



SPRFMO
South Pacific Regional Fisheries Management Organisation

11TH MEETING OF THE SPRFMO COMMISSION

Manta, Ecuador, 13 to 17 February 2023

COMM 11 – Prop 12.1

Explanatory Note for Prop12 Deepwater Species

New Zealand



Additional information relating to the proposal for amendments to the
Deepwater Species Conservation and Management Measure for SPRFMO – CMM 03a-
2021

24 December 2022

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1. Purpose of paper

This paper provides additional information on the proposed amendments to the Deepwater Species CMM 03a-2021 to:

1. update the catch limits for orange roughy in the Louisville Ridge (and split into Central, North and South), West Norfolk Ridge, Lord Howe Rise and Northwest Challenger, and
2. extend the catch limit for the Westpac Bank area from 2023 to 2024 fishing year due to an aborted voyage in 2022 to perform an acoustic biomass survey after COVID-19 was detected on the vessel
3. Include an Annex describing the location of Fisheries Management Areas (FMAs).

2. Rationale for amendments to Conservation and Management Measure

The Deepwater species CMM 03a-2021 sets precautionary orange roughy catch limits for specific stocks or areas. The catch limits for the Louisville Ridge, West Norfolk Ridge, Lord Howe Rise and Northwest Challenger are only set for the 2022 fishing year within the current CMM. The proposed amendments set catch limits for these areas based on recommendations from the 10th Scientific Committee (SC10) meeting.

The catch limit for the Westpac Bank area is set for the 2022 and 2023 fishing years. An orange roughy acoustic biomass survey incorporating the Westpac Bank area was planned to be undertaken by New Zealand in 2022 and this would have been the basis of an updated stock assessment in 2023. The research vessel departed as planned, however COVID-19 was subsequently detected aboard the vessel and further cases developed. This forced the vessel to return to port and the survey had to be delayed to the following year (2023). Therefore, the updated stock assessment will now not be available until the 2024 SC meeting. Therefore, the orange roughy catch limit for the Westpac Bank area outlined in CMM 03a-2021 will remain the best available information for the 2024 fishing year.

3. Catch Limits

The updated stock assessment for Louisville Ridge (Central, North and South), West Norfolk Ridge, Lord Howe Rise and Northwest Challenger was presented at SC10 ([SC10-DW01_rev1](#)). The assessment included simulation studies to determine how precisely and accurately the 2019 assessment of orange roughy on the Central Louisville Ridge could estimate stock size and status with ‘perfect’ data, and as data became noisier and model assumptions mis-specified.

During the process of updating the stock assessments it was discovered that the previously accepted orange roughy stock assessments using integrated assessment models for North, Central and South Louisville Ridge, the West Norfolk Ridge, Lord Howe Rise and the Northwest Challenger Plateau have been shown to be unreliable. Even with accurate age data to inform the previous modelling approach, misspecification of natural mortality rate or year class strength could produce substantially misleading biomass estimates. Error in age frequencies could result in the true biomass being outside of the 95% confidence interval of the assessment model, even if the previous assessment model had perfect knowledge of for all other parameters.

Despite these findings, it was outlined in the stock assessment that the integrated assessment model approach can still be used to estimate B_{min} ¹ given plausible settings for stock productivity and vulnerability. The B_{min} estimates should be used as a proxy for B_0 ² estimates and that sustainable yields should be calculated

¹ B_{min} – defined as the minimum virgin biomass that would allow the historical catches to be taken assuming a maximum exploitation rate of 67% ([SC5-DW14](#))

² B_0 – virgin biomass



by applying a fixed scalar to the B_{min} associated with an MCY³ policy of 1.45% (i.e., sustainable yield = $0.0145 \times B_{min}$). As outlined in the stock assessment and agreed by SC10, from a scientific perspective this represents a precautionary approach to setting catch limits.

The SC10 recommendations on the catch limits (Table 1) are based on the deterministic calculation of B_{min} and for some stocks include the range of the two natural mortality values considered in the stock assessment ($M=0.03$ and $M=0.045$) when these values differed. New Zealand is proposing that the catch limits are based on the B_{min} estimates where $M=0.03$ is used. These B_{min} estimates fall within the range recommended by SC10 and maintain consistency between stocks regarding natural mortality (Table 1).

Table 1. SC10 recommendations for catch limits and proposed catch limits changes to CMM 03a-2021

Area	Catch limit range (t) recommended at SC10	Proposed catch limits changes to CMM03a-2021
Louisville Ridge Central	305-334	305
Louisville Ridge North	116	116
Louisville Ridge South	145-160	160
West Norfolk Ridge	44	44
Lord Howe Rise	160-174	174
NW Challenger	131-160	160

4. Fisheries Management Areas

To aid with interpretation of the Conservation Management Measures for Bottom Fishing (CMM03) and Deepwater Species (CMM03a), an Annex containing the coordinates of Fisheries Management Areas referred to in the stock Assessments, and accompanying maps, has been added.

5. Conclusion

To allow for orange roughy fishing within the Louisville Ridge, West Norfolk Ridge, Lord Howe Rise and Northwest Challenger, New Zealand requests the Commission adopt the proposed amendments to catch limits for those areas.

Considering the delay to the acoustic biomass survey, New Zealand requests the Commission extends the duration of the current catch limit by one additional year for the Westpac Bank area.

³ MCY - Maximum Constant Yield