

7TH MEETING OF THE COMMISSION

The Hague, The Netherlands, 23-27 January 2019

COMM7 – Prop16.3

Allocation of Orange Roughy in the SPRFMO Convention Area

New Zealand

Purpose of the Paper

1. New Zealand and Australia jointly submitted the Deepwater Species CMM proposing total allowable catch limits for orange roughy for four fisheries in the SPRFMO Convention area (the Tasman Sea, the South Tasman Rise, Louisville Ridge and the Westpac Bank). The proposal noted that the two members were working jointly to finalise the provisions related to the application of catch limits (para 13). Unfortunately, despite considerable efforts, the provisions were unable to be agreed in time for the Commission meeting.
2. In view of the fact that Australia has submitted a paper COMM 7–Prop 16.2 setting out Australia’s proposal for allocation, it is important that members are aware of New Zealand’s views on the correct application of the Convention and New Zealand’s allocation proposal. As members will see, New Zealand has a very different view on the application of the legal framework to the particular circumstances of the fisheries.

New Zealand Allocation Proposal

3. The applicable legal framework governing the Commission’s decisions on allocation is clearly set out in the SPRFMO Convention, particularly Articles 21 and 4. The fundamental principle underpinning the Convention is ensuring the long-term conservation and sustainable use of fishery resources while safeguarding the marine ecosystems in which the resources occur.¹ The Convention sits within, and gives expression to, the broader framework provided by the UN Convention on the Law of the Sea and the UN Fish Stocks Agreement, and is fully consistent with this framework.
4. Decisions on participation in fishing, including allocation,² need to be taken by the Commission in accordance with the criteria set out in Article 21 and where straddling stocks are involved, Article 4. These decisions need to be based in the specific factual circumstances in each fishery, rather than on general notions of fairness and equity.
5. The draft CMM covers four orange roughy fisheries. In three of these New Zealand has been the leading participant with only minor or negligible participation from others. Over decades, New Zealand has invested significantly in these fisheries, contributing the vast majority of the science, and conducting its activities responsibly and consistent with the applicable legal frameworks.

¹ Article 2 and preambular paragraph 1 of the Convention.

² The terms used in the Convention are “participation in fishing” and “allocation” and the Convention does not contain any presumption that allocation decisions should always lead to more than one participant in a fishery. The terms “sharing” or “share” do not appear in the Convention.



6. New Zealand seeks an allocation that is fully consistent with the proper application of the Convention to the particular circumstances of the four fisheries. There is no question of any country seeking or gaining a “monopoly” over any high seas fisheries resources. Any allocation granted by the Commission is based on the proper application of the criteria in Article 21 and the provisions of Article 4, in light of the objective of the Convention, to the specific situation in each of the four fisheries. The allocation applies only for the duration of the CMM, and is subject to future decisions of the Commission, including on prospective new entrants.
7. Based on the criteria in the Convention, New Zealand proposes the following allocation:
- a) Tasman Sea – 90% to New Zealand / 10 % to Australia
 - b) Louisville Ridge – 95% to New Zealand / 5% to Australia
 - c) Westpac Bank – No basis at present for any allocation to any other country than New Zealand.³
 - d) South Tasman Rise – 25% to New Zealand / 75% to Australia⁴

Rationale for proposal: which criteria are relevant to this context?

8. The **key relevant criteria** to this determination in this context:
- Article 21(1)(a) - fishing patterns and historic catch
 - Article 21(1)(d) - contribution to conservation and management
 - Article 21(1)(j) - contribution to science; and
 - Article 21(1)(f) - with respect to the Westpac Bank. the interests of the coastal State with regard to a straddling stock
9. New Zealand’s proposed allocation recognises:
- New Zealand and Australia’s past and present **fishing patterns and historic catch** in the respective fisheries in the Convention Area as set out in Annex II and below [Article 21(1)(a)].
 - New Zealand’s **contribution to scientific research** with respect to the resources [Article 21(1)(j)]. As is set out in Annex III, New Zealand has funded and carried out nearly all of the scientific research on the orange roughy fisheries covered by the measure (NZ research - 75 items; Joint AU/NZ research - 12 items; Australian research - 7 items). New Zealand suggests that a developed country participant seeking a much increased percentage in a fishery would be expected to demonstrate significant contributions to the scientific research programme evaluating the impacts of fishing supporting the ongoing sustainable utilisation of the resource.
 - That New Zealand and Australia have both contributed to the **conservation and management of the fishing resource** including the provision of data and effective monitoring, control and surveillance, commensurate to their fishing effort, by exercising appropriate control over their vessels.⁵ In New

³ See Annex I on the particular circumstances applying to the Westpac Bank which is a fishery straddling New Zealand’s EEZ, with approximately 85% occurring in zone and 15 % in the Convention area.

⁴ This fishery currently has a 0 catch limit but may open again in the future and is included In the draft CMM.

⁵ Australia’s information paper COMM 7 – Prop 16.2, page 3 suggests that there should be less emphasis on catch history due to overfishing. New Zealand considers that this is a mischaracterisation of the situation. Globally there was a strategy during the early years of the orange roughy fisheries to “fish down” the populations to understand the size of populations (e.g. biomass can be estimated based on assessing declines in biomass estimates and the amount of fish removed). It took some time to understand the biology of orange roughy (and its productivity), and during this time, a number of



Zealand’s case this includes the manner in which we report our annual data.⁶ In particular regarding the Westpac Bank, New Zealand cooperated with Australia to manage the stock in the early 1990s and has assumed primary responsibility for the conservation and management of the stock since 2000. New Zealand took measures to address overfishing and applied a precautionary approach to the resumption of commercial fishing in 2010. On this basis, the fishery was certified by the Marine Stewardship Council as a sustainable fishery.

- New Zealand’s **interests as the sole coastal state with respect to the Westpac Bank straddling stock** [Article (21)(f)] including the need to ensure compatibility with and avoid undermining the effectiveness of the existing conservation and management measures established by New Zealand [Article 4].

10. In the current context, New Zealand submits that other criteria in Article 21(1) are of **minimal relevance**:

- Neither New Zealand nor Australia have had any significant incidences of non-compliance with SPRFMO CMMs [Article 21(1)(b)];
- Both Australia and New Zealand have robust systems in place to exercise flag state control [Article 21(1)(c)];
- Article 21(1)(e)⁷, (g) and (h) are clearly inapplicable.
- Article 21(1)(i) is not relevant as there have been no New and Exploratory fisheries related to orange roughy in the SPRFMO Convention Area.

11. Australia has also suggested that the allocation by the Commission to Australia should recognise their good performance in other fisheries management organisations [Article 21(5)]. With respect, New Zealand submits that this is misuse of Article 21(5) which was inserted into the Convention to make it explicit that **poor** performance in other regional fisheries management organisations could be taken into account in deciding allocation.

Further information on the rationale for New Zealand’s proposal:

Louisville Ridge

Louisville Ridge	
Time period	Proportion of Catch (NZ/Aus/other)
2015-2017	95% / 5%
2007-2017	95% / 1% / 4%
2002-2006 (footprint years)	99.9% / 0.1%

orange roughy stocks were fished beyond the maximum sustainable yield. New Zealand responded to the “fish down”, and reduced fishing pressure on the stocks, both domestically and in other fisheries where there were mechanisms to do so. Subsequently, New Zealand made a conscious decision to remain in the fishery and continue to explore ways to better estimate orange roughy biomass, and gain a better understanding of the species’ biology. This has included significant investment from New Zealand Government and industry (both monetary and resourcing), and includes regular monitoring of and a number of attempts to assess stocks on the High Seas. A conscious decision may have been made by other members to withdraw from the fishery for a period of time but this should not undermine or dismiss the ongoing investment made by New Zealand.

⁶ In addition to providing the required monthly data reports, New Zealand also reports annual fishing data to a higher spatial resolution in our National Report each year.

⁷ Both New Zealand and Australia are developed countries.



12. New Zealand has been by far the main flag state fishing this fishery. In the first few years of the fishery other states now members of SPRFMO or CNCPs undertook limited fishing in the area. New Zealand has invested significantly in scientific research on understanding the stock status, structure and biology⁸ including a dedicated research survey focused on understanding the benthic environment on the Louisville Ridge. New Zealand also intends to carry out an acoustic survey in the area in early 2019 to support the updated stock assessment to be presented to Scientific Committee.

13. On this basis New Zealand assesses that **the appropriate allocation would be 95% to New Zealand and 5% to Australia**, which would reflect the status quo over the past three years and represents a considerable increase over what Australian vessels have fished in either the 2007-2017 period or during the footprint years of 2002-2006. New Zealand notes that Australia is seeking an increase from the current figure of 5% to 20% which is 4 times the status quo, and which New Zealand considers is not justified.

Tasman Sea

Tasman Sea	
<i>Time period</i>	<i>Proportion of Catch (NZ/Aus/other)</i>
2015-2017	93%/7%
2007-2017	92%/6%/2%
2002-2006 (footprint years)	86%/14%

14. While New Zealand has also been the predominant presence in the Tasman Sea fishery, New Zealand acknowledges that Australia has had a more consistent presence here than on the Louisville Ridge. The table above shows that there has been a split of the proportion for catch 93% NZ/ 7% Australia over the past three years and this was substantially the same in the 11 year period from 2007 to 2017. The only period with a higher proportion of catch history by Australia was during the footprint years from 2002-2006 when the balance was 86% NZ/14% Australia. Over the past five years New Zealand has had 5-12 vessels operating in the Tasman Sea and Australia one (with the exception of one year when there were two). As with the Louisville Ridge New Zealand has carried out extensive scientific research on the stock.⁹

15. On this basis New Zealand assesses **that the appropriate allocation would be 90% to New Zealand and 10% to Australia**. A relevant factor in the context of past and present fishing practices is that the reduced catch limit means that even under this proposal New Zealand industry would already be drastically reducing catch (by approximately 42% on average when considered against the past 5 years). Australia is seeking an increase from the status quo of 7% to 28%. If Australia increases its catch at this point the already negative impact on the New Zealand industry will be further exacerbated. New Zealand also notes that Australia bases its request of 28% on the need to ensure enough catch for one vessel to be economically viable. This is not a valid criterion to be taken into account in allocation decisions, but even if it were, there would be other ways to address this issue which did not involve such a significant percentage allocation. An option would be to allocate a temporary minimum tonnage which would return back to the appropriate percentages when the catch limit rises due to stock recovery.

⁸ This includes: Reports in 1998 (two), 1999, 2001 (two), 2003, 2004, 2006, and 2008.

⁹ Ibid.



South Tasman Rise

16. This fishery is currently closed with a 0 catch limit but it has been included in the draft CMMs with a view to the area being reopened once the stock rebounds and the necessary scientific work is completed. Historical catch data shows a split between New Zealand and Australia as 25% NZ/ 75% Australia. Australia and New Zealand agreed a Memorandum of Understanding in 1998 prior to the establishment of SPRFMO that contains this percentage split. **It is proposed to carry over the percentage split of 25% to New Zealand and 75% to Australia into the CMM.** With respect to scientific research, New Zealand carried out Catch per Unit Effort analyses for the South Tasman Rise in the early 2000s.

Westpac Bank

Westpac Bank	
Time period	Proportion of Catch (NZ/Aus/other)
2015-2017 (3 yrs)	100%/0
2007-2017 (11 years)	100%/0
2002-2006 (footprint years)	99.9%/<1%

17. The Westpac Bank is part of a stock that straddles the New Zealand EEZ and the high seas, with the majority of the stock (approximately 85%) located within the New Zealand EEZ. New Zealand has exclusively fished the stock in recent years and has managed the stock as a whole (both in-zone and the SPRFMO component) in a sustainable manner. The out of zone component of the fishery is small (200 tonnes) and is presently managed so that vessel operators fishing in the Westpac bank are required to report any catch against the against the limit set for the in-zone fishery under New Zealand’s Quota Management System (see further information in Annex 1). New Zealand vessel operators fishing in the Westpac Bank are required to count and report any catch New Zealand has invested in excess of \$15 million in scientific research to monitor and support management of the stock across its range. This work has led to MSC certification of the whole straddling stock.

18. Australia is seeking an allocation of 20% on the Westpac Bank which in New Zealand’s view, would undermine the effectiveness of New Zealand’s measures and is not justified in accordance with Article 21(1) and Article 4, as explained below in paragraphs 10-25. New Zealand is the only country that has demonstrated substantive investment in the sustainable management and utilisation of this fishery over the past three decades. **New Zealand does not consider there is any basis at present for any other member to seek an allocation on the high seas portion of this stock.**

Application of the legal framework to allocation decisions

19. New Zealand wishes to emphasize that allocation should be based on a proper application of the criteria in Article 21(1) and, with respect to the Westpac Bank, Article 4. This requires that the criteria be applied to the specific fact situation of the fisheries to the extent that they are relevant. New Zealand’s proposal is based on this approach and focusses only on those criteria that are relevant to the particular situation. With respect to the Westpac Bank, which is a straddling stock, the additional criteria of 21(1)(f) and the provisions of Article 4 (which reflects the provisions of Article 7 of the UN Fish Stocks) must also be taken into account.



20. In accordance with Article 21(1)(f), the particular interests of New Zealand as the sole coastal state with respect to this straddling stock must be taken into account. This requires a consideration of how the stock is being managed by the coastal state and the impact that the Commission's allocation decisions would have on this, bearing in mind that the overriding objective of the Commission to ensure long-term conservation and sustainable use of the resources.

21. Article 7 of the UN Fish Stocks Agreement and Article 4 of the SPRFMO Convention ensure that high seas measures reinforce rather than undermine measures adopted by coastal states in their EEZs. With respect to a straddling stock, the Commission is required to ensure compatibility between the CMM it adopts and the measures being taken by the coastal state in its area of national jurisdiction. The Commission also needs to ensure that measures established in the high seas do not undermine the effectiveness of the coastal state's measure.

22. In developing compatible CMMs the Commission must take into account a number of factors including the extent to which the resources occur and are fished in the coastal state's zone – in this case about 85% of the stock. Another factor that needs to be taken into account under Article 4 is the relative dependence of the coastal state and others states on the resources concerned – New Zealand has six vessels operating in the Westpac Bank fishery from five companies, whereas Australia has no current dependence on this fishery.

23. It would not be consistent with the legal framework for the Commission to establish measures for the high seas that would significantly undermine the effect of any catch, effort, or method restrictions adopted by New Zealand, or that would require New Zealand to significantly reduce its EEZ catch to compensate for catch level on the high seas. This is particularly the case given that the CMM will be the first time that SPRFMO has established any specific measures for the Westpac Bank.

24. This is not the same as saying that the current situation must endure in perpetuity or that one state gains a monopoly. New Zealand does not suggest that there has been any "renunciation" of rights or that there is no potential for others to obtain future access.¹⁰ However this should only occur consistent with the provisions of the Convention.

25. Australia has suggested that if the Commission is unable to determine allocation that the Commission should apply a competitive fishery (Olympic) model until such time that an allocation consistent with Article 21 can be agreed. New Zealand considers that a competitive fishery model would be a lesser outcome from a conservation and management perspective. New Zealand is also concerned that this would be a difficult task for the Secretariat to manage, especially with relatively small catch limits. For these reasons New Zealand's strong preference is that allocation be determined to ensure effective management of the fisheries. If this is not possible at the 7th Commission meeting New Zealand suggests the better option would be for the Commission to decide that any such competitive fishery would apply only until such time that the allocation would be determined by an arbitrator (or a panel of arbitrators) who would determine the allocation in accordance with the criteria in Articles 21 and 4, and other applicable rules of international law.¹¹

¹⁰ Cf. Australia's information paper COMM 7 – Prop 16.2 page 3, line 22 and page 4, final paragraph.

¹¹ An arbitration could be quickly established following the 7th meeting of the Commission, organised and paid for by the two countries concerned, New Zealand and Australia.



Annex I

Westpac Bank background information

In 1986, New Zealand set a Total Allowable Commercial Catch (TACC) limit for orange roughy in the Challenger Plateau area, now known as the ORH7A quota management area plus the Westpac Bank area on the high seas. Orange roughy catch remained within the TACC except for in 1986 and 1989 when catch exceeded the TACC (by 555 t (5%) and 1209 t (48%), respectively), likely as the result of fishing on the high seas by other flagged vessels. New Zealand set an annual TACC of 1 t from 2000-2009, effectively closing the fishery for conservation and management purposes while the stock recovered.

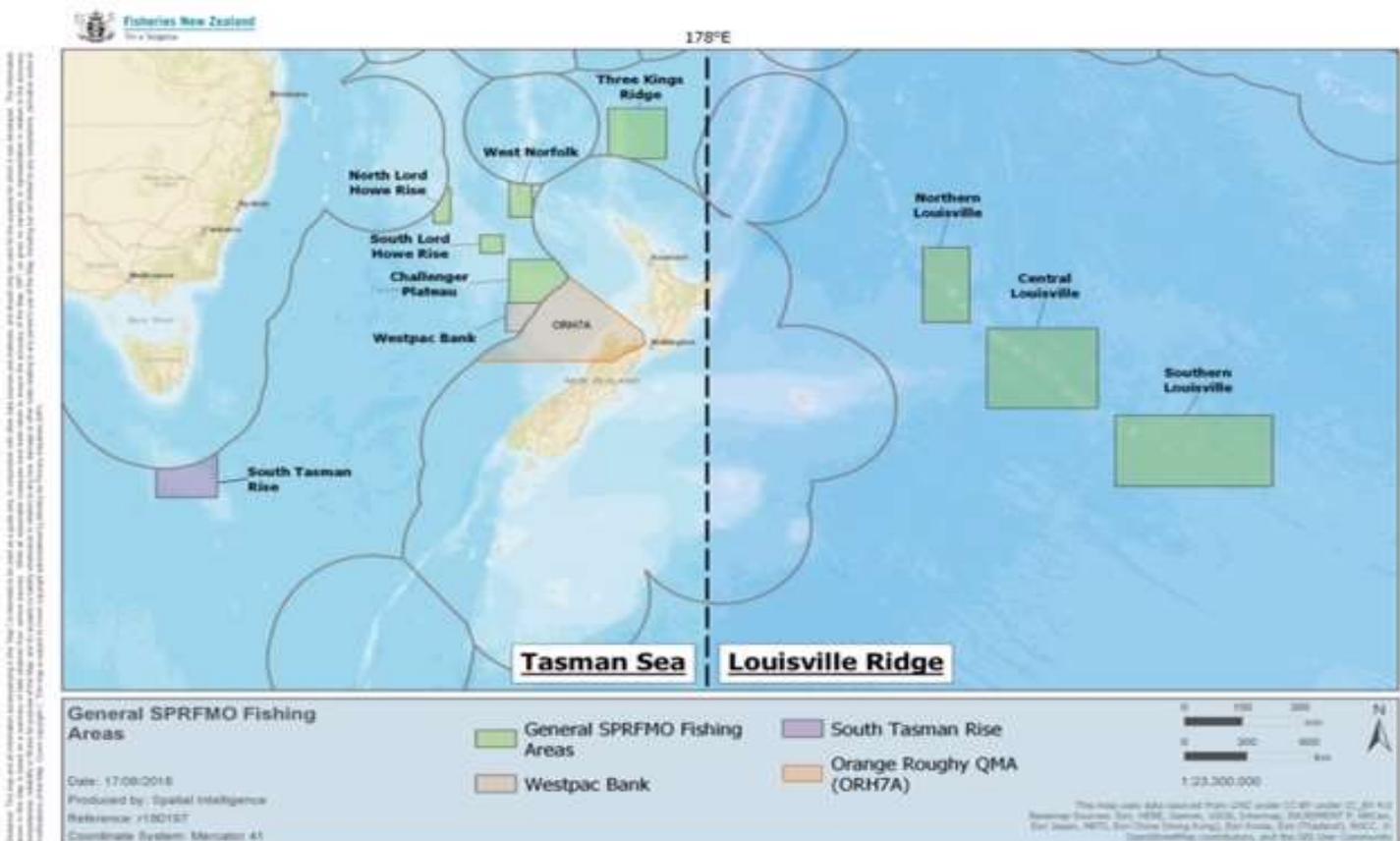
With respect to Westpac Bank, New Zealand and Australia exchanged letters in 1991 agreeing to cooperate in the development of measures to conserve and manage the stock. In 2000, New Zealand sought the continued cooperation of Australia with respect to the Challenger Plateau in accordance with the 1991 Understanding. New Zealand closed ORH7A and the Westpac Bank (through the setting of a 1 t TACC) and Australia continued to ensure its vessels did not fish the high seas areas of the Challenger Plateau (i.e. the Westpac Bank).

Following a number of research surveys, the fishery was re-opened in 2010 with a TACC of 500 tonnes which was increased to 1,600 tonnes in 2014 based on estimates of sustainable yield from a quantitative stock assessment.

New Zealand requires its vessel operators to count the high seas catch of orange roughy from the Westpac Bank against the TACC set for ORH7A to ensure all catch for this stock is accounted for within the TACC.

Under New Zealand’s Quota Management System, Māori tribal groups (the indigenous people of New Zealand) own orange roughy quota within ORH7A through the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

Map of relevant Orange Roughy Fisheries in the SPRFMO Convention Area





Annex II Table of Orange Roughy Catch History in SPRFMO Convention Area

	New Zealand
	Australia
	Other

	Recent catch history (Average of last 3 years, 2015-2017)	Average annual catch from 2007 to 2017 (11 years) From SPRFMO Secretariat data	Footprint years (2002 – 2006)	Historical annual average catch
Westpac Bank	160 (100%)	65 (100%)	14 (100%)	142 (100%) ¹²
	0	0	0	XX ¹³
Louisville Ridge	303 (95%)	385 (95%)	729 (99.9%)	1584 tonnes ¹⁴
	15 (5%)	4 (1%)	1 (<0.1%)	
		18 (4%)		
Tasman Sea	648 (93%)	745 (92%)	1105 (86%)	943 tonnes ¹⁵
	50 (7%)	46 (6%)	187 (14%) ¹⁶	
		16 (2%)		
South Tasman Rise	0	0	0	260 (24%) ¹⁷
	0	0	70 (100%) ¹⁸	758 (69%)
				75 (7%)

¹² For the period 1990-2014.

¹³ Australian catch was taken in 1989/90, although the amount was not reported.

¹⁴ For the period 1990-2014.

¹⁵ For the period 1990-2014.

¹⁶ Based on Australia's National Report, subtracting South Tasman Rise catch

¹⁷ For the period 1997-2006.

¹⁸ Based on data from FAR2008/12



Annex III: Research papers and reports relevant to the management of high seas deepwater bottom fisheries

Key

	Research authored and funded mostly or completely by NZ
	Research authored and funded mostly or completely by AU
	Research authored and funded by AU & NZ

Year	Link	Title	Type	Authors	Funding
1991	FARD 91/02	Assessment of the Challenger Plateau (ORH7A) orange roughy fishery for the 1991-92 fishing year.	NZ-FARD	NZ	NZ
1994	Fish Bull 92: 236-253	Changes in a population of orange roughy with commercial exploitation on the Challenger Plateau, New Zealand	Journal	NZ	NZ
1996	BRS Canberra	A summary of stock assessment information for orange roughy fisheries on the Lord Howe Rise: 1996	BRS report	NZ & AU	NZ & AU
1998	FARD 98/14	Orange roughy fisheries in southern areas of New Zealand: a summary of commercial catch and effort information from 1991-92 to 1996-97 fishing years	NZ-FARD	NZ	NZ
1999	FARD 99/47	An update and standardised analysis of New Zealand commercial catch and effort information for the orange roughy fishery on the Louisville Ridge	NZ-FARD	NZ	NZ
1999	Oceanol Acta 22: 593-602	Fisheries for orange roughy on seamounts in New Zealand	Journal	NZ	NZ
2000	BRS Canberra	South Tasman Rise trawl fishery. In: Caton, A., McLoughlin, K. (eds) Fishery status reports 1999: resource assessments of Australian Commonwealth fisheries	BRS report	AU	AU
2001	FAR 2001/03	A summary of commercial catch and effort information for the orange roughy fishery on the South Tasman Rise from 1987 to 1999.	NZ-FAR	NZ & AU	Mostly NZ
2001	FAR 2001/75	The estimation of catch levels for new orange roughy fisheries on seamounts: a meta-analysis of seamount data	NZ-FAR	NZ	NZ
2001	FAR 2001/74	The Louisville Ridge orange roughy fishery: an update of commercial catch-effort data and CPUE analysis of the fishery to the end of the 1999-2000 fishing year.	NZ-FAR	NZ	NZ
2002	Fish Res 58:119-140	Multiple techniques for determining stock relationships between orange roughy fisheries in the eastern Tasman Sea	Journal	NZ & AU	NZ & AU
2002	FAR 2002/59	Descriptive analysis of orange roughy fisheries in the Tasman Sea outside the New Zealand EEZ: Lord Howe Rise, Northwest Challenger Plateau, and South Tasman Rise from 1986-87 to the end of the 2000-01 fishing year	NZ-FAR	NZ	NZ
2003	FRR ORH2002/03	Estimation of orange roughy biomass on the Louisville Ridge: application of "Seamount Meta-analysis" results	NZ-FRR	NZ	NZ
2003	FAR 2003/03	The Louisville Ridge orange roughy fishery: an analysis of commercial catch-effort data and stock assessment of the fishery to the end of the 2000-01 fishing year	NZ-FAR	NZ	NZ
2003	FAR2003/36	Catch-per-unit-effort analysis of orange roughy fisheries outside the New Zealand EEZ: Lord Howe Rise and Northwest Challenger Plateau to the end of the 2001-02 fishing year	NZ-FAR	NZ	NZ



2003	CSIRO	Analysis of orange roughy catches on the South Tasman Rise, 1997–2002. Report to the Orange Roughy Assessment Group.	CSIRO report	AU & NZ	AU & NZ
2004	FAR 2004/51	Descriptive analysis of orange roughy fisheries in the New Zealand region outside the EEZ: Lord Howe Rise, Northwest Challenger Plateau, West Norfolk Ridge, South Tasman Rise, and Louisville Ridge to the end of the 2002–03 fishing year	NZ-FAR	NZ	NZ
2005	NIWA 2005	Distribution, abundance, and biology of orange roughy on the Challenger Plateau: results of a trawl and acoustic survey, June–July 2005 (THH0501).	Client report	NZ	NZ
2005	NZJMFR 39:839-850	Quantifying the relative intensity of fishing on New Zealand seamounts.	Journal	NZ	NZ
2006	FAR 2006/16	A summary of biological information on the New Zealand fisheries for orange roughy for the 2003–04 fishing year	NZ-FAR	NZ	NZ
2006	FAR 2006/25	Descriptive analysis of orange roughy fisheries in the New Zealand region outside the EEZ: Lord Howe Rise, Northwest Challenger Plateau, West Norfolk Ridge, South Tasman Rise, and Louisville Ridge to the end of the 2003–04 fishing year	NZ-FAR	NZ	NZ
2006	FAR2006/56	Descriptive analysis of orange roughy fisheries in the New Zealand region outside the EEZ: Lord Howe Rise, Northwest Challenger Plateau, West Norfolk Ridge, South Tasman Rise, and Louisville Ridge to the end of the 2004–05 fishing year	NZ-FAR	NZ	NZ
2008	AEBR #27	New Zealand’s “SEAMOUNT” database: recent updates and its potential use for ecological risk assessment	NZ-AEBR	NZ	NZ
2008	FAR 2008/12	Descriptive analysis of orange roughy fisheries in the New Zealand region outside the EEZ: Lord Howe Rise, Northwest Challenger Plateau, West Norfolk Ridge, South Tasman Rise, and Louisville Ridge to the end of the 2005–06 fishing year	NZ-FAR	NZ	NZ
2008	FAR 2008/66	Descriptive analysis of orange roughy fisheries in the New Zealand region outside the EEZ: Lord Howe Rise, Northwest Challenger Plateau, West Norfolk Ridge, and Louisville Ridge to the end of the 2006–07 fishing year	NZ-FAR	NZ	NZ
2009	AEBR #28	Fish and invertebrate biodiversity on the Norfolk Ridge and Lord Howe Rise (NORFANZ voyage, 2003)	NZ-AEBR	NZ & AU	NZ & AU
2009	Lat Am J Aquat Res 37: 501–512	Deep-sea seamount fisheries: a review of global status and future prospects	Journal	NZ	NZ
2010	FAR draft	Review of data and potential stock assessment approaches for orange roughy on the Challenger Plateau (ORH 7A)	NZ-FAR	NZ	NZ
2010	FAR 2010/19	Development of estimates and sustainable catches for orange roughy fisheries in the New Zealand region outside the EEZ: CPUE analyses, and application of the “seamount meta-analysis” approach	NZ-FAR	NZ	NZ
2010	SWG-09-DW-02	An approach to estimation of sustainable catch limits for orange roughy in the SPRFMO Area. Paper to the SPRFMO SWG	SWG-paper	NZ	NZ
2012	FAR 2012/20	Descriptive analysis of catch and effort data from New Zealand orange roughy fisheries in ORH 1, 2A, 2B, 3A, 3B, 7A, and 7B to the end of the 2008–09 fishing year	NZ-FAR	NZ	NZ
2013	<u>SC-01-09</u>	Identification of vulnerable benthic taxa in the western SPRFMO Area and review of move-on rules for different gear types	SC paper	AU	AU



2013	SC-01-20	Spatial analysis of Australian and New Zealand historical bottom trawl fishing effort in the Convention Area of the SPRFMO	SC paper	AU	AU
2013	AEBR #120	Developing predictive models for the distribution of vulnerable marine ecosystems in the South Pacific Ocean region	NZ-AEBR	AU	NZ
2013	FAR 2013/02	Comparison of Challenger Plateau (ORH 7A) orange roughy age estimates between 1987 and 2009	NZ-FAR	NZ	NZ
2013	FAR 2013/48	Acoustic and trawl estimates of orange roughy biomass on the southwest Challenger Plateau, June/July 2011	NZ-FAR	NZ	NZ
2014	Mitochondrial DNA lodgment	The complete mitochondrial genome of the deep-sea stony coral <i>Solenosmilia variabilis</i> and its inter-individual variation	Journal	NZ	NZ
2014	Marine Policy 49: 146-154	A Systematic approach to the identification and protection of Vulnerable Marine Ecosystems.	Journal	NZ	NZ
2014	SC-02-DW-01	Review of the biodiversity component of the New Zealand VME evidence process	SC paper	NZ	NZ
2014	SC-02-DW-02	SPRFMO Bottom Fishing Conservation and Management Overview	SC paper	NZ	NZ
2014	SC-02-DW-03	The estimation of initial biomass and catch limits for Orange roughy	SC paper	NZ	NZ
2014	FAR 2014/15	Acoustic and trawl estimates of orange roughy biomass on the southwest Challenger Plateau, June/July 2012	NZ-FAR	NZ	NZ
2014	FAR 2014/50	The 2014 orange roughy stock assessments (incl ORH7A / Westpac)	NZ-FAR	NZ	NZ
2014	AEBR #135	Review of the biodiversity component of the New Zealand VME Evidence Process	NZ-AEBR	AU	NZ
2014	ISL 2014	A Management Strategy Evaluation for orange roughy	Client Rpt	NZ	NZ
2015	SC-03-DW-01_rev2	New Zealand proposal to conduct exploratory bottom longlining	SC paper	NZ	NZ
2015	SC-03-DW-02	New Zealand research relevant to the assessment of stocks of orange roughy	SC paper	NZ	NZ
2015	SC-03-DW-03	New Zealand notification of amendments to the status of blocks within its bottom fishing footprint for trawl	SC paper	NZ	NZ
2015	Deep Sea Res 98:53-61	Harvest control rules for a sustainable orange roughy fishery.	Journal	NZ	NZ
2015	SC-03-DW-04	Predicting the distribution of Vulnerable Marine Ecosystems and options for designing spatial management areas for bottom fisheries	SC paper	NZ	NZ
2015	FAR 2015/60	Orange roughy age estimates for the Volcano seamount, Challenger Plateau (ORH 7A), for 2014	NZ-FAR	NZ	NZ
2015	AEBR #149	Vulnerable Marine Ecosystems of the Louisville Seamount Chain: voyage report of a survey to evaluate the efficacy of preliminary habitat suitability models	NZ-AEBR	NZ	NZ
2015	AEBR #155	Developing spatial management options for the protection of vulnerable marine ecosystems in the South Pacific Ocean region	NZ-AEBR	NZ	NZ
2016	SC-04-DW-02	New Zealand's exploratory toothfish fishery	SC paper	NZ	NZ
2016	SC-04-DW-03	Preliminary stock assessments for stocks of orange roughy in the western SPRFMO Area using spatially disaggregated CPUE and Bayesian biomass dynamic models	SC paper	NZ	NZ
2016	SC-04-DW-04	Progress towards a revised bottom fishing measure	SC paper	NZ	NZ
2016	FAR 2016/19	Stock management areas for orange roughy in the Tasman Sea and western South Pacific Ocean	NZ-FAR	NZ	NZ



2016	FAR 2016/47	Estimating orange roughy stock size on seamounts: a meta-analysis of physical seamount characteristics	NZ-FAR	NZ	NZ
2016	Ocean Coast Mgmt 120: 110–126	Field validation of habitat suitability models for vulnerable marine ecosystems in the South Pacific Ocean: implications for the use of broad-scale models in fisheries management.	Journal	NZ	NZ
2016	Deep-Sea Res 115: 265-292	Habitat suitability models for predicting the occurrence of vulnerable marine ecosystems in seas around New Zealand	Journal	NZ	NZ
2017	Evol Appl DOI: 10.1111/eva.12509	Population genetic structure and connectivity of deep-sea stony corals (Scleractinia) in the New Zealand region: Implications for the conservation and management of vulnerable marine ecosystems	Journal	NZ	NZ
2017	FAR 2017/01	Low information stock assessment of orange roughy in the South Pacific Regional Fisheries Management Organisation Convention Area	NZ-FAR	NZ	NZ
2017	SC5-DW02	Update for New Zealand's exploratory fishery for toothfish within the SPRFMO Area	SC paper	NZ	NZ
2017	SC5-DW03	Proposals for a revised CMM for bottom fisheries within the SPRFMO Area	SC paper	NZ & AU	Mostly NZ
2017	SC5-DW04	Draft stock assessment framework for bottom fisheries within the SPRFMO Area	SC paper	AU & NZ	Mostly AU
2017	SC5-DW05	New Zealand Stakeholder workshops on potential changes to the current bottom fishing CMM	SC paper	NZ & AU	NZ
2017	SC5-DW06	Methods development for spatially-explicit bottom fishing impact evaluation within SPRFMO: 1. Fishery footprint estimation	SC paper	NZ	NZ
2017	SC5-DW07	Review of the current SPRFMO Bottom fishery Impact Assessment Standard (BFAIS)	SC paper	AU & NZ	AU
2017	SC5-DW08	The utility of move-on rules in CMMS to prevent SAIs of bottom fisheries on VMEs	SC paper	NZ & AU	NZ
2017	SC5-DW09_rev1	Ecosystem approach considerations: Deepwater chondrichthyans in the Western SPRFMO Area	SC paper	NZ	NZ
2017	SC5-DW10	Preliminary ERA for the effects of bottom fishing on deepwater chondrichthyans	SC paper	AU	AU
2017	SC5-DW11	Low information stock assessment of Orange roughy in the SPRFMO Area	SC paper	NZ	NZ
2017	SC5-DW12	A simple delay-difference model for assessment of data-poor Orange roughy stocks	SC paper	NZ	NZ
2017	SC5-DW13_rev1	A data limited approach for assessing small scale fisheries for Orange roughy	SC paper	NZ	NZ
2017	SC5-DW14	Catch history based stock assessments of seven SPRFMO Orange roughy stocks	SC paper	NZ	NZ
2017	SC5-INF03	A CPUE based stock assessment of the Louisville Central orange roughy stock.	SC INF paper	NZ	NZ
2017	SC5-DW15_rev2	Potential scientific advice for Orange roughy stocks within the Western SPRFMO Area	SC paper	NZ & AU	Mostly NZ
2017	SW5-Doc08	Report of the SPRFMO Deep Water Working Group Workshop	SC paper	NZ & AU	NZ & AU
2017	Frontiers Mar Sci 4: 335	High-resolution habitat suitability models for the conservation and management of vulnerable marine ecosystems on the Louisville Seamount Chain, South Pacific Ocean	Journal	NZ	NZ
2018	SC6-DW03_rev2	New Zealand's Proposal for extension to Exploratory Toothfish fishery	SC paper	NZ	NZ
2018	SC6-DW05	Design of acoustic surveys and sampling for Orange roughy stock assessments	SC paper	NZ	NZ
2018	SC6-DW06	Interim categorisation of SPRFMO species into tiered assessment framework	SC paper	AU & NZ	Mostly AU
2018	SC6-DW07	Update on progress on PSA and SAFE ecological risk assessment for secondary teleosts	SC paper	AU	AU



2018	<u>SC6-DW08</u>	Quantitative risk assessment for Deepwater sharks caught in SPRFMO bottom Fisheries	SC paper	AU	AU
2018	<u>SC6-DW09</u>	Methods of deriving thresholds for VME encounter protocols for SPRFMO bottom fisheries	SC paper	NZ & AU	NZ
2018	<u>SC6-DW10</u>	Cumulative bottom impact statistics for SPRFMO bottom fishing methods	SC paper	NZ	NZ
2018	<u>SC6-DW11</u>	Methods of designing spatial management areas using outputs from Zonation	SC paper	NZ	NZ
2018	<u>SC6-DW12</u>	Summary of scientific underpinnings of proposals for a revised bottom fishing CMM	SC paper	NZ & AU	Mostly NZ
2018	<u>SC6-DW13</u>	Review of the SPRFMO Bottom Fishery Impact Assessment Standard (BFIAS)	SC paper	AU & NZ	AU & NZ
2018	<u>SC6-DW14</u>	Benthic Sampling and bycatch data, Including VME taxa, in SPRFMO bottom Fisheries	SC paper	NZ	NZ
In press	Fish Res 211: 256–274	Ensemble habitat suitability modeling of vulnerable marine ecosystem indicator taxa to inform deep-sea fisheries management in the South Pacific Ocean	Journal	NZ	NZ
In review	Nature Scientific Reports	Patterns of genetic connectivity among four deep-sea demosponges in the New Zealand region: implications for the protection of vulnerable marine ecosystems	Journal	NZ	NZ
In review	Ocean and Coastal Management	Examining the utility of a decision-support tool to develop spatial management options for the protection of vulnerable marine ecosystems on the high seas around New Zealand	Journal	NZ	NZ
In review	NZ-AEBAR	Genetic connectivity of deep-sea corals in the New Zealand region	NZ-AEBAR	NZ	NZ