Zealand EEZ has been mapped, with the model of probability of occurrence refined by Anderson et al. 2014 to incorporate information on seafloor saturation levels of aragonite and calcite (Figure 22). Updated habitat suitability modelling was conducted again more recently by Anderson et al 2020 (figures not shown).

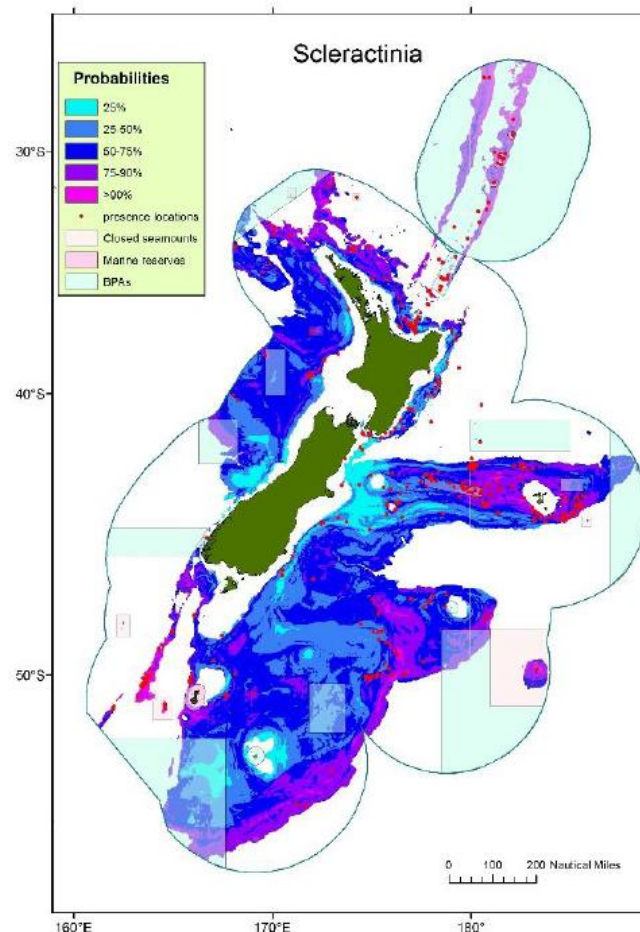


Figure 22. Probability of occurrence of suitable habitat for branching scleractinian coral species (*Solenosmilia variabilis*, *Goniocorella dumosa*, *Enalllopsammia rostrata*, and *Madrepora oculata*) from BRT models. Probabilities of occurrence (based on n= 779 presence records); closed seamounts (introduced in 2001); Benthic Protected Areas (introduced in 2007), and large Marine Reserves.

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10.2.8.2 Fishing distribution

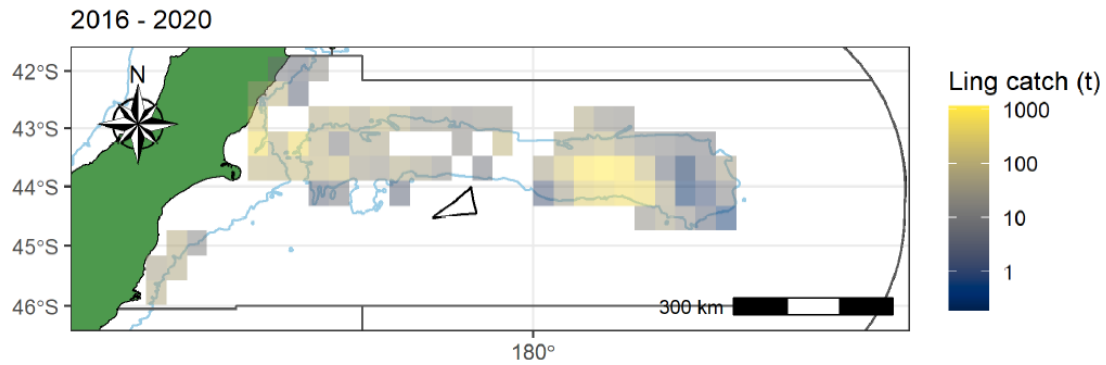


Figure 23. Distribution of ling catches in the LIN 3&4 biological stock area by bottom longlines between 2016 and 2020. Year ranges are fishing years. Areas are plotted at about 0.5° resolution and only where at least three vessels fished in any cell in the period as per confidentiality rules. Source: Figure cropped to show only most recent 5 year period from Mormede et al 2023 Figure A.12.

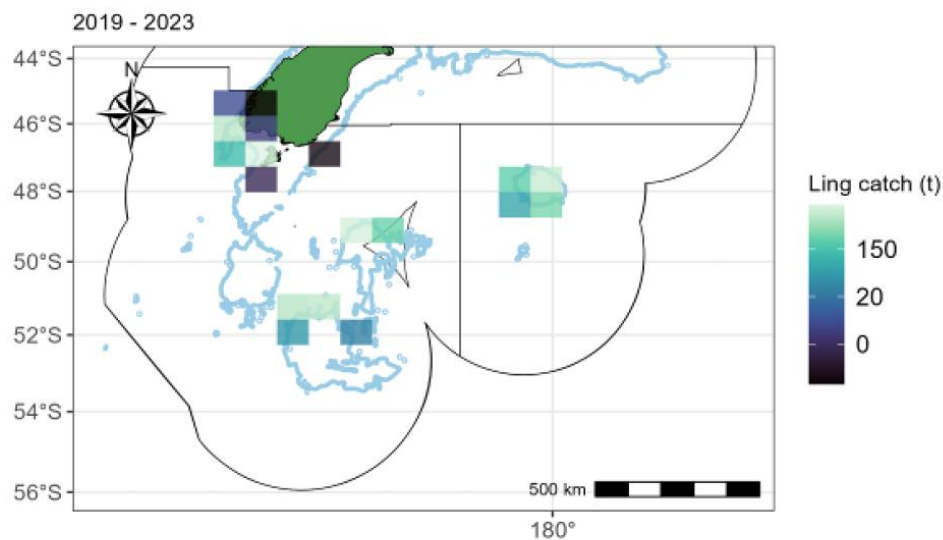


Figure 24. Distribution of ling catches in the Sub-Antarctic (LIN 5&6 and LIN 6B) by bottom longlines between 2019 and 2023. Year ranges are fishing years. Areas are plotted at about 0.5° resolution and only where at least three vessels fished in any cell in the period. Source: Figure cropped to show only most recent 5 year period from Mormede et al 2024 Figure A.18.

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2018 - 2022

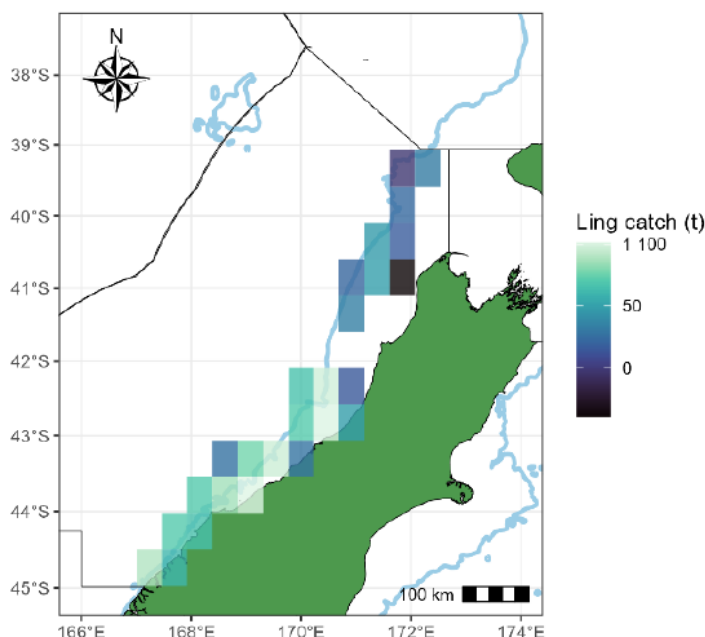


Figure 25. Distribution of ling catches in the LIN 7WC biological stock area by bottom longlines between 2018 and 2022. Year ranges are fishing years. Areas are plotted at about 0.5° resolution and only where at least three vessels fished in any cell in the period. Source: Figure cropped to show only most recent 5 year period from Mormede et al 2023 Figure A.11.

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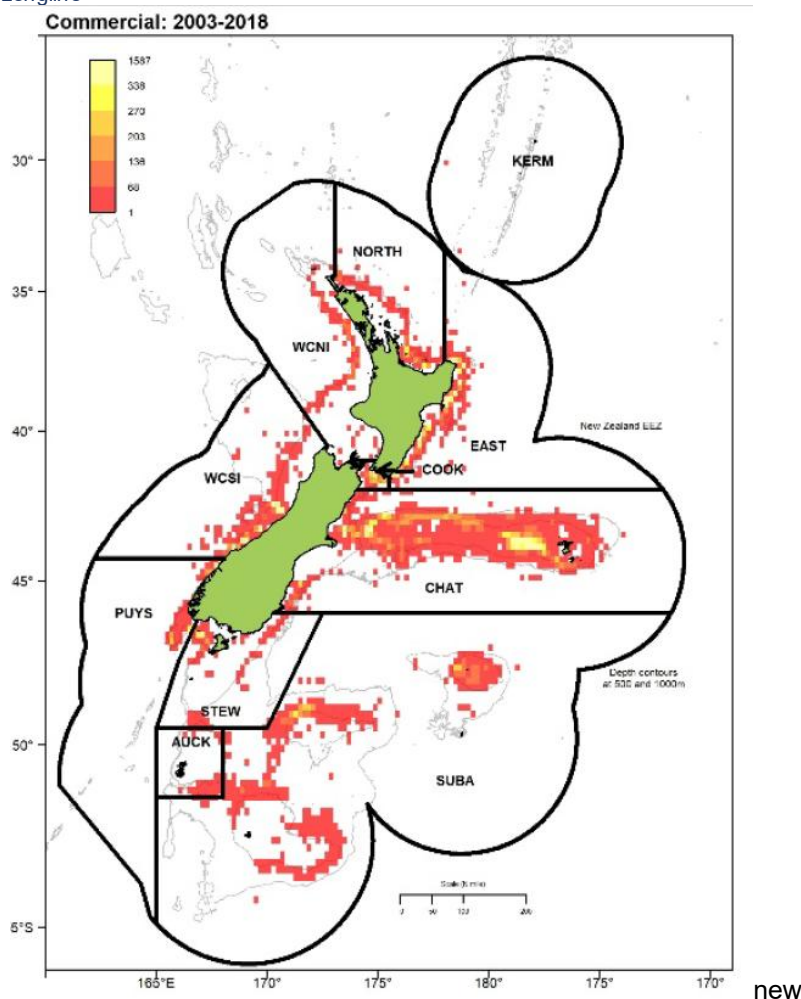


Figure 26. Density plot showing the distribution of all commercial ling target sets with recorded position data, for fishing years 2003 (2002–03) to 2018 (2017–18). The legend indicates the average number of sets per year in each 0.2° cell; solid lines mark the boundary of the EEZ and areas used in the analyses; the dotted line shows the approximate 1000 m isobath. Source: Finnuci et al 2020.

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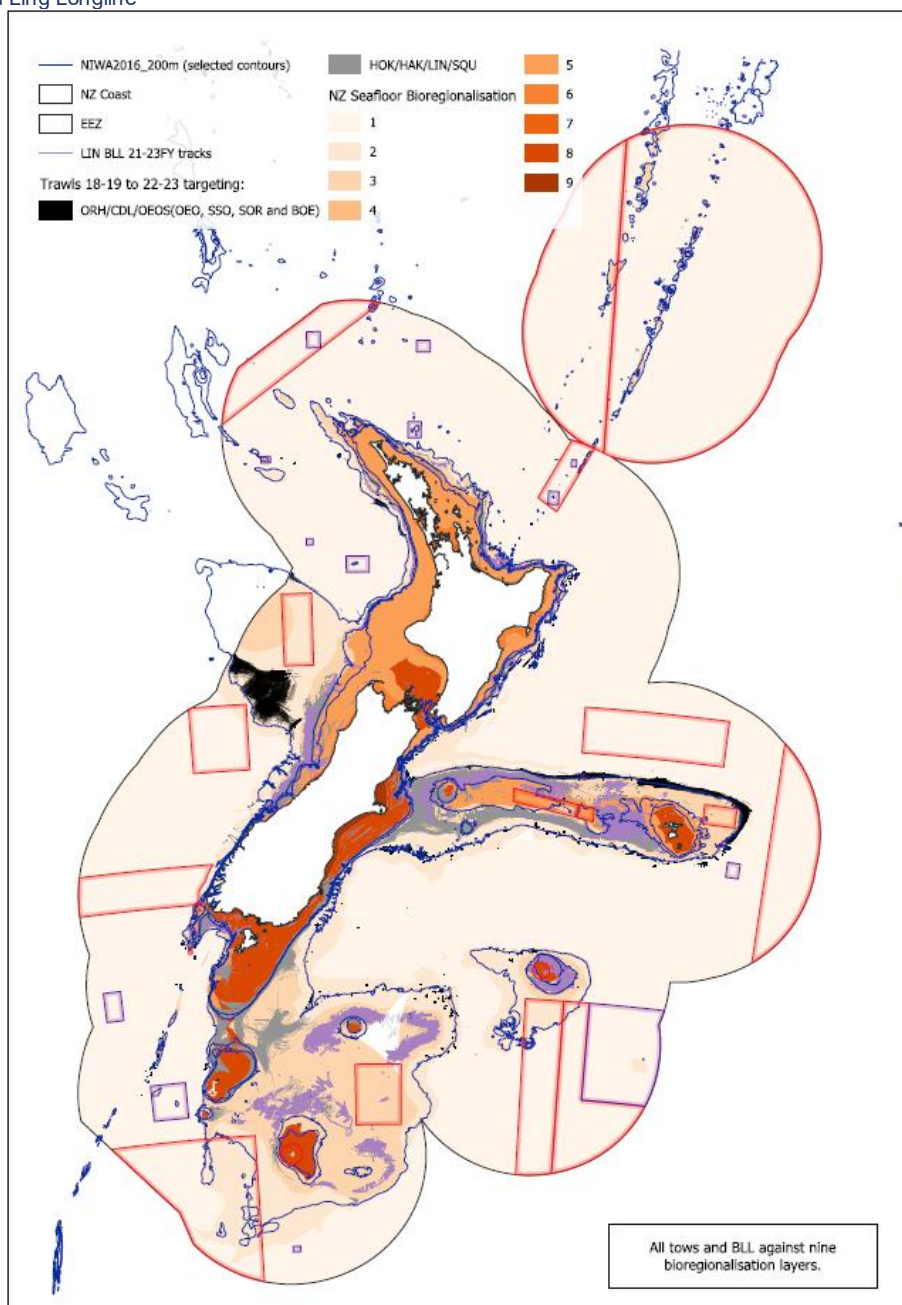


Figure 27. All bottom ling longline sets (purple) and all trawl tows (black and grey) for the period 2018/19-2022/23, plotted against the 9-class New Zealand Seafloor Bioregionalisation (Stephenson et al 2023). Image supplied by NZ Seafood, Deepwater Council.

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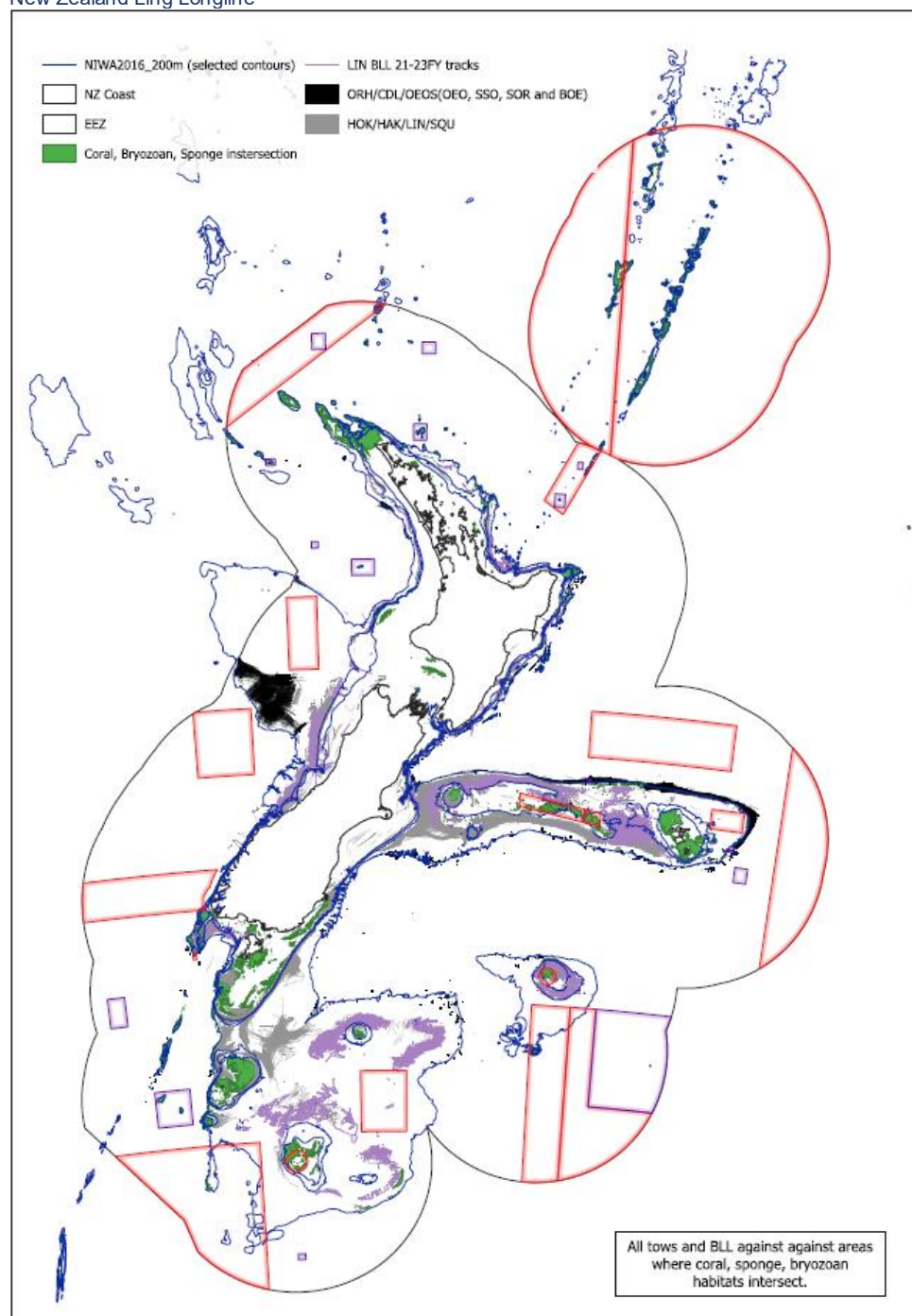


Figure 28. All bottom ling longline sets (purple) and all trawl tows (black and grey) for the period 2018/19-2022/23, plotted against areas where coral, sponge and bryozoan habitats intersect. Image supplied by NZ Seafood, Deepwater Council.

10.2.8.3 Benthic invertebrate catch

The Aquatic Environment and Biodiversity Annual Review ([AEBAR, 2021](#)) last updated in 2021, includes a chapter 11 on benthic impacts. In it is noted the following, “*The benthic effects of other methods of catching fish on or near the seabed that do not involve deliberately towing or dragging fishing gear across the seabed are thought to be considerably*

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less than those of the mobile methods (although they are not always negligible) and these methods are not considered in this document.”

In illustration of the considerably low impact of static longline gear on benthic habitat forming invertebrates, observed catches of those species for the period 2018/19-2022/23 are presented in Table 61. Observed sessile benthic invertebrate catches by ling longline fisheries show that anemones are the most common group caught, with an average annual catch of around 28 kg. Very small quantities of ETP corals are reported caught (Table 61).

Table 61: Observed incidental catch of sessile benthic invertebrates by ling longline vessels during the period 2018-19 to 2022-23. ETP coral groups are shaded. Percentages calculated in relation to total observed fish and invertebrate catches. (SNZ, 2024).

Species/group	2018-19	2019-20	2020-21	2021-22	2022-23	5-Year Avg. (kg)	5-Year Avg. (%)
Warty deepsea anemones	-	-	-	11.50	54.50	13.20	0.0013%
Smooth deepsea anemones	-	-	-	3.00	59.60	12.52	0.0012%
Bivalves (unidentified)	-	-	-	-	13.00	2.60	0.0002%
Anemones	-	10.60	-	-	-	2.12	0.0002%
Coral (Unidentified)	-	-	2.00	-	0.50	0.50	0.0000%
Sponges	-	0.20	0.50	-	1.50	0.44	0.0000%
Bamboo corals	1.00	-	-	-	-	0.20	0.0000%
Deepwater branching coral	1.00	-	-	-	-	0.20	0.0000%
Feathery hydroids	-	-	0.20	-	-	0.04	0.0000%
Sea pens	-	-	0.20	-	-	0.04	0.0000%
Stony corals	-	-	0.20	-	-	0.04	0.0000%
Hydrocorals	-	0.10	-	-	-	0.02	0.0000%
Erect cyclostome bryozoans	-	-	0.10	-	-	0.02	0.0000%
Sea fans	-	0.10	-	-	-	0.02	0.0000%
Primnoidae soft corals	-	-	0.10	-	-	0.02	0.0000%
Totals	2.00	11.00	3.30	14.50	129.10	31.98	0.0031%

The historical analyses conducted by Finucci et al (2020) found Starfish (Asteroidea & Ophiuroidea) to be the most commonly caught invertebrate group at 0.2% of the total catch on average from 1 October 2002 to 30 September 2018. Anemones, sponges, corals, sea pens, sea fans and other benthic habitat forming invertebrates accounted for <0.1% of the observed target species catch by weight for the same period (Finucci et al, 2020).

Incidental catches of non-protected sessile benthic invertebrates (e.g. anemones, bryozoans and sponges) are also reported by commercial vessels on Non-Fish Protected Species (NFPS) forms, along with catches of protected seabirds and marine mammals (Table 62). Note: code CSB is sometimes used when mixed catches of unidentified sessile benthic organisms occur.

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Table 62: Incidental catches of sessile invertebrates and ETP corals (generic reporting code COU) by ling longline fisheries during the period 2018-19 to 2022-23. ETP coral groups are shaded (Data source: FNZ Non-Fish Protected Species catch forms, SNZ, 2024).

Species Group	Code	2018-19	2019-20	2020-21	2021-22	2022-23
Corals/Sponges/Bryozoans	CSB	-	-	1.3	-	-
Sponges	ONG	-	-	3.2	-	-
True Coral (Unidentified)	COU	-	0.1	0.1	-	-
Totals		-	0.1	4.6	-	-

The historical observer data review (Finucci et al, 2020), the more recent observer data (SNZ, 2024) and the commercial reporting indicate that the ling bottom longline fisheries clearly have minimal interactions with sessile benthic ETP and non-ETP invertebrate species.

10.2.9 Habitat Management

There are a suite of management measures in place in New Zealand deepwater fisheries to conserve benthic habitats and ecosystems.

- Key legislation
 - Wildlife Act 1953
 - Conservation Act 1987
 - Fisheries Act 1996 (Fisheries Amendment Act 2022)
 - Marine Reserves Act 1971
 - Resource Management Act 1991
 - Marine and Coastal Area (Takutai Moana) Act 2011
 - Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012
- Plans
 - National Fisheries Plan for Deepwater and Middle-depth Fisheries, 2019²
 - Annual Operational Plan for Deepwater Fisheries³
 - Medium term research plan for deepwater fisheries 2024/25-2029/30⁴
 - Conservation Services Programme Annual Plan⁵
- Reporting
 - Fisheries New Zealand Electronic Reporting System (ERS) Guidelines and Requirements
 - Capture of non-fish or protected fish species (NFPS) report (Reports any non-fish and protected species caught for that fishing event including for corals, sponges and bryozoans)
 - Disposal report (for any other types of benthic organisms)
 - At sea observers
- Research
 - The Aquatic and Biodiversity Annual Review list ongoing and completed pieces of research on key aquatic environment issues for fisheries management. Themes include six broad areas of research: protected species (PRO), non-QMS bycatch (mostly fish) (BYC/NPB), benthic effects (BEN), ecosystem issues (ECO), marine biodiversity (ZBD), and aquaculture.

² <https://www.mpi.govt.nz/dmsdocument/3967-National-Fisheries-Plan-for-Deepwater-and-Middle-depth-Fisheries-2019>

³ <https://www.mpi.govt.nz/dmsdocument/51892-Annual-Operational-Plan-for-Deepwater-Fisheries-202223>

⁴ <https://www.mpi.govt.nz/dmsdocument/21746-medium-term-research-plan-for-deepwater-fisheries-report>

⁵ <https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/plans-and-submissions/202425/final-csp-annual-plan-2024-25.pdf>

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- Some key benthic effects projects include:
 - BEN2019-04 - A spatially explicit benthic impact assessment for inshore and deepwater fisheries in New Zealand
 - BEN2019-05 - Towards the development of a spatial decision support tool for managing the impacts of bottom fishing on in-zone, particularly vulnerable or sensitive habitats
 - BEN2020-01 - Extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone
 - BEN2020-07 - Extent and intensity of trawl effort on or near underwater topographic features in New Zealand's Exclusive Economic Zone
 - BEN2021-01 - Characterisation of benthic habitats in four inshore areas and their potential as HPSFM
- New proposed fisheries research projects are published annually through the MPI⁶ and previous years completed work is also published.

To date New Zealand's MPA Policy has only been applied to the 12 nm TS. The Fisheries Act 1996 has been the primary legislation for establishing marine protection in the EEZ (given the Marine Reserves Act only applies in the TS). The main protection measures established in the EEZ to date have been the 'Seamount' Closures and the Benthic Protection Areas. Marine reserves, SCAs, BPAs and other major spatial restrictions to trawling are presented in Figure 29.

In 2007 New Zealand established Benthic Protection Areas (BPAs). BPAs close 17 large areas to bottom trawling and to dredging (though not to longlining). These areas comprise over 1.1 million km² of largely pristine seabed, an area equal to about 30% of New Zealand's EEZ. Within the BPAs, bottom trawling and dredging is prohibited and any form of mid-water trawling may only be undertaken under strictly controlled and monitored conditions to preclude contact with, and therefore impacts on, the benthic environment.

Table 63. New Zealand MPA Policy Classification.

NZ MPA Policy Classification	Type of Area	Main Objective
Type 1 MPA	Marine reserves	Established under the Marine Reserves Act for the purpose of preserving marine life for scientific study
Type 2 MPA	Other MPAs	Meets the MPA Policy's Protection Standard but has not been established under the Marine Reserves Act such as marine mammal sanctuaries
Protection Tools	-	Not recognised as an MPA because does not meet the MPA Policy Standard but still recognised as a protection tool

⁶ <https://www.mpi.govt.nz/dmsdocument/51409-Fisheries-Research-Services-for-202425>

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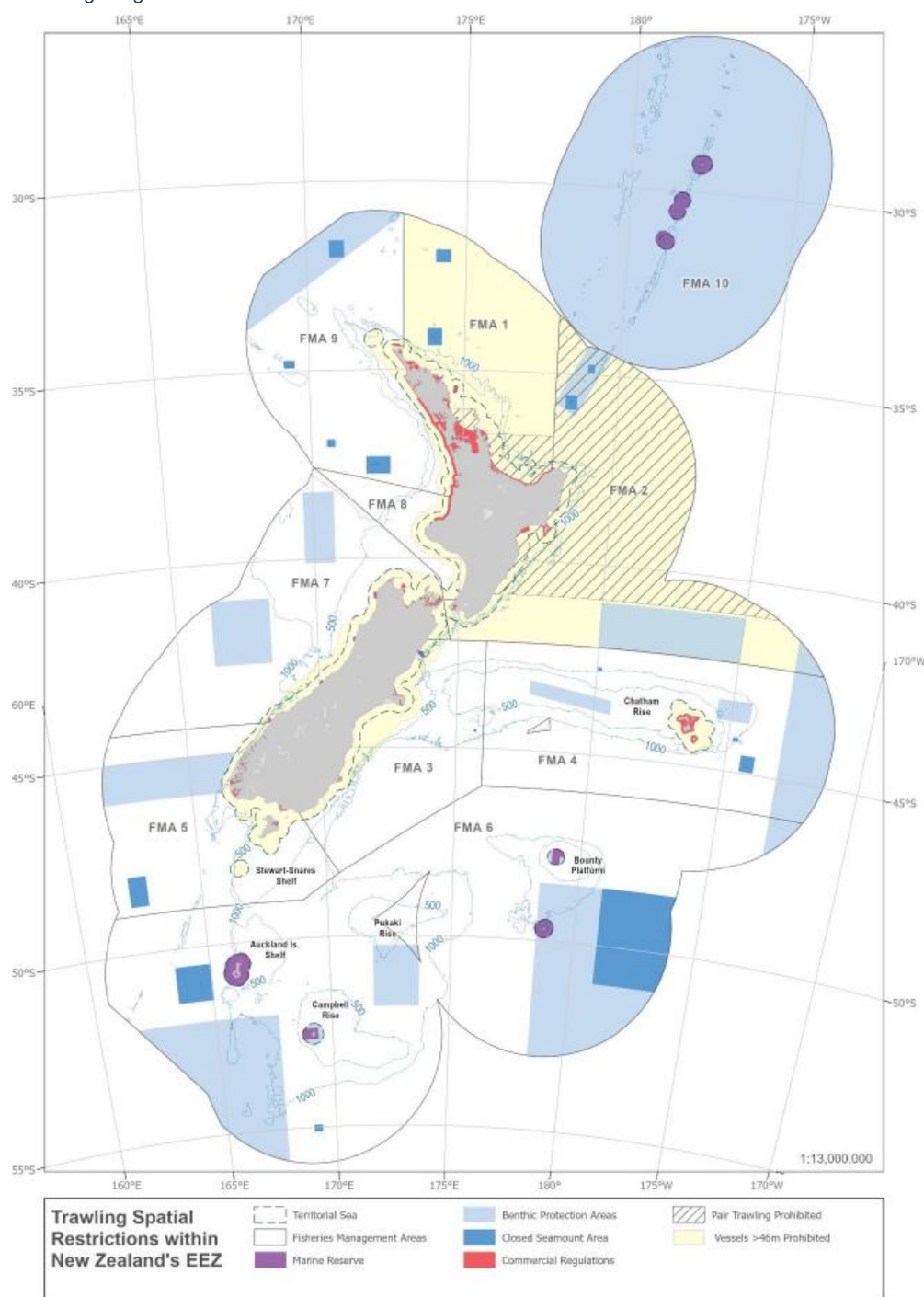


Figure 29. Map of the major spatial restrictions to trawling and dredging and Fisheries Management Areas (FMAs) within the outer boundary of the New Zealand EEZ. (AEBAR 2021 – Chapter 11).

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Most coral species are protected under the Wildlife Act, 1953, within one of the orders or family groups as indicated below:

- Gorgonians – Order Gorgonacea
- Black corals – Order Antipatharia
- Stony Corals – Order Scleractinia
- Hydrocorals – Family Stylasteridae

Schedule 6 of the Exclusive Economic Zone and Continental Shelf Regulations (2013) lists sensitive environments and thresholds to indicate their existence (Ministry for Environment 2013)⁷

Table 64. Ministry for Environment 2013, Schedule 6, sensitive environments.

Sensitive environment	Indicator of existence of sensitive environment
Stony coral thickets or reefs	A stony coral reef or thicket exists if— • a colony of a structure-forming species (ie, <i>Madrepora oculata</i>, <i>Solenosmilia variabilis</i>, <i>Goniocorella dumosa</i>, <i>Enallopsammia rostrata</i>, <i>Oculina virgosa</i>) covers 15% or more of the seabed in a visual imaging survey of 100 m² or more; or • a specimen of a thicket-forming species is found in 2 successive point samples; or • a specimen of a structure-forming species is found in a sample collected using towed gear.
Xenophyophores (sessile protozoan) beds	A xenophyophore bed exists if average densities of all species of xenophyophore found (including fragments) equal or exceed 1 specimen per m ² sampled.
Bryozoan thickets	A bryozoan thicket exists if— • colonies of large frame-building bryozoan species cover at least 50% of the of an area between 10 m² and 100 m²; or • colonies of large frame-building bryozoan species cover at least 40% of an area that exceeds 10 km²; or • a specimen of a large frame-building bryozoan species is found in a sample collected using towed gear; or • 1 or more large frame-building bryozoan species is found in successive point samples.
Calcareous tube worm thickets	A sensitive tube worm thicket exists if— • 1 or more tube worm mounds per 250 m² are visible in a seabed imaging survey; or • 2 or more specimens of a mound-forming species of tube worm are found in a point sample; or • mound-forming species of tube worm comprise 10% or more by weight or volume of a towed sample.
Chaetopteridae worm fields	A sensitive chaetopteridae worm field exists if worm tubes or epifaunal species— • cover 25% or more of the seabed in a visual imaging survey of 500 m² or more; or • make up 25% or more of the volume of a sample collected using towed gear; or • are found in 2 successive point samples.
Sea pen field	A sea pen field exists if— • a specimen of sea pen is found in successive point samples; or • 2 or more specimens of sea pen per m² are found in a visual imaging survey or a survey collected using towed gear.
Rhodolith (maerl) beds	A rhodolith bed— • exists if living coralline thalli are found to cover more than 10% of an area in a visual imaging survey; • is to be taken to exist if a single specimen of a rhodolith species is found in any sample.
Sponge gardens	A sponge garden exists if metazoans of classes Demospongiae, Hexactinellida, Calcarea, or Homoscleromorpha— • comprise 25% or more by volume of successive point samples; or

⁷ Ministry for the Environment. 2013. Exclusive Economic Zone and Continental Shelf (Environmental Effects—Permitted Activities) Regulations 2013. (SR 2013/283).

<https://www.legislation.govt.nz/regulation/public/2013/0283/latest/whole.html#DLM5270660>

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Sensitive environment	Indicator of existence of sensitive environment
	- comprise 20% or more by volume of any sample collected using towed gear; or - cover 25% or more of the seabed over an area of 100 m² or more in a visual imaging survey.
Beds of large bivalve molluscs	A bed of large bivalve molluscs exists if living and dead specimens — - cover 30% or more of the seabed in a visual imaging survey; or - comprise 30% or more by weight or volume of the catch in a sample collected using towed gear; or - comprise 30% or more by weight or volume in successive point samples.
Macro-algae beds	A macro-algae bed exists if a specimen of a red, green, or brown macro-algae is found in a visual imaging survey or any sample.
Brachiopods	A brachiopod bed exists if 1 or more live brachiopods — - are found per m² sampled using towed gear; or - are found in successive point samples.
Deep-sea hydrothermal vents	A sensitive hydrothermal vent exists if a live specimen of a known vent species is found in a visual imaging survey or any sample. The following vent species are known to exist in New Zealand waters: <i>Vulcanolepis osheai</i>: <i>Ashinkailepas kermadecensis</i>: <i>Gigantidas gladius</i>: <i>Vulcanidas insolatus</i>: <i>Alvinocaris niwa</i>: <i>A. longirostris</i>: <i>A. alexander</i>: <i>Lebbeus wera</i>: <i>Nautilocaris saintlaurentae</i>: <i>Gandalfus puia</i>: <i>Xenograpsus ngatama</i>: <i>Paralomis hirtella</i>: <i>Bathyaustriella thionipta</i>: <i>Siboglinum</i> sp: <i>Oasisia fujikurai</i>: <i>Lamellibrachia juni</i>: <i>Sclerasterias eructans</i>: <i>Parachnoidea rowdeni</i>: <i>Pyrolycus moelleri</i>: <i>Symphurus thermophiles</i>.
Methane or cold seeps	A methane or cold seep exists if a single occurrence of one of the following taxa is found in a visual imaging survey or any sample: - large siboglinid tubeworms <i>Lamellibrachia</i> sp: - vesicomysid clams <i>Calyptogena</i> sp: - mussels in the family Bathymodiolinae: - solemyid clams (<i>Acharax clarificata</i>): - the sponges <i>Stelletta</i> n sp and <i>Pseudosuberites</i> sp: - ampharetid, dorvilleid, and pogonophoran (<i>Siboglinum</i> sp) polychaete worms.

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10.2.10 Ecosystem

Hoki are a key biological component of the upper slope (200–800 m) ecosystem and is the species with the highest biomass. Hoki preys on lantern fishes and other midwater fishes, with larger hoki (over 80 cm) consuming proportionately more than smaller hoki. The diet of hoki overlaps with the diets of alfonsino, arrow squid, hake, javelin fish, Ray's bream, and shovelnose dogfish. While hoki is prey for hake, stargazers, smooth skates, several deepwater shark species and ling.

Research into deepwater ecosystems in the New Zealand EEZ is most advanced in the vicinity of Chatham Rise region. Primary production is high in the region due to the convergence of subantarctic and subtropical water and the region supports valuable deepwater fisheries, an unusually rich benthic ecosystem and large seabird populations. Ecosystem modelling of the Chatham Rise food web has been conducted since the mid-2000s (FNZ, 2023a).

Data from the Sub-Antarctic and Chatham Rise trawl surveys were used to develop ecosystem indicators using diversity, fish size, and trophic level. Species-based indicators appeared to identify some changes correlated with fishing intensity with increasing evenness (reducing diversity) but no evidence of species disappearing from the food-web. Some size characteristics of fish in research trawls on the Chatham Rise had changed, with fewer larger or heavier fish, although the median length of the catch did not change (Tuck, et al., 2009).

A balanced trophic model of Chatham Rise, with the focus on the role of demersal fish in the food web including hoki, orange roughy, smooth oreo, black oreo, ling, silver warehou, hake, javelin fish and barracouta and three fish groups: rattails, dogfish and other demersal species, showed that benthic invertebrates, macrozooplankton and mesopelagic fish had particularly high ecological importance in the foodweb (Pinkerton, (2011).

Recent work developing the Chatham Rise Atlantis model (McGregor, et al., 2019, McGregor, et al., 2020), which comprises waters from the shoreline around Chatham Islands to depths of 1,300 m along the Chatham Rise, has shown similar results to fisheries stock assessment models for key fisheries species. The key species groups are orange roughy, hoki, small pelagic fish (primarily myctophids), and spiny dogfish.

10.2.10.1 Ecosystem monitoring

Three series of scientific trawls in New Zealand waters are particularly valuable for understanding ecosystem dynamics and for monitoring for trophic and ecosystem-level effects at the level of the demersal fish community (Tuck et al. 2009):

- A scientific trawl survey has been carried out on the Chatham Rise region approximately annually since 1992
- A similar scientific trawl survey has been carried out over the Sub-Antarctic plateau over the same period, but less frequently (Bagley & O'Driscoll 2012, Tuck et al. 2009)
- 15 scientific trawl surveys have been carried out in the Hauraki Gulf region between 1980 and 2000.

These surveys used a consistent methodology and were used to investigate change in a series of indicators in the demersal fish community. Data from Chatham Rise trawl surveys between 1992 and 2007 showed evidence of increasing evenness (i.e. reduced diversity), but no evidence that species were being lost from the food web. Some size characteristics of fish had changed, with fewer fish longer than 30 cm or heavier than 750 g being taken by trawl gear, although the median length of the catch did not change (Tuck et al., 2009).

Research into deepwater ecosystems in the New Zealand EEZ is most advanced in the vicinity of Chatham Rise region. Primary production is high in the region due to the convergence of subantarctic and subtropical water and the region supports valuable deepwater fisheries, an unusually rich benthic ecosystem and large seabird populations (FNZ, 2022c). Ecosystem modelling of the Chatham Rise food web has been conducted since the mid-2000s (FNZ, 2022c).

Data from the Sub-Antarctic and Chatham Rise trawl surveys were used to develop ecosystem indicators using diversity, fish size, and trophic level (Tuck et al., 2009). Their analyses showed some evidence of change in ecosystem indicators over time. For example, there was evidence of increasing evenness (reducing diversity) but no evidence that species were being lost from the food-web. Some size characteristics of fish in research trawls on the Chatham Rise had changed, with fewer fish longer than 30 cm or heavier than 750 g being taken by trawl gear, although the median length of the catch did not change. There was also evidence that the proportion of piscivorous fish and of true demersal (rather

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than benthic-pelagic) species declined over the studied period, but “low-resilience” species such as dogfish and rays had increased relative to other species on the Chatham Rise. There were also changes in the spatial distribution of fish species, with 16 out of 47 species showing changes (half declining and half increasing) in the proportion of the study area over which 90% of their abundance by weight was caught (Tuck et al., 2009). The Tuck et al. (2014) considered the utility of a suite of indicators relevant to deepwater fisheries. Recommended deep water fishery-specific indicators, included the following:

- Total removals (nationally, by region or target fishery)
- Target species biomass
- Species distribution
- Total fish biomass
- Community diversity
- Proportion of large fish
- Mean trophic level.

There does not appear to be a more recent update of the change in ecosystem indicators over time since Tuck et al 2009. Focus has instead been on developing ecosystem models.

A balanced trophic model of Chatham Rise, with the focus on the role of demersal fish in the food web including hoki, orange roughy, smooth oreo, black oreo, ling, silver warehou, hake, javelinfish and barracouta and three fish groups: rattails, dogfish and other demersal species, showed that benthic invertebrates, macrozooplankton and mesopelagic fish had particularly high ecological importance in the foodweb (Pinkerton, (2011).

Atlantis is an end-to-end ecosystem modelling approach that can be used to create an environment in which different scenarios can be played out to test for different results and learn how a system may be reacting to changes within it. The Chatham Rise Atlantis comprehensive ecosystem model is a valuable tool for understanding potential system-wide responses to fisheries management strategies in one of New Zealand’s largest fishing grounds.

For the Chatham Rise deep-sea ecosystem, MacGregor et al, (2019) calculated ‘keystoneness’ as a measure of the effect a species or group has on the rest of the system (change in biomass of the other species groups), that takes into account its proportion of the total biomass. There were four species groups that stood out as having more effect than the other groups: orange roughy, hoki, pelagic fish small (primarily myctophids), and spiny dogfish (MacGregor et al, 2019). Hoki are a key biological component of the upper slope (200–800 m) ecosystem and is the species with the highest biomass, and was ranked highest by MacGregor et al (2019) for keystoneness. They found however that the small pelagics fish (primarily myctophids) had both high keystoneness and responsiveness and so may be most important and influential in scenarios explored with the Chatham Rise Atlantis model (Figure 30).

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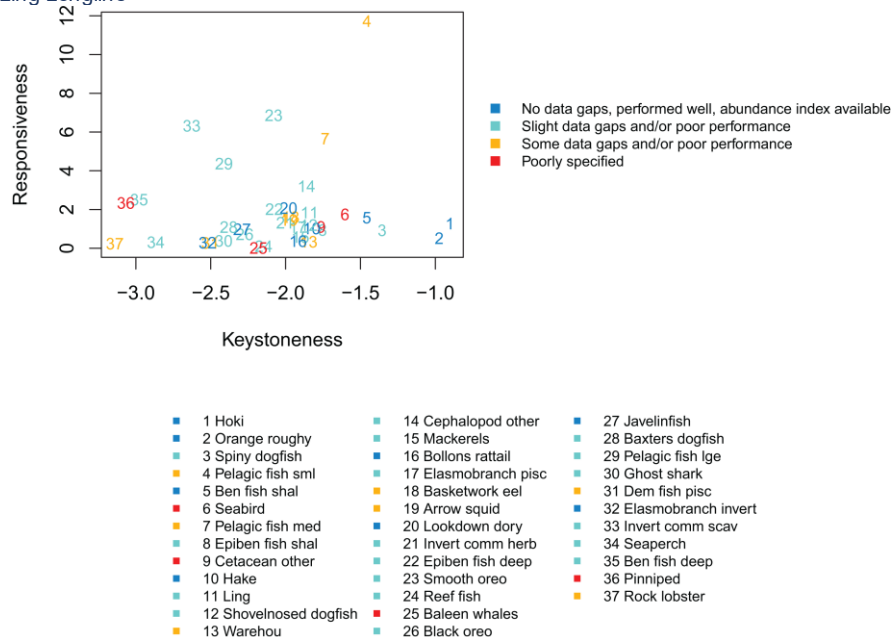


Figure 30. Keystoneness (x-axis) and responsiveness (y-axis) with numbers showing keystoneness ranking and colours how well each species group was informed and/or performed in the model (legend). Source: MacGregor et al, 2019.

MacGregor et al, (2020) then assessed the sensitivity of their Atlantic model to initial conditions finding the Chatham Rise Atlantis model was robust to initialisation uncertainty at the system level, at small, and even quite large (up to 50%) changes, finding the model produced very similar results with respect to ecosystem indicators. Focusing on small pelagics as a key species on the Chatham Rise ecosystem MacGregor et al (2020) found that the effects of uncertainty from the oceanographic variables had a greater range than those from perturbing the initial conditions. It appears that since the late 1970's following a significant increase in fishing pressure, that this group has significantly increased in biomass (Figure 31).

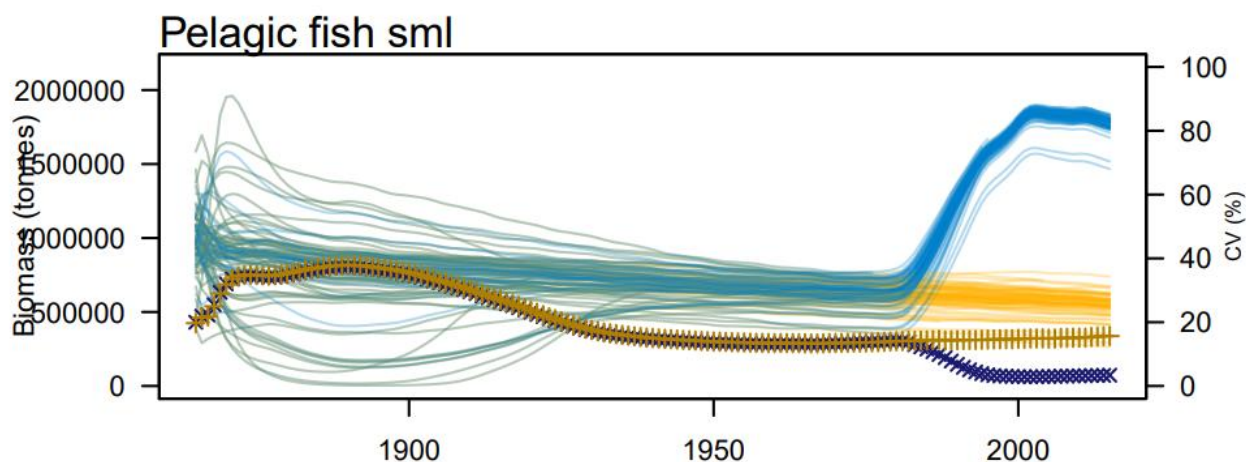


Figure 31. Biomass trajectories from models with fishing included (blue lines) and no fishing (orange lines) for each species group, with CVs from across the model runs by time from fished models (midnight blue crosses) and unfished models (dark orange pluses) overlaid and using the right-hand axis. Source: MacGregor et al 2020, supplemental information DOI: [10.7717/peerj.9254/supp-1](https://doi.org/10.7717/peerj.9254/supp-1).

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Examination of the diets of hoki, hake and ling on the Chatham Rise between 1990 and 2009 showed some marked between-year differences in ling diet but no trends were detected (Dunn et al. 2009; Horn & Dunn 2010). Discards and offal from fisheries were found to be an important part of the diets of deepwater fish and accounted for up to a quarter of the diet of smooth skate (*Raja innominata*), (Dunn et al. 2009, Forman & Dunn 2012).

An estimated 11 000 - 14 000 t per year of non-commercial species and 600 - 2 100 t per year of hoki are discarded by trawl fisheries (Anderson & Smith, 2005), leading to the potential for a significant modification of the diet of scavenging species (Forman & Dunn 2012). Interpreting changes in diet from discards in a way that can inform fisheries management is not straightforward as the changes covered a period of declining hoki spawning biomass (McKenzie 2013) and during a time when evidence of climate variation was noted, namely a shift in the prevalence of Kidson weather types (Kidson 2000) between 1992 and 2007 (Hurst et al. 2012). Disentangling these environmental and fishery drivers of changes to indicators of the demersal fish communities has not yet been attempted in New Zealand.

Since the launch of NZ's Biodiversity Strategy 2000, Fisheries New Zealand has run a Marine Biodiversity Research Programme with 67 projects to date, addressing biodiversity knowledge gaps. Research projects pertinent to the deepwater environment include:

- ZBD2020-07 Recovery of Seamount Communities
- ZBD2020-06 Recovery of biogenic habitats
- ZBD2019-11 Development of Electronic Automated Reporting System (EARS) to improve seabird bycatch monitoring
- ZBD2019-01 Quantifying benthic habitats
- ZBD2019-04 Plastics and marine debris across the ocean floor in New Zealand waters
- BD2018-01 5-year continuous plankton survey (Phase 3)
- ZBD2018-05 Ecosystem function and regime shifts in the Subantarctic
- ZBD2016-11 Quantifying benthic biodiversity across natural gradients
- ZBD2016-04 Organic Carbon Recycling in Deepwater
- ZBD2014-03 Sublethal effects of environmental change on fish populations.

10.2.10.2 Climate change

Cummings, et al., (2021) reviewed the biological and ecological characteristics of 32 commercial fisheries species or species groups and evaluated their potential to be impacted by climate related changes. For offshore species information was sparse. However, for hoki there are known changes in growth rate over time the cause of which is unknown but maybe due to density dependence with hake switching prey in response to low hoki density. There is also a suspected shift in availability of hoki in the Sub-Antarctic, which may be a response to environmental change (Cummings, et al., 2021). However, in the Sub-Antarctic there were changes to several ecosystem components (predators, prey, and competitors of hoki) during anomalously warm and cold years in the 2000s, therefore the links to hoki biomass remain unclear (O'Driscoll et al. 2011). The Chatham Rise Atlantis model has suggested trends in stock abundance (for hoki and other species) which is estimated in stock assessment models to be due to trends in recruitment but may be due to trends in natural mortality rate due to ecosystem changes or species interactions. Overall, based on published literature and expert opinion, the risk of future projected environmental change to hoki and other key Tier 1 stocks was considered low. However, further research is still in progress.

Current climate change research projects include:

- ZBD2018-02 Climate change, fish distribution meta-analysis
- ZBD2018- 03 Climate variability, trends, and fish population parameters
- ZBD2014-09 Climate change risks and opportunities.

10.2.11 Principle 2 Scoring elements

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Scoring Element		Component	Rationale for categorisation
Common name	Scientific name		
Spiny dogfish	<i>Squalus acanthias</i>	In-scope main	See Table 45
Ribaldo	<i>Mora moro</i>		
Rough skate	<i>Dipturus nasutus</i>		
Smooth skate	<i>Dipturus innominatus</i>		
Jack mackerel	<i>Trachurus declivis</i>		
	<i>Trachurus murphyi</i>		
Smallscaled cod	<i>Notothenia microlepidota</i>	In-scope minor	See Table 45
Barracouta	<i>Thyrsites atun</i>		See Table 52
White-chinned petrel	<i>Procellaria aequinoctialis</i>	Out of scope	See Table 54
Salvin's albatross	<i>Thalassarche salvini</i>		
Westland petrel	<i>Procellaria westlandica</i>		
New Zealand white-capped albatross	<i>Thalassarche cauta steadi</i>		
Grey petrel	<i>Procellaria cineria</i>		
Chatham Island albatross	<i>Thalassarche eremita</i>		
Southern black-backed gull	<i>Larus dominicanus dominicanus</i>		
Fluttering shearwater	<i>Puffinus gavia</i>		
New Zealand white-faced storm petrel	<i>Pelagodroma marina maoriana</i>		
Sooty shearwater	<i>Puffinus griseus</i>		
Southern Buller's albatross	<i>Thalassarche bulleri bulleri</i>		
Sponges	<i>Porifera</i>	Habitats	See Table 61
Bamboo corals	<i>Keratoisididae</i>		
Deepwater branching coral	<i>Enallopsammia rostrata</i>		
Feathery hydroids	<i>Leptomeduseae and Anthoathecatae (excluding Styasteridae)</i>		
Sea pens	<i>Pennatulacea</i>		
Stony corals	<i>Scleractinia sp.</i>		
Hydrocorals	<i>Styasteridae</i>		
Erect cyclostome bryozoans	<i>Cyclostomatidae</i>		
Sea fans	<i>Alcyonacea</i>		
Soft corals	<i>Primnoidae</i>		
BOMECS Classes A-O		Habitats – less sensitive	See Section 10.2.8.1
Underwater Topographic Features		Habitats – more sensitive	
Community composition/diversity		Ecosystem	See Section 10.2.10

10.2.12 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – In-scope species outcome

PI 2.1.1	The UoA aims to maintain in-scope species above the PRI and does not hinder recovery of in-scope species if they are below the PRI
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Scoring issue		SG 60	SG 80	SG 100
a	Main in-scope species stock status			
	Guide post	Main in-scope species are likely to be above the PRI. or If the species is below the PRI, it is likely that the UoA does not hinder recovery and rebuilding.	Main in-scope species are highly likely to be above the PRI. or If the species is below the PRI, there is evidence of recovery, or it is highly likely that the UoA does not hinder recovery and rebuilding.	There is a high degree of certainty that main in-scope species are fluctuating around a level consistent with MSY.
	Met?	Yes – all main in-scope species and stocks	Yes (RBF) – RIB, RSK, SSK, JMA No (RBF) - SPD	No – all main in-scope species
Rationale		There are four main in-scope species recorded in the catch composition for the BLL fleet: Spiny dogfish (<i>Squalus acanthias</i>), Ribaldo (<i>Mora moro</i>), Rough skate (<i>Dipturus nasutus</i>) and Smooth skate (<i>Dipturus innominatus</i>), with an additional two bait species assessed also as main in-scope: Jack mackerel (<i>Trachurus declivis</i> and <i>Trachurus murphyi</i>). There are multiple management units of each of the main in-scope species and whilst there are stock reference points available for some of the management units, for the majority no estimates of current or reference biomass are available. The assessment team are therefore required to assess stocks of each of the main in-scope species using Tool A of the Evidence Requirement Framework, the Risk-Based Framework (ERF, Table 5). During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all main in-scope species fishstocks be combined and scored using the RBF methodology as single biological stocks. See Table 73 for individual species/stock MSC RBF PSA-derived scores. SG60 and SG80 are met for ribaldo (RBF = 92), rough skate (RBF= 87), smooth skate (RBF = 82) and both jack mackerel species (RBF = 95). SG60 is met for spiny dogfish but not SG80 (RBF = 75). SG100 is not met for any main in-scope species.		
b	Minor in-scope species stock status			
	Guide post			Minor in-scope species are highly likely to be above the PRI. or If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor in-scope species.

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Met?	No – score capped.
Rationale	There are two minor in-scope species recorded in the catch composition for the BLL fleet: Smallscaled cod (<i>Notothenia microlepidota</i>) and the bait species Barracouta (<i>Thrysites atun</i>). Catches of smallscaled cod have been recorded in FMA 6 (Sub-Antarctic) only and have ranged between zero and 42.2 tonnes during the period 2018-19 to 2022-23 (Table 48). No biomass index or indication of stock status are currently available. The species is therefore eligible for assessment using Tool A of the Evidence Requirement Framework, the Risk-Based Framework (ERF, Table 5). There are four stocks of barracouta in New Zealand, BAR 1, 4, 5 and 7. Stock status reference points are available for BAR 1 and BAR 5. For BAR 4 and 7 no biomass index or indication of stock status are currently available. During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all main in-scope species fishstocks be combined and scored using the RBF methodology as single biological stocks. The biological stocks of smallscaled cod and barracouta are therefore eligible for assessment using Tool A of the Evidence Requirement Framework, the Risk-Based Framework (ERF, Table 5). Per A4.1.5 of the Evidence Requirement Framework, the Risk-Based Framework, <i>The team may elect to conduct a PSA on “main” species only when evaluating PI 2.1.1 and A4.1.5.1, The team shall cap the final PI score as per A5.3.2.</i> The assessment the team has decided to exercise this option, per A5.3.2.1, as only main species have been considered for the PSA analysis, the team shall not assign a final PI score greater than 80.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	60-79
Information gap indicator	More information sought <i>Risk-Based Framework (Tool A of the MSC Fisheries Standard Toolbox) was applied, triggering a stakeholder consultation workshop at the site visit. All susceptibility scoring attributes for species/stocks assessed using the RBF will be reviewed following stakeholder consultation.</i> <i>The use of proxy indicators and reference points for PRI and BMSY will be explored for species/stocks assessed using the default scoring tree following stakeholder consultation.</i>

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	75
Condition number (if relevant)	#1

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PI 2.1.2 – In-scope species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species		
Scoring issue		SG 60	SG 80	SG 100
A	Management strategy in place			
	Guide post	There are measures in place for the UoA, if necessary , that are expected to maintain or to not hinder rebuilding of the main in-scope species at/to the in-scope species outcome SG60 level.	There is a partial strategy in place for the UoA, if necessary , that is expected to maintain or to not hinder rebuilding of the main in-scope species at/to the in-scope species outcome SG80 level. or Where in-scope species outcome fails to meet the SG80, a demonstrably effective strategy is in place between all MSC UoAs that categorise this species as main in-scope to ensure that they collectively do not hinder recovery and rebuilding.	There is a strategy in place for the UoA for managing main and minor in-scope species at the in-scope species outcome SG80 level.
	Met?	Yes – all main in-scope stocks	Yes – all main in-scope stocks	No - SPD, RIB, RSK, SSK, JMA, BAR and smallscaled cod
Rationale		SA3.4.1 The team shall interpret: “Measures” to mean actions or tools that explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere. “Partial strategy” to mean a cohesive arrangement that may comprise 1 or more measures, an understanding of how the measures work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. A “partial strategy” may not have been designed to manage the impact on that component specifically. “Strategy” to mean a cohesive and strategic arrangement that may comprise 1 or more measures and an understanding of how the measures work to achieve an outcome. A “strategy” should be designed to manage impact on that component specifically, it needs to be appropriate to the scale, intensity, and cultural context of the fishery and should contain mechanisms for the modification of fishing practices if unacceptable impacts are identified. Three key components of the fisheries management system are noteworthy with respect to in-scope species management in New Zealand. They work in concert to set the catch limit of a given fish stock. Total Allowable Commercial Catch (TACC) quota is the total quantity of each fish stock that the commercial fishing industry can catch in a given year. The TACC is a portion of the TAC that is set after allowances have been made for customary and recreational fishing, and for other sources of fishing-related mortality (FNZ Infosite). have been in place		

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PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species
	since 1986-87. Species which have a TACC are part of the Quota Management System (QMS). The annual catch entitlement (ACE) scheme was added to New Zealand's quota management system for fisheries in 2001. The scheme allocates quota owners an annual share of the total allowable commercial catch (TACC) in proportion to their quota holding of a particular fishstock and overcatch attracts paid deemed values that are scaled to level over overcatch (FNZ InfoSite). ACE may also be carried over to the following fishing year. The "Adaptive Management Programme" (AMP) approach was introduced into New Zealand's fisheries management decision making in 1991. The AMP allows a variation in the TAC for fisheries management units (defined as fishstocks) for which there is limited information on stock size (Peacey et al 2001). Spiny dogfish, ribaldo, smooth and rough skates, and jack mackerels, which are categorised as main in-scope species and barracouta categorised as a minor in-scope species are Tier 2 stocks (Table 49). Tier 2 stocks, where possible, are subject to stock assessments, with subsequent Plenary reports summarising fisheries, biological, environmental, stock assessment and stock status information. Small-scaled cod, a minor in-scope species, is a Tier 3 stock (Table 49). Tier 3 stocks, in some cases, have TACC's, stock assessments, generic biomass reference points and in some cases an indication of stock status relative to those reference points. In all cases of the assessed main and minor in-scope species there is little to no knowledge of the biological structure of the stocks and convenient management units are defined to support management. For some management units (fishstocks) there are stock assessments, biomass indices and an indication of stock status. The Plenary reports take into account the most recent data and analyses available to Science Working Groups (SWGs) and Fisheries Assessment Plenary meetings, and also incorporate relevant analyses undertaken in previous years. Tier 2 stocks are managed through TACC's and the QMS. Plenary reports are published annually for all main and minor in-scope species. Wide-area trawl surveys collect biological information and provide abundance indices for a wide range of species. There are three deepwater and middle-depth wide-area trawl surveys that cover the three main deepwater fishing grounds: Chatham Rise, Sub-Antarctic, and the West Coast of the South Island (WCSI). The surveys are optimised to provide information on relevant Tier 1 middle-depth fish stocks, but also provide valuable information on a range of Tier 2 and non-QMS species, including data that informs risk assessments for sharks, and important ecosystem data (e.g. sea temperature, stomach sampling) in these key fishery areas. Tier 2 species and stocks are typically less valuable bycatch fisheries or are only target fisheries at certain times of the year. Because of the nature of these fisheries, Tier 2 fisheries are often data limited making full stock assessments problematic. The abundance of Tier 2 stocks may be monitored using a number of approaches including stock assessment, CPUE indices, age and/or size structure, and trawl survey indices. Reviews of stock status for Tier 2 stocks are primarily undertaken based either on significant changes in catch volume (e.g. decrease in bycatch in another target fishery suggesting a potential sustainability issue or an increase suggesting an increase in abundance), or when specific concerns are raised by stakeholders. In addition, trends in the bycatch of Tier 2 (and non-QMS Tier 3) species and stocks are continuously monitored

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PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species			
	through bycatch reports prepared through the Aquatic Environment research stream, and the three wide area multi-species trawl surveys. Independent monitoring of the ling longline UoAs is provided for by independent scientific observers. This, alongside mandatory daily electronic reporting of catches and land-based catch-sampling, complements the research trawl surveys and contributes to determination of trends in stock abundance for tier 2 and tier 3 stocks. There is clearly more than a single measure in place to manage main in-scope species in the New Zealand bottom ling longline fishery. Those measures are cohesive and reported on coherently annually through multiple platforms, primarily annual plenary reports for each species. There is deemed to be a partial strategy in place for all main in-scope species, SG80 is met. Apart from the QMS-managed stocks (Tier 2), management is not designed for each in-scope species specifically. The lack of knowledge of the biological structure of the stocks or stock assessments, biomass indices and an indication of stock status for some fishstocks precludes scoring at SG100 for all main and minor in-scope species. SG100 is not met.			
B	Management strategy effectiveness			
	Guide post	The measures, if necessary , are considered likely to work for the main in-scope species, based on plausible argument.	There is some evidence that the measures/partial strategy, if necessary , is achieving the objectives for main in-scope species set out in scoring issue (a), based on some information directly about the UoA and/or species involved.	There is evidence that the partial strategy/strategy is achieving the objectives set out in scoring issue (a), based on information directly about the UoA and/or species involved.
	Met?	Yes – all main in-scope stocks	Yes – all main in-scope stocks	No – all main and minor in-scope stocks
Rationale	Trends in catches of retained and bycatch species are indicative of management effectiveness in the ling longline fishery. The most recent estimates of the level of individual fish and invertebrate species non-target catch in each fishing year from 2002-03 to 2017-18 by Finucci et al. (2020). Finucci et al. (2020) showed that ling accounted for about 65% of the total estimated catch from all observed bottom longline sets targeting ling between 1 October 2002 and 30 September 2018 (Figure 14). Finucci et al. (2020) observed that the total annual non-target catch ranged from 1 408–4 724 t between 2002–03 and 2017–18 and that there was no trend over time for the annual estimates of total non-target catch for any of the groups and an average discard fraction of 0.36 comparable with recent mean rates in New Zealand deepwater trawl fisheries. There are no strong patterns or trends in the amounts of non-target catch of QMS species over time, although some increase in trend was observed since 2014-15 (Figure 32). The estimated annual non-target catch of non-QMS species was much lower than that of QMS species, and in most years was 600-800 t, with a low of 120 t in 2012-13. The highest non-QMS catch of 2 163 t occurred in 2002-03, the first year of the time series (the year before spiny dogfish entered the QMS), and as observed with QMS species, levels increased after 2014-15 (Figure 32).			

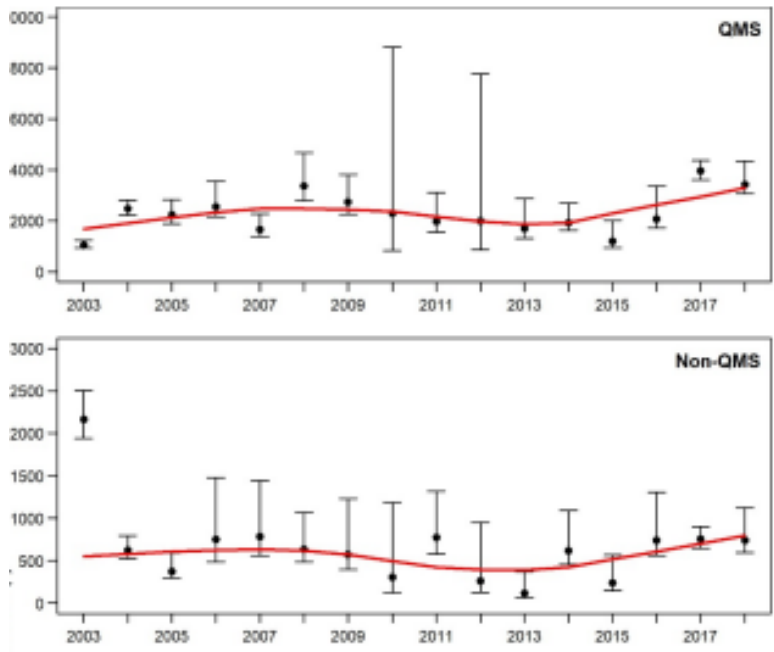
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PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species		
		 Figure 32. Annual estimates of non-target catch in the target ling longline fishery, by species category, for fishing years 2003 to 2018 (black dots). Error bars indicate 95% confidence intervals. The red lines show the fit of a locally weighted polynomial regression to annual non-target catch. Source: Finucci et al., 2020. The trends in catches of QMS and non-QMS species, coupled with the overall success of management measures to maintain those species above the PRI level (with targets to achieve B_{MSY} or similar where not already met), constitutes some evidence that the partial strategy is achieving the objectives for main in-scope species. SG60 and SG80 are met. Limitations to stock assessments, or the absence thereof, and the estimation of stock status/biomass relative to management targets and limits means that there is not a high degree of certainty that main in-scope species are fluctuating around a level consistent with MSY or that minor in-scope species are highly likely to be above the PRI (as required at the SG100 level of si (a) and as per the management targets described by Fisheries New Zealand), SG100 is not met.		
C	Review of alternative measures			
	Guide post	There is a review of alternative measures to minimise UoA-related mortality of unwanted catch of main in-scope species	There is a review at least once every 5 years of alternative measures to minimise UoA-related mortality of unwanted catch of main in-scope species and they are implemented, as appropriate.	There is a review that happens every 2 years of alternative measures to minimise UoA-related mortality of unwanted catch of all in-scope species, and they are implemented, as appropriate.
	Met?	Yes – spiny dogfish, ribaldo, rough skates, smooth skates NA – jack mackerels	Yes – spiny dogfish, ribaldo, rough skates, smooth skates NA – jack mackerels	No – spiny dogfish, ribaldo, rough skates, smooth skates, barracouta, smallscaled cod NA – jack mackerels

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PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species
Rationale	Per SA3.1.1e, <i>“Unwanted catch” is the part of the catch that the UoA did not intend to catch but could not avoid and did not want or chose not to use.</i> Finnuci et al 2020 estimated, for the ling longline fishery, 67.9% of all spiny dogfish, 7.4% of ribaldo, 4.2% of rough skates and 12.6% of smooth skates were discarded between 2002 and 2018. Anderson et al 2019 estimated, for the trawl fishery, 0.64% of jack mackerels and 6.44% of barracouta were discarded between 2002 and 2017. For jack mackerels, discard levels are negligible and this scoring issue is not applicable. Estimation of non-target species catch is carried out for each of the Tier 1 Deepwater fisheries on a rotational basis, updated about every 4–5 years. The ling longline fishery is not the main source of mortality for the main in-scope species under assessment, they are typically taken in larger volumes by bottom trawl fisheries. Finucci et al 2020 identified that, in the ling longline fishery, discards of ling have significantly decreased since 2002/03, and non-significant decreases of non-QMS fish were also observed (Figure 32). The management of non-target fish and invertebrate catch in the offshore (deepwater and middle-depth) fisheries is described in the National Fisheries Plan for Deepwater and Middle-depth Fisheries (Fisheries New Zealand 2019). Under the National Deepwater Plan 2019, the objective most relevant for management of non-target fish and invertebrate catch is Management Objective 6: Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate adverse effects on associated or dependent or incidentally caught fish species. All catches of species managed under the QMS are required by law to be accurately recorded, reported and landed with a few prescribed exceptions for landings. Deemed values prevent an incentive for dumping. Deemed values are payable for QMS species caught without balancing ACE (Annual Catch Entitlement). Where deemed values are payable for QMS species taken without balancing ACE, the deemed value is set at a level to remove any financial benefit to industry to catch but at a level that will not incentivise what would be illegal discarding. The penalties for discarding QMS species without authorisation are severe, further reducing the incentives to discard. Discarding can occur but only to a limited degree as discarding is legal but needs to be recorded by a scientific observer and counted against the vessel quota. Catch overages can also occur when a species is a bycatch to the main targeted species. The QMS is an incentive-based system designed to encourage good behaviour (i.e. maintaining catch within the TACC) and penalizing bad behaviour (i.e. penalizing catch above the TACC through an additional tax or deemed value). Quota holders can address catch over their allotted ACE through purchasing unfished ACE from other quota holders. Spiny dogfish are a QMS-species that are permitted to be discarded dead or alive per Schedule 6 of the Fisheries Act 1996. For the remaining main in-scope species, ribaldo, rough skates and smooth skates and minor in-scope species barracouta, all of which are QMS species, there are restrictions with respect to discarding under the new discard rules introduced by the Fisheries Amendment Act 2022. The minor in scope non-QMS species, smallscaled cod, is only scored at the SG100 level. Under the new discard rules introduced by the Fisheries Amendment Act 2022 (https://www.legislation.govt.nz/act/public/2022/0056/latest/whole.html), all QMS species must be retained and landed unless the species is subject to a Ministerial exemption or is permitted for return under observer-authorised provisions pursuant to s72 of the Fisheries Act 1996. The form in which it is landed is not specified, but all QMS species landed must have an associated catch

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PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species		
		weight estimate reported by fishstock (irrespective of product type landed). Also, for any authorised discards of QMS species, a catch report must also be provided (catch weight estimate, stock, area, etc.). The 2024 and 2025 landings and discard exceptions documents (FNZ, 2024g, 2025) outline the rules related to discarding, including of spiny dogfish, rough skate and smooth skates. Unwanted catch, and discards thereof, is limited by limiting fishing activity in areas that are fished by setting annual TACCs for individual species and bringing most bycatch species into the QMS with steadily higher ‘deemed values’ for any fish caught in excess of an individual’s annual catch entitlement (ACE). TACCs are set annually, constituting a regular review of the main measure to limit discards and the new discard rules introduced by the Fisheries Amendment Act 2022 has been reviewed, SG60 is met. Per SA3.7.2.2, <i>The team shall verify that a review includes consideration of the potential effectiveness and practicality of “alternative measures”</i>. Per SA3.7.2.1, <i>The team shall interpret “alternative measures” as alternative fishing gear and/or practices (i.e. those not already used in the UoA prior to the review) that have been shown to “minimise” incidental observed and/or unobserved mortality of the species or species type to the lowest achievable levels.</i> Regular and structured reviews of measures to minimise unwanted catch occur and are embedded within the broader fisheries management framework, including the Fisheries Assessment Plenary process that takes place annually and the implementation of new regulatory measures, such as the amendments to the Fisheries Act 2022. During the site visit the client discussed the application of ‘potting’ as a viable alternative method for ling. While potting is not a new method, it has not been widely used in the ling fishery and was subject to a review to assess its potential as a lower-impact alternative. Potting for ling in LIN 3&4 represented less than 1% of the catch up until 2013; but since then the use of this method has increased, and potting represented 10–16% of the catch in that area per year between 2018 and 2022 and 31% of total catches in the 2023 fishing year. The use of potting has also increased more recently in other ling stocks: in the 2023 fishing year, it represented 22% of total catches in LIN 7WC and 12% of total catches in LIN 5&6 (Mormede et al., in prep). The reduction in longline effort, with vessels transitioning to potting, that generates almost no unwanted catch and offers better selectivity, demonstrates that alternative measures are being actively considered, as reported in annual plenary reports and increasingly being incorporated, SG80 is met. It is anticipated that future reporting including feedback from operators, gear trials, and spatial overlap analysis with bottom longlining and trawling will improve scoring, until such time SG100 is not met.		
D	Shark finning (V2.01 SGs per accepted Variation Request – Section 11.12.1)			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	Yes	Yes
Rationale		Interactions with in-scope and ETP chondrichthyans are “negligible” per SA3.2.3. It is noted that short-finned mako shark, leafscale gulper shark, school shark, porbeagle shark, and blue shark are categorised as ETP species. However per SA3.7.4 the <i>team shall score scoring issue (d) following SA2.4.3 - SA2.4.4, regardless of the ETP status of these sharks</i> (and level of catch).		

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PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species
	There is a Fins Naturally Attached (FNA) policy requirement in New Zealand since 2014, with eight exceptions to the requirement. For those shark species it is not possible to confirm that the UoA has adopted the FNA because GSA2.4.3–GSA2.4.4 of MSC Standard v3.1 does not permit exemptions to an FNA Policy. LRQA applied for and were granted a Variation Request (Section 11.12.1) to apply a blanket modification to the assessment tree for scoring issue 2.1.2d and 2.2.2d, applying the requirements of SA2.4.3–SA2.4.7 (MSC V2.01) to ensure that shark finning is not being undertaken in the UoA. Subject to application of the Variation Request per MSC V2.01, at SG100: SA2.4.7.1, If sharks are landed with fins naturally attached, there is some external validation such that there is a high degree of certainty that shark finning is not taking place. SA2.4.7.2, If sharks are processed on board: - There are comprehensive regulations in place governing the management of sharks; - There is full documentation of the destination of all shark bodies and body parts; and - Comprehensive external validation of the vessels' activities is available to confirm with a high degree of certainty that shark finning is not taking place. Per GSA2.4.5–GSA2.4.7, the MSC recognises that in some fisheries adoption of a FNA Policy may be practically difficult to achieve when sharks are destined for processing and utilisation, and therefore also recognises that landing fins and other shark parts separately, including as meal, may be allowed if adequately regulated and observed. External validation is prescribed as follows: At SG 80 "good external validation" should be understood to indicate a validation level equivalent to a nominal observer coverage of 20% of effort, although the CAB may accept other rates and alternative measures/evidence with sufficient justification that the same scientific outcome (highly likely confidence that finning is not taking place) is delivered. At SG 100 "comprehensive external validation" is required. This gives consideration of the continuity of data collection, precision and accuracy of information, and any bias, etc, that is capable of supporting the measures in place given the level of precaution that is implicit in the measures and the ability of the measures for detecting any changes. Around 39 chondrichthyan species/species groups have been observed in catches over the most recent five-year period. Spiny dogfish (<i>Squalus acanthias</i>) is the most abundant species caught and comprises ~16.6% of the overall total catch. Rough and smooth skate (<i>Dipturus nasutus</i> & <i>D. innominatus</i>) are the second- and third-most abundant chondrichthyans at 2.6% & 2.2% of the overall catch. All three species are managed under the Quota Management System. All other chondrichthyan species individually comprise <2% of the catch (Table 50). School shark, porbeagle shark, blue shark and mako shark (with negligible catches) are also managed under the QMS. The Fisheries (Commercial Fishing) Regulations 2001 prohibit shark finning and require that any shark fins landed must be naturally attached to the remainder of the shark. However, an exception to the fins attached requirement is provided for seven QMS species to allow at-sea processing to continue (Figure 33).

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PI 2.1.2

There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species

All QMS shark species must be landed if taken. However, Schedule 6 provides for exceptions to this rule by listing QMS species which may be returned to the sea (FNZ, 2022), as follows:

- Rig (SPO) and School shark (SCH) – may be returned alive only
- Blue shark (BWS), mako shark (MAK) and porbeagle shark (POS) – may be returned alive or dead and if dead, balanced against ACE
- Spiny dogfish (SPD) – may be returned alive or dead and must always be balanced against ACE regardless of life status.

In New Zealand two shark definitions are used:

- 1) The Fisheries (Commercial Fishing) Regulations 2001 defines sharks as 'a fish of the class Chondrichthyes, but excludes Batoidea'.
- 2) New Zealand's NPOA Sharks uses the term 'sharks' generally to include all species in the class Chondrichthyes (sharks, rays, skates and chimaeras).

Recognising the difference in shark definitions within New Zealand for different purposes it is precautionary to apply the more comprehensive definition of the NPOA Sharks.

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

Figure 33. New Zealand conditions for landing shark fins (FNZ AOP, 2022).

Scoring Summary

The following information is provided to demonstrate there is a high degree of certainty shark finning is not taking place:

1. The Fisheries (Commercial Fishing) Regulations 2001.
2. NPOA-Sharks 2022 (FNZ, 2022)
3. A fleet-wide code-of conduct for deepwater vessels.
4. Information to confirm that the UoA has adopted an FNA policy is available through Operational Procedures (OPs) in place which are updated regularly/iteratively by the Deepwater Group.
5. OPs are communicated effectively to the deepwater fleet through an Information Portal available on the bridge of all UoA vessels
6. Implementation is supported through the full time Environmental Liaison Officer who is required to visit at least 90% of vessels in the Deepwater fleet each year
7. FNZ's observer protocols require observers to look for any instances of shark finning.

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PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species
	8. Where a shark is landed, observers record the species and determine its disposal code. The disposal code is cross-checked against DWC's Sharks Operational Procedures to check they are landed in accordance with DWC's operational documentation. 9. Observer reports include provision to record shark processing codes and instances of observed shark finning (noting that there have been no reported shark finning cases reported). 10. Observers are positioned to directly observe vessel interactions with sharks throughout the catch operation, including reporting the fate of sharks either retained, processed or discarded. 11. Vessel offloads are monitored Ministry for Primary Industries Fishery Officers and vessels are inspected to ensure all catch is landed from the vessel. There have been no reported instances of shark finning through dockside compliance monitoring. 12. All stakeholders interviewed during the site visit, including fishery managers, compliance officers, observer program managers, external consultants and the client where emphatic that shark finning does not take place in New Zealand deepwater fisheries. For the LIN 3 – 7 fisheries combined over the period 2018-19 to 2022-23, observer coverage ranged between 5.7% and 26.4% per annum, with the 5-year average being 15.9% of hooks observed (Table 44), (SNZ, 2024). For spiny dogfish and all non-QMS species the FNA applies and whether landed whole or processed, evidence is available to satisfy SA2.4.7.1, SG60, SG80 and SG100 are met. Shark species which are permitted to be landed against a fin to greenweight ratio and blue shark, which are permitted to be landed with Fins Artificially Attached (Figure 33) do not meet the definition of a FNA in place, therefore the requirements of SA2.4.7.2 apply at SG100. This applies for mako shark, porbeagle shark, rig and school shark, pale and dark ghost sharks and elephant fish. It is clear that there are comprehensive regulations in place governing the management of sharks, in particular there has been a Fins Naturally Attached (FNA) policy requirement in New Zealand since 2014. At the site visit the assessment team requested landing or disposal code, product state code, greenweight and shark fin weight for these seven species for the most recent 5-year period, noting all vessels are required to report landings and disposals for all QMS species through the Electronic Reporting System (ERS). This data was supplied constituting full documentation of the destination of all shark bodies and body parts, including sharks processed to meal. As stated above comprehensive external validation is required at the SG100 level. There is clear continuity of observer data collection in the ling longline UoAs and there is a long history, since 01 October 2014, of the exception to the requirement for a FNA. The representativity of the moderately high levels of observer coverage has been tested, supporting confidence in the trueness and accuracy of the information supplied and limiting the possibility of bias. There is 100% reporting through the ERS and dockside monitoring is comprehensive. For species landed against a fin to green weight ratio the assessment team conclude that the requirements of SA2.4.7.2 are met, SG60, S80 and SG100 are met.
E	Ghost gear management strategy

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PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of in-scope species		
	Guide post	There are measures in place for the UoA, if necessary , that are expected to minimise ghost gear and its impact on all in-scope species.	There is a partial strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on all in-scope species.	There is a strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on all in-scope species.
	Met?	N/A	N/A	N/A
Rationale		Per SA 3.7.5, The team shall only score scoring issue (e) if PI 2.2.2 scoring issue (e) is not scored (i.e. if there are no ETP/OOS scoring elements). This scoring issue is therefore not applicable .		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	<60
Information gap indicator	More information sought The fishery is in the process of updating the FNA and OPs that these species will no longer be allowed to be landed against a fin to greenweight ratio. Further consultation to review the updated FNA and confirm observer protocols with respect to its enforcement will be sought at the site visit.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	85
Condition number (if relevant)	NA

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PI 2.1.3R – In-scope species information if RBF is used to score PI 2.1.1

PI 2.1.3R		Information on the nature and amount of in-scope species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage in-scope species		
Scoring issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main in-scope species			
	Guide post	Qualitative information is adequate to estimate productivity and susceptibility attributes for main in-scope species.	Some quantitative information is adequate to assess productivity and susceptibility attributes for main in-scope species.	
	Met?	Yes	Yes	
Rationale		Observer reported catch composition and chondrichthyan catches for the most recent 5-year period are reflected in Table 45 and Table 50 respectively. Bait species quantities are reported in Table 52. In respect of “Unwanted catches” Finnuci et al 2020 estimated 67.9% of all spiny dogfish, 7.4% of ribaldo, 4.2% of rough skates and 12.6% of smooth skates were discarded between 2002 and 2018. Anderson et al 2019 estimated 0.64% of jack mackerels were discarded in the hoki, hake and ling trawl fishery between 2002 and 2017. The ling longline fishery comprises five UoAs: LIN 3 Chatham Rise (LIN 3 & 4), LIN 4 Chatham Rise (LIN 3 & 4), LIN 5 Sub-Antarctic (LIN 5 & 6), LIN 6 Sub-Antarctic (LIN 5 & 6), LIN 7 WCSI (LIN 7WC). Fishery Management Area (FMA) boundaries broadly capture the ling stocks Quota Management Areas (QMA) (Table 41) and are useful to support distinguishing specific UoA-catch. For the most part however, as related to in-scope species and the availability of information with respect to categorisation of Principle 2 scoring elements and subsequent assessment, the information used is derived from the combined UoAs. Information and data come from a variety of sources including independent Fisheries New Zealand observer data, industry mandatory reporting, contracted fisheries independent research surveys, and contracted projects. The Ministry for Primary Industries (MPI) has a clear and robust system for gathering commercial- and research-related information. Commercial, observer and scientific information is collected in a consistent manner and subject to a strong process of review and validation. The catch monitoring system, that transitioned to the Electronic Reporting System (ERS) in 2019, determines the total catch by QMA and hence the size of the catch by the target fisheries relative to the total catch. Main in-scope species fishstock catch is reported by stock in annual plenary reports (FNZ 2024, 2024c, 2024d, 2024e, 2024f). Ling longline vessels submit daily the Fish catch report – an estimate of the top 8 species (QMS or not); Processing report - for vessels that process their catch on board. These must be completed and provided before the close of the day; A disposal report - Information on all fish not landed. For each fishing event where fish are disposed unless the vessel is submitting processing reports. In this case, they submit a disposal report covering the same period as the processing report; Landing report - a detailed inventory of catch upon landing followed by an update to the report once green weights are confirmed by licensed fish receivers. The landing report covers all species, as opposed to the daily fish catch report, and provide a reliable census of the landed catch per species stock QMA. Observer coverage of deepwater fisheries is planned by financial year and is based on biological information requirements, international requirements, percentage-level coverage targets and observer programme capacity. The level of observer coverage for the different fisheries/sectors is		

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PI 2.1.3R		Information on the nature and amount of in-scope species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage in-scope species		
		tailored to suit the data and information requirements, including for stock assessment, compliance monitoring and ETP species captures. Fisheries New Zealand considers that 30% coverage is sufficient for most fisheries/sectors but implements high (80-100%) coverage for fisheries where there may be what are deemed by management to be high-risk ETP species (e.g., squid and southern blue whiting trawl fisheries where operations overlap with sea lions). Fisheries New Zealand and the Department of Conservation work together each year to develop a 'seadays plan'. Fisheries New Zealand observers record details of catch and discards by species or species groups for the fleet of vessels involved in ling longline fishery. Only a portion of the fishing effort can be covered, however, and the allocation of observers on commercial vessels considers a range of data collection requirements and compliance issues for multiple fisheries, as well as the capacity of vessels to accommodate additional personnel. Although it is not possible to achieve a perfectly representative or random spread of observer effort across the fishery, the analyses used in, for example, Anderson et al 2019, Spatially Explicit Fisheries Risk Assessments (SEFRAs e.g. Edwards et al 2023) and Finucci et al 2020, find that the observer coverage closely matches the overall spatial and temporal spread of the commercial fisheries. Finucci et al. (2020) noted that observer coverage has been reasonably well spread over the spatial extent of the fishery, with observer coverage highest among the sub-Antarctic (SUBA, 27%) and Stewart-Snares shelf (STEW, 28%) (Table 43). Coverage was relatively low in the east coast North Island (EAST), west coast North Island (WCNI), and Northland (NORTH) areas. In general, these areas with low coverage were fished by smaller vessels that would not normally be able to carry observers. These areas also attributed to small proportions of the total effort of the fishery (Table 43). For the LIN 3 – 7 fisheries combined over the period 2018-19 to 2022-23, observer coverage ranged between 5.7% and 26.4% per annum, with the 5-year average being 15.9% of hooks observed (Table 44), (SNZ, 2024). Some quantitative information is available and adequate to assess productivity and susceptibility attributes for main in-scope species, SG80 is met.		
b	Information adequacy for assessment of impact on minor in-scope species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor in-scope species with respect to status.
	Met?			Yes
Rationale		See PI2.1.3R scoring issue (a). SG100 is met .		
c	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage main in-scope species.	Information is adequate to support a partial strategy to manage main in-scope species.	Information is adequate to support a strategy to manage all in-scope species and evaluate with a high degree of certainty whether the strategy is achieving its objective.

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PI 2.1.3R		Information on the nature and amount of in-scope species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage in-scope species		
	Met?	Yes – all main in-scope species	Yes – all main in-scope species	No – main and minor in-scope species
Rationale		Per MSC Toolbox V1.2, A1.3.8, In scoring issue (c), the team shall use its expert judgement to consider the adequacy of information in relation to supporting the management measures, partial strategy, or strategy, including the ability to detect any changes in risk level to in-scope species. The observer sea day allocation and cost-recovery system from quota holders, the independence of observers as they are employed by the MPI and the rigorous review and quality assurance processes outlined in the Science and Research Standard for all information collected, provides assurance that there is no possibility that the commercial interests of the fishery directly prejudice the collection or provision of truthful information. The high level of observer coverage, the up to date catch profiles and coverage statistics, as well as extensive analysis to confirm representativity satisfy the requirements that the observed catch profile provides estimates of total mortality with a high degree of precision. Information is adequate to support a partial strategy to manage main in-scope species, SG80 is met. Smaller longline vessels are not represented in the observer program to the same degree as larger vessels, it is not clear what the consequences of this are with respect to main in-scope species. Furthermore there are limitations with respect to the determination of stock status for main in-scope species, these limitations are clearly highlighted in the species plenary reports but have not been fully addressed (SG100 is not met).		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	More information sought <i>Landing reports from commercial ERS</i>

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	85
Condition number (if relevant)	NA

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PI 2.2.1 – ETP/OOS species outcome

PI 2.2.1		The direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status		
Scoring issue		SG 60	SG 80	SG 100
a	Direct effects			
	Guide post	The direct effects of the UoA are unlikely to hinder recovery of the ETP/OOS unit to favourable conservation status.	The direct effects of the UoA are highly unlikely to hinder recovery of the ETP/OOS unit to favourable conservation status.	There is a high degree of certainty that the direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status.
	Met?	Yes – all 11 seabird species	Yes – all 11 seabird species	Yes – all 11 seabird species
Rationale		Per Table SA8 the probability required at different scoring guideposts are as follows: “Unlikely” = > 70th %ile “Highly unlikely” = > 80th %ile “High degree of certainty” = > 95th %ile Table 53 list the observed interactions with all ETP species (grand total and annual average), their status (alive/dead/decomposed) for sets targeting ling for the most recent five years fishing seasons for which data are available from 2016/17-2020/21 from the Protected Species website. Seabirds are the only ETP/OOS taxa with which the ling longline UoAs have non-negligible interactions. Table 54 provides the mean annual deaths (>0) of seabirds that interact with the bottom longline fisheries in New Zealand (20 species) and the mean annual number of breeding pairs is taken to be the estimated breeding population size, with the lower and upper bounds of the breeding population size presented with 95% CI, using data extracted from the Edwards et al 2023 Spatially Explicit Fishery Risk Assessment. Those data are raised catches from the ling longline UoAs or in some cases from all bottom longline fisheries. For 11 species there are non-negligible interactions and only these species are assessed: White-chinned petrel, Salvin's albatross, Westland petrel, New Zealand white-capped albatross, Grey petrel, Chatham Island albatross, Southern black-backed gull, Fluttering shearwater, New Zealand white-faced storm petrel, Sooty shearwater and Southern Buller's albatross. Table 55 provides the annual observable captures, deaths and risk per species, ranked from highest to lowest median risk for the top 31 most at risk species (noting these are not necessarily the same as the 20 species with which the longline fisheries interact). Species with a median risk ratio <1 are not expected to hinder the achievement of population management (Richard et al., 2020). The default objective is that Risk = 1 corresponds to a median population-stabilisation outcome of 75% of the unimpacted level. This is a higher target than is set by the MSC Standard V3.1 per SA3.9.2.1, <i>The team shall consider favourable conservation status to be a level equivalent to at least 50% carrying capacity unless the team has defined a higher level based on the life history characteristics of the ETP/OOS unit.</i> It is notable however that the determined risk accounts for mortality from all commercial fisheries in New Zealand, and not just the direct effects of the ling longline fishery UoAs. This is most relevant for the southern Buller's albatross where risk is currently assessed to be >1. It is assumed that the bulk of captures by the UoAs would have been accounted for within the categories large Autoline with IWL, large Autoline, small Autoline (LIN, RIB) and small manual (LIN, RIB) – taken to be the sub-group of bottom longline vessels targeting ling, i.e., UoA vessels in assessment. This		

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PI 2.2.1	The direct effects of the UoA do not hinder recovery of the ETP/OOS unit to favourable conservation status
	group of vessels accounted for just 6 (0.76%) of the 785 observed captures of southern Buller's albatross over the period 2006/7-2019/20 (Edwards et al 2023a). If only the direct effect of the UoAs was accounted for the risk to southern Buller's albatross score would drop very significantly. Likewise for species where the upper 95thile credible limit is >1 the risk score would be lower if mortality only from the ling longline UoAs was assessed. For the Salvin's albatross the vessels taken to account for the ling longline UoAs contributed 42 (8.2%) of the 513 observed captures and for New Zealand white-capped albatross 12 (0.84%) of the 1430 observed captures over the period 2006/7-2019/20 (Edwards et al 2023a). A helpful review was provided by the fishery client through Sharp (2025) which updated cryptic mortality multipliers used in the Edwards et al 2023 SEFRA and which also parcelled out the mortality attributable to the BLL UoAs under assessment. The confirmation of mortality and subsequent risk posed by the UoAs only is presented by Sharp (2025) to be orders of magnitude lower than estimated by Edwards et al 2023. Sharp (2025) focused on the three most at risk species: southern Buller's albatross, Salvin's albatross and white-capped albatross. Sharp (2025) estimated mean annual deaths attributable to the BLL fishery and the risk that the equilibrium population size will be reduced as follows: - Southern buller's albatross: 13.2 individuals; risk = 0.022 - Salvin's albatross: 56.3 individuals; risk = 0.022 - White-capped albatross: 35.6 individuals; risk = 0.007 These updated results indicate that the mortalities caused by the longline UoAs in assessment targeting ling, are lower than can be sustained by the populations over the long-term. Even without the critical re-evaluation by Sharp (2025), for these three species, despite accruing the highest risk ratings for seabirds in New Zealand, the proportionate contribution of the long longline UoAs to total mortality is a fraction of a percent in the case of southern Buller's albatross and less than 10% in the case of New Zealand White-capped albatross. Furthermore the risk ratio applied by Edwards et al 2023 equates to 75% of the unimpacted level, whereas the MSC Standard seeks a level equivalent to at least 50% carrying capacity. With the revised risk ratios calculated for the UoAs only being significantly <1, there is a high degree of certainty that the UoAs will not hinder recovery of southern Buller's albatross, Salvin's albatross and white-capped albatross, to favourable conservation status SG60, SG80 and 100 are met. For all other species, it is clear that, despite including all commercial fisheries in New Zealand in the determination of the risk score, the risk ratings <1 and where the upper 95thile are <1 there is a high degree of certainty that the risk posed by all fisheries, and consequently by the ling longline UoAs, will not hinder recovery of those species. SG60, SG80 and SG100 are met.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	NA

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PI 2.2.2 – ETP/OOS species management strategy

PI 2.2.2		The UoA has precautionary management strategies in place designed to:		
		- Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated - Ensure that the UoA does not hinder recovery to Favourable Conservation Status.		
Scoring issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary , that are expected to minimise the UoA-related mortality of the ETP/OOS unit and achieve the ETP/OOS outcome SG80 level of performance.	There is a strategy in place, if necessary , that is expected to minimise the UoA-related mortality of the ETP/OOS unit and achieve the ETP/OOS outcome SG80 level of performance.	There is a comprehensive strategy in place that is expected to minimise the UoA-related mortality of the ETP/OOS unit and achieve the ETP outcome SG80 level of performance.
	Met?	Yes – all 11 seabird species	Yes – all 11 seabird species	Yes – all 11 seabird species
Rationale		Per SA3.4.1 the team shall interpret: “Measures” to mean actions or tools that explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere. “Strategy” to mean a cohesive and strategic arrangement that may comprise 1 or more measures and an understanding of how the measures work to achieve an outcome. A “strategy” should be designed to manage impact on that component specifically, it needs to be appropriate to the scale, intensity, and cultural context of the fishery and should contain mechanisms for the modification of fishing practices if unacceptable impacts are identified. “Comprehensive strategy” to mean a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses. All ETP Species A range of management measures, including industry-led, non-regulatory initiatives, are employed to monitor environmental interactions in deep water fisheries and to reduce the risk of any adverse effects on protected species populations. Measures relating to the deepwater industry’s monitoring of ETP species are described in DWG’s Operational Procedures (OPs) and Vessel Management Plans (VMPs), (DWG, 2024), which include which include, as related to the ling longline UoAs: - Ling Bottom Longline OPs - Marine Mammals OPs - Reporting OPs - Seabirds OPs - Sharks OPs - Benthic OPs (implemented in 2021-22) - Ten Commandments for: - Marine Mammals - Saving Seabirds - Ten Golden Rules for Protected Species Reporting.		

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PI 2.2.2	The UoA has precautionary management strategies in place designed to: • Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated • Ensure that the UoA does not hinder recovery to Favourable Conservation Status.
	The Operational Procedures (OPs) for each species-group include elements of identifying and mitigating risk, safe handling and release following capture, reporting and event response, audit and review. They are monitored and administered by the Deepwater Council (DWC) with performance and conformance audited by Fisheries New Zealand Observers. The OPs are underpinned by New Zealand legislation and National Plans of Action (NPOAs). Key legislation includes : • Fisheries (Seabird Mitigation Measures – Bottom Longlines) Circular (No. 2) 2021 (Notice No. MPI 1375) Bottom Longline Seabird Mitigation Regs 2021 ○ describes the requirements for all vessels greater than 7m to deploy a streamer line, use prescribed line-weighting regimes and restrictions on discharge of offal or fish while setting and hauling bottom longlines. • Fisheries Act 1996: requires that: ○ measures are taken to avoid, remedy or mitigate any adverse effects of fishing-related mortality on any protected species. ○ This Act also includes requirements to report captures of protected species. ○ All catch be reported ○ All QMS-species be landed if taken, except where Schedule 6 applies and provides for their return to the sea (e.g. blue, mako, porbeagle, rig, school shark and spiny dogfish) ○ Adherence to the prohibition of Shark Finning • Wildlife Act 1953 states it is an offence to deliberately take, or attempt to take, harass, injure, mutilate or retain all or any part of any Protected Species • Animal Welfare Act 1999 • Marine Mammals Protection Act 1978: the accidental capture of any marine mammal is permitted provided that the capture is reported to the appropriate authority without delay. It is an offence to accidentally capture a marine mammal and to not report it. National Plans of Action New Zealand has a responsibility to act in accordance with the objective of International Plans of Action for Seabirds and Sharks. The two NPOAs applicable to deepwater fisheries are (though noting only seabirds are assessed as scoring elements for the ling longline UoAs): NPOA-Sharks 2022 (FNZ, 2022) New Zealand's first NPOA-Sharks was in 2008 and the most recent one was NPOA-Sharks 2013. The 2013 NPOA has been reviewed and the NPOA-Sharks 2022 has been consulted on and a draft NPOA circulated. The final NPOA-Sharks 2022 is imminent with consultations having closed in September 2022. The NPOA sharks 2022's vision is New Zealanders work toward ensuring the long-term viability, biodiversity and functional role of sharks, and that any utilisation of sharks in Aotearoa is sustainable. Its seven goals are: 1) Maintaining biodiversity and ecological long-term viability of shark populations;

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PI 2.2.2	The UoA has precautionary management strategies in place designed to: • Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated • Ensure that the UoA does not hinder recovery to Favourable Conservation Status.
	2) Ensuring full utilisation of sharks and maintaining the prohibition on shark finning in New Zealand; 3) Avoiding protected and unwanted shark captures, and maximising post release survival; 4) Minimising anthropogenic effects other than direct fisheries impacts; 5) Better Integration of Tangata Whenua Perspectives and Value; 6) International engagement through enhanced monitoring, data collection and information sharing; and 7) Continuous improvement in the research, data and information to conserve and manage sharks, guided by the SEFRA framework and conservation threat status. NPOA Seabirds (FNZ, 2020) New Zealand's first NPOA was published in 2004 and a revised NPOA-Seabirds published in 2013. The NPOA Seabirds 2020 is New Zealand's third iteration of a national plan of action. The NPOA Seabirds 2020's vision is New Zealanders work towards zero fishing-related seabird mortalities. Its four goals are: 1) Avoiding bycatch — effective bycatch mitigation practices are implemented in New Zealand fisheries; 2) Healthy seabird populations — direct effects of New Zealand fishing do not threaten seabird populations or their recovery; 3) Research and information — information to effectively manage direct fisheries effects on seabirds is continuously improved; and 4) International engagement — New Zealand actively engages internationally to promote measures and practices that reduce impacts on New Zealand seabirds. ETP and OOS species observer programme The Conservation Services Programme (CSP), administered by the Department of Conservation, has as its aim to avoid, remedy or mitigate the adverse effects of commercial fisheries on protected species. The CSP Annual Plan outlines the conservation services projects required to be delivered each year and forms the basis for levying the commercial fishing industry to cover these costs under the Fisheries Act 1996. The CSP objectives are as follows (DOC, 2023): • Objective A: Proven mitigation strategies are in place to avoid or minimise the adverse effects of commercial fishing on protected species across the range of fisheries with known interactions • Objective B: The nature of direct adverse effects of commercial fishing on protected species is described • Objective C: The extent of known direct adverse effects of commercial fishing on protected species is adequately understood • Objective D: The nature and extent of indirect adverse effects of commercial fishing are identified and described for protected species that are at particular risk to such effects • Objective E: Adequate information on population level and susceptibility to fisheries effects exists for protected species populations identified as at medium or higher risk from fisheries.

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PI 2.2.2	The UoA has precautionary management strategies in place designed to: • Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated • Ensure that the UoA does not hinder recovery to Favourable Conservation Status.
	The CSP planning for middle-depth and deepwater fisheries considers and works in parallel with other relevant planning and management processes such as those prescribed in the following: • National Plan of Action (NPOA) for seabirds • National Plan of Action for sharks • Threat Management Plan (TMP) for the New Zealand sea lion The planning process is iterative and inclusive and ensures that gaps are identified and research synergies are maximised. Observer coverage is planned and prioritised based on specific monitoring objectives for protected species interactions with fisheries and achieving adequate coverage levels for high-risk fisheries to allow detection of changes in bycatch over time. Coverage is aimed at reducing uncertainty around the risks to protected species and assessing mitigation options for identified interactions. The allocation of observer coverage across fisheries is guided by factors including data needs for protected species and fisheries management, compliance, and international obligations, with particular consideration of: • Independently verifying protected species captures • Fishing effort • Past observer coverage • Monitoring of high value stocks or fisheries where there may be a sustainability risk • Current level of information, especially for recently protected species • The status of threatened protected species • Historic mortality of protected species and risk assessment work which has been undertaken • Requirements under the NPOAs and any relevant TMPs or Strategies • Planned and ongoing research priorities/projects for DOC and FNZ • Ministerial directives. Observers working in the offshore deepwater and middle-depth trawl fisheries have multiple priorities including stock assessment data collection, compliance monitoring, protected species research and benthic interaction monitoring. As these fisheries have had historically high and consistent levels of observer coverage over the last ten years, they are well characterised. CSP-focused observer days in these fisheries is therefore less than that allocated to monitoring of commercial fishing and recording of associated biological data, but still deemed sufficient for monitoring of ETP species interactions and compliance with mitigation requirements. CSP observer focus for LIN 3-7 stocks in 2023-24 was prioritised as follows (DOC, 2023): • The focus will be on smaller bottom longline vessels operating on the Chatham Rise • Monitoring and recording interactions with seabirds including captures and behaviour around vessels. • Recording information on which mitigation techniques are employed in this fishery (i.e. tori lines; line weighting regimes). • Monitoring of ETP shark captures.

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	The draft Conservation Services Programme Annual Plan 2024/25 presents the priorities for observer program focus and the numerous interaction projects (DOC, 2024). DWC Liaison Programme for ETP Species Risk Management The overall objectives of the Environmental Liaison Officer (ELO) programme is to: • Visit at least 90% of the deepwater trawl fleet (including fresher, factory, and seasonal hoki), and all scampi and ling bottom longline vessels. • To train senior crew and vessel managers • Promote best practice mitigation standards across the fleet and review the DWG standards set out within the OPs. • Audit Vessel Management Plans (VMPs) and best practice environmental and mitigation practices. • Encourage improvement and effectiveness of fish waste control and mitigation device use and improve real-time reporting of the capture event. • Be on call 7 days a week to respond to any multiple or trigger capture event reported by DWG vessels and reply immediately to gather further information and offer advice. During 2018-19, DWC's Environmental Liaison Officer (ELO) visited 34 ling longline vessels. During 2019-20, 24 ling longline vessels were visited. In 2020-21 and 2021-22, the Covid-19 pandemic restricted vessel visits to an extent, and several vessels were tied up. The ELO visited 21 and 20 ling longline vessels in these two years respectively. During 2022-23, around 7 ling longline vessels were still tied up and a total of 19 vessels were visited (Cleal, 2019, 2020, 2021, 2022, 2023). The purpose of these vessel visits is to: • Organise and deliver environmental training resources to senior crew and associated managers. • Monitor vessel operator's adherence to the agreed environmental risk Operational Procedures (OPs) • Maintain fleet database of vessels, operators, target species, ports, skippers etc. • Undertake port call and vessel visits to a minimum of 90% of the fleet • Analyse all FNZ audits of Vessel Management Plans (VMPs) and OPs, contacting operators with feedback for each and every audit • Provide expert advice on vessel-specific options for fish waste management and warp mitigation systems and ensure this is documented • Maintain strong liaison with government – particularly with FNZ, DOC and DOC's Inshore Liaison Officer Programme • Review VMPs, ensuring each vessel has an effective vessel-specific seabird risk management programme. • Provide full induction into DWC programmes to new skippers and/or vessel operators who have moved to new fisheries or have started on new vessels.

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	• Support reviews and re-drafts of any OPs that require renewal. • Produce an end-of-year summary report to DWC, FNZ and DOC. The ELO additionally visits any vessel that has reported trigger-point captures in order to assess the possible reasons for the captures, whether they could have been prevented, and to educate the skipper on how to reduce the risk of such events re-occurring. The ELO is on-call 24/7 for any communications or requests for support, including for trigger capture events (Cleal, 2019, 2020, 2021, 2022, 2023). The ELO reinforces to Skippers the regulatory requirements for seabird mitigation, for application by all vessels 28 metres or greater in length, that include: • Deployment of at least one type of seabird scaring device during all tows (i.e., bird bafflers, tori lines or warp deflectors) • Management of fish waste discharge so as not to attract seabirds to risk areas (i.e., no discharge during shooting/hauling; mincing and batch-discharge while towing; installation of mincers/hashers/batching tanks/meal plants; gratings/trap systems to reduce fish waste discharge through scuppers/sump pumps). Seabird risk associated with trawl nets is minimised by: • Removal of stickers before shooting • Minimising the time fishing gear remains at/near the surface • Seabirds caught alive in/on the net are correctly handled and released to ensure maximum chance of survival. Seabird risk associated with deck landings and vessel impacts is minimised by: • Ensuring deck lighting does not attract/disorientate seabirds • Prompt removal of fish waste from the deck • Seabirds that land on the deck or impact with the vessel are correctly handled and released to ensure maximum chance of survival. Scoring summary It is clear that the aforementioned measures and programs take account of the spatial and temporal fishing patterns of the fleet and supply informed guidance on the modification of fishing practices, including to mitigate risk to and maximise the likelihood of live release of captured ETP/OOS species. The mitigation measures and safe release protocols have been designed and tested and are considered to qualify as best-practice able to demonstrably achieve minimisation of mortalities to ETP/OOS species in demersal longline fisheries. The combination of the OPs, vessel and observer reporting and ELO program provides assurance that a comprehensive strategy is in place that is expected to minimise the UoA-related mortality of the ETP/OOS unit and achieve the ETP outcome SG80 level of performance, SG60, SG80 and SG100 is met for all ETP seabird species scoring elements.			
b	Management strategy effectiveness			
	Guide post		Evidence indicates that the measures, strategy or comprehensive strategy	

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PI 2.2.2		The UoA has precautionary management strategies in place designed to: • Ensure that incidental catches of the ETP/OOS unit are minimised and where possible eliminated • Ensure that the UoA does not hinder recovery to Favourable Conservation Status.		
			have reduced or minimised the mortality of the ETP/OOS unit.	
	Met?		Yes	
Rationale		Seabird capture rate reduction targets were established under the NPOA Seabirds for use in comparing them to baseline capture rates. The latter were defined as the average estimated capture rates across the three-year block leading up to the implementation of the NPOA Seabirds 2013 (i.e. the 2010-11 to 2012-13 fishing years), with at least 10% observer coverage and an estimated seabird capture rate coefficient of variation (CV) of less than 0.30. For vessels >28 m length in the ling bottom longline fisheries, a baseline capture rate of 0.022 estimated captures per 1000 hooks was determined. The National Plan of Action Seabird report 2020/21 provides a breakdown of the observed seabird captures by ling longline vessels, illustrating that small albatross species (i.e. mollymawks), petrels & shearwaters are the most abundant groups caught (FNZ, 2023). Historical capture rates for the ling bottom longline fisheries show that the estimated capture rate has fluctuated above and below the baseline (Figure 19), (FNZ, 2023). Per SA3.10.3.1, The team shall interpret “minimised” to mean when both of the following are met: a. The ETP/OOS unit score meets at least the SG80 for PI 2.2.1 scoring issue (a) b. The ETP/OOS unit score meets the SG100 for PI 2.2.2 scoring issue (a). All ETP/OOS seabird species meet SG100 for PI2.2.1 scoring issue (a) and seabirds are managed through a comprehensive strategy, meeting SG100 for PI2.2.2 scoring issue (a), SG80 is met.		
c	Review of alternative measures to minimise mortality of the ETP/OOS unit			
	Guide post		There is a review at least once every 5 years of the alternative measures to minimise UoA-related mortality of the ETP/OOS unit and they are implemented as appropriate for the ETP/OOS unit.	There is a review that happens every 2 years of alternative measures to minimise UoA- related mortality of the ETP/OOS unit, and they are implemented, as appropriate for the ETP/OOS unit.
	Met?		Yes	Yes
Rationale		New Zealand’s first NPOA was published in 2004 and a revised NPOA-Seabirds published in 2013. The NPOA Seabirds 2020 is New Zealand’s third iteration of a national plan of action. The NPOA Seabirds 2020’s vision is New Zealanders work towards zero fishing-related seabird mortalities. Its four goals are: 1) Avoiding bycatch — effective bycatch mitigation practices are implemented in New Zealand fisheries; 2) Healthy seabird populations — direct effects of New Zealand fishing do not threaten seabird populations or their recovery; 3) Research and information — information to effectively manage direct fisheries effects on seabirds is continuously improved; and		

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		4) International engagement — New Zealand actively engages internationally to promote measures and practices that reduce impacts on New Zealand seabirds. Ongoing research includes continued monitoring and refinement of mitigation measures to decrease bird mortality and injury. The AEBAR 2021 (FNZ, 2022) refers to the following research programs underway that relate specifically to alternative measures to reduce seabird bycatch in the bottom ling longline fishery: PSB2020-07 Factors affecting protected species captures in domestic longline fisheries PSB2019-08 Feasibility trial of the Underwater Baitsetter MIT2018-02 Haul mitigation for small longline vessels MIT2018- 03 Setting mitigation for small longline vessels. The fishing industry has also undertaken several initiatives to reduce captures, including funding research into new or improved mitigation measures and adopting voluntary codes of practice and best practice fishing methods. Measures are operationalized through the Ling Bottom Longline Operational Procedures (OPs) which apply to all longline vessels targeting ling stocks LIN 2-7 and came into effect in 2016 and have been updated six times to July 2024. In summary, the NPOA Seabirds guides research into seabird bycatch mitigation by developing and monitoring capture rate reduction targets and providing overarching goals for seabird conservation in New Zealand. It has also been updated on time to its current form NPOA-2020. Clearly research programs are underway to effect the objectives of the NPOA-2020 and measures are operationalized by industry through consistent review and updating of operational procedures. SG80 and SG100 are met.		
d	Shark finning (V2.01 SGs per accepted Variation Request – Section 11.12.1)			
	Guide post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Yes	Yes	Yes
Rationale		LRQA applied for and were granted a Variation Request – Section 11.12.1 to apply a blanket modification to the assessment tree for scoring issue 2.1.2d and 2.2.2d, applying the requirements of SA2.4.3–SA2.4.7 (MSC V2.01) to ensure that shark finning is not being undertaken in the UoA.		
		See scoring under PI 2.1.2d, SG60, SG80 and SG100 are met.		
e	Ghost gear management strategy			
	Guide post	There are measures in place, if necessary , for the UoA that are expected to minimise ghost gear and its impact on the ETP/OOS unit.	There is a partial strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on the ETP/OOS unit.	There is a strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on the ETP/OOS unit.
	Met?	Yes	Yes	Yes

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Rationale	Individual hooks and floats that are lost do not have the characteristics that would result in ghost fishing. Lost hooks from the side of the vessel would sink out of the range of diving seabirds and hooks lost through snagging on the bottom would likewise pose no risk to seabirds. For hooks and floats the risk of ghost gear impact is therefore demonstrably absent (GSA3.7.6). The only marginal potential risk of ghost fishing in the bottom ling longline fishery would come from large portions of line, with baited hooks, being lost near the surface. New Zealand maintains stringent regulations to ensure garbage lost at sea from vessels is minimised. The regulations primarily fall under the Maritime Protection Rules⁸ but there are also components of the Fisheries Act (1996) which reduces risk of gear being lost. Vessels are also required by law to report lost gear to authorities via the Electronic Reporting System (ERS). Maritime Protection Rules 170.3 General prohibition on discharge of garbage into the sea: 1. Garbage is a harmful substance for the purposes of section 225 of the Act. 2. The discharge of garbage [including fishing gear] into the sea from a ship is prohibited, except as provided in this Part or the Act. 170.4 General exceptions to prohibition: Nothing in this Part prohibits or restricts any person from discharging garbage from a ship if – c) the discharge is an accidental loss of fishing gear from a ship and all reasonable precautions have been taken to prevent such loss; or d) the discharge is a discharge of fishing gear from a ship for the protection of the marine environment or for the safety of that ship or its crew. 170.21 Reporting accidental loss or discharge of fishing gear: In the event of an accidental loss or discharge of fishing gear referred to in 170.4(c) or (d) that poses a significant threat to the marine environment or navigation, the owner and the master of a ship to which this rule applies must report the accidental loss or discharge: a) to the Director; and b) if the accidental loss or discharge occurs within waters subject to the jurisdiction of a coastal State, to the appropriate authority in that coastal State. Fisheries (Commercial Fishing) Regulations 2001⁹ 54. Longlines, static fishing gear, and set nets 1. Commercial fishers must not use for fishing, or have on board a fishing vessel, longlines, set nets, or other static fishing gear without surface floats at each end. 2. Each surface float must be clearly, permanently, and legibly marked with the registration number of the fishing vessel from which it was or will be set or is being transported. 3. Despite subclause (1), trot lines, droplines, and dahn lines may be marked at one end only. In addition to their statutory requirements vessel operators in the ling bottom longline fisheries have management strategies in place to prevent, mitigate and remediate gear lost or abandoned

⁸ [Part 170 - Consolidated - Marine Protection Rules Part 199 Prevention of Air Pollution from Ships Various Amendments 2022 \(maritimenz.govt.nz\)](#)

⁹ [Fisheries \(Commercial Fishing\) Regulations 2001 \(SR 2001/253\) \(as at 03 August 2023\) 54 Longlines, static fishing gear, and set nets – New Zealand Legislation](#)

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	at sea (Table 66). Discarding gear at sea is prohibited unless under the circumstances noted above. Table 66: Ghost Fishing Gear Management Strategy for ling bottom longline fisheries (SNZ, 2024). <table border="1"> <tr> <td>Prevention</td><td> • The ling bottom longline fleet ensure gear is well maintained to avoid gear loss. • The autoline fleet avoid setting on foul ground where gear can get caught up. • Operators maintain a register of gear loss and/or include coordinates of lost gear on the plotter so it can be retrieved. • Bottom longlines must have surface floats attached at two ends, surface floats must be marked with registration number </td></tr> <tr> <td>Mitigation</td><td> • Hooks are occasionally lost in the ling bottom longline fishery, however the risk of lost hooks being a risk as ghost fishing gear is considered low. Lost hooks sink to the seafloor, and bait would eventually decompose. These hooks would not be considered ghost fishing. </td></tr> <tr> <td>Remediation</td><td> • If sections of line are lost, vessels will plot the location. • Longline vessels also attempt to grapnel for lost sections of line, if equipment is available, or they set another longline across where the gear was lost to try and hook up with it. </td></tr> </table> Available data sources • FishServe has all events where gear was reported 'lost' • Observers record events where gear has been lost. • Some operators have a register of lost gear There have been approximately 22 observed bottom longline sets between 2019-20 to 2021-22 where fishing gear has been reported lost. Most of these involved hooks being lost overboard, but weights, floats and ropes are also occasionally lost. In some cases (when it was rational to do so), the vessels attempted to drag for the gear but were unsuccessful. Because of the non-fishable characteristics of weights, floats and unbaited hooks, and considering the measures in place in the UoAs to prevent, mitigate and remediate any instances of lost gear, SG60, SG80 and SG100 are met.	Prevention	• The ling bottom longline fleet ensure gear is well maintained to avoid gear loss. • The autoline fleet avoid setting on foul ground where gear can get caught up. • Operators maintain a register of gear loss and/or include coordinates of lost gear on the plotter so it can be retrieved. • Bottom longlines must have surface floats attached at two ends, surface floats must be marked with registration number	Mitigation	• Hooks are occasionally lost in the ling bottom longline fishery, however the risk of lost hooks being a risk as ghost fishing gear is considered low. Lost hooks sink to the seafloor, and bait would eventually decompose. These hooks would not be considered ghost fishing.	Remediation	• If sections of line are lost, vessels will plot the location. • Longline vessels also attempt to grapnel for lost sections of line, if equipment is available, or they set another longline across where the gear was lost to try and hook up with it.
Prevention	• The ling bottom longline fleet ensure gear is well maintained to avoid gear loss. • The autoline fleet avoid setting on foul ground where gear can get caught up. • Operators maintain a register of gear loss and/or include coordinates of lost gear on the plotter so it can be retrieved. • Bottom longlines must have surface floats attached at two ends, surface floats must be marked with registration number						
Mitigation	• Hooks are occasionally lost in the ling bottom longline fishery, however the risk of lost hooks being a risk as ghost fishing gear is considered low. Lost hooks sink to the seafloor, and bait would eventually decompose. These hooks would not be considered ghost fishing.						
Remediation	• If sections of line are lost, vessels will plot the location. • Longline vessels also attempt to grapnel for lost sections of line, if equipment is available, or they set another longline across where the gear was lost to try and hook up with it.						

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	NA

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PI 2.2.3 – ETP/OOS species information

PI 2.2.3		Information is adequate to determine the impact of the UoA on the ETP/OOS unit and the effectiveness of management measures or strategies in place		
Scoring issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	Information is adequate to broadly understand the impact of the UoA on the ETP/OOS unit.	Information is adequate to estimate the impact of the UoA on the ETP/OOS unit, and to estimate whether the UoA may be a threat to its recovery, with a high degree of accuracy .	Information is adequate to estimate the impact of the UoA on the ETP/OOS unit, and to estimate whether the UoA may be a threat to its recovery, with a very high degree of accuracy .
	Met?	Yes – TG1 and PG1 is met for all seabird species	Yes – TG2 and PG2 is met for all seabird species	Yes – TG3 is met for all seabird species No – PG3 is not met for all seabird species
Rationale		See PI2.2.2.a for a description of the Conservation Services Programme (CSP), administered by the Department of Conservation and the Deepwater Council Liaison Programme for ETP Species Risk Management. Four main sources of information are used to identify and assess the nature, extent and potential consequences of ETP/OOS species mortality in fisheries within New Zealand's jurisdiction, or fishing by New Zealand vessels on the high seas: 1. Fisheries New Zealand's observer-reported data. This provides data on ETP/OOS species captures, species identification, use of mitigation measures and general fishing practices, photographs of ETP/OOS species caught on fishing vessels, and specimens (seabirds killed by fishing operations) for onshore analysis. 2. Commercial fisher-reported data. This provides data on the spatial and temporal distribution of fishing effort, and on ETP/OOS captures. These data are summarised in annual environmental liaison officer reports. 3. Research outputs on ETP/OOS species biology, demography, ecology, and at-sea distribution. 4. Data collected by, or reported to, RFMOs. The observer non-fish bycatch and protected species interaction forms prescribe the information to be collected by observers. Observed captures include distinction of the capture, the identification method (observer, necropsy, imputation, photograph) and whether the observer witnessed the interaction whilst on duty, the life status when first sighted and at the end of the interaction, the fishing method and declared target species (which allows distinction between UoAs) are linked to a specific set on a specific vessel, the length and sex of the individual and whether it was tagged and associated details. Observers record details of the mitigation equipment used (tori lines, warp scarer, bird baffler). Through the commercial Electronic Reporting System (ERS) vessels must submit a capture of non-fish or protected fish species report. This is a report of any non-fish and protected species caught for a fishing event and must be provided with the corresponding fish catch report. If caught when not fishing, for example, while steaming, the vessel must provide a report before the close of the day on which the permit holder became aware of the capture. Protected species capture events are reported through a real-time reporting capture event threshold system against trigger points specified in the reporting and species group Operational Procedures.		

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PI 2.2.3	Information is adequate to determine the impact of the UoA on the ETP/OOS unit and the effectiveness of management measures or strategies in place
	Assessments of the risk posed to ETP bird species using the estimation of Annual Potential Fatalities (APFs) and Potential Biological Removals (PBRs) (Richard & Abraham, 2015; Baker & Hamilton, 2016; Edwards et al., 2023) have culminated in the Spatially Explicit Fisheries Risk Assessment (SEFRA) methodology. Observer data are used to determine fleet-level mortality. Observer data are 'groomed' as a form of validation and the similarity between the actual and expected (from the model) number of observed captures is modelled to provide a spatially-oriented numerical summary of model fit. Uncertainty with raised estimates is reported in the form of coefficients of variation or confidence intervals. For ETP/OOS species (ERF, v1.2, GB1.3), "catch estimate" is interpreted to mean an estimate of all direct effects of the UoA. This includes an estimate of all fatal interactions with the species, whether associated with the gear or another aspect of the fishing operation. Interactions with non-fish and protected species bycatch are reported to management authorities when they occur through the ERS system. Operators are also bound by the Operational Procedures for reporting seabirds include reporting when interactions exceed trigger thresholds within a 24-hour or 7-day period. Independent verification of catches with coverage that is largely representative of the UoA's fishing operations is achieved through the at-sea scientific observer program. For the LIN 3 – 7 fisheries combined over the period 2018-19 to 2022-23, observer coverage ranged between 5.7% and 26.4% per annum, with the 5-year average being 15.9% of hooks observed (Table 44), (SNZ, 2024). The observer program and sampling design covers all major characteristics of the fleet of longline vessels operating in the UoAs and has been tested to show that it is representative in both time and space (see Finucci et al 2020). Observers report which component of the fishing or mitigation gear the ETP/OOS species interacted with. They also report non-fishing gear related interactions such as seabird collisions with vessels. The independent catch monitoring system, operated at a good level of coverage provides that most potential sources of bias have been mitigated, and where bias might exist, its effect on trueness is well understood and is not considered to be consequential, TG3 is met. Total interactions and raised catch estimates for some species estimates are reported through DragonFly data Science protected species capture website. The Spatially Explicit Fisheries Risk Assessments (SEFRAs) that have been iteratively improved for seabirds include tests of observer coverage representativity (through model fit of observed and model predicted interactions) and annual average fleet-level catch estimates. Uncertainty with raised estimates is reported in the form of coefficients of variation or confidence intervals, to a level of high degree of certainty = > 95th %ile. The extent to which ecological and biological characteristics of a species influence variability in catch estimates is accounted for by a range of variables and parameters used in the multi-species SEFRA estimation model, including, for example, density overlap for a given species with a fishing event at a month by month level and species group level effect for probability of live capture. The independent catch monitoring system in place is expected to account for the main sources of random error that may affect the precision of catch estimates, PG2 is met. Per ERF V1.2 B1.3.4, <i>The team shall determine that PG3 is met if the catch monitoring system enables a census of catches using independent observation and the team should interpret the term "census" to mean the observation of all catch events, such that total catch can be known from the data rather than being estimated from a sample</i> (GB1.3.4). This is not the case in the longline fishery, PG3 is not met. Based on the information available TG3 is met but only PG2 is met, in accordance with B1.4 of the MSC Toolbox Table B7 - SG80 is met.

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PI 2.2.3		Information is adequate to determine the impact of the UoA on the ETP/OOS unit and the effectiveness of management measures or strategies in place		
b	Information adequacy for management strategy			
	Guide post	Information is adequate to support measures to manage impacts on the ETP/OOS unit.	Information is adequate to support a strategy to manage impacts on the ETP/OOS unit, and to measure trends to evaluate the effectiveness of the measures to minimise mortality.	Information is adequate to support a comprehensive strategy to manage impacts on the ETP/OOS unit, and to evaluate the effectiveness of the measures to minimise mortality with a high degree of certainty .
	Met?	Yes – all seabird species	Yes – all seabird species	Yes – all seabird species
Rationale		See PI2.2.2.a for a description of the comprehensive management strategy in place for ETP/OOS species. The range of information collected through statutory reporting to management authorities and independent observations provides the basis for monitoring changes in risk levels to ETP/OOS species with which the ling longline UoAs interact. Data and information collection is prioritised to reduce uncertainty in formal, quantitative risk assessments for protected species, and to provide information on issues where there is public interest in of risks from fishing to the aquatic environment. Implementation of a risk-based approach has enabled prioritisation of areas on which to focus mitigation or data collection efforts. The National Institute of Water and Atmospheric Research (NIWA) currently carries out the role of Data Manager and Custodian for the fisheries research data owned by the Ministry for Primary Industries (MPI). The Centralized Observer Database (COD) is dedicated to information collected by Ministry scientific observers. Observer data are reported through multiple platforms such as the DragonFly Science protected species capture website and numerous research studies the likes of SEFRAs for marine mammals and seabirds. Drivers of research in this area include the National Plan of Action (NPOA)-Seabirds and NPOA-Sharks. The Aquatic environment and biodiversity annual review (AEBAR) last updated in 2021 primarily addresses interactions between the seafood sector, biodiversity, and the aquatic environment. The AEBAR is supported by more detailed reports and science papers published on-line each year. The information contained within the AEBAR informs decision-making in Fisheries New Zealand. The AEBAR is organised by topic (e.g., protected species, bycatch, benthic impacts, etc.), and almost all topics involve more than one fish stock or fishery. Overall, information is adequate to support a comprehensive strategy to manage impacts on the ETP/OOS unit. The evaluation of the effectiveness of mitigation measures can be assessed through observer coverage (>15%% in the UoAs, Table 44) and commercial reporting through the ERS (100% coverage) at levels adequate to measure their effectiveness with a high degree of certainty. SG100 is met.		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	NA

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PI 2.3.1 – Habitats outcome

PI 2.3.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(ies) responsible for fisheries management in the area(s) where the UoA operates		
Scoring issue		SG 60	SG 80	SG 100
a	Less sensitive habitats			
	Guide post	The UoA is unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm .	The UoA is highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm .	There is evidence that the UoA is highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm .
	Met?	Yes – gravel, mud, and sand, upper and mid-slope across all BOMECE classes	Yes – gravel, mud, and sand, upper and mid-slope across all BOMECE classes	No – gravel, mud, and sand, upper and mid-slope across all BOMECE classes
Rationale		For the longline fishery, the autoline system used to fish for ling uses lines set on the bottom, predominantly from 5 to 15 km long. The main line can be 7 mm, 9 mm or 11.5 mm in diameter, and has swivels (where snood and hook attaches) at set spacing of 1.3 m to 1.5 m. Hook size to target for ling are generally 12/0s. Gear is deployed from the stern of the larger vessels with a float attached to a grapple to take the line to the bottom and anchor it in place. There is a float and grapple on each end. Some vessels use what are called “droppers”, which is a line set so hooks are about 10 meters off the bottom, although this may be used more to target bluenose and hapuka groper or to avoid bycatch of sharks or bait depredation by starfish, etc. There has been work on the benthic footprint of demersal longlines by CCAMLR (for Antarctic longline fisheries) which can be applied here by analogy (Sharp, 2010). Most of the larger autoliners operate under CCAMLR (Commission for the Conservation of Antarctic Marine living Resources) conservation measures. The smaller longline vessels however do not at any time operate in the CCAMLR jurisdiction and the behaviour of their gear on the seafloor may not be analogous to the same extent. The actual behaviour of demersal longline fishing gear in contact with the sea floor — and thus the nature and spatial extent of associated impacts on benthic organisms including VME taxa — is subject to uncertainty, in large part due to the inherent difficulty of observing longline deployments in deep water without potentially influencing the behaviour of the gear. Lateral line movement during line retrieval was found to be the key determinant of benthic impact, aka the footprint index (Sharp et al 2010). Static gears (e.g., longlines and traps) generally have lower impacts than mobile gear types (e.g., trawls and dredges; (Pham, et al., 2014)) with most of the disturbance occurring when fishing gear is retrieved (Welsford, et al., 2014). Longline hooks may also snag and remove taxa to the surface or at least some distance into the water column above (Sharp et al 2010). Welsford, et al., (2020) conducted an impact assessment of bottom fishing gears and estimate that longlines (of up to 8.9 km long) have an area of interaction with benthic habitats of 44600m² per fishing event, which is less than 4.6% of the impact estimated to be attributed to trawl fishing events. As longlines are rarely set over exactly the same ground there are less cumulative impacts at any fished location. Bottom longline depth records indicate that most target ling fishing takes place at depths of between 500 and 600 m (FNZ, 2024a). Figure 34 indicates that for 2023/24 the main depth ranged from 400-500 m. Longliners fish mainly in LIN 3, 4, 5, and 6 (FNZ, 2024a).		

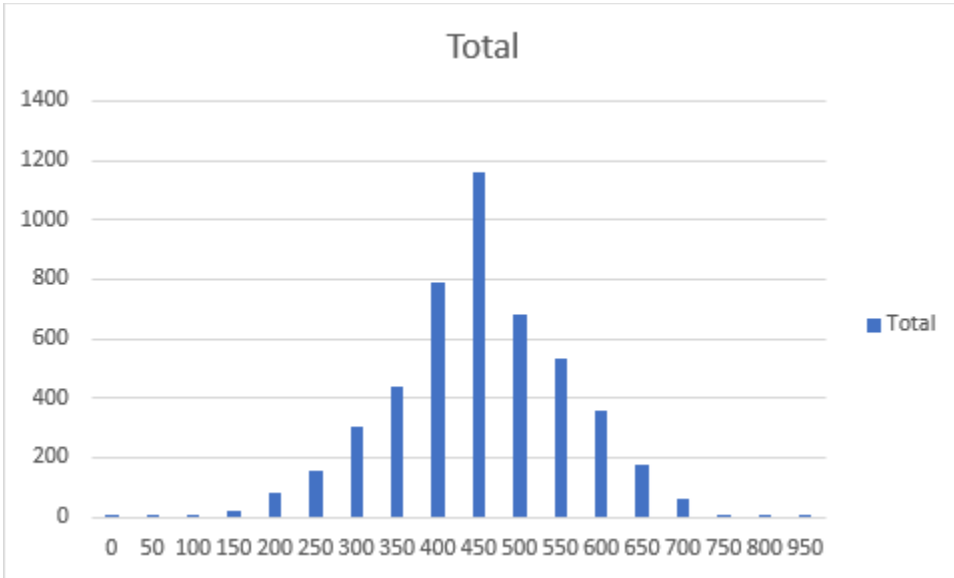
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PI 2.3.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(ies) responsible for fisheries management in the area(s) where the UoA operates		
		 Figure 34. The fishing depth of ling BLL sets for 2023-24 (X-axis is depth, Y-axis is number of fishing events). Fisheries New Zealand, David Forster pers. Comm to the Client. Based on the static nature of the fishing gear, and because longlines would not be set over the same exact location thus reducing any cumulative impacts, the UoAs are considered to be highly unlikely to reduce structure and function of less sensitive habitats to a point where there would be serious or irreversible harm, SG60 and SG80 are met. Spatial overlay of fishing effort with the 9-Class seafloor bioregionalization (Stephenson et al 2023) was provided by the Client following the site visit (Figure 27). However a quantitative evaluation of the impact to each BOMEK Class or Bioregion and the gravel, mud, and sand, upper and mid-slope substrates within each, is not available, SG100 is not met.		
b	More sensitive habitats			
	Guide post	The UoA is unlikely to reduce structure and function of more sensitive habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of more sensitive habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of more sensitive habitats to a point where there would be serious or irreversible harm.
	Met?	Yes – sand covered hard substrate with emergent fauna	Yes – sand covered hard substrate with emergent fauna	No – sand covered hard substrate with emergent fauna
Rationale		In illustration of the considerably low impact of static longline gear on benthic habitat forming invertebrates, observed catches of those species for the period 2018/19-2022/23 are presented in Table 61. Observed sessile benthic invertebrate catches by ling longline fisheries show that anemones are the most common group caught, with an average annual catch of around 28 kg. Very small quantities of ETP corals are reported caught (Table 61). The historical analyses conducted by Finucci et al (2020) found Starfish (Asteroidea & Ophiuroidea) to be the most commonly caught invertebrate group at 0.2% of the total catch on		

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PI 2.3.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(ies) responsible for fisheries management in the area(s) where the UoA operates
	average from 1 October 2002 to 30 September 2018. Anemones, sponges, corals, sea peans, sea fans and other benthic habitat forming invertebrates accounted for <0.1% of the observed target species catch by weight for the same period (Finucci et al, 2020). Incidental catches of non-protected sessile benthic invertebrates (e.g. anemones, bryozoans and sponges) are also reported by commercial vessels on Non-Fish Protected Species (NFPS) forms, along with catches of protected seabirds and marine mammals (Table 62). Note: code CSB is sometimes used when mixed catches of unidentified sessile benthic organisms occur. The historical observer data review (Finucci et al, 2020), the more recent observer data (SNZ, 2024) and the commercial reporting indicate that the ling bottom longline fisheries clearly have minimal interactions with sessile benthic ETP and non-ETP invertebrate species and are highly unlikely to reduce structure and function of more sensitive habitats to a point where there would be serious or irreversible harm. SG60 is met. Information on the spatial and temporal distribution of the UoAs fishing activity relative to the distribution of coral, sponge and bryozoan habitats (more sensitive habitats) was supplied to the assessment team on request following the site visit (Figure 28). This reflects a qualitative assessment of the limited overlap of the fishery with areas where the coral, sponge and bryozoan habitats intersect, supporting the negligible levels of interaction reported with invertebrate species associated with more sensitive habitats, SG80 is met. Whilst the UoAs impact on more sensitive habitats is highly unlikely ($\leq 30^{\text{th}}$ %ile) to reduce the structure and function of those habitats to a point where there would be serious or irreversible harm, noting the inherent fragility of species associated with more sensitive habitats and the purported damage from lateral movement of the line that would not be reflected in retained catches, it would be presumptive to conclude this without a detailed review and assessment of benthic impacts from longlining in the New Zealand EEZ. SG100 is not met. A Recommendation is raised that the fishery client conduct a spatial assessment of the degree of overlap of the ling longline UoAs with each of the 9 bioregions identified by Stephenson et al 2023 and likewise provide a quantitative spatial assessment of the degree of overlap with corals, bryozoans and sponges.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥ 80
Information gap indicator	More information sought Information on the spatial distribution of the UoAs fishing activity relative to the distribution of more sensitive habitats

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	80
Condition number (if relevant)	NA

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PI 2.3.2 – Habitats management strategy

PI 2.3.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary , that are expected to achieve the habitat outcome SG80 level.	There is a partial strategy in place, if necessary , that is expected to achieve the habitat outcome SG80 level or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Yes	No	No
Rationale		SA3.13.2.1 In scoring issue (a) at the SG60 and SG80 levels, the “measures” or “partial strategy” respectively, for a UoA that encounters “more sensitive” habitats shall include, at a minimum: - Requirements to comply with management “measures” to protect “more sensitive” habitats. - Implementation by the UoA of precautionary measures to avoid encounters with “more sensitive” habitats and avoid potential serious or irreversible harm. For less sensitive habitats the nature of the fishing gear (being static) precludes the need for a clear partial or full strategy to be confident that they are not subject to serious or irreversible harm. The “if necessary” qualification applies for those habitats scoring elements. For more sensitive habitats, management measures include a spectrum of indirect and directed controls on the bottom ling longline fishery. The National Fisheries Plan for Deepwater and Middle Depth Fisheries has an environmental outcome to manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on benthic habitats (FNZ, 2019). The Fisheries Act requires the consideration of ‘habitat of particular significant to fisheries management’ which is currently done on a case by case basis, though HPFSMs have not yet been defined or applied as yet in New Zealand. Direct management measures refer to the requirement to report interactions with non-protected and protected benthic invertebrates. Very small quantities of ETP corals are reported caught (Table 61) and there appears to be good compliance with this mandatory reporting scheme. Additionally ling longline vessels are required to carry scientific observers, the historical analyses conducted by Finucci et al (2020) found that anemones, sponges, corals, sea peans, sea fans and other benthic habitat forming invertebrates accounted for <0.1% of the observed target species catch by weight for the period 1 October 2002 to 30 September 2018. Precautionary measures to avoid encounters with more sensitive habitats include the designation of marine reserves and seamount closure areas (noting benthic protection areas, whilst expansive, do not apply to longliners). Based on observer and commercial reports of interactions with benthic invertebrate species associated with more sensitive habitats, the limited impact of the bottom ling longline fishery is minimal and there are requirements to comply with designated marine reserves and seamount closures. SG60 is met. There is no implementation of UoA-specific precautionary measures to avoid encounters with “more sensitive” habitats to avoid potential serious or irreversible harm. Spatial overlay of fishing effort with the 9-Class seafloor bioregionalization (Stephenson et al 2023) was provided by the Client following the site visit (Figure 27) and with the distribution of coral, sponge and bryozoan habitats (more sensitive habitats) was supplied to the assessment team on request following the site visit (Figure 28). The overlap between the ling BLL fishery and these protected areas indicates a minimal likelihood of interaction with sensitive habitats. The ling BLL fishery is subject to observer		

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PI 2.3.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats			
	coverage and electronic monitoring, which verify gear deployment and interactions with benthic species. Unlike mobile bottom-contact gear such as trawl gear, bottom longlines involve minimal seabed contact, with hooks typically suspended in the water column or lightly touching the bottom. The gear does not drag or sweep across the seabed, which significantly reduces the risk of physical disturbance to benthic habitats. Table A28 of the MSC Fisheries Standard Toolbox classifies the “gear footprint score” for demersal longline as “2” reflecting that the UoAs need to include the requirements and implementations specified by SA3.13.2.1. Despite minimal overlap with sensitive habitats and Benthic Protection Areas, verified by electronic monitoring and observer deployments, and the relatively low impacting nature of bottom longlining on benthic habitats, due to the lack of consideration of the requirements of overlapping MSC UoAs protection measures afforded to more sensitive habitats, there is not considered to be a partial strategy in place that is expected to achieve the habitat outcome SG80 level or above, SG80 is not met. Without a clear evaluation of the impact of bottom longline fisheries on more sensitive habitats within New Zealand there is not a strategy in place, SG100 is not met.			
b	Management strategy effectiveness			
	Guide post	The measures, if necessary , are considered likely to work, based on plausible argument .	There is some evidence that the measures/partial strategy, if necessary , is achieving the objectives set out in SI (a), based on information directly about the UoA and/or habitats involved.	There is evidence that the partial strategy/strategy is achieving the objectives set out in SI (a), based on information directly about the UoA and/or habitats involved.
	Met?	Yes	Yes	No
Rationale	The evidence available to indicate the partial management strategy is achieving its objectives is the availability of benthic invertebrate catch data from commercial reporting and observers, including a long-period review of observer reported catches from Finucci et al, 2020 that showed very small quantities of ETP corals are reported caught (Table 61). The Ministry for Primary Industries audits commercial vessel catch-effort and landing reports and reconciles these against multiple sources including VMS records and data collected by onboard MPI observers to ensure that all catches are reported correctly and vessels are adhering to management measures. Information is therefore available from the UoA directly applicable to fishing catch and effort relative to the habitats involved, SG60 and SG80 are met. SG100 is not met considering the lack of quantitative information on the spatial distribution of the UoAs fishing activity relative to the distribution of more sensitive habitats.			
c	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect more sensitive habitats			
	Guide post	Information is adequate to broadly understand compliance in the UoA with management requirements to protect more sensitive habitats.	Information is adequate to determine , with a high degree of accuracy , compliance in the UoA with both its management requirements and protection measures afforded to more	Information is adequate to determine , with a very high degree of accuracy , compliance in the UoA with both its management requirements and with protection measures afforded

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PI 2.3.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
			sensitive habitats by other MSC UoAs/non-MSC fisheries, where relevant .	to more sensitive habitats by other MSC UoAs/ non-MSC fisheries, where relevant .
	Met?	Yes – UoA management measures	Yes – UoA management measures Yes – other MSC UoAs management measures	Yes – UoA management measures Yes – other MSC UoAs management measures
Rationale		SA3.1.3 specifies that, the team shall only score scoring issue (c) if: - The UoA impacts a “more sensitive” habitat, and/or - Another MSC UoA or non-MSC fishery, where relevant, impacts a “more sensitive” habitat within the UoA’s “managed area” (as defined in SA3.12.6). In this case the ling longline UoAs impact more sensitive habitats and other MSC UoAs within the managed area also impact more sensitive habitats. The scoring issue is therefore scored. SA3.13.3.1 In scoring issue (c), the team shall assess the adequacy of the information available to understand (SG60)/determine (SG80 and SG100) the extent to which the UoA complies with: - Management requirements that apply directly to the UoA, and - Precautionary protection measures implemented by other MSC UoAs and non-MSC fisheries, “where relevant”. GSA3.13.3.3 specifies that an MSC UoA needs to have some way of assessing whether the actions of all MSC UoAs and other non-MSC fisheries, where relevant, are applicable to the avoidance of impacts on more sensitive habitats. In the case of the bottom ling longline UoAs there is overlap with the hoki, hake and ling trawl UoAs and southern blue whiting UoAs. There are a range of additional management measures applicable to the trawl fishery including, for example, respecting benthic protection areas. Those management requirements are not applicable to demersal longline vessels, only trawl and dredge bottom fishing is prohibited. However Benthic Protection Areas are “relevant” in that they are areas where closure is clearly aimed at precautionary protection of more sensitive habitats, based on scientific rationale and best practice. The assessment team are directed to <i>not consider levels of compliance in scoring issue (c), but rather the information available to determine this</i> (SA3.13.3.2). Directed management measures for the ling longline UoAs include reporting ETP benthic invertebrate catches and the designation of marine reserves and seamount closure areas. There is sufficient and clear information available to provide evidence that these management measures have been adopted and are enforced. The Ministry for Primary Industries audits commercial vessel catch-effort and landing reports and reconciles these against multiple sources including VMS records and data collected by onboard MPI observers to ensure that all catches are reported correctly and vessels are adhering to management measures. There is no potential for bias in vessel position reporting relative to spatial management boundaries and the limited potential for bias or misreporting invertebrate catches are mitigated through MPI audits TG1, TG2 and TG3 are met for the UoAs management measures and SG60, SG80 and SG100 are met for UoA management measures. Benthic Protection Areas, whilst relevant to the conservation of more sensitive habitats, are applicable only to trawl and dredge gear types. MSC UoAs impacting in those closed areas would be required to respect those closures under the requirements of the management PI 2.3.2		

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PI 2.3.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats			
	(GSA3.13.3.3). It is clear that a small number of sets are made by ling longliners within BPAs (Figure 27) and following the site visit it is clear those BPAs have not been adopted by the ling longline fishery UoAs. Information is however adequate to determine with a very high degree of accuracy, through vessel fishing location reporting and vessel monitoring, whether the ling longline fishery UoAs are compliant with those spatial management measures applicable to the trawl fisheries (regardless of whether they have been adopted or not). There is no potential for bias in vessel position reporting relative to spatial management boundaries TG1, TG2 and TG3 are met and SG60, SG80 and SG100 are met for protection measures afforded to more sensitive habitats by other MSC UoAs.			
d	Ghost gear management strategy			
	Guide post	There are measures in place, if necessary , for the UoA that are expected to minimise ghost gear and its impact on all habitats.	There is a partial strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on all habitats.	There is a strategy in place for the UoA, if necessary , that is expected to minimise ghost gear and its impact on all habitats.
	Met?	Yes	Yes	No
Rationale	New Zealand maintains stringent regulations to ensure garbage lost at sea from vessels is minimised. The regulations primarily fall under the Maritime Protection Rules¹⁰ but there are also components of the Fisheries Act (1996) which reduces risk of gear being lost. Vessels are also required by law to report lost gear to authorities via the Electronic Reporting System (ERS). Maritime Protection Rules 170.3 General prohibition on discharge of garbage into the sea: 3. Garbage is a harmful substance for the purposes of section 225 of the Act. 4. The discharge of garbage [including fishing gear] into the sea from a ship is prohibited, except as provided in this Part or the Act. 170.4 General exceptions to prohibition: Nothing in this Part prohibits or restricts any person from discharging garbage from a ship if – e) the discharge is an accidental loss of fishing gear from a ship and all reasonable precautions have been taken to prevent such loss; or f) the discharge is a discharge of fishing gear from a ship for the protection of the marine environment or for the safety of that ship or its crew. 170.21 Reporting accidental loss or discharge of fishing gear: In the event of an accidental loss or discharge of fishing gear referred to in 170.4(c) or (d) that poses a significant threat to the marine environment or navigation, the owner and the master of a ship to which this rule applies must report the accidental loss or discharge: c) to the Director; and d) if the accidental loss or discharge occurs within waters subject to the jurisdiction of a coastal State, to the appropriate authority in that coastal State. Fisheries (Commercial Fishing) Regulations 2001¹¹ 54. Longlines, static fishing gear, and set nets			

¹⁰ [Part 170 - Consolidated - Marine Protection Rules Part 199 Prevention of Air Pollution from Ships Various Amendments 2022 \(maritimenz.govt.nz\)](#)

¹¹ [Fisheries \(Commercial Fishing\) Regulations 2001 \(SR 2001/253\) \(as at 03 August 2023\) 54 Longlines, static fishing gear, and set nets – New Zealand Legislation](#)

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PI 2.3.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats
	4. Commercial fishers must not use for fishing, or have on board a fishing vessel, longlines, set nets, or other static fishing gear without surface floats at each end. 5. Each surface float must be clearly, permanently, and legibly marked with the registration number of the fishing vessel from which it was or will be set or is being transported. 6. Despite subclause (1), trot lines, droplines, and dahn lines may be marked at one end only. In addition to their statutory requirements vessel operators in the ling bottom longline fisheries have management strategies in place to prevent, mitigate and remediate gear lost or abandoned at sea (see Table 66). Discarding gear at sea is prohibited unless under the circumstances noted above. Available data sources • FishServe has all events where gear was reported 'lost' • Observers record events where gear has been lost. • Some operators have a register of lost gear There have been approximately 22 observed bottom longline sets between 2019-20 to 2021-22 where fishing gear has been reported lost. Most of these involved hooks being lost overboard, but weights, floats and ropes are also occasionally lost. In some cases (when it was rational to do so), the vessels attempted to drag for the gear but were unsuccessful. The combination of measures in place (see Table 66) qualify scoring guideposts at SG60 and SG80 being met. The nature and extent of the impact of lost bottom longline fishing gear on more sensitive habitats have not been investigated in detail, SG100 is not met.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	60-79
Information gap indicator	More information sought Spatial mapping and metrics for bottom longline fishing summarising the nature and extent of impact on more sensitive impacts. Clarification whether Benthic Protection Areas have been adopted and are respected by ling longliners.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	75
Condition number (if relevant)	#3

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PI 2.3.3 – Habitats information

PI 2.3.3		Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time		
Scoring issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The types and distribution of habitats are broadly understood .	The nature, distribution, and vulnerability of habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.	The distribution of habitats is known over their range, with particular attention given to the occurrence of vulnerable habitats.
	Met?	Yes	Yes	No
Rationale		Per SA3.14.1 The team shall interpret “vulnerability” for the SG80 and SG100 levels to mean the combination of: a. The likelihood that the gear would encounter the habitat. b. The likelihood that the habitat would be altered were an encounter between the gear and the habitat to occur. In New Zealand the Benthic-Optimised Marine Environment Classification, BOME (Leathwick et al. 2012), used a combination of environmental predictors and distributional data for eight taxonomic groups (Table 60) to train an environmental classification for New Zealand’s Exclusive Economic Zone (EEZ) with depths of 3000m or less. The combination of these predictors and biota meets the requirements of SA3.12.2 (MSC V3.1) for recognising distinct benthic habitat types (Figure 20). Over and above this the Seafloor Community Classification (SCC, Stephenson et al. 2022) provides a description of species compositional turnover. The classification used a broad suite of biotic groups [benthic invertebrates, macroalgae, reef fish and demersal fish) and transformed 33 environmental variables to represent spatial patterns of taxa compositional turnover (Figure 21). Stephenson et al 2023 developed a 9-class New Zealand Seafloor Bioregionalisation. During the site visit stakeholders, including co-authors of the report, recommended this 9-class characterization would be more appropriate than the 12 Class BOME to determine the impact of the fishing on benthic habitat types. This was only possible on an indicative, qualitative level (Figure 27) because the overlap of the ling longline UoAs has not been assessed to the same degree as has been done by MacGibbon & Mules, 2023 for the BOME and trawl fishery. Similarly the degree of overlap with the distribution of coral, bryozoan and sponge habitats has only been undertaken recently and at a qualitative level (Figure 28). There are a range of studies on neighbouring jurisdictions, including in the area of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), that describes the minimal estimated impact of bottom longlining on vulnerable marine biogenic habitats (see Sharp et al 2010). Through these detailed pieces of work the nature and distributions of habitats are known at a level of detail relevant to the scale and intensity of the UoA. SG60 and SG80 are met. The distribution and occurrence of vulnerable habitats is not known over their full range, SG100 is not met.		
b	Information adequacy for assessment of impacts			
	Guide post	Information is adequate to broadly understand the	Information is adequate to estimate the impacts of the	Information is adequate to estimate the impacts of the

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PI 2.3.3		Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time		
		impacts of gear use on habitats.	UoA on habitats with a high degree of accuracy .	UoA on habitats with a very high degree of accuracy .
	Met?	Yes - TG1 (all habitats) Yes - PG1 (more sensitive habitats)	Yes – TG2 (all habitats) Yes – PG1 (more sensitive habitats)	No – TG3 (all habitats) Yes – PG1 (more sensitive habitats)
Rationale		Per SA3.14.2 In scoring issue (b), the team shall apply the Evidence Requirements Framework in Tool B of the MSC Fisheries Standard Toolbox to determine which guidepost is met. Per Table B1 of the ERF, B1.2 (trueness) applies to all scoring elements and B1.3 (precision) applies to all scoring elements that are a habitat-forming species associated with more sensitive habitats. Per GB1.4.1 and Table B5 of the MSC Fisheries Standard Toolbox v1.2, only PG1 has to be met for all scoring elements that are a habitat-forming species associated with more sensitive habitats across SG60, 80 and 100. Information on the spatial and temporal distribution of fishing effort in the UoA in relation to habitats is not available for all less sensitive and more sensitive habitat scoring elements. Though there is sufficient information to broadly understand the impact of bottom longline fishing gear on benthic habitats (for example see Pham et al 2014, Sharp et al 2010) and spatial distribution of fishing effort is monitored (Figure 24, Figure 25, Figure 23), TG1 is met (SG60 is met). Information on catches in the UoA of habitat-forming species associated with more sensitive habitats are available through the commercial ERS whereby vessels must submit a capture of non-fish or protected fish species (NFPS) report (Table 62). All landings of protected corals must be returned to the water immediately, and commercial fishers must report their capture on NFPS catch returns. FNZ observers also record landing of both protected and other benthic bycatch such as anemones, bryozoans, sea pens and sponges (Table 61). Information on the spatial distribution of fishing effort in relation to benthic bioregionalization layers and the habitat intersect for corals, bryozoans and sponges was provided to the assessment team in the form of plots (Figure 27, Figure 28) following the site visit where these were requested. The information provided demonstrate that the fishery operates at a relatively low scale and intensity, with minimal overlap with sensitive benthic habitats. The habitat classifications used (BOMECS and Stephenson et al.'s nine-class bioregionalisation) provide ecologically meaningful frameworks, and the information is relevant and reliable at the scale of the UoA. Taken together, the habitat classifications, spatial effort plots, observer records and international evidence support that the requirements of TG2 are met (SG80 is met). Whilst the initial impact and recovery time of longline gear on sensitive habitats has been investigated in adjacent management areas (Pham et al 2014, Sharp et al 2010) the lack of similar studies within New Zealand and directly relating to the UoAs limits scoring, TG3 (and SG100) is not met. With regards to the precision of information available with respect to habitat-forming species associated with more sensitive habitats the team is required to assess whether the catch monitoring system in place facilitates (ERF, B1.3.2): - The estimation of catches; and - Reporting of catch information to management authorities; and - Independent verification of catches		

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PI 2.3.3		Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time		
		Information on catches in the UoA of habitat-forming species associated with more sensitive habitats are available through the commercial ERS whereby vessels must submit a capture of non-fish or protected fish species (NFPS) report (Table 62). All landings of protected corals must be returned to the water immediately, and commercial fishers must report their capture on NFPS catch returns. FNZ observers also record landing of both protected and other benthic bycatch such as anemones, bryozoans, sea pens and sponges (Table 61). UoAs have been observed at a relatively high and representative level of coverage over the period 2018-19 to 2022-23 at 15.9% (Table 44). In both cases reports are submitted to Ministry for Primary Industries, Fisheries New Zealand (the management authority) and are reported in the Annual Review Report for Deepwater Fisheries. The level of observer coverage, the up to date catch profiles and coverage statistics, as well as extensive analysis to confirm representativity (see section 10.2.1 and analyses by Finucci et al, 2020) satisfy the requirements of PG1 (SG60,SG80 and SG100 are met). Both TG2 and PG1 are met, meeting SG80.		
c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to habitats.	Changes in habitat distributions over time are measured.
	Met?		Yes	Yes
Rationale		Per GSA3.14, When scoring issue (c) at the SG80 level, the team should consider all potential increases in risk, such as changes in: • The scoring of the outcome PI. • The operation of the UoA. • The effectiveness of the measures. The area covered by the fishing fleet targeting ling can be represented by the expansion or retraction of the area fished over time by investigation at the 0.1° cell, by summarising the number of those 0.1° cells where fishing occurs based on location of fishing in any one year as well as the cumulative number of cells fished for the first time each year. The annual spatial distribution of the top 90th percentile catch of the ling longline target fishery on the Chatham Rise (LIN 3 & 4, Figure 35), in the Sub-Antarctic (LIN 5 & 6 and LIN 6B, Figure 36) and off the west coast South Island (LIN 7WC, Figure 37) is monitored with respect to ling target fishery catch, and is helpful to determine any increase in risk to habitats with respect to the operation of the UoAs. The longline fleet presented a rapid expansion of new areas explored to 1997, followed by a slowing (but not plateau) in the number of new areas investigated in LIN 3 & 4 (Figure 35). The longline fleet showed a slow continued increase in the number of new areas explored to date in LIN 5 & 6 and LIN 6B (Figure 36). The longline fleet showed a continued increase in the number of new areas explored to date in LIN 7WC (Figure 37).		

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Bottom longline

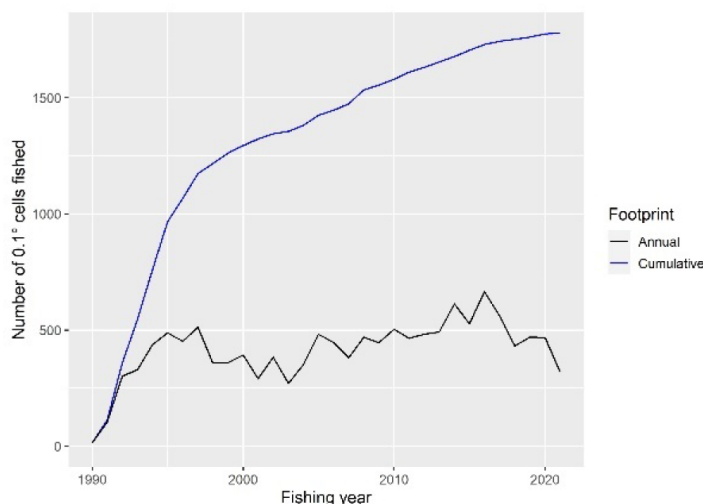


Figure 35. Spatial distribution of the ling target fishery in LIN 3&4: number of cells of 0.1° latitude and longitude fished in any one year and cumulative number of new cells fished over time. Source: Mormede et al 2022, Figure A.15.

Bottom longline

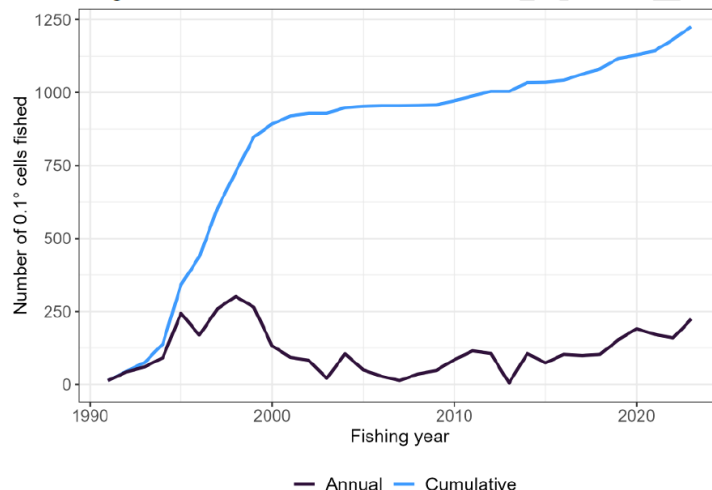


Figure 36. Spatial distribution of the top 90% of catch of the ling target fishery in LIN 5&6: annual total number of cells of 0.1° latitude and longitude that were fished and cumulative number of new cells fished over time. Source: Mormede et al 2024, Figure A.20.

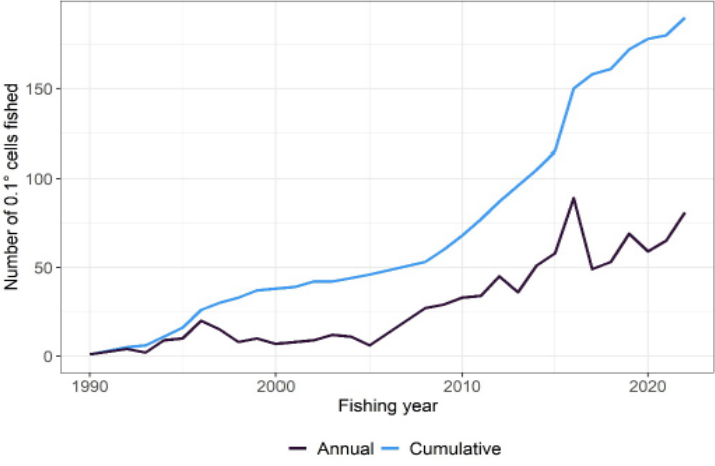
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PI 2.3.3	Information is adequate to determine the impact of the UoA on habitats, including changes in the risk posed by the UoA over time
	Bottom longline  Figure 37. Spatial distribution of the top 90 percentile catch of the ling target fishery in LIN 7WC: annual total number of cells of 0.1° latitude and longitude that were fished and cumulative number of new cells fished over time. Source: Mormede et al 2023, Figure A.13. The effectiveness of habitat management measures, including spatial restrictions and reporting (see PI2.3.2 for a description of measures in place) are monitored through near-real-time Geospatial Position Reporting and mandatory daily Electronic Catch Reporting in the ling longline fleet. Fisheries New Zealand still combines this functionality with at-sea and aerial surveillance, supported by the New Zealand Defence Force. This independently provides surveillance of activities of UoA vessels through inspection and visual capability to ensure these vessels are fully monitored and verified to ensure compliance with both regulations and with industry-agreed Operational Procedures. The Ministry for Primary Industries audits commercial vessel catch-effort and landing reports and reconciles these against multiple sources including VMS records and data collected by onboard MPI observers to ensure that all catches are reported correctly and vessels are adhering to management measures. SG80 is met. Iterative updates to benthic habitat maps and classification systems have been undertaken in New Zealand beginning with the original Marine Environment Classification in 2005 (Snelder et al. 2005). This was followed by a classification optimised for demersal fish (Leathwick et al. 2006), the Benthic-Optimised Marine Environment Classification, BOMECE (Leathwick et al. 2012) and most recently the Seafloor Community Classification (SCC, Stephenson et al. 2021, Stephenson et al. 2023). Additionally analyses using species distribution modelling have identified potential 'coral hotspots' (Anderson et al., 2023). The iterative research and updates to benthic habitat mapping as well as a particular focus on more sensitive habitats enshrined in policies such as the Aotearoa New Zealand Biodiversity Strategy (DOC, 2022) provides information on the changes in habitat distributions over time and allows the impacts of the UoAs on those habitats to be measured. SG100 is met.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	60-79
Information gap indicator	Lack of information on the spatial and temporal distribution of the UoAs fishing activity relative to the distribution of habitats

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	85
Condition number (if relevant)	NA

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PI 2.4.1 – Ecosystem outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to the key elements underlying ecosystem structure and function		
Scoring issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm.
	Met?	Yes	Yes	No
Rationale		Per SA3.15.4 The team shall interpret “key” ecosystem elements as: - The features of an ecosystem considered most crucial to the ecosystem’s characteristic nature and dynamics. - The features most crucial to maintaining the integrity of its structure and functions and the key determinants of its resilience and productivity. Per Table GSA2: MSC outcome expectations for each P2 component: <i>Changes caused by the fishery that fundamentally alter the capacity of the ecosystem to maintain its key structure and function or recover from the impact. The team may interpret this to mean changes that seriously reduce the ecosystem services provided by the component to the fishery, to other fisheries, and human uses.</i> The assessment team has determined that the key ecosystem element to be assessed is: - Community composition/diversity Tuck et al. 2009 provided an ecosystem-focused review of data from the Chatham Rise and Sub-Antarctic trawl surveys. Their analyses showed some evidence of change in ecosystem indicators over time, including evidence of increasing evenness (reducing diversity) but no evidence that species were being lost from the food-web. While longer time-series would increase certainty, the available data (Tuck 2009; Finucci 2020) show no evidence of species loss. The MSC Standard V3.1 does not provide a definition of ‘serious or irreversible’ harm with respect to key ecosystem elements, however in light of no evidence of species loss, the lack of evidence for adverse ecosystem effects (e.g., trophic cascades), low discard rates (Finucci et al 2020), and strengthened regulatory measures support the conclusion that the UoAs are highly unlikely to disrupt community composition/diversity to the point where that would be the case. SG60 and SG80 are met. The lack of more up to date determinations based on analyses of a longer time-series of trawl survey data means that there is not evidence to conclude this with a higher degree of certainty and for all areas fished by the UoAs. Dialogue with ecosystem experts during the site visit reflected consensus that there is an abundance of information available from research trawl surveys to build on the work of Tuck et al 2009 but simply a lack of impetus to do so in light of other priorities. SG100 is not met. A Recommendation (#3) is raised that the fishery review and collate available research trawl information/data that may be used to provide up to date determinations of changes to key ecosystem indicators and evidence that the UoA is highly unlikely to disrupt the key elements		

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PI 2.4.1	The UoA does not cause serious or irreversible harm to the key elements underlying ecosystem structure and function
	underlying ecosystem structure and function to a point where there would be serious or irreversible harm. The assessment team are also required to, per SA3.15.5, identify whether the UoAs impact on key ecosystem element(s) includes indirect effects on ETP/OOS units. The indirect effect considered by the team, being the most relevant to the longline UoAs and the ETP/OOS scoring elements with which the fishery has non-negligible direct impacts (seabirds), is the addition of biomass due to discards or offal discharge. Finucci et al. (2020) showed that ling accounted for about 65% of the total estimated catch from all observed bottom longline sets targeting ling between 1 October 2002 and 30 September 2018 (Figure 14). Finucci et al. (2020) observed that the total annual non-target catch ranged from 1 408–4 724 t between 2002–03 and 2017–18 and that there was no trend over time for the annual estimates of total non-target catch for any of the groups and an average discard fraction of 0.36 comparable with recent mean rates in New Zealand deepwater trawl fisheries. Estimation of non-target species catch is carried out for each of the Tier 1 Deepwater fisheries on a rotational basis, updated about every 4–5 years. Finucci et al 2020 identified that discards of ling have significantly decreased since 2002/03, however, and non-significant decreases of non-QMS fish were also observed. Under the new discard rules introduced by the Fisheries Amendment Act 2022 (https://www.legislation.govt.nz/act/public/2022/0056/latest/whole.html), all QMS species must be retained and landed unless the target species are subject to a Ministerial exemption or are permitted for return under observer-authorised provisions pursuant to section 72 of the Fisheries Act 1996. The form in which it is landed is not specified (Vessels with meal plants onboard will meal this unwanted catch, vessels without meal plants onboard will still have to land the product), but all QMS species landed must have an associated catch weight estimate reported by fishstock (irrespective of product type landed). Also, for any authorised discards of QMS species, a catch report must also be provided (catch weight estimate, stock, area, etc.). Discard and offal management measures limit the indirect effects on seabirds such that the UoAs are unlikely to hinder the recovery of those species.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	60-79
Information gap indicator	More information sought Up to date analyses of trawl survey data with respect to ecosystem indicators. Modelled trajectories of biomass under current and future predicted fishing pressure for the Chatham Island Atlantis Model.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	80
Condition number (if relevant)	NA

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PI 2.4.2 – Ecosystem management strategy

PI 2.4.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are measures in place, if necessary , which considers the potential impacts of the UoA on the key elements underlying ecosystem structure and function.	There is a partial strategy in place, if necessary , that is expected to achieve the Ecosystem outcome SG80 level.	There is a strategy in place for managing the impact of the UoA on the key elements underlying ecosystem structure and function.
	Met?	Yes	Yes	No
Rationale		Per GSA 3.16.2, at SG80 and SG100, partial strategies and strategies, respectively, may contain measures designed and implemented to address impacts on components that have been evaluated elsewhere in this framework. If the measures address specific ecosystem impacts effectively enough to meet the appropriate standard, it is unnecessary to have special “ecosystem measures” to address the same impacts. UoAs should be capable of adapting management to environmental changes as well as managing the effect of the UoA on the ecosystem. There are numerous measures in place to manage impacts of the ling bottom longline fishery on individual ecosystem components (and thereby ecosystem structure and function), e.g., for the target ling (as described in PI 1.2.1), in-scope species (as described in PI 2.1.2), ETP/OOS species (as described in PI 2.2.2), and habitats (as described in PI 2.3.2). The management of ecosystem impacts is based around a well-structured, legislative, policy and operational framework. The overall structure includes at least the following: • Fisheries Act 1996 • Wildlife Act 1953 • Animal Welfare Act 1999 • Marine Mammals Protection Act 1978 • Aotearoa New Zealand Biodiversity Strategy Implementation Plan (DOC, 2022) • The Harvest Strategy Standard for New Zealand Fisheries (MPI, 2008) • The National Fisheries Plan for Deepwater and Middle-depth Fisheries (FNZ, 2019) • Medium term research plan for deepwater fisheries 2024/25 – 2029/30 (FNZ, 2024) • National Plans of Action for seabirds 2020 and sharks 2022 (FNZ 2020, FNZ, 2022a) Operational delivery plans are then set out, including those that are both statutory and non-statutory, for example: • The Annual Operational Plan for Deepwater Fisheries (FNZ, 2022) • Conservation Services Programme Annual Plan 2023/24 (DOC, 2023) • DWG’s Operational Procedures (OPs) (DWG, 2024) • Ling bottom longline OPs • Reporting OPs Data are collected, collated and reviewed regularly to inform the ongoing delivery of sustainable fisheries. For example: • Trawl surveys and annual plenary reports • The Annual Review Report for Deepwater Fisheries for 2021/22 (FNZ 2023a) • Target and bycatch fish and invertebrate species (e.g., Finnuci et al 2020)		

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PI 2.4.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
		- ETP/OOS species (e.g., Edwards et al 2023, Edwards and Mormede, S., 2023, MacKenzie et al 2022) - Habitats (Leathwick et al. 2012, Stephenson et al. 2022, FNZ, 2022c) - Ecosystem considerations (e.g., Tuck et al. 2009, MacGregor et al 2019, FNZ, 2022c). In summary, measures address specific ecosystem impacts effectively enough to meet the appropriate standard, and there is considered to be a partial strategy in place to address the impact of the UoAs that is expected to achieve the ecosystem outcome SG80 level. SG60 and SG80 are met. Despite the combination of measures, the UoAs impacts on the key ecosystem element of community composition/diversity is not clearly understood in recent times thus restricting the efficacy of the partial management strategy with respect to the ling longline UoAs, SG100 is not met.		
b	Management strategy effectiveness			
	Guide post	The measures, if necessary , are considered likely to work, based on plausible argument.	There is some evidence that the measures/partial strategy, if necessary , is achieving the objectives set out in scoring issue (a), based on some information directly about the UoA and/or the ecosystem involved.	There is evidence that the partial strategy/strategy is achieving the objectives set out in scoring issue (a) based on information directly about the UoA and/or ecosystem involved.
	Met?	Yes	Yes	No
Rationale		Strategic and operational measures that are in place are considered likely to work, based on information about the fishery and ecosystem components involved (e.g. target, retained and bycatch species, ETP/OOS species and habitats). These components are being actively managed (see PI 1.2.1, PI 2.1.2, PI 2.2.2 and PI 2.3.2). The Aquatic Environment and Biodiversity Annual Review (FNZ, 2022c) provides a comprehensive review of the efficacy of measures, and identification of ongoing and new issues. Detailed monitoring of many aspects of the fishery (e.g. catches of target, retained species, and bycatch fish and invertebrates) provides a rich source of information through which to investigate the efficacy of strategies and plans in place providing some evidence of the management measures achieving their objectives. SG60 and SG80 are met. Updated evidence of the impacts of the longline UoAs on overall community composition/diversity for the deep-water ecosystems with which the fishery interacts across its range is not available, SG100 is not met.		

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	80
Condition number (if relevant)	NA

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PI 2.4.3 – Ecosystem information

PI 2.4.3		There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements		
Scoring issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Yes	Yes	
Rationale		The assessment team has determined that the key ecosystem element to be assessed is: 1. Community composition/diversity The Aquatic Environment and Biodiversity Annual Review (AEBAR), compiled by Fisheries New Zealand most recently for 2021 (FNZ, 2022c) provides a thorough review of the status of research into New Zealand deep water ecosystems. Research is most advanced in the Chatham Rise region, where modelling of the foodweb has been underway since 2006, the most recent version being MacGregor et al 2019. Information from the Chatham Rise Atlantis Model identified four species groups that stood out as having more effect than the other groups: orange roughy, hoki, pelagic fish small (primarily myctophids), and spiny dogfish (MacGregor et al, 2019). The Chatham Rise Atlantis model has been shown to have sound dynamics with respect to current knowledge of the system, has been tested for sensitivity to its ocean forcing variables and spawning stock recruitment assumptions (see references in MacGregor et al 2020). In a follow up to address and explore sensitivity to initial conditions of the to the biological sub-component of the Atlantis model input variables, MacGregor et al 2020, summarised that accounting for uncertainty in four main categories of model variables (1) initial conditions; (2) environmental; (3) feeding functional response; (4) productivity/recruitment, is likely to cover the broad range of uncertainty for the model. It is clear that information is adequate to broadly understand the key elements of the ecosystem – SG60 and SG80 are met.		
b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on the key ecosystem elements can be inferred from existing information	Main impacts of the UoA on the key elements of the ecosystem have been investigated in detail.	Main interactions between the UoA and the key ecosystem elements have been investigated in detail.
	Met?	Yes	Yes	No
Rationale		The assessment team has determined that the key ecosystem element to be assessed is: 1. Community composition/diversity Tuck et al. 2009 provided an ecosystem-focused review of data from the Chatham Rise and Sub-Antarctic trawl surveys. Their analyses showed some evidence of change in ecosystem indicators over time, including evidence of increasing evenness (reducing diversity) but no evidence that species were being lost from the food-web. The lack of more up to date determinations based on analyses of a longer time-series of trawl survey data limits the assessment teams ability to conclude this with a higher degree of certainty and for all areas fished by the UoAs. Nevertheless, the main impacts of the UoA on the ecosystem have been and continue to be investigated in detail through up to date ecosystem modelling (see MacGregor et al 2019, 2020) that take account of multiple stressors to the ecosystem (fishing pressure), SG80 is met. The main interactions of the UoAs with the ecosystem outside of the		

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PI 2.4.3		There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements		
		Chatham Rise and specifically follow up to the initial Tuck et al (2009) work would support scoring, at this stage SG100 is not met .		
c	Understanding of component functions			
	Guide post		The main functions of the components in the ecosystem are known .	The impacts of the UoA on the components are identified and the main functions of these components in the ecosystem are understood .
	Met?		Yes	Yes
Rationale		The main impacts of the UoAs include direct fishery removals, the addition of biomass from offal and discarding available to scavengers and impacts to community composition through top-down pressure. The main functions of the components in the ecosystem in the New Zealand deepwater ecosystem are considered to be understood, based on ecosystem modelling and associated research (e.g., Tuck et al 2009, Pinkerton 2011, MacGregor 2019, 2020). Both SG80 and SG100 are met		
d	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Yes	Yes
Rationale		Three series of scientific trawls in New Zealand waters are particularly valuable for understanding ecosystem dynamics and for monitoring for trophic and ecosystem-level effects at the level of the demersal fish community: • A scientific trawl survey has been carried out on the Chatham Rise region approximately annually since 1992 • A similar scientific trawl survey has been carried out over the Sub-Antarctic plateau over the same period, but less frequently (Bagley & O'Driscoll 2012, Tuck et al. 2009) • 15 scientific trawl surveys have been carried out in the Hauraki Gulf region between 1980 and 2000. These surveys used a consistent methodology and were used to investigate change in a series of indicators in the demersal fish community (Tuck et al. 2009). The combination of research trawls and observer coverage, mandatory commercial catch and effort reporting generate adequate data to detect any increase in risk level the UoAs pose to deep water ecosystems. SG80 is met . Since the launch of NZ's Biodiversity Strategy 2000, Fisheries New Zealand has run a Marine Biodiversity Research Programme with 67 projects to date, addressing biodiversity knowledge gaps. Research projects pertinent to the deepwater environment include: • ZBD2020-07 Recovery of Seamount Communities • ZBD2020-06 Recovery of biogenic habitats • ZBD2019-11 Development of Electronic Automated Reporting System (EARS) to improve seabird bycatch monitoring		

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PI 2.4.3	There is adequate knowledge of the ecosystem and the main impacts of the UoA on key ecosystem elements
	• ZBD2019-01 Quantifying benthic habitats • ZBD2019-04 Plastics and marine debris across the ocean floor in New Zealand waters • BD2018-01 5-year continuous plankton survey (Phase 3) • ZBD2018-05 Ecosystem function and regime shifts in the Subantarctic • ZBD2016-11 Quantifying benthic biodiversity across natural gradients • ZBD2016-04 Organic Carbon Recycling in Deepwater • ZBD2014-03 Sublethal effects of environmental change on fish populations. The current Aotearoa New Zealand Biodiversity Strategy, Implementation Plan (DOC, 2022) and the Aquatic Environment and Biodiversity Annual Review (AEBAR, FNZ 2022c) summarise and outline New Zealand's comprehensive strategies to manage ecosystem impacts based on information directly from the UoAs and a multitude of other sources. SG100 is met. Per SA3.17.1 In scoring issue (d) the team shall interpret "information is adequate" to include an understanding of the effects of climate change on the natural productivity of the UoAs. Current research in New Zealand focuses on identifying climate change risks to the marine environment and the seafood sector, biodiversity, deepwater corals, biogenic habitats, fish, shellfish, plankton, primary productivity, and regime shifts. Improving monitoring methods to measure change and assess future scenarios has become important and methods of incorporating climate change indicators into stock assessment, and methods to assess species movements, are underway (FNZ, 2022c). Cummings, et al., (2021) reviewed the biological and ecological characteristics of 32 commercial fisheries species or species groups and evaluated their potential to be impacted by climate related changes. The Chatham Rise Atlantis model (MacGregor et al 2019) has suggested trends in stock abundance (for hoki and other species) which is estimated in stock assessment models to be due to trends in recruitment but may be due to trends in natural mortality rate due to ecosystem changes or species interactions. Current climate change research projects include: • ZBD2018-02 Climate change, fish distribution meta-analysis • ZBD2018- 03 Climate variability, trends, and fish population parameters • ZBD2014-09 Climate change risks and opportunities. The requirement of SA3.17.1 is also met supporting scoring at the SG80 and SG100 levels.

Draft scoring range and information gap indicator included in Announcement Comment Draft Report stage only

Draft scoring range	≥80
Information gap indicator	Information sufficient to score PI

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	NA

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Principle 3

10.3 Principle 3 background

Much of the information for this section is based on Acoura (2018), MRAG (2022), SNZ, DWC (2024 situation reports) and various FNZ reports as referenced.

10.3.1 Management

Fisheries New Zealand (FNZ) is the key regulator tasked with guiding the sustainable use of fisheries resources to the greatest overall benefit to New Zealanders. FNZ is a business unit within the Ministry of Primary Industries (MPI).

The Quota Management System (QMS) is the overall framework for managing New Zealand fisheries. Introduced in 1986, it ensures the long-term sustainability of the fish stocks and the health of the marine ecosystems. The QMS allocates shares in each fish stock as quota. Quota generates an entitlement to catch a proportion of the TACC each year (ACE) within the relevant Quota management Area (QMA). The Minister for Oceans and Fisheries sets the TAC, guided by the *Harvest Strategy Standard*.

The *Harvest Strategy Standard* applies to all fish under the QMS and guides the way that fish stocks are managed. It is how the statutory requirements for stock sustainability, provided in Section 13 of the Fisheries Act 1996, are implemented in practice. The *Harvest Strategy Standard* states that stock targets and limits should be set more conservatively for stocks where information is sparse or uncertainty is high.

In 2019, Fisheries New Zealand finalised a *National Fisheries Plan for Deepwater and Middle-depth Fisheries*. Deepwater and middle-depth fisheries occur in water depths between 200 and 1,500 m and are located between the 12 nautical mile limit out to the edge of our EEZ. The species in this assessment, hoki, hake and ling are deepwater species. The plan provides strategic direction for managing deepwater fisheries and an integrated and transparent way of defining management objectives.

The management of New Zealand's deepwater fisheries is a collaborative arrangement between Fisheries New Zealand (FNZ) and the commercial fishing industry, represented by Seafood New Zealand Deepwater Council (SNZ, DWC). This arrangement enables the Management Objectives to be achieved by drawing on the combined knowledge, experience, capabilities, and perspectives of both organisations.

Input from tangata whenua occurs at the iwi fisheries forums. Industry and eNGO representatives and Treaty partner representatives such as Te Ohu Kaimoana are engaged in the management of our deepwater fisheries through the Deepwater Fish Plan Advisory Group (FPAG) which meets twice a year. The FPAG is an engagement forum for stakeholders to meet with FNZ.

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 2019). The Deepwater Plan 2019 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 Figure 38 These legislative requirements and policies inform the Deepwater Plan 2019, which in turn sets the direction and objectives for this AOP.

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Treaty
Obligations to
Maori

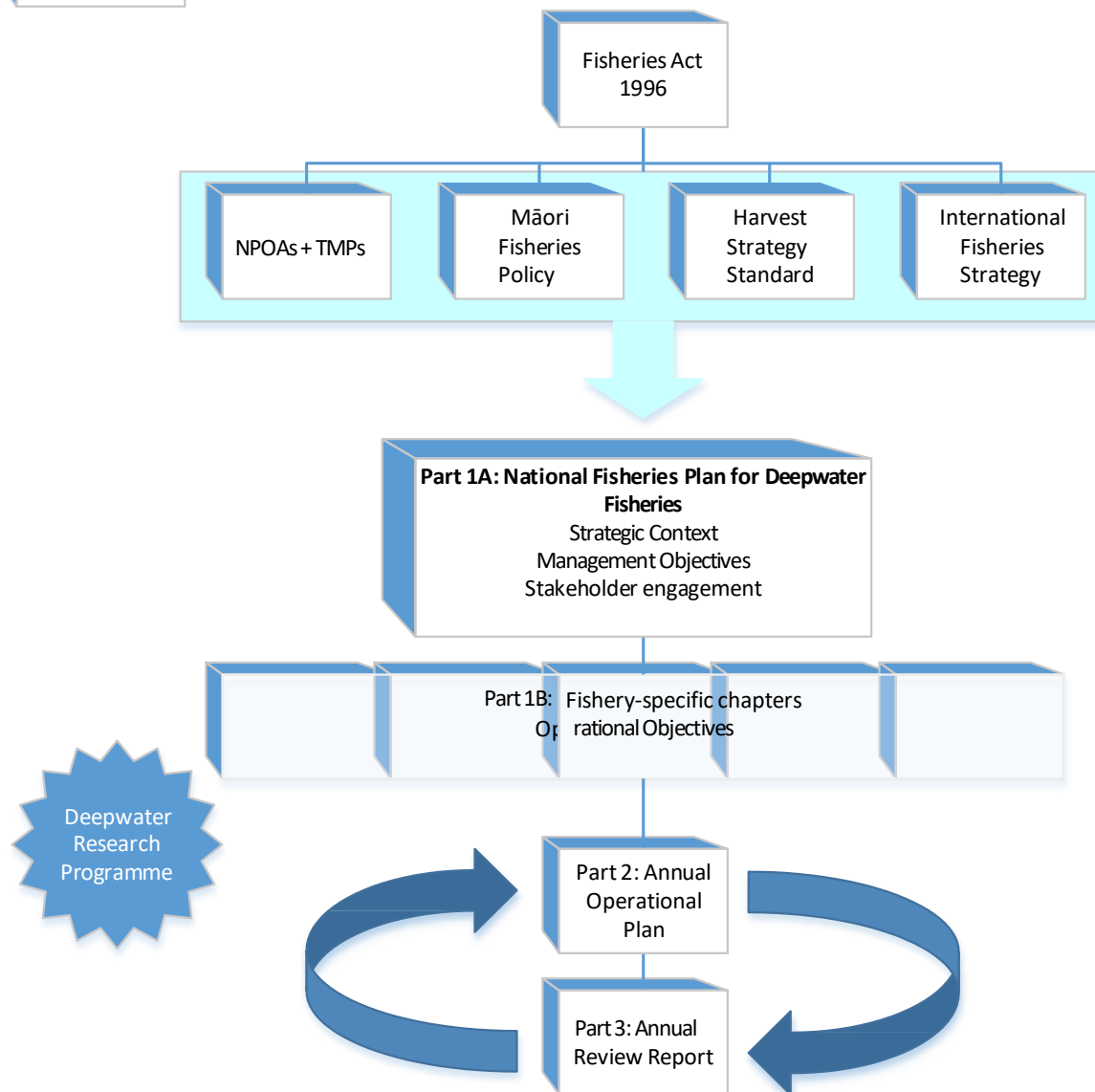


Figure 38 Structure of Management System for NZ deepwater fisheries

Source FNZ 2024

10.3.2 Area of operation and fleet

The five UoAs operate in the Exclusive Economic Zone (EEZ) of New Zealand from within the 12 nautical miles (nm) limit of the territorial sea out to the 200nm EEZ Figure 1. The management units for ling. The outer boundary represents the New Zealand 200 mile EEZ.(Figure 1) No foreign fishing for these species has occurred adjacent to New Zealand in recent years and nor in the foreseeable future. The UoAs fisheries fall under the authority of the NZ government.

Ling fisheries fall under single jurisdiction with the fishing area within the EEZ

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10.3.3 Recognised groups

The primary groups with direct interest in the fisheries are FNZ and the deepwater fishing industry, represented by NZS, DWC. Both are involved in the fishery through a partnership for management and science-based monitoring. FNZ has the responsibility for sustainable harvest under the requirements of the Fisheries Act 1996. Through policy, FNZ and DWG work closely together through a Memorandum of Understanding (DWG 2010) with a goal to ensure New Zealand's deepwater fisheries are sustainably managed.

The New Zealand Department of Conservation (DoC) Conservation Services Programme (CSP) monitors the impact of commercial fishing on protected species, studies species populations and looks at ways to limit bycatch (DoC 2021a)¹². Protected marine species include all marine mammals and reptiles; sea birds (except black backed gulls); seven species of fish; all black corals, gorgonian corals, stony corals and hydrocorals (DoC 2021b)¹³. FNZ and DWC coordinate with DoC in management of the fisheries. However, managing the effects of fishing on these species remains the responsibility of FNZ.

Active participation in New Zealand's commercial fisheries by Iwi, Te Ohu Kai Moana (TOKM) and other Maori interests occurs through several mechanisms, including through membership in DWC and through active engagement with FNZ and Ministers.

The terms of the Maori Treaty Settlement for their rights to commercial fisheries have included delivery of commercial quota to Maori (FNZ 2021). MPI delivers the Crown's obligations to Maori under the

- Treaty of Waitangi (Fisheries claims) Settlement Act 1992
- Maori Commercial Aquaculture Claims Settlement Act 2004 and
- Maori Fisheries Act 2004

Several NGOs participate in consultations on the science and management of NZ deepwater fisheries. WWF, Royal Forest and Bird Protection Society of New Zealand, Greenpeace, and Environment and Conservation Organisations of New Zealand (ECO) are participants. Other organisations may also participate selectively such as the New Zealand Marine Sciences Society

10.3.4 Legislative context

The purpose of the Fisheries Act 1996 is set out in Section 8

(1) The purpose of this Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

(2) In this Act –

Ensuring sustainability means

- a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and
- b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment

Utilisation means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being.

Section 9 of the Act establishes the following environmental principles that shall be taken into account when exercising any powers under the Act in relation to the utilisation of fisheries resources or ensuring sustainability

- a) Associated or dependent species should be maintained above a level that ensures their long-term viability
- b) Biological diversity of the aquatic environment should be maintained; and

¹² <https://www.doc.govt.nz/our-work/conservation-services-programme/about-csp/>.

¹³ <https://www.doc.govt.nz/our-work/conservation-services-programme/>.

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c) Habitat of particular significance for fisheries management should be protected.

Section 10 of the Act outlines information principles for decision makers as follows:

- a) Decisions should be based on the best available information
- b) Decision makers should consider any uncertainty in the information available in any case
- c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
- d) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

The Act also acknowledges external obligations, in particular, Part 1, section 5 notes that the Act shall be interpreted in a manner consistent with:

New Zealand's international obligations relating to fishing

Under the United Nations Convention on the Law of the Sea (UNCLOS) 1982 and its associated agreements, New Zealand has international obligations regarding the management of fish stocks. In deepwater fisheries, the most relevant sections are Articles 61-63 which apply to the management of marine resources within the EEZ and in cases where fish stocks extend beyond the borders of the EEZ.

The provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

Specific treaty obligations in the Fisheries Act provide for commercial elements of the settlement (through 20% of quota as new species enter the QMS and non-commercial elements through regulations providing for customary use). The more general obligations provide for tangata whenua input and participation and having particular regard to kaitiakitanga.

The passing of the Fisheries Amendment Act 2022, which has not yet been implemented, means that by 2026 discarding of all QMS species (unless expressly provided for) will be illegal. This change won't come into force until 2026.

Other domestic legislation which contributes to the management of the wider fisheries ecosystem includes the:

Wildlife Act 1953 which gives partial or full protection to all but one species of seabird; and

The Marine Mammals Protection Act 1978 which makes provision for the protection, conservation, and management of marine mammals within New Zealand waters.

10.3.5 Deepwater fisheries research

Research needs for deepwater fisheries are driven from the Objectives within the National Deepwater Plan 2019 and are primarily delivered through FNZ Fisheries Research Services. These research needs are outlined in the Medium-Term Research Plan (FNZ 2024) which is a living document that is updated regularly to reflect changes in management priorities where these occur, and identification of new information requirements. This research programme focuses on obtaining comprehensive, consistent and robust information in a cost-effective manner. To accomplish this, the research programme specifies the routine research and data collection necessary to meet Management Objectives. Research projects contracted for each financial year, included stock assessments, and trawl and acoustic surveys. All research projects are reviewed by FNZ Science Working Groups and are assessed against the Research and Science Information Standard for New Zealand Fisheries. This review process aims to ensure the quality of the research is sufficient to underpin Deepwater Fisheries Management.

Progress reports are not available for all projects, reports are made publicly available at the conclusion of each project.

10.3.6 Consultation and decision-making processes

The 1996 Fisheries Act requires consultation with stakeholders. To affect this, the Minister has established consultation standards that set out:

- Best practice consultation process to be followed by fisheries managers

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- Minimum performance measures where appropriate; and
- A nationally consistent approach.

A process standard for stakeholder consultation has been developed to set out how MPI meets its obligations to consult with stakeholders before providing advice to the Minister, based on requirements of the Fisheries Act 1996. This standard sets out best practice consultation processes to be followed by fisheries managers; minimum performance measures where appropriate; and a nationally consistent approach with reference to relevant legislation and guidelines. Within this process, it is necessary to identify both who has an interest and who are representative of those having an interest. FNZ provides an initial consultation plan and the manner of consultation, including the timeframe for the consultation and the decision. FNZ distributes the decision and subsequently reviews the process to assure that their consultation meets all requirements.

When management changes are proposed to meet sustainability requirements (such as a change to a TAC/TACC), FNZ prepares a discussion document that provides the Ministry's initial proposals for issues needing decision and a range of management options. In hoki, hake and ling fisheries such proposals primarily relate to changes in TACCs/catch limits. The proposals outlined in FNZ's discussion document are preliminary and are provided as the basis for consultation with stakeholders. Subsequently, FNZ prepares a decision document, which summarises stakeholders' views on their proposals and makes recommendations to the Minister. The decision document and the Minister's letter setting out his final decisions are posted on MPI's website as soon as they become available.

The Fisheries Act 1996 requires a precautionary approach. The MSC vocabulary defines the precautionary as: "The precautionary approach shall be interpreted to mean being cautious when information is uncertain, unreliable or inadequate and that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures." Section 10 of the Fisheries Act 1996 specifies four information principles, which encompass the precautionary principle, that must be taken into account in relation to the utilisation of fisheries resources or ensuring sustainability:

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

- decisions should be based on the best available information:
- decision makers should consider any uncertainty in the information available in any case:
- decision makers should be cautious when information is uncertain, unreliable, or inadequate:
- the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

A decision to consult or not to consult, and any decision made after consultation, must be made in accordance with the principles of administrative law, and in accordance with Fisheries Act 1996 obligations. These principles require decision-makers to act:

- in accordance with law
- reasonably; and
- fairly, in accordance with the principles of natural justice.

Decisions that do not follow requirements are open to legal challenge.

10.3.7 Fisheries objectives

Fisheries 2030, MPI's overarching vision for New Zealand fisheries established in 2009, states that by 2030, New Zealand's fisheries will be:

- world-leading and recognised for achieving a track record of environmental and commercial leadership and success, both domestically and internationally

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- a sector that New Zealanders are proud of, in that they understand that a precious but limited national resource is being responsibly managed, in the interests of all, for both the present and the future
- based on healthy and abundant aquatic environments that are ecologically sustainable, about which we have reliable and dynamic information.
- a sector in which there are positive Crown-Maori partnerships, balancing and optimising cultural and commercial value.
- profitable and efficient, with a strong focus on long-term economic value
- characterised by high trust and high accountability relationships amongst both use and non-extractive use interests and between stake/rights holder entities and Government; and,
- a dynamic system in which transparent and robust decisions about allocation and trading-off are being made by stake/rights holders themselves, within a more enabling legislative and regulatory framework.

Fisheries 2030 specifies an overarching goal for New Zealanders to maximise benefits from the use of fisheries within environmental limits.

There are two outcomes:

Use Outcome: Fisheries resources are used in a manner that provides 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.

The National Deepwater Plan (FNZ,2019) provides an integrated, transparent way of defining management objectives, actions, and services required to meet relevant legislative obligations and strategic directions for managing New Zealand's deepwater fisheries. The plan also provides a reporting mechanism to measure progress towards meeting objectives. The purpose of national fisheries plans is to provide clear management objectives to support the purpose and principles of the Fisheries Act 1996 and to identify key deliverables for MPI over the medium term (5 years). Work on the revision began in 2016. In May 2019, MPI approved the plan.

The National Deepwater Plan consists of three parts:

1. Fisheries Management Framework and Objectives
 - Part 1A- overall strategic direction including management objectives
 - Part 1B- fishery specific objectives for deep water fisheries .
2. Annual Operating Plan
3. Annual Review report

MPI published a Medium-Term Research Plan for Deepwater Fisheries (MTRP; FNZ 2024) for the period 2024-25 to 2029-30. This MTRP outlines the scientific monitoring, and research needs to inform management of New Zealand's deepwater fisheries.

The science needs in this MTRP are based on the longer-term planning that has previously been consulted on with stakeholders, but not provided publicly with descriptions, context and rationale for the planned work. The MTRP remains a living document and will be updated regularly to reflect changes in management priorities where these occur, and identification of new areas of research. Annual research plans will be consulted with stakeholders through the National Deepwater Fisheries Plan forums and reported in the AOP and Annual Review Reports for deepwater fisheries.

The National Fisheries Plan for Deepwater and Middle depth fisheries (2019) sets out high level objectives under three outcomes

1. Use Outcomes

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- Ensure the deepwater and middle-depth fisheries resources are managed to provide for the needs of future generations
- Ensure excellence in the management of New Zealand's deepwater and middle-depth fisheries, so they are consistent with, or exceed, international best practice
- Ensure effective management of deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information
- Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points

2. Environment Outcomes

- 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
- 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
- Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the benthic habitat
- 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

3. Governance Conditions

- Ensure the management of New Zealand's deepwater and middle-depth fisheries meets the Crown's obligations to Māori
- Ensure there is consistency and certainty of management measures and processes in the deepwater and middle-depth fisheries
- Ensure New Zealand's deepwater and middle depth fisheries are transparently managed

10.3.8 Regulation to meet objectives

Long term objectives are included in the Fisheries Act. The purpose of the Fisheries Act is focused on achieving a balance between sustainable utilisation of our fisheries resources, and maintenance of the marine environment. The Act implicitly recognises that:

- The biological realities of harvesting deepwater fisheries means that the future value of these fisheries can only be assured if they are managed sustainably. Measures to increase value must always be considered in the context of ensuring long-term maintenance of both target and bycatch stocks.
- Deepwater target and key bycatch fish stocks exist as part of the broader aquatic environment, and this broader environment has value, including an intrinsic value, to New Zealanders. It also recognises that, while fishing activities may have an environmental impact, not all environmental impacts have an adverse effect on the aquatic environment.
- Avoiding or mitigating adverse effects on the aquatic environment will ensure that the long-term viability of associated or dependent species is assured and that the biological diversity and functionality of marine communities is maintained.

10.3.9 Compliance, monitoring, surveillance and enforcement

The management system has a documented comprehensive and effective monitoring, control and surveillance system

FNZ maintains a comprehensive compliance programme, which includes both encouraging compliance through support and creating effective deterrents. This strategy is underpinned by the **VADE** model, which focuses on all elements of the compliance spectrum as follows:

1. **Voluntary compliance** – outcomes are achieved through education, engagement and communicating expectations and obligations
2. **Assisted compliance** – reinforces obligations and provides confidence that these are being achieved through monitoring, inspection, responsive actions and feedback loops
3. **Directed compliance** – directs behavioural change and may include official sanctions and warnings

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4. **Enforced compliance** – uses the full extent of the law and recognises that some individuals may deliberately choose to break the law and require formal investigation and prosecution.

Since 1994, all vessels over 28 m have been required by law to be part of the Vessel Monitoring System (VMS) which, through satellite telemetry, enables FNZ to always monitor all hake/hoki/ling vessel locations. Paper based catch reporting was also required by all fishing vessels operating in NZ's EEZ. These systems have now been replaced by near real time Geospatial Position Reporting and daily Electronic Catch Reporting. FNZ still combines this functionality with at-sea and aerial surveillance, supported by the New Zealand Defence Force. This independently provides surveillance of activities of deep-water vessels through inspection and visual capability to ensure these vessels are fully monitored and verified to ensure compliance with both regulations and with industry-agreed Operational Procedures.

All commercial catches from QMS stocks must be reported and balanced against ACE (Annual Catch Entitlement) at the end of the month. It is illegal to discard or not to report catches of QMS species. Catches may only be landed at designated ports and sold to Licensed Fish Receivers (LFRs). Reporting requirements for hake/hoki/ling trawl vessels include logging the location, depth, main species caught for each tow, and total landed catch for each trip.

MPI Fishery Officers carry out in-port and at-sea inspections. These inspections relate to both inshore and deep-water vessels that are engaged in the HOK, HAK and LIN trawl fisheries

MPI Fishery Officers also conduct at-sea Royal Navy (RNZN) patrols. During these operations vessel are boarded and inspected, or hailed if boarding was not possible. The Fishery Officers were briefed to examine possible compliance risks.

FNZ audits commercial vessel catch-effort and landing reports, reconciles these against multiple sources including VMS records, data collected by onboard FNZ observers, and catch landing records from LFRs to ensure that all catches are reported correctly. Areas of compliance risk and/or concern are communicated to deepwater operators annually by MPI Compliance (MPI, 2019, 2020). In addition, MPI's Management and Compliance teams meet with DWC personnel and vessel operators annually to discuss and evaluate any issues of concern (DWG, 2019, 2020). Any identified risks are communicated to the fleet along with proposed remedial action to be undertaken.

Commercial fishermen face prosecution and risk severe penalties, which include automatic forfeiture of vessel and quota upon conviction of breaches of the fisheries regulations (unless the court rules otherwise). Financial penalties are also imposed in the form of deemed values to discourage fishermen from over-catching their ACE holdings.

The extensive Regulations governing these fisheries are complemented by additional industry-agreed non-regulatory measures, known as DWG's Operational Procedures (DWG 2022,2023) The Minister for Fisheries relies on the effectiveness of both regulatory and non-regulatory measures to ensure the sustainable management of these fisheries.

To facilitate implementation and monitoring of performance of DWG's Operational Procedures, DWG has an Environmental Liaison Officer (ELO) whose role is to train vessel operators and skippers on ETP species mitigation methods, use of mitigation equipment, safe handling and release of incidental captures and prompt reporting of trigger-level captures to DWG and to FNZ. The ELO is on-call 24/7 to respond to any ETP species capture issues and maintains active liaison with both vessel operators and FNZ towards ensuring effective implementation of the Operational Procedures and the National Plans of Action for Seabirds (FNZ, 2020) and Sharks (MPI, 2013).

10.3.10 Monitoring of Performance of management system

The Deepwater Fisheries Annual Review Report ARR (2022) assesses progress against the fisheries management priorities and actions identified in the Deepwater Fisheries Annual Operational Plan 2020/21. It also reports on the annual performance of New Zealand's deepwater fisheries during the 2020/21 fishing year in relation to environmental interactions and impacts.

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

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

Achievement of these annual priorities contributes to meeting the high-level management objectives set out in Part 1A of the National Deepwater Plan 2019.

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

Part 3C provides a summary report of the combined environmental impacts of deepwater fishing activity, and the deepwater fleet's adherence to the suite of non-regulatory management measures in place during the 2020/21 October Fishing Year (1 October– 30 September).

The AOP is reviewed annually and reported in the ARR. The Ministry conducts an extensive review of the performance of the deepwater fisheries that incorporates consultations with the industry and other stakeholders. Parts of the management system, specifically science and enforcement, undergo external review.

In 2018 an external review of the deepwater fisheries management was conducted by Quality Assurance NZ (IQANZ 2018). The review covered relevant parts of fisheries management and concluded that there was an appropriate management system in place for the ongoing sustainable management of the fisheries.

FNZ and DWC are working on terms of reference for an updated (pers comm A Iving) external review of the management system.

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10.3.11 Principle 3 Performance Indicator scores and rationales

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: - Is capable of delivering sustainability in the UoA(s); - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework		
Scoring issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and organised and effective cooperation with other parties , where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties that deliver management outcomes consistent with MSC Principles 1 and 2.
	Met?	Yes	Yes	Yes
Rationale		The Fisheries Act 1996 (FA) provides the legislative framework for New Zealand fisheries management, within New Zealand fisheries waters and for New Zealand flagged vessels and nationals on the high seas. The purpose of the Fisheries Act is to provide for utilisation of fisheries resources while ensuring sustainability. In giving effect to the purpose of the Act, decision makers are required to take into account environmental and information principles, and to act consistently with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and international obligations. Among other things, the Fisheries Act sets out New Zealand's fisheries management regime; provisions relating to access to fisheries, including foreign licensed access; a high seas fishing regime; record keeping, reporting, and disposal of fish provisions; monitoring, control, and surveillance (MCS) provisions; and a system of offences and penalties. Since 1986, the major commercial fisheries in New Zealand fisheries waters have been managed through a quota management system (QMS) based on individual transferable quotas (ITQs). Within the QMS, fisheries sustainability objectives are achieved by setting a total allowable catch (TAC) that is consistent with the productivity of a fishery. TACs can be reviewed on an annual basis and a total allowable commercial catch (TACC) is then determined. The TACC for each fishery is then apportioned to quota holders as an annual catch entitlement according to the percentage of quota each company or individual holds for a fishery. Annual catch entitlements are widely traded during their period of validity to enable fishers to balance catches taken against quota held. The Fisheries Act binds the Crown. Decisions made under power given by the Act are judicially reviewable by the Courts in the event of disputes. Procedures and processes that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act, are set out under Part 7 of the Fisheries Act. MPI's fisheries management responsibilities extend to the 200 nautical mile limit of the New Zealand EEZ. The requirements and obligations under the Fisheries Act 1996, Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (and individual iwi Deeds of Settlement), the United Nations Convention on the Law of Sea (1982) and its associated agreements, the United Nations Fish		

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PI 3.1.1	The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: • Is capable of delivering sustainability in the UoA(s); • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework			
	Stocks Agreement (1995), Food and Agricultural Organisation's (FAO) Code of Conduct for Responsible Fisheries and the United Nations Fish Stocks Agreement (1995) are all binding. There is an effective national and international legal system and binding procedures governing cooperation with other parties that delivers management outcomes consistent with MSC Principles 1 and 2. This SI meets SG60, SG80 and SG100.			
b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes, which is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Yes	Yes	Yes
Rationale	The Fisheries Act provides opportunities to negotiate and resolve disputes. Procedures and processes that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act, are set out under Part 7 of the Fisheries Act. The Minister may appoint a Dispute Commissioner, and the Minister makes the final determination. The consultation process is an attempt to avoid unresolved disputes by ensuring all interested parties have an opportunity to participate and have an input into decisions. There have been occasions when there has not been a satisfactory outcome and then this has gone to litigation and the Court has decided. The Memorandum of Understanding (DWG 2010) between DWG (now Seafood NZ, DWC) and MPI has encouraged better working relationships and avoided the need for litigation between the Ministry and the industry. The reduction in disputes between DWG and MPI demonstrates the effectiveness of the MOU. The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective. This meets the requirements of SG60, 80, and 100			
c	Respect for rights			
	Guide post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Yes	Yes	Yes

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PI 3.1.1	The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: • Is capable of delivering sustainability in the UoA(s); • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework
Rationale	The terms of the Maori Treaty Settlement for their rights to commercial fisheries have included delivery of commercial quota to Maori (MPI, 2021). MPI delivers the crown's obligations to Maori under the • Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 • Maori Commercial Aquaculture Claims Settlement Act 2004 and • Maori Fisheries Act 2004 The Treaty of Waitangi guarantees the "Chiefs, Tribes and peoples of New Zealand" the "undisturbed possession" of their fisheries until they wished to dispose of them to the Crown. Recognition of their Treaty rights to commercial fisheries was agreed in the early 1990s, resulting in the Crown delivering a comprehensive settlement to Maori in three major components. The first was to purchase 10 percent of the quota shares from the market and to transfer these to the Treaty of Waitangi Fisheries Commission, set up as a transitional trust for the benefit of Maori. The second was a cash settlement that was in part used to buy half of New Zealand's largest fishing company – Sealord Limited. The third was an undertaking to deliver to Maori 20% of the commercial quota shares for any new species brought into the QMS in future. The Maori Fisheries Act 2004 has the purpose of implementing the agreements made in the Deed of Settlement dated 23 September 1992; and to provide for the development of the collective and individual interests of iwi in fisheries, fishing, and fisheries-related activities in a manner that is ultimately for the benefit of all Maori. To achieve the purposes of this Act, provision is made to establish a framework for the allocation and management of settlement assets through the allocation and transfer of specified settlement assets to iwi as provided for by or under this Act; and the central management of the remainder of those settlement assets. See Sections 10.3.1.3 and 10.3.1.4 for more details. The management system clearly commits to rights of customary fishing, reaching SG60, 80 and 100 for all UoAs.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

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PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are generally understood .	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles, and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Yes	Yes	Yes
Rationale		The primary groups with direct interest in the fishery are FNZ and the deepwater fishing industry (represented by DWC). Both are involved in the fishery through a partnership for management and science-based monitoring. FNZ has the responsibility for sustainable harvest under the requirements of the Fisheries Act 1996. Through policy, FNZ and DWC work closely together through a Memorandum of Understanding (DWG 2010) with a goal to ensure New Zealand’s deepwater fisheries are sustainably managed. The New Zealand Department of Conservation (DoC) Conservation Services Programme (CSP) monitors the impact of commercial fishing on protected species, studies species populations and looks at ways to limit bycatch (DoC 2021a). FNZ and DWG coordinate with DoC in management of the fisheries. However, managing the effects of fishing on these species remains the responsibility of FNZ. The Treaty of Waitangi guarantees the “Chiefs, Tribes and peoples of New Zealand” the “undisturbed possession” of their fisheries until they wished to dispose of them to the Crown. Recognition of their Treaty rights to commercial fisheries was agreed in the early 1990s, resulting in the Crown delivering a comprehensive settlement to Maori in three major components. The New Zealand Department of Conservation (DoC) Conservation Services Programme (CSP) monitors the impact of commercial fishing on protected species, studies species populations and looks at ways to limit bycatch. Protected marine species include all marine mammals and reptiles; sea birds (except black backed gulls); seven species of fish; all black corals, gorgonian corals, stony corals and hydrocorals FNZ and DWG coordinate with DoC in management of the fisheries. A number of NGOs participate in consultations on the science and management of NZ deepwater fisheries. WWF-NZ, WWF-US, WWF-AU, Royal Forest and Bird Protection Society of New Zealand, Greenpeace, and Environment and Conservation Organisations of New Zealand (ECO) are participants. Other organisations may also participate selectively such as the New Zealand Marine Sciences Society. Organizations and individuals involved in the fishery have been identified, with roles and responsibilities well laid out, meeting the SG60, 80, and 100		
b	Consultation processes			
	Guide post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge , to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge . The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge . The management system demonstrates consideration of the

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PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
				information and explains how it is used or not used.
	Met?	Yes	Yes	Yes
Rationale		The 1996 Fisheries Act requires consultation with stakeholders. To affect this, the Minister has established consultation standards (MPI https://fs.fish.govt.nz/Doc/21817/consultation_standard%5B1%5D.pdf.ashx) that set out: • Best practice consultation process to be followed by fisheries managers. • Minimum performance measures where appropriate; and • A nationally consistent approach. This process standard has been developed taking into account relevant obligations, including the provisions of s 12 of the Fisheries Act 1996, administrative law requirements, and the MFish Statement of Intent 2006-2011. These standards recognize that consultation leading to decisions must occur in accordance with law; in a reasonable manner; and fairly, in accordance with the principles of natural justice. The law requires identification of stakeholders “with an interest” in each fishery, and the identification of those who represent stakeholders with an interest. In general, the policy recommends setting a wide range of stakeholders with an interest. The Minister must notify stakeholders in advance of the consultation, and to subsequently inform them of his decisions. Within this process, it is necessary to identify both who has an interest and who are representative of those having an interest. FNZ provides an initial consultation plan and the manner of consultation, including the timeframe for the consultation and the decision. FNZ distributes the decision and subsequently reviews the process to assure that their consultation meets all requirements. When management changes are proposed to meet sustainability requirements (such as a change to a TAC/TACC), FNZ prepares a discussion document that provides the Ministry’s initial proposals for issues needing decision and a range of management options. In hoki, hake and ling fisheries such proposals primarily relate to changes in TACCs/catch limits. The proposals outlined in FNZ’s discussion document are preliminary and are provided as the basis for consultation with stakeholders. Subsequently, FNZ prepares a decision document, which summarises stakeholders’ views on their proposals and makes recommendations to the Minister. The decision document and the Minister’s letter setting out his final decisions are posted on MPI’s website as soon as they become available. The primary non-government stakeholders are the owners of the deepwater quota represented by DWC. DWG-MFish (2010) outlines the consultations undertaken by the industry and FNZ. FNZ has established open and direct involvement of all stakeholders in their science assessment processes. All of the Science Working Groups, including the annual stock assessment Plenary, are open to the public and the papers and meeting records are available to all participants. DWC invites discussions with MSC stakeholders through presentations and participation in conferences and documentaries (Clement, 2021); through direct meetings; through the public release of all information pertaining to the MSC assessment process online; and, through inviting all participants to attend any meeting between the MSC, CAB and DWG. See also Section 10.3.1.6. The management system includes ongoing consultation processes that seek and use inputs, and provide information on the use of the inputs, meeting SG 60, 80, and 100 for all UoAs.		
c	Participation			
	Guide post		The consultation process provides opportunity for all	The consultation process provides opportunity and encouragement for all

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PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
			interested and affected parties to be involved.	interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Yes	Yes
Rationale		A process standard for stakeholder consultation has been developed to set out how MPI meets its obligations to consult with stakeholders before providing advice to the Minister, based on requirements of the Fisheries Act 1996. Fisheries stakeholders are people or groups with a particular interest in the management of fishery resources. It includes environmental interests, commercial, customary and recreational fishers. Members of the public who are affected by the management of fisheries resources are also covered by them. This standard sets out best practice consultation processes to be followed by fisheries managers; minimum performance measures where appropriate; and a nationally consistent approach with reference to relevant legislation and guidelines. Within this process¹⁴, it is necessary to identify both who has an interest and who are representative of those having an interest. Decision-makers should • start consultation early • consult widely when appropriate • listen to what others have to say • be informative • be prepared to wait • balance the issues • ask for feedback • conduct consultation in mutual good faith • keep consultation a two-way process • be open minded The delegated decision-maker is also to determine the manner of consultation. The consultation may take place in the form of written exchange of information (i.e., hard copy, disk format, email), or in working groups, meetings or by telephone. The Consultation Standard identified three major elements to stakeholder involvement in fisheries management decisions: • Stakeholder consultation prescribed by the Fisheries Act 1996. • Constructive engagement with stakeholders, • Input and participation of tangata whenua. These procedures identify the stakeholders, assure all stakeholders receive relevant information and have opportunities to participate, and assure opportunity and encouragement for effective stakeholder engagement meeting SG80 and 100.		

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

¹⁴ (https://fs.fish.govt.nz/Doc/21817/consultation_standard%5B1%5D.pdf.ashx)

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PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with the MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach , are implicit within management policy .	Clear long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach , are explicit within management policy .	Clear long-term objectives that guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach , are explicit within and required by management policy.
	Met?	Yes	Yes	Yes
Rationale		The Fisheries Act 1996 requires a precautionary approach. The MSC vocabulary defines the precautionary as: “The precautionary approach shall be interpreted to mean being cautious when information is uncertain, unreliable or inadequate and that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.” Section 10 of the Fisheries Act 1996 specifies four information principles, which encompass the precautionary principle, that must be taken into account in relation to the utilisation of fisheries resources or ensuring sustainability: All persons exercising or performing functions, duties, or powers under the Fisheries Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles: • decisions should be based on the best available information: • decision makers should consider any uncertainty in the information available in any case: • decision makers should be cautious when information is uncertain, unreliable, or inadequate: • the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act. Fisheries 2030, MPI’s overarching vision for New Zealand fisheries established in 2009, specifies an overarching goal for New Zealand’s fisheries and two outcomes: Goal: New Zealanders maximising benefits from the use of fisheries within environmental limits. Use Outcome: Fisheries resources are used in a manner that provides 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. The National Deepwater Plan provides an integrated, transparent way of defining management objectives, actions, and services required to meet relevant legislative obligations and strategic directions for managing New Zealand’s deepwater fisheries. The plan also provides a reporting mechanism to measure progress towards meeting objectives. The purpose of national fisheries plans is to provide clear management objectives to support the purpose and principles of the Fisheries Act 1996 and to identify key deliverables for MPI over the medium term (5 years). Work on the revision began in 2016. In May 2019, MPI approved the plan . Refer Section 10.3.1.7 for more details. Clear long-term objectives, consistent with the precautionary approach, are explicit and required, meeting SG60, 80, and 100.		

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

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PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC Principles 1 and 2		
Scoring issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are explicit within the fishery-specific management system.	Well-defined and measurable short- and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Yes	Yes	Partial
Rationale		The National Deepwater Plan provides an integrated, transparent way of defining management objectives, actions, and services required to meet relevant legislative obligations and strategic directions for managing New Zealand's deepwater fisheries. The plan also provides a reporting mechanism to measure progress towards meeting objectives. The purpose of national fisheries plans is to provide clear management objectives to support the purpose and principles of the Fisheries Act 1996 and to identify key deliverables for FNZ over the medium term (5 years). The Section 4 information provides well defined objectives. The performance indicators in Section 4 provide mechanisms for measuring success for some, but not all, of the objectives. Therefore, the management system contains well-defined and measurable objectives, although not all objectives meet the 'measurable' requirement. The DWG-MPI MOU (DWG-MFish, 2010) further lays out specific objectives for implementing the National Deepwater Plan. The fishery specific chapter for ling contains Management Objectives divided into two main areas: Utilization and Environment. Each Management Objective contains a description of the current status relative to the Objective, a description of the target status at the end of the five year period covered by the National Deepwater Plan, and a series of supporting Operational Objectives. Management and operational objectives have performance indicators defined to assist in evaluation performance. Operational objectives are specific, measurable and time bound designed to drive all management action in the fishery and cover both long and short term. These operational objectives will be critical in determining the annual management of fisheries for the five years that the National Deepwater Plan is in place. Each Operational Objective links to one or more Management Objectives. The individual tasks that contribute to the delivery of each operational objective will be specified each year in the annual operational plan. The Management Objectives are generally broad in scope, while the Operational Objectives are specific and measurable. However, the specific fisheries chapter dates back to ling 2011 and this needs to be updated. The objectives are well defined, measurable, and explicit and probably still represent the needs of the fisheries. The chapters are currently being updated (Pers com FNZ, 2025). The Deepwater Plan and the DWG-MPI MOU meet the SG80, but the age and uncertainty that the objectives are all still relevant indicates that the SG100 is not completely met. Therefore, a partial score of 90 is given. SG 60 and SG80 are met and SG 100 partially		

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	

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PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring issue		SG 60	SG 80	SG 100
A	Decision-making processes			
	Guide post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Yes	Yes	
Rationale		When management changes are proposed to meet sustainability requirements (such as a change to a TAC/TACC), FNZ prepares a discussion document that provides the Ministry's initial proposals for issues needing decision and a range of management options. In hoki, hake and ling fisheries such proposals primarily relate to changes in TACCs/catch limits. The proposals outlined in FNZ's discussion document are preliminary and are provided as the basis for consultation with stakeholders. Subsequently, FNZ prepares a decision document, which summarises stakeholders' views on their proposals and makes recommendations to the Minister. The decision document and the Minister's letter setting out his final decisions are posted on MPI's website as soon as they become available. All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles: • decisions should be based on the best available information: • decision makers should consider any uncertainty in the information available in any case: • decision makers should be cautious when information is uncertain, unreliable, or inadequate: • the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act. A decision to consult or not to consult, and any decision made after consultation, must be made in accordance with the principles of administrative law, and in accordance with Fisheries Act 1996 obligations. These principles require decision-makers to act: • in accordance with law • reasonably; and • fairly, in accordance with the principles of natural justice. Decisions that do not follow requirements are open to legal challenge. SG 60 and SG 80 are met		
B	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely and adaptive manner, and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation, and consultation, in a transparent, timely, and adaptive manner, and take account of the wider implications of decisions.
	Met?	Yes	Yes	No
Rationale		Consultation is a central component of the management decision-making process (Fisheries Act Section 12, Stakeholder Consultation Process Standard). The Minister makes the final decision		

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PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
		based on advice received from other parties (Section 12 – “the Minister shall consult with such persons or organisations as the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned including Maori, environmental, commercial, and recreational interests”). FNZ prepares a discussion document that provides the Ministry’s initial proposals for issues needing decision and a range of management options (https://www.mpi.govt.nz/consultations/your-fisheries-your-say/). In hoki, hake and ling fisheries such proposals primarily relate to changes in TACCs/catch limits. The proposals outlined in FNZ’s discussion document are preliminary and are provided as the basis for consultation with stakeholders. Subsequently, FNZ prepares a decision document, which summarises stakeholders’ views on their proposals and makes recommendations to the Minister. The decision document and the Minister’s letter setting out his final decisions are posted on MPI’s website as soon as they become available. This demonstrates the management system responding to serious and important issues in an open and transparent way, taking into account the wider implications and alternatives for decision making. This meets the SG60 and 80. While the management system considers a wide range of issues, it is not clear that the system takes into account all issues, thus not meeting the SG100.		
C	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Yes	
Rationale		The Fisheries Act 1996 requires a precautionary approach. The MSC vocabulary defines the precautionary as: “The precautionary approach shall be interpreted to mean being cautious when information is uncertain, unreliable or inadequate and that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.” Section 10 of the Fisheries Act 1996 specifies four information principles, which encompass the precautionary principle, that must be taken into account in relation to the utilisation of fisheries resources or ensuring sustainability. SG80 is met		
D	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery’s performance and management action is generally available on request to stakeholders.	Information on the fishery’s performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery’s performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation, and review activity.
	Met?	Yes	Yes	Yes
Rationale		Formal reporting on management actions or inactions is part of the formal consultation process. When management changes are proposed to meet sustainability requirements (such as a change		

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PI 3.2.2	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery			
	to a TAC/TACC), FNZ prepares a discussion document that provides the Ministry's initial proposals for issues needing decision and a range of management options (https://www.mpi.govt.nz/consultations/your-fisheries-your-say/). In hoki, hake and ling fisheries such proposals primarily relate to changes in TACCs/catch limits. The proposals outlined in FNZ's discussion document are preliminary and are provided as the basis for consultation with stakeholders. Subsequently, FNZ prepares a decision document, which summarises stakeholders' views on their proposals and makes recommendations to the Minister. The decision document and the Minister's letter setting out his final decisions are posted on MPI's website as soon as they become available. These measures together meet the SG60, 80, and 100 .			
E	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.	The management system or UoA is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or UoA acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Yes	Yes	Yes
Rationale	The Minister is the decision maker in fisheries management matters and his decisions are bound by the law and are therefore open to legal review. The law requires identification of stakeholders "with an interest" in each fishery, and the identification of those who represent stakeholders with an interest. Section VII Disputes Resolution of the Fisheries Act states that the section "(a) applies to disputes about the effects of fishing (excluding fish farming) on the fishing activities of any person who has a current fishing interest provided for or authorized by or under this Act; but (b) does not apply to disputes about ensuring sustainability or about the effects of any fishing authorised under Part 9." Section VII further requires that the Minister publicly set out an approved statement of procedure for the resolution of such disputes. The Minister of Fisheries published in 1998 the dispute resolution procedures. The Minister's approved statement of procedure for the resolution of disputes consists of four steps, with each step in turn involving specific actions to be undertaken by the parties to the dispute to give effect to the requirements of Section VII of the Act: • Dispute summary report by the party identifying the report • Production and Distribution of Initial Assessment Report demonstrating the dispute is about the effects of fishing, and does not involve issues associated with ensuring sustainability • Negotiation and attempts at resolution • Prepare an Outcome Report with conclusion of the process including resolution or not of the dispute. The parties to the dispute may make recommendations that involve sustainability or customary fishing that would require action beyond the authority of the Minister. The collaboration between the DWG and MPI works to avoid disputes, as the agreement of common goals and negotiations to achieve them occurs during the normal working relationship between the two parties. The principles in the Fisheries Act require decision-makers to act: • in accordance with law; • reasonably; and • fairly, in accordance with the principles of natural justice. Decisions that do not follow requirements are open to legal challenge.			

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PI 3.2.2	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery
	Legal challenges are uncommon in the fisheries, in part because of the collaborative decision making. Therefore, the management system proactively acts to avoid disputes. Lack of judicial decisions does not provide direct evidence of rapid implementation, but the requirements of the Fisheries Act and policies of DWG and MPI strongly suggest this would be the case. The fishery reaches the SG60, SG80, and SG100

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	

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PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with		
Scoring issue		SG 60	SG 80	SG 100
A	MCS system			
	Guide post	MCS mechanisms exist within the UoA.	An MCS system exists within the UoA.	A comprehensive MCS system is well-established within the UoA.
	Met?	Yes	Yes	Yes
Rationale		The Ministry for Primary Industries (MPI) maintains a comprehensive compliance programme, which includes both encouraging compliance through support and creating effective deterrents. This strategy is underpinned by the VADE model, which focuses on all elements of the compliance spectrum as follows: 1. Voluntary compliance – outcomes are achieved through education, engagement and communicating expectations and obligations 2. Assisted compliance – reinforces obligations and provides confidence that these are being achieved through monitoring, inspection, responsive actions and feedback loops 3. Directed compliance – directs behavioural change and may include official sanctions and warnings 4. Enforced compliance – uses the full extent of the law and recognises that some individuals may deliberately choose to break the law and require formal investigation and prosecution. Since 1994, all vessels over 28 m have been required by law to be part of the Vessel Monitoring System (VMS) which, through satellite telemetry, enables FNZ to monitor all hake/hoki/ling/southern blue whiting vessel locations at all times. Paper-based catch reporting was also required by all fishing vessels operating in NZ’s EEZ. These systems have now been replaced by near-real-time Geospatial Position Reporting and daily Electronic Catch Reporting. FNZ still combines this functionality with at-sea and aerial surveillance, supported by the New Zealand Defence Force. This independently provides surveillance of activities of deep-water vessels through inspection and visual capability to ensure these vessels are fully monitored and verified to ensure compliance with both regulations and with industry-agreed Operational Procedures. All commercial catches from QMS stocks must be reported and balanced against ACE at the end of the month. It is illegal to discard or not to report catches of QMS species. Catches may only be landed at designated ports and sold to Licensed Fish Receivers (LFRs). Reporting requirements for hake/hoki/ling trawl vessels include logging the location, depth, main species caught for each tow, and total landed catch for each trip. MPI audits commercial vessel catch-effort and landing reports and reconciles these against multiple sources including VMS records, data collected by onboard MPI observers, and catch landing records from LFRs to ensure that all catches are reported correctly. At sea and aerial surveillance, supported by NZ defence Force, are also carried out This independently provides surveillance of activities of deep-water vessels through inspection and visual capability to ensure these vessels are fully monitored and verified to ensure compliance with both regulations and with industry-agreed Operational Procedures. The comprehensive MCS system has demonstrated a consistent ability for effective enforcement meeting SG60, 80, and 100.		
B	Sanctions			

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PI 3.2.3		Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with		
	Guide post	Sanctions to address non-compliance exist within the UoA.	Sanctions to deal with non-compliance exist, that are appropriate to the UoA, and are applied.	Comprehensive sanctions to address non-compliance exist, that are appropriate to the UoA, and are consistently applied.
	Met?	Yes	Yes	Yes
Rationale		NZ Commercial fishers face prosecution and risk severe penalties, which include automatic forfeiture of vessel and quota upon conviction of breaches of the fisheries regulations (unless the court rules otherwise). Financial penalties are also imposed in the form of deemed values to discourage fishers from over-catching their ACE holdings. The industry, with its investment in the fishery through co-management, has a strong incentive to maintain its cooperative role through compliance with legal requirements. MPI Fishery Officers carried out a total of 210 in-port and at-sea inspections for the period 1 January 2019 to 31 December 2023. These inspections relate to both inshore and deep-water vessels that were engaged in the HOK, HAK, LIN and SBW trawl fisheries and the LIN longline fishery Areas monitored during in-port inspection included one or more of the following: • Carton weights • Adherence to state for HGT and DRE product (for HOK, HAK and LIN) • ER reporting and landing documentation • Verification of landing • Compliance checks of mitigation devices for NFPS (e.g., SLEDS and tori lines) • Inspection of PRB equipment • Fish to meal. Some minor non-compliance was detected during in-port inspections in relation to ER reporting including the non-reporting of discards and LIN tail cuts greater than 60mm for dressed product. Other compliance issues such as no fishing permit or certificate of registration onboard the vessel was detected and followed up by Fisheries Officers at the time with the skipper and later with the permit holder if required. Comprehensive sanctions to address non-compliance exist, that are appropriate to the UoAs, and are consistently applied.SG60, SG 80 and SG 100 are met		
C	Compliance (information)			
	Guide post	Information is adequate to broadly understand compliance in the UoA.	Information is adequate to estimate compliance in the UoA with a high degree of accuracy .	Information is adequate to estimate compliance in the UoA with a very high degree of accuracy .
	Met?	Yes	Yes	Yes
Rationale		Since 1994, all vessels over 28 m have been required by law to be part of the Vessel Monitoring System (VMS) which, through satellite telemetry, enables MPI to monitor all ling bottom longline vessel locations at all times. Paper-based catch reporting was also required by all fishing vessels operating in NZ's EEZ. These systems have now been replaced by near-real-time Geospatial Position Reporting and daily Electronic Catch Reporting. FNZ still combines this functionality with at-sea and aerial surveillance, supported by the New Zealand Defence Force. This independently provides surveillance of activities of deep-water vessels through inspection and		

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PI 3.2.3	Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with						
	visual capability to ensure these vessels are fully monitored and verified to ensure compliance with both regulations and with industry-agreed Operational Procedures. All commercial catches from QMS stocks must be reported and balanced against Annual Catch Entitlement (ACE) at the end of the month. It is illegal to discard or not report catches of QMS species. Catches may only be landed at designated ports and sold to Licensed Fish Receivers (LFRs). Reporting requirements for ling longline vessels include logging the location, depth, main species caught for each set, and total landed catch for each trip. MPI audits commercial vessel catch-effort and landing reports and reconciles these against multiple sources including VMS records, data collected by onboard MPI observers, and catch landing records from LFRs to ensure that all catches are reported correctly. Commercial fishers face prosecution and risk severe penalties, which include automatic forfeiture of vessel and quota upon conviction of breaches of the fisheries regulations (unless the court rules otherwise). Financial penalties are also imposed in the form of deemed values to discourage fishers from over-catching their ACE holdings. The extensive regulations governing these fisheries are complemented by additional industry-agreed non-regulatory measures, known as the New Zealand Deepwater Fisheries Operational Procedures. The Minister for Oceans & Fisheries relies on the effectiveness of both regulatory and non-regulatory measures to ensure the sustainable management of these fisheries. As part of DWC's Operational Procedures, DWC has an Environmental Liaison Officer whose role is to liaise with vessel operators, skippers and MPI to assist with the effective implementation of these Operational Procedures. MPI Fishery Officers carried out a total of 210 in-port and at-sea inspections for the period 1 January 2019 to 31 December 2023. These inspections relate to both inshore and deep-water vessels that were engaged in the HOK, HAK, LIN and SBW trawl fisheries and the LIN longline fishery. Inspections during 2020 and 2021 were lower than usual due to restricted access to vessels during the Covid epidemic (G. Lydon FNZ, pers. comm.). FNZ audits commercial vessel catch-effort and landing reports, reconciles these against multiple sources including VMS records, data collected by onboard FNZ observers, and catch landing records from LFRs to ensure that all catches are reported correctly. Areas of compliance risk and/or concern are communicated to deepwater operators annually by MPI Compliance (MPI, 2019, 2020). In addition, MPI's Management and Compliance teams meet with DWG personnel and vessel operators annually to discuss and evaluate any issues of concern (DWG, 2019, 2020). Any identified risks are communicated to the fleet along with proposed remedial action to be undertaken. As Information is adequate to estimate compliance in the UoA with a very high degree of accuracy. SG 60,80 and 100 are met. TG1,2 and 3 are met. See table 67 below For PI 3.2.3 c the application of Evidence Requirements Framework is required to evaluate trueness of information Table 67. Assessment of factors determining data "trueness" for compliance data. Note Evidence Based Framework <table><tr><th>Criteria</th><th>Assessment</th><th>Determination High/Med/Low</th></tr><tr><td></td><td></td><td></td></tr></table>	Criteria	Assessment	Determination High/Med/Low			
Criteria	Assessment	Determination High/Med/Low					

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PI 3.2.3	Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with		
	Objectivity: to what extent is the information free from conflict of interest?	The primary sources of catch composition information are skipper logbooks, and LFRs, along with a comprehensive system of offload checks and observer reports. As described above, because observers are employed, deployed and debriefed by MPI according to management arrangements set independently of the industry, observer information is considered highly objective. Logbook data may be less objective, simply because it is self-reported by the vessel captain, but these data are cross checked using, LFR, offload inspections and observer reports. However, having these sources of information allows for the cross-validation of catch information. In this case, the logbook and LFR catch composition information is very consistent with the observer reports. Independent sources of information pertaining to bird and mammal population statuses and broader fishery impact used are highly objective. VMS is also objective in that it cannot be influenced by humans. There is a comprehensive system of monitoring and verification of compliance with closed area management using VMS that is free of conflicts of interest. Overall, this data has high objectivity.	High Objectivity
	Relevance: to what extent is the information pertinent or connected to the matter in hand	The main compliance risks are identified as quota evasion, fishing in prohibited areas, failure to report interaction/retention of protected or prohibited species, and misreporting or mishandling of bycatch and discards. Quota evasion is monitored by skipper logbooks, LFRs and a high frequency of offload checks. Vessel positions are monitored via VMS and alert systems Skipper ETP interaction reporting and Observer information interaction/retention of protected or prohibited species, and misreporting or mishandling of bycatch and discards.	High Relevance
	Completeness: To what extent are different sources in agreement	Information is available from a multiplicity of monitoring tools and cross-checking procedures e.g. Geospatial Position Reporting, Electronic catch reporting, at sea and aerial surveillance, port inspections and MPI audits	High Completeness

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		Consistency: To what extent are different sources in agreement	Observers catch records and logbook catch, and LFR records are very consistent with each other, Bird interaction was recorded both in the logbook and by an observer. VMS is also checked relative to vessel reported fishing locations and these sources of information are consistent.	High Consistency
		As High objectivity, high relevance, high completeness and high consistency are met TG1,2 and 3 are met and a SG score of 100.		
D	Compliance (outcome)			
	Guide post	Systematic non-compliance of regulations specific to governing sustainable fishing practices on the water is not evident within the UoA.	Majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are likely to be complied with.	Majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are consistently complied with.
	Met?	Yes	Yes	Yes
Rationale		FNZ audits commercial vessel catch-effort and landing reports, reconciles these against multiple sources including VMS records, data collected by onboard FNZ observers, and catch landing records from LFRs to ensure that all catches are reported correctly. Areas of compliance risk and/or concern are communicated to deepwater operators annually by MPI Compliance (MPI, 2019, 2020). In addition, MPI's Management and Compliance teams meet with DWC personnel and vessel operators annually to discuss and evaluate any issues of concern (DWG, 2019, 2020). Any identified risks are communicated to the fleet along with proposed remedial action to be undertaken. Some minor non-compliance was detected during in-port inspections in relation to ER reporting including the non-reporting of discards and LIN tail cuts greater than 60mm for dressed product. Other compliance issues such as no fishing permit or certificate of registration onboard the vessel was detected and followed up by Fisheries Officers at the time with the skipper and later with the permit holder if required. Commercial fishermen face prosecution and risk severe penalties, which include automatic forfeiture of vessel and quota upon conviction of breaches of the fisheries regulations (unless the court rules otherwise). Financial penalties are also imposed in the form of deemed values to discourage fishermen from over-catching their ACE holdings. The extensive Regulations governing these fisheries are complemented by additional industry-agreed non-regulatory measures, known as DWG's Operational Procedures (DWG, 2021). The Minister for Fisheries relies on the effectiveness of both regulatory and non-regulatory measures to ensure the sustainable management of these fisheries. To facilitate implementation and monitoring of performance of DWG's Operational Procedures, DWG has an Environmental Liaison Officer (ELO) whose role is to train vessel operators and skippers on ETP species mitigation methods, use of mitigation equipment, safe handling and release of incidental captures and prompt reporting of trigger-level captures to DWG and to FNZ. The ELO is on-call 24/7 to respond to any ETP species capture issues and maintains active liaison		

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PI 3.2.3	Monitoring, control, and surveillance (MCS) mechanisms ensure the management measures in the UoA are enforced and complied with
	with both vessel operators and FNZ towards ensuring effective implementation of the Operational Procedures and the National Plans of Action for Seabirds (FNZ, 2020) and Sharks (MPI, 2013a). The high level of meeting reporting requirements, and ongoing monitoring by enforcement agents demonstrates no evidence of systematic non-compliance. This meets the SG100.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

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PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system		
Scoring issue		SG 60	SG 80	SG 100
A	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system.	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	Yes	Yes	Yes
Rationale		The Deepwater Fisheries Annual Review report (ARR) 2022, assesses progress against the fisheries management priorities and actions identified in the Deepwater Fisheries Annual Operational Plan 2020/21. It also reports on the annual performance of NZ's deepwater fisheries during the 2020/21 fishing year in relation to environmental interactions and impacts. The ARR is Part 3 of the National Deepwater Plan 2019. It is split into three parts Part 3A describes the progress that has been made during the 2020/21 financial year (1 July 2020 – 30 June 2021) towards delivering the management actions set out in the 2020/21 AOP. Achievement of these annual priorities contributes to meeting the high-level management objectives set out in Part 1A of the National Deepwater Plan 2019. Part 3B provides detail on delivery of fisheries service's relevant to Deepwater Fisheries Management that are planned by Financial Year. These processes include the planning and contracting of fisheries and conservation research projects, planning observer coverage on the deepwater fleet and the cost recovery regime. Part 3C provides a summary report of the combined environmental impacts of deepwater fishing activity, and the deepwater fleet's adherence to the suite of non-regulatory management measures in place during the 2020/21 October Fishing Year (1 October 2020 – 30 September 2021). The ARR contains several appendices: • Appendix I summarises the commercial catch of deepwater stocks during the 2020/21 Fishing Year. Also included, where available, are observer coverage details, the amount of deemed values invoiced, and export earnings during the 2020 calendar year • Appendix II summarises the results of the October 2020 sustainability rounds • Appendix III comprises The Deepwater Fish Plan Advisory Group (FPAG) Terms of Reference • Appendix IV MSC certified stocks and the relevant data used to review the certification • Appendix V summarises cost recovery levies for deepwater stocks for the 2020/21 Financial Year; and • Appendix VI comprises the observer Interim Trip Report template. The AAR evaluates the development and implementation of the Fisheries Plan framework – National Deepwater Plan with fishery specific chapters and Annual Operational Plan for the fisheries. This review encompasses all parts of the management system, therefore reaching the SG60, SG80, and SG100		
B	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Yes	Yes	No

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PI 3.2.4	There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system
Rationale	Progress against the objectives in the National Fisheries Plan for Deepwater and the Annual Operational Plan is reviewed annually and reported in the Annual Review Report. FNZ conducts an extensive review of performance of the deepwater fisheries that incorporates consultations with industry and other stakeholders. Parts of the management system, specifically science and enforcement, undergo regular external review. In 2018, MPI completed an external review of the Deepwater Fisheries Management conducted by Independent Quality Assurance New Zealand (IQANZ 2018). The review covered the relevant parts of fishery management. Another such review is currently being proposed and planned. The CAB recommends that progress on this is monitored and evidence provided at the surveillance audit. SG60 and SG 80 are met but not SG100

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	90
Condition number (if relevant)	

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11 Appendices

11.1 Assessment information

11.1.1 Previous assessments

NZ Ling longline was first MSC certified in 2014

A MSC assessment of the New Zealand ling longline fishery was carried out in 2009 and certification granted in 2014. Three conditions were placed on the fishery, all P! 2.3 ETP. These three conditions were all closed in subsequent surveillance Audits.

The NZ longline ling fishery was reassessed and recertified in 2018 with no conditions.

11.2 Evaluation processes and techniques

11.2.1 Site visits

A site visit took place in Wellington, New Zealand, 23-28th February 2025. CAB assessment team members attended all meetings. Meetings with stakeholders were held both in person and remotely. The client group and their consultants, National Institute of Water and Atmospheric Research (NIWA) scientists, Ministry for Primary Industry and Fisheries New Zealand (FNZ) Managers and staff attended. The stakeholders provided invaluable input with their contributions of relevant information. The assessors have taken this into account in this CPRD report.

No NGOs wished to be involved nor wrote any submissions.

All attendees were informed that

- The CAB, LRQA is an independent body contracted to assess this fishery against the Marine Stewardship Council's standard for Sustainable Fishing
- Stakeholder involvement is a vital part of the MSC process and to please provide any information they felt might be valuable in conducting this assessment, including any concerns they may have about the fishery. The information they provide will be considered by the assessment team when writing the assessment report and might influence scoring decisions.
- If there is information, they wished to remain confidential they should inform us before sharing it with us. Any information referenced during this assessment must be shared with any stakeholder who wishes to see it. We can provide a confidentiality agreement on request before you share sensitive information. Information presented to inform the assessment must be objective and verifiable

11.2.2 Stakeholder participation

Identified stakeholders were contacted by LRQA and the client and invited to participate in this reassessment. The CAB provided the hyperlink to the 'MSC template for Stakeholder Input into Fishery Assessments'.

There were no written submissions from stakeholders

Meetings were held for five days in Wellington both in person and remotely.

At each session stakeholders were given the opportunity to ask questions. The sessions were organised so that the assessors would

- Describe the Fishery under assessment / surveillance – (species, method, area, fleet)
- Explain MSC Procedures and principles - describe in manner appropriate for participants
- Ask participants to introduce themselves & key interests
- Confirm that participants are happy for information to be attributed?

Key issues of concern

- What are they?
- How can they be addressed?

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- What's the best source of information?
- Participants were asked to identify any sources of information / other stakeholders that may be useful for assessment.
- Participants were asked if they require that a note of the meeting be sent to them for comment & then included in the main report.
- Agreed timescale for feedback / further input.
- Summarised key points at end of meeting

11.2.3 Evaluation techniques

- For various stocks of spiny dogfish, ribald, rough and smooth skates and *Trachurus* bait species, assessed as main in-scope species under PI 2.2.1, stock status reference points are not available, derived either from analytical stock assessment or using empirical approaches. This justifies using the RBF per Table 5 of the ERF. Refer section 11.8
- At the site visit:
 - The team consulted a range of stakeholder groups.
 - The team identified stakeholders early in the assessment process.
 - The team organised in person and remote meetings to allow for the highest participation of stakeholders.
 - The team structured meetings to encourage engagement amongst stakeholders
 - The team make available background information on the UoA ahead of the meeting so that the stakeholder consultation process is focused on providing information required for the RBF scoring process, while allowing participants to express their expert opinions.
- A key purpose of the site visit was to collect information and speak to stakeholders with an interest in the fishery. For those parts of the assessment involving the MSC's Risk- Based Framework, we used a stakeholder-driven, qualitative and semi-quantitative analysis during the site visit. To achieve a robust outcome from this consultative approach, we rely heavily on participation of a broad range of stakeholders with a balance of knowledge of the fishery. We encourage any stakeholders with experience or knowledge of the fishery to participate in these meetings.
- The main points of discussion during the site visit for which stakeholder opinions and knowledge were canvassed included:
 - *Stock assessment modelling attempts*
 - *CPUE time-series*
 - *Distinction of biological stocks as separate scoring elements in the UoAs*
 - *Susceptibility attributes and scores*

RBF was used in this assessment Refer Sect 11.8.

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11.3 Peer Review reports

11.3.1 PRA

11.3.1.1 General Comments

Fishery	Assessment Start Year	Peer Reviewer (A/B/C)	Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI / RBF tables (first row) and conditions (second row).	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)
New Zealand Ling Longline	2025	PR A	Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	No	The report is generally written well. However, there are a number of the rationales that the CAB has not met their requirements under Section 7.15 of the MSC Fisheries Certification Process v2.3, ensuring that all scoring rationales are unambiguously met and clear. Further, a number of SG require reductions based on the evidence provided in the current rationales. If no additional or clearer evidence can be obtained, then this should result in some score reductions. There also appears to be some rational differences between this report and the trawl report regarding Ling which the CAB might want to review, ideally the sections regarding Ling, specifically P1, should be written the same.	Thank you. These concerns have been addressed in the PI sheet and amendments made to the report
New Zealand Ling Longline	2025	PR A	Are the condition(s) raised appropriately written to clearly identify relevant scoring issues and scoring elements and define any milestones, consistent with the MSC process requirements? [Reference: FCP v3.0 Section 7.16]	Yes	Conditions are written well and agreed.	Thank you.
New Zealand Ling Longline	2025	PR A	Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from	NA		



			enhancement activities?			
New Zealand Ling Longline	2025	PR A	Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below.	NA	Many rationales provided throughout the assessment, lack sufficient information to justify scoring. Whilst in most cases it is understood that the information is available for the fishery, the team has not always presented the required information in rationales to satisfy scoring requirements. This can be simply fixed through additional provision of information in rationales, as indicated throughout the report.	Thank you. These concerns have been addressed in the PI sheet and amendments made to the report

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New Zealand Ling Longline	2025	PR A	Optional: General Comments (continued)	NA	No clear explanation has been provided by the CAB why observer data or other data (ETP/OOS) was only considered up to 2020/21? For example under 2.2.1 the assessor states that "...<i>observed interactions with all ETP species (grand total and annual average), their status (alive/dead/decomposed) for sets targeting ling for the most recent five years fishing seasons for which data are available from 2016/17-2020/21 from the Protected Species website</i>". Why is the data from 2022/23/24 not used? was it not available? Did the CAB have issues accessing the data? There is a good three years of data missing from the some of the conversation and scoring. It would be good to have a much more clear justification or explanation of why.	Table 45 reflects observer data from 2018/19 through 2022/23. Table 50 reflects chondrichthyan catch composition from 2018/19 through 2022/23. Observer data were not provided to the assessment team for bottom longline sets targeting ling for ETP species after the 2020/21 fishing season. Additional data were provided to the assessment team by the client for the more recent years (2021/22, 2022/23 and the first two quarters of 2023/24) but were not disaggregated to target fishery (i.e. for all bottom longline fisheries combined). Nevertheless 5-years of observer data were available to determine average interactions and mortalities, Environmental Liaison Officer reports reflected captures and life status to the end of the 2022/23 fishing season and seabird mortality was re-evaluated for the most at risk species by Sharp (2025). The report has been updated with the above paragraph in explanation. The assessment team were comfortable with the suite of data available that the ETP scoring elements were represented in the assessment and that the direct mortality of the fishery was not underestimated due to the absence of more recent observer data. Up to date observer reported interactions will be supplied and incorporated into the assessment during future surveillance of the fishery.
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11.3.1.2 PI Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	PR comment code	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Fishery	Assessment Start Year	Enter UoA stock/s, and insert extra rows for P1 PIs as needed, e.g. if separate scores given for different UoA stocks	Enter UoA gear/s, and insert extra rows for P2 PIs as needed, e.g. if separate scores given for different UoA gear types	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Enter code below to summarise the comment and any expected score change	Peer reviewers (PRs) should provide support for the codes used in the left column by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any PIs where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (using the 'Change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.1.1	Minor change suggested to increase clarity	SI(b) end of first paragraph, the value provide for 7WC states "0.05" with no unit provided. It is believed that the 7WC value written here should be 5%?	Thanks - that was a carry over from using proportions instead of percentages. Corrected	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.1.2	NA (PI not scored)			NA (No response needed)

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.1	Change to rationale or evidence expected, not to scoring	SI(a) Under MSC SA2.4.1(a) SG100 Responsiveness - The CAB has not provide sufficient information in the rational on whether <i>“action has been taken by management, when required”</i>. Whilst there is a harvest strategy in place, is there evidence of its use, in order to gauge the “responsiveness” of the harvest strategy? SA2.4.1(b) states <i>““Designed” at SG100 scoring issue (a) to mean a harvest strategy that includes a management procedure (MP) that has been developed through management strategy evaluation (MSE)”</i>. The rational provided by the assessor does not address these two fundamental elements of SG100 when considering “design”. It is not clear whether an MP has been developed?	SI(a). We have added text to clarify that the strategy is "responsive" in general. For example, the TACCs for HOK 1 and HAK 7 were reduced because their stock sizes were below their target levels and were approaching their limit reference points. The ling stocks are well above their target levels and some TACCs has been increase given this. We also now clarify that the HCR component of the harvest startegy was selected using a MSE process.	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.1	Change to rationale or evidence expected, not to scoring	SI(b) SA2.4.1 (d) states “Evaluated” at SG100 scoring issue (b) to mean <i>“tested for robustness to uncertainty, appropriate to the scale and intensity of the UoA”</i>. Whilst it is understood that the harvest strategy has undergone MSE, it is not clear if that MSE tested for robustness to uncertainty, appropriate to the scale and intensity of the UoA.	There is not explicit guidance what constitutes "appropriate to the scale and intensity of the UoA" but the MSEs did examine the key uncertainties that are commonly explored in best practices MSEs although as scored under 1.2.2(b) the MSE work did not address ecological implications such as would require an ecosystem operating model. We have added additional text to clarify that the MSEs explored the primary sources of uncertainty relevant to fisheries of these types.	No score change, additional evidence presented

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.1	Minor score reduction expected	SI(d) The rational states that the HCR was reviewed in 2025. However, there is no mention of review of the HS? The HCR and HS are two different things. Was the HS reviewed? If so when and were changes made if necessary? If the HS has not been reviewed, then SG100 is not met.	The HCR is the key component of the harvest startegy but the harvest startegy standard itself was not reviewed - scored reduced to a level consistent with 80.	Minor score reduction made
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.2	Minor score reduction expected	SI(a) SA2.5.3 states <i>"In scoring issue (a) at the SG100 level, where quantitative simulation testing is available "most of the time", the team shall interpret the stock as being maintained at or above BMSY or some ecologically more relevant target point at least 70% of the time"</i> . The rational provided does not address this element, rather it is stated by the assessor that the <i>"stocks of ling "should" fluctuate" about 0.4Bo"</i> . The term "should" does not provide a level of confidence that the stock will be at or above BMSY, or any measure of time in that area? If there is not a more definitive rational provided, then SG100 is not met.	The rationale has been expanded to refer to the fact that the simulation results for hoki, hake and ling all show that the stocks are predicted (for most MSE scenarios) to remain well about the BMSY in the operating model (which is less than the target of the HCR).	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.2	Change to rationale or evidence expected, not to scoring	SI(c) the rational provided for SG100 being met requires further explanation as per GSA2.5.4.	We have added additional reference to the tools used to ensure that exploitation rates are achieved as expected.	No score change, additional evidence presented

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.3	Change to rationale or evidence expected, not to scoring	SI(b) Regarding the second last paragraph of the rational starting with " <i>It is illegal...</i> " What are the figures? It is fine to state this as fact, but no evidence has been provided here in the rational. This statement requires further evidence. It is understood that it is illegal to discard but what does the information say and what level of compliance informs this rational? MPI observers are not present all the time, so what analysis has been done to show level of compliance or discarding occurring?	Finucci et al. 2020, in their analysis of non-target fish and invertebrate catch and discards in New Zealand ling longline fisheries from 2002–03 to 2017–18, reported that discarding of ling was generally low, less than 100 t per year in all years except for 2003–04 and 2004–05 and that annual levels of discarding have declined over time, with a low of 11 t reported in 2017–18.	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.3	Change to rationale or evidence expected, not to scoring	SI(c) There is no SG60, therefore please remove SG60 from rational text. Whilst it is understood that ling is a QMS species and therefore all commercial fishers need to report against catches, what about recreational catch? Further it would be good for the assessor to provide further information/justification in the rational by including known catches by the various sectors, to demonstrate evidence.	The report already refers to the few instances of illegal catch and catches of recreational fishers and customary users is negligible. We have added to text (and references to the plenary report where this is documented).	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	1.2.4	No comments (scoring agreed)	scoring agreed.		NA (No response needed)

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.1	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.2	Change to rationale or evidence expected, not to scoring	SI(a) As stated previously by the assessor, “<i>There are four stocks of barracouta in New Zealand, BAR 1, 4, 5 and 7. Stock status reference points are available for BAR 1 and BAR 5. For BAR 4 and 7 no biomass index or indication of stock status are currently available.</i>” Therefore, the rational needs to be more accurate for Tier 2 stocks and what measures are in place, as example for BAR 4 and 7 they do not have stock assessments, no stock status information, and unlikely to have environmental information. Needs amending to be clear about BAR stocks.	During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all in-scope species fishstocks be combined as single biological stocks. This has bearing on the absence of stock assessments and stock status information for some fishstocks (management units). For some management units (fishstocks) there are stock assessments, biomass indices and an indication of stock status. Scoring rationale updated to reflect that individual fishstocks are defined for the purpose of management but that little to no knowledge exists about the biological structure of the stocks of main and minor in-scope species.	Minor score reduction made

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.2	Change to rationale or evidence expected, not to scoring	SI(a) small-scaled cod - The rational has provided some good information, but how is it relevant to small-scaled cod? Does this species have a TACC, stock assessment, genetic biomass reference points? It is not clear if this is relevant to this species. Given that under 2.1.1 SI(b) the assessor stated that “ <i>No biomass index or indication of stock status are currently available</i> ” for this species, then it is unlikely that this information is relevant to this species and is misleading. Needs amending to reflect the current situation for this specific species.	During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all in-scope species fishstocks be combined as single biological stocks. This has bearing on the absence of stock assessments and stock status information for some fishstocks (management units). For some management units (fishstocks) there are stock assessments, biomass indices and an indication of stock status. Scoring rationale updated to reflect that individual fishstocks are defined for the purpose of management but that little to no knowledge exists about the biological structure of the stocks of main and minor in-scope species.	No score change, change to rationale
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.2	Change to rationale or evidence expected, not to scoring	SI(a) The rational provides some good back background information on Tier 2 stocks generally, but what does it have to do specifically for the species considered under scoring? Can the assessor point to examples directly about the species under assessment and being scored with relevance to the Tier 2 works that “generally get done”. It is not clear how this relates to these species, needs amending.	During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all in-scope species fishstocks be combined as single biological stocks. This has bearing on the absence of stock assessments and stock status information for some fishstocks (management units).	Minor score reduction made

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								For some management units (fishstocks) there are stock assessments, biomass indices and an indication of stock status. Scoring rationale updated to reflect that individual fishstocks are defined for the purpose of management but that little to no knowledge exists about the biological structure of the stocks of main and minor in-scope species.	
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.2	Minor score reduction expected	SI(a) Scoring is questionable for tier 2 and 3 species being assessed here especially for BAR 4 and 7 and small-scaled cod. No clear examples have been provided that relate specifically to these species to indicate that they have had these measures recently applied to them. If not, how long ago was it applied. SG80 is met for BAR 4 and 7 and small-scaled cod, but not SG100.	During the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all in-scope species fishstocks be combined as single biological stocks. This has bearing on the absence of stock assessments and stock status information for some fishstocks (management units). For some management units (fishstocks) there are stock assessments, biomass indices and an indication of stock status. Scoring rationale updated to reflect that individual fishstocks are defined for the purpose of management but that little to no knowledge exists about the biological structure of the stocks of main and minor in-scope species.	Minor score reduction made

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.2	Score reduction expected to <80, condition needed	SI(c) The assessors rational fails to provide any evidence/justification addressing requirements under SA3.7.2.1, SA3.7.2.2, and SA3.7.2.3. As an example, there is no evidence provided regarding alternative fishing gear and/or practices, no verification that a review includes consideration of the potential effectiveness and practicality of "alternative measures". Therefore, SG80 is not met. Without greater justification, SG60 could be arguably not met.	Additional evidence was supplied uring the sitie visit describing that the target long fishery has been transitioning to the use of potting gear that offers better selectivity and generates almost no bycatch. It is anticipated that future reporting including feedback from operators, gear trials, and spatial overlap analysis with bottom longlining and trawling will improve scoring but in the interim, with potting increasingly being incorporated as an alternative fishing gear the assessment team consider SG80 is met.	No score change, additional evidence presented
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.1.3	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.2.1	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.2.2	Score reduction expected to <80, condition needed	SI(b) the rational does not provide evidence that the comprehensive strategy has reduced or minimized the mortality of seabirds. The rational clearly states that the estimated capture of seabirds has fluctuated above or below the baseline. Therefore, one would assume this means seabird capture has been stable. This is not the same as reduce or minimize. Therefore, SG80 not met.	Per SA3.10.3.1, The team shall interpret "minimised" to mean when both of the following are met: a. The ETP/OOS unit score meets at least the SG80 for PI 2.2.1 scoring issue (a) a.b. The ETP/OOS unit score meets the SG100 for PI 2.2.2 scoring issue (a). All ETP/OOS seabird species meet SG100 for PI2.2.1 scoring issue (a) and seabirds are managed through a comprehensive strategy, meeting	No score change, change to rationale

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								SG100 for PI2.2.2 scoring issue (a), SG80 is met.	
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.2.3	Minor score reduction expected	SI(a) As currently written, it is believed that the assessor has not met their requirements under Section 7.15 of the MSC Fisheries Certification Process v2.3, ensuring that all scoring rationales are unambiguously met and clear. The assessor has failed to provide in the rational which SG is met based on the information provided and the outcomes achieved through the ERF, is it SG80 or 100? Based on the information provided by the assessor that TG3 is met but only PG2 is met, then in accordance with B1.4 of the MSC Toolbox Table B7 - then SG80 is met.	Thank you. Rationale now includes which SG is met, being SG80.	No score change, change to rationale

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.1	Score reduction expected to <80, condition needed	SI(b) It is not clear how SG80 is met when there is very little knowledge about the more sensitive habitats the fishery may or may not be interacting with. As stated by the CAB, information on the spatial and temporal distribution of the UoAs fishing activity relative to the distribution of more sensitive habitats is not available. Without this, it is not possible to state what impact the fishery has and the what, where, and how the more sensitive habitats are interacted with. There is no certainty with catch of invertebrates as well as there are only recoding's of what is actually landed on vessels and no data provided regarding instant "drop-offs" or mid water "drop-offs" from lines and hooks deployed, SG80 is not met. This requires a condition which the recommendation could form part of.	Following the site visit the fishery client supplied two plots, the first was the spatial distribution of fishing effort relative to the Stephenson (2023) 9 layer bioregionalisation that was included as Figure 27 in the report. The second which to this point was not included was the spatial distribution of oshing effort relative to habitat intersects for corals, sponges and bryozoans that are sessile benthic invertebrates comonly associated with more sensitive habitats. We have now included this plot (Figure 28) and beleive it supports scoring at SG80. We have amended the scoring rational as per below text and have also updated the Recommendation. Information on the spatial and temporal distribution of the UoAs fishing activity relative to the distribution of coral, sponge and bryozoan habitats (more sensitive habitats) was supplied to the assessment team on request following the site visit (Figure 28). This reflects a qualitative assessment of the limited overlap of the fishery with areas where the coral, sponge and bryozoan habitats intersect, supporting the negligible levels of interactions reported with invertebrate species associated with more sensitive habitats, SG80 is met.	No score change, additional evidence presented
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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.2	Score reduction expected to <80, condition needed	SI(a) The rational has not provided enough justification to claim that a partial strategy is in place for more sensitive habitats. It is arguably correct to say that there are measures in place at SG60, but not SG80. This is because there is no certainty around what the more sensitive habitats are, where they are located and how the fishery overlaps with these specific habitats. Further, it is not clear what management measures are in place to protect the more sensitive habitats specifically. All measures stated in the rational are very indirect measures at best and do nothing to “protect”, but they rather simply monitor what is being done. Also there are no measures (under requirement SA3.13.2.1 (b)) or precautionary measures implemented to “avoid” encounters with “more sensitive” habitats. SG80 is not met. Another point is that the benthic protection areas do not apply to longlines.	The requirement to report interactions with benthic invertebrates and to comply with designated marine reserves and seamount closures constitute the measures in place to avoid serious or irreversible harm to more sensitive habitats. The assessment team agrees that these do not constitute meaningful precautionary measures implemented to “avoid” encounters with “more sensitive” habitats and have reduced scoring to SG60.	Minor score reduction made
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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.2	Score reduction expected to <80, condition needed	SI(b) It is not clear how SG80 is met when there is no data available for more sensitive habitats and invertebrates apart from very limited landed catch information. This data does not consider the amount of "drop-offs" that would occur and likely to be greater than that of landed habitat/invertebrates. There is no rational provided here to support that critical consideration of scoring here. SG60 met but not SG80.	The consideration of "unobserved mortality" is not applicable to habitats scoring elements under this scoring issue instead ghost gear impacts and management thereof is applied to habitats scoring elements. The scoring rationale has been updated to reflect that all vessels are monitored through VMS and that catch and effort and landing reports are audited by the MPI. The measures in place are to report all interactions and restrict fishing in seamount closures and marine reserves. The negligible catch of invertebrates and the absence of fishing in closed areas constitutes evidence the the measures are acheiving their objective.	No score change, change to rationale
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.3	Minor change suggested to increase clarity	CAB needs to state at end of rational that SG100 is not met.		No score change, change to rationale

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.3	Score reduction expected to <80, condition needed	SI(b) As currently written, it is believed that the assessor has not met their requirements under Section 7.15 of the MSC Fisheries Certification Process v2.3, ensuring that all scoring rationales are unambiguously met and clear. Final rational scoring in text does not complete the scores and fails to identify which SG is met. As per GB1.4.1 and table B5 of the MSC Fisheries Standard Toolbox v1.2, the CAB has correctly indicated that only TG1 has been met for all habitats. However, only PG1 has to be met for all scoring elements across SG60, 80 and 100. Therefore, PG2 and PG3 do not need to be scored or displayed under this SI. Based on the TG and PG guideposts awarded by the CAB and in accordance with Table B5, the score achieves SG60 but not SG80 given that whilst PG1 was met, TG2 was not met, therefore scoring falls to the lowest order and in this case that would be SG60 as both TG1 and PG1 where met. Scoring needs to be stated at the end of the rational so it is clear which SG is met.	Thank you for that reference to the relevant guidance. We have revised the scoring rationale to reflect PG1 is met and PG2 and PG3 are not applicable to this scoring issue. Therefore, in combination with TG2 being met (but not TG3) only SG80 is met.	No score change, change to rationale
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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.3.3	Minor score reduction expected	SI(c) Given that the habitats are unknown and there is uncertainty of the UoAs impact and overlap of these habitats as stated by the CAB, it is not possible to claim that changes in habitat distributions over time are measures. SG100 is not met. The recording of landed invertebrates allows you to understand very little about the distribution of habitats and even less about the potential impacts of the UoAs, as it cannot account for "drop-offs" etc. Further, whilst it is understood that there has been ongoing iterative updates to benthic habitat maps and classification systems in New Zealand, there is nothing specifically linked to the UoAs as the CAB has stated in previous PIs.	The assessment team disagrees here for the reason that increases in risk are monitored specifically for the UoA being principally increases in fishing effort and spatial distribution of fishing effort. The measurement of "changes in habitat distributions over time" is not qualified by requiring a specific linkage to the UoA.	No change made
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.4.1	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.4.2	No comments (scoring agreed)	scoring agreed.		NA (No response needed)

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	2.4.3	Score reduction expected to <80, condition needed	SI(b) In the second paragraph the following sentence "<i>The team anticipates dialogue with ecosystem experts during the site visit might support scoring</i>". This seems an odd sentence to have in a report? Please review and amend accordingly. Given the previous statements by the CAB throughout a number of the PI scoring issues claiming that the UoAs impact on habitats is uncertain and overlap with habitats is not well understood or unknown, it is not possible to state that the key elements of the ecosystem have been investigated in detail. SG80 is not met. Whilst it is agreed that target catch and bycatch is known, little is known about invertebrate catch etc.	Thank you, sentence removed. The assessment team has determined that the key ecosystem element to be assessed is "Community composition/diversity" . We agree that further work is required relating to habitats (Conditions on 2.3.2 and 2.3.3) and also to the determination of the UoAs impact on this key ecosystem element (Condition on 2.4.1a). There is however no scoring guidance supplied to assessors as relates to the investigation of the main impacts of the UoA on key ecosystem elements. The assessment team take the main impact to be fish removals and the effects of increased fishing pressure has been modelled (Tuck et al 2009) and further work has been done on the Chatham Rise more recently (MacGregor et al 2019, 2020). The assessment team considers the Condition on PI2.4.1a will sufficiently address and update the impacts of the UoA on key ecosystem elements.	No score change, change to rationale
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.1.1	No comments (scoring agreed)	scoring agreed.		NA (No response needed)

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.1.2	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.1.3	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.2.1	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.2.2	No comments (scoring agreed)	scoring agreed.		NA (No response needed)
New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.2.3	Scoring implications unknown	SI(c) As currently written, it is believed that the assessor has not met their requirements under Section 7.15 of the MSC Fisheries Certification Process v2.3, ensuring that all scoring rationales are unambiguously met and clear. The SI is missing the ERF assessment outcomes for TG? Whilst the CAB has provided the table assessing the factors that determine trueness of compliance data, there are no TG scores provided. Therefore, it is unknown which SG is achieved. The CAB needs to provide the TG scores and subsequently the relevant SG that it applies to.	Thank you. Rational have been revised and improved. TG scores are now provided and the SG it applies to	No score change, change to rationale

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New Zealand Ling Longline	2025	Ling New Zealand EEZ	longline	PR A	3.2.4	No comments (scoring agreed)	scoring agreed.		No score change, change to rationale
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11.3.1.3 Condition Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	Condition number	Condition code	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Fishery	Assessment Start Year	Enter UoA stock/s covered by the condition	Enter UoA gear/s covered by the condition	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Condition number as currently used in the CAB report	Is the condition fully and clearly defined?	Peer reviewers (PRs) should provide support for their answers in the left column by referring to the details of each condition as appropriate. Additional rows should be inserted where two or more discrete comments are raised on the same PI or condition, e.g. for different UoAs, scoring issues or scoring elements, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'Condition agreed' or identify any places where unclear language could be improved (using the 'Minor change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
New Zealand	2025	ling New	longline	PR A	2.1.1	1	Yes			No change made

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Ling Longline		Zealand EEZ								
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.3.2	2	Yes			No change made
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.3.3	3	Yes			No change made
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.4.1	4	Yes			No change made

11.3.1.4 RBF Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code

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Fishery	Assessment Start Year	Enter UoA stock/s, and insert extra rows for P1 PIs as needed, e.g. if separate scores given for different UoA stocks	Enter UoA gear/s, and insert extra rows for P2 PIs as needed, e.g. if separate scores given for different UoA gear types	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome?	Are the RBF risk scores well-referenced?	Peer reviewers (PRs) should provide support for their answers in the left two columns by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any PIs where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (using the 'Change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to the specific issues raised in each row. CAB responses should	See codes page for response options
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									include details of where different changes have been made in the report (which section #, table etc).	
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.2.1 (RBF)	No comments (scoring agreed)	Minor change suggested to increase clarity	Spiny dogfish - references are missing from several productivity and susceptibility rows throughout the RBF table.	Thank you, references and cross-reference to tables and figures added.	No score change, additional evidence presented
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.2.1 (RBF)	No comments (scoring agreed)	Minor change suggested to increase clarity	Ribaldo - references are missing from several susceptibility rows	Thank you, references and cross-reference to tables and figures added.	No score change, additional evidence presented

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New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.2.1 (RBF)	No comments (scoring agreed)	Minor change suggested to increase clarity	Rough skate - references are missing from all productivity rows and majority of susceptibility rows.	Thank you, references and cross-reference to tables and figures added.	No score change, additional evidence presented
New Zealand Ling Longline	2025	ling New Zealand EEZ	longline	PR A	2.2.1 (RBF)	No comments (scoring agreed)	Minor change suggested to increase clarity	smooth skate - references are missing from several susceptibility rows.	Thank you, references and cross-reference to tables and figures added.	No score change, additional evidence presented

11.3.2 PRB

11.3.2.1 General Comments

Fishery	Assessment Start Year	Peer Reviewer (A/B/C)	Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI / RBF tables (first row) and conditions (second row).	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)
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New Zealand Ling Longline	2025	PR B	Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The Yes/No code option column would be served by a "Partial" or "Maybe" option. This final of three assessment reports for a suite of NZ demersal species is well-written and comprehensive, supported by in-depth reference to a wealth of evidence that supports the team's conclusions. The use of the RBF for in-scope species (PI 2.1.1) was appropriate and sources were well-referenced, and the use of the EBF was well-explained and executed where needed throughout the report. In addition to some minor clarifications and questions over scoring calculations, there are also some areas of concern. For PI 1.2.2 about SG100 being met for SIa; for PI 2.3.2 SIc about the relevance of what is considered, which has knock-on implications for PI 3.2.3 SId and Condition 2; and finally, for PI 2.3.3 in the rationale relating to interpreting ERF TGs vs PI SGs. For the most part, scoring is agreed and the rationales are well articulated in support of most of the scores presented in the report.	Thank you. Concerns for individual PIs have been addressed in the PI comments sheet
New Zealand Ling Longline	2025	PR B	Are the condition(s) raised appropriately written to clearly identify relevant scoring issues and scoring elements and define any milestones, consistent with the MSC process requirements? [Reference: FCP v3.0 Section 7.16]	Yes	As above, for the most part conditions are agreed. The exception is Condition 2. The issues relate not only to whether a condition is indicated or not for PI 2.3.2 (i.e., the associated PI score could change), two of the milestones are problematic. For all conditions, the tables themselves would be more clear and better for future reference (particularly in surveillance audits) if each had a summary of the rationale/justification for the condition rather than a cross reference to another part of the assessment report.	Condition 2 has been revised and justifications for all Conditions provided for clarity.

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New Zealand Ling Longline	2025	PR B	Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below.	NA	p.12 Glossary, suggest adding BLL to the list as it appears regularly throughout the report but doesn't seem to be spelled out anywhere. Also, BOMECE would be helpful.	Thank you. These have been added to the glossary
New Zealand Ling Longline	2025	PR B	Optional: General Comments (continued)	NA	p.24 Section 7.4.3.2 Acoustic Surveys: two paragraphs refer to hoki and southern blue whiting. The relevance to the ling UoAs covered in this report is not clear. Suggest clarifying or removing section.	Section 7.4.3.2 was included for completeness, but we can see that it can be deleted to avoid confusion.
New Zealand Ling Longline	2025	PR B	Optional: General Comments (continued)	NA	p.60, 2nd last paragraph, typo: should "pinta" say "points"?	Yes, corrected.
New Zealand Ling Longline	2025	PR B	Optional: General Comments (continued)	NA	p.109 Killer Whale, 3rd sentence: missing word? "A total of [one?] live release was reported..."	Yes, corrected.
New Zealand Ling Longline	2025	PR B	Optional: General Comments (continued)	NA	p.176 typo: "...lack of impotence..." should be "lack of impetus..."	Yes, corrected.
New Zealand Ling Longline	2025	PR B	Optional: General Comments (continued)	NA	p.188, typo in paragraph beginning "The National Fisheries for Deepwater..." should say "The National Fisheries Plan for Deepwater..."	Yes, corrected

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11.3.2.2 PI Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	PR comment code	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Fishery	Assessment Start Year	Enter UoA stock/s, and insert extra rows for P1 PIs as needed, e.g. if separate scores given for different UoA stocks	Enter UoA gear/s, and insert extra rows for P2 PIs as needed, e.g. if separate scores given for different UoA gear types	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Enter code below to summarise the comment and any expected score change	Peer reviewers (PRs) should provide support for the codes used in the left column by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any PIs where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (using the 'Change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
New Zealand Ling Longline	2025	Ling 3 (UoA 13)	Longline	PR B	1.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	Ling 4 (UoA 14)	Longline	PR B	1.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	Ling 5 (UoA 15)	Longline	PR B	1.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)

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New Zealand Ling Longline	2025	Ling 6 (UoA 16)	Longline	PR B	1.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	Ling 7 (UoA 17)	Longline	PR B	1.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	1.2.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	1.2.2	Scoring implications unknown	Sla. The rationale for scoring 100 does not cite references nor justify how HCRs take "into account the ecological role of the stock". Nor is the P1 Background on HCRs (and the HSS) explicit about this. The rationale and evidence cited in the background seems more consistent with a score of 80 for this Scoring Issue. If there is evidence elsewhere in the P1 Background about how HCRs, or the references points themselves, take into account the ecological role of stocks, this could support the justification for the score, but should be made explicit in the scoring table wording and referenced.	The guidelines for applying the HSS (MPI, 2011) refer to the fisheries management targets accounting for ecosystem (and other) considerations and that catch levels should be set more conservatively than those that meet single-species considerations alone. None of the species considered in the report would be considered low trophic level species. However, the MSE work has not referenced how ecological role was accounted for. The score has therefore been reduced to that consistent with 80. The text of harvest strategies section has been revised to include the additional material regarding ecosystem considerations.	Minor score reduction made

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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	1.2.3	Minor change suggested to increase clarity	Slb. 1st paragraph of the rationale references trawl catch, effort & processing returns (TCEPRs / TCERs), how these relate to scoring the ling UoAs is unclear. Should this paragraph be more specific about ling catch & effort reporting, or is TCEPR/TCER a generic term that takes in ling longline reporting? Clarification would boost rationale.	We have clarified that these systems apply to all species	No score change, change to rationale
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	1.2.3	Scoring implications unknown	Three Scoring Issues all score 80, none score 100, but the score given for the PI is 85. Shouldn't the score be 80 for all UoAs? If an upwards adjustment is permissible in the FCP, in this case, shouldn't this be explained in the report?	The score was reduced from 85 to 80. Some initial scores were revised during the CPRDR stage but not carried into the PCDR report. Corrected	Minor score reduction made
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	1.2.4	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.1.2	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.1.3	Minor change suggested to increase clarity	SlA. 2nd paragraph seems irrelevant. Per Table 5 of the MSC Standards Toolbox, when the RBF is used to score PI 2.1.1, the ERF is not used for those scoring elements. Suggest deleting. Otherwise scoring agreed.	Thank you, paragraph deleted.	No score change, change to rationale

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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.2.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.2.2	Scoring implications unknown	Not all SIs achieved 100 score - SIb only has SG80, however does that mean the overall PI score when everything else scores 100, can be 100? Or should it be 95 because two of the three scored SIs fully met SG100, and one met SG80? If this upwards adjustment to 100 is to reflect very high performance, and is permissible under the FCP, should this be explained somewhere?	Per FCP 3.1, paragraph 7.15.4, b: In order to achieve a 100 score, all the SG60s, all the SG80s, and all the SG100s shall be met. This requirement is satisfied and SG100 is met.	No change made
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.2.3	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.3.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)

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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.3.2	Scoring implications unknown	Slc. Final paragraph of rationale considers levels of compliance rather than the adequacy of information available to determine this. And as such, does not conform to SA3.13.3.2 of the MSC Fisheries Standard. This is significant as SG80 is deemed not to have been met and a condition is raised. Current wording suggests that information may in fact be adequate to determine there is some non-compliance, however, Trueness guideposts are not explicitly considered in this last paragraph and should be clarified in the rationale. Furthermore, if the <u>information is deemed adequate</u> to determine whether the UoAs comply with/respect (or not) management requirements and precautionary protection measures with a high degree of accuracy, then the score should reflect that and the condition becomes redundant. Compliance outcomes should be scored under PI 3.2.3 Sld - where a score of 100 was given (see comments below).	Thanks for the reminder. We have included reference to levels of bias per the TG scoring guideposts. Thank you also for this clear-eyed determination that information is likewise adequate to determine whether the UoAs comply with (or not) management requirements and precautionary protection measures of other MSC UoAs with a very high degree of accuracy. However noting that the ling longline UoAs have not considered the overlapping certified trawl fishery sensitive habitat protection measures we have determined to reduce the score under scoring issue (a) to meeting SG60 only.	Score increased
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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.3.3	Change to rationale or evidence expected, not to scoring	Slb. 5th paragraph beginning "The assessment team determines the lack of information..." Question about whether it is TG2 that is not met, rather than the entirety of SG80 - the trueness of the [existing] information may be determined, but the fact that it doesn't exist means it is not possible to determine that the information base itself is adequate to estimate impacts on habitats with a high degree of accuracy. Based on the information in the report, a score of below 80 seems justified, its the language of the rationale here that needs to be clearer. In other words, even though the information may pass the 'trueness' test, it still is not adequate to estimate... because of the information gaps, therefore SG80 is not met. If the assessment team determines that it is in fact TG2 that is not met, more clarity using specific ERF (Table B2 Guidepost) language would be required. Otherwise scoring agreed. [Noting that this is one of those places where the use of the ERF Trueness guidepost as the only determinant of whether an SG is met doesn't quite work. On the face of it there seems a logical inconsistency. The MSC is currently reviewing the ERF for usability/interpretation, with particular focus on removing the TG/PG guideposts and giving greater clarity to defining adequacy and accuracy when it comes to	Thanks for that note at the end of your comment. Following other PR comments and some applied thinking we have further clarified the scoring rationale to reflect that only qualitative information is available rather than a quantitative assessment of the spatial overlap of fishing with respect to more sensitive habitats. The qualitative nature of the information in turn does not account for potential bias nor its effect on information trueness. Your comment here has led to further refinement of the scoring rationale, thank you.	No score change, change to rationale
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							applying the ERF to score information SGs].		
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.4.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)

New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.4.2	Minor change suggested to increase clarity	SlA. Final sentence. Rationale wording does not address language of SG100, but instead references "the UoAs impacts on key ecosystem element of community composition/diversity is not clearly understood...". SG100 is about whether there is a strategy in place for managing the impact of the UoA on the key elements...". The rationale should explicitly reference whether there is a strategy in place (or not) to manage the impact of the UoA on community composition/diversity, possibly including reference to how well (or not) functional relationships between the UoAs and key ecosystem elements are understood (per MSC Standard SA3.16.2). Otherwise scoring agreed.	Scoring rational reworded.	No score change, change to rationale
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	2.4.3	Minor change suggested to increase clarity	Slb. 2nd paragraph includes the following sentence: "The team anticipates dialogue with ecosystem experts during the site visit might support scoring." This seems a leftover from the ACDR. Was there anything significant revealed through dialogue at the site visit? If so, suggest including or delete the sentence. Otherwise scoring agreed.	Thank you, sentence removed.	No score change, change to rationale
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.1.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.1.2	No comments (scoring agreed)	Scoring agreed		NA (No response needed)

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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.1.3	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.2.1	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.2.2	No comments (scoring agreed)	Scoring agreed		NA (No response needed)
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.2.3	Change to rationale or evidence expected, not to scoring	Slc. Table 67 on Row 3, Column 1, minor structural error - should be about "Completeness. To what extent does the information capture all relevant elements and dimensions". It currently shows the "Consistency" criterion. The remainder of the row appears correctly applicable to Completeness. However, the assessment (in the Table) of completeness seems incomplete given the high score, mentioning only multiple sources. Being more explicit in Table 67 about compliance information being representative of all UoAs over a given time frame, or the extent to which information provides an up-to-date description of compliance in all UoAs, would strengthen the assessment that the UoAs meet the TG3 guideposts. Otherwise scoring agreed for Slc.	Changes Have ave been made in the text to address issue raised by PR.	No score change, change to rationale

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New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.2.3	Scoring implications unknown	Sld. It is unclear that a score of 100 is justified. Given the issues highlighted at PI 2.3.2 Sld above, regarding compliance outcomes, including potential non-compliance/lack of respect for other MSC UoA measures on more sensitive habitats, such outcome-related information may be relevant to scoring PI 3.2.3 Sld. If so, a perfect score of 100 is probably not justified. Furthermore, pp.81-82 describe detailed analyses of observer coverage of the ling longline fleet and make reference to relatively low levels of coverage in certain management areas. This seems to contradict the statement in the Sld rationale about relatively high observer coverage, which appears to be a copy/paste from the Hoki, Hake, Ling Trawl UoAs report. Given this PI is about the fishery-specific management system for Ling Longline, a different score may be justified - i.e., it would not have to 'harmonise' with the other UoA reports but can be judged in its own right. The relevance and/or significance of both these issues should be explicitly considered in the rationale for the SG100 score, either to justify the high score or support a reduced score of 80.	The issues highlighted in 3..2.3 c have been moved to 3.2.3d as this is more appropriate. However they are minor issues. The majority of regulations, including all regulations specific to governing sustainable fishing practices on the water, are consistently complied with so SG100 is still met. The relatively high level of observer coverage has been removed but does not impact the score	No score change, change to rationale
New Zealand Ling Longline	2025	All UoAs	Longline	PR B	3.2.4	No comments (scoring agreed)	Scoring agreed		NA (No response needed)

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11.3.2.3 Condition Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	Condition number	Condition code	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Fishery	Assessment Start Year	Enter UoA stock/s covered by the condition	Enter UoA gear/s covered by the condition	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Condition number as currently used in the CAB report	Is the condition fully and clearly defined?	Peer reviewers (PRs) should provide support for their answers in the left column by referring to the details of each condition as appropriate. Additional rows should be inserted where two or more discrete comments are raised on the same PI or condition, e.g. for different UoAs, scoring issues or scoring elements, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'Condition agreed' or identify any places where unclear language could be improved (using the 'Minor change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
New Zealand Ling Longline	2025	Ling All UoAs	Longline	PR B	2.1.1	1	Minor change suggested to increase clarity	Condition agreed. For the sake of clarity and future readability (and surveillance audit reports), a summary of the scoring rationale should be included in the Condition table.	Noted, rationale included in justification.	Condition changed

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New Zealand Ling Longline	2025	Ling All UoAs	Longline	PR B	2.3.2	2	No	Question about whether the condition is necessary. See commentary on PI 2.3.2. If deemed necessary because score upheld, for the sake of clarity and future readability (and surveillance audit reports), a summary of the scoring rationale should be included in the Condition table). Milestones 3 and 4 are not entirely about Slc - adequacy of compliance information - but are recommending the adoption of specific management measures and ultimately judging performance at SG80 for Slc based on the adoption of such measures. It seems to use failure to meet SG80 on adequacy of information as a bootstrap to introducing specific protection measures.	The scoring for PI2.3.2 has been updated to reflect that under scoring issue (a) a partial strategy is not available and here we have referred to the lack of consideration of overlapping MSC UoAs protection measures for more sensitive habitats. In agreeing with your comment about the redundancy of the condition on scoring issue (c), in particular considering that information adequacy is the measure being assessed as opposed to adoption of or compliance with other fishery management measures, we have reworded the condition to focus on scoring issue (a).	Condition changed
New Zealand Ling Longline	2025	Ling All UoAs	Longline	PR B	2.3.3	3	Minor change suggested to increase clarity	Condition agreed. For the sake of clarity and future readability (and surveillance audit reports), a summary of the scoring rationale should be included in the Condition table.	Noted, rationale included in justification.	Condition changed
New Zealand Ling Longline	2025	Ling All UoAs	Longline	PR B	2.4.1	4	Minor change suggested to increase clarity	Condition agreed. For the sake of clarity and future readability (and surveillance audit reports), a summary of the scoring rationale should be included in the Condition table.	Noted, rationale included in justification.	Condition changed

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11.3.2.4 RBF Comments

Fishery	Year	UoA stock	UoA gear	PR (A/B/C)	PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Fishery	Assessment Start Year	Enter UoA stock/s, and insert extra rows for P1 Pls as needed, e.g. if separate scores given for different UoA stocks	Enter UoA gear/s, and insert extra rows for P2 Pls as needed, e.g. if separate scores given for different UoA gear types	Peer Reviewer (A/B/C)	Performance Indicator (PI)	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome?	Are the RBF risk scores well-referenced?	Peer reviewers (PRs) should provide support for their answers in the left two columns by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any Pls where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return keyboard shortcut. Detailed justifications are only required where the PR is suggesting some change is needed. In other cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (using the 'Change suggested to increase clarity' code).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
New Zealand Ling Longline	2025	Ling (All UoAs)	Longline	PR B	2.1.1 (RBF)	No comments (scoring agreed)	No comments (scoring agreed)	Scoring agreed.		NA (No response needed)

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9.1.1. MSC TO Comments

SubID	PageReference	Grade	RequirementVersion	OversightDescription	Pi	CABComment
37849	114-115	Minor	FCP-7.15.10.1 v3.1	UoA 1-10 (Hoki): PI 1.2.1(f) It is unclear from the rationale if the review of alternative measures occurs every 5 years. Rationale states that review has happened within the last 5 years but does not state a plan.	1.2.1	We have added references to the 2024 and 2025 plans related to discarding
37850	53	Minor	FCP-7.15.10.1 v3.1	UoA 11 & 12 (SBW): PI 1.2.1(f): It is unclear from the rationale if the review of alternative measures occurs every 5 years. Rationale states that review has happened within the last 5 years but does not state a plan.	1.2.1	We have added references to the 2024 and 2025 plans related to discarding
37857	73	Minor	FCP-7.15.10.1 v3.1	UoA 13-17 (Ling): PI 1.2.2(a): It is unclear which scoring is attributed to this PI. The rationale states that SG100 is not met, but scoring guidepost is scored at SG100.	1.2.2	This was a typo it should have been "no" - the score was correct

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37853	102	Minor	FCP-7.15.10.1 v3.1	UoA 11&12 (SBW):PI 2.1.2(c): It is unclear from the rationale if the review of alternative measures occurs every 5 years. Rationale states that reievw has happened within the last 5 years but does not state a plan.	2.1.2	Thanks for flagging this socring issue. Upon review it has been assessed as "not applicable" as there are in fact no main or minor scoring elements with all non-target species catch meeting the definition of "negligible" per SA3.1.1.d.ii.
37858	140	Minor	FCP-7.15.10.1 v3.1	UoA 13-17 (Ling): PI 2.1.2(c): It is unclear from the rationale if the review of alternative measures occurs every 5 years. Rationale states that reievw has happened within the last 5 years but does not state a plan.	2.1.2	Thank you, additional references to the revisions tot eh Fisheries Amendments relating to discards have been added and it has been clarified that the reviews to gear changes are reported at least once every 5 years.

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37855	122-123	Minor	FCP-7.15.10.1 v3.1	UoA 11&12 (SBW): PI 2.2.3(b): It is unclear from the rationale if the scoring guidepost of SG100 has been met. The rationale does not state if the information is adequate to evaluate the effectiveness of the measures to minimise mortality with a high degree of certainty.	2.2.3	Thank you, an additional paragraph added to justify scoring at SG100.
37860	160-161	Major	FCP-7.15.7.4 v3.1	UoA 13-17 (Ling): PI 2.2.3: It is unclear as to why the overall PI score of 95 was scored for this PI. According to the rationale of 2.2.3(a) is scored at SG80, with 2.2.3(b) scored at SG100. According to FCP v3.1 clause 7.15.4.ii "The team shall assign 90 where performance against the SIs is mid-way between SG80 and SG100".	2.2.3	Corrected
37851	232	Minor	FCP-7.15.10.1 v3.1	UoA 1-10 (Hoki): PI 2.3.2(b) It is unclear from the rationale what the effect of the increased percentage of tows with captures is on the	2.3.2	Thank you for this comment, it has been incorporated into the scoring rationale with a consequent

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				sessile benthic invertebrate taxa.		reduction in score to SG80.
37852	241	Guidance	FCP-7.15.10.1 v3.1	UoA 1-10 (Hoki): PI 2.4.1(a) It is unclear from the rationale if the assessment team has considered the indirect effects on ETP/OOS. It states information regarding this after the recommendation, making it unclear if it is part of the recommendation or considered in the scoring.	2.4.1	Thank you, the text referring to indirect effects has been moved to form part of the rationale to meet SG60 and SG80. It is clearer now that the Recommendation is linked to not meeting SG100.
37856	160	Minor	FCP-7.15.10.1 v3.1	UoA 11&12 (SBW): PI 3.2.2(b): It is unclear which scoring is attributed to this PI. The rationale states that SG100 is not met, but scoring guidepost is scored at SG100. Additionally, it is unclear if the overall score for this PI has been properly adjusted.	3.2.2	Thank you. This has been corrected in the SBW report .. Also all three reports HHL, LL and SBW now score 3.2.2 at 90.
37869	31	Guidance	FCP - 7.17.6.i v3.1	As per FCP 7.17.6.i, "the CAB shall document in the 'MSC Reporting Template': how fish and fish products can be identified or can be confirmed as certified at the point that it enters		Text has been added in all reports, SBW, HHL and LL to show fish and fish products can be confirmed as certified at the point that it enters certified

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MSC FCP v3 Reporting Template v2.0 LRQA 27012023,

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				certified chains of custody." While it is stated that all shareholders of the NZ Seafood Deepwater Council are all eligible to make use of the fishery certificate and sell products as certified, it is unclear how individual members of the council can be identified and verified as such at the point of sale.		chains of custody. Also text to show how individual members of the council can be identified and verified as such at the point of sale.
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11.4 Stakeholder input

No written statements from stakeholders were received.

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11.5 Conditions

11.5.1 Summary of conditions closed under previous certificate

There were no open conditions on these fisheries

11.5.2 Conditions

Table 68: Condition 1 - PI2.1.1 Sla

Performance Indicator	2.1.1 The UoA aims to maintain in-scope species above the PRI and does not hinder recovery of in-scope species if they are below the PRI Scoring Issue a. Main in-scope species stock status.
Score	75
Justification	See Table 73 for individual species/stock MSC RBF PSA-derived scores. SG60 and SG80 are met for ribaldo (RBF = 92), rough skate (RBF= 87), smooth skate (RBF = 82) and both jack mackerel species (RBF = 95). SG60 is met for spiny dogfish but not SG80 (RBF = 75).
Condition	By the fourth surveillance audit, information shall be gathered to show that main in-scope species are highly likely to be above the PRI, by determining stock status reference points derived either from analytical stock assessment or using empirical approaches, or by reducing the susceptibility of the main in-scope species currently assessed as “Medium” risk in the Risk Based Framework such that “Low” risk is attained.
Condition start	Recertification.
Condition deadline	4th Surveillance Audit, 2029.
Exceptional circumstances	No
Milestones	Year 1: (Interim score = 75) A plan has been developed to compile information to conduct a stock assessment and/or review empirical reference points or reduce susceptibility for spiny dogfish. Year 2: (Interim score = 75) The Plan developed in Year 1 has been initiated and/or parties to conduct the work have been nominated. Year 3: (Interim score = 75) The Plan initiated in Year 2 has been fully implemented. Preliminary results are discussed as they become available. Year 4: (Expected score = 80) Information collection/collation and analysis concluded, and findings confirm that that spiny dogfish are highly likely to be above the PRI or susceptibility risk to longline fishing gear has been lowered such that RBF score of “low risk” is achieved.
Verification with other entities	None.
<i>Complete the following rows for reassessments and/or transition assessments.</i>	
Carried over condition	No
Related condition	No
Condition rewritten	No

Table 69. Condition 2 - PI2.3.2 Sla

Performance Indicator	2.3.2 There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats
-----------------------	--

	Scoring Issue a. Management strategy in place
Score	75
Justification	SA3.13.2.1 In scoring issue (a) at the SG60 and SG80 levels, the “measures” or “partial strategy” respectively, for a UoA that encounters “more sensitive” habitats shall include, at a minimum: - Requirements to comply with management “measures” to protect “more sensitive” habitats. - Implementation by the UoA of precautionary measures to avoid encounters with “more sensitive” habitats and avoid potential serious or irreversible harm. For less sensitive habitats the nature of the fishing gear (being static) precludes the need for a clear partial or full strategy to be confident that they are not subject to serious or irreversible harm. The “if necessary” qualification applies for those habitats scoring elements. For more sensitive habitats, management measures include a spectrum of indirect and directed controls on the bottom ling longline fishery. The National Fisheries Plan for Deepwater and Middle Depth Fisheries has an environmental outcome to manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on benthic habitats (FNZ, 2019). The Fisheries Act requires the consideration of ‘habitat of particular significant to fisheries management’ which is currently done on a case by case basis, though HPFSMs have not yet been defined or applied as yet in New Zealand. Direct management measures refer to the requirement to report interactions with non-protected and protected benthic invertebrates. Very small quantities of ETP corals are reported caught (Table 61) and there appears to be good compliance with this mandatory reporting scheme. Additionally ling longline vessels are required to carry scientific observers, the historical analyses conducted by Finucci et al (2020) found that anemones, sponges, corals, sea peans, sea fans and other benthic habitat forming invertebrates accounted for <0.1% of the observed target species catch by weight for the period 1 October 2002 to 30 September 2018. Precautionary measures to avoid encounters with more sensitive habitats include the designation of marine reserves and seamount closure areas (noting benthic protection areas, whilst expansive, do not apply to longliners). Based on observer and commercial reports of interactions with benthic invertebrate species associated with more sensitive habitats, the limited impact of the bottom ling longline fishery is minimal and there are requirements to comply with designated marine reserves and seamount closures. SG60 is met. There is no implementation of UoA-specific precautionary measures to avoid encounters with “more sensitive” habitats to avoid potential serious or irreversible harm. Spatial overlay of fishing effort with the 9-Class seafloor bioregionalization (Stephenson et al 2023) was provided by the Client following the site visit (Figure 27) and with the distribution of coral, sponge and bryozoan habitats (more sensitive habitats) was supplied to the assessment team on request following the site visit (Figure 28). The overlap between the ling BLL fishery and these protected areas indicates a minimal likelihood of interaction with sensitive habitats. The ling BLL fishery is subject to observer coverage and electronic monitoring, which verify gear deployment and interactions with benthic species. Unlike mobile bottom-contact gear such as trawl gear, bottom longlines involve minimal seabed contact, with hooks typically suspended in the water column or lightly touching

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	the bottom. The gear does not drag or sweep across the seabed, which significantly reduces the risk of physical disturbance to benthic habitats. Table A28 of the MSC Fisheries Standard Toolbox classifies the “gear footprint score” for demersal longline as “2” reflecting that the UoAs need to include the requirements and implementations specified by SA3.13.2.1. Despite minimal overlap with sensitive habitats and Benthic Protection Areas, verified by electronic monitoring and observer deployments, and the relatively low impacting nature of bottom longlining on benthic habitats, due to the lack of consideration of the requirements of overlapping MSC UoAs protection measures afforded to more sensitive habitats, there is not considered to be a partial strategy in place that is expected to achieve the habitat outcome SG80 level or above, SG80 is not met.
Condition	By the fourth surveillance audit, a partial management strategy shall be in place that is expected to achieve the habitat outcome SG80 level or above, including consideration of overlapping MSC UoAs/non-MSC fishery protection measures for more sensitive habitats.
Condition start	Recertification
Condition deadline	4th Surveillance Audit, 2029.
Exceptional circumstances	No
Milestones	Year 1: (Interim score = 75) Currently in place and available management measures to protect more sensitive habitats have been compiled. Where relevant precautionary protection measures implemented by other MSC UoAs and non-MSC fisheries have been accounted for. Year 2: (Interim score = 75) Precautionary measures to avoid encounters with “more sensitive” habitats and avoid potential serious or irreversible harm are available for implementation.. Year 3: (Interim score = 75) Based on the findings at Year 2, a recommendation is made to adopt relevant management measures for the ling longline UoA’s with an associated description of information to be collected to confirm enforcement. Year 4: (Expected score = 80) A partial management strategy to conserve more sensitive habitats from the impact of longline UoAs is in place and information is available to confirm with a high degree of certainty that the partial strategy is enforced.
Verification with other entities	None.
<i>Complete the following rows for reassessments and/or transition assessments.</i>	
Carried over condition	No
Related condition	No
Condition rewritten	No

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Marine Stewardship Council fisheries assessments

**New Zealand Hake, Hoki, Ling and Southern Blue Whiting Fishery –
Ling Bottom Longline
MSC Client Action Plan**



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1. Introduction

Table 1: Key Details

Fishery name	Southern Blue Whiting Trawl
Report author	Jo Akroyd, Stewart Norman and André Punt
Report author association	LRQA (Seafood) Limited
Client name	Seafood NZ, Deepwater Council
Client contact person	Aaron Irving
Date of Client Action Plan	August 2025

2. Summary of conditions

The report should include a table, summarising conditions raised by the CAB in the assessment. This information can be found in Client and Peer Review Draft Report assessment.

Table 2: Summary of conditions

Condition number	Condition	Performance Indicator (PI)	Deadline
1	By the fourth surveillance audit, information shall be gathered to show that main in-scope species are highly likely to be above the PRI, by determining stock status reference points derived either from analytical stock assessment or using empirical approaches, or by reducing the susceptibility of the main in-scope species currently assessed as "Medium" risk in the Risk Based Framework such that "Low" risk is attained.	2.1.1	2029
2	By the fourth surveillance audit, adequate information shall be gathered to confirm the longline UoAs have adopted and enforce management regulations and other MSC UoAs' measures to protect more sensitive habitats in the managed area.	2.3.2	2029

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3. Summary of conditions

Table 3: PI 2.1.1

1	Condition number
1	
2	Performance Indicator(s)
2.1.1	The UoA aims to maintain in-scope species above the PRI and does not hinder recovery of in-scope species if they are below the PRI. Scoring Issue a. Main in-scope species stock status.
3	Score
75	
4	Condition(s)
	By the fourth surveillance audit, information shall be gathered to show that main in-scope species are highly likely to be above the PRI, by determining stock status reference points which are appropriate for the stock, which are derived either from analytical stock assessment or using empirical approaches, or by reducing the susceptibility of the main in-scope species currently assessed as "Medium" risk in the Risk Based Framework such that "Low" risk is attained. Justification They are found on the continental shelf and upper slope down to a depth of at least 500 m but are most common in depths of 50–150 m. BLL are restricted by operational depth and typically don't fish deeper than 500 m. Gear sits on bottom and therefore is awarded a high-risk score of 3 for 'Encounterability' as there is high encounterability with demersal species. Spiny dogfish make up ~16% of the total catch in the UoAs indicating they are frequently caught. In the absence of catch-at-length information it is not clear whether individuals <size at maturity are caught. Stakeholders during the RBF-workshop advised a high-risk score of 3 for 'Selectivity of Gear Type' as appropriate. Finucci et al 2020 estimated 67.9% of all spiny dogfish were discarded between 2002 and 2018. Schedule 6 of the Fisheries Act 1996 sets out QMS species that may be returned to the sea, so long as the specified conditions are met. Spiny dogfish may be returned to the sea either alive or dead. In the absence of post-capture mortality studies or life-status information from the observer program, a score of 3 is awarded for 'Post Capture Mortality' following stakeholder consultation at the site visit.
5	Milestone(s)
	- Year 1: A plan has been developed to compile information to conduct a stock assessment and/or review empirical reference points or reduce susceptibility for spiny dogfish. - Year 2: The Plan developed in Year 1 has been initiated and/or parties to conduct the work have been nominated. - Year 3: The Plan initiated in Year 2 has been fully implemented. Preliminary results are discussed as they become available. - Year 4: Information collection/collation and analysis concluded, and findings confirm that that spiny dogfish are highly likely to be above the PRI or susceptibility risk to longline fishing gear has been lowered such that RBF score of "low risk" is achieved.

6	Summary of action plan		
This action plan describes how the ling bottom longline UoA will gather and analyse information to show that spiny dogfish are highly likely to be above the PRI. It includes developing a data collection plan, implementing it, reviewing preliminary results, and confirming outcomes through final analysis or reduced susceptibility risk.			
Milestone	Action	Roles & responsibilities	Outputs
1. A plan has been developed to compile information to conduct a stock assessment and/or review empirical reference points or reduce susceptibility for spiny dogfish.	Develop a plan to compile information for a stock assessment and/or empirical reference points for spiny dogfish, or to identify measures to reduce susceptibility to longline gear.	SNZ DWC coordinate with FNZ science team and/or research providers; CAB review adequacy of plan.	Documented plan detailing approach (analytical assessment, empirical methods, or susceptibility reduction).
2. The Plan developed in Year 1 has been initiated and/or parties to conduct the work have been nominated.	Initiate implementation of the Year 1 plan, including data collection and/or analysis. Nominate parties responsible for specific tasks.	Research providers / FNZ begin work programme; SNZ DWC ensure delivery and coordination; CAB verify initiation.	Evidence of plan initiation (e.g. contracts, research commencement, or formal nomination of responsible parties)
3. The Plan initiated in Year 2 has been fully implemented. Preliminary results are discussed as they become available.	Fully implement the plan, continue information collection and analysis, and discuss preliminary results with stakeholders and CAB.	Research providers / FNZ undertake data collection and analysis; SNZ DWC collate and provide results; CAB review progress.	Progress report and preliminary findings on spiny dogfish stock status and/or evidence of reduced susceptibility risk.
4. Information collection/collation and analysis concluded, and findings confirm that that spiny dogfish are highly likely to be above the PRI or susceptibility risk to longline fishing gear has been lowered such that RBF score of "low risk" is achieved.	Conclude information collection/collation and analysis. Provide evidence that spiny dogfish are highly likely above the PRI, or that susceptibility risk to longline gear has been reduced to "Low" under the RBF.	Research providers / FNZ finalise results; SNZ DWC submit report to CAB; CAB evaluate compliance.	Final assessment report confirming either (a) stock status above PRI or (b) revised RBF score of "Low" risk for spiny dogfish.

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Table 4: PI 2.3.2

1	Condition number		
2			
2	Performance Indicator(s)		
2.3.2 – There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats. Scoring Issue a. Management strategy in place			
3	Score		
75			
4	Condition(s)		
By the fourth surveillance audit, a partial management strategy shall be in place that is expected to achieve the habitat outcome SG80 level or above, including consideration of overlapping MSC UoAs/non-MSC fishery protection measures for more sensitive habitats.			
Justification There is no implementation of UoA-specific precautionary measures to avoid encounters with "more sensitive" habitats to avoid potential serious or irreversible harm and only qualitative information available on the degree of overlap of the ling longline fishery with benthic invertebrates commonly associated with more sensitive habitats. Furthermore, no consideration has been given to the relevant management requirements and protection measures afforded to more sensitive habitats by other MSC UoAs/non-MSC fisheries that overlap with the ling longline UoAs, there is not considered to be a partial strategy in place that is expected to achieve the habitat outcome SG80 level or above, SG80 is not met.			
5	Milestone(s)		
1. Year 1: Currently in place and available management measures to protect more sensitive habitats have been compiled. Where relevant precautionary protection measures implemented by other MSC UoAs and non-MSC fisheries have been accounted for. 2. Year 2: Precautionary measures to avoid encounters with "more sensitive" habitats and avoid potential serious or irreversible harm are available for implementation. 3. Year 3: Based on the findings at Year 2, a recommendation is made to adopt relevant management measures for the ling longline UoA's with an associated description of information to be collected to confirm enforcement 4. Year 4: A partial management strategy to conserve more sensitive habitats from the impact of longline UoAs is in place and information is available to confirm with a high degree of certainty that the partial strategy is enforced.			
6	Summary of action plan		
This action plan outlines how the ling bottom longline UoA will develop a partial management strategy to ensure that fishing does not pose a risk of serious or irreversible harm to more sensitive habitats. It includes compiling existing measures (including overlapping MSC/non-MSC fisheries), making precautionary measures available, recommending UoA-specific measures, and confirming implementation to achieve an SG80-level habitat outcome or above.			
Milestone	Action	Roles & responsibilities	Outputs
1. Currently in place and available management measures to protect more sensitive habitats have been characterized and compiled.	Compile currently available management measures to protect more sensitive habitats, including precautionary measures from overlapping MSC and non-MSC fisheries.	SNZ DWC gathers information on existing measures; FNZ/research providers verify overlaps; CAB reviews compilation.	Document summarising available measures and overlaps with other UoAs/non-MSC fisheries.
2. If required, assess the extent to which precautionary measures to avoid encounters with "more sensitive" habitats and avoid potential serious or irreversible harm are available for implementation.	If required, make precautionary measures to avoid encounters with more sensitive habitats available for implementation to prevent serious or irreversible harm.	SNZ DWC identifies relevant measures and makes them operational; CAB verifies.	List of precautionary measures available for implementation.
3. Based on the findings at Year 2, if required a recommendation is made to adopt relevant management measures for the ling longline UoA's with an associated description of information to be collected to confirm enforcement.	Develop recommendation for UoA-specific management measures based on Year 2 findings, including a plan for monitoring and confirming enforcement.	SNZ DWC draft recommendation and enforcement plan; CAB review proposed measures.	Recommendation document with proposed UoA-specific management measures and monitoring plan.
4. A partial management strategy to conserve more sensitive habitats from the impact of longline UoAs is in place and information is available to confirm with a high degree of certainty that the partial strategy is enforced.	Implement the partial management strategy and confirm enforcement to achieve habitat outcome SG80 level or above.	SNZ DWC implements strategy; FNZ monitors compliance; CAB verifies adoption and enforcement.	Evidence showing partial strategy in place, enforced, and contributing to SG80-level habitat outcomes.

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11.7 Surveillance

Table 70: Fishery surveillance program

Surveillance level	Year 1	Year 2	Year 3	Year 4
Level 4	Off-site surveillance audit	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit & re-certification site visit

Table 71: Timing of surveillance audit

Years	Anniversary date of certificate	Proposed date of surveillance audit	Justification
1	6 th February 2026	2026	Evidence of progress towards conditions 2.1.1, 2,3,2 to be provided remotely
2		2027	The auditors need to review progress against the four conditions
3		2028	Evidence of progress towards conditions 2.1.1, 2,3,2 to be provided remotely
4		2029	The auditors need to assess that the client fishery can demonstrate that the UoAs can meet SG80 for all four conditions.

Table 72: Surveillance level justification

Year	Surveillance activity	Number of auditors	Justification
1	Offsite audit	2 auditors offsite	Condition 1: 2.1.1. A plan has been developed to compile information to conduct a stock assessment and/or review empirical reference points or reduce susceptibility for spiny dogfish. Condition 2: 2.3.2. Information on the spatial and temporal distribution of the UoA's fishing activity relative to the distribution of habitats and Benthic Protection Areas has been compiled
2	On site	2 auditors on site	Condition 1: 2.1.1. The Plan developed in Year 1 has been initiated and/or parties to conduct the work have been nominated Condition 2: 2.3.2. A quantitative assessment of the UoA's fishing activity within and outside of Benthic Protection Areas has been conducted to determine the degree of fishing within BPAs

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3	Off site	2 auditors offsite	Condition 1: 2.1.1. The Plan initiated in Year 2 has been fully implemented. Preliminary results are discussed as they become available Condition 2: 2.3.2. Based on the findings at Year 2, a recommendation is made to adopt Benthic Protection Areas as a management measure for the ling longline UoA's with an associated description of information to be collected to confirm enforcement
4	On site	3 auditors	Condition 1: 2.1.1. Information collection/collation and analysis concluded, and findings confirm that that spiny dogfish are highly likely to be above the PRI or susceptibility risk to longline fishing gear has been lowered such that RBF score of "low risk" is achieved Condition 2: 2.3.2. Benthic Protection Areas are adopted as a management measure to conserve more sensitive habitats from the impact of longline UoAs and information is available to confirm with a high degree of certainty that the measures are enforced <i>This site visit will be combined with a reassessment</i>

11.8 Harmonised fishery assessments

There are a few other fisheries in New Zealand and the surrounding areas that are MSC certified, but these operate on a different scale targeting different stocks compared to this fishery. While other assessments have been reviewed in relation to general fisheries management aspects under P3, it is determined that there is harmony.

Overlapping Fisheries		
Fishery Name	Certification Status	Standard version and harmonised principles
New Zealand Hoki, Hake and Ling Trawl Fishery	This fishery	This reassessment on V3.1 – P3
New Zealand orange roughy	Certified	V2.01 – P3

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11.9 Risk-Based Framework outputs

11.9.1 Productivity Susceptibility Analysis (PSA)

The MSC Risk Based Framework was announced for this assessment. The purpose of this section is to report the RBF activities that the team undertook before, at, and following, the site visit.

Notifications for RBF published >30 days ahead of the site visit. Prior to the site visit the team gathered the information needed for scoring these PIs as required by Annex PF and published preliminary scores for all elements based on team research. This information was used to inform the RBF stakeholder meetings and was presented to attendees; in addition to this the team collected information to inform the use of the RBF both during and after the site visit. The site visit was organised to encourage the engagement of stakeholders with the assessment team and discussions between stakeholders. The opportunities that were provided for stakeholder input to the RBF at the site visit included the interviews that the assessment team conducted with individual stakeholders and reminders issued at each meeting to further encourage stakeholder contributions to the RBF process. In addition, the assessment team published a questionnaire summarising the rationale for use of the RBF, presenting draft productivity and susceptibility scores, and requesting stakeholders supply justified alternative scores or confirm the teams approach and scoring.

RBF activities which were carried out were:

- a) Assist in determining the appropriate fishstocks to assess using the RBF
- b) Comment on the provisional productivity scores assigned to each scoring element by the Assessment Team
- c) Assist in the scoring of the susceptibility attributes within the PSA.

The assessment team determined that the RBF process was triggered for main and minor in-scope species in the UoA catch being: spiny dogfish, ribaldo, rough skate, smooth skate and small-scaled cod. In addition, bait species barracouta and jack mackerels triggered scoring using the RBF. Only main in-scope species were assessed (following Per A4.1.5 of the ERF, meaning small-scaled cod and barracouta were not assessed). Initially the assessment team considered that only certain management units of each of the main in-scope species (certain fishstocks) triggered the RBF, however during the RBF workshop it was made clear that there is little to no knowledge of the biological structure of the stocks and that convenient management units were simply defined to support management as opposed to delineating true biological stocks. It was thus recommended that all main in-scope species fishstocks be combined and scored using the RBF methodology as single biological stocks.

Following this revised approach the assessment team adjusted the susceptibility scores accordingly to reflect a far wider distribution of each of the main in-scope species (effectively throughout the EEZ) and consequently a low areal overlap with the combined longline UoAs. Whilst the areal overlap score should be applied to each UoA separately it was recommended at the workshop that the areal overlap should be assessed at the spatial scale of the UoAs and that assessing the UoAs collectively would be more precautionary and take account of the uncertainty surrounding stock structure.

The areal overlap of the combined ling longline UoAs (and separately) was therefore confirmed as low overlap (low risk score of 1) for all main in-scope species. See Figure 26 for the distribution of ling targeting sets and Figure 39, Figure 40, Figure 41 and Figure 42 for the distribution of main in-scope species appearing in the ling longline fishery catch.

Encounterability was adjusted to a high-risk score of 3 noting that the longline fishing gear sits on the bottom increasing the likelihood of encountering demersal species.

Selectivity scores varied amongst main in-scope species based on references supplied during the workshop and stakeholder knowledge of the size and maturity state of those main in-scope species assessed. Selectivity scores proposed by stakeholders were adopted.

Post-capture mortality scores were all finalized at high risk (3) noting that the majority of each species was retained.

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Table 73. Risk-Based Framework Productivity Susceptibility Analysis scoring worksheet for main in-scope species.

Only main species scored?			Yes						Productivity Scores (1-3)								Susceptibility Scores (1-3)				Cumulative only									
Scoring element	First of each scoring element	Species Grouping only ID 'At Risk' species by selecting associated species group	Species Grouping only Number of species in species group which this species represents (N2)	Family name	Scientific name	Common name	Species type	Fishery descriptor	Average age at maturity	Average max age	Fecundity	Average max size	Average size at maturity	Reproductive strategy	Trophic level	Density Dependence	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA score	Catch limits	Weighting	Weighted Total	Weighted PSA score	MSC PSA-derived score	Risk Category Name	MSC scoring paleo-outlet
1	First			Squalidae	<i>Squalus acanthias</i>	Spiny dogfish	Vertebrate	Demersal longline	2	2	3	2	2	3	3		2.43	1	3	3	3	1.65	2.94				75	Med	55-75	
2	First			Moridae	<i>Mora moro</i>	Rabbitfish	Vertebrate	Demersal longline	2	3	1	1	2	1	3		1.86	1	3	1	3	1.20	2.21				52	Low	<50	
3	First			Rajidae	<i>Zoaraja nasuta</i>	Rough skate	Vertebrate	Demersal longline	2	1	3	1	2	2	3		2.00	1	3	3	3	1.45	2.46				87	Low	<80	
4	First			Rajidae	<i>Dipturus innominatus</i>	Smooth skate	Vertebrate	Demersal longline	2	2	3	2	2	2	3		2.29	1	3	3	3	1.43	2.69				62	Low	<60	
5	First			Carangidae	<i>Trachurus declivis</i>	Greenback horse mackerel	Vertebrate	Demersal trawl	1	3	1	1	1	1	3		1.57	1	3	3	3	1.28	2.02				95	Low	<80	
6	First			Carangidae	<i>Trachurus murphyi</i>	Chilean jack mackerel	Vertebrate	Demersal trawl	1	3	1	1	1	1	3		1.57	1	3	3	3	1.28	2.02				95	Low	<80	

PSA productivity and susceptibility attributes and scores for main in-scope species.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Spiny dogfish (<i>Squalus acanthias</i>)	
Attribute	Justification	Score
Average age at maturity	Males mature at 58 cm TL at age 6, and females mature at 73 cm TL at age 10. (FNZ, 2024a)	2
Average maximum age	The maximum ages and lengths in a study of east coast South Island dogfish were 21 years and 90 cm TL for males, and 26 years and 111 cm TL for females (FNZ, 2024a)	2
Fecundity	The number of young per litter ranges from 1 to 19 (FNZ, 2024a)	3
Average maximum size Not scored for invertebrates	The maximum ages and lengths in a study of east coast South Island dogfish were 21 years and 90 cm TL for males, and 26 years and 111 cm TL for female (FNZ, 2024a)	2
Average size at maturity Not scored for invertebrates	Males mature at 58 cm TL at age 6, and females mature at 73 cm TL at age 10. (FNZ, 2024a)	2
Reproductive strategy	Ovoviviparous (FNZ, 2024a)	3
Trophic level	4.4 ±0.4 se; based on diet studies. https://www.fishbase.se/summary/Squalus-acanthias.html	3
Density dependence Invertebrates only	NA	NA
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	NA	
Attribute	Justification	Score
Areal overlap	The ling longline UoAs combined and individually cover a fraction of the distribution of the spiny dogfish stock (Figure 39).	1
Encounterability	They are found on the continental shelf and upper slope down to a depth of at least 500 m but are most common in depths of 50–150 m (FNZ, 2024a). BLL are restricted by operational depth, and typically don't fish deeper than 750 m (Figure 34). Gear sits on bottom and therefore there is high encounterability with demersal species.	3

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	High overlap with fishing gear.	
Selectivity of gear type	Spiny dogfish make up ~16% of the total catch in the UoAs indicating they are frequently caught (Table 45). In the absence of catch-at-length information it is not clear whether individuals <size at maturity are caught. Stakeholders during the RBF-workshop advised a high risk score of 3 as appropriate. .	3
Post capture mortality	Finnuci et al 2020 estimated 67.9% of all spiny dogfish were discarded between 2002 and 2018. Schedule 6 of the Fisheries Act 1996 sets out QMS species that may be returned to the sea, so long as the specified conditions are met. Spiny dogfish may be returned to the sea either alive or dead. In the absence of post-capture mortality studies or life-status information from the observer program, a score of 3 is awarded following stakeholder consultation at the site visit.	3
Catch (weight) Only where the scoring element is scored cumulatively	NA	NA

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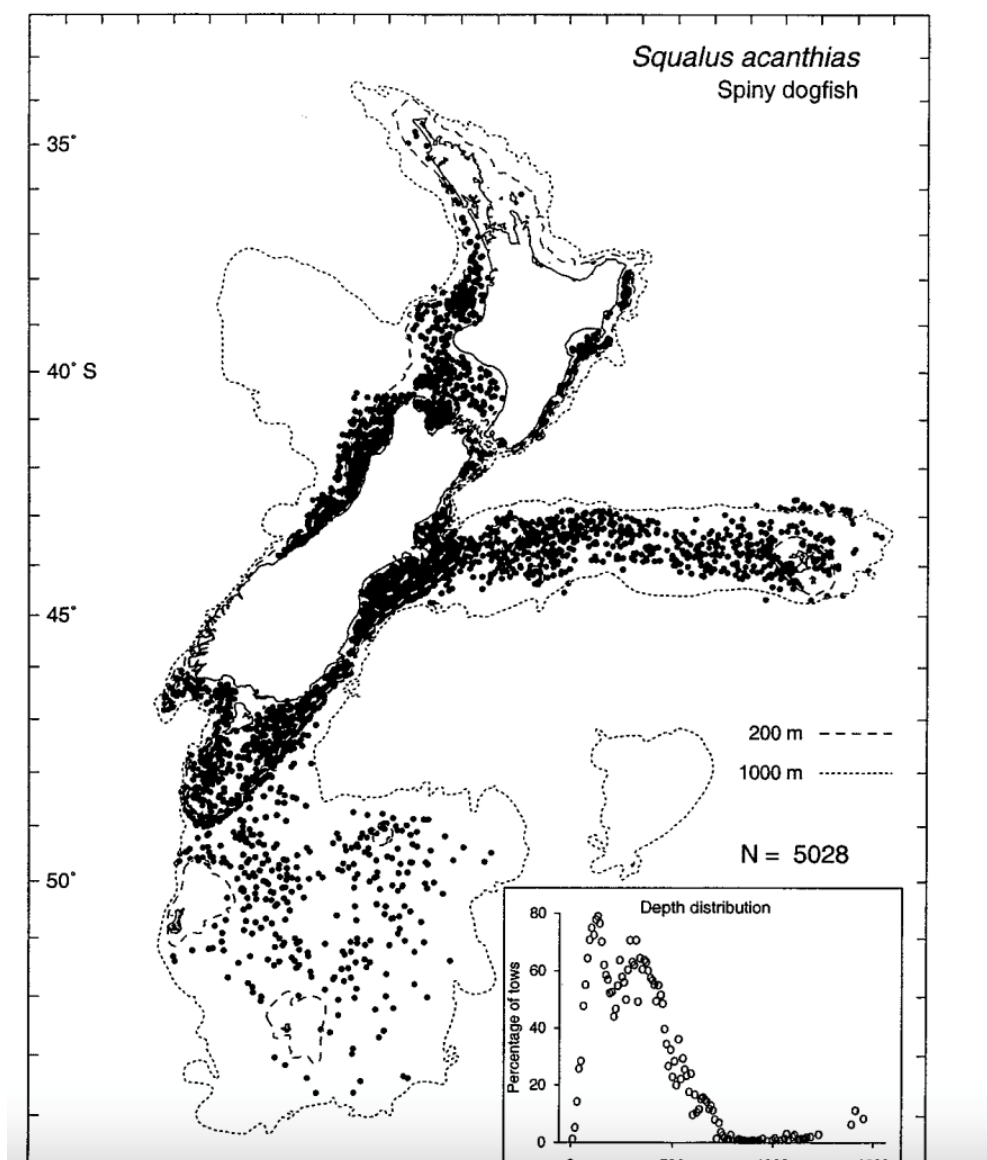


Figure 39. Spiny dogfish distribution. Anderson et al 1998.

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Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Ribaldo (<i>Mora moro</i>)	
Attribute	Justification	Score
Average age at maturity	Female grow to a larger size than males, and attain reproductive maturity at about 14 years of age, while males mature at about 8 years of age (Bray, 2017).	2
Average maximum age	Maximum ages of 37 and 39 years for females and males respectively (FNZ, 2024d)	3
Fecundity	Fecundity: 3,366,772 – 2,160,840 (Gordon and Duncan, 1985)	1
Average maximum size Not scored for invertebrates	Ribaldo reach maximum fork lengths (FL) of about 75 cm and 65 cm for females and males respectively. (FNZ, 2024d)	1
Average size at maturity Not scored for invertebrates	50% sexual maturity at ~45 cm TL (FNZ, 2024d)	2
Reproductive strategy	Broadcast spawner	1
Trophic level	Trophic level: 3.8 ±0.55 se; based on food items. https://www.fishbase.se/summary/Mora-moro.html	3
Density dependence Invertebrates only	NA	NA
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	NA	
Attribute	Justification	Score
Areal overlap	The ling longline UoAs combined and individually cover a fraction of the distribution of the ribaldo stock (Figure 40).	1
Encounterability	It occurs at depths from 400 - 1 300 m but appears to be most common at 600–700 m. BLL are restricted by operational depth, and typically don't fish deeper than 750 m (Figure 34). Following stakeholder consultation during the site visit RBF-workshop a high risk score of 3 was awarded.	3
Selectivity of gear type	Ribaldo make up ~5.45% of the total catch in the UoAs indicating they are regularly caught (Table 45). Per stakeholder advice at the RBF workshop trawl caught fish are >size at maturity and longline caught fish are typically larger indicating individuals less than the size at maturity are escaping and a score of 1 was promoted.	1
Post capture mortality	Finnuci et al 2020 estimated 7.4% of ribaldo were discarded between 2002 and 2018. This indicates that ribaldo are a retained species and a score of 3 is awarded.	3
Catch (weight) Only where the scoring element is scored cumulatively	NA	NA

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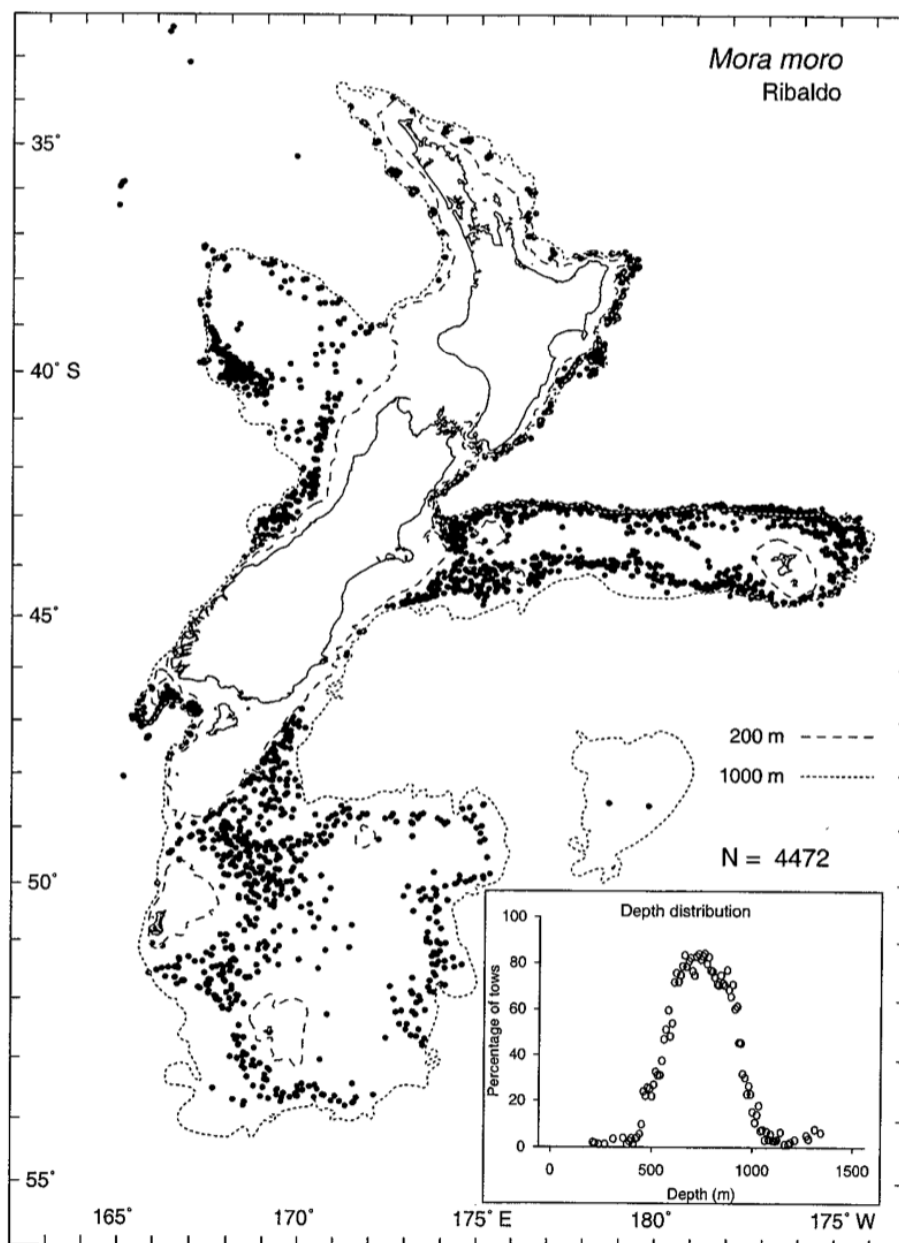


Figure 40. Ribaldo distribution. Anderson et al 1998.

Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Rough skate (<i>Zearaja nasuta</i>)	
Attribute	Justification	Score

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Average age at maturity	Males reach 50% maturity at about 52 cm and 4 years, and females at 59 cm and 6 years (FNZ, 2024e)	2
Average maximum age	The greatest reported age is 9 years for a 70 cm pelvic length female, and females may live longer than males (FNZ, 2024e)	1
Fecundity	Two eggs are laid at a time, but the number of eggs laid annually by a female is unknown (FNZ, 2024e)	3
Average maximum size Not scored for invertebrates	Rough skates grow to at least 79 cm pelvic length, and females grow larger than males FNZ, 2024e)	1
Average size at maturity Not scored for invertebrates	Males reach 50% maturity at about 52 cm and 4 years, and females at 59 cm and 6 years (FNZ, 2024e)	2
Reproductive strategy	Rough skates reproduce by laying yolky eggs, enclosed in leathery cases, on the seabed. Demersal egg layer (FNZ, 2024e)	2
Trophic level	Trophic level: 3.7 ±0.57 se; based on food items. https://www.fishbase.se/summary/Zearaja-nasuta.html	3
Density dependence Invertebrates only	NA	NA
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	NA	
Attribute	Justification	Score
Areal overlap	The ling longline UoAs combined and individually cover a fraction of the distribution of the rough skate stock (Figure 41).	1
Encounterability	Rough skates occur throughout New Zealand but are most abundant around the South Island in depths down to 500 m. (FNZ, 2024e). BLL are restricted by operational depth, and typically don't fish deeper than 750 m (Figure 34). Gear sits on bottom and therefore there is high encounterability with demersal species. High overlap with fishing gear.	3
Selectivity of gear type	Rough skates make up ~2.5% of the total catch in the UoAs indicating they are rarely caught (Table 45). In the absence of catch-at-length information it is not clear whether individuals <size at maturity are caught. Since the fishing gear is static bycatch species are able to escape or avoid the gear.	2
Post capture mortality	Finnuci et al 2020 estimated 4.2% of rough skates were discarded between 2002 and 2018. Skates returned to the sea alive probably have a greater chance of survival than most other fishes (FNZ, 2024e), however the high retention rate indicates rough skates are a retained species and a score of 3 is awarded.	3
Catch (weight) Only where the scoring element is scored cumulatively	NA	NA

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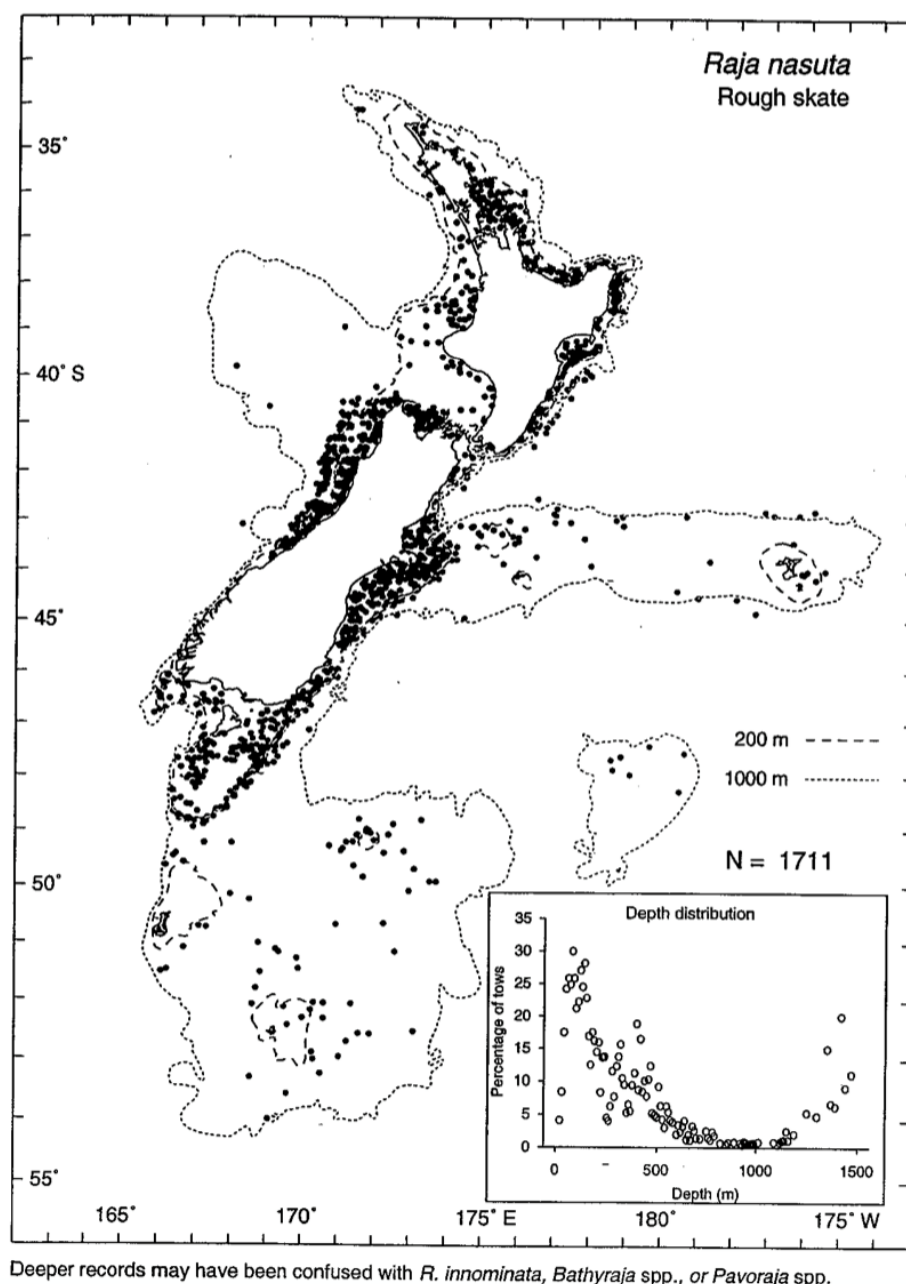


Figure 41. Rough skate distribution. Anderson et al 1998.

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Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Smooth skate (<i>Dipturus innominatus</i>)	
Attribute	Justification	Score
Average age at maturity	Males reach 50% maturity at about 93 cm and 8 years, and females at 112 cm and 13 years. (FNZ, 2024f)	2
Average maximum age	The greatest reported age for smooth skate is 28 years for a 155 cm pelvic length female. Females grow larger than males and also appear to live longer. (FNZ, 2024f)	2
Fecundity	Two eggs are laid at a time, but the number of eggs laid annually by a female is unknown. (FNZ, 2024f)	3
Average maximum size Not scored for invertebrates	The greatest reported age for smooth skate is 28 years for a 155 cm pelvic length female. Females grow larger than males and also appear to live longer. (FNZ, 2024f)	2
Average size at maturity Not scored for invertebrates	Males reach 50% maturity at about 93 cm and 8 years, and females at 112 cm and 13 years. (FNZ, 2024f)	2
Reproductive strategy	Smooth skates reproduce by laying yolky eggs, enclosed in leathery cases, on the seabed. (FNZ, 2024f). Demersal egg layer	2
Trophic level	Trophic level: 4.1 ±0.6 se; based on size and trophic level of closest relatives. https://www.fishbase.se/summary/Dipturus-innominatus.html	3
Density dependence Invertebrates only	NA	NA
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	NA	
Attribute	Justification	Score
Areal overlap	The ling longline UoAs combined and individually cover a fraction of the distribution of the rough skate stock (Figure 34).	1
Encounterability	Smooth skates occur throughout New Zealand, but are most abundant around the South Island in depths down to 500 m. (FNZ, 2024e). BLL are restricted by operational depth, and typically don't fish deeper than 750 m (Figure 42). Gear sits on bottom and therefore there is high encounterability with demersal species. High overlap with fishing gear.	3
Selectivity of gear type	Smooth skates make up ~2.2% of the total catch in the UoAs indicating they are rarely caught (Table 45). In the absence of catch-at-length information it is not clear whether individuals <size at maturity are caught. Since the fishing gear is static bycatch species are able to escape or avoid the gear.	2

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Post capture mortality	Finnuci et al 2020 estimated 12.6% of smooth skates were discarded between 2002 and 2018. Skates returned to the sea alive probably have a greater chance of survival than most other fishes (FNZ, 2024f), however the high retention rate indicates rough skates are a retained species and a score of 3 is awarded.	3
Catch (weight) Only where the scoring element is scored cumulatively	NA	NA

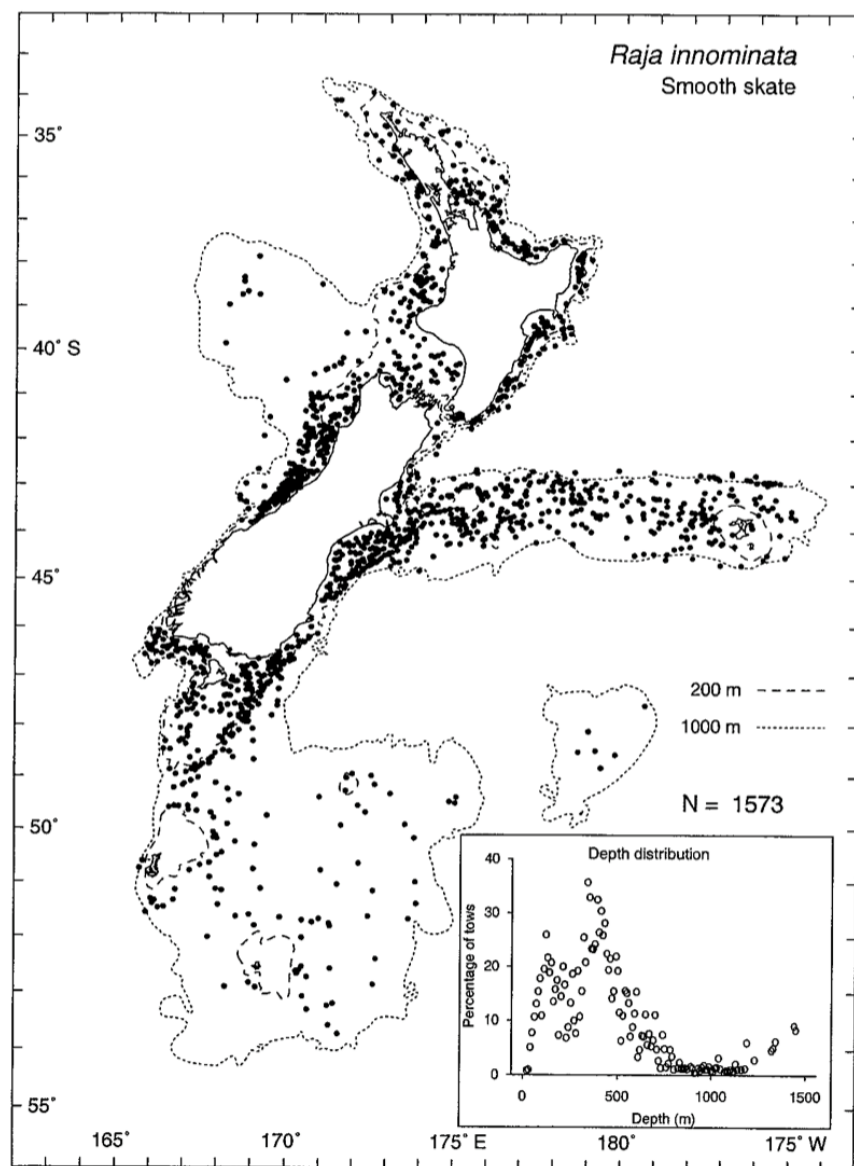


Figure 42. Smooth skate distribution. Anderson et al 1998.

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Performance Indicator	2.2.1	
Productivity		
Scoring element (species)	Jack mackerel (<i>Trachurus declivis</i> and <i>T. murphyi</i>)	
Attribute	Justification	Score
Average age at maturity	<i>T. declivis</i> matures when about 26–30 cm FL at an age of 2–4 years. The reproductive biology of <i>T. murphyi</i> in New Zealand waters is not well understood. (FNZ, 2024).	1
Average maximum age	<i>T. declivis</i> has a moderate initial growth rate that slows after about 6 years and reaches a maximum age of 25+ years. <i>T. murphyi</i> is a moderately long-lived species with a maximum observed age of 38 years (FNZ, 2024)	3
Fecundity	Unknown. A score of 1 is awarded following stakeholder consultation at the site visit.	1
Average maximum size Not scored for invertebrates	<i>T. declivis</i> Max length : 64.0 cm SL male/unsexed; common length : 42.0 cm TL male/unsexed https://www.fishbase.se/summary/Trachurus-declivis.html <i>T. murphyi</i> Max length : 70.0 cm TL male/unsexed; common length : 45.0 cm FL male/unsexed https://www.fishbase.se/summary/Trachurus-murphyi.html	1
Average size at maturity Not scored for invertebrates	<i>T. declivis</i> matures when about 26–30 cm FL at an age of 2–4 years (FNZ, 2024). The reproductive biology of <i>T. murphyi</i> in New Zealand waters is not well understood. (FNZ, 2024).	1
Reproductive strategy	Eggs and sperm are released amongst schooling fish, possibly deep in the water column near the edge of the continental shelf. https://www.fishbase.se/summary/Trachurus-declivis.html	1
Trophic level	<i>T. declivis</i> Trophic level: 3.9 ±0.61 se; based on food items. https://www.fishbase.se/summary/Trachurus-declivis.html <i>T. murphyi</i> Trophic level: 3.3 ±0.2 se; based on diet studies. https://www.fishbase.se/summary/Trachurus-murphyi.html	3
Density dependence Invertebrates only	NA	NA
Susceptibility		
Fishery Only where the scoring element is scored cumulatively	NA	
Attribute	Justification <i>Trachurus declivis</i> / <i>T. murphyi</i>	Score
Areal overlap	<i>T. declivis</i> and <i>T. murphyi</i> are taken mainly by trawl gear in waters deeper than 150 m in the JMA 3 and JMA 7 management areas (FNZ, 2024). There are two possible hypotheses on the stock structure of <i>T. murphyi</i> in New Zealand waters: it is either a separate stock established by fish migrating from South America, or part of a single, extensive trans-Pacific stock. Current evidence favours the latter hypothesis which would result in a marginal areal overlap with the stock	1/1

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Encounterability	<i>Trachurus declivis</i> generally occurs in deeper (but less than 300 m) waters cooler than 16°C, north of latitude 45° S (FNZ, 2024). <i>Trachurus murphyi</i> occurs to depths of least 500 m and has a wide latitudinal range (0° at the Galapagos Islands and coastal Ecuador, to south of 40° S off the Chilean coast). Medium overlap with demersal trawl fishing gear. A final score of 2 is awarded following stakeholder consultation at the site visit.	2/2
Selectivity of gear type	Jack mackerels made up ~0.08% of the total catch in hoki, hake and ling trawl fishery per Anderson et al 2019 over the period Oct 2002 to Sep 2017 indicating they are rarely caught. In the absence of catch-at-length information it is not clear whether individuals <size at maturity are caught. A final score of 2 is awarded following stakeholder consultation at the site visit.	2/2
Post capture mortality	Anderson et al 2019 estimated 0.64% of jack mackerels were discarded between 2002 and 2017. The high retention rate indicates jack mackerels are a retained species and a score of 3 is awarded.	3/3
Catch (weight) Only where the scoring element is scored cumulatively	NA	NA

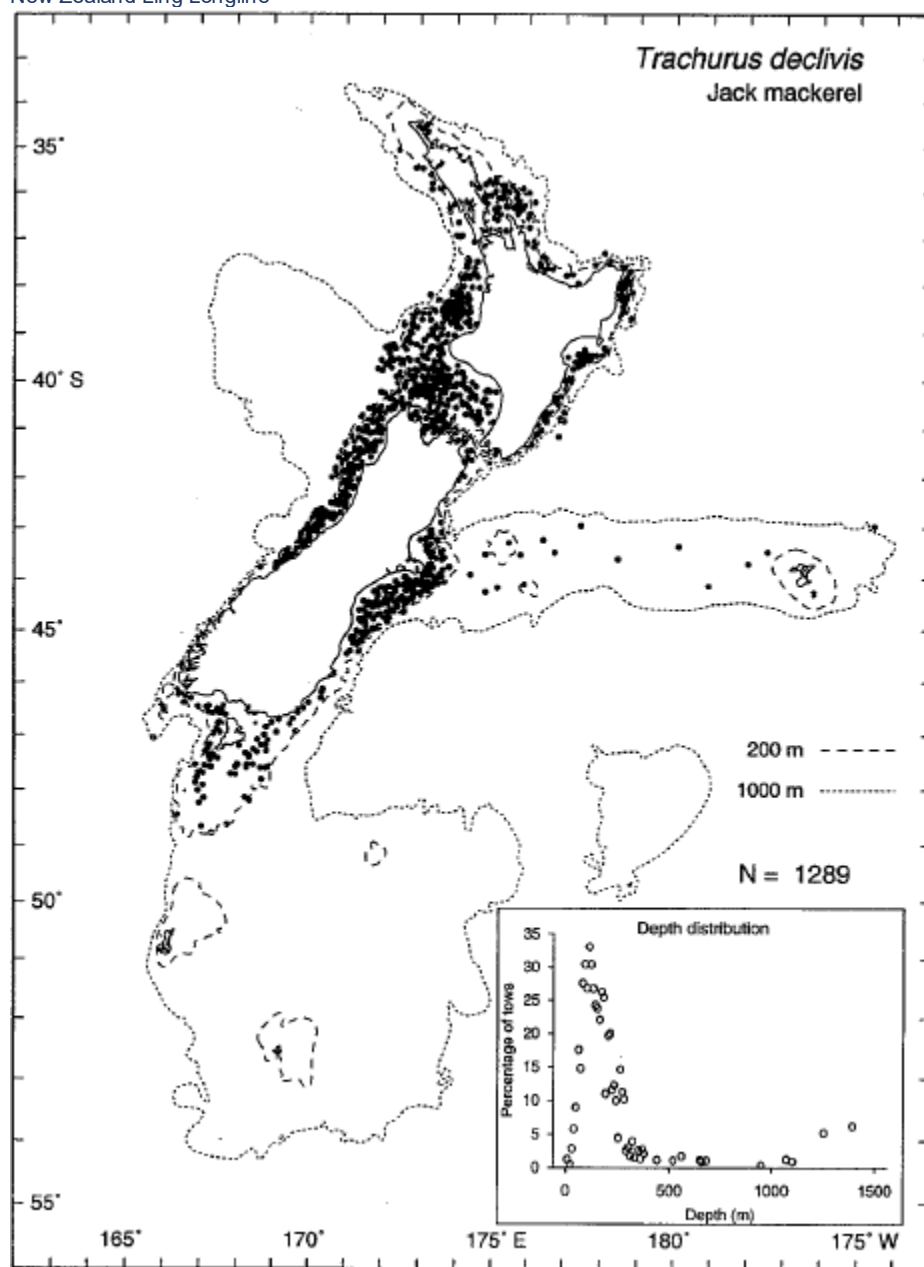
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Deeper records may be *Trachurus murphyi*.

Figure 43. Jack mackerel (*T. declivis*) distribution. Anderson et al 1998.

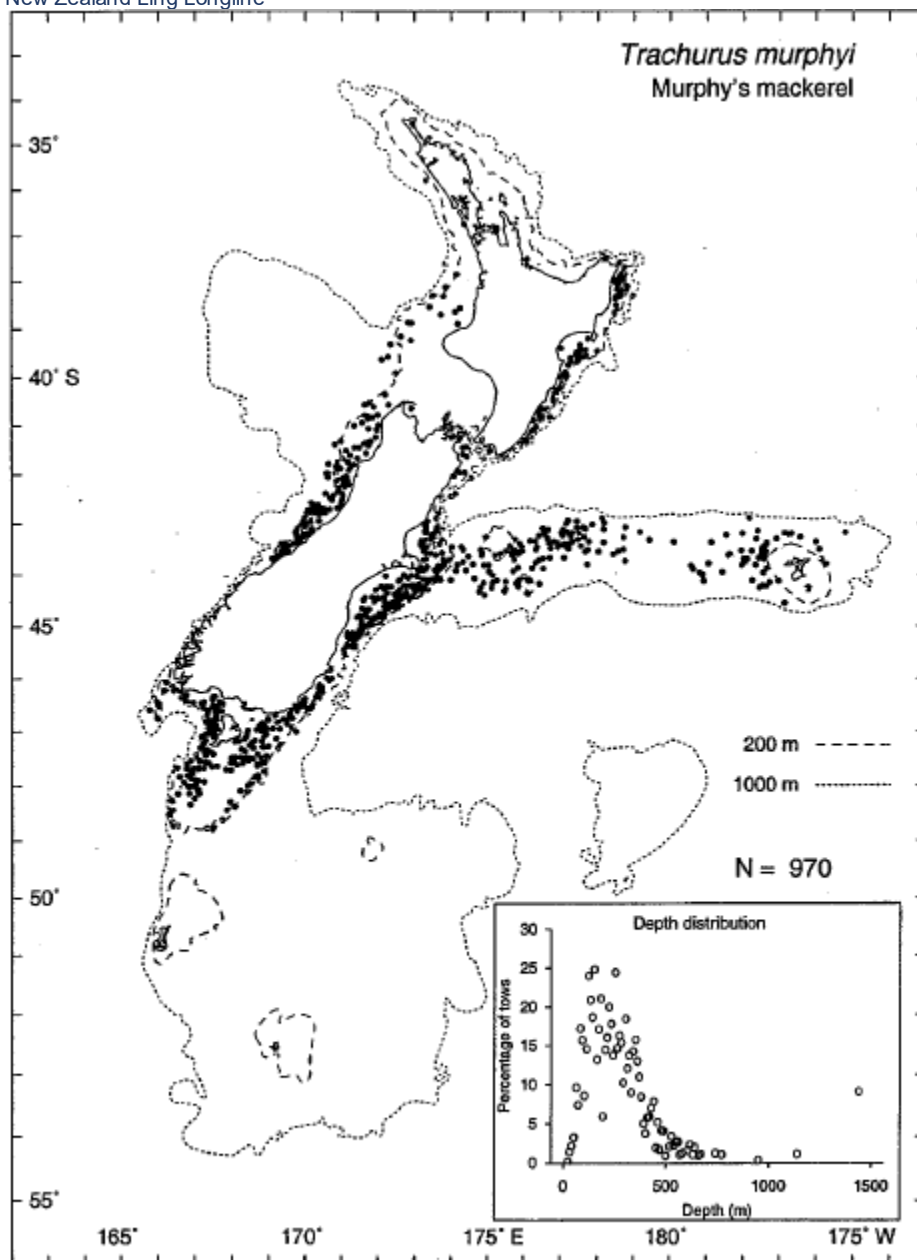
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Some records may be *T. declivis*. Stepien & Rosenblatt (1996) suggest that *T. murphyi* may not be a separate species from *T. symmetricus*.

Figure 44. Jack mackerel (*T. murphyi*) distribution. Anderson et al 1998.

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11.10 Peer reviewers – summary of qualifications and competencies

Chris Grieve

Chris has 25+ years' experience in fisheries management and policy-making from local to global levels. First as research assistant to Australian stock assessment scientists, then the manager of complex Australian demersal trawl and dredge fisheries. She moved to the UK in 2000 to lead the Sustainable Fisheries Policy Research Programme for a London-based think tank where the mission was influencing change in the EU's Common Fisheries Policy. In 2002, Chris became International Policy Director for the Marine Stewardship Council (MSC) to lead MSC's work on standards, certification and accreditation, governing bodies and developing world fisheries. Chris's role evolved to become Associate Director between 2005 and 2010 after she established Meridian Prime as a consulting company with a diverse portfolio of work. Chris led and participated in work on the development, evolution and implementation of the MSC standard and certification requirements. She has also led and participated in sustainable fisheries-related projects for client organisations in the UK, across Europe and the USA. Chris has been team member on fishery assessments and surveillance audits under the MSC certification scheme; and is an approved independent peer reviewer for MSC's Peer Reviewer College. On a consultancy basis, Chris is Executive Director Standards & Impact of the EDGE Certified Foundation: a Swiss-based, global certification scheme focusing on gender equality in the workplace. Chris served until recently as a Board Director for WOCAN (an international non-profit focusing on gender equality in natural resource management in the global south) and was on the founding Advisory Board of Ocean Outcomes (a US-based non-profit focusing on sustainable fisheries). Chris was a founding Trustee and Vice Chair of the ISEAL Alliance, the global sustainability standards organization; and a statutory-appointed member of two Australian fisheries management public boards.

Peter Trott

Peter is Director of FishListic, an independent sustainable seafood consultancy. Peter has 20 years' experience in fisheries management, resource sharing, ecosystem principles, project management, seafood markets, supply chains and traceability. During the eight years at WWF-Australia, Peter lead on international and domestic seafood markets. Peter was the architect of key strategic seafood market partnerships with retailers, brand owners and aquaculture companies. He has been involved in the Marine Stewardship Council (MSC) and with fishery certifications across the globe, including as co-client. He is a certified MSC Chain of Custody auditor, fishery team-member, fishery team-leader, certified SA8000 social auditor and ISO19011-2018 accredited. Peter is a member of the MSC Stakeholder Advisory Council. Peter was a fisheries manager with two fisheries agencies for eight years, and holds a Bachelor of Science (Fisheries Management and Aquaculture) with an honours degree in Aquatic Sciences from Deakin University.

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11.11 Assessment Team – biographies/summaries of CVs

Jo Akroyd Team Lead and P3

Jo has over 30 years' experience in marine fisheries policy, research, management and governance. She has extensive international and Pacific experience and has worked at senior levels in both the public and private sectors in these roles. Jo was with the Ministry of Agriculture and Fisheries in New Zealand for 20 years. Starting as a fisheries scientist, she was promoted to senior chief fisheries scientist, then Assistant Director, Marine Research. She was awarded a Commemoration Medal in 1990 in recognition of her pioneering work in establishing New Zealand's fisheries quota management system. Jo has worked on many fisheries aid projects in the Pacific including Cook Islands, Solomon Island, Fiji, Vanuatu, Papua New Guinea and Timor-Leste and also in Myanmar. As well as carrying out general fisheries consultancy since 1994 she has undertaken all facets of MSC work as a lead assessor, expert team member and peer reviewer across a wide range of fisheries. Jo has completed the MSC v1.3, v2.0, v2.1, v2.2 and v 3.0 and V3.1 training modules including for enhanced fisheries, Risk based framework and traceability. She is a member of the MSC's Peer Review College,

MSC projects include Team Leader and Fisheries Management expert for New Zealand fisheries, (hoki, hake, ling, southern blue whiting, albacore and skipjack), Fiji (albacore, yellowfin and bigeye tuna), Japan (scallops, skipjack and yellowfin), China (scallops, flounder and snowcrab), Maldives (skipjack), Ross Sea (toothfish), West Papua (skipjack and yellowfin). More recently she was the Team Leader for the MSC assessment for the AGAC four oceans albacore, yellowfin and bigeye tuna fisheries. Jo has conducted multi species pre-assessments in Japan, China, Viet Nam, Australia and New Zealand and provided independent Peer review reports for tuna, scallops and prawn fisheries in many countries

Andre Punt P1

Dr. André Punt is a Professor in the School of Aquatic and Fishery Sciences at the University of Washington. He holds a PhD in Applied Mathematics from the University of Cape Town (South Africa). He has been involved in stock assessment and fisheries management for over 35 years and has been recognized for his contributions in this area with awards from CSIRO, the University of Washington, the Australian Society for Fish Biology, and the American Fisheries Society. His research relates broadly to the development and application of fisheries stock assessment techniques, bioeconomic modelling, and the evaluation of the performance of stock assessment methods and harvest control rules using the Management Strategy Evaluation approach. Dr. Punt has conducted stock assessments for a wide range of species, ranging from anchovies and sardines, to groundfish, tunas, and cetaceans. He has published over 450 papers in the peer-reviewed literature, along with over 400 technical reports. He was a member of a National Research Council panel on evaluating the effectiveness of fish stock rebuilding in the United States. Dr Punt is currently a member of the Scientific and Statistical Committee of the Pacific Fishery Management Council, the advisory committee for Center for the Advancement of Population Assessment Methodology, the Crab Plan Team of the North Pacific Fishery Management Council, and the Scientific Committee of the International Whaling Commission. He has been involved in MSC assessments, pre-assessments and surveillance audits for orange roughy, hoki, hake, and southern blue whiting in New Zealand. Dr. Punt has passed MSC training and has no Conflict of Interest in relation to this fishery. Full CV available upon request.

Stewart Norman P2

Stewart Norman is the Director of Capricorn Marine Environmental in South Africa, responsible for overarching project management in scientific observer programs and professional consulting since the start of 2019. He holds a Master's degree from the University of Cape Town in Applied Marine Science completed in 2013, specifically focusing on highly migratory large pelagic species. He has undertaken numerous scientific research projects contracted to regional management organisations, most notably with the IOTC, CCSBT and ICCAT. His work involves interpreting scientific

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data from commercial fishing fleets and incorporating it into fisheries management. He has a key role in the provision of scientific and fisheries management advice in support of the South African hake trawl fishery as an MSC client in their accreditation processes.

Stewart has been involved in numerous pre-assessments for a range of species (octopus, menhaden, lobster, kelp, tuna (FADs/non-FADs). He has 5 years of experience as a Principle 2 expert including as part of the team conducting the global purse seine fishery assessment of the AGAC fleet, the assessment of South Korean Pacific Ocean longline fleets and Ghanaian Pole and Line fishery. He also has 5 years' experience in the role of MSC Chain of Custody auditor.

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11.12 Supporting Information

The below MSC variation request and response are available on the MSC track a Fishery website, and have been included here for completeness.

11.12.1 Variation Request

Table 1: Variation request

1	Date submitted to the MSC
	24 th February 2025 (amended 17 th March 2025)
2	CAB
	LRQA
3	Fishery name and certificate number
	New Zealand hake, hoki, ling and Southern blue whiting - MSC-F-31397
4	Lead auditor or program manager
	Jo Akroyd – Lead Auditor Gillian Irvine – Program Manager
5	Request prepared by
	Gillian Irvine – Program Manager Jo Akroyd – Lead Auditor Stewart Norman – Principle 2 Auditor Andre Punt – Principle 1 Auditor
6	Scheme requirement(s) for which variation requested
	FCP v2.3 - 7.8.3 The team shall use the default assessment tree as set out in the MSC Fisheries Standard Section SA in all assessments, with the following exceptions. GCR v2.7 - 4.12.2 When submitting a variation request as allowed under these requirements, the CAB shall note that: c. The CAB shall only submit variation requests in advance of the circumstances occurring. The MSC will not accept retrospective variation requests.
7	How many times has a variation against this requirement been accepted during this assessment or audit of this fishery?
	0

Table 2 – Variation justification

1	Proposed variation
	LRQA requests to change standard version 3.1 - SI 2.1.2d and SI 2.2.2d with standard version 2.01 – SI2.1.2d in the v3.1 reassessment of the New Zealand hake, hoki, ling and Southern blue whiting fishery (scoring issues included in justification below) As explained below while some of the shark species do pass the v3.1 PI the variation asks for a blanket modification to the assessment tree for the scoring issue in question to avoid any confusion with individual elements being assessed against different versions of the standard.
2	Additional time requested (where applicable)
	Original deadline date
	NA

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Modified deadline date requested	NA
Number of additional days requested	NA
3	Justification
The New Zealand hake, hoki, ling and Southern blue whiting fishery is currently undergoing reassessment. The site visit it is planned for the week commencing 24th of February 2025. Currently, there are reassessments announced against both standard versions. And the fishery is currently certified against v1.3 of the standard. At the ACDR stage the fishery is not meeting SG60 for 2.1.2d under V3.1. There has been a regulatory FNA requirement in New Zealand since 2014, following which the Minister gazetted eight exceptions to the fins attached requirement, which acknowledging that all Quota Management System (QMS) shark species must be landed if taken, provides for at sea-processing of eight QMS species of shark. Noting the definition of 'shark' under V3.1 of the Standard, three of the eight species to which the exemption applies are not scored as sharks. Within the UoAs, interactions with in-scope and ETP shark species to which the exemption applies have been assessed to be negligible. For the shark species to which the FNA applies, the assessment team finds that the intent of PI 2.1.2d is achieved and that TG3 of the ERF is met, with the following evidence available to confirm this: - Information to confirm that the UoA has adopted an FNA policy is available through Operational Procedures (OPs) in place, which are updated regularly/iteratively by the Deepwater Group. - OPs are communicated effectively to the deepwater fleet through an Information Portal available on the bridge of all UoA vessels - Implementation is supported through the full time Environmental Liaison Officer who is required to visit at least 90% of vessels in the Deepwater fleet each year - Information to confirm that an FNA or non-retention policy is enforced in the UoA is available through the high levels of representative observer coverage in the UoAs averaging 44.6% of tows observed in the hoki, hake and ling trawl fishery, 15.9% of hooks observed in the ling longline fishery and 95.4% of tows observed in the southern blue whiting fishery over the period 2018/19-2022/23. - Observer reports include provision to record shark processing codes and instances of observed shark finning (noting that there have been no reported shark finning cases reported). - Observers are positioned to directly observe vessel interactions with sharks throughout the catch operation, including reporting the fate of sharks either retained, processed or discarded. - Vessel offloads are monitored Ministry for Primary Industries Fishery Officers and vessels are inspected to ensure all catch is landed from the vessel. For the five species classified as 'sharks' under V3.1 and to which the Ministerial exemption applies it is therefore not possible to confirm that the UoA has adopted the FNA because GSA2.4.3–GSA2.4.4 of MSC Standard V3.1 does not permit exemptions to an FNA Policy. The fishery client is developing measures to address these exemptions but their application would result in loss of revenue to vessels that currently process sharks onboard and additionally may not be fully implemented in time to able to consider this scoring issue under V3.1 met for the reassessment. The fishery has the option to undergo reassessment against either V2.01 or V3.1 of the Standard and is voluntarily choosing to be recertified against V3.1. By opting to move forward with V3.1 the fishery is demonstrating a commitment to sustainability and supplying evidence of higher performance than what is necessary under v2.01 for all other Principle 2 PIs/SIs.	

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As explained above while some of the shark species do pass the v3.1 PI the variation asks for a blanket modification to the assessment tree for the scoring issue in question to avoid any confusion with individual elements being assessed against different versions of the standard.

This variation would allow the fishery, presuming a successful reassessment, to be certified against v3.1 of the standard. The fishery would be meeting the higher bar set in v3.1 of the standard on all other PIs/SIs.

The fishery shall be expected to follow the requirement that CABs shall apply the MSC Fisheries Standard v3.1 by 1 November 2030, thereby giving the fishery the same timeline as all other certified fisheries to implement what is necessary to meet SG60.

Scoring Issues

V3.1 - 2.1.2d, 2.2.2d – SG 60 - There is a high degree of certainty that shark finning is not taking place.

SA2.4.4 At scoring issue (e) at SG60, the team shall:

- a. Determine that a fins naturally attached (FNA) policy is in place for all retained sharks.
- i. If the UoA does not retain sharks, the team shall determine that a non-retention policy is in place.
- b. Apply the Evidence Requirements Framework in Tool B of the MSC Fisheries Standard Toolbox to establish that the information used to determine that an FNA or non-retention policy is in place and enforced has a very high degree of accuracy.

ERF Table B1 specifies when an evaluation of information trueness and precision must be applied. In the case of PI 1.2.1 SI (e), PI 2.1.2 SI (d), PI 2.2.2 SI (d), B1.2 applies if these SIs are scored (evaluation of trueness), whilst B1.3 (evaluation of precision) is not applicable.

ERF Table B3 prescribes relevant information to be considered in the evaluation of trueness to be: Information needed to determine the implementation of a fins naturally attached (FNA) or non-retention policy.

ERF Table B3 directs that information categories to be considered include: Information to confirm that the UoA has adopted an FNA or non-retention policy; and Information to confirm that an FNA or non-retention policy is enforced in the UoA.

V2.01 – 2.1.2d – SG 60 - It is likely that shark finning is not taking place.

SG80 - It is highly likely that shark finning is not taking place.

SG100 - There is a high degree of certainty that shark finning is not taking place.

SA2.4.5 When scoring SI (e) at SG60, the expectation shall be that one of the following subparagraphs applies:

SA2.4.5.1 If fins are cut on board:

- a. There are regulations in place governing the management of sharks;
 - b. Shark fins and carcasses shall be landed together in compliance with a ratio specifically relevant for the species, fishing fleet and initial post catch processing (e.g., fresh/frozen/dried); and
 - i. The team shall document the justification for using the specific ratio.
- c) Good external validation of the vessels' activities is available to confirm that it is likely that shark finning is not taking place.

SA2.4.5.2 If sharks are processed on board:

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- a. There are regulations in place governing the management of sharks;
- b. There is full documentation of the destination of all shark bodies and body parts; and
- c. Some external validation of the vessel's activities is available to confirm that it is likely that shark finning is not taking place.

SA2.4.6 When scoring SI (e) at SG80, the expectation shall be that one of the following subparagraphs applies:

SA2.4.6.1 All sharks are landed with fins naturally attached; SA2.4.6.2 If sharks are processed on board:

- a. There are regulations in place governing the management of sharks;
- b. There is full documentation of the destination of all shark bodies and body parts; and
- c. Good external validation of the vessels' activities is available to confirm that it is highly likely that shark finning is not taking place.

SA2.4.7 When scoring SI (e) at SG100, the expectation shall be that one of the following subparagraphs applies:

SA2.4.7.1 If sharks are landed with fins naturally attached, there is some external validation such that there is a high degree of certainty that shark finning is not taking place.

SA2.4.7.2 If sharks are processed on board

- a. There are comprehensive regulations in place governing the management of sharks;
- b. There is full documentation of the destination of all shark bodies and body parts; and

Comprehensive external validation of the vessels' activities is available to confirm with a high degree of certainty that shark finning is not taking place.

4 Implications for assessment

This variation would allow the fishery, presuming a successful reassessment, to be certified against v3.1 of the standard. The fishery would be meeting the higher bar set in v3.1 on all other PIs

5 Mitigation of the implications for assessment

LRQA shall retrospectively follow the modified assessment tree steps with some modifications: a. Apply for and obtain a variation from the MSC to 7.8.3 (this variation)

b. Inform stakeholders about the draft assessment tree and the reasons for modifications.

- d. Upload the draft assessment tree to the MSC database for publication on the MSC website.
- e. Allow stakeholder input on the draft modified assessment tree for a period of 15 days.
- f. Consider all stakeholder input, recording why comments have been accepted or rejected.
- g. Review the decision to modify the assessment tree, considering stakeholder input.
- h. Upload the final assessment tree to be used to the MSC database for publication on the MSC website, within 10 days of the consultation period closing.

6 How many conditions does the fishery have?

To be determined.

7 What is the status of the current assessment or audit?

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Reassessment site visit set for the w/c 24th of February 2025

8 Other relevant information

9 If applicable, additional information added after the MSC's request

2. Variation Response



Marine Stewardship Council

Gillian Irvine

LRQA (Seafood) Limited

6 Redheughs Rigg

Edinburgh

United Kingdom EH12 9DQ

Sent by email

Date: 27/03/2025

New Zealand hake, hoki, ling and Southern blue whiting, request for variation to the MSC Certification Requirements.

- V2.3 - FCP-7.8.3 - The team shall use the default assessment tree as set out in the MSC Fisheries Standard Section SA in all assessments, with the following exceptions.
- V2.7 - GCR-4.12.2.c - When submitting a variation request as allowed under these requirements, the CAB shall note that:

c. The CAB shall only submit variation requests in advance of the circumstances occurring. The MSC will not accept retrospective variation requests.

Dear Gillian Irvine,

I write with reference to your submission on 24/02/2025 of a request for variation to the MSC Certification Requirements (CR) to allow:

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LRQA to use a modified assessment tree for the reassessment of this fishery under v3.1 of the Fisheries standard, after publishing the ACDR. The proposed modified assessment tree would score shark finning using FS v2.01 - SI 2.1.2.d, instead of FS v3.1 - SI 2.1.2d and SI 2.2.2d. All shark species shall be scored using this modified assessment tree, following FS v3.1 for the definition of shark.

The requirements are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented supporting your request, including:

- The fishery has worked with the CAB to produce two ACDRs in order to compare the scoring between v2.01 and v3.1 of the Fisheries Standard. The ACDRs were published ahead of the site visit, which was conducted in the week of the 24th of February 2025.
- There is a Fins Naturally Attached (FNA) policy requirement in New Zealand since 2014, with eight exceptions to the requirement. Following the definition of 'shark' under Fisheries Standard v3.1, three of the eight species are not scored as sharks. For the remaining five shark species it is not possible to confirm that the UoA has adopted the FNA because GSA2.4.3–GSA2.4.4 of MSC Standard v3.1 does not permit exemptions to an FNA Policy.
- The assessment team have confidence that the intent of PI 2.1.2d is achieved and that the intent of TG3 of the ERF is met with the provided evidence. Such as an established observer program with good coverage, dockside monitoring, and available information that confirms that shark finning does not occur.
- The fishery is developing measures to address these exemptions but their application would result in loss of revenue to vessels that currently process sharks onboard, and may not be fully implemented in time to be able to consider this scoring issue under v3.1 met for the reassessment. The policy measures will work to meet the v3.1 requirements by 2030.
- This variation would allow the fishery, presuming a successful reassessment, to be certified against v3.1 of the standard and be held to a higher bar in all other performance areas.
- The fishery shall be expected to follow Fisheries Standard v3.1 clause 7.32, that CABs shall apply the MSC

Fisheries Standard v3.1 by 1 November 2030. Thereby giving the fishery the same timeline as all other certified fisheries to implement what is necessary to meet SG60.

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- The CAB shall follow the mitigation actions set out in section 5 of the variation request. This includes a public consultation period of 15 days for the draft modified assessment tree.

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council cc: Assurance Services International

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11.13 References (Bibliography)

Principle 1

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The CAB shall delete the table below:

Table 74: Template version control

Version	Date of publication	Description of amendment
1.0	17 December 2018	Date of first release
1.1	29 March 2019	Minor document changes for usability
1.2	25 March 2020	Release alongside Fisheries Certification Process v2.2
2.0	26 October 2022	Release alongside Fisheries Certification Process v3.0
2.1	22 July 2024	Updated for release of Fisheries Certification Process v3.1

A controlled document list of MSC program documents is available on the MSC website (<https://www.msc.org/for-business/certification-bodies/supporting-documents>).

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