



# Review of Management Controls for Smooth Oreo in Oreo 4 (OEO 4) in 2015

Consultation Document

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# 1 Submission Information

MPI welcomes written submissions on the proposals contained in the Consultation Document. All written submissions must be received by MPI no later than 5pm on 17 July 2015.

Written submissions should be sent directly to:

Deepwater Fisheries Management  
Ministry for Primary Industries  
P O Box 2526  
Wellington 6011

or emailed to [FMSubmissions@mpi.govt.nz](mailto:FMSubmissions@mpi.govt.nz)

## 1.1 OFFICIAL INFORMATION ACT 1982

All submissions are subject to the Official Information Act and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

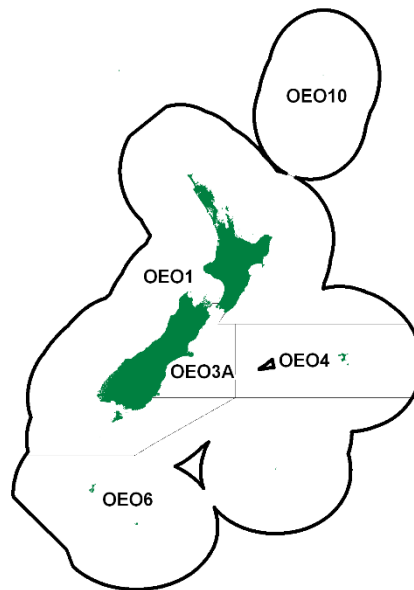


Figure 1: Quota Management Areas for oreos

## 2 Executive Summary

The Ministry for Primary Industries (MPI) is seeking tangata whenua and stakeholder input to inform a review of catch limits and other management controls for oreos in Fisheries Management Area (FMA) 4. Catch limits are a sustainability measure imposed under the Fisheries Act 1996 (the Act) to achieve the purpose of the Act set out in section 8 (provision for the utilisation of fisheries resources while ensuring sustainability)

Oreos in OEO 4 (mainly fished on the south Chatham Rise) are managed under section 13 of the Fisheries Act 1996 (the Act) as a species complex (Figure 1) of three species, smooth oreo (*Pseudocyttus maculatus*), black oreo (*Allocyttus niger*), and spiky oreo (*Neocyttus rhomboidalis*) which are assessed separately. A single total allowable catch (TAC) and total allowable commercial catch (TACC) is set for OEO 4, against which the catch of all oreo species is reported. The current TACC in OEO 4 is 7,000 tonnes which is generally fully caught with smooth oreo making up around 85% of the total catch in OEO 4.<sup>1</sup>

The results of the 2014 stock assessment of the smooth oreo stock in OEO 4 (SSO 4) estimates stock status to be at 27%  $B_0$  which is below the management target of 40%  $B_0$ . The stock assessment also indicated that the current exploitation rate is three times higher than the rate that will allow the stock to be maintained at the management target.

Five year projections, using the 2014 stock assessment, indicate that SSO 4 stock status will continue to decline under the current catch and will likely decline below the soft limit (20%  $B_0$ ) before 2018. These projections indicated that the declining biomass trajectory would be halted by reducing the harvest to 2,000 tonnes or less.

It is also proposed that as part of this TAC review, a non-regulatory species specific catch limit be implemented in this fishery. This will be formally administered through FishServe<sup>2</sup>

<sup>1</sup> The remainder of the catch is predominantly black oreo, with a very small amount of spiky oreo.

<sup>2</sup> FishServe is a wholly-owned subsidiary of Seafood New Zealand and is responsible for the administration of catch reporting requirements.

and endorsed by the Minister to ensure that the catch of smooth oreo is limited within the overall TACC.

In addition, MPI is proposing that an allowance for other sources of fishing related mortality is introduced within the TAC for the first time in 2015-16 to allow for unreported mortality.

MPI proposes the following options for OEO 4 TAC, TACCs, species-specific catch limits, and associated allowances for the 2015-16 fishing year (Table 1). Note that option 3 should be considered as the first stage in a two-step reduction, with an additional decrease in the TAC for the 1 October 2016 fishing year.

**Table 1: Current and proposed TACs, TACCs and allowances for OEO 4 in 2015-16**

Option	TAC	TACC	Non-regulatory species specific catch split		Allowances (tonnes)
			Smooth oreo limit	Other oreo species limit	Other sources of fishing related mortality
Current (not an option)	7,000	7,000	N/A	N/A	0
Option 1	2,100	2,000	1,000	1,000	100
Option 2	3,150	3,000	2,000	1,000	150
Option 3 (Staged reduction)	4,200	4,000	3,000	1,000	200

## 3 Purpose

### 3.1 ISSUE/NEED FOR ACTION

The 2014 stock assessment of smooth oreo in OEO 4 indicated that the stock status is below the management target and declining at a rate that will result in the stock being below the soft limit within the next five years at current catch levels.

These results reiterate the results from the previous assessment in 2012, which also showed the stock was declining. Since then a further biomass survey and updated assessment confirm that management action is required to prevent the stock reaching a level where future recruitment may be impaired.

MPI considers it necessary to reduce the catch of smooth oreo, to ensure harvest levels remain sustainable and allow the smooth oreo stock to move back towards the management target.

### 3.2 MANAGEMENT APPROACH

OEO 4 is managed within the National Fisheries Plan for Deepwater and Middle-Depth Fisheries (National Deepwater Plan) as a Tier 1 stock. A fisheries-specific oreo chapter of the National Deepwater Plan was finalised in October 2013. The chapter details the management approach and operational objectives for the fishery.

The smooth oreo and black stocks on the south Chatham Rise are assessed separately but managed as a single stock. The management approach for OEO 4 is supported by regular stock assessments of SSO 4.

The most recent stock assessment for black oreo was 2009, however, there is currently no quantitative stock assessment model available. This paper does not propose changes to the level of black oreo catch within OEO 4, but proposes that MPI work with quota owners to establish an industry-agreed voluntary catch split arrangement to enable catches of individual oreo species to be monitored and reported separately.

## 4 Background Information

### 4.1 BIOLOGICAL CHARACTERISTICS OF SMOOTH OREO

Smooth oreo is a relatively slow growing species that is found on the south Chatham Rise, along the east coast of the South Island, and in some areas of the sub-Antarctic in depths of 650 to 1500 m. Smooth oreo are through to mature at around 31 years old, and are estimated to live up to 86 years.

Smooth oreo spawn from late October to December, forming small aggregations, especially on the south Chatham Rise (OEO 4).

### 4.2 FISHERY DESCRIPTION

Oreos were introduced into the QMS in 1982-83 with a TAC of 6,750 tonnes. Catches in OEO 4 have ranged from around 5,000 tonnes to a maximum of around 8,700 tonnes since then. In the most recent five years, total OEO 4 catches have averaged 7,000 tonnes.

The proportion of the catch that is smooth oreo has remained relatively constant over time, with smooth oreo estimated to make up around 85% of the total catch in OEO 4. With a TACC of 7,000 tonnes, this translates to roughly 6,000 tonnes of smooth oreo caught annually. Other oreo species (black and spiky) are primarily a bycatch of smooth oreo and hoki target fishing, although some targeting of black oreo does occur.

To date, no species-specific catch limits have been implemented for this fishery, although fishers have been required to report landings by species since 2007-08.

#### *Recreational and Māori Customary Interests*

No allowance has traditionally been provided for recreational and Maori Customary fishing for OEO 4. Because of the depth distribution of the oreo species, it is considered that there are no significant recreational or Maori Customary fisheries for any oreo species.

#### *Other Sources of Fishing Related Mortality*

MPI proposes that an allowance for other sources of fishing-related mortality be added to catches at 5% of the TACC. This nominal allowance accounts for unreported oreo mortality, such as loss due to burst nets, or discarding of damaged oreo.

### 4.3 PREVIOUS REVIEW

The TAC and TACC for OEO 4 was last reviewed for the 2003-04 fishing year when the TACC was increased from 5,460 to 7,000 tonnes based on the 2003 stock assessment of smooth oreo that indicated that the SSO 4 stock was healthy and could sustain an increase.

Previous to that, the TACC had been decreased from 7,000 tonnes to 5,460 tonnes based on a stock assessment that indicated some sustainability concerns for the stock.



## 4.4 STOCK ASSESSMENT/NEW INFORMATION

In 2015, the Stock Assessment Plenary agreed that the 2014 SSO 4 stock assessment was of high quality and met New Zealand's Science and Research Information Standard.<sup>3</sup> The stock assessment estimated the 2014 status of SSO 4 to be 27%  $B_0$ , which is below the management target of 40%  $B_0$ . Five-year projections indicated that at current catch levels, the stock would likely decrease to be below the soft limit (20%  $B_0$ ) before 2018. The 2014 stock assessment estimates that the current level of catch provides an exploitation rate of  $U = 0.15$ , or three times higher than the rate required that will move the stock to the management target.

Prior to the 2014 assessment the previous assessment in 2012 showed the stock to be at either 33% or 41%  $B_0$ . Due to the large amount of uncertainty in the stock assessment, and a planned acoustic survey in the near future, the catch limits were not reviewed. The continued catches at the TACC may have contributed to the lower stock status in the 2014 assessment.

Overall, the 2014 assessment model incorporates abundance estimates from five acoustic surveys and age frequency data from two of those surveys. The assessment used an age-structured population model with Bayesian estimation incorporating stochastic recruitment, life history parameters, and catch history up to 2012-13. The model structure was similar to that used in 2012. It used the same single area model with the exclusion of CPUE, but with the addition of an abundance estimate from an acoustic survey in 2012, age frequency estimates from 1998 and 2005 acoustic surveys, and estimated relative year class strengths.

Five-year projections were run using the 2014 stock assessment model. These projections assumed a catch level of 6,000 tonnes of smooth oreo for the 2013-14, and 2014-15 fishing years, and a range of catch levels for subsequent years. Catch levels of smooth oreo were 1,000 tonnes, 2,000 tonnes, and 3,000 tonnes. Using these projections the decline of stock status was slower under all scenarios compared to current catch levels.

The main sources of uncertainty associated with the SSO 4 stock assessment are in relation to the assumptions used to interpret biomass estimates from the acoustic trawl surveys. These include the estimated target strength, the scaling factor from survey areas to total areas, and the proportion of vulnerable biomass present in the survey marks.

## 5 Legal Considerations

### 5.1 TAC/MANAGEMENT MEASURES SETTING

Section 13(2) of the Act requires the Minister for Primary Industries (the Minister) to set a TAC that maintains the stock at or above a level that can produce the maximum sustainable yield (MSY), or if the stock is above or below that level, to move towards or above the level that can produce MSY.

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.

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 Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

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<sup>3</sup> Available at: <http://www.fish.govt.nz/en-nz/Publications/Research+and+Science+Information+Standard.htm>

There is no known recreational or customary Maori catch in oreo fisheries.

## 5.2 KEY CONSIDERATIONS

When making a decision concerning the TAC for a stock, the Minister<sup>4</sup> must have regard to the interdependence of stocks, the biological characteristics (discussed above), and any environmental conditions affecting the stock.

### *Interdependence of stocks*

The main species caught in association with smooth oreo include black and some spiky oreo, orange roughy, and hoki.

The status of black oreo in OEO 4 is unknown, although catch levels have remained stable over time. The options proposed in this paper will result in a decrease in fishing effort in OEO 4 which may reduce the overall catch of black oreo. MPI considers that the options proposed will have no impacts on the sustainability of black oreo in OEO 4. MPI is not proposing any change to level of catch for black oreo, simply that it will remain the same under each option.

A small quantity of orange roughy are caught as a bycatch in smooth oreo fishing in OEO 4. These orange roughy are thought to be from either the Northwest Chatham Rise or East and South Chatham Rise orange roughy stock. Both of these stocks were assessed in 2014 to be at or above management target levels, and the catch limits were increased in 2014 for both of these stocks. The options proposed here will reduce fishing effort in OEO 4, and will have no impact on the sustainability of any orange roughy stocks in the area.

A small quantity of hoki are taken as bycatch in smooth oreo fisheries in OEO 4. These hoki are considered to be part of the eastern hoki stock. The 2015 assessment of hoki stocks indicated that the eastern stock is above the management target range. The options proposed will reduce fishing effort in OEO 4 and will have no impact on the sustainability of any hoki stocks.

### *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 assessment that underpins the NPOA-Seabirds. Seabird interactions with OEO 4 do not occur to any significant degree. Oreo fisheries overall were assessed to contribute very low levels of risk to a small number of seabird species.

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<sup>4</sup> The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

## Marine mammals

No significant captures of protected species occur in smooth oreo fisheries in OEO 4. Under all options, fishing effort for smooth oreo in OEO 4 is not expected to increase significantly and there will be no additional risk to marine mammals.

## Benthic impacts

Management measures to address the effects of deepwater trawl activity have focused on ‘avoiding’ these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs).<sup>5</sup> The implementation of BPAs in 2007 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.

MPI acknowledges that the proposals to reduce the OEO 4 TACC are likely to reduce the level of fishing effort and hence limit benthic impacts. Further, as current effort is considerably less than that during the 1990s, the current level of benthic impact is considerably less than that of the 1990s.

MPI will continue to monitor the trawl footprint of the oreo and other deepwater fisheries annually.

## Other Management Measures

MPI is not proposing to make any changes to the deemed value rates for oreo, or any other management measures. MPI proposes to work with quota owners to develop and implement a catch split arrangement to enable catches of individual oreo species to be monitored and reported separately. Industry has demonstrated processes that could be adapted to achieve this. Such arrangements have worked successfully in the past, for example following the 2003 stock assessment in OEO 1 and OEO 3A (Southland SSO) which resulted in a catch limit for smooth oreo in Southland.

# 6 Proposed Options

Table 2: Current and proposed TACs, TACCs and allowances for OEO 4 in 2015-16

Option	TAC	TACC	Non-regulatory species specific catch split		Allowances (tonnes)
			Smooth oreo limit	Other oreo species limit	Other sources of fishing related mortality
Current (not an option)	7,000	7,000	N/A	N/A	0
Option 1	2,100	2,000	1,000	1,000	100
Option 2	3,150	3,000	2,000	1,000	150
Option 3 (Staged reduction)	4,200	4,000	3,000	1,000	200

A key information input to the development of these options are the projections set out in Table 3, which show the probabilities of stock status in relation to the reference points in

<sup>5</sup> Fisheries (Benthic Protection Areas) Regulations 2007.

2018 from five-year projections using the 2014 stock assessment model for the three proposed options as proposed in table 1.

Table 3: Probabilities of stock status in relation to reference points in 2018 from five-year projections using 2014 stock assessment model for the three proposed options.

	Smooth oreo catch	SSO 4 Stock status in 2018 (%B0)	Probability of stock being at or above management target (40% B0)	Probability of stock being below the soft limit (20% B0)	Probability of stock being below the hard limit (10% B0)
Current (not an option)	6,000	17.5	0.01	0.61	0.17
Option 1	1,000	24.5	0.04	0.29	0.02
Option 2	2,000	23.1	0.03	0.36	0.03
Option 3 (Staged reduction)	3,000	21.7	0.02	0.42	0.06

## 6.1 OPTION 1

Under this option, the TACC would be decreased to 2,000 tonnes, and the TAC would be reduced to 2,100 tonnes, including an allowance for other sources of fishing related mortality of 100 tonnes (5%). It is proposed that under this option a species-specific catch limit be implemented to limit the catch of smooth oreo to 1,000 tonnes.

**Impact:** This option will result in the most rapid increase of the stock back towards the management target, but will also result in the largest impact on industry to reallocate fishing capacity.

The projections show that this option provides the lowest probability of the stock falling below the soft limit (29%) and hard limit (2%) by 2018. It also provides the highest probability (4%) of the stock recovering to the management target range by 2018.

Based on an approximate current export value for oreo of \$1.42 per kilogram greenweight, this option may result in the loss of up to \$6 million per annum in export value.

## 6.2 OPTION 2

Under this option, the TACC would be decreased to 3,000 tonnes, and the TAC would be 3,150 tonnes including an allowance for other sources of fishing related mortality of 150 tonnes. It is proposed that under this option a species-specific catch limit be implemented limiting the catch of smooth oreo to 2,000 tonnes.

**Impact:** This option will result in a slower decrease of stock status, with the status estimated to be 23% by 2018. This option would have slightly less of an immediate impact on the fishing industry, but still represents a large TAC reduction of 71%. Potentially, this could be seen as a first step in a staged reduction in catch levels.

Based on an approximate current export value for oreo of \$1.42 per kilogram greenweight, this option may result in the loss of up to \$5 million per annum in export value.

## 6.3 OPTION 3 (STAGED REDUCTION)

Under this option, the TACC would be decreased by 40% to 4,000 tonnes and the TAC would be 4,200 tonnes. The allowance for other sources of fishing related mortality would be set at

200 tonnes. It is proposed that under this option a species-specific catch limit be implemented limiting the catch of smooth oreo to 3,000 tonnes and a further reduction be taken for the 1 October 2016 fishing year.

**Impact:** This option is not projected to increase the stock back towards the management target in the next five years, with stock status projected to be 21.7%  $B_0$  in 2018. This option will slow the rate of the current decline, but not stop the decline. Five-year projections indicate a 42% probability that the stock will decline below the soft limit by 2018 under this option.

This option would have the least immediate impact on the fishing industry. However, if this option is chosen it must be regarded as the first step in a staged reduction as it does not result in any rebuild of the stock after the low point is reached in 2016. MPI considers a ~50% chance of the stock falling below the soft limit is unacceptable. Given the uncertainty with forward planning and implementation for the deepwater monitoring and research plan with regards to oreo and the timing of the next abundance survey, this option would require a commitment to take a second reduction in the smooth oreo catch limit in 2016/17. Taking the smaller decrease will result in lower stock status and increases the risk of the stock declining to the point where the future recruitment is impaired even further, but allows more time for the industry to redistribute fishing effort.

Additional projections using the 2014 stock assessment model will be run prior to the 1 October 2016 sustainability round to inform the second stage of the reduction in TAC for OEO 4. Note that this option may require a larger reduction for 2016 as a result of the 2015-16 catch being above recommended levels.

Based on an approximate export value for oreos of \$1.42 per kilogram greenweight, this option may result in the loss of up to \$4 million per annum in export value.

## 7 Other Matters

In cooperation with the fishing industry, MPI is proposing that the Minister request a non-regulatory agreement to implement a species specific catch limit arrangement in the OEO 4 fishery to limit the catch of smooth oreo to an agreed amount within the TACC.

The proposed smooth oreo catch limits are specified in each of the options above.

## 8 Conclusion

The 2014 stock assessment of smooth oreo in OEO 4 indicated that the stock status is 27%  $B_0$  and the stock is undergoing a long-term decline in abundance. The current status is below the management target range and is projected to decline below the soft limit in the next three years at current catch levels.

MPI is consulting on a range of reductions to the TAC, TACC, and the implementation of a non-regulatory species-specific catch limit to slow the decline in stock status and allow the stock to move back towards the required management target. Given concern around the sustainable management of oreo fisheries it is recommended to implement conservative management strategies proposed for this major oreo stock.