



Review of Sustainability Controls for the Bounty Platform Southern Blue Whiting Fishery (SBW 6B)

Consultation Document SBW 6B

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1 Executive Summary

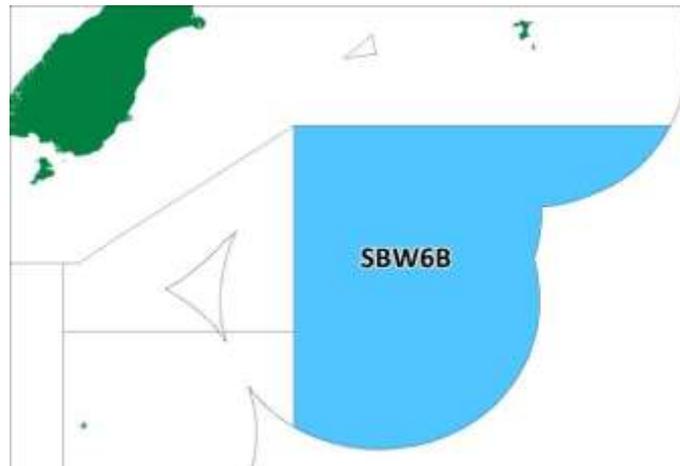


Figure 1: Quota Management Areas (QMAs) for southern blue whiting with SBW 6B highlighted

The Ministry for Primary Industries (MPI) is seeking information and views from tangata whenua and stakeholders to inform a review of catch limits for southern blue whiting in the Bounty Platform Quota Management Area (QMA) SBW 6B (see Figure 1). MPI is proposing to reduce the total allowable catch (TAC) for the fishery under section 13 (2A) of the Fisheries Act 1996.

Decreases to the TAC and total allowable commercial catch (TACC) are proposed based on the results of the 2016 acoustic survey which indicated that the biomass has continued to decline since the peak in 2007-08 and the current TAC and TACC are considered to be too high. Specific options are shown in Table 1.

Table 1: Proposed TACs, TACCs and allowances for SBW 6B (all values in tonnes)

	Allowances				
	TAC	TACC	Customary Māori	Recreational	Other sources of fishing-related mortality
Current Settings	3,000	2,940	0	0	60
Proposed Options					
Option 1	2,022	1,982	0	0	40
Option 2	2,426	2,377	0	0	49
Option 3	2,628	2,575	0	0	53

To the best of our knowledge, there is no known customary Māori or recreational take of southern blue whiting and it is proposed to retain zero allowances for these sectors. In addition, MPI proposes to maintain the allocation for other sources of fishing related mortality at 2% of the TAC. MPI is not proposing any changes to deemed value rates for SBW 6B.

2 Purpose

2.1 NEED FOR ACTION

Acoustic surveys to monitor spawning stock abundance are conducted by research providers between August and September each year in SBW 6B. The 2016 acoustic survey indicated that biomass has declined and is considered to be below the management target of 40% of

unfished biomass (40% B_0). Estimates of current annual yield (CAY) on the basis of that biomass estimate indicates that the current catch limit is too high for the stock to move towards a level that can produce the B_{MSY}^1 (maximum sustainable yield).

2.2 MANAGEMENT APPROACH

As a high value and high volume fishery, southern blue whiting is managed within the National Deepwater Plan² as a Tier 1 stock. A fisheries-specific southern blue whiting chapter of the National Deepwater Plan was finalised in 2011. The chapter details the management approach and operational objectives for the fishery.

The management approach for SBW 6B is to employ regular acoustic surveys as a key source of information for the estimation of stock status. From 2004 to 2016, a series of local area aggregation surveys have been carried out by industry vessels fishing at the Bounty Platform. These surveys enable regular biomass monitoring and TAC and TACC reviews.

The current reference points for southern blue whiting are the default targets and limits set out within the Harvest Strategy Standard for New Zealand Fisheries as described in Table 2.³ The management target of 40% B_0^4 is considered to be a conservative proxy for the biomass that would support the maximum sustainable yield for a species with the life history characteristics of southern blue whiting.

Table 2: Southern blue whiting default reference points and the associated management response.

Reference point	Management response
Management target of 40% B_0	Stock permitted to fluctuate around this management target. TAC changes will be employed to move stock toward or above target.
Soft limit of 20% B_0	A formal time constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B_0	The limit below which fisheries will be considered for closure.
Harvest control rule	Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points

In past years when the stock assessment model has not been accepted by the Deepwater Assessment Working Group (DWWG), an appropriate CAY has instead been calculated from the biomass estimate available at the time. The CAY is the estimate of one year of catch calculated by applying a fishing mortality level to an estimate of current fishable biomass.

In the past, the CAY was calculated as the fishing mortality (F) level that is equivalent to the natural mortality rate (M). $F=M$ was considered to be a conservative proxy for the fishing mortality that would result in the stock biomass moving to B_{MSY} . For southern blue whiting, M is estimated to be 0.2. The CAY was therefore estimated to be approximately 20% of the available biomass estimated from the acoustic survey. An option for a TAC reduction is presented on this basis (Option 1).

A management strategy evaluation was completed for SBW 6B in December 2016 which used simulation modelling to test the fishing mortality level that would be most appropriate to maintain (or recover) the stock to B_{MSY} and to ensure the stock is maintained above 20% B_0

¹ The average stock biomass that results from taking an average catch of the maximum sustainable yield

² http://www.fish.govt.nz/en-nz/Deepwater/National+Deepwater+Plan.htm#wbc_purpose=Basic%26WBCMODE

³ The Harvest Strategy Standard can be found at <http://fs.fish.govt.nz/Page.aspx?pk=104>

⁴ Virgin biomass, unfished biomass

for at least 90% of the time. The simulations tested a range of assumptions about the biology of the stock, including natural mortality rate and recruitment fluctuations. The management strategy evaluation suggested that a fishing mortality of 0.24 is appropriate to manage the SBW 6B stock. An option for a TAC reduction is presented on this basis (Option 2).

An upper bound of M considered in the management strategy evaluation for SBW 6B is $M = 0.25$. Assuming this level of M in the evaluation results in an estimate of fishing mortality of 0.26. An option for a TAC reduction is presented on this basis (Option 3).

3 Background Information

3.1 BIOLOGICAL CHARACTERISTICS OF SOUTHERN BLUE WHITING

Southern blue whiting (*Micromesistius australis*) is a relatively productive species that is generally confined to depths of 250-600 metres in sub-Antarctic waters to the south of New Zealand. This species exhibits fast growth, especially during the juvenile life stage.

Adult southern blue whiting form dense spawning aggregations at four known locations across the sub-Antarctic (Auckland Islands, Campbell Island, Pukaki Rise, and Bounty Platform). The available scientific information shows that these four spawning locations represent four distinct biological stocks.

New Zealand's southern blue whiting stocks are characterised by highly variable recruitment, often referred to as year class strength. Very strong year classes are observed infrequently and are separated by longer periods of average or below average recruitment. The variables that drive these fluctuations are poorly understood, but strong year classes can produce very large spikes in available biomass, providing short term utilisation opportunities. A challenge associated with these short term opportunities is increasing and subsequently decreasing harvest levels quickly in response to the changing biomass.

Southern blue whiting generally mature between two and four years of age, when they recruit to the spawning grounds (and the commercial fishery) for the first time. The age of first spawning is observed to increase in the strong year classes, which show signs of a density dependent response to high abundance.

3.2 FISHERY DESCRIPTION

Southern blue whiting was introduced to the quota management system (QMS) in 1999. Fisheries for southern blue whiting were initiated in the 1970s by the Soviet foreign licensed fleet. From 1992 until its introduction to the QMS, area catch limits were in place for the fishery allowing a total catch across all stocks of 32,000 tonnes. This limit increased to 58,000 tonnes in 1996. From 2000, the catch limit was set at 35,140 tonnes and has fluctuated under 50,000 tonnes until 2014/15 when it increased to 53,000 tonnes.

The southern blue whiting fisheries consist of four key stocks managed separately at: Auckland Islands (SBW 6A); Bounty Platform (SBW 6B); the main fishery at Campbell Island (SBW 6I); and a fourth at Pukaki Rise (SBW 6R). Current combined total catch limits for all southern blue whiting stocks is 50,148 tonnes. In recent years, total catches have been less than half of the total TACC. High catch rates are required to make these fisheries economically viable and a limited number of vessels have the operational capability to operate in the sub-Antarctic, resulting in limited effort in the fisheries and TACCs being

undercaught. Of the four main fisheries, only two (SBW 6B and SBW 6I) are regularly fished, those by only two to five vessels each year.

The Bounty fishery is focused on spawning aggregations which form during late August and September and began in earnest in the late 1980s, with catches reaching a peak of nearly 59,000 tonnes in 1991/92. The fishery has been variable over time. Occasional large recruitment events and subsequent decreases in biomass have occurred, leading to fluctuating catches over time. Catches varied around 2,000-5,000 tonnes until a very large year class recruited to the fishery in 2008/09. The total catch subsequently increased to 15,000 tonnes in 2009/10, and nearly 14,000 tonnes in 2010/11 before being reduced to 6,660 tonnes. Since that peak, the biomass has declined, and subsequently the TACC and catches have also declined. In the 2015/16 and 2016/17 fishery, only two vessels participated in the fishery because of the low TACC.

Based on the proportion of southern blue whiting landings taken in SBW 6B and a total estimated export value of \$23.5 million for southern blue whiting in the 2015 calendar year, SBW 6B has an estimated export value of \$2.4 million.

The southern blue whiting fishery, including fish harvested from SBW 6B, has been certified as sustainable by the Marine Stewardship Council⁵ since April 2012.

3.3 PREVIOUS REVIEWS

The TAC for SBW 6B is regularly reviewed, most often based on CAY calculations. TACs can fluctuate significantly to take advantage of periods of high recruitment, or respond when aggregations of the fish have disappeared, the reasons for which are unclear.

The most recent review was in 2015, when the SBW 6B TAC was reduced from 7,000 tonnes to 3,000 tonnes in response to an observed decrease in stock biomass. The TACC was proportionality decreased to 2,940 tonnes, and the allowance for other sources of fishing-mortality to 60 tonnes (2% of the TAC). A stock assessment in 2015 was not accepted by the Deepwater Working Group (DWWG), however it was considered that two model runs were useful to provide upper and lower bounds of a plausible stock status. This indicated that the stock was likely to be below the management target of 40% B_0 and would continue to decline.

3.4 SCIENCE INFORMATION

The most recent survey (October 2016) estimated the 2016 mid-season spawning stock biomass was approximately 6,400 tonnes. Biological sampling carried out during the fishery and the survey indicated that a new year class (2012) may be recruiting to the fishery but this is not certain. Recruitment is known to be highly variable and has not been detected in recent surveys of the SBW 6B stock.

4 Legal Considerations

4.1 SETTING MANAGEMENT MEASURES

MPI considers that the current level of the SBW 6B stock and the level of the stock that can produce the maximum sustainable yield (MSY) cannot currently be estimated reliably.

⁵ For more information about the Marine Stewardship Council and its certification processes, refer to <https://www.msc.org/>

Section 13 (2A) therefore applies when setting a TAC for SBW 6B. This paper provides the Minister with options that MPI considers satisfy his obligations under section 13 (2A). MPI considers that the proposed options are not inconsistent with the objective of maintaining the SBW 6B stock at or above a level that can produce MSY.

For SBW 6B, in the absence of a full stock assessment, stock status can only be approximately inferred. Using the southern blue whiting harvest strategy which notes that 40% B_0 is understood to be a conservative proxy for B_{MSY} , the best available information on current stock status indicates that it is below this level. The options for TAC reductions presented are likely to result in an increase in biomass but with variation in the rate of change.

Under section 13(3) of the Act, relevant social, cultural and economic considerations must be considered by the Minister in determining an appropriate way and rate to move the stock towards or above a level that can produce the MSY where applicable to limits set under section 13 (2A). There are economic considerations in relation to the options proposed. Larger TAC reductions have a more significant economic impact on the fishing industry

The TAC must be apportioned between the relevant sectors and interests set out under the provisions of section 21 of the Act. Section 21 requires the Minister to allow for Māori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

There is no known customary Māori or recreational take in SBW 6B; and as such, MPI proposes retaining nil allowances for these sector groups.

Currently, an allowance of 2% of the TAC exists to account for other sources of fishing related mortality. MPI proposes to retain this allowance of 2% for the 2017/18 fishing year.

4.2 FURTHER CONSIDERATIONS

When making a decision concerning the TAC for a stock under Section 13 (2A) of the Act, the Minister must have regard to interdependence of stocks, the biological characteristics (discussed above) and any environmental conditions affecting the stock.

Sections 9(a) and (b) also require the Minister to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

The key environmental interactions associated with SBW 6B are discussed below with reference to the likely impacts of the proposed management options.

4.2.1 Marine Mammals

The SBW 6B fishery overlaps with the foraging range of New Zealand fur seals which live on the Bounty Islands. Interactions between the SBW 6B fishery and fur seals are known to occur. However, it is not considered that the interactions of the SBW 6B fishery with New Zealand fur seals is having an adverse effect on the population. In 2017, research is planned to estimate fur seal population sizes which will benefit understanding of any fisheries impacts on fur seals.

It is MPI's intention that incidental fur seal interactions are minimised to the extent practicable. MPI works to ensure that captures are minimised through good operational practices.

MPI works closely with the fishing industry to increase awareness amongst the fishing fleet of how to minimise interactions, and emphasises the importance of adherence to the current marine mammal operational procedures. These procedures aim to reduce the risk of interactions with marine mammals by requiring that vessels minimise the length of time the fishing gear is on the surface, remove all pieces of fish from the net before deploying the gear, steam away from any congregations of marine mammals before shooting the gear again, and appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled. Performance in relation to these procedures is audited by MPI, which will continue in the 2017/18 fishing year.

MPI considers that none of the options proposed will increase fishing effort and therefore will not have any additional effects on the fur seal population.

4.2.2 Fish bycatch

Total fish bycatch in the southern blue whiting fisheries is estimated to be <1% of the total catch from the fishery. The target fishery focuses on schools of southern blue whiting and as a result takes minimal bycatch. MPI considers that the options proposed will not increase fishing effort in SBW 6B and will therefore not result in adverse effects on fish bycatch.

4.2.3 Seabirds

Management of seabird interactions with New Zealand's commercial fisheries is driven through the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species to the extent practicable.

The level of risk from commercial fishing to individual seabird species has been identified through a comprehensive hierarchical risk assessment⁶ that underpins the NPOA-Seabirds. Seabird interactions with SBW 6B generally occur at low rates, although interactions are known to occur. The southern blue whiting fisheries overall were assessed to contribute very low levels of risk to a small number of seabird species.

Regulatory and non-regulatory management measures are in place to mitigate and manage interactions with seabirds. Mandatory measures include the requirement that all trawl vessels over 28m in length deploy specified bird mitigation devices such as bird bafflers, during fishing. Non-regulatory management measures include vessel-specific vessel management plans (VMPs). The VMPs describe on-board practices vessels must follow to reduce the risk of a seabird capture, including offal management and good factory cleanliness. MPI monitors each vessel's performance against its VMP and works with the industry via the Deepwater Group Limited (DWG) to rectify any issues that arise during the fishing season. This practice will continue during the 2017/18 fishing year.

All options proposed would result in decreased fishing effort in SBW 6B. With the range of regulatory and non-regulatory measures in place, the management proposals should reduce the impacts on seabirds.

4.2.4 Benthic impacts

Southern blue whiting are generally fished using mid-water trawl gear near or on the seabed, as this is where the fish aggregate. The gear is generally not fished hard down on the seabed

⁶ <http://www.mpi.govt.nz/Default.aspx?TabId=126&id=1758>

and does not generally use heavy rollers or bobbins on the nets, which reduces the severity of any benthic impact. SBW 6B also operates over a relatively restricted area which changes very little from year to year.

Management measures to address the effects of deepwater trawl activity have focused on ‘avoiding’ these benthic effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007⁷ effectively closed approximately 30% of the New Zealand EEZ to bottom trawling. A monitoring regime to ensure these closures are adhered to was also implemented.

The proposed options for SBW 6B will not result in increased fishing effort, so it is unlikely any options will result in an increased benthic impact. Furthermore it is highly likely that any future fishing effort will occur over ground that has been trawled previously.

MPI will continue to monitor the trawl footprint of the southern blue whiting and other deepwater fisheries annually.

5 Proposed Options – SBW 6B

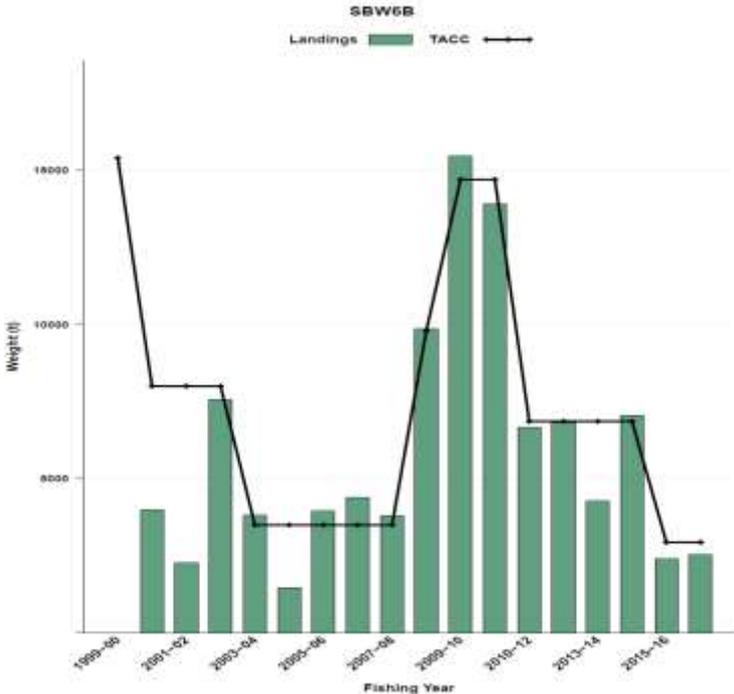


Figure 3: Landings and the TACC for SBW 6B from 1999-00 to 2016-17.

MPI is consulting on the following management options for the Minister to set the TAC, TACC and allowances for SBW 6B (Table 3).

⁷ Benthic Protection Areas are regulated by the Fisheries (Benthic Protection Areas) Regulations 2007.

Table 3: Proposed TAC, TACC and allowance options for SBW 6B.

	Allowances (all values in tonnes)				Other sources of fishing-related mortality
	TAC	TACC	Customary Māori	Recreational	
Current Settings	3,000	2,940	0	0	60
Proposed Options					
Option 1	2,022	1,982	0	0	40
Option 2	2,426	2,377	0	0	49
Option 3	2,628	2,575	0	0	53

SBW 6B biomass is considered to be below the level that can produce the maximum sustainable yield and the current TAC is too high to allow the stock to recover.

5.1 OPTION 1

Option 1 is the most conservative option, and is based on the CAY calculation that was used in previous years (fishing mortality rate of 0.20). This option would recover the stock more quickly than Options 2 and 3, however it also has the most significant impact on commercial fishers, and would likely impede the completion of the planned acoustic survey in 2017 without additional investment from stakeholders.

Based on export figures from 2015 of approximately \$1.00/kg,⁸ a TACC decrease of 958 tonnes as proposed in this option would result in a reduction of approximately \$960,000 in export revenue.

5.2 OPTION 2

Option 2 is the output of the CAY calculation using the fishing mortality rate recommended by the management strategy evaluation and would be expected to return the stock to the management target level over time.

With the potential new recruitment entering the fishery, this option may result in some lost utilisation opportunities if the 2012 year class recruits strongly to the 2017 fishery. However, it is expected that the stock will be surveyed again in 2017 and the TAC and TACC may be adjusted if it is demonstrated that stock biomass has increased.

Based on export figures from 2015 of approximately \$1.00/kg SBW, a TACC decrease of 563 tonnes as proposed in this option would result in a reduction of approximately \$560,000 in export revenue.

5.3 OPTION 3

Option 3 presents the least conservative option, based on a CAY calculation using the fishing mortality rate associated with an upper bound of natural mortality for the species ($M = 0.25$ instead of 0.2, resulting in a fishing mortality rate of 0.26).

⁸ This is an estimated green weight price per kg across all the product forms exported during Jan 2015- Dec 2015 of \$0.98/kg for surimi and of \$1.05/kg SBW dressed. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

This option potentially slows the recovery of the stock, but would provide the largest opportunity to take advantage of any recruitment that may result from the 2012 year class and has the least economic impact on the fishing industry.

Based on export figures from 2015 of approximately \$1.00/kg SBW, a TACC decrease of 365 tonnes would result in a reduction of approximately \$360,000 in annual export revenue.

6 Other Matters

6.1 DEEMED VALUES

Deemed values are an economic tool intended to constrain commercial catch to respective catch limits by encouraging fishers to balance catch with ACE while not discouraging them from landing and accurately reporting catch. Ensuring deemed value rates are appropriately set is a fundamental principle of the QMS.

The TACC for SBW 6B has not been exceeded and MPI is not proposing any changes to deemed value rates.

7 Conclusion

The SBW 6B stock is considered to be below the management target and the biomass that can produce the maximum sustainable yield. The current TAC and TACC are too high to compensate for the natural fluctuations of the stock levels, and MPI considers a reduction in the current harvest level is required to move stock biomass back towards B_{MSY} and the management target of 40% B_0 .