



# Southern Blue Whiting Situation Report

Prepared for the 2<sup>nd</sup> MSC Surveillance Audit 2021



deepwater  
group

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### Purpose of this report

This report provides an update on two southern blue whiting Units of Certification (UoC): SBW 6B Bounty Platform and SBW 6I Campbell Island Rise, and supplements the information previously provided for the first surveillance audit in 2019.

It is Deepwater Group Limited's (DWG) submission that these two southern blue whiting trawl fisheries continue to conform with the MSC Fisheries Standard (FCR V1.3) as evidenced in the following updated information and references.

### Overview of fishery MSC Certification

#### Southern blue whiting certification details

Certification date	Initial Certification: September 2014 Recertification: September 2018 (synchronised with Hoki)
Stock areas	UoC 1: Bounty Platform (SBW 6B) UoC 2: Campbell Island Rise (SBW 6I)
Species	<i>Micromesistius australis</i>
Method/gear	Mid-water and bottom trawling

#### Fishery background

Southern blue whiting is a benthopelagic species found in sub-Antarctic waters south of New Zealand on the Campbell Plateau and Bounty Platform. During August and September, fisheries occur on the dense spawning aggregations at depths between 300 – 600 m.

They are fast-growing, reaching 20 cm within the first year and 30 cm after two years, although years of high recruitment may be marked by slightly slower growth. Sexual maturity occurs at between 3-4 years of age. Southern blue whiting fisheries are characterised by episodic recruitment events, where roughly once a decade recruitment events substantially exceed the long-term average. As a result, year-class strengths, and fishable biomass, can be highly variable.

### P1 Overview of Stock Status Information

#### Stock status, TACC & catches

##### UoC 1 – Bounty Platform (SBW 6B)

A stock assessment was completed for the Bounty Platform stock in 2014 using data up to 2013 from local area acoustic surveys of aggregations and the general-purpose stock assessment program, CASAL with Bayesian estimation. However, preliminary model runs did not provide satisfactory fits to both the high local area aggregation acoustic biomass estimates observed in 2007– 2008 and the lower local area aggregation biomass estimates observed since 2009.

Development of the assessment then focused on evaluating models with different assumptions that allowed a comparison of the extent to which the high biomass and subsequent decline

were fitted. However, these proved unsuccessful and the stock assessment was rejected by the Working Group in favour of developing a harvest control rule.

An HCR that would lead to a low risk of the stock falling below the soft limit reference point of 20%  $B_0$  was developed and used the most recent acoustic index of abundance as an absolute measure of abundance (Doonan, 2017, 2018; FNZ, 2020). A fishing vessel completed acoustic surveys at the Bounty Platform from 2014 to 2017, but surveys in 2018, 2019 and 2020 were unsuccessful, due operational constraints (limited time on the grounds) and absence of aggregations suited to acoustic surveying. As a result, the HCR has not been updated since 2018. The TACC was reduced as a precautionary measure for the 2020-21 fishing year (MPI, 2020, 2020a).

**Table 1: Extract from Minister's Decision Letter – SBW 6B TACC reduction from 1 April 2020 (MPI, 2020a).**

Stock		TAC (t)	TACC (t)	Allowances (t)		
				Customary	Recreational	Other mortality
SBW 6B Bounty Platform	Old	3,209	3,145	0	0	64
	New	2,888 ↓	2,830 ↓	0	0	58 ↓

The stock would seem to be undergoing a period of decline, with the 2012 year-class being the most recent noteworthy recruitment pulse into the fishery. The TACC was substantially under-caught in the 2018-19 and 2019-20 fishing years, likely due to a combination of factors including the lower stock size and the fact that this is a low-value fishery where decisions to fish it are influenced by timing and economics, since the season in August overlaps with the more valuable west coast hoki spawn fishery.

Should survey biomass information not be forthcoming from the fishery during 2021 as a basis for updating the HCR, FNZ has signalled there will be a further precautionary TACC review prior to the 2022-23 fishing year.

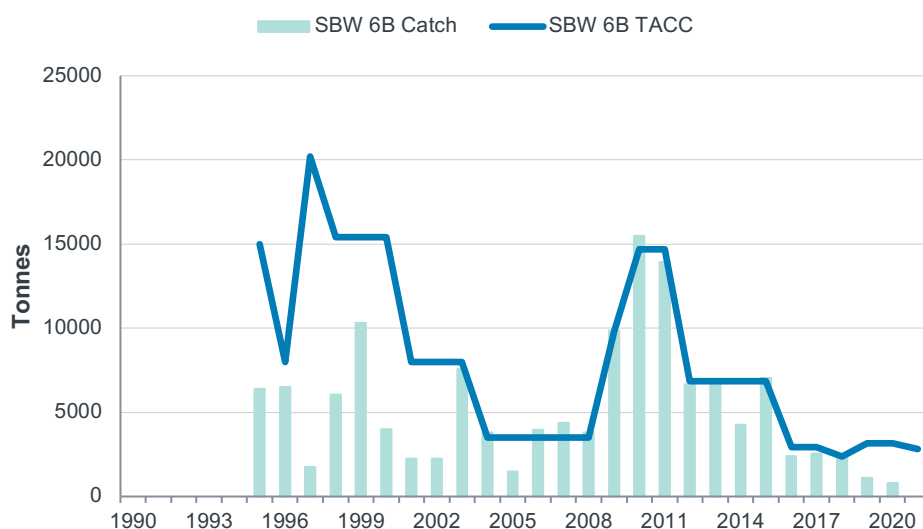
In the interim, DWG has developed the following management actions for implementation towards an understanding of stock status (DWG, 2021):

- An assessment of stock status using existing data sources to provide a proxy MSY estimate (e.g. MAY or MCY) for the stock as supporting rationale for a 2022-23 TACC review. Terms of reference for this work have been drafted and a service provider is being sought.
- Development of a formalised recruitment monitoring plan involving scientific observer protocols for collection of length-frequencies and otoliths during the short, annual fishing season
- Analysis of historical observer data to establish 'time and place' of peak spawning as a basis for optimising survey timing and design.

In summary, DWG is of the view that while SBW 6B stock status is currently uncertain, a precautionary management approach is in place to guard against further stock depletion.

Update on stock status (Doonan, 2018)	Harvest control rule based on simulations of an age-structured model estimated that stock status was Likely (>60%) to be below target
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	<i>F</i> and overfishing was Unlikely (<40%) to be occurring. No post-2018 update on stock status is available.
TACC 2020-21	2,830 t
TACC 2019-20	3,145 t
TACC 2018-19	3,145 t
TACC 2017-18	2,377 t
UoA share of TACC	100%
UoC share of TACC	87%
SBW 6B catch 2019-20	788 t
SBW 6B catch 2018-19	1,101 t
SBW 6B catch 2017-18	2,423 t



**Figure 1: Total Allowable Commercial Catches and reported catches for SBW 6B**

#### UoC 2 – Campbell Island Rise (SBW 6I)

A stock assessment of the Campbell Island Rise stock was undertaken in 2020 using research time series of abundance indices from wide-area acoustic surveys from 1993 to 2019 and proportion-at-age data from the commercial fishery. New information included a wide-area acoustic biomass survey of Campbell Island Rise in 2019, which produced an adult biomass estimate of 91,000 t. This was a slight (6%) decrease from the 2019 survey but was the fourth highest in the time series (Ladroit et al., 2020). Biomass surveys here are biennial.



The general purpose stock assessment program, CASAL was used and the approach, which used Bayesian estimation, was the same as that adopted by Roberts & Hanchet (2019). Year class strengths were estimated from 1958 and the catch history extended back to 1971, the first year of reported catches. The 2020 model produced similar estimates of status to the old model, but it also produced stable estimates of natural mortality when using Markov Chain Monte Carlo (MCMC) methods (Doonan, 2020; FNZ, 2020).

Update on stock status (Doonan, 2020)	$B_{2020}$ was estimated at 56% $B_0$ and Very Likely (>90%) to be at or above the target of 40% $B_0$ .
TACC 2020-21	39,200 t
TACC 2019-20	39,200 t
TACC 2018-19	39,200 t
TACC 2017-18	39,200 t
UoA share of TACC	100%
UoC share of TACC	87%
SBW 6I catch 2019-20	26,517 t
SBW 6I catch 2018-19	15,147 t
SBW 6I catch 2017-18	18,334 t

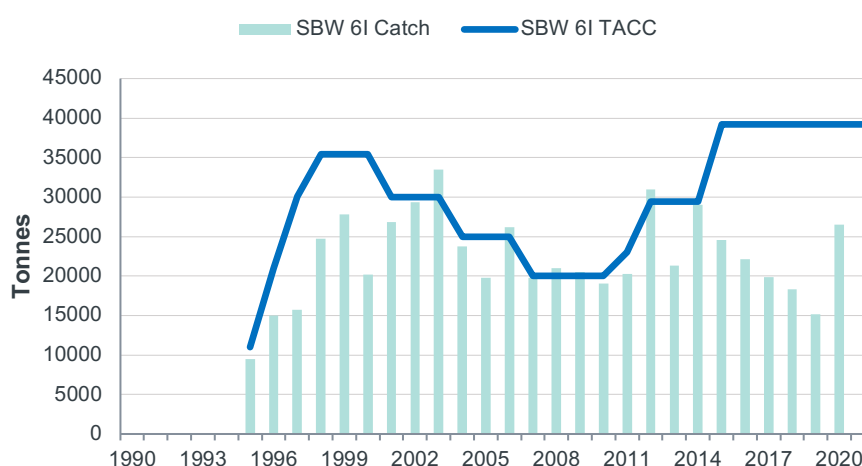


Figure 2: Total Allowable Commercial Catches and reported catches for SBW 6I<sup>1</sup>

<sup>1</sup> Southern blue whiting stocks are characterised by sporadic recruitment pulses and highly variable year-class strengths. Fisheries are characterised by high catches when strong year-classes enter the fishery, followed by gradual declines as these year-classes are fished down over time.

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### Key P1 references

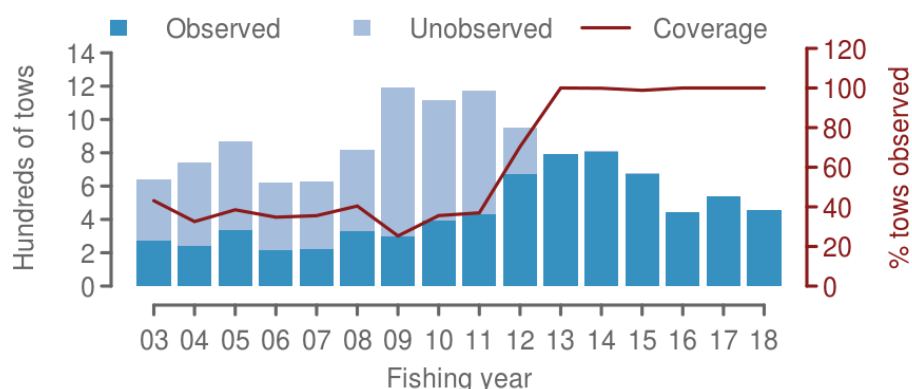
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## P2 Overview of Environmental Information

### Observer Coverage

Note: FNZ has recently contracted an alternative service provider to maintain the Protected Species Database. Data trends, as in the figures below, are currently not accessible for the years post-2018.

Southern blue whiting fisheries have been subject to 100% observer coverage as of the 2012-13 fishing year (Fig. 3), (Dragonfly, 2019).



**Figure 3: Fishing effort and observer coverage in all southern blue whiting fisheries 2002-03 to 2017-18.**

**Table 1: Fishing effort and observer coverage in SBW 6B and SBW 6I fisheries in 2018-19 and 2019-20 (FNZ, pers. comm.).**

Fishery	QMA	2018-19			2019-20		
		Observed tows	total tows	% tows observed	Observed tows	total tows	% tows observed
Southern blue whiting	SBW 6B	152	152	100%	14	14	100%
	SBW 6I	596	596	100%	334	334	100%

### Retained & bycatch species

The southern blue whiting fishery is characterised as a “clean” fishery with bycatch comprising less than 1% of the total catch, on average. Bycatch estimates over the most recent five-year period for which data are available (i.e. 2013-14 to 2016-17), reveal that between seven and 16 species have had catches of greater than one tonne per annum, of which 11 are managed within the Quota Management system. During this period, bycatch has been dominated by five species: ling (147 t), porbeagle shark (104 t), hoki (87 t), hake (80 t) and opah (55 t), with all but opah being QMS species (Finucci et al., 2019).



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### ETP species capture mitigation

In addition to FNZ's Operational Plan to Manage the Incidental Capture of New Zealand Sea Lions in the Southern Blue Whiting Fishery, Campbell Islands (SBW6I), DWG's members have agreed to implement several initiatives aimed at mitigating the capture of endangered, threatened and protected species. These include (DWG, 2021):

- Operational Procedures (OPs)
- Vessel Management Plans (VMPs)
- Marine Mammal Operational Procedures (MMOPs)
- 10 Commandments for SBW Fisheries
- A seasonal Vessel Advisory Memo to Deepwater Fleet, (DWG, 2019, 2020)

Deepwater Group has developed a mobile App to enable vessel operators, vessel managers and skippers to easily access all of the current, agreed Operational Procedures that are in place for mitigating ETP species captures by the trawl fleet. By scanning DWG's QR code, a smart-phone app is downloaded where all of the Operational Procedures can be accessed.

DWG's Environmental Liaison Officer (ELO) visited all factory vessels involved in the SBW fisheries prior to the 2018-19 and 2019-20 seasons. His objectives and tasks prior to and during the fishing season include 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
- For SQU and SBW seasons, ensure the full fleet adheres to the SLED audit programme:
  - Maintain updated database of all SLEDs
  - Provide FNZ with a summary of all SLED certifications
  - Monitor in season SLED damage, repairs and re-certification
- 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 DWG programmes to new skippers and/or vessel operators who have moved to new fisheries or have started on new vessels.
- Produce an end-of-year summary report to DWG, 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 (Cleal, 2019, 2020).

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Southern blue whiting trawlers operate in areas where there is an abundance of seabirds and marine mammals and a great deal of time and energy goes into ensuring these interactions are kept at a minimum. As a consequence of the 100% observer coverage on vessels targeting southern blue whiting from the 2012-13 fishing year, there is a high degree of confidence around the reported numbers of ETP species captures. A summary of ETP species captures during 2018-19 and 2019-20 fishing years is provided below (Table 2).

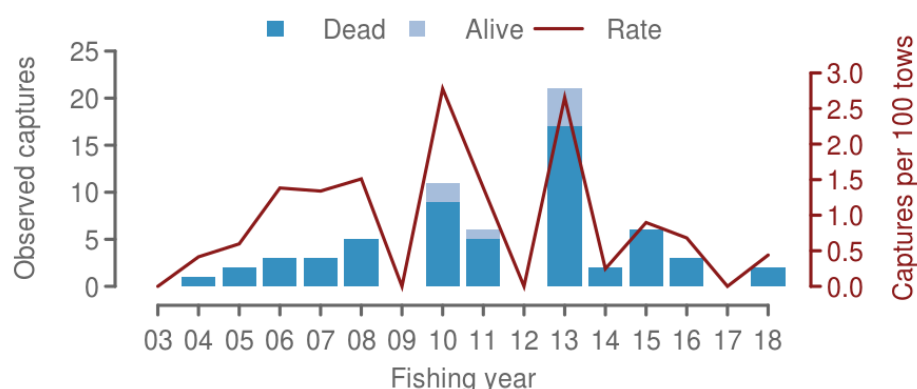
**Table 2: Industry-reported incidental captures of non-fish species in the southern blue whiting fisheries during 2018-19 and 2019-20.**

Target fishery	2018/19				2019/20			
	Seabirds	Sea lions	Fur seals	Dolphins/whales	Seabirds	Sea lions	Fur seals	Dolphins/whales
SBW	7	0	11	0	9	1	8	0

### New Zealand sea lions

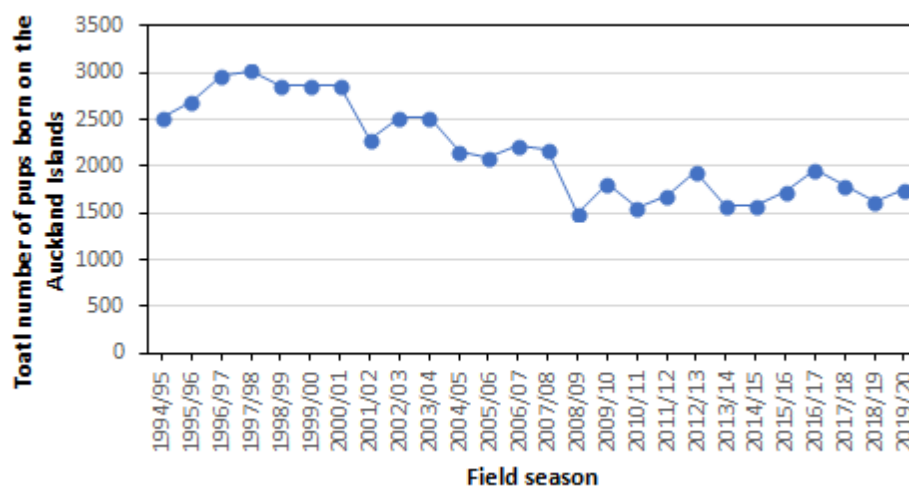
The New Zealand sea lion is listed as 'Threatened – Nationally Vulnerable' (Baker et al., 2019). A New Zealand Sea Lion Threat Management Plan (TMP) was finalised in 2017 (DoC, 2017) with a vision to "promote recovery and ensure the long-term viability of New Zealand sea lions".

There were 12 reported incidental captures of New Zealand (NZ) sea lions in the southern blue whiting trawl fisheries in the five-year period from 2013-14 to 2017-18 (Fig. 4), (Dragonfly, 2019), zero captures in 2018-19 and one in 2019-20 (Table 2). All captures by these fisheries were incorporated into the TMP and were not considered to pose a threat to the sea lion population (DOC, 2017).



**Figure 4: Observed captures of sea lions in southern blue whiting fisheries 2002-03 to 2017-18 (Note: 100% observer coverage from 2013).**

Following an unexplained decline in pup counts between 2007-08 and 2008-09, annual pup production has been relatively stable over the 12-year period 2008-09 to 2019-20 (Melidonis & Childerhouse, 2020), (Fig. 5).



**Figure 5. Total estimated sea lion pup production at the Auckland Islands (all colonies combined) 1994-95 to 2019-20.**

The use of sea lion exclusion devices (SLEDs) is a mandatory for all southern blue whiting vessels in the SBW 6I fishery.

A summary of performance against the SBW Operational Plan for managing the incidental capture of sea lions during the 2018-19 season at Campbell Island (SBW 6I) noted the following (FNZ, 2019):

- 14 vessels participated in the fishery during 2019 and each carried at least one MPI observer (i.e. 100% observer coverage)
- Observers reported the level of adherence with the VMPs and the MMOPs was excellent
- SLEDs were used for all tows
- No sea lions were captured in 2019.

A summary of performance against the SBW Operational Plan for managing the incidental capture of sea lions during the 2019-20 season at Campbell Island (SBW 6I) noted the following (FNZ, 2020):

- Nine vessels participated in the fishery during 2020 and each carried at least one MPI observer (i.e. 100% observer coverage)
- Observers reported the level of adherence with the VMPs and the MMOPs was excellent
- One sea lion was captured in 2020 and was successfully released alive.

Fisheries New Zealand's Operational Plan to Manage the Incidental Capture of New Zealand Sea Lions in the Southern Blue Whiting Fishery, Campbell Islands (SBW6I), is reviewed annually and is distributed to all vessel operators prior to season commencement (FNZ 2020a). The Operational Plans set out the stringent requirements for vessels operating in the fishery including:

- Requirement to carry two SLEDs built and approved by certified manufacturer
- Carrying of observers at all times

- Prior notification of vessel departures.

The OP requires the fleet to leave the fishery should the following occur:

- A limit of 12 female sea lion mortalities is reached, or
- 25 total sea lion mortalities occurs.

Prior to each August-September fishing season<sup>2</sup>, DWG's Environmental Liaison Officer (ELO) ensures that all vessels have up-to-date VMPs and MMOPs aboard and ensures all SLEDs are checked and approved by a nominated net-shed. A total of 42 SLED audit forms were processed prior to commencement of the 2018-19 southern blue whiting fishing season and there were 5 SLED checks during the fishing season (Cleal, 2019). During 2019-20 a total of 100 SLED checks were undertaken prior to commencement of the 2019-20 southern blue whiting and squid fishing seasons (Cleal, 2020).

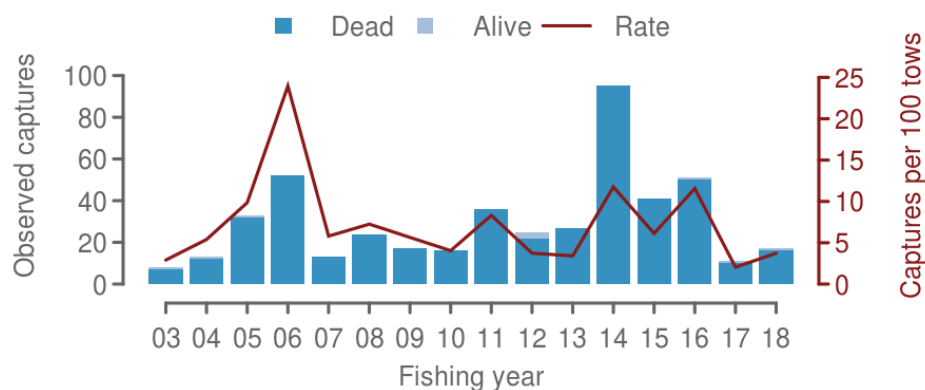
The ELO provides vessel owners and operators with the following information as a reminder of the strategies and actions required to reduce the fleet's interactions with sea lions (and all ETP), (DWG, 2021):

- DWG memo to SBW 6I vessel skippers: sea lion risk management actions
- FNZ Operational Plan for SBW 6I sea lion risk mitigation
- DWG Marine Mammal Operational Procedures.

### New Zealand fur seals

The New Zealand fur seal is classified as "Not Threatened" under the New Zealand Threat Classification System in 2019 (Baker et al. 2019).

Observed fur seal captures for the period 2002-03 to 2017-18 are provided below (Fig. 6).



**Figure 6: NZ fur seal captures and capture rates in southern blue whiting fisheries 2002-03 to 2017-18.**

<sup>2</sup> The SBW fishing year runs from 1 April – 31 March, SBW fishing occurs during August-September, and the 2018 season falls into the 2017-18 fishing year. HOK, HAK & LIN fishing years run from 1 October – 30 September.

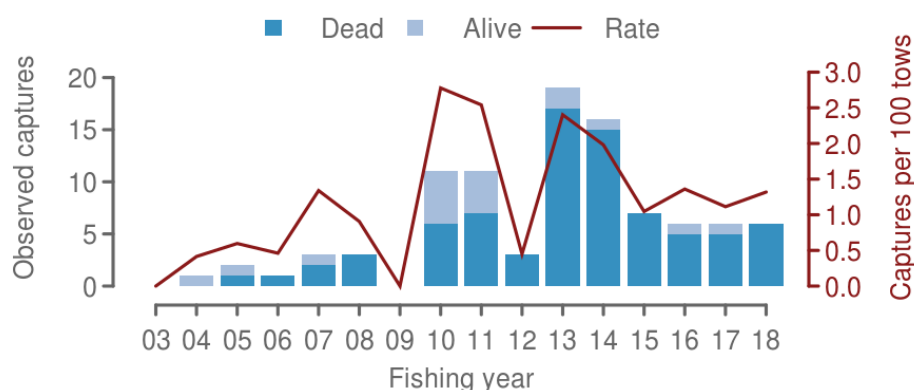
In the 2018-19 and 2019-20 fishing years there were 11 and 8 reported captures respectively of New Zealand fur seal in southern blue whiting trawl fisheries (FNZ, pers. comm.). Most captures were from the SBW 6B fishery which is prosecuted within range of a large fur seal colony comprising approximately 20,000 animals (DOC, 2019), on the Bounty Islands.

NZ fur seals are distributed over a very extensive area, including all of the sub-Antarctic islands, and their numbers are believed to be increasing across their range.

A recent experiment to investigate the use of drone technology for conducting affordable aerial photographic surveys of fur seal colonies on distant islands has proved very successful, which bodes well for future population censuses (Rexer-Huber & Parker, 2020).

### Seabirds

Very low numbers of seabirds are incidentally caught by southern blue whiting fisheries, averaging around 5 per year in recent years (Fig. 7). Most seabirds captured in the SBW fisheries are grey petrels, of which there are an estimated 53,000 breeding pairs on the Antipodes Islands and their conservation status in 2013 was moved from 'at risk-declining' to 'at risk – naturally uncommon' (Bell, 2013).



**Figure 7: Observed incidental captures of seabirds in southern blue whiting fisheries and capture rates per 100 tows, 2002-03 to 2017-18.**

In 2018-19 and 2019-20 there were seven and nine observed seabirds captures respectively in southern blue whiting trawl fisheries. As there is 100% observer coverage in these fisheries, there is a high degree of confidence in these figures. This high level of observer coverage is scheduled to continue, as are the seabird mitigation measures guided by the updated NPOA seabirds (FNZ, 2020b,c,d,e).

### Whales & dolphins

There have been no observed or reported whale or dolphin captures in the southern blue whiting fisheries.

### Sharks

A recent study which modelled the relationship between basking shark records and environmental variables and biotic (zooplankton distribution) variables found areas of high habitat suitability around the Bounty Islands and Auckland Islands (Finucci et al., 2020). However, the only recorded capture of a basking shark by the southern blue whiting fleet has been of a single animal in the SBW 6B Bounties area during the 2016 fishing season, and there

have been no further captures through to 2019-20 (Table 3), (FNZ, pers. comm.). There have been no reported captures of white pointer shark (great white) by southern blue whiting fisheries.

**Table 3: Industry-reported ETP shark captures in SBW fisheries during 2018-19 and 2019-20 (BSK, basking shark; WPS, white pointer shark).**

Fishery	2018/19		2019/20	
	BSK	WPS	BSK	WPS
SBW	0	0	0	0

### Corals

Protected coral bycatch has been negligible in southern blue whiting fisheries even though most trawls occur on or close to the seabed for at least part of the time. Around 99% of trawl tows are undertaken using midwater nets, which are fished both on the bottom and in midwater, and it is estimated that around 56% of tows occur on the seabed (FNZ 2020f, SBW Chapter). The light groundrope used on these midwater nets is likely to be much less impactful than the heavier bobbin-rigs used on conventional bottom trawls. No corals were reported captured during 2018-19 and 2019-20 (Table 4), (FNZ, pers. comm.).

**Table 4: Industry-reported coral catch by southern blue whiting fisheries in 2018-19 and 2019-20 (FNZ, pers. comm.).**

ETP corals catch	2018-19	2019-20
	SBW	SBW
Coral catch (kg)	0	0
No. tows with coral	0	0
No. observed tows	748	348
% tows with coral	0.00%	0.00%
Catch rate (kg/tow)	0	0

### Benthic interactions

The trawl footprint of New Zealand's trawl fisheries is assessed annually to monitor their interactions with the benthic habitat (Baird & Mules, 2020). The trawl footprint has been determined for each year, commencing in 1989-90, for all the main deep water target fisheries including southern blue whiting.

For the 2017-18 and 2018-19 fishing years, southern blue whiting bottom tows had estimated footprints of 732 km<sup>2</sup> and 757 km<sup>2</sup> respectively, which represented coverage of < 0.1% of the Fishable Area within the EEZ and Territorial Sea (i.e. 0-1,600 m depth), (Baird & Mules, 2020). The fishing grounds are well-established and very little new ground is traversed each year (Table 5).



**Table 5: Trawl footprint, percentage of fishable area trawled, and new area trawled by southern blue whiting fisheries in 2017-18 and 2018-19.**

Fishery	2017-18			2018-19		
	Trawl footprint (km <sup>2</sup> )	% Fishable Area (0-1600 m)	New Area Trawled (km <sup>2</sup> )	Trawl footprint (km <sup>2</sup> )	% Fishable Area (0-1600 m)	New Area Trawled (km <sup>2</sup> )
SBW	732	0.05%	0.3	757	0.05%	10.9

New Zealand's strategy to guard against adverse impacts on the benthic environment includes multiple area closures in the EEZ. A total of 17 Benthic Protection Areas (BPAs), representatively distributed around the EEZ, and 17 'seamount' closures, collectively close 30% of the EEZ to bottom fishing (Helson et al., 2010). The area closures protect:

- 28 percent of underwater topographic features (including seamounts)
- 52 percent of seamounts over 1000 metres in height
- 88 percent of known active hydrothermal vents.

Aquatic environment and biodiversity research initiatives related to the benthic effects of fishing are detailed in the Annual Operational Plan for Deepwater Fisheries (FNZ, 2020g) and include the following:

- The extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone (trawl footprint), (Project BEN2020-01)
- The extent and intensity of trawl effort on or near underwater topographic features in New Zealand's Exclusive Economic Zone (Project BEN2020-07).

### Key P2 references

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### **P3**

#### **Overview of management information**

#### **Legal & customary framework**

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.

Quota provides a property right to access commercial fisheries and has been allocated to Maori as part of the Treaty of Waitangi Settlements that acknowledge the Treaty guaranteed Maori *“full exclusive and undisturbed possession of their...fisheries.”*

Quota is a tradable property right that entitles the owner to a share of the TACC. At the commencement of each fishing year, quota gives rise to Annual Catch Entitlements (ACE) which are tradable, expressed in weight, and entitle the holder to land catch against them. The QMS enables sustainable utilisation of fisheries resources through the direct control of harvest levels based on the best available science. The QMS is administered by MPI through the Fisheries Act 1996.

New Zealand has implemented one of the most extensive quota-based fisheries management systems in the world, with over 100 species or species-complexes of fish, shellfish and seaweed now being managed within this framework. Almost all commercially targeted fish species within New Zealand's waters are now managed within the QMS.

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:
  - Part 1A - strategic direction for deepwater fisheries
  - Part 1B - fishery-specific chapters and management objectives at the fishery level
- Annual Operational Plan (AOP) – detailing the management actions for delivery during the financial year
- Annual Review Report – reporting on progress towards meeting the five-year plan and on the annual performance of the deep water fisheries against the AOP.

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 in 2018 (IQANZ, 2018).

#### **Collaboration**

In 2006, DWG and 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 through:

- A close working relationship under a shared and agreed vision, objectives and collaborative work plans

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- Real-time, open communication between DWG and FNZ on information relevant to management measures, particularly from the FNZ Observer Programme and commercial catching operations.

FNZ and DOC actively consult with interested parties to inform management decisions through their open scientific working groups and public consultation processes.

### **Compliance & enforcement**

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
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 Fishery Officers carried out a total of 99 in-port and at-sea inspections for the period 1 January 2019 to 31 December 2020. 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 (Table 6), (MPI, pers. comm.).

**Table 6: Compliance inspections of deepwater fishing vessels by MPI Fishery Officers, 1 January to 31 December 2020.**

Year	Inspection type	Number of inspections		
		HAK/HOK/LIN trawl	LIN longline	SBW trawl
2019	In port (inshore vessels)	25	15	
	In port (deep-water vessels)	9	2	3
	At sea	6	6	0
	<b>Total</b>	<b>40</b>	<b>23</b>	<b>3</b>
2020	In port (inshore vessels)	10	9	
	In port (deep-water vessels)	9	1	1
	At sea	2	1	0
	<b>Total</b>	<b>21</b>	<b>11</b>	<b>1</b>
<b>Grand total</b>		<b>61</b>	<b>34</b>	<b>4</b>

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.

MPI Fishery Officers conducted three at-sea RNZN patrols in 2019. These patrols covered vessels operating on the East Coast of the North Island/Upper East Coast of the South Island and the West Coast South Island Hoki fishery. During these operations, a total of 88 vessels were boarded and inspected, observed by RNZN helicopter and/or hailed if boarding was not possible. Of the 88 vessels, 12 had been operating in the HOK, HAK, or LIN fisheries. The Fishery Officers were briefed to examine possible compliance risks in these fisheries including one or more of the checks listed above.

Due to the COVID-19 pandemic all NZ borders and entry ports were closed to non-residents in March 2020. This resulted in fewer in-port and at-sea inspections of fishing vessels throughout 2020 due to the tight restrictions of people movement and inspection criteria. In November 2020 one at-sea RNZN patrol was conducted in the Northland area. During the patrol, one LIN longline vessel was boarded and two trawlers with bycatch of LIN. No compliance issues were identified during these inspections.



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, 2019a; 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 DWG's Operational Procedures (DWG, 2021), which are industry-agreed, non-regulatory measures. 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 of the National Plans of Action for Seabirds (FNZ, 2020) and Sharks (MPI, 2013).

### **Fisheries plans**

The National Fisheries Plan for Deepwater Fisheries (FNZ, 2019) 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 fishery within this Plan (MPI, 2011).

The actual management measures and delivery outcomes in the Plan are specified in FNZ's Annual Operational Plan (AOP), (FNZ, 2020a), which is reviewed and updated annually. In addition, Annual Review Reports assesses performance against the AOP and are publicly available (FNZ, 2020b).

### **Research plans**

Research needs for deep water fisheries are driven by the objectives of the National Fisheries Plan for Deepwater Fisheries and delivered through the Medium-Term Research Plan for deep water fisheries (MTRP), (FNZ, 2020c). 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).

FNZ's Annual Operational Plan for Deepwater Fisheries 2020/21 (Tables 8-11 and 16) provides FNZ and DoC research projects to be undertaken during 2020-21 that relate to deep water species (FNZ, 2020a).

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