



Review of Sustainability Measures for Orange Roughy (ORH 3B) for 2019/20

Fisheries New Zealand Discussion Paper No: 2019/04

ISBN No: 978-1-98-859474-3 (online)

ISSN No: 2624-0165 (online)

June 2019

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1 Stock being reviewed

Orange roughy (ORH 3B)

(*Hoplostethus atlanticus*; nihorota)

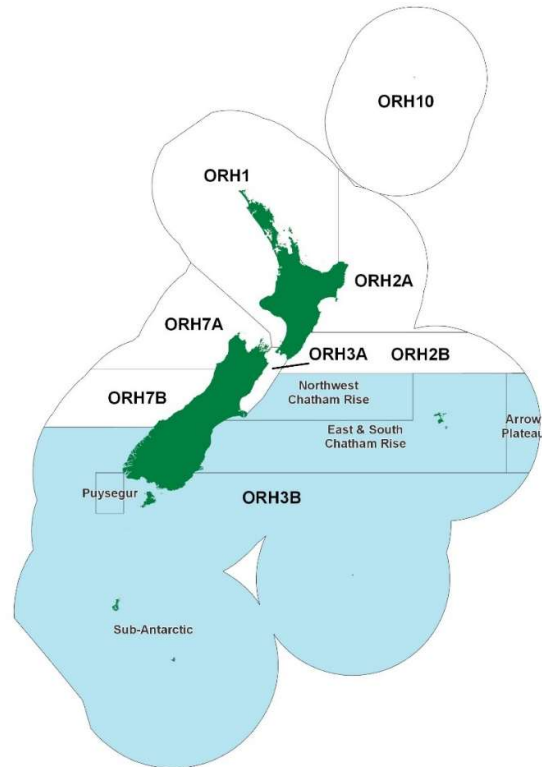


Figure 1: ORH 3B and the sub-QMAs

2 Summary

In 2018, the Minister of Fisheries agreed to a 3-year staged increase of the ORH 3B TAC and TACC based on an updated stock assessment that indicated the biomass had increased and a utilisation opportunity existed. This is the second year of the staged increase; the proposal is to increase the sub-area catch limit for the East and South Chatham Rise consistent with the Minister's decision for the 2018/19 fishing year.

This paper proposes that the Minister approve the second stage of the increase; specifically, to:

- increase the ORH 3B TAC by 703 tonnes (11%) to 7,116 tonnes
- increase the TACC by 681 tonnes (11%) to 6,772 tonnes
- increase the allowance for all other fishing related mortality by 22 tonnes (7%) to 339 tonnes
- retain current allowances for Customary Māori (5 tonnes)
- retain current allowances for Recreational Fishing (0 tonnes)
- apply all of the catch increase to the East and South Chatham Rise (ESCR).

3 Quota Management System

Within New Zealand, ORH 3B is managed using the Quota Management System (QMS), with a 1 October to 30 September fishing year. For more information about the QMS go to <https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/quota-management-system/>.

4 Legal basis for managing fisheries in New Zealand

The Fisheries Act 1996 provides the legal basis for managing fisheries in New Zealand, including the Minister's responsibilities for setting and varying sustainability measures. See the separate document *Overview of legislative requirements and other considerations* on the Fisheries New Zealand sustainability consultation webpage (<https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2019>) for more information.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

The iwi of the South Island and Chatham Islands are likely to constitute tangata whenua in the area of ORH3B. Input and participation is provided for through discussions with relevant iwi at Iwi Fisheries Forums. The proposal to increase the TAC and TACC for ORH 3B phased over three years was presented to Te Waka a Māui me Ōna Toka Iwi Forum (representing the nine iwi of the South Island) in 2018. This forum supported a review of the ORH 3B fishery. The proposal was also discussed with Chatham Islands iwi and imi as part of a general engagement process in 2018.

No views were expressed by the Chatham Islands groups. Ngai Tahu, Te Waka a Māui me Ōna Toka Iwi Forum, Kahungunu Asset Holding Company, and Ngati Whatua Fisheries all made submissions on the 2018 consultation. The iwi groups either expressed no view or were in favour of TAC/TACC increases.

Information on the proposal to consult on ORH 3B was not provided to Iwi Fisheries Forums in 2019, as they had already provided input and supported or not opposed the three-year management strategy.

5.2 Katiakitanga

Orange roughy (nīhorōta) is listed as a taonga species in the Te Waipounamu (all of South Island) Iwi Fisheries Plan. The Te Waka a Māui me Ōna Toka Iwi Forum consider all fish species taonga. The Te Waipounamu plan contains objectives to support and provide for the interests of South Island iwi, and contains three objectives which are relevant to the management options proposed for ORH 3B:

Management objective 3: to develop environmentally responsible, productive, sustainable, and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi.

Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

Imi (Moriōri) and iwi (Ngāti Mutunga of Chatham Islands (Rēkohu/Wharekauri) have listed *pātohe* orange roughy as a taonga species in their CIFF@44° (Chatham Island Fisheries Forum plan; Includes Rangihau/Rangiauria-Pitt Island). Imi and Iwi regard all fish as customary fish. Three management objectives of CIFF@44° which are particularly relevant to the management options proposed for ORH 3B are:

Management objective 2: Kaitiakitanga is fundamental to the management of all fisheries resources.

Management objective 5: Thriving Fisheries. Thriving sustainable fisheries that are enduring for present and future generations.

Management objective 6: Traditional Fisheries. Fisheries and fisheries areas of cultural significance are protected, maintained and enhanced.

6 Relevant plans, strategies, statements and context

Orange roughy in ORH 3B is managed as a Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). A species-specific chapter of the National Deepwater Plan for orange roughy (Part 1B) was completed in 2012. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to ORH 3B being:

Management Objective 1: Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.

Management Objective 4: Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.

The National Deepwater Plan is a formally approved s11A plan which the Minister must take into account when making sustainability decisions.

There are no other plans, strategies or statements relevant to orange roughy or ORH 3B.

7 Non-regulatory arrangements

Statutory catch limits in the form of total allowable catches (TACs), and total allowable commercial catches (TACCs), are set for each QMA. Where a biological stock boundary aligns with the boundaries of a single QMA, the catch limit is the TACC.

Genetics, geographical separation and distribution of orange roughy indicate that there are at least four biological sub-stocks within ORH 3B – Northwest Chatham Rise, South East Chatham Rise, Sub-Antarctic and Puysegur. The Chatham Rise is managed as two separate stocks – Northwest Chatham Rise and East and South Chatham Rise. The rest of ORH 3B is managed as a separate sub-stock.

The Minister sets the total allowable catch (TAC) for the ORH 3B stock as a whole. The Deepwater Group Ltd (DWG), which represents approximately 98% of the ORH 3B quota owners, agrees each year to adhere to catch limits at a sub-Quota Management Area (QMA) level for the individual sub-stocks. These are non-regulatory catch limits but are monitored by Fisheries New Zealand.

8 Current state of the stock

ORH 3B is a large and spatially complex area that comprises at least four individual sub-stocks (Figure 1: ORH 3B and the sub-QMAs, above).

Orange roughy stocks are generally monitored using acoustic surveys and stock assessments completed every four years, as recommended by a Management Strategy Evaluation for orange roughy.

The harvest strategy for ORH 3B is based on the Management Strategy Evaluation which has been reviewed and accepted by the Fisheries New Zealand Deepwater Working Group (DWWG) as a basis for management of ORH 3B. The Management Strategy Evaluation recommends a management target range of 30-50% of unfished biomass (B_0) and a soft limit of 20%, to ensure the stock is resilient

to natural fluctuations such as periodic recruitment pulses and long-term fluctuations in biomass (Table 1, below).

Table 1: Harvest Strategy for ORH 3B

Reference point	Management response
Management target 30-50% B_0	Stock permitted to fluctuate around the management target range of 30-50% B_0 . TAC/TACC changes will be employed to keep the stock around the 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

The Management Strategy Evaluation underpinned the development of a Harvest Control Rule (HCR) for orange roughy. This involved testing the performance of a number of potential harvest control rules against simulated stock trajectories over long periods of time. The agreed HCR is estimated to have a greater than 97% probability of maintaining the stock above the lower boundary of the management target range, under a series of assumptions about stock-recruit relationships and estimates of natural mortality in the long term.

The HCR is used to suggest catch limits which are dependent on the estimated stock status in relation to the management target range of 30-50% of B_0 . Where a stock is estimated to be below the midpoint of the target range, recommended catch limits are lower than for a stock near the top of the target range. Likewise, the HCR allows for a higher catch limit for stocks that are above the mid-point of the target range (40% B_0).

Acoustic surveys in 2016 underpinned stock assessments in 2017 for two key sub-stocks in ORH 3B: Northwest Chatham Rise (NWCR), and East and South Chatham Rise (ESCR).

Orange roughy abundance in both NWCR and ESCR was estimated to be increasing. The NWCR stock assessment estimated that the stock was at 38% B_0 and there was a 98% probability that the stock was above the lower bound of the management target range of 30% of B_0 in 2017 (Figure 2).

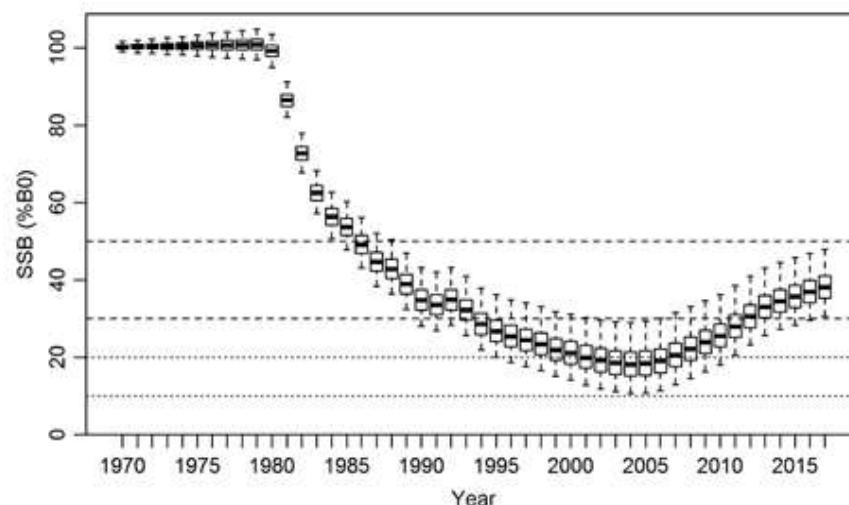


Figure 2: Northwest Chatham Rise estimated spawning stock biomass (SSB) trajectory. The box in each year covers 50% of the distribution, and the whiskers extend to 95% of the distribution. Dotted lines indicate the hard limit (10% B_0) and the soft limit (20% B_0), and the dashed lines the biomass target range (30-50% B_0).

For ESCR, the stock assessment estimated that the stock was at 33% B_0 and there was an 86% probability that the stock was above the lower boundary of the management target range of 30% of B_0 in 2017 (Figure 3).

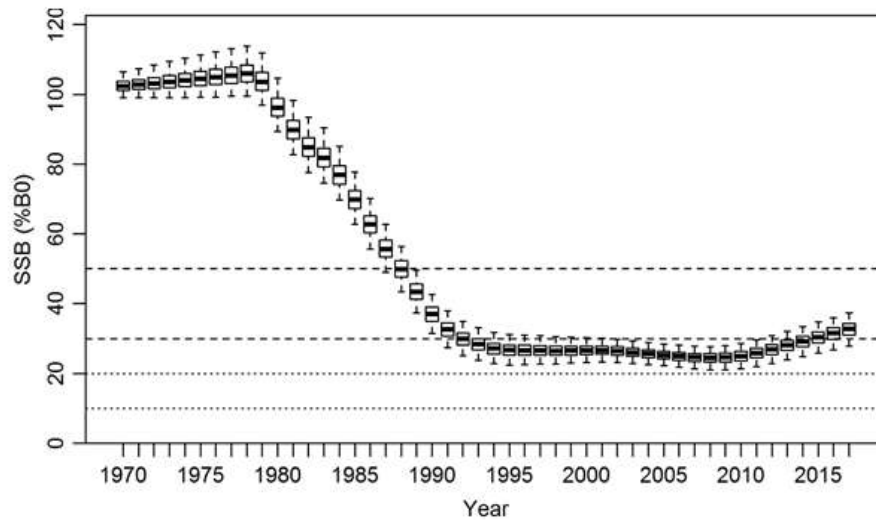


Figure 3: East & South Chatham Rise estimated spawning stock biomass trajectory

9 Recent catch levels and trends

All orange roughy is caught by the commercial fishing sector. Commercial orange roughy fishing uses the bottom trawling method, targeting spawning aggregations. The main fishing grounds in ORH 3B are on the Chatham Rise, with smaller fisheries occurring to the south at Puysegur and the sub-Antarctic (Figure 1).

Annual orange roughy landings from ORH 3B have been less than the TACC over the last ten years; the annual average undercatch for the last ten years was 15% (Figure 4).

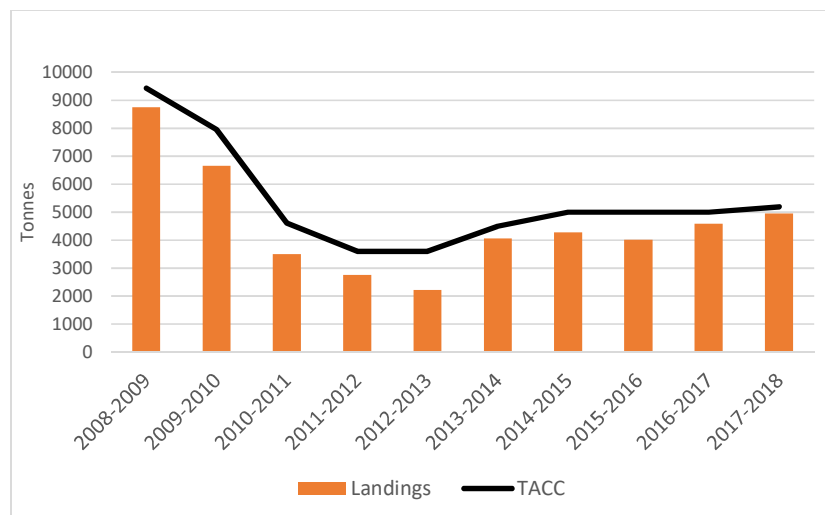


Figure 4: Landings vs TACC ORH 3B, 2008/09 - 2017/18 fishing years

Figure 5 and Figure 6, below, show estimated catch and catch limits for two of the sub-QMAs (NWCR and E&SCR) within the ORH 3B QMA.

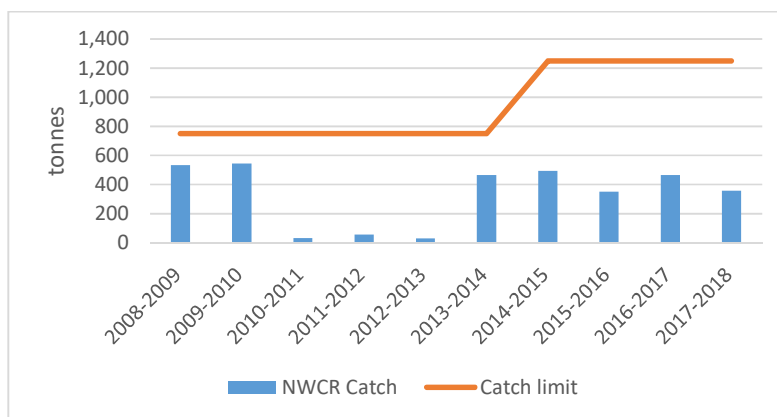


Figure 5: ORH 3B Northwest Chatham Rise catch vs catch limit, 2007/08 - 2017/18¹

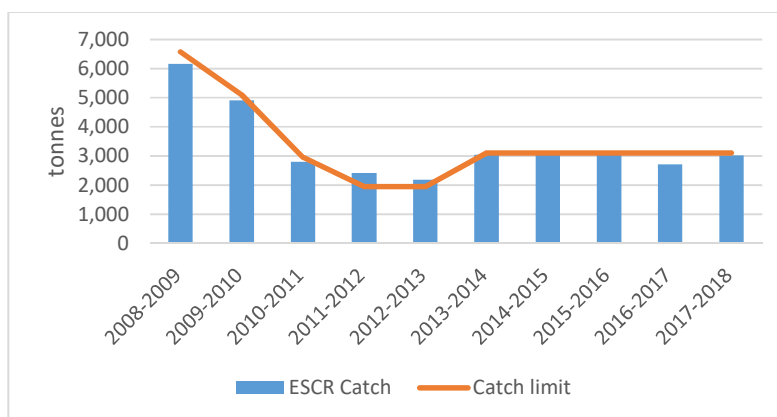


Figure 6: ORH 3B East and South Chatham Rise catch vs catch limit, 2007/08 - 2017/18

10 Projections of biomass

Projections of stock biomass over the next five years estimate that the stock status will continue to increase under the proposed catch levels. Figure 7 shows the projected median stock status for each of the next five years with the stock estimated to increase from 33% B_0 to 37% B_0 over that timeframe.

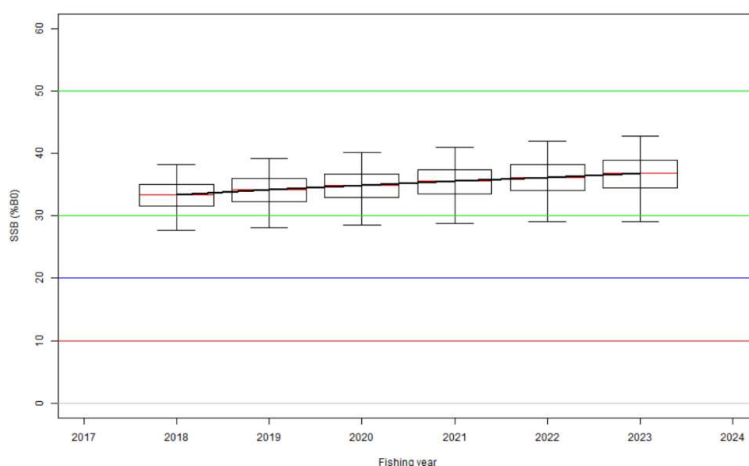


Figure 7 East & South Chatham Rise Orange Roughy spawning stock biomass projections, 2017/18 to 2022/23

¹ Quota owners agreed to shelve 207 tonnes of NWCR ACE for 2014-15 to 2017-18. This left 1043 tonnes available to catch.

11 Option – Varying the TAC and TACC

Table 2 shows the proposed distribution of the TACC amongst sub-QMA areas for 2019/20 (year 2, the year we are considering here) and 2020/21 (year 3, based on current assumptions).

Fisheries New Zealand proposes that the Minister seek the agreement of ORH 3B quota owners to continue the current non-regulatory regime of sub-area catch limits, with the adjustments to ESCR as proposed.

Table 2: Proposed ORH 3B Sub-QMA catch limits, TACCs, TACs and allowances in tonnes from 1 October 2018

	Current year	Year 2 (2019/20)	Year 3 (2020/21)
TAC	6413	↑ 7116	↑ 8055
TACC (for all sub-QMAs)	6091	↑ 6772	↑ 7667
Allowance for other mortality caused by fishing	317	↑ 339	↑ 383
Customary Māori allowance	5	5	5
Northwest Chatham Rise	1150	1150	1150
East & South Chatham Rise	4095	↑ 4775	↑ 5670
Puysegur	347	347	347
Arrow Plateau	0	0	0
Sub-Antarctic	500	500	500

12 Environmental interactions

The key environmental interactions with the fishery, which must be taken into account are:

Marine mammals

The capture rate of marine mammals in ORH 3B target tows is very low; there was one observed fur seal capture between the 2013/14 and 2017/18 fishing years (average observer coverage was 27% over the five years). The proposal is unlikely to change this materially.

Fish bycatch

The proposed option is likely to increase catch of associated species. The main fish bycatch species associated with orange roughy fishing include oreo, and deepwater sharks.

Based on the average annual smooth and black oreo catch from FMA 4 when targeting orange roughy over the last ten fishing years (2008/09 to 2017/18), it is estimated that the proposed TACC increase may lead to an increase of approximately 16 tonnes in black oreo caught, and approximately 67 tonnes of smooth oreo.

Management of shark species in New Zealand is driven by the National Plan of Action for Sharks (NPOA-Sharks) 2013. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in orange roughy fisheries and consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.

Seabirds

The National Plan of Action Seabirds 2013 guides management of seabird interactions in New Zealand fisheries. Management is based on a systematic risk assessment of seabirds and fishing vessels. ORH 3B is assessed as low risk; the most vulnerable species in all deepwater fisheries is Chatham Island albatross, however its vulnerability to capture in bottom trawling is low.

Trawlers longer than 28m and bottom longline vessels longer than 7m are required to deploy bird interaction mitigation devices when fishing gear is in use. Non-regulatory Vessel Management Plans may include additional measures to avoid seabird interactions, including offal management. Fisheries New Zealand monitors and audits performance against these plans.

Benthic Impacts

Bottom trawling interacts with the seabed and benthic environment. Management measures have focused on avoiding these effects through closing areas to bottom trawling, starting with 17 seamount closures in 2001. Five of the seamount closures are within the ESCR and NWCR ORH 3B sub-areas – Pinnie, the Morgue and Pyre/Gothic group, Diamond Head and Seamount 328. In addition, the implementation of Benthic Protection Areas in 2007 effectively closed approximately 30% of the New Zealand EEZ to bottom trawling. Three of the Benthic Protection Areas are within the ESCR and NWCR ORH 3B subareas – Mid Chatham Rise, East Chatham Rise and Blink.

The New Zealand trawl footprint, measured from 1989/90 to 2015/16, is estimated to cover roughly 8% (335,812 km²) of the EEZ. The orange roughy footprint in ORH 3B is estimated to have contacted 11% (4,942 km²) of the seabed in the ESCR sub-QMA, and 8% (1,867 km²) of the seabed in the NWCR sub-QMA, between 800-1600m depths from 2008-2017. Most fishing occurs within areas that have been fished for a number of years, and it is estimated that there is very little 'new' area trawled each year.

13 Uncertainties and risks

The proposed increase in the TAC/TACC is large enough to have a significant impact on the orange roughy stock should biomass estimates be too optimistic. However, the outputs of the 2017 stock assessment and the use of the agreed HCR to calculate a proposed catch limit for East and South Chatham Rise provides confidence that the stock can sustain an increase as proposed, while remaining within the management target range.

14 Analysis of options

The proposed increases in the ORH 3B TAC and the ESCR catch limit are relatively large (11% and 17%, respectively), and the estimated biomass for ESCR of 33% B_0 is close to 30% (the bottom end of the target range). However, the outputs of the 2017 stock assessment, the use of the agreed HCR to calculate a proposed catch limit for ESCR, as well as the five year projections that indicate continued growth in the stock at the increased levels proposed (Figure 7), all provide confidence that the stock can sustain these increases, while continuing to build toward the midpoint of the management target range.

Based upon orange roughy export data for the 2018 calendar year, the estimated economic impact of increasing the TACC by 681 tonnes is an increase in FOB² exports of NZ\$ 8.26 million per annum.

It is not considered that the potential increase in oreo catch from increased ORH 3B fishing is likely to pose a sustainability risk, because we do not expect that increased ORH 3B fishing will lead to any overcatch of the OEO 4 TACC.

As discussed above, the proposed TAC/TACC increase is not expected to have any significant environmental effects, nor will it adversely affect the population of marine mammal species or seabirds given the low capture rate of these animals. Compliance with Vessel Management Plans is very high, therefore any additional risk to marine mammals and seabirds following a TAC/TACC increase is considered to be low.

² Free on board. The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport or insurance cost to get the goods to the export market.

The majority of the increase in fishing effort is likely to be taken in the same areas that are already fished, therefore the trawl footprint is unlikely to increase significantly. The trawl footprint of the orange roughy fishery will continue to be mapped and monitored annually to assess if new areas are being impacted. The environmental impacts of fishing are summarised annually by Fisheries New Zealand.

15 Questions for submitters on options

- Do you support the proposed option? Why or why not?
- Are the allowances for customary fishing appropriate? Do customary fishers have information on likely catch for the next fishing year, given the TAC may be increased again in 2020/21.

Please provide detailed, verifiable information and rationale to support your views

16 Deemed values

The purpose of deemed values is to provide incentives for commercial fishers to match their catch with their Annual Catch Entitlement within each fishing year for each QMS stock. There has been no over-catch of the TACC in the last five years and no deemed value payments have been required for this fishery. No change is proposed to deemed value rates for ORH 3B. The catch limits have been exceeded in E&SCR in seven of the last ten years, but the catch has not exceeded available ACE.

17 Referenced reports

Fisheries Assessment Plenary May 2019: <https://www.fisheries.govt.nz/news-and-resources/science-and-research/fisheries-research/>

Management Strategy Evaluation: <http://deepwatergroup.org/wp-content/uploads/2014/08/Cordue-2014-A-Management-Strategy-Evaluation-for-Orange-Roughy-ISL-Re....pdf>

Deepwater Fisheries Plan: <https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/>

Aquatic Environment and Biodiversity Annual Review 2017: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

18 How to get more information and have your say

Fisheries New Zealand invites you to make a submission on the proposals set out in this discussion document. We must receive your submission by 5pm on 26 July 2019. Please see the Fisheries New Zealand sustainability consultation webpage (<https://www.fisheries.govt.nz/news-and-resources/consultations/review-of-sustainability-measures-for-1-october-2019>) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access the webpage or require hard copies of documents or any other information, please email FMSubmissions@mpi.govt.nz.