



Marine Stewardship Council fisheries assessments

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New Zealand Hake, Hoki, Ling and Southern Blue Whiting

5th Surveillance Report 2025



Conformity Assessment Body (CAB)	LRQA (Seafood) Limited
Assessment team	Jo Akroyd and André Punt
Fishery client	NZ Seafood, Deepwater Council
Assessment type	Fifth Surveillance
Date	April 2025

Assessment Data Sheet

CAB details

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Principle 1 and 2

Principle 2 and 3

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2. Executive summary

In 2018, after an MSC reassessment process was undertaken for the NZ Hoki, Hake, Ling and Southern Blue Whiting trawl fisheries and the NZ Ling longline fisheries, using the MSC Certification Requirements (CR) version (v) 1.3 (MSC 2013) default assessment tree, these fisheries were MSC certified with no conditions.

This report is the 5th audit that took place on site in Wellington, New Zealand during the week of 24-28th February 2025. During this week stakeholders attended meetings both in person and remotely. The CAB auditors, 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 all attended. No NGOs wished to be involved nor wrote any submissions. Meetings involved discussions on the Surveillance audit and a Reassessment of these fisheries

The client provided excellent situation reports for all fisheries and delivered relevant papers and documents via links. As there were no conditions on the fisheries there was no Client Action Plan as such.

No Conditions were placed on these fisheries at this Year 5 audit.

There were no material changes to the circumstances and practices affecting the original complying assessment of the fishery.

These fisheries continue to meet the MSC Standard, and they remain certified.

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3. Audit details

3.1. Surveillance information

Table 1: Surveillance information

1	Fishery name
	New Zealand Hake, Hoki, Ling and Southern Blue Whiting
2	Unit(s) of Assessment (UoA)
UoA 1	Description
Species	Hoki (<i>Macruronus novaezelandiae</i>)
Target Stock	Eastern (UoA 1)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 2	Description
Species	Hoki (<i>Macruronus novaezelandiae</i>)
Target Stock	Western (UoA 2)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 3	Description
Species	Hake (<i>Merluccius australis</i>)
Target Stock	Sub-Antarctic (UoA 3)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 4	Description
Species	Hake (<i>Merluccius australis</i>)
Target Stock	Chatham Rise (UoA 4)

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Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 5	Description
Species	Hake (<i>Merluccius australis</i>)
Target Stock	West Coast South Island (UoA 5)
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 6	Description
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	Chatham Rise LIN3
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 7	Description
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	Chatham Rise LIN4
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 8	Description
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	Sub-Antarctic LIN5

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Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 9	Description
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	Sub-Antarctic LIN6
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 10	Description
Species	Ling (<i>Genypterus blacodes</i>)
Target Stock	West Coast South Island LIN7
Geographical area	New Zealand EEZ
Fishing gear type(s) and, if relevant, vessel type(s)	Trawl
Client group	Seafood NZ, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licenced to fish for hoki, hake and ling with demersal and semi demersal pelagic trawl, in management areas (HOK 1, 2; HAK 1, 4, 7; LIN 3, 4, 5, 6, 7 and with access to quota for these species.
UoA 11	Description
Species	Southern blue whiting (<i>Micromesistius australis</i>)
Target Stock	SBW 6B (UoA 11)
Geographical area	Bounty Platform (UoA 11)
Fishing gear type(s) and, if relevant, vessel type(s)	Demersal and Semi Pelagic Trawl
Client group	NZ Seafood, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licensed to fish for southern blue whiting with demersal and semi demersal pelagic trawl, in management areas SBW 6B and SBW 6I and with access to quota for these species.
UoA 12	Description
Species	Southern blue whiting (<i>Micromesistius australis</i>)
Target Stock	SBW 6I (UoA 12)

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Geographical area	Campbell Rise (UoA 12)
Fishing gear type(s) and, if relevant, vessel type(s)	Demersal and Semi Pelagic Trawl
Client group	NZ Seafood, Deep Water Council (DWC)
Other eligible fishers	New Zealand flagged vessels, licensed to fish for southern blue whiting with demersal and semi demersal pelagic trawl, in management areas SBW 6B and SBW 6I and with access to quota for these species.
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	New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.
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	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	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

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Fishing gear type(s) and, if relevant, vessel type(s)	Longline
Client group	Deepwater Group Limited (DWG)
Other eligible fishers	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	New Zealand flagged vessels, licensed to fish for ling with longline and with access to quota for this species.

3	Date certified	Date of expiry
	12 th September 2018	8 th August 2025
4	Audit type and number	
	Onsite 5 th surveillance (extra surveillance due to certificate extension and combined with reassessment site visit)	
5	Surveillance Level	
	Level 1	
6	Proposed team leader	

Jo Akroyd – Principle 3 Expert

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

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Jo has completed a number of MSC assessment as TL and meets all Fishery TL Qualification and Competency Criteria under MSC FCP v2.3 Table PC1 and MSC GCR v2.6 Table 1.

7 Proposed team members

André 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.

8 Audit time and location

Onsite w/c 24th February 2025 in Wellington, New Zealand

9 Assessment and review activities

All relevant information, any changes to the fishery, and any updates on the recommendations.

3.2. Version details

Table 2: Fisheries program documents versions

Document/Assessment Tree	Version number/Type
MSC Fisheries Certification Process	Version 2.3
MSC Fisheries Standard	Version 1.3
Assessment tree	Default
MSC General Certification Requirements	Version 2.7
MSC Surveillance Reporting Template	Version 2.2

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3.3. Update on the fishery

Background

Seafood New Zealand, Deepwater Council formally Deepwater Group Limited (DWG) <http://deepwatergroup.org> – (now SeaFood New Zealand Deepwater Council, DWC) 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 72% of the recorded hoki, hake and ling landings

The NZ hoki, hake, ling and southern blue whiting trawl fisheries, along with the ling longline fishery were reassessed and recertified in 2018. These fisheries were previously assessed against the MSC standard and certified separately at different times. The re-assessment was conducted using the MSC Certification Requirements (CR) version (v) 1.3 (MSC 2013) default assessment tree with no changes made to the text of any default Performance Indicator (PI). The assessment followed CR v 2.0 process (MSC 2014). At reassessment, no Performance Indicators scored < 80 and so no conditions of certification were applied to the fishery.

Surveillance audits were held in 2019, 2021, 2022, 2023 and this year in 2025

Changes in the management system and/or relevant regulations

None of significance at this stage. 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.

Changes to personnel in science management of industry

There have been a few changes in personnel, but these changes are not anticipated to make any fundamental differences to the way in which the client operates or engages with the MSC certification of the fishery.

Developments or changes that impact on Traceability

No changes and no issues encountered.

Inseparable or practicably inseparable (IPI) stock status

There are no IPI species

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3.3.1. Total Allowable Catch (TAC) and catch data

Table 3: Allowable Catch (TAC) and catch data *UoC 1 & UoC 2 – HOK 1 East & HOK 1 West*

TACC 2023-24	110,000 t (agreed catch limit split: East 65,000 t; West 45,000 t)
TACC 2022-23	110,000 t (agreed catch limit split: East 65,000 t; West 45,000 t) ¹
TACC 2021-22	110,000 t (agreed catch limit split: East 65,000 t; West 45,000 t) ²
TACC 2020-21	115,000 t (agreed catch limit split: East 60,000 t; West 55,000 t) ³
UoA share of TACC	100%
UoC share of TACC	93%
HOK 1 catch 2023-24	107,091 t (HOK 1 East 64,525 t, HOK 1 West 42,561 t)
HOK 1 catch 2022-23	105,620 t (HOK 1 East 60,063 t, HOK 1 West 45,550 t)
HOK 1 catch 2021-22	91,712 t (HOK 1 East 48,942 t, HOK 1 West 42,767 t)
HOK 1 catch 2020-21	101,251 t (HOK 1 East 54,914 t, HOK 1 West 46,333 t)

UoC 3 – HAK 1

TACC 2023-24	3,071 t
TACC 2022-23	3,701 t
TACC 2021-22	3,701 t
TACC 2020-21	3,701 t
UoA share of TACC	100%
UoC share of TACC	94%
HAK 1 catch 2023-24	945 t
HAK 1 catch 2022-23	1,083 t
HAK 1 catch 2021-22	1,692 t
HAK 1 catch 2020-21	1,503 t

¹ During the 2022-23 fishing year quota owners have agreed to an overall catch of 100,000 t with catch limits of 60,000 t for East and 40,000 t for West – delivered through shelving of ACE.

² During the 2021-22 fishing year quota owners have agreed to an overall catch of 100,000 t with catch limits of 55,000 t for East and 45,000 t for West – delivered through shelving of ACE.

³ During the 2020-21 fishing year quota owners agreed to an overall catch of 95,000 t with catch limits of 50,000 t for East and 45,000 t for West – delivered through shelving of ACE.

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UoC 4 – HAK 4

TACC 2023-24	1,800 t
TACC 2022-23	1,800 t
TACC 2021-22	1,800 t
TACC 2020-21	1,800 t
UoA share of TACC	100%
UoC share of TACC	94%
HAK 4 catch 2023-24	198 t
HAK 4 catch 2022-23	124 t
HAK 4 catch 2021-22	137 t
HAK 4 catch 2020-21	207 t

UoC 6 – LIN 3 Trawl and Longline

TACC 2023-24	2,060 t
TACC 2022-23	2,060 t
TACC 2021-22	2,060 t
TACC 2020-21	2,060 t
UoA share of TACC and total LIN catch	100% of TACC and 44% of total LIN catch (based on average estimated trawl catch over the last two years)
UoC share of TACC and total LIN catch	93% of TACC and 40% of total LIN catch (based on average estimated trawl catch over the last two years)
LIN 3 catch 2023-24	1,965 t (Total reported catch) 706 t (Estimated catch trawl) 275 t (Estimated catch bottom longline) 766 t (Estimated catch other methods)
LIN 3 catch 2022-23	1,366 t (Total reported catch) 683 t (Estimated catch trawl) 176 t (Estimated catch bottom longline) 332 t (Estimated catch other methods)
LIN 3 catch 2021-22	1,175 t (Total reported catch) 604 t (Estimated catch trawl) 240 t (Estimated catch bottom longline)

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LIN 3 catch 2020-21	174 t (Estimated catch other methods)
	1,489 t (Total reported catch)
	520 t (Estimated catch trawl)
	404 t (Estimated catch bottom longline)
	397 t (Estimated catch other methods)

UoC 7 – LIN 4

TACC 2023-24	4,200 t
TACC 2022-23	4,200 t
TACC 2021-22	4,200 t
TACC 2020-21	4,200 t
UoA share of TACC and total LIN catch	100% of TACC and 32% of total LIN catch (based on average estimated trawl catch over the last two years)
UoC share of TACC and total LIN catch	87% of TACC and 30% of total LIN catch (based on average estimated trawl catch over the last two years)
LIN 4 catch 2023-24	2,359 t (Total reported catch) 532 t (Estimated catch trawl) 925 t (Estimated catch bottom longline) 618 t (Estimated catch other methods)
LIN 4 catch 2022-23	1,892 t (Total reported catch) 435 t (Estimated catch trawl) 679 t (Estimated catch bottom longline) 576 t (Estimated catch other methods)
LIN 4 catch 2021-22	2,604 t (Total reported catch) 387 t (Estimated catch trawl) 1,745 t (Estimated catch bottom longline) 192 t (Estimated catch other methods)
LIN 4 catch 2020-21	2,129 t (Total reported catch) 467 t (Estimated catch trawl) 1,447 t (Estimated catch bottom longline) 0 t (Estimated catch other methods)

UoC 8 – LIN 5 Trawl and Longline

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TACC 2023-24	5,208 t
TACC 2022-23	5,208 t
TACC 2021-22	5,208 t
TACC 2020-21	4,735 t
UoA share of TACC and total LIN catch	100% of TACC and 90% of total LIN catch (based on average estimated trawl catch over the last two years)
UoC share of TACC and total LIN catch	95% of TACC and 85% of total LIN catch (based on average estimated trawl catch over the last two years)
LIN 5 catch 2023-24	4,763 t (Total reported catch) 3,807 t (Estimated catch trawl) 690 t (Estimated catch bottom longline) 2 t (Estimated catch other methods)
LIN 5 catch 2022-23	4,906 t (Total reported catch) 4,268 t (Estimated catch trawl) 499 t (Estimated catch bottom longline) 2 t (Estimated catch other methods)
LIN 5 catch 2021-22	5,044 t (Total reported catch) 4,315 t (Estimated catch trawl) 505 t (Estimated catch bottom longline) 2 t (Estimated catch other methods)
LIN 5 catch 2020-21	4,949 t (Total reported catch) 4,280 t (Estimated catch trawl) 1,538 t (Estimated catch bottom longline) 3 t (Estimated catch other methods)

UoC 9 – LIN 6 Trawl and Longline

TACC 2023-24	8,505 t
TACC 2022-23	8,505 t
TACC 2021-22	8,505 t
TACC 2020-21	8,505 t
UoA share of TACC and total LIN catch	100% of TACC and 61% of total LIN catch (based on average estimated trawl catch over the last two years)
UoC share of TACC and total LIN catch	61% of TACC and 57% of total LIN catch (based on average estimated trawl catch over the last two years)

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LIN 6 catch 2023-24	4,417 t (Total reported catch) 1,641 t (Estimated catch trawl) 1,122 t (Estimated catch bottom longline) 1,428 t (Estimated catch other methods)
LIN 6 catch 2022-23	4,780 t (Total reported catch) 2,284 t (Estimated catch trawl) 1,134 t (Estimated catch bottom longline) 1,028 t (Estimated catch other methods)
LIN 6 catch 2021-22	3,881 t (Total reported catch) 2,837 t (Estimated catch trawl) 967 t (Estimated catch bottom longline) 0 t (Estimated catch other methods)
LIN 6 catch 2020-21	3,916 t (Total reported catch) 2,510 t (Estimated catch trawl) 1,319 t (Estimated catch bottom longline) 0 t (Estimated catch other methods)

UoC 10 – LIN 7 Trawl and Longline

TACC 2023-24	3,387 t
TACC 2022-23	3,387 t
TACC 2021-22	3,387 t
TACC 2020-21	3,387 t
UoA share of TACC and total LIN catch	100% of TACC and 50% of total LIN catch (based on average estimated trawl catch over the last two years)
UoC share of TACC and total LIN catch	73% of TACC and 46% of total LIN catch (based on average estimated trawl catch over the last two years)
LIN 7 catch 2023-24	3,216 t (Total reported catch) 1,068 t (Estimated catch trawl) 1,083 t (Estimated catch bottom longline) 687 t (Estimated catch other methods)
LIN 7 catch 2022-23	3,540 t (Total reported catch) 1,366 t (Estimated catch trawl) 1,028 t (Estimated catch bottom longline) 777 t (Estimated catch other methods)

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LIN 7 catch 2021-22	3,325 t (Total reported catch) 1,245 t (Estimated catch trawl) 1,479 t (Estimated catch bottom longline) 193 t (Estimated catch other methods)
LIN 7 catch 2020-21	3,308 t (Total reported catch) 1,190 t (Estimated catch trawl) 1,504 t (Estimated catch bottom longline) 136 t (Estimated catch other methods)

UoC 11 – SBW 6B Trawl

TACC 2023-24	2,264 t
TACC 2022-23	2,264 t
TACC 2021-22	2,830 t
TACC 2020-21	2,830 t
UoA share of TACC	100%
UoC share of TACC	87%
SBW 6B catch 2023-24	2,010 t
SBW 6B catch 2022-23	125 t
SBW 6B catch 2021-22	801 t
SBW 6B catch 2020-21	1,100 t

UoC 12– SBW 6I Trawl

TACC 2023-24	39,200 t
TACC 2022-23	39,200 t
TACC 2021-22	39,200 t
TACC 2020-21	39,200 t
UoA share of TACC	100%
UoC share of TACC	87%
SBW 6I catch 2023-24	21,725 t
SBW 6I catch 2022-23	22,985 t

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SBW 6I catch 2021-22	19,514 t
SBW 6I catch 2020-21	11,982 t

4. Surveillance Audit Results

4.1 Principle 1

4.1.1 Management strategies, reference points, and management changes

4.1.1.1 Hake

Dunn (2024) conducted an evaluation of harvest control rules (HCRs) based on the most recent stock assessment for HAK7. The operating model assumed that recruitment averaged at a level comparable to that for the most 10 years (2008-2017), as estimated within the stock assessment, although the MSE also explored sensitivity to autocorrelation in future recruitment. The MSE did not explore alternative values for other population parameters such as natural mortality and stock-recruit steepness.

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 current management target of $0.4B_0$ and the New Zealand soft and hard limits of $0.2B_0$ and $0.1B_0$. The analyst defined selection criteria for the performance metrics considered, including that the probability of dropping below $0.2B_0$ should not exceed 0.10.

The analyst examined several groups of candidate HCRs: a constant exploitation rate strategy, three threshold strategies in which fishing mortality was ramped up from 0, $0.1B_0$ and $0.2B_0$, and two strategies that ramped fishing mortality from 0 and $0.2B_0$ to either $0.4B_0$ or $(1-M) \times 0.4B_0$. Assessments and TAC updates were assumed to occur every three years, and three levels of catch variability constraint were explored. Future estimates of spawning stock biomass were generated from lognormal distributions, in some cases with autocorrelated errors, i.e. using the “shortcut” approach to MSE.

Dunn (2024) noted that deterministic B_{MSY} is less than $0.2B_0$, but that the “real world” B_{MSY} would be higher than this. Dunn (2024) therefore also assessed a potential management target range for HAK 7 based on the results of the simulations and identified $0.35-50B_0$ as a level that would maintain the stock above the New Zealand soft limit of $0.2B_0$ and such that biomass would fluctuate about $0.4B_0$.

4.1.1.2 Ling

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 analyses also considered inter-annual constraints on TAC adjustments.

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, although the need for a rebuilding analysis if the soft

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limit is breached was not evaluated – although 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 but have yet to lead to formally adopted HCR for use for the ling stocks.

4.1.1.3 SBW 6B (Bounty Platform)

This stock is managed using a harvest control rule. The harvest control rule for SBW 6B was updated during 2022 to account for the possibility that an acoustic survey is not completed for the stock (Doonan, 2023). This involves adjusting the TAC based on a series of multiplicative factors that relate to how many years it has been since a survey was conducted and an estimate of biomass obtained (Table 19 of FNZ [2023]). The harvest strategy was applied based on a new 2023 survey estimate of abundance which led to a recommended TACC of 4,988t. FNZ (2024a) proposed consideration of an increase in TAC from 2,309 to 4,988t. The proposal for the change in TAC was consulted on and nine submissions were received. One submission supported the status quo, five submissions supported the increase in TAC, and three submissions supported neither of the two options. The Minister of Fisheries decided to increase the TAC to 4,988t (a TACC of 4,888t) (FNZ, 2024a; Minister of Fisheries, 2024).

4.1.2 Stock status and projections

Table 4 : 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
HOK 1 East*	2024	51 (41-62) [2024]	< 1%	< 1%
HOK 1 West*	2024	41 (34-50) [2024]	< 1%	5%
HAK 1	2021	62 (50-75) [2021]	< 1%	< 1%
HAK 4	2020	55 (46-66) [2020]	< 1%	1%
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%
SBW 6B	Managed using an HCR			
SBW 6I*	2023	63 (47-82) [2022]	< 1%	< 1%

*Detailed assessment report not available

+ Lower limit of the target range

4.1.2.1 Hoki

4.1.2.1.1 Catches

The TACC for the 2022-23 fishing year was set at 110,000t but the hoki quota owners agreed to voluntarily reduce the HOK 1 catch limit, by reducing the HOK 1 East catch limit from 65,000t to 50,000t, and by reducing the HOK 1 West catch limit from 45,000t to 40,000t, for an effective TACC of 100,000t. The reported catch was 105,554t (FNZ, 2024b), an increase of 13,890t from the catch for the 2021-22 fishing year. The largest increases in catch occurred in the Cook Strait spawning fishery, the sub-Antarctic spawning fishery, and the Chatham Island and ECSI [East Coast South Island] non-spawning fishery (by 35%, 55%, and 20% respectively). Catches in the Puysegur spawning fisheries were lower during the 2022-23 fishing year than during the 2021-22 fishing year.

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4.1.2.1.2 Stock assessment

The 2024 assessment was based on Casal 2 (Doonan et al., 2016; Casal2 Development Team, 2022) and differed from the 2022 and 2023 assessments (McGregor et al., 2022; 2023) as the ECSI spawning area was redefined with ECSI catches during July-September (the spawning months) being assigned to the ECSI spawning fishery and the remainder of the ECSI catches being assigned to the Chatham Rise fisheries. Catches off Puysegur from the June to September were included the west coast north (WC north) fishery and remainder of the catches off Puysegur were assigned to the Chatham Rise fisheries. The 2024 assessment was again based on 10 model fisheries (Table 4), although the fisheries differed from those on which the 2022 and 2023 assessments were based by having a ECSI spawning fishery and no Puysegur spawning fishery. The stock assessment did not attempt to estimate the size of the 2020 (Model 1) and 2021 (Model 2) recruitments because of lack of age data for the most recent years.

Table 5 : The division of annual catches by area and months into the 10 model fisheries. (Source: FNZ, 2024b).

Fishery	Description	Areas/months
CR_deep	Chatham Rise deep (effort depth ≥ 475 m), non-spawning	CR (excluding ECSI spawning), CS (Oct-May), ECNI, ECSI (Oct-June)
CR_shallow	Chatham Rise shallow (effort depth < 475 m), non-spawning	CR (excluding ECSI spawning), CS (Oct-May), ECNI, ECSI (Oct-June)
CS	Cook Strait spawning	CS (Jun-Sep)
ECSI	ECSI spawning	ECSI (Jul-Sept)
SA_auck	Sub-Antarctic Auckland Islands, non-spawning	Sub-Antarctic Auckland Islands
SA_snares	Sub-Antarctic Snares shelf, non-spawning	Sub-Antarctic Snares, Puysegur (Oct-May)
SA_suba	Sub-Antarctic excluding Auckland Islands and Snares shelf, non-spawning	Sub-Antarctic
PUY_spn	Puysegur spawning fishery	Puysegur (Jun-Sep)
WC_inside	West coast, spawning, inside 25nmile line	West coast inside
WC_north	West coast north spawning fishery	West coast north
WC_south	West coast south fishery	West coast south

The assessment was based two model configurations:

- **Model 1:** Two spawning stocks, which spawn in Cook Strait (CS) and the West Coast South Island (WCSI). Recruits from both stocks reside on the CR as juveniles. Western-spawned fish migrate to the SA (with the movement ogive estimated). Mature West Coast-stock fish migrate from the SA to the WCSI to spawn, and mature CR-stock fish move from the CR to CS to spawn. After spawning, all mature fish return (WC to SA and CS to CR). Natural mortality for males and females is set to 0.3yr^{-1} and 0.22yr^{-1} respectively, with stock-recruitment steepness set to 0.75.
- **Model 2:** A model with one spawning stock, that spawns on the CS and WC but retains the spatial, temporal and fishery structure of model 1. Recruits from both spawning grounds reside on the CR as juveniles. A fixed estimated proportion of fish by sex migrate to the SA. These fish effectively become 'western stock' fish as they never return to the CR. Mature fish migrate from the SA to the WC to spawn and similarly from the CR to the CS to spawn. After spawning, all mature fish return (WC to SA and CS to CR).

The new data included in the 2024 assessment include new catches (2022-23 fishing year), 2023 fishery age-composition data, survey index and age-composition data for the January/February 2024 trawl survey of the Chatham Rise (Stevens et al., 2024) and the results of a winter 2023 acoustic survey of Cook Strait. The 2024 assessment also included a new index - a time-series of acoustic estimates of abundance 2002-2023 for Pegasus Canyon (ECSI).

The assessment examined the sensitivity of the results to values of natural mortality, stock-recruitment steepness, and the maturation ogive using Maximum Posterior Density estimates (the main model results are based on Bayesian sampling using MCMC; McGregor and Langely, 2024). The MCMC algorithm used to sample from the posterior was improved for the 2024 assessment (FNZ, 2024b)

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Biomass and recruitment

The biomasses of both stocks were at their lowest points from about 2004 to 2006 ($\sim 0.3B_0$ for the eastern stock and $\sim 0.2B_0$ for the western stock) for the base model (Fig. 1), after the western stock experienced seven consecutive years of poor recruitment from 1995 to 2001 inclusive, and the eastern stock had below average recruitment over the same period (Fig. 2). Both stocks then increased to above the target range of $0.35\text{--}0.5B_0$, then declined, with the eastern stock now near the top of the target range and the western stock near the lower limit of the target range. Recruitment to the western stock following the 1995–2001 period of poor recruitment remained low for two more years then was estimated to have been above average for about five years before dropping again, with recruitment below average for 2011–2019. The recruitment patterns were similar for the eastern stock over these years, except for two strong year classes in 2011 and 2015 (Fig. 2).

The 2024 depletion (biomass relative to B_0) of the eastern stock was estimated to be 0.51 (95% confidence interval 0.41–0.62) while the 2024 depletion of western stock was estimated to be 0.41 (95% confidence interval 0.34–0.50). The 2024 depletion of HOK1 in total was estimated to be 0.45 (95% confidence interval 0.40–0.50) (Table 7). The probability of 2024 biomass being below the soft limit was estimated to be <0.01 for both stocks, with the probability of being below the lower limit of management target range being <0.01 for HOK 1 East and 0.052 for HOK 1 West (Table HOK-7). The 2024 depletion of HOK 1 based on the single-stock model is similar to that of the two-stock model (0.46; 95% confidence interval 0.40–0.52).

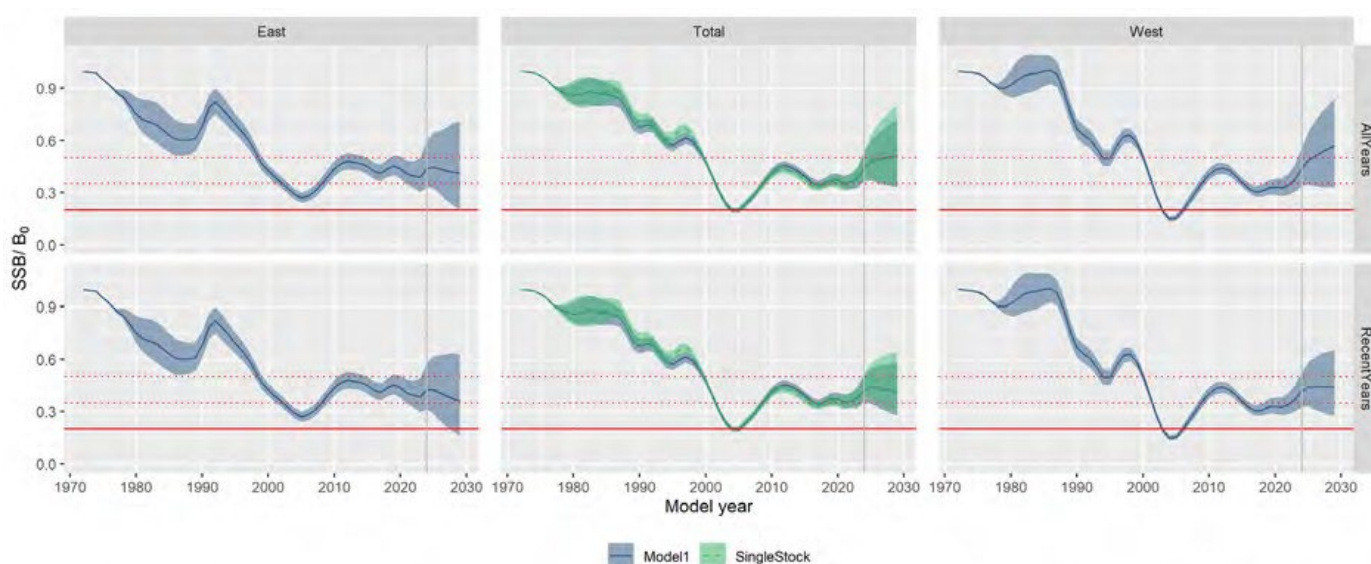


Figure 1 :Projected spawning biomass (as % B_0) from model 1 (blue) and model 2 (green) under two recruitment scenarios: recent (2010–2019 (model 1) 2010–2020 (model 2) (bottom); long-term (1975–2019 (model 1) 1975–2020 (model 2) (top), for the eastern stock (left), total (middle), and western stock (right), with catches assumed at the current TACC (110,000 t). The horizontal dotted red lines represent the target management range of $0.35\text{--}0.50 B_0$. The horizontal solid red line shows $0.20 B_0$. Shaded areas give 95% CIs, and the central line gives median SSB/B_0 . (Source: FNZ, 2024b).

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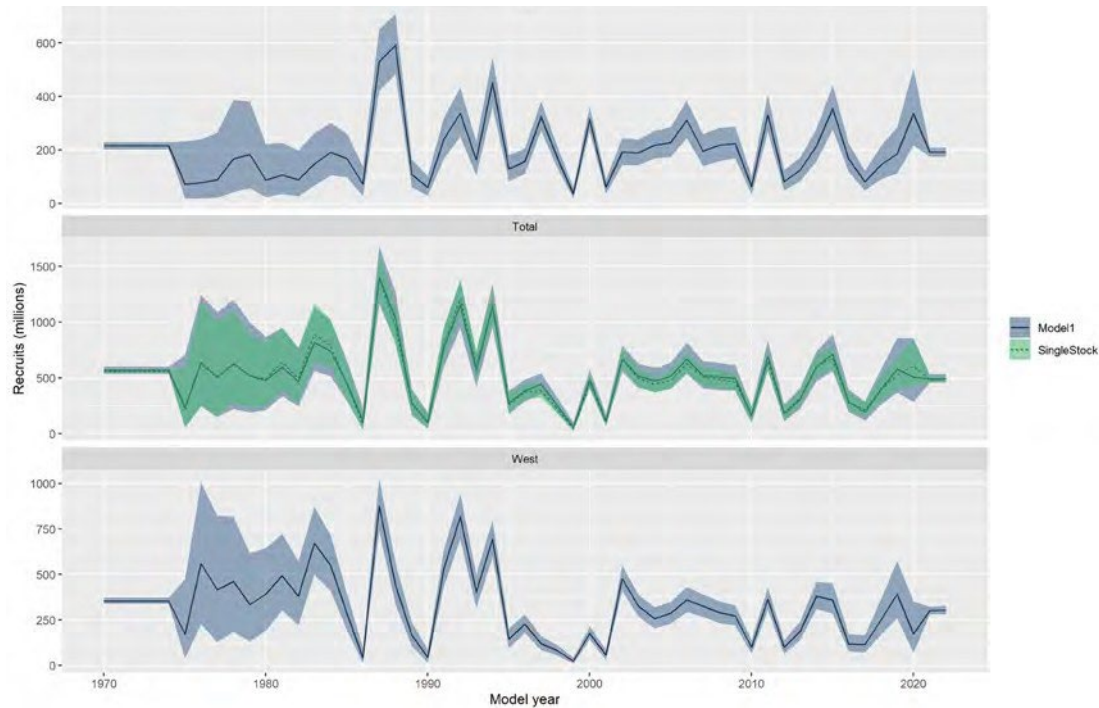


Figure 2 : Recruits (millions) for the eastern (top), total (middle) and western (bottom) stocks from model 1 (blue) and model 2 (green) from MCMC samples. Shaded areas are 95% CIs; solid lines are median values. Years are model years (1990 = 1989–90). (Source: FNZ, 2024b)

Table 6 : Bayesian median estimates (95% credible intervals) (MCMC) of B_0 , B_{2024} , and B_{2024} as a percentage of B_0 for two HOK 1 models. “E” denotes the east stock, “W” denotes the west stock, and “T” denotes the total. (Source: McGregor and Langely, 2024).

Model	B_0 ('000t)			B_{2024} ('000t)			B_{2024}/B_0		
	E	W	T	E	W	T	E	W	T
Model 1	696	1198	1894	352	496	852	51	41	45
	[652, 743]	[1152, 1251]	[1804, 1994]	[269,459]	[392, 627]	[723, 999]	[41,62]	[34, 50]	[40,50]
Model 2			1957			893			46
			[1902,2020]			[761, 1051]			[40,52]

Model	$P(< 0.4B_0)$			$P(< 0.35B_0)$			$P(< 0.2B_0)$		
	E	W	T	E	W	T	E	W	T
Model 1	0.02	0.364	0.03	<0.01	0.052	<0.01	<0.01	<0.01	<0.01

New data collected since the 2024 assessment include an acoustic survey of the WSCI, which suggests abundance similar to 2018 and lower than 2020 and 2022 and a 2024 trawl survey of the Sub Antarctic (which will also inform the assessments for hake [HAK 1] and ling [LIN 5&6]). The results of 2024 survey of Chatham Rise indicate an increase in biomass estimates of all three species (22% for hoki, 16% for hake, 8% for ling) (MacGibbon, 2025). An acoustic survey of the ECSI is expected during 2025.

Projections

Five-year projections were conducted for models 1 and 2 by randomly selecting future recruitments based on two scenarios: (i) recruitments estimated for 2010–2019 (model 1) and 2010–2020 (model 2) (recent recruitment), and (ii) recruitments estimated for 1975–2019 (model 1) and 1975–2020 (model 2) (long-term recruitment). The projections involved a TACC of 110,000t (45,000t western stock, 65,000t eastern stock). The projections indicated that the eastern

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biomass would remain constant under long-term recruitment and decline over the next 5 years under recent recruitment but would likely remain within the target range. The western biomass was projected to increase under long-term recruitment and remain constant within the target range under recent recruitment (FNZ, 2024b).

4.1.2.2 Hake

5.1.2.2.1 HAK 1

No assessment of the Sub-Antarctic area (HAK 1 south of Otago Peninsula) was undertaken during 2024, the last assessment having taken place in 2021. The next stock assessment for HAK1 is planned to take place in 2025.

4.1.2.2.2 HAK 4

No assessment of the Chatham Rise area (HAK 4 plus HAK 1 north of Otago Peninsula) was undertaken during 2024, the last assessment having taken place in 2020. The next stock assessment for HAK4 is planned to take place in 2025. This assessment is expected to be an update to the 2020 assessment.

4.1.2.3 Ling

4.1.2.3.1 LIN3 & LIN 4 (Chatham Rise)

No assessment of the Chatham Rise area (LIN 3 & LIN 4) was undertaken during 2024, the last assessment having taken place in 2022. The next stock assessment for LIN 3 & LIN 4 is planned to take place in 2025 (FNZ, 2024c).

4.1.2.3.2 LIN 5 & LIN 6

An assessment for ling in the Sub-Antarctic area was undertaken during 2024, the last assessment having taken place in 2021. This assessment updated the 2021 assessment (Mormede et al., 2021). Unlike to 2021 assessment, the 2024 assessment (Mormede et al., 2024) included data for LIN 6B (Bounty Plateau) as a separate fishery, although fishery selectivity and the biological and recruitment parameters for LIN 6B were assumed to the same as those for LIN 5 and LIN 6. Potting occurs in LIN 6B but there are no age data for this component of the fishery so potting was assumed to have the same selectivity as bottom trawling. The assessment was based on a two-period model (January-August and September-December), with the start of the year defined as January (rather than September). Compared to the 2021 assessment, the 2024 assessment included additional longline CPUE data (not included in the base model) as well additional fishery age-composition data. The base-case model assumed steepness to be 0.7, M to be 0.18yr^{-1} and the right-hand limb of the selectivity pattern for the trawl fishery selectivity was set so selectivity was close to asymptotic.

The assessment explored sensitivity to:

- $M=0.16$ / $M=0.20$: Changing natural mortality to 0.16yr^{-1} and 0.20yr^{-1} .
- Length-base 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).

Biomass and recruitment

The difference in unfished biomass between the 2024 and 2021 assessments (12,400t) was close to that estimated for LIN 6B based on an assessment conducted in 2007 (Horn, 2007). All models were taken through to MCMC (Table 8). The biomass shows a declining trend over time but stock size is estimated to be well above the management target (Fig. 3), with no evidence for trends over time in the deviations in recruitment about the stock-recruitment relationship (Fig. 4).

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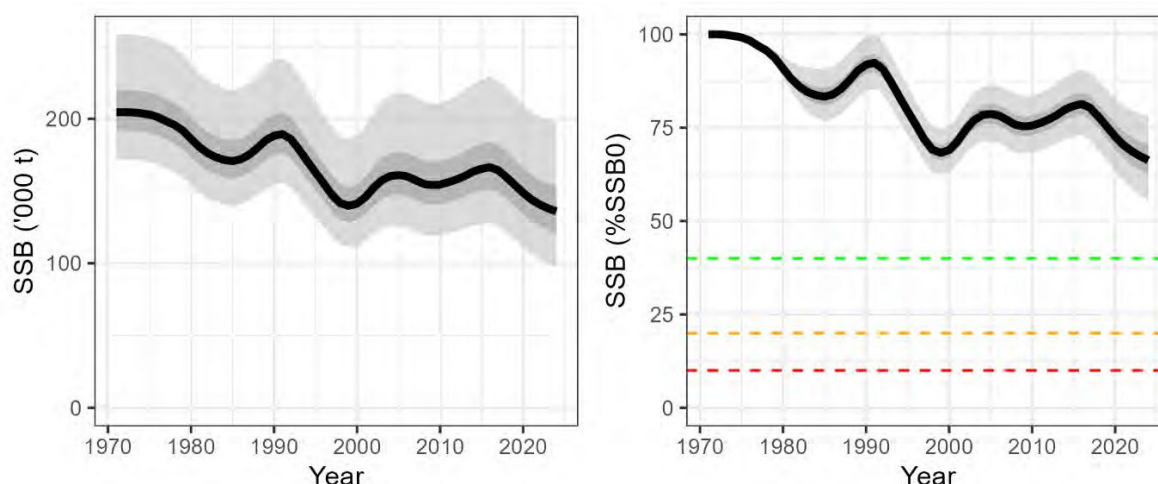


Figure 3 : LIN 5&6 and LIN 6B base model. Estimated median trajectories (with interquartile range shown as dark grey bands and 95% credible intervals as light grey bands) for absolute biomass and biomass as a percentage of B_0 . The red horizontal line at $0.1 B_0$ represents the hard limit, the orange line at $0.20 B_0$ is the soft limit, and the green line is the $\% B_0$ target ($0.40 B_0$). (Source: FNZ, 2024c).

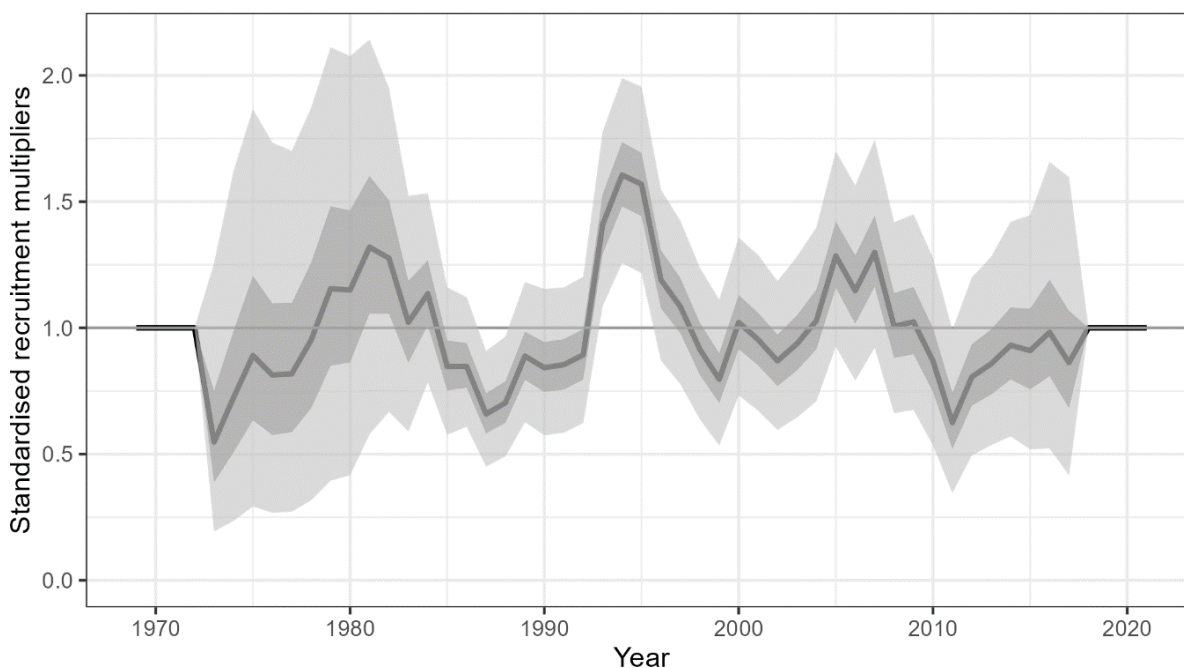


Figure 4 LIN 5&6 and LIN 6B. Estimated posterior distribution of year class strength from the base case run, with median (line and individual points), interquartile range (dark grey band) and 95% credible interval (light grey band). The horizontal line indicates a year class strength of one. (Source: FNZ, 2024c).

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Table 7 : 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, 2024c).

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 equal to the average catch during 2020-2023 (6,954t) or the TACC (10,235). Biomass was estimated to remain above 0.4 B_0 in 2029 with high probability (FNZ, 2024c).

5.1.2.3.3 LIN 7W

No assessment of ling on the West Coast South Island was undertaken during 2024 (FNZ, 2024d), the last assessment having taken place in 2023. The next stock assessment for LIN 7W is planned to take place in 2026 (FNZ, 2024c).

4.1.2.4 Southern blue whiting

4.1.2.4.2 SBW 6B (Bounty Platform)

The catch of southern blue whiting on the Bounty Platform was 125t, the lowest value since 1988-89. Acoustic surveys of the Bounty Platform were conducted during 2018, 2019, 2020, 2021, 2022, and 2023, but only the 2023 survey was successful. Stock assessments for SBW 6B based on fitting population models have proven difficult owing to inconsistencies between changes on abundance inferred from surveys and the estimates of relative year-class strength based on age data. Recent ageing work suggests strong cohorts of southern blue whiting on the Bounty Platform in 2002, 2007, 2012 and 2018.

Given the limited success of acoustic surveys, the HCR for the SBW 6I was updated in 2023 to account for gaps in surveys (Doonan, 2023). The estimate of mature biomass from the 2023 survey was 12,508t (CV 0.18). This estimate of abundance was used in the HCR. The application of the HCR was based on a biomass estimate of 12,506t (CV 0.18), the average of two snapshots on 18 and 20 September 2023, with the catch at survey time set to 947t (FNZ, 2024d). Given an assumed survey catchability of 0.6, this leads to a biomass estimate pre-fishery of 21,791t and hence a TAC of 4,988t (i.e., $0.24 \times (21,791 - 2010/2)$) (FNZ, 2024d).

4.1.2.4.2 SBW 6I (Campbell Island Rise)

The catch of southern blue whiting on the Campbell Island Rise was larger during the 2022-23 fishing year (22,985t) than during the 2020-21 and 2021-22 fishing years but nevertheless remained lower than the TACC of 39,200t.

A stock assessment for SWB 6I was conducted during 2023 updating the 2020 assessment (Doonan, 2020). The 2023 assessment was based on Casal 2 (Doonan et al., 2016; Casal Development Team, 2022) and was similar in structure to the 2020 assessment. The model was two-sex and considered ages from 2-15 with age 15 treated as a plus-group with fish partitioned into immature and mature fish, and the catch restricted to the mature component of the population (so that fishery selectivity was uniform on mature fish). The model included two time-steps, with 90% of natural mortality occurring during the first time-step. The stock-recruitment relationship was Beverton-Holt with steepness set to 0.9 and an equal sex ratio at age 2. Growth was not estimated as part of the model-fitting process given substantial

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environmentally driven inter-annual variation in growth. Rather, mean sizes-at-age were pre-specified based on commercial catch-at-length and -at-age data, with missing values inferred based on the relative size of their cohort and mean growth of similar ages in other years.

The model was initiated at equilibrium in 1960, with year-class strengths estimated from 1958 given the evidence for strong year classes in the age data, which are available from 1979.

The model was fitted to a time-series of wide-area acoustic survey-based estimates of immature and mature biomass and fishery age-composition data. Compared to the 2021 assessment, the 2023 assessment was based on new survey estimates of biomass for 2023 and additional fishery age-composition data.

The assessment involved a series of maximum posterior density analyses, with the final estimates based on MCMC sampling. The base model assumed natural mortality (M) was 0.2yr^{-1} for both sexes, placed a prior (mean 0.54, CV 0.44) on survey catchability, and estimated recruitment deviations for 1958-2019. The sensitivity tests examined were:

- Mfree: As for the base model, but with natural mortality estimated.
- Ttvary: As for the base model, but with time-varying maturity from 1990 to 2022.

As was the case for the 2020 assessment, survey catchability was estimated to be less than the prior mean (base-case 0.40).

Biomass and recruitment

The stock is characterized by highly variable recruitment (Figure 5), with the 2015 recruitment driving trends in current biomass. The biomass increased early during the modelled period due to strong year-classes during the 1960s, declined to below $0.2B_0$ owing to series of weak year-classes and recovered from 1994 to 1996 due to the very strong 1991 year-class (Figures 5 and 6). The 2011, 2014 and 2015 year-classes also appear strong based on the age data. The stock is estimated to be well above the target biomass of $0.4B_0$ (Table 9).

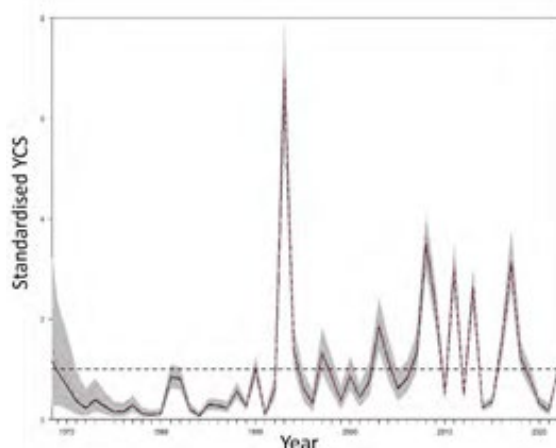


Figure 5 : Estimated posterior distributions of relative year-class strength for the Campbell Rise stock for the base case model. The red dashed line in each plot shows the MPD result. Year is model year that fish enter the population at age 2. (Source: FNZ, 2024d).

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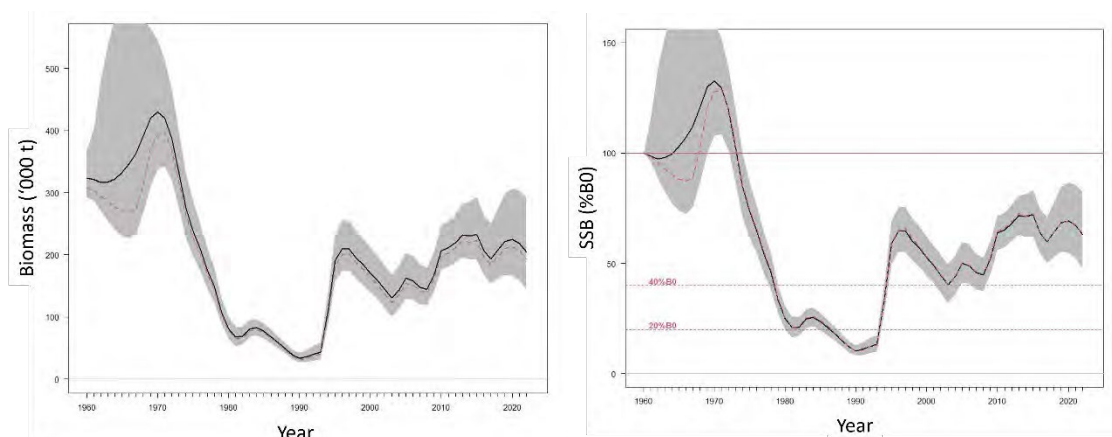


Figure 6 : MCMC posterior plots of the trajectories of biomass (left) and current stock status ($\% B_{2022}/B_0$) (right) for the Campbell Rise stock for the base case model. The shaded regions are the 95% credible intervals and the red dashed line shows the MPD result. In the right hand plot, the red dotted lines show the target ($0.40B_0$) and soft limit ($0.20B_0$). Source: FNZ, 2024d).

Table 9 : Bayesian median (95% credible intervals) (MCMC) of B_0 and B_{2022} ('000t), and B_{2022} as a percentage of B_0 for SBW 6I for the three model runs (source: FNZ, 2024d).

Case	B_0 ('000t)	B_{2022} ('000t)	B_{2022} ($\%B_0$)	$P(>40\%B_0)$	$P(<20\%B_0)$
Base case	323 [292-369]	204 [144, 291]	63 [47-82]	<0.01	<0.01
Mfree	319 [294-365]	185 [124, 280]	58 [41-79]	<0.01	<0.01
Tvary	345 [310-400]	196 [138, 278]	57 [42-74]	<0.01	<0.01

Projections

Five-year projections (2022-2027) were undertaken with catches equal to the average catch during 2020-21-2022-23 (18,200t) or the TACC (39,200t) and for two recruitment scenarios: (i) long-term recruitment (1960-2021) and (ii) recent recruitment (2012-2021). Projected mean sizes-at-age were assumed to be equal to the average of the estimated sizes-at-age for 2018-2022. The probability of dropping below the soft limit ($0.2B_0$) was low (2%) for the recent average catch but increased with time for catches equal to the TACC. This probability exceeded 0.2 by 2026-27 if future recruitment was best represented by the long-term series and by 2027-28 if future recruitment was best represented by the recent series.

Recommendations P1

- Age-compositions for the pot fishery for LIN 6B should be collected and included in future assessments.
- Retrospective and historical analyses should be included in stock assessment reports.

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4.2 Principal 2

4.2.1 Observer coverage

Fisheries New Zealand (FNZ) observers are deployed on commercial fishing vessels to carry out biological sampling, monitor environmental interactions, and observe and record compliance with a range of regulatory and non-regulatory management measures. An important function is to collect data on incidental catches and mortalities of endangered, threatened and protected (ETP) species. The monitoring of ETP captures is administered and funded by the Department of Conservation (DOC) through levies recovered from quota owners.

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

Fisheries New Zealand (FNZ) 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. Table 8 summarizes the latest available information related to observer coverage in the hoki, hake and ling trawl fishery, the southern blue whiting trawl fishery, and the ling longline fishery.

Table 8: 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

4.2.2 Retained and by catch species

There is no new compilation of catch composition in the fisheries since the last surveillance audit, with the last year of compilation being 2022-23 (SNZ, 2024a, 2024b, 2024c). There is thus no new information on the catch composition for the fisheries. The primary retained species for the trawl fisheries for hake, hoki and ling other than hake, hoki and ling therefore remain silver warehou and white warehou but these species make up less than 5% of the catch of the combined fishery. There are no primary retained bycatch species in the fisheries for southern blue whiting other than southern blue whiting.

The primary bycatch species for the trawl fisheries for hake, hoki and ling therefore remain rattails, javelinfish and spiny dogfish. There is a broader set of primary retained and bycatch species in the longline fishery for ling other than ling (spiny dogfish, ribaldo, skates [smooth and rough], black cod, sea perch. Pale ghost shark, red cod, and shovelnose dogfish). There is no updated stock assessment information for these species.

4.2.3 ETP Species

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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 information about the capture method (being warp or door, deck, net, mitigation device for trawlers), the identification method (observer, necropsy, imputation, photograph), the status (dead or alive), the fishing method and declared target species (which allows distinction among UoAs), vessel size, fishing area, location of capture, mitigation equipment used and whether the record is included in further analysis.

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)

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) and NPOA Seabirds (FNZ, 2020)

4.2.4 Habitats

Broad scale habitat maps indicate that sand, mud and gravel are the primary habitat types in the fishery. Benthic habitats and communities are impacted to varying extents by the impact of trawling depending on a range of factors, including:

- the type of gear used (design and weight) and the towing speed,
- features of seafloor habitats, including their natural disturbance regimes,
- the species present,
- the frequency and intensity of fishing, and
- the trawl footprint

Geospatial position reporting (GPR) devices, for position reporting, are required to be installed and operational on commercial fishing vessels. Data are therefore available to monitor the trawl footprint of the hoki/hake/ling fishery. Footprint data illustrates that the fishery operates in the 200-800m depth range and primarily fishes within the historic footprint (i.e., the same grounds are fished year-on-year).

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 (Fisheries New Zealand, 2019b).

All vessels have GPR systems installed, and the trawl footprint of New Zealand's trawl fisheries is assessed annually to monitor interactions with benthic habitats. The trawl footprint has been determined for each year commencing in 1989-90 for all the main deep water target fisheries (Seafood New Zealand, 2023a).

Habitats research & innovation

Fisheries New Zealand and Seafood New Zealand have jointly developed a Draft Fisheries Industry Transformation Plan, one of the main objectives of which is to strengthen environmental performance through '*investing in innovation to accelerate selective fishing and further reduce benthic impacts and protected species interactions*' (FNZ, 2023). This will be achieved via the establishment of a joint industry/government project to source and develop technology that minimises adverse impact on the ocean floor to the maximum extent practicable through incentivising and facilitating

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fast adoption of proven efficient and environmentally sustainable fishing gear and methods by fishers. Government will facilitate this initiative by reviewing regulatory barriers to fishing innovation

Another example is the development in New Zealand of [DeepSet](#), a trawl-net-attached camera which uses machine-learning algorithms to identify species entering a trawl net and for this information to be transmitted to the vessel in near-real-time. This allows operators to quickly identify and reduce catches of non-fish protected species and non-target fish species (Radcliffe, 2023).

An initiative, implemented by Fisheries New Zealand and the Department of Conservation in 2022, is the Forum to Manage the Effects of Bottom Trawling, which will make recommendations on potential management measures to avoid, remedy or mitigate any adverse effects of trawling on the benthic environment (FNZ & DOC, 2022). Forum members included representatives from eNGOs, the fishing industry and Maori. The primary approach to achieving the Forum objectives is to identify potential additional areas for closure as a basis for protection of sensitive benthic habitats and communities. Analyses using species distribution modelling have identified potential 'coral hotspots' (Anderson et al., 2023), for consideration by the Forum.

4.2.5 Ecosystem

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 (Fisheries New Zealand, 2022b). Ecosystem modelling of the Chatham Rise food web has been conducted since the mid-2000s (see Fisheries New Zealand, 2022b).

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. 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.

4.3 Principal 3

4.3.1 Overview of management information

New Zealand's fisheries management is centred on the Quota Management System (QMS), a system introduced in 1986 based on Individual Transferrable Quota (quota), Total Allowable Catch (TAC) limits and Total Allowable Commercial Catch (TACC) limits. The QMS is administered by MPI through the Fisheries Act 1996.

At an operational level, these fisheries are managed in accordance with the National Fisheries Plan for Deepwater Fisheries (FNZ, 2019). There are species-specific chapters for hake, hoki and ling within this plan (MPI, 2010a; MPI, 2011; MPI, 2013).

The National Deepwater Plan consists of three parts:

- Fisheries management framework and objectives,
- an Annual Operational Plan (AOP), and
- an Annual Review Report.

The deepwater fisheries management system undergoes periodic reviews to ensure it is able to deliver on its objectives and to identify opportunities to maximise its effectiveness. The most recent review was conducted during 2018 (IQANZ, 2018).

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4.3.2 Fisheries Change Programme

The programme has three parts:

- Introducing mandatory electronic catch and position reporting to improve the collection and reliability of fisheries information
- Changing fishing rules and policies to make them simpler, fairer and more responsive, while also incentivising better fishing practice
- Improving monitoring and verification capabilities, including the use of on-board cameras, to better observe fishing practice. (<https://www.mpi.govt.nz/fishing-aquaculture/commercial-fishing/fisheries-change-programme/>)

The Fisheries Amendment Act has been passed into law with the vision that it will encourage better fishing practices, and modernise and strengthen New Zealand's fisheries management system.

4.3.3 Collaboration

In 2006, Seafood New Zealand Deepwater Council (DWC, then DWG) and Fisheries New Zealand (FNZ then MPI), entered into a formal partnership to enable collaboration in the management of New Zealand's deep-water fisheries. This partnership was updated in 2008 and 2010 (MPI, 2010), and has directly facilitated improved management of the hake/hoki/ling trawl fisheries.

FNZ and the Department of Conservation (DOC) actively consult with interested parties to inform management decisions through their open scientific working groups and public consultation processes.

4.3.4 Compliance & enforcement

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
2. Assisted compliance
3. Directed compliance
4. Enforced compliance

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 Defense Force. FNZ 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.

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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.

4.3.5 Fisheries plan

The National Fisheries Plan for Deepwater and Middle-depth fisheries is a statutory document approved by the Minister of Fisheries. This Plan provides an enabling framework outlining agreed management objectives, timelines, performance criteria and review processes. There is a fisheries-specific chapter for the southern blue whiting fisheries within this Plan.

4.3.6 Research plans

Research needs for deepwater fisheries are driven by the objectives of the National Fisheries Plan for Deepwater Fisheries and delivered through the Medium-Term Research Plan for deepwater fisheries (MTRP), (FNZ, 2020d). The MTRP provides a five-year schedule of science and monitoring projects (e.g., biomass surveys and stock assessments), required to support the sustainable management of deepwater fisheries.

All research projects are reviewed by FNZ's Science Working Groups and assessed against FNZ's Research and Science Information Standard for New Zealand Fisheries (MFish, 2011) and the Harvest Strategy Standard (MPI, 2008).

Recommendations P3

- Fishery specific chapters for hoki, hake, ling and SBW should be updated
- An external review of the management system should be initiated

5. Client Action Plan

As there are no conditions no Client Action Plan is required. However the client did provide situation reports for all the fisheries

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6 Appendices

6.1 Evaluation processes and techniques

6.1.1 Site visits

During the week of 23-28th February 2025 stakeholders attended meetings both in person and remotely. The CAB auditors, 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 all attended. No NGOs wished to be involved nor wrote any submissions. Meetings involved discussions on the surveillance audit and a reassessment of these fisheries.

6.1.2 Stakeholder participation

Identified stakeholders were contacted by LRQA and the client and invited to participate in this audit. For five days meetings in person and remote were held to discuss the audit and the reassessment. Views of the client were actively sought on

- Any changes in information provided in the scope declaration
- Changes to the UoAs and their management
- There were no open conditions
- Any changes in traceability
- Any significant changes in the UoAs.

Information was sought on

- Changes in management system
- Changes in regulations
- Personnel changes
- Potential changes to scientific information
- Changes effecting traceability

Stakeholders- scientist's, fishery managers and industry all contributed.

Unfortunately, no NGOs wished to engage

6.1.3 Stakeholder input

No written submissions were received

6.2 Surveillance program

These fisheries are being reassessed. The ACDR was published on the 23rd January 2025 and site visit 24-28 February.

The new surveillance program will be presented in the reassessment report

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6.4 Assessment Team – biographies/summaries of CVs (optional)

Full CVs are available from the CAB LRQA

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