



30 August 2019

Document Number: B19-0373

October 2019 Sustainability Round Decisions

Purpose:

This briefing seeks your decisions on sustainability and related measures for selected stocks for the 1 October 2019 fishing year.

Minister	Action Required:	Minister's Deadline
Minister of	<p>Note the contents of this briefing.</p> <p>Note your legal obligations under the Fisheries Act 1996, as set out in the attached documents.</p> <p>Agree to make and record the decisions outlined in the decision document.</p>	<p>Decisions are requested by 17 September to allow Gazettal of decisions.</p> <p>You may wish to take an oral item to Cabinet ahead of your decisions</p>

Comments:

A high level of tangata whenua and stakeholder interest is expected in relation to your decisions on the tarakihi proposals. A medium level of interest is expected in relation to your decisions on the orange roughy, hoki and hake proposals.

Contact for telephone discussion (if required)

	Name	Position	Work	Mobile
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1. Key points

1.1. Sustainability and related measures

This paper seeks your decisions in relation to the October 2019 Sustainability Review. We provide options to set or vary Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC), and allowances for Māori customary and recreational catch, and other mortality to stocks from fishing for the following 20 QMS stocks for the fishing year beginning 1 October 2019:

Top of the South Island Trawl fishery

- Elephant fish (ELE 7: Top of the South Island)
- Gurnard (GUR 7: top of the South Island)
- John dory (JDO 7: Top of the South Island)
- Rig (SPO 7: Top of the South Island)

Inshore stocks

- Kina (SUR 1A, 1B: North east coast of North Island)
- Pāua (PAU 4: Chatham Islands)
- Red Snapper (RSN 1, 2: Entire New Zealand coast)
- Tarakihi (TAR 1, 2, 3, 7: East coast North and South Island)

Deepwater stocks

- Gemfish (SKI 3, 7: Entire South Island and lower west coast North Island)
- Hake (HAK 7: West Coast South Island)
- Hoki (HOK 1: Entire New Zealand EEZ)
- Ling (LIN 7: West Coast South Island)
- Orange roughy (ORH 3B: East Coast South Island,
- Orange roughy (ORH 7A: West Coast South Island)

We have consulted on the options with representatives of people who have an interest in the stocks or the effects of fishing on the aquatic environment in the areas concerned, including Māori, environmental, commercial, and recreational interests.

We have provided for input and participation of tangata whenua on these decisions, primarily through iwi fisheries forums, which have been set up for this purpose. We have identified species and areas over which these groups have expressed kaitiakitanga, to which you must have particular regard when making these decisions.

Full submissions on all of the proposals are attached.

1.2. Deemed Value Rates

We also propose amendments to the deemed value rates (under Part 4 of the Act) for eight stocks:

- Bluenose – BNS 7 (West Coast South Island)
- Black cardinalfish – CDL 5 (southern South Island)
- Jack mackerel – JMA 7 (West coast North and South Island)
- Kingfish – KIN 3 (East coast South Island and southern part of EEZ)
- Rubyfish – RBY 5 and 6 (southern South Island)
- Silver warehou – SWA 3 and 4 (East coast South Island and southern part of EEZ).

We have consulted about amendments to deemed value rates with representatives of classes of people who have an interest in the stocks, including Māori, environmental, commercial, and recreational interests.

1.3. Amateur Charter Vessels reporting

Note that we also consulted on extending requirements for amateur-fishing charter operators to report species catch information. This is for your information only; decision-making on this measure is delegated to the Inshore Fisheries Manager within Fisheries New Zealand.

All submissions support the proposed measures in principal with many suggesting the proposals could go further. However, our policy is to include catch reporting of species that make the most significant direct contribution to fisheries management. We consider that reporting on catch of blue cod, scallops, snapper and tarakihi should be required to improve the quality and quantity of information obtained from the charter vessel reporting system, and contribute substantially to more informed management of these key shared fisheries.

1.4. Next steps

Officials are available to talk to you about the October Sustainability Round on 9 September.

You are requested to make your decisions regarding the October 2019 Sustainability Round by 17 September.

Fisheries New Zealand and the Parliamentary Counsel Office will draft the Gazette notice for you to sign on 19 September.

The new and revised measures for the 2019/20 fishing year will be published in the Gazette on 23 September. The new and revised sustainability measures will all be in place for 1 October 2019.

Recommendations

1. Fisheries New Zealand recommends that you:

a) **Agree** to the contents of this briefing

Agreed / Not Agreed

Dan Bolger
Deputy Director-General
Fisheries New Zealand

Hon Stuart Nash
Minister of Fisheries

/ / 2019

2 Executive summary

This paper proposes that you set or vary TAC, TACC, allowances and deemed value rates for selected fish stocks.

2.1. Proposals to set or vary TAC, TACC, and allowances

The options, their implications and themes from submissions are summarised in the tables on the subsequent pages for each stock. Recommended options are shaded in blue.

Pāua (PAU 4: Chatham Islands)

Decision sought: Set TAC, reduce TACC.

Reason: No TAC set under old act, fishery appears to be declining.

Key considerations: There is a PAU 4 Fisheries Plan which includes a commitment to shelve 40% of ACE.

Option 3 is preferred as it takes the PAU 4 Fisheries Plan into account, but moves the TAC and TACC towards a level that is more consistent with the long term sustainable catch level for PAU 4 than Options 1, 2 or 4.

Option	Way (how the option will achieve the objective of rebuilding the stock)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
1	<ul style="list-style-type: none"> Set TAC, no change to TACC 	On-going decline in stock status	No change	No change	Te Ohu Kaimoana, PāuaMAC4, Iwi Collective Partnership, Ngati Mutunga, Specialty and Emerging Fisheries Group
2	<ul style="list-style-type: none"> Set TAC, reduce TACC by 10% 	Unknown, insufficient data	Reduction in revenue of \$1.3m p/a based on port price	No additional impact since the options proposed will reduce take, and the collection method has minimal impact.	None
3	<ul style="list-style-type: none"> Set TAC, reduce TACC by 20% 		Reduction in revenue of \$2.5m p/a on port price		None
4	<ul style="list-style-type: none"> Set TAC, reduce TACC by 30% 		Reduction in revenue of \$3.8m p/a on port price		Forest & Bird, Our Seas Our Future, RRNZSPCA, ECO

Red snapper (RSN 1 and 2: entire New Zealand coast)

Decision sought: Reduce the TAC and TACC for RSN 1 and increase the TAC and TACC for RSN 2.

Reason: The TACC in RSN 1 has been significantly under-caught since 2000; The TACC in RSN 2 TACC has been fully caught or over-caught in four of the last five years. The over catch in RSN 2 creates an obligation to pay deemed values. Since RSN is primarily a bycatch stock, once the TACC has been fully caught fishers are deterred from fishing for the target species in order to avoid the deemed value burden of catching further RSN. The proposal is to rebalance the TACC across the two stocks to accommodate snapper catch in both QMAs.

There has been no stock assessment and the biomass relative to the target is unknown, however anecdotal evidence indicates that the stock in RSN 1 has declined since the early 2000s while the stock in RSN 2 has increased.

Option 2: preferred – only one proposal was consulted on and while environmental and recreation groups support the status quo, we consider that redressing the balance of TACC across the two stocks will support the balance between sustainability and utilisation of snapper, while reducing the associated deemed value burden, which will support utilisation of target stocks.

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above the target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
1	<ul style="list-style-type: none"> Status quo 	N/A	On-going deemed value burden and/or reduce target catch	No change	Environmental and recreational groups support status quo or reduction in TAC and TACC in both QMAs.
2	<ul style="list-style-type: none"> RSN 1: reduce TAC by 43% and TACC by 48% RSN 2: increase TAC by 340% and TACC by 386% 	When implemented	Reduced deemed value burden	Unlikely to significantly change fishing effort or area, so unlikely to be significant change in environmental impacts	Te Ohu Kaimoana, the Iwi Collective Partnership and Industry Support Option 2.

Kina (SUR 1A and 1B: north east coast of North Island)

Decision sought: Retain the status quo.

Reason: We reviewed this stock as fishers have been telling us that the stocks could support increased harvest without causing any sustainability concerns, and growing the industry could help reduce 'kina barrens' which occur when high abundance of kina reduces the prevalence of other species in an area. However, kina is a low knowledge stock, increased kina take may not target kina barrens, and kina stocks in some countries around the world are experiencing depletion, therefore we recommend a cautious response until we have more information.

Key considerations: Finer scale monitoring information will be available from later in 2019.

Option 1: retaining the status quo is preferred until we have more information about these stocks.

Option	Way (means of achieving objective of increasing utilisation while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
1 Status quo	<ul style="list-style-type: none"> No change 	No change	No change	No change	Te Ohu Kaimoana, RNZRNZSPCA
2	<ul style="list-style-type: none"> Increase TAC and TACC by 20% 	--	Revenue increase: SUR 1A \$1,000 p/a SUR 1B \$27,000 p/a based on port price	May improve kina barrens, where over growth of kina impede other species	Kina Industry Council, Specialty and Emerging Fisheries Group if further reviewed in 2021
3	<ul style="list-style-type: none"> Increase TAC and TACC by 50% 	—	Revenue increase: SUR 1A \$2,500 p/a SUR 1B \$67,000 p/a based on port price		Kina Industry Council, Specialty and Emerging Fisheries Group, Sea Urchin New Zealand Fish Forever, if implemented with monitoring 4 individual submitters and 16 form submitters

Tarakihi (TAR 1, 2, 3 and 7: east coast North and South Islands)

Decision sought: Reduce the TAC and TACC for these four tarakihi stocks.

Reason: The biomass of these stocks is below the target range and the soft limit established through the Harvest Strategy Standard (HSS) and a time limited rebuilding plan is warranted.

Key considerations: In 2018 you decided to approach rebuilding the stocks through a two-stage process. As part of this you invited the industry to submit a plan to support the rebuilding using alternatives to catch reductions, given the industry's concerns about the economic impacts of significant catch reductions. We consider that there is uncertainty as to whether the industry plan would deliver an accelerated rate of rebuilding. The industry has committed to a 20 year timeframe to rebuild the stock, which is double the rate promoted by the HSS.

Option 2: would provide the most reliable way to rebuild the stock at a rate consistent with the guidance in the HSS;

Option 4: incorporates TACC reductions in conjunction with implementation of the industry plan.

Option	Way	Rate	Socio economic impacts ¹	Environmental impacts	Supported by
1	<ul style="list-style-type: none"> • Reduce TAC by 28% • Reduce TACC by 31% • Cuts unevenly spread across QMAs 	12 years	-\$14,830,000 in National GDP *	Reduced due to reduced fishing effort	Options 1 and 2 were most supported by submitters other than Industry.
2	<ul style="list-style-type: none"> • Reduce TAC 32% • Reduce TACC by 35% 	11 years	-\$15,860,000 in National GDP *	Reduced due to reduced fishing effort	Options 1 and 2 were most supported by submitters other than Industry.

¹ The socio- economic impacts are calculated over the entire rebuild period and therefore take into account the cuts that were made during the 2018 sustainability round.

	<ul style="list-style-type: none"> • Cuts evenly spread across QMAs 				
3	<ul style="list-style-type: none"> • Amend biomass target to 35% • No TAC, TACC reductions • Implement Industry Rebuild Plan 	TACC cuts alone: 27 years; Industry has committed to 20 years	-\$6,060,000 in National, GDP *	No change, when compared to the current catch limits, since the fishing effort would not change	Supported by industry as it would mitigate socioeconomic impacts on fishers
4	<ul style="list-style-type: none"> • Reduce TAC 6% • Reduce TACC 7% and implement Industry Rebuild Plan 	TACC cuts alone: 25 years; Industry has committed to 20 years	-\$8,000,000 in National GDP *	Reduced due to reduced fishing effort	New option, not consulted on, but combines elements that were consulted on – Industry plan + TACC cuts

* These figures are annual economic impacts associated with the first year of the proposed catch limit settings for each option. When considering the 'Total Economic Impact' in relation to the relative rebuild period of each option, these figures should not be multiplied by the total number of years of the rebuild under each option. This is because the impacts are likely to reduce over time as fishers adapt their behaviour to changes in fishing technology, allowing for greater fishing precision. Furthermore, the long-term impact will also be influenced by other factors such as environmental conditions, climate change, and fluctuations in recruitment further complicating the calculation of the 'Total Economic Impact'. Therefore, these figures should instead be used as a general comparison of the options.

Top of the South Island trawl fishery

Decision sought: increase the TAC and TACC for gumard, rig and John dory, and set a TAC for elephant fish in the top of the South Island trawl fishery.

Reason: The biomass of these gurnard, rig and John dory stocks is likely to be above the target biomass and there is an opportunity to increase utilisation. No TAC was set for elephant fish in this QMA under the old act and it is timely to set one in the context of this review.

Key considerations: We are reviewing these stocks together because a multi-species approach considers the linkages and interdependencies between these stocks, the biological factors (such as stock productivity and abundance), and target and bycatch interactions. This approach is a step towards more explicit consideration of ecosystem based fisheries management (EBFM).

Gumard (GUR 7): Option 3 is preferred as it would provide for the highest level of utilisation of the available stock while maintaining the stock above the target biomass, without a significant increase in the trawl footprint.

Rig (SPO 7): Option 3 is preferred as it would provide for the highest level of utilisation of the available stock while maintaining the stock above the target biomass, without a significant increase in the trawl footprint.

John dory (JDO 7): Option 2 is preferred as it would provide for the best balance between utilisation of the available stock while maintaining the stock above the target biomass, without a significant increase in the trawl footprint.

Elephant fish (ELE 7): Only one proposal was consulted on – to set the TAC at a level that equals the current TAC plus allowances for Māori customary and recreational fishing and all other mortality from fishing.

Option	Way (means of achieving objective of increasing utilisation while maintaining the stocks at or above their targets)	Socio-economic impacts	Supported by
Gurnard			
1 status quo	• No change	No change	Recreational and environmental groups
2	• Increase TAC and TACC by 10%	Estimated revenue increase of \$51,000 p/a based on port price	Te Ohu Kaimoana supports option 2, although would support option 3 in conjunction with a

Option	Way (means of achieving objective of increasing utilisation while maintaining the stocks at or above their targets)	Socio-economic impacts	Supported by
Gumard			
3	• Increase TAC and TACC by 20%	Estimated revenue increase of \$102,000 p/a based on port price	fisheries plan that has full commitment of quota holders Industry support option 3 for GUR 7
Rig (SPO 7)			
1 status quo	• No change	No change	Recreational and environmental groups
2	• Increase TAC and TACC by 10%	Estimated revenue increase of \$44,300 p/a based on port price	Te Ohu Kaimoana supports option 2, although would support option 3 in conjunction with a fisheries plan that has full commitment of quota holders
3	• Increase TAC and TACC by 20%	Estimated revenue increase of \$88,500 p/a based on port price	Industry support option 3 for SPO 7
John dory (JDO 7)			
1 status quo	• No change	No change	Recreational and environmental groups
2	• Increase TAC and TACC by 10%	Estimated revenue increase of \$44,600 p/a based on port price	Te Ohu Kaimoana
3	• Increase TAC and TACC by 20%	Estimated revenue increase of \$89,300 p/a based on port price	Industry requested an option 3 for JDO 7

Option	Way (means of achieving objective of increasing utilisation while maintaining the stocks at or above their targets)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Supported by
<p>Elephant fish (ELE 7)</p>	<ul style="list-style-type: none"> • Set TAC at 127 tonnes 		<p>No change</p>	<p>New Zealand Sport Fishing Council, LegaSea and New Zealand Angling Casting Association</p> <p>ECO, Forest and Bird, Our Seas Our Future, individual recreational fishers and environmental submitters did not support the proposal however, it appears that they mistook the <i>setting</i> of a TAC as an <i>increase in take</i> rather than representing the current TACC plus allowances.</p>

Hake (HAK 7: West Coast South Island)

Decision sought: Reduce the TAC and TACC.

Reason: The 2019 stock assessment indicated that the biomass is 17% B_0 - below the soft limit of 20% B_0 . A time-bound rebuilding plan is warranted.

Key considerations: The key uncertainty in data for this stock relates to recruitment levels and we have modelled projections of biomass based on two scenarios – low recruitment and average recruitment.

Option 2 is preferred as there is anecdotal evidence to support the assumption that recruitment will be about average and this option would enable the stock to rebuild at a rate consistent with the HSS guidance; this option would support growth, even if recruitment is slightly below average.

Option	Way (means of achieving objective of rebuilding the stock)	Rate (when the objective is likely to be achieved)		Socio-economic impacts	Environmental impacts	Supported by
		Low recruitment scenario	Avg. recruitment scenario			
1	• Reduce TAC, TACC by 38%	Stock would continue to decline	10 years	Short-term revenue loss of \$1.3m p/a export value	Decrease in fishing effort would result in reduced effects of fishing on the aquatic environment	Deep Water Group, Te Ohu Kaimoana, Iwi Collective Partnership, Sealord
2	• Reduce TAC, and TACC by 55%	Stock would continue to decline	7 years	Short-term revenue loss of \$4.4m p/a export value		None
3	• Reduce TAC and TACC by 73%	16 years	5-7 years	Short-term revenue loss of \$7.5m p/a export value		Our Seas Our Future, RRNZSPCA, Royal Forest and Bird Protection Society

Hoki (HOK 1: entire New Zealand EEZ)

Decision sought: reduce TAC and TACC, applying the full TACC reduction to the western stock, with no change in catch limit for the eastern stock.

Reason: The eastern stock is above the management target and slowly increasing – no change is proposed. The 2019 assessment for the western stock was uncertain; different models produced different results, one within target and one well below target. Nonetheless catch and effort data, along with anecdotal information, indicates that the stock has likely declined.

Key considerations: Non-statutory measures are currently in place, including ACE shelving, area closures during spawning, and measures to avoid catching juvenile hoki.

Option 2 is preferred as it provides more certainty than Option 1 that western hoki stock would rebuild within 5 years.

Option	Way (means of achieving objective rebuilding the stock)	Rate (when the objective is likely to be achieved)	Socio economic impacts	Environmental impacts	Supported by
Status quo	<ul style="list-style-type: none"> Retain existing TAC Reduce catch limit for western stock by 39% via industry ACE shelving 	2024 or earlier (assuming industry ACE shelving)	<ul style="list-style-type: none"> \$55m p/a reduction in export revenue based on 150,000 tonne TACC being fully caught \$25m reduction taking into account current ACE shelving of 20,000 tonnes 	Reductions in fishing effort would reduce impacts on the environment	Deepwater Group, Sealord Note that the Deepwater Group favours retention of the status quo and retention of the non-statutory measures
1	<ul style="list-style-type: none"> Reduce TAC by 13% Reduce catch limit for western stock by 22% 	The stock would continue to decline	<ul style="list-style-type: none"> \$34m p/a reduction in export revenue based on 150,000 tonne TACC being fully caught No change based on current ACE shelving of 20,000 tonnes 		No submissions explicitly supported this option

Option	Way (means of achieving objective rebuilding the stock)	Rate (when the objective is likely to be achieved)	Socio economic impacts	Environmental impacts	Supported by
2	<ul style="list-style-type: none"> • Reduce TAC by 20% • Reduce catch limit for western stock by 33% 	2024	<ul style="list-style-type: none"> • \$47m p/a reduction in export revenue based on 150,000 tonne TACC being fully caught • \$17m reduction in export value taking into account current ACE shelving of 20,000 tonnes 		Recreational and environmental submitters preferred this option; some environmental groups suggested greater reductions

Ling (LIN 7: West Coast South Island)

Decision sought: Increase TAC and TACC.

Reason: The 2017 stock assessment for LIN 7 indicates that the biomass is very likely to be at or above the management target. This indicates there is an opportunity to sustainably increase the catch limits for this stock.

Key considerations: Ling is managed as a tier 1 species under the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019.

We propose that you increase Māori customary allowance to reflect the potential for customary take through the recently approved pātaka.

Option 1 is preferred as it provides for increased utilisation while maintaining the biomass within the target range.

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio economic impacts	Environmental impacts	Supported by
1	<ul style="list-style-type: none"> Increase TAC and TACC by 10% 	Biomass projected to remain the same to at least 2022	<ul style="list-style-type: none"> \$1.1m p/a additional export revenue Deemed value payments reduce by \$1.7m p/a 	Small increase in TAC unlikely to increase environmental impacts	Te Waka a Māui, Forest & Bird (but concerned about increased bycatch of other stocks)
2	<ul style="list-style-type: none"> Increase TAC and TACC by 20% 	N/A	<ul style="list-style-type: none"> \$2.24m p/a additional export revenue 	Unlikely to result in adverse effects due to low rate of marine mammal captures, low risk to sea bird species and minimal effects on the benthic environment	Deepwater Group (but seeks increased observer coverage), Sealord, Iwi Collective Partnership, Te Ohu Kaimoana (if industry implements shelving)

Orange roughy (ORH 3B East Coast South Island)

Decision sought: Increase the TAC and TACC

Reason: A recent stock assessment that indicates that the biomass for this stock is within the management target range for the stock, and a utilisation opportunity exists.

Key considerations: Orange roughy is managed as a tier 1 species under the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019.

Option 1 is the only option consulted on; this is in line with the staged increase you agreed to in 2018.

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
Status quo	No change	N/A	No change	No change	Deep Sea Conservation Coalition, Forest & Bird and ECO on the grounds that the biomass is at the lower end of target range
1	<ul style="list-style-type: none"> Increase TAC and TACC by 11% 	Projected biomass increase to 37%	Increase in export revenue of \$8.26m p/a	Low capture rates of mammals and seabirds. Bottom trawl impacts on benthic environment, but trawl footprint unlikely to expand significantly, if at all under this option	Te Ohu Kaimoana, Iwi Collective Partnership, Sealord and Deepwater Group

Orange roughy Challenger Plateau (ORH 7A + Westpac Bank) West Coast South Island

Decision sought: Increase the TAC and TACC

Reason: A recent stock assessment that indicates that the biomass for this stock is within the management target range for the stock, and a utilisation opportunity exists.

Key considerations: Orange roughy is managed as a tier 1 species under the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019.

We propose that you increase the customary Māori allowance to reflect recently approved pātaka.

Option 2 is preferred as it would allow for increased utilisation while maintaining the biomass of the stock within the target range for at least 8 years.

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
1 Status quo	No change	No change	Forgoes utilisation opportunity	No change	Deep Sea Conservation Coalition, ECO, Forest & Bird, Greenpeace NZ, OSOF, RRNZSPCA on the basis that bottom trawling has unacceptable impacts on the benthic environment
2	<ul style="list-style-type: none"> Increase TAC and TACC by 29% 	Projected to maintain biomass within target range for 8 years	Increase in export value of \$3.5m p/a, but would forgo some utilisation opportunity	Trawl footprint may increase, but unlikely to increase beyond peak footprint in 1990s or to	Deepwater Group, the Iwi Collective Partnership, Sealord and Te Ohu Kaimoana

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
3	<ul style="list-style-type: none"> • Increase TAC and TACC by 38% 	Projected to maintain biomass within target range for 4 years	Increase in export value of \$4.6m p/a	include any new underwater features No increased impact on associated or dependent species expected given low bycatch and interaction rates with mammals and seabirds.	None
4	<ul style="list-style-type: none"> • Increase TAC and TACC by 52% 	Projected to maintain biomass within target range for 4 years	Increase in export value of \$6.5m p/a		None

Gemfish (SKI 3 & SKI 7: entire South Island and lower west coast North Island)

Decision sought: Increase the TAC and TACC.

Reason: The 2019 stock assessment indicates that biomass of SKI 3 and SKI 7 has increased considerably during recent years due to above average recruitment, and a utilisation opportunity exists. Gemfish in SKI 3 and 7 is almost exclusively taken as bycatch and as the stock has increased the catch has exceeded TACC which creates deemed values obligations.

Key considerations: Gemfish is managed as a tier 1 species under the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019. All options propose to increase Māori customary allowance to reflect the recently approved pātaka.

Option 2 for SKI 3 and Option 1 for SKI 7 are preferred as they would increase the TACCs to the level of actual catch, which will reduce the deemed values obligations and the actual catch is unlikely to increase.

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
SKI 3				Gemfish is primarily taken as bycatch and impacts from changes to catch limits are expected to be minimal.	
Status Quo	No change	No change	No change		ECO and Our Seas Our Future
1	<ul style="list-style-type: none"> Increase TAC by 52% Increase TACC by 50% 	Increases TACC to reflect a proportion of actual commercial catch, unlikely to increase catch or affect biomass	No change in export earnings however deemed value payments would reduce by 50%		RNZSPCA
2	<ul style="list-style-type: none"> Increase TAC by 106% Increase TACC by 100% 	Increases TACC to reflect actual commercial catch, unlikely to increase catch	No change in export earnings however deemed value payments would reduce by 100%	Deepwater Group, Iwi Collective Partnership, Southern Inshore and Te Ohu Kaimoana	

Option	Way (means of achieving objective of balancing catch with ACE while maintaining the stock at or above target)	Rate (when the objective is likely to be achieved)	Socio-economic impacts	Environmental impacts	Supported by
SKI 7					
Status quo	No change	No change	No change		ECO and Our Seas Our Future Te Ohu Kaimoana opposed the proposed change due to the association of 28N rights with the stock
--	--	--	--	--	RNZSPCA supported a 50% increase
1	<ul style="list-style-type: none"> • Increase TAC by 106% • Increase TACC by 100% 	Increases TACC to reflect actual commercial catch, unlikely to increase catch or affect biomass	No change in export earnings however deemed value payments would reduce by 100%	Gemfish is primarily taken as bycatch and impacts from changes to catch limits are expected to be minimal.	Deepwater Group, Iwi Collective Partnership support provided 28N rights are given effect Southern Inshore supported, and noted that the 28N impact needs to be balanced against on-going deemed value payments

2.2. Proposals to adjust deemed value rates

The rationales for proposals for each stock being reviewed are:

- i. **Bluenose BNS 7 (West Coast South Island) – Increase the annual deemed value rate so as to provide a greater incentive for fishers to balance catch with ACE.**
- ii. **Black cardinalfish CDL 5 – (southern South Island) Decrease the annual deemed value rate so as to reduce the deemed value payments to quota value ratio.**
- iii. **Jack mackerel JMA 7 - (West coast North and South Island) Increase the annual deemed value rate, and introduce a stringent differential schedule, so as to provide a greater incentive for fishers to balance catch with ACE.**
- iv. **Kingfish KIN 3 – (East coast South Island and southern part of EEZ) Decrease the annual deemed value rate so as to reduce the level of deemed value rate payments for this low TACC stock.**
- v. **Rubyfish RBY 5/6 – (southern South Island) Remove the differential schedule, as both stocks have a 0 tonne TACC.**
- vi. **Silver warehou SWA 3/4 – (East coast South Island and southern part of EEZ) Reduce the annual deemed value rates so that they are set between the ACE and the port price.**

The table below sets out the current and proposed deemed value rates for the stocks being reviewed:

Species	Stock	Current				Proposed			
		Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differ-ential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differ-ential ²
Bluenose	BNS 7	2.70	3.00	10.00	Special	3.60	4.00	11.00	Special
Black cardinalfish	CDL 5	0.26	0.52	0.52	-	0.27	0.30	0.30	-
Jack Mackerel	JMA 7	0.14	0.15	0.30	Standard	0.18	0.20	0.30	Special
Kingfish	KIN 3	8.00	8.90	17.80	Standard	4.00	4.45	8.90	Standard
Rubyfish	RBY 5	0.25	0.28	0.56	Standard	0.25	0.28	0.28	-
	RBY 6	0.25	0.28	0.56	Standard	0.25	0.28	0.28	-
Silver warehou	SWA 3	1.57	1.74	3.00	Special	0.63	0.70	2.00	Special
	SWA 4	0.50	1.22	3.00	Special	0.63	0.70	2.00	Special

² Where there is already a special differential set, the change to the special in this column is due to the annual rate change and not to the differential percentages applied.

3. Introduction

3.1. Overview of powers and obligations under the Fisheries Act 1996

3.2. Decisions Ministers may make in relation to sustainability reviews

There are three things you, as Minister of Fisheries, may do relating to sustainability under the Fisheries Act:

Part 3 Sustainability Measures

- Set and vary sustainability measures such as the Total Allowable Catch (TAC)

Part 4 Quota Management System

- Set and vary Total Allowable Commercial Catch (TACC) within the limits of the TAC and making allowances for Māori customary and recreational fishing and all other mortality to the stock caused by fishing
- Set deemed value rates to provide an incentive for fishers not to exceed the available ACE.

In making decisions on those things there are a number of things you are required to do, take into account, or have regard to.

3.3. Overarching requirements

Section 5: You must act in a manner consistent with New Zealand's International obligations relating to fishing, and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

Section 9: you must take into account the following environmental principles:

- (a) associated or dependent species should be maintained above a level that ensures their long-term viability
- (b) biological diversity of the aquatic environment should be maintained
- (c) habitat of particular significance for fisheries management should be protected.

Section 10: you must take into account the following information principles:

- (a) decisions should be based on the best available information
- (b) decision makers should consider any uncertainty in the information available in any case
- (c) decision makers should be cautious when information is uncertain, unreliable, or inadequate
- (d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

Sections 12, 21 and 75A require you to consult before making decisions on sustainability measures, TACC, and deemed values rates, respectively.

3.4. The Hauraki Gulf Marine Park Act 2000

Section 11 of the Fisheries Act (discussed below) requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when setting or varying the TAC. Section 13 of the HGMPA requires that you have particular regard to sections 7 and 8 of the HGMPA when setting or varying TACCs and deemed values.

Section 7 of the HGMPA recognises the national significance of the Hauraki Gulf and section 8 sets out objectives for management of the Gulf.

Decisions the Minister may make	Requirements – things the Minister must do when making decisions
Part 3 Sustainability Measures	
<p>Note: The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in the QMS. It is intended to provide guidance as to how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of QMS species while ensuring sustainability.</p>	
<p>Section 11 The Minister may set and vary sustainability measures for any stock</p> <p>S11(3) Sustainability measures may relate to (but are not limited to):</p> <ul style="list-style-type: none"> • Catch limits • Size, sex or biological state • Areas • Fishing methods • Fishing seasons 	<p>(1) after taking into account:</p> <ul style="list-style-type: none"> (a) effects of fishing on any stock and aquatic environment (b) existing controls under this Act that apply to the stock/area concerned; and (c) the natural variability of the stock concerned. <p>(2) before setting or varying any sustainability measure, have regard to:</p> <ul style="list-style-type: none"> (a) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991 (b) any management strategy or plan under the Conservation Act 1987 (c) ss 7-8 of the Hauraki Gulf Marine Park Act 2000 (ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and (d) a planning document lodged with the Minister by a customary marine title group under s91 of Marine and Coastal Area (Takutai Moana) Act 2011. <p>(2A) before setting or varying any sustainability measure, take into account:</p> <ul style="list-style-type: none"> (a) any conservation or fisheries services (b) any relevant fisheries plan approved under s11A (c) any decisions not to require conservation or fisheries services.
<p>Section 11A The Minister may approve or revoke fisheries plans</p>	<p>Fisheries plans may include:</p> <ul style="list-style-type: none"> (a-c) fisheries management objectives, strategies to achieve them, and performance criteria to measure achievement (d) Conservation or fisheries services (e) Contingency strategies to deal with foreseeable variations in circumstances. <p>To date national fisheries plans have been approved only for deepwater and highly migratory species, the Foveaux Strait oyster fishery and PAU 4 (Chatham Islands).</p>

Section 13

The Minister shall set (unless he/she does not intend to set initial TACC – s20), and may vary, TAC for quota management stocks

- (2) The Minister shall set (and may vary – s(4)) a TAC that:
- (a) maintains the stock at or above a level that can produce the *MSY*, having regard to the interdependence of stocks
 - (b) enables the level of any stock below a level that can produce *MSY* to be altered:
 - (i) in a way and at a rate that will restore the stock to a level that can produce *MSY* having regard to interdependence
 - (ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and environmental conditions affecting it, or
 - (c) enables the level of any stock above *MSY* to be altered in a way and at a rate to move the stock toward or above *MSY* having regard to interdependence
- (2A) If the Minister considers that the stock level to produce *MSY* is not able to be estimated reliably using best available information, the minister must:
- (a) not use this as a reason to postpone or fail to set a TAC;
 - (b) have regard to the interdependence of stocks, biological characteristics of the stock and any environmental conditions affecting the stock; and
 - (c) set a TAC
 - (i) using the best available information
 - (ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above *MSY*.
- (3) In considering the way and rate at which stock is moved toward or above *MSY* the Minister shall have regard to such social, cultural and economic factors as he/she considers relevant.
- (4) The Minister may, by notice in the *Gazette*, vary any total allowable catch set for any quota management stock under this section. When considering any variation, the Minister is to have regard to the matters specified in subsections (2), (2A) (if applicable), and (3).

Part 4 Quota Management System**Section 20**

The Minister shall set and may vary TACC for quota management stocks, unless a TAC has not been set for the stock

- s21 the Minister must take the following into account when setting or varying TACC:
- (1) in setting or varying TACC the Minister shall have regard to the TAC and shall allow for
- (a)(i) Māori customary interests
 - (a)(ii) Recreational interests
 - (b) all other mortality to the stock caused by fishing.
- (2-3) Before setting or varying TACC the Minister shall consult representatives of classes of people that have an interest and give reasons for his/her decision
- (4) when allowing for Māori customary interests the Minister must take into account
- (a) any mataitai reserve in the QMA declared under s186; and
 - (b) any area closure or method restrictions/prohibitions imposed under s186A.
- (5) when allowing for recreational interests the Minister must take into account any regulations that prohibit or restrict fishing under s311.

<p>Section 75</p> <p>The Minister must set and may vary interim and annual deemed value rates for each quota management stock</p>	<p>The Deemed Values Guidelines set out operational policy, including a set of principles to be applied when setting deemed value rates.</p> <p>(2) in setting deemed values the Minister:</p> <p>(a) must take into account the need to provide incentive for fishers to acquire sufficient ACE</p> <p>(b) may have regard to:</p> <p>(i) the desirability of fishers landing catch for which they do not have ACE</p> <p>(ii) the market value of the ACE for the stock</p> <p>(iii) the market value of the stock</p> <p>(iv) the economic benefits obtained by (parties involved in commercial fishing, processing, sale)</p> <p>(v) the extent to which catch has exceeded/is likely to exceed TAC</p> <p>(vi) any other matters the Minister considers relevant.</p> <p>(3) Annual deemed values must be greater than interim deemed values</p> <p>(4) Differential deemed values may be set for different levels of excess catch</p> <p>(5) Different deemed values may be set for the Chatham Islands</p> <p>(6) When setting deemed value rates, the Minister must not:</p> <p>(a) have regard to the personal circumstances of individuals or groups</p> <p>(b) set separate deemed values in individual cases.</p>
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3.5. Overview of Harvest Strategy Standard

The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in New Zealand's Quota Management System (QMS). It is intended to provide guidance as to how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability. The HSS outlines the Ministry's approach to relevant sections of the Fisheries Act 1996. It is therefore a core input to the Ministry's advice to the Minister of Fisheries on the management of fisheries, particularly the setting of TACs under sections 13 and 14.

The HSS assists us to decide when a review of sustainability and related settings for a stock may be warranted, by establishing reference points and guidance for the fisheries management responses when stocks are at those reference points. The HSS establishes default targets and limits as a minimum standard:

Reference point	Default	Management response
Management target	40% unfished biomass (B_0)	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with at least a 50% probability of being at the target).
Soft limit	20% B_0	A formal time constrained rebuilding plan will be implemented if this limit is reached.
Hard limit	10% B_0	The limit below which fisheries will be considered for closure.
Rebuild strategy		Stocks that have fallen below the soft limit should be rebuilt back to at least the target level in a time frame between T_{min} and $2 * T_{min}$ with an acceptable probability.

		T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing.
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4. Input and consultation

4.1. Input and participation of tangata whenua

Section 12 of the Act requires you to provide for the input and participation of tangata whenua who have a non-commercial interest in the stock concerned, or an interest in the effects of fishing on the aquatic environment in the area concerned. You must have particular regard to kaitiakitanga.

Input and participation into the sustainability decision-making process is provided primarily through iwi fisheries forums, which have been established for that purpose. Each iwi fisheries forum has developed an iwi fisheries forum plan that describes how the iwi in the forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interests in fisheries.

Iwi fisheries forums were invited to have input into the selection of stocks for review and to submit on proposals to set or vary sustainability measures.

The following chapters on individual fish stocks provide specific information about input and participation of tangata whenua and kaitiakitanga in relation to those stocks.

4.2. Consultation process

The consultation for the October 2019 Sustainability Round commenced on 18 June 2019. Fisheries New Zealand notified Treaty partners and 2800 stakeholders that the consultation documents were available, and directed them to the consultation page on the Fisheries New Zealand website. The consultation page had links to each of the consultation papers, and an invitation to provide submissions on any or all of the papers. In addition to inviting written submissions, an online form was provided, and a link to an online survey tool for selected stocks (tarakihi, red snapper, kina, top of the South Island trawl species, and hoki.) In addition Fisheries New Zealand held three public meetings on tarakihi in Christchurch (5 July), Auckland (11 July) and Napier (12 July).

Submissions closed at 5.00 pm on 26 July, providing a six week consultation period. We received 74 written submissions from 71 submitters. Kina (SUR 1A and 1B) and tarakihi (TAR 1, 2, 3 & 7) were the most commented-upon stocks.

We received 260 online submissions, most of which were from recreational fishers.

Two major iwi groups responded (Te Ohu Kaimoana and the Iwi Collective Partnership), as did major eNGOs (Forest & Bird, Greenpeace, Deepsea Conservation Coalition, and Environmental Defence Society). Quota owner representative groups including Deepwater Group, Fisheries Inshore New Zealand, Southern Inshore and the Kina Industry Council provided detailed submissions on stocks relevant to their respective stakeholders.

5. Overarching themes from consultation

5.1. On-going themes

Several general issues raised in submissions in this round were discussed at length in the 2018 round decision documents, 'Review of Sustainability Measures for the October 2018/19 Fishing Year'. These issues include:

Shelving

Deepwater Group, Te Ohu Kaimoana, and the Iwi Collective Partnership support shelving as a management option; Forest & Bird and ECO oppose the use of shelving.

ACE shelving is a formal agreement among quota owners in a stock to forgo harvesting a specified proportion of the Total Allowable Commercial Catch (TACC) by each transferring an agreed proportion of their Annual Catch Entitlement (ACE) to a non-fishing entity, usually FishServe.

In reaching agreement on the settlement of legal proceedings relating to PAU 4 (Chatham Island) and PAU 7 (northwest South Island), Fisheries New Zealand, Te Ohu Kaimoana and PauMAC 4 agreed on a statement that describes the role of shelving in relation to the setting of sustainability measures under s 11 of the Act. The parties agreed that:

7.1 the Minister may take into account as a permissive relevant consideration the effect that any ACE shelving is expected to have on, for example, the level of biomass, including whether the resulting reduction in the level of removals will contribute to the biomass being restored to a level that will produce the *MSY* (pursuant to section 11(1)(a));

7.2 the Minister must take into account any ACE shelving arrangements provided for in a fisheries plan (pursuant to section 11(2A));

7.3 for any particular decision, the weight, if any, that the Minister places on considerations relevant to ACE shelving, and the effect ACE shelving is expected to have on the biomass, is a matter for the Minister in the exercise of his or her discretion, taking into account all of the circumstances of the decision and the fishery concerned; and

7.4 in deciding whether (and how) to vary a TAC, the Minister must have regard to the full range of matters set out in sections 11 and 13 of the Act, including the requirement for the TAC to achieve the objectives set out in section 13(2) (or 2A if applicable).

Setting allowances

Te Ohu Kaimoana notes that Section 5 (b) of the Fisheries Act 1996 obliges "all persons exercising or performing functions, duties, or powers conferred or imposed by or under it" to "act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (TOW(FC)SA)". They consider that whenever you make a decision to implement a sustainability measure or to provide for utilisation, you must ensure your decision is consistent with, and does not undermine, the Fisheries Settlement. In particular, they consider that all increases to a TAC should be allocated to the commercial sector after providing for non-commercial Māori customary fishing and other fisheries-related sources of mortality.

Fisheries New Zealand does not consider that Te Ohu Kaimoana's position is correct. The law provides you considerable discretion in considering relevant matters and making allocation decisions. Quota allocated to Māori as part of pre- or post-settlement obligations had the same attributes as all other quota in relation to the ability of the Crown to reduce or increase the amount of ACE generated by shares in the fishery by adjustment to the TAC and TACC.

In a case relating to Kahawai the Supreme Court said that the wording of the Act sets out a particular order of decisions – after allowing for Māori customary non-commercial fishing interest, recreational fishing interests, and all other sources of fishing-related mortality, the remainder constitutes the TACC³. On their ordinary meaning the words “allow for” require you both to take into account those interests, and to make provision for them in the calculation of the total allowable commercial catch⁴. That does not, however, mandate any particular outcome⁵.

Importantly, the Act does not confer priority for any interest over the other⁶ and does not limit the relative weight which you may give to the interests of competing sectors.⁷ It leaves that judgement to you.

The Courts have also provided guidance as to the nature of the allowances to be provided. Where there are competing demands that exceed an available resource it could perhaps be said you can ‘allow for’ use by dispensing a lesser allotment than complete satisfaction, creating not a full priority but some degree of shared pain⁸. The requirement to ‘allow for’ the recreational interest can be construed as meaning to “allow for in whole or part”.⁹ The Supreme Court stated that the Act envisages that the allowance for recreational interest, as well as Māori customary fishing interests and the TACC, will be a reasonable one in all the circumstances.¹⁰

Harvest Strategy Standard

Te Ohu Kaimoana and ECO both suggested that the HSS needs to be updated, including default targets.

The target biomass levels proposed under the standard are applied as default targets only, in the absence of a stock-specific management target.

Where we have good science evidence, Fisheries New Zealand can work with Tangata whenua and stakeholders through the working groups to set alternative management targets that meet your legislative obligations.

³ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 53.

⁴ *Ibid*, para 55.

⁵ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 57.

⁶ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 65.

⁷ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 61.

⁸ *Roach v Minister of Fisheries* (HC, Wellington CP715/91, 12/10/92, McGechan J). p 16

⁹ *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97), p 150.

¹⁰ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 65.

Preferential allocation rights

Te Ohu Kaimoana, Deepwater Group, and Southern Inshore expressed concerns over the impacts of preferential allocation ('28N') rights that arise from decisions on sustainability measures and management controls. Te Ohu Kaimoana notes that where a fishery that has 28N rights associated with it has its TACC reduced, then in the absence of any other change, when the fishery recovers and the TACC is subsequently increased, triggering 28N rights, the proportional share of quota that iwi hold will be reduced. They consider this is a permanent reduction in the share that iwi have in the TACC of that fishery, and is directly contrary to the Fisheries Settlement as well as furthering the agreements expressed in the Deed of Settlement, as required by section 3 of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

The QMS was changed to a proportional, share-based system in 1990. When the TACC is now increased for a stock that has 28N rights associated with it, the quota shares of owners who do not have 28N rights are reduced and redistributed to the holders of 28N rights. This is done in accordance with formulas set out in section 23 of the Act, and is an automatic consequence of an increase in the TACC. Although it amounts to a permanent reallocation of quota shares rather than the one-off nature of the original scheme, this is the scheme that Parliament has put in place. The operation of the 28N rights regime is not in itself a reason for not setting a TAC and TACC in accordance with (and as required by) the Act; this view is supported by Southern Inshore.

As noted in the Gemfish (SKI 3 & 7) paper, there are 151.7 tonnes of 28N rights associated with the SKI 7 stock. Under options to increase the TACC of SKI 7, these rights would be discharged, in that the quota shares of owners who do not have '28N' rights would be reduced and redistributed to the holders of '28N' rights. The effect on iwi quota holdings derived from the 1992 Fisheries Settlement would be to permanently reduce the proportion of the quota shares iwi hold in this stock. Te Ohu Kaimoana would only support the proposed TACC increase if 28N rights are resolved.

5.2. New themes raised in this round

Bottom trawling and benthic impacts

The submissions from eNGOs refer to two online petitions initiated by the Deep Sea Conservation Coalition and Greenpeace which have attracted over 36,600 signatures. The petitions called on the Minister of Fisheries and the Minister of Conservation to ban bottom trawling on seamounts and similar deep sea features, to stop issuing permits for bottom trawling in international waters, and to support research and protection of deep sea features. It is unclear when the petitions close.

Bottom trawling is known to have impacts on the benthic environment, in particular on slow-growing cold water coral species that often occur on deep underwater features. Surveys commissioned to monitor recovery of an underwater feature on the Chatham Rise following its closure to bottom trawling showed no clear evidence that the benthic community was recovering after 15 years. However, research has suggested that features which have been contacted only on established tow lines may still support diverse communities of coral. This means that just because a feature may have been fished, it is not necessarily entirely devoid of diverse benthic communities.

New Zealand currently has a range of spatial closures in place to avoid and mitigate adverse effects of fishing on the benthic environment, including on features. These include seamount closures, Benthic Protection Areas, and a range of other closures that exclude trawling from certain areas. Other management measures in place in New Zealand have different objectives, but result in the protection of the benthic environment from bottom-impacting fishing activities (eg. marine mammal sanctuaries). These spatial closures cover approximately 140 of the 530 features within the EEZ. In total, the Seamount Closures and Benthic Protection Areas combined close roughly 30% of the New Zealand Exclusive Economic Zone, 28% of underwater features, and 52% of seamounts over 1,000 metres in height to bottom trawling.

Closer to the coast, trawling is prohibited from 13% of New Zealand's Territorial Sea (waters from the coast to 12 nautical miles offshore). Of this, 2.6% has been closed to bottom trawling through targeted initiatives under the Marine Protected Area Policy.

Further analysis of the benthic impacts of bottom trawl fishing is addressed under the sections for specific stocks, below. Future analyses will calculate new areas trawled to monitor any expansion of the footprint. In addition, Fisheries New Zealand and the Department of Conservation have commissioned research projects to improve understanding of the distribution of benthic organisms, the impacts of bottom fishing on benthic habitats and organisms, and recovery of benthic habitats and organisms impacted by fishing. As expected, the biological diversity of the communities is mostly higher on features that have not been trawled.

International obligations

The Deepsea Conservation Coalition, Greenpeace, and Forest & Bird suggested that New Zealand is not meeting its international obligations, specifically that New Zealand has neither conducted environmental impact assessments for high seas fisheries (including the Challenger Plateau part of ORH 7A) nor prohibited vessels from high seas fishing where these assessments have not been undertaken, as required under United Nations General Assembly resolution 61/105.

New Zealand's participation in bottom fisheries on the high seas is currently restricted to the western part of the Convention Area of the South Pacific Regional Fisheries Management Organisation (SPRFMO), which includes all high seas waters south of the equator between Australia and South America. Between 9 and 11 New Zealand vessels fish annually in the SPRFMO Convention Area, using bottom longline and bottom trawl gear, and catch around 1,800 tonnes per year. The issues raised in this context are addressed in the section dealing with the proposal to increase the TAC and TACC for ORH 7A.

6. Next steps

You are requested to make your decisions regarding the October 2019 Sustainability Round by 17 September 2019.

Fisheries New Zealand and the Parliamentary Council Office will draft the Gazette notice for you to sign on 19 September.

The new and revised measures for the 2019/20 fishing year will be published in the Gazette on 23 September.

Fisheries New Zealand will prepare a letter to iwi and stakeholders outlining the reasons for your decisions, for your signature on 23 September, to be emailed to iwi and stakeholders and put on the Fisheries New Zealand website on 24 September.

Fisheries New Zealand will prepare a press release outlining your decisions, for your approval on 23 September.

The press release will be released on 24 September.

Your decisions will be implemented by 1 October.

Inshore stocks Pāua (PAU 4) Chatham Islands

Haliotis iris, *Haliotis australis*

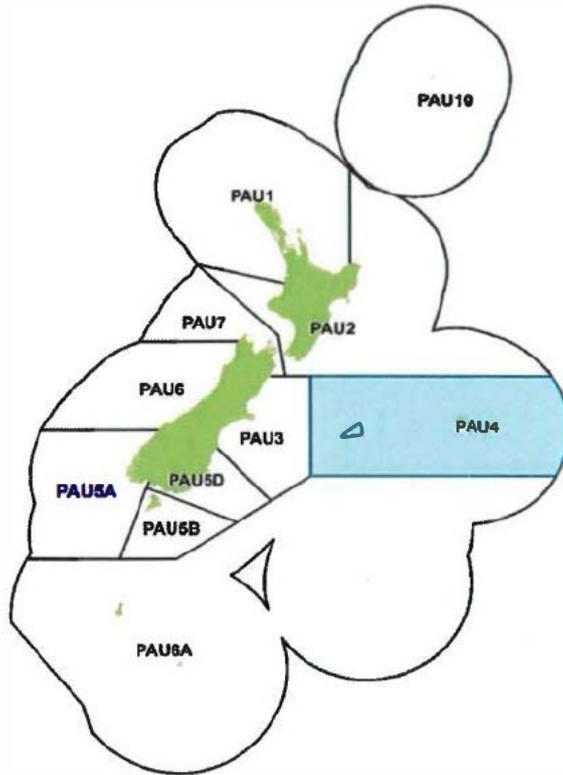


Figure 1: Quota management areas (QMAs) for pāua, with PAU 4 highlighted in blue.

1. Current TAC, TACC and allowances

A total allowable catch (TAC) and allowances have not been previously set for the pāua fishery in the Chatham Islands (PAU 4). Only a Total Allowable Commercial Catch (TACC) was required when it entered the Quota Management System (QMS).

Table 1: Current management settings in tonnes for PAU 4

Stock	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary	Recreational	All other mortality to the stock caused by fishing
PAU 4	-	326	-	-	-

Fisheries New Zealand proposes that you set a TAC and allowances for the first time. Four options are provided, which involve retaining the current TACC, or reducing it by 10, 20 or 30%.

2 Why are we proposing that you set a TAC and vary TACC?

No TAC was set for PAU 4 when the TACC was set under the previous Act. The new Act requires a TAC to be set, and it is timely to set the TACC in conjunction with the review of the TACC setting.

2.1. State of the stock

There is a lack of reliable data to effectively quantify the biomass of the fishery. The current status of the fishery in relation to the target biomass of 40%, soft limit of 20% and hard limit of 10% is therefore unknown. However, commercial catch and effort data and anecdotal information suggests that the fishery is declining. In particular, analyses of commercial catch and effort data and pāua length in 2017 and 2019 suggest substantial depletion of the resource may have occurred since 2001-02.

2.2. Information source and quality

The best available information is from commercial catch and effort data and anecdotal information from fishers, other user groups and stakeholders. A cautious management approach is required in relation to stocks for which we do not have reliable data.

3. Allowances for varying the TACC

When varying a TACC, you are first required to make allowances within the TAC for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing.

3.1. Māori customary interests

Reported annual customary catch numbers fluctuated between 1000 and 4300 individual pāua between 2010 and 2013. An average pāua weight is 280g, so the maximum reported customary take equates to 1.2 tonnes. Given the uncertainty around the levels of historic customary harvest, a three-tonne customary allowance should be sufficient to allow for current customary harvest levels.

3.2. Recreational interests

Due to the limited population on the Chatham Islands and its isolation, it is likely that recreational catch is small but important. A three-tonne allowance is sufficient to allow for current recreational harvest under all options, taking into account recreational effort from fishers who visit the island and to meet the needs of the local community.

3.3. All other mortality caused by fishing

Previous research suggests that incidental mortality of pāua from fishing could be approximately 0.3% of the landed catch, which would be less than 1 tonne under each proposed option. An allowance of 2 tonnes is appropriate to allow for all likely other sources of mortality, including illegal catch.

4. Options and analysis for management settings

We consulted on the following proposed management settings for PAU 4 (Table 2).

4.1. Options

Table 2: Proposed management settings for PAU 4

Stock	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary	Recreational	All other mortality to the stock caused by fishing
Option 1	334	326	3	3	2
Option 2	301.4	293.4 ↓ (10%)	3	3	2
Option 3	269	261 ↓ (20%)	3	3	2
Option 4	236.2	228.2 ↓ (30%)	3	3	2

Quota holders have committed to voluntarily shelve Annual Catch Entitlement to a level that equates to an overall catch reduction of 40%, as per the PAU 4 Fisheries Plan approved earlier this year.

4.2. Input and participation of tangata whenua

On 29 May 2019, Fisheries New Zealand met with Ngati Mutunga to discuss options for pāua for the October 2019 sustainability round. Attendees acknowledged sustainability concerns about PAU 4 during this korero. Ngati Mutunga felt that the PAU 4 Fisheries Plan was a good way to address those concerns and manage this fishery better, and at a potentially finer scale. We also discussed the options with Moriori, who did not present a view at that time.

4.3. Response and submissions

Fisheries New Zealand received submissions and responses on the PAU 4 proposals from the following organisations (no submissions supported options 2 or 3):

Table 3 Preferred options of submissions/responses

Respondent	Option 1 (set TAC and allowances, retain current TACC)	Option 4 (set TAC and allowances and reduce TACC by 30%)
PāuaMAC 4	✓ - supports option 1 and the formal (voluntary) shelving of ACE over the next 2 years	
TeOhu Kaimoana	✓ - supports option 1 to maintain the status quo which recognises the PAU 4 Fisheries Plan as the tool for guiding the sustainable and adaptive management of the PAU 4 fishery.	
Iwi Collective Partnership	✓ - supports Te Ohu Kaimoana and PāuaMAC4 submissions.	
Ngati Mutunga	✓ - supports option 1 and feel this is the only option that does not undermine the approved PAU 4 Fishery Plan.	

Specialty and Emerging Fisheries Group	✓ - Supports PāuaMAC4's position
Forest & Bird	✓ - supports option 4, and an additionally precautionary 5th option of 40% reduction be put forward.
Our Seas Our Future	✓ - supports option 4 as the most precautionary option due to the considerable uncertainty.
RNZ RNZSPCA	✓ - supports the largest cut in TACC figures (option 4) as the most responsible approach to ensure that pāua stocks fully recover.
ECO	✓ - supports option 4, given the current limited information and need to take precautionary measures

Four submissions supported Option 4, which recommends setting the TAC and allowances, while reducing the TACC by 30%.

Supporters of Option 1 were industry and Iwi groups (PauaMAC 4, Te Ohu Kaimoana, Iwi Collective Partnership, Ngati Mutunga, Specialty and Emerging Fisheries Group). These parties supported maintaining the status quo TACC and allowing for the PAU 4 Fisheries Plan to be implemented as a management tool to support rebuilding the fishery.

Te Ohu Kaimoana notes that Iwi, Iwi and Moana collectively own 51% of PAU 4 quota, and supports fisheries management that captures the collective aspirations of Iwi, Iwi and industry. Furthermore, Te Ohu Kaimoana notes that decreasing the TAC will result in 28N rights being triggered in the event the TAC subsequently increases (28N rights are only triggered when TACC increases) and considers that this would adversely affect Iwi interests in this fishery by reducing their share of the TAC. It is their view that this undermines Iwi rights in the Deed of Settlement. The issue of the impact of 28N rights on Treaty rights was also raised as a concern by the Iwi Collective Partnership and Ngati Mutunga.

The Iwi Collective Partnership and Ngati Mutunga consider that Option 1 is the only option that does not undermine the PAU 4 Fisheries Plan.

PauaMAC 4 reaffirms in its submission that under Option 1 quota holders are committed to voluntarily shelving 40% of ACE as set out in the PAU 4 Fisheries Plan you approved earlier this year. However, in relation to Options 2 to 4 they caution that:

While it may be possible to implement industry fine-scale management alongside a TACC cut, PauaMAC 4 considers that it would be challenging (if not impossible) to obtain adequate quota owner support for the necessary voluntary management measures if the TACC is reduced.

Recreational and environmental submitters (Forest & Bird, Our Seas Our Future, RNZ RNZSPCA, ECO) supported the more cautious management approach, advocating for Option 4. Forest & Bird suggested reducing TACC by 40%, equating to the current voluntary agreement to shelve 40% of ACE.

Most submissions and responses expressed concern at the lack of reliable data for assessing the state of the fishery (PauaMAC 4, Te Ohu Kaimoana, Forest & Bird, Our Seas Our Future, RNZ RNZSPCA and ECO). However, there is general agreement on the need to address the sustainability concern within the fishery that is evident from the best available information. There is less agreement in terms of the best means to achieve this. Iwi and those closely involved in the fishery see the PAU 4 Fisheries Plan as the vehicle for achieving this (through Option 1), while other submitters would prefer to see the TACC being reduced to the greatest extent proposed (Option 4).

The response from Te Ohu Kaimoana includes wider and generic policy and/or legal considerations that are potentially relevant to your decision for PAU 4 including on ACE shelving, the Harvest Strategy Standard and the matters Te Ohu Kaimoana considers should be taken into account when setting sustainability measures under s11 of the Fisheries Act. These are discussed below, where relevant to your decision for PAU 4.

4.4. Analysis

In circumstances such as this, where there is uncertainty around the estimates of the biomass that will produce *MSY*, you must be satisfied the TAC is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the *MSY*.

Under the Act, you must also take into account the recently approved PAU 4 Fisheries Plan which includes an agreement for commercial fishers to shelve PAU 4 ACE. Under the PAU 4 Annual Operating Plan for 2019-20, PAU 4 quota owners have committed to:

...achieve a level of 40% ACE shelving (assuming a TACC of 326.543 tonnes). If the PAU 4 TACC is cut from 1 October 2019, the level of ACE shelving may be reduced in order to achieve a total commercial harvest reduction of 40%.

The PAU 4 Fisheries Plan includes additional measures – catch spreading, variable minimum harvest sizes and enhancement of local pāua populations – all of which may move the fishery towards the target biomass level at a faster rate than TAC and TACC reductions alone.

Which option you select will depend partly on upon how much confidence you have in the Fisheries Plan.

4.5. Effectiveness of the PAU 4 Fisheries Plan

We provided an assessment of the likely effectiveness of the PAU 4 Fisheries Plan in our advice to you when you approved the plan (B19-0015); our analysis is summarised in

Table 4.

Table 4: Assessment of the effectiveness of the PAU 4 Fisheries Plan measures in restoring pāua biomass

Measure	Effect	Impact on biomass	Timeframe	Risks	Overall effectiveness
40% ACE Shelving	Will leave additional 130t of pāua in the water each year	Increase in biomass of at least 130t per year (sans natural mortality)	Immediate and ongoing impact	Moderate. 40% shelving is not yet in place, despite the plan. Ongoing risk of non-adherence. Not guaranteed to cover 100% of fishers.	Highly effective provided fully implemented
Variable minimum harvest size (above legal size of 125mm)	Will leave larger proportion of spawning pāua in the water	Increase in spawning stock may result in higher stock productivity and recruitment. Considered to have worked well in other fisheries	Medium term (overall biomass), long term (recruitment to MHS)	Moderate. Good record of adherence to MHS date. Not certain the fishery is recruitment limited by factors such as wave exposure, habitat structure, availability of food and population density	Effective in medium to long term
Enhancement	Will target areas that previously supported strong pāua populations and subject to localised depletion	Increase in juvenile recruitment	Immediate (translocate two sites each year), medium/long term (enhancement success monitored and assessed)	High. Reseeding trials in pāua fisheries show 15 to 20% survival rate.	Effective in medium to long term if successful establishing new spawning banks
Effort spreading	Will spread fishing effort and manage risk of local depletion	Reduce risk of ongoing depletion	Immediate and ongoing impact	Low. Monitoring of actual sub-area catch and implement in-	Effective in medium to long term

season
closures if
catch levels
reach a
specified
threshold;
enhanced by
ER/GPR

The above assessment remains Fisheries New Zealand's view of the likely effectiveness of the Plan at addressing sustainability concerns in the fishery if it is fully implemented.

It is also the view of Fisheries New Zealand, however, that ACE shelving may not be an appropriate mechanism on its own to address sustainability concerns. The Act gives the TAC setting process a central role in relation to sustainability of stocks. ACE shelving alone leads to this role being bypassed.

PauaMAC 4's submission suggests that it may not, however, be possible to obtain adequate quota owner support for the voluntary measures in the plan (presumably including ACE shelving) if the TACC is reduced. Irrespective of this submission, we note the possibility that ACE shelving and the other measures in the plan may not be fully adhered to, or that adherence may drift over time. The challenges experienced with implementing voluntary measures are referred to in PauaMAC 4's submission.

Option 1 would set a TAC that retains the current TACC of 326 tonnes. The status of the fishery in relation to *MSY* is uncertain, however, the best available information suggests that the fishery has declined under the current TACC. Therefore this option, on its own, will not address this decline and is likely to be inconsistent with the objective of moving the stock towards, or above, a level that can produce the *MSY*. You must take into account, however, the effect that the PAU 4 Fisheries Plan is expected to have, including whether it will contribute to the biomass being restored to a level that will produce *MSY*. As discussed, under this option you would need to place significant weight on the effect of the plan in achieving this objective.

All responses and submissions agree that there is a need to take action in PAU 4, however, as discussed they are divided in terms of how this is best achieved. The response from Te Ohu Kaimoana and submissions from PāuaMAC4, Iwi Collective Partnership, Ngati Mutunga, and the Specialty and Emerging Fisheries Group support this option on the basis that the approved PAU 4 Fisheries Plan is seen as the most effective tool to sustainably manage the fishery. Submissions from Forest & Bird, Our Seas Our Future, RNZ RNZSPCA, and ECO on the other hand prefer Option 4 on the basis that there is limited information and a more cautious approach is warranted to allow for the fishery to recover.

If you were to choose Option 1 it would be on the basis that you have high confidence that implementation of the plan (in particular the shelving of ACE) will address the sustainability issues that are of concern, and meet the legal requirements of the Act.

In reaching agreement on the settlement of legal proceedings relating to PAU 4 and PAU 7, Fisheries New Zealand, Te Ohu Kaimoana, PauaMAC 4 and PauaMAC 7 agreed on a statement that describes the role of shelving arrangements in relation to the setting or adjusting of sustainability measures under s 11 of the Act, and when making a decision whether (and if so how) to adjust a TAC under s 13. The key sections of the statement relevant to PAU 4 include:

- 7.2 The Minister must take into account any ACE shelving arrangements provided for in a fisheries plan (pursuant to section 11(2A));

- 7.3 for any particular decision, the weight, if any, that the Minister places on considerations relevant to ACE shelving, and the effect ACE shelving is expected to have on the biomass, is a matter for the Minister in the exercise of his or her discretion, taking into account all of the circumstances of the decision and the fishery concerned;
- 8.1 On 13 February 2019, the Minister approved, in terms of s 11A of the Act, a fisheries plan for the Chatham Islands Pāua fishery. The Fisheries Plan includes provision for ACE shelving. As a consequence, in terms of s 11(2A) of the Act, this will be a mandatory relevant consideration in the event of any future TAC/TACC adjustment.

Fisheries New Zealand's view is that choosing Option 1 is the edge of what can reasonably be considered appropriate within the context of this statement. As noted above the Act gives the TAC setting process a central role in relation to sustainability of stocks.

Beyond this, Option 1 does not address the need to set a long-term sustainable TAC and TACC for this fishery. The responses and submissions make it clear that the current TACC is universally viewed as inappropriate, for example PauaMAC 4's submission notes industry's concern:

... at the way the PAU 4 TACC was increased to well above historic catch levels following quota allocation appeals.

There is no expectation in the responses or submissions received that commercial harvest levels in PAU 4 will approach the current TACC, even in the long term. This view is supported by the scientific assessments and Fisheries New Zealand's experience of pāua fisheries, which is that the recovery rate of depleted pāua stocks is very slow. For example, significant TAC reductions in the 1990s in the PAU 5B (Stewart Island) stock have only recently resulted in recovery of biomass to a level where you could increase the TAC last year (some 20 years later and the first time a pāua TAC has been increased since introduction to the QMS).

Options 2 and 3 would set TACs that reduce the TACC by 10% or 20% respectively.

Given that shelving of 10-20% of ACE in the 10 years before the 2017 stock assessment appears not to have addressed the apparent decline in abundance, a reduction of 10% on its own may be inconsistent with the objective of moving the stock towards or above a level that can produce the *MSY*. However, you may consider Option 2 to be appropriate in the context of quota holders' commitment to 'top up' the commercial reduction by shelving ACE, and the close monitoring of PAU 4 that will continue both through the PAU 4 Fisheries Plan, and by Fisheries New Zealand independently of the plan. As the overall effectiveness and extent of adherence to the plan remains uncertain, there remains a higher likelihood (in comparison to Option 3 or Option 4) that if you choose Option 2 we will need to come back to you seeking a further decision on PAU 4 in the next one to two years.

This risk is lessened with the 20% reduction under Option 3, which is more likely than Option 1 or Option 2 to be consistent with the objective of moving the PAU 4 stock towards or above a level that can produce the *MSY*. However, even this option may not, on its own, rebuild the stock to this level over an appropriate timeframe.

Pāua are slow growing, and increases in abundance will vary depending on the spread of fishing effort and environmental factors over small spatial scales.

Again, you must take into account the effect that the plan is expected to have, including its influence on the way and the rate at which the biomass will be restored to a level that will produce *MSY*. The catch spreading and other measures in the plan (beyond ACE shelving, which is simply an alternative to the TACC to achieve a reduction in commercial catch), are expected to be effective at increasing the likelihood of a more rapid rebuild to a level that will produce *MSY*.

No respondents/submitters preferred Options 2 or 3. As noted, there was a clear demarcation during consultation, with industry and customary interests favouring no change to the TACC, and environmental and recreational interests favouring the more cautious approach and largest reduction to the TACC.

Option 4 would set a TAC that reduces the TACC by 30%. It is the most likely of the four TAC options to, on its own, move the PAU 4 stock towards or above a level that can produce the *MSY*. It places the least weight on the effect that the plan is expected to have in contributing to the biomass being restored to a level that will produce *MSY*.

As stated, Option 4 was the preferred option for environmental and recreational organisations, ie, Forest & Bird, Our Seas Our Future, RNZ RNZSPCA, and ECO. Forest & Bird raised concerns that Options 1, 2, and 3 did not provide enough protections to pāua populations to address current biomass declines, and further provide for future sustainability. Forest and Bird also point out that 10-20% ACE shelving in the previous 10 years before the 2017 stock assessment did not address declining abundance. The RNZ RNZSPCA supports the largest cut in the TACC (Option 4), as the most responsible approach to ensure that pāua stocks fully recover.

These submitters are correct that Option 4 is the most cautious option, if the effect of the TAC and TACC is considered in isolation of the PAU 4 Fisheries Plan. However, you are required to take into account the PAU 4 Fisheries Plan, and under that plan quota holders have committed to shelve ACE to a level that reduces commercial catch by 40% (irrespective of the TACC).

Fisheries New Zealand considers Option 4 is an appropriate option for you to consider, particularly if you wish to set the TAC and TACC at a more cautious level that reflects the sustainability concerns evident in the fishery, and/ or you are concerned that ACE shelving and the other measures in the plan may not be fully adhered to, or that adherence to these measures may drift over time. The PAU 4 Fisheries Plan has only been recently approved and while we consider the management strategies should be successful in addressing depletion, there remains some uncertainty in relation to its overall effectiveness and the extent of adherence to the plan over time.

Our Seas Our Future also raises an issue that the allowance for other mortality caused by fishing was too high across all options, and thus fails to 'disincentivise' poor industry practices. They cite research that suggests incidentally mortality of pāua from fishing could be approximately 0.3% of the landed catch, which would be less than 1 tonne under each proposed option. This low mortality could be true in the future as the dive crews move towards live pāua as the standard for landing, however at this time we consider a 1 tonne allowance reflects best available information given current industry practices.

A summary of the potential changes to commercial revenue resulting from the TAC and TACC options is provided in Table 5 below. These changes assume that the TACC would be fully caught, which is not the case. PAU 4 quota holders have committed, through the recently approved PAU 4 Fisheries Plan, to shelve ACE to ensure a total commercial harvest reduction of 40% for the 2019/2020 fishing year.

Table 5: Potential changes to commercial revenue of the proposed options, based on recommended port prices of \$39.00/kg for PAU 4 in 2019/2020, and assuming that the TACC is fully caught.

Stock	TACC (t)	Change from current setting (t)	Predicted revenue change (\$ p.a.)
Option 1 (<i>current setting</i>)	326	No change	No change
Option 2	293.4	32.6 ↓ (10%)	1,271,400 ↓
Option 3	261	65 ↓ (20%)	2,535,000 ↓
Option 4	228.2	97.8 ↓ (30%)	3,814,200 ↓

Overall, Option 3 is Fisheries New Zealand's preferred option. It takes into account the measures to be implemented under the PAU 4 Fisheries Plan, but moves the TAC and TACC towards a level that is more consistent with the long term sustainable catch level for PAU 4 than Options 1 or 2. It sets a TAC that more fully considers the range of matters set out in s 11 and s 13 of the Act (see discussion of these matters in the "Introduction". Option 3 reduces the likelihood (compared to Option 1 or Option 2) that a further review of the fishery is required in the next one to two years, either because adherence to the plan is poor, or because further monitoring and research shows the status of the fishery is worsening.

5. Decision

Option 1

Agree to set the PAU 4 TAC at 334 tonnes and within the TAC:

- i. Set the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- ii. Set the allowance of 3 tonnes for recreational fishing interests;
- iii. Set the allowance of 2 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the PAU 4 TACC at 326 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the PAU 4 TAC at 301.4 tonnes and within the TAC:

- i. Set the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- ii. Set the allowance of 3 tonnes for recreational fishing interests;
- iii. Set the allowance of 2 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Reduce the PAU 4 TACC from 326 to 293.4 tonnes (10% decrease).

Agreed / Agreed as Amended / ~~Not Agreed~~

OR

Option 3 (Fisheries New Zealand preferred)

Agree to set the PAU 4 TAC at 269 tonnes and within the TAC:

- i. Set the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- ii. Set the allowance of 3 tonnes for recreational fishing interests;
- iii. Set the allowance of 2 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Reduce the PAU 4 TACC from 326 to 261 tonnes (20% decrease).

Agreed / Agreed as Amended / ~~Not Agreed~~

OR

Option 4

Agree to set the PAU 4 TAC at 236.2 tonnes and within the TAC:

- v. Set the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- vi. Set the allowance of 3 tonnes for recreational fishing interests;
- vii. Set the allowance of 2 tonnes for all other sources of mortality to the stock caused by fishing;
- viii. Reduce the PAU 4 TACC from 326 to 228.2 tonnes (30% decrease).

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

15/09/2019

Red Snapper (RSN 1 and RSN 2) Entire New Zealand coast

Centroberyx affinis

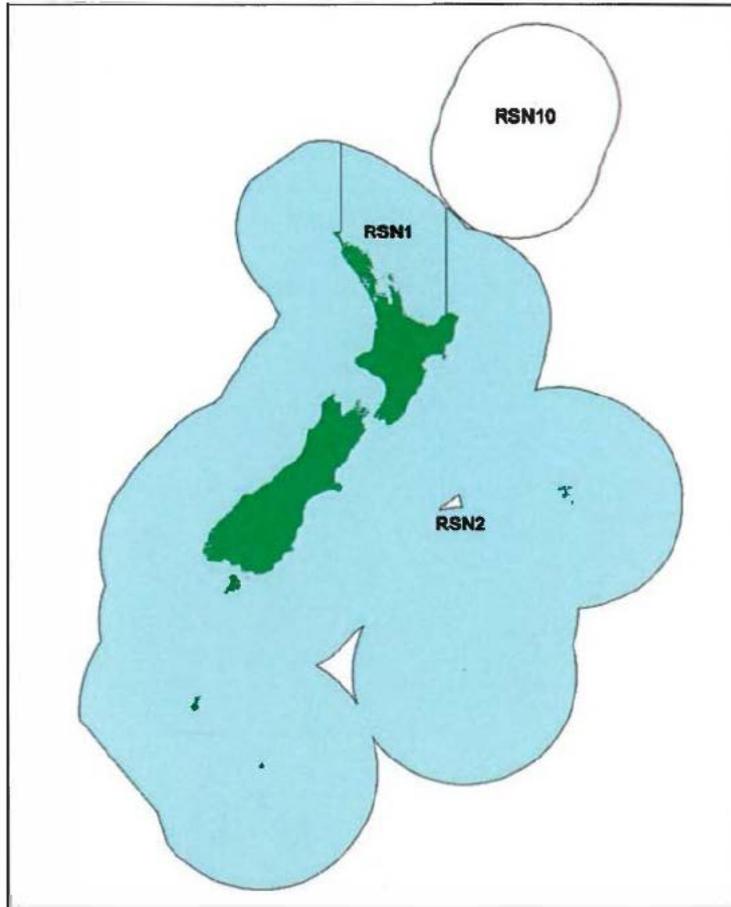


Figure 2: Quota management areas (QMAs) for red snapper, with RSN 1&2 highlighted in blue.

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for red snapper in RSN 1 and RSN 2 are shown in Table 6.

Table 6: Current TAC, TACC and allowances for RSN 1 and RSN 2

	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
RSN 1	140	124	2	13	1
RSN 2	25	21	2	1	1

2 Why are we proposing that you vary the TACs and TACCs?

Red snapper is primarily a commercial bycatch species that is of importance to inshore trawl, set net and bottom long line fleets, particularly in the northern North Island. The vast majority of commercial red snapper catch is taken from east and west Northland on either side of the RSN 1 and RSN 2 boundary. Catch limits and allowances for RSN 1 and RSN 2 have not been reviewed since red snapper was introduced into the quota management system (QMS) in 2004. Within both quota management areas (QMAs), trends in the commercial catch have prompted Fisheries New Zealand to review the current settings.

The TACC for RSN 1 has been significantly under-caught since around the year 2000. Conversely, commercial landings from RSN 2 have been at or above the TACC for four of the last five years.

The commercial fishing industry has expressed concern that the low TACC in RSN 2 is restricting the ability of fishers to access other target species. If the stocks are linked more than previously thought, there may be an opportunity to address a potential sustainability concern in RSN 1, while facilitating increased commercial access to red snapper stocks in RSN 2.

2.1. State of the stock

It is unknown whether red snapper is a single biological stock, or whether there are multiple stocks. However, red snapper has a predominantly northern distribution, and it is likely that stocks on either side of the northern boundary between RSN 1 and RSN 2, where the bulk of the commercial catch is taken, are linked.

Red snapper appears to be long-lived and likely to be a relatively unproductive species. While often caught on or around reef areas, red snapper are also known to inhabit open water, indicating that they may not be a reef-restricted species. During consultation on the introduction of red snapper into the QMS fishers stated that, "red snapper are not uncommon in open water habitats between 100-400m in depth". In 1993, a regulatory prohibition on sale was introduced for a number of 'reef' fish species because of concerns over sustainability. This prohibition did not include red snapper, because it was accepted that although it mostly occupies reefs, it is also found in open waters.

There has been no stock assessment of red snapper and it is not known what the stock status of RSN 1 and RSN 2 are relative to B_{MSY} (the default biomass target). There is limited information available to monitor the fishery and assess fishery performance, apart from the catch reported by commercial fishers.

Commercial catch of red snapper in RSN 1 increased to its peak of 211 tonnes in 1996/97, followed by a significant decline in catch in the early 2000s, and then relatively stable catches, consistently well below the TACC. It is not known what factors influenced the significant decline in catch in RSN 1. Catch in RSN 2 has increased and has been greater than the TACC (which is considerably smaller than the RSN 1 TACC) in four of the last five years.

2.2. Information source and quality

Red snapper is a low knowledge stock. The best available information on red snapper stocks comes from reporting of commercial catch, effort and landing data. There is also anecdotal information from fishers and other stakeholders.

Information on red snapper biology is also a consideration, particularly with respect to attributes that affect its resilience to over-fishing or localised depletion effects.

3. Allowances for varying TACC

3.1. Māori customary interests

Red snapper is believed to be caught by customary fishers, although there have been no reported customary authorisations for RSN 1 or RSN 2. The amount of catch is uncertain and believed to be small. Nominal allowances of two tonnes for Māori customary interests are set for each of the red snapper stocks and we recommend no changes to these allowances.

3.2. Recreational interests

While red snapper is known to be caught by recreational fishers, particularly on the deep reefs and around offshore islands of east Northland and the outer Hauraki Gulf, the amount of catch is uncertain and believed to be small. It is likely red snapper are taken by recreational fishers targeting other deep water species such as tarakihi and hapuku/bass.

Fisheries New Zealand considers that the recreational red snapper catch is likely to be no more than 10% of the TACC. The existing recreational allowances were set on that basis and we recommend no changes to these allowances.

3.3. All other mortality caused by fishing

It is likely that a small amount of fishing-related mortality occurs through factors such as loss from commercial fishing gear and recreationally caught fish being returned to the sea. As such, a nominal allowance of 1 tonne for other sources of fishing-related mortality is set for each of the red snapper stocks. It is believed that this allocation is appropriate and we recommend no changes to these allowances.

4. Options and analysis for sustainability measures

The options set out in Table 7 below shows the proposed TAC, TACC and allowances in tonnes for RNS 1 and RSN 2. It is not proposed to change existing allowances for customary Māori, recreational or all other mortality to the stock caused by fishing.

Table 7: Proposed TACs, TACCs and allowances in tonnes for RSN1 and RSN2 from 1 October 2019.

Option	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
				Customary Māori (tonnes)	Recreational (tonnes)	All other mortality to the stock caused by fishing (tonnes)
Option 1 (Status quo)	RSN 1	140	124	2	13	1
	RSN 2	25	21	2	1	1
Option 2	RSN 1	80↓ (43%)	64↓ (48%)	2	13	1
	RSN 2	85↑ (340%)	81↑ (386%)	2	1	1

4.1. Analysis

Input and participation of tangata whenua

Prior to consultation, the review of RSN 1 and RSN 2 was discussed with the northern Iwi fisheries forums: Te Hiku o Te Ika (Far North), Nga Hapu o Te Uru o Tainui (West Coast North Island/Waikato) and Mai I Ngā Kuri a Whareki Tihirau (Bay of Plenty).

Kaitiakitanga

Red Snapper is identified as a taonga species in the Te Hiku o Te Ika Fisheries Forum fisheries plan.

Red Snapper is not identified as a taonga species in the Nga Hapu o Te Uru o Tainui, or Mai I Ngā Kuri a Whareki Tihirau Iwi Forum Fisheries Plans.

The objectives of these Iwi fisheries plans generally relate to the maintenance of healthy and sustainable fisheries. Fisheries New Zealand considers that the management options presented are in keeping with these objectives.

During discussion of the October sustainability round stocks, Iwi Forum members acknowledged the review of the RSN 1 and RSN 2 stocks, however did not make any comment on the proposals.

Response and submissions

We received nine responses or submissions related to RSN 1 and 2:

Te Ohu Kaimoana	<ul style="list-style-type: none"> • Supports Option 2
Fisheries Inshore New Zealand (FINZ)	<ul style="list-style-type: none"> • Supports Option 2
Iwi Collective Partnership	<ul style="list-style-type: none"> • Supports Option 2
Joint Recreational Submission (New Zealand Sport Fishing Council, LegaSea and New Zealand Angling & Casting Association)	<ul style="list-style-type: none"> • Propose a reduction of TACC of 100t in RSN 1 • Support no change to TAC in RSN 2 (partial support for Option 1)
Forest & Bird	<ul style="list-style-type: none"> • RSN 1- Proposes a TAC cut from 140t to 60t and a TACC cut from 124t to 44t • RSN 2-Supports Option 1- Status quo
Our Seas Our Future	<ul style="list-style-type: none"> • RSN 1- Propose a TACC cut from 124t to 64t • RSN 2- Supports Option 1- Status quo
NZ RRNZSPCA	<ul style="list-style-type: none"> • Propose a cut in TAC and TACC for RSN 1 of 'up to 60t' • Support option 1- status quo for RSN 2 until confirmation if a sustainability issue exists.
Andrew Turnwald, Commercial fisher	<ul style="list-style-type: none"> • Supports amalgamation of Quota Management Areas
Environment and Conservation Organisations of NZ Inc	<ul style="list-style-type: none"> • Do not support change in the red snapper catch limits in RSN 2 • Support a cut in catch in RSN 1

Fisheries Inshore New Zealand and Te Ohu Kaimoana expressed dissatisfaction with Fisheries New Zealand's prioritisation process for the review of stocks in the October 2019 sustainability round. They note that RSN 1 and RSN 2 are the only stocks identified by FINZ to be included in the round.

Setting the TAC

TACs for RSN 1 and 2 will need to be varied under section 13(2A) of the Act, which requires you to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the *MSY*. Section 13(2A) is used for stocks such as RSN 1 and 2 where the current biomass level of the stock is estimated by proxy - in this case trends in commercial catches.

Environmental principles (section 9)

There is no information to suggest that the proposed changes to the catch limits would result in any change in environmental interactions outside of increased take of RSN 2.

As red snapper is almost exclusively a bycatch fishery, we do not have any information on key environmental issues associated specifically with the red snapper fishery. The proposed changes to the RSN 1 and 2 TACs reflect existing catch levels. There is no information to indicate there will be impacts upon the matters noted in section 9 of the Act.

If a target fishery were to develop which sought out assemblages of red snapper around reef structures, there may be implications in terms of the biological diversity in these areas. Given the biology of red snapper there is a risk that any depletion may be slow to recover. Closer monitoring using newly available electronic reporting and geospatial position reporting information will help mitigate this risk.

Sustainability measures (section 11)

Section 11 of the Act sets out various matters that you must take into account or have regard to when varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan.

You are required to take into account any existing controls that apply to the stock or area concerned.

Fisheries New Zealand considers that other existing controls are being applied appropriately, with the potential exception of the current stock boundaries.

Effects of fishing

Most red snapper catch is taken as bycatch of other fisheries such as bottom trawl. As such the impact on the benthic environment is not expected to change under Option 2, and Option 2 is unlikely to have any additional detrimental impact on biological diversity of the aquatic environment, beyond the additional take of red snapper.

Hauraki Gulf Marine Park Act

Section 11(2)(c) of the Fisheries Act 1996 requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when varying the TAC relating to stocks with boundaries intersecting with the park.

The Hauraki Gulf Marine Park resides within the RSN 1 stock boundary. Based on available information it is likely that very little fishing for RSN 1 currently occurs within the Hauraki Gulf Marine Park. Ensuring sustainability of red snapper is consistent with objectives of the HGMPA. Fisheries New Zealand considers that a reduction in the potential level of harvest in RSN 1 is an appropriate management action to aid with the sustainable utilisation of red snapper within the Hauraki Gulf.

The Bay of Plenty Regional Council has included measures within its revised Coastal Plan to exclude fishing from certain defined spaces within the inshore area of the Bay of Plenty, which fall within RSN 1. These are relatively small areas and do not overlap with habitat likely to support populations of red snapper. Their impact on fishing for red snapper in RSN 1 is therefore likely to be insignificant.

4.2. Option 1

Option 1 would make no change to the current settings.

The Joint Recreational submission, Forest and Bird, Our Seas our Future, NZRRNZSPCA and ECO submit support for a more 'sustainable' option 1, whereby the RSN 1 TACC would be decreased by 60 tonnes and RSN 2 TAC would remain at the status quo with no increase. These submissions suggest you place weight on decreasing catch trends and concerns about localised depletion in RSN 1, while waiting for further information to support any increase in RSN 2. The submissions draw your attention to the risks of a target fishery around reef structures developing, bringing detrimental impact on biological diversity.

Fisheries New Zealand is aware of anecdotal concerns from environmental and recreational fishing groups about the sustainability of red snapper. These concerns are based on the biological and ecological characteristics of red snapper as a reef fish, which may make it susceptible to localised depletion. However, we note that from this year onwards more information will be collected through the introduction of digital monitoring on all commercial vessels. We are confident this will improve our ability for a more agile management response if a sustainability concern is subsequently detected.

We note that this option does not address the current over-catch and lack of access to red snapper stocks in RSN 2.

4.3. Option 2 (recommended)

Option 2 proposes to reduce the RSN 1 TAC from 140 tonnes to 80 tonnes. An adjusted TACC of 64 tonnes would still be above the current catch level so would provide for moderate increases in commercial catch if it were to rise above the current trend.

Option 2 proposes a TACC increase in RSN 2 of 60 tonnes to 85 tonnes. An adjusted TACC of 81 tonnes facilitates increased commercial access to this stock.

This option mitigates some of the risk posed by the low level of available information by maintaining the overall combined catch limit across RSN 1 and RSN 2. However, there are risks associated with making a significant amount of additional RSN 2 ACE available, in that increased fishing effort may result in localised depletion of red snapper populations. These risks are exacerbated by the biology of red snapper, which suggests that such depletion would be slow to recover.

The Te Ohu Kaimoana response, and FINZ and other Industry submissions support increasing the RSN 2 TACC under Option 2. Te Ohu Kaimoana notes that Option 2 provides a solution to deemed value accruals from RSN 2, while not increasing the total amount of RSN that can be taken across both FMAs. They agree with the consultation paper in that this increase will allow for more commercial value to be achieved from the national fishery. The increased revenue to fishers is estimated at \$437,400 if the 60 tonne TACC increase were caught. In addition, Te Ohu Kaimoana suggests that the greater availability of RSN 2 ACE will alleviate constraints on catching other species.

While supportive of Option 2, FINZ expressed concerns with information used in the consultation documentation. These relate to the RSN 1 management approach and characterising the observed under-catch as a sustainability risk.

We do not agree that management action should necessarily be triggered by commercial catch levels only. In 1993 a regulatory prohibition on sale was introduced for a number of 'reef species' because of concerns over sustainability. The prohibition did not include red snapper, although it has attributes of a 'reef species'. You are required to consider the best available information in making your decisions, including red snapper biological characteristics.

After a significant decline around the year 2000, commercial catch in RSN 1 has remained relatively stable at well below the TACC. There is the potential that this continued low level of catch, following a sharp decline, may be indicative of a sustainability concern. However, we acknowledge Industry concerns with this approach and agree that the factors contributing to the decrease and subsequent low catch levels are uncertain.

Reducing the TACC for RSN 1 by 60 tonnes to 80 tonnes is a response to sustainability concerns and has the support of Industry. The impact of adopting this option on recent commercial catch and revenues in RSN 1 would be negligible, as this option reflects catch levels of recent years. However, the reduction in the TACC will mean an opportunity cost for commercial fishers, who will no longer be able to catch up to the current TACC (124 tonnes).

We note the concerns in the joint recreational submission that an uncatchable quota in one area cannot be moved to a new area, and as long as the aggregate is maintained there would be no discernible impact. However, we believe the risk of the increased catch in RSN 2 will be mitigated by monitoring of catch and effort to ensure that any potential sustainability concerns can be detected and managed promptly. The implementation of digital monitoring will support this by providing finer scale, more timely information.

Wider environmental impacts of an increase in RSN 2 catches are expected to be low, given red snapper are predominantly a by-catch species and it is not expected that a target fishery would develop as a result of the proposed changes.

4.4. Other considerations

Turnwald submits that in his view the option to 'shift' quota from RSN 1 to RSN 2 by redistributing proportionally as suggested in the consultation document could lead to legal consequences.

We accept that Option 2 will impact quota owners differently depending on which stock of red snapper they hold. 56 quota owners hold RSN 1 only and they might be detrimentally impacted (although these impacts relate to an opportunity cost as the TACC is under-caught). 69 quota owners either hold both RSN 1 and RSN 2, or only RSN 2 quota, who would be unaffected or potentially be able to increase participation in the fishery.

We do not consider that Option 2 would be a redistribution of quota from RSN 1 to RSN 2, as suggested by Turnwald in his submission. The proposed reduction to the RSN 1 TAC relates to achieving sustainability outcomes and the TAC increase proposed in RSN 2 facilitates increased access to this stock.

Turnwald submits that the current stock boundary set between RSN 1 and RSN 2 is flawed, since a single stock occurs over the northern boundary. He suggests the least complicated way to address issues in the fishery would be to aggregate RSN 1 and RSN 2 into one stock.

Changes to Quota Management Area boundaries can be implemented on the basis of quota holder agreements. The Act also provides for you to determine alternative stock boundaries without the agreement of stakeholders if you consider it to be necessary to ensure sustainability, and if you have approved a plan that specifies the detail of how the alternative boundaries would be applied. However, as Te Ohu Kaimoana suggests, amalgamation of QMAs would be premature and difficult to achieve. We agree, and in the meantime an opportunity for utilisation of red snapper would be lost.

Industry submissions question whether electronic reporting and geospatial position reporting will increase the utility of information gathered for these stocks. In contrast, Forest & Bird supports the roll out of digital monitoring of commercial catch through electronic log books and position reporting, which they submit is a great first step and will provide us with valuable fine scale catch information. Further, they submit any reporting system needs to be supported by 100% observer coverage, and/or cameras.

By December 2019 all commercial operators will be required to report and submit electronic fishing reports on a daily basis and report their position via geospatial position reporting devices on their vessels. This will provide improved information about the location and extent of fishing. Finer scale, more timely information will provide an opportunity to improve monitoring of commercial catch for red snapper. For species such as red snapper, which are prone to localised depletion, enhanced monitoring ability will be important.

Overall, Fisheries New Zealand recommends Option 2. We believe that some of the risk of making an increase to the RSN 2 TACC would be mitigated by making the increase equivalent to the decrease made in RSN 1. This approach means that the overall total catch limit originally set when red snapper was introduced into the QMS will be retained. The potential sustainability concerns in RSN 1 are balanced against the utilisation opportunity of increasing the RSN 2 TACC in a low information environment.

5. Decision

RSN 1

Option 1 (*Status quo*)

Agree to retain the RSN 1 TAC at 140 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 13 tonnes for recreational fishing interests;
- iii. Retain the allowance for 1 tonnes for all other sources of fishing related mortality;
- iv. Retain the RSN 1 TACC at 124 tonnes.

AND For RSN 2

Agree to retain the RSN 2 TAC of 25 tonnes and within the TAC:

- i. Retain the 2 tonnes allowance for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 1 tonne for recreational fishing interests;;
- iii. Retain the 1 tonne allowance for all other sources of fishing related mortality;
- iv. Retain the RSN 2 TACC at 21 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

RSN 1

Option 2 (Recommended)

Agree to reduce the RSN 1 TAC at from 140 to 80 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 13 tonnes for recreational fishing interests;
- iii. Retain the allowance for 1 tonnes for all other sources of fishing related mortality;
- iv. Reduce the RSN 1 TACC from 124 to 64 tonnes.

AND For RSN 2

Agree to increase the RSN 2 TAC from 25 to 85 tonnes and within the TAC:

- i. Retain the 2 tonnes allowance for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 1 tonne for recreational fishing interests;;
- iii. Retain the 1 tonne allowance for all other sources of fishing related mortality;
- iv. Increase the RSN 2 TACC from 21 to 81 tonnes.

Agreed / Agreed as Amended / Not Agreed



**Hon Stuart Nash
Minister of Fisheries**

24/09/2019

Kina (SUR 1A and 1B) North east coast North Island

Evechinus chloroticus; kina, sea urchin

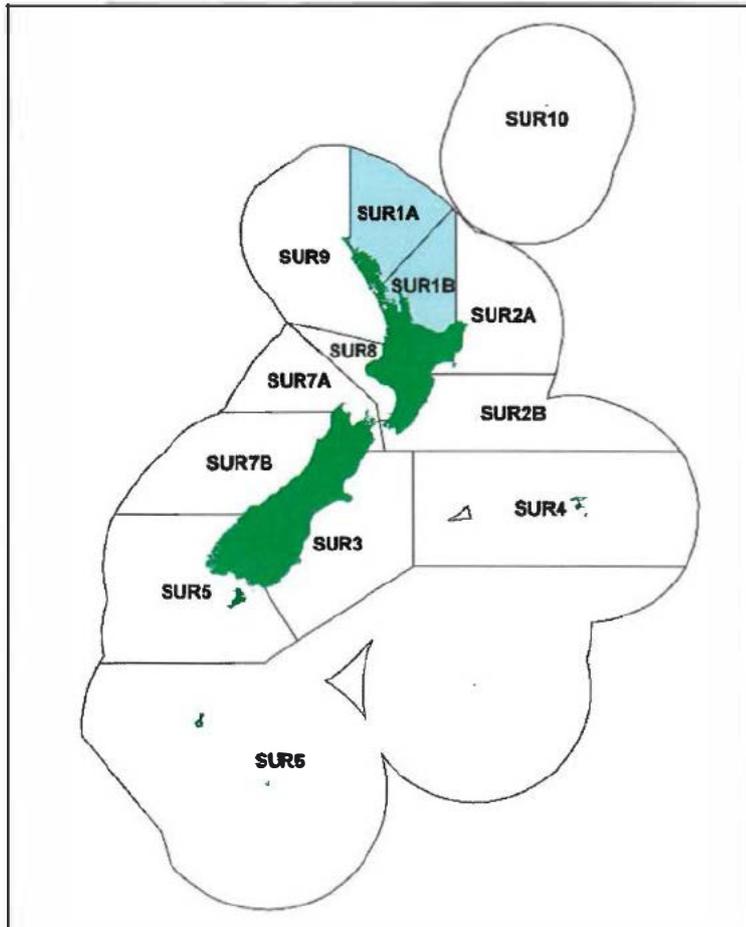


Figure 3: The Quota Management Areas (QMA) for kina (SUR), with SUR 1A and 1B highlighted in blue.

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for kina in SUR 1A and 1B are shown in Table 8. These settings have been in place since kina was introduced into the Quota Management System (QMS) in 2003.

Table 8 SUR 1A and 1B current TAC, TACC and allowances

	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
SUR 1A	172	40	65	65	2
SUR 1B	324	140	90	90	4

2. Why have we reviewed sustainability and related measures?

This review sought input and views on whether it is appropriate to increase the TACC and allowances for north east kina stocks. For a number of years commercial kina fishers have expressed to Fisheries New Zealand that they consider the stocks could support increased harvest without causing any sustainability concerns, and that there could be other benefits from growing the industry, including reducing the prevalence of kina barrens (areas of high kina abundance and reduced abundance of other species, which is of concern in parts of this region). This position is somewhat supported by public concern around high kina abundance and the perceived proliferation of kina barrens along the North Island's east coast.

SUR 1A and 1B are low information stocks and it is important to take into account the views of fishers and other stakeholders. Kina is a significant taonga species for Māori, and the risks and benefits of decisions need to be carefully considered in that context.

2.1. State of the stock

There is little genetic difference between kina that have been analysed in different parts of New Zealand, and the boundaries of the biological stock are unknown. There is insufficient information available to be able to assess the abundance of kina in SUR 1A or 1B, or to assess the status of the stocks either in relation to unfished biomass or maximum sustainable yield.

The best available information on the SUR 1A and 1B stocks is obtained through commercial reporting of catch, effort and landings. Reported commercial catches of kina in SUR 1A and 1B increased in the ten years before the introduction of the QMS. During this period the average annual catch across both areas was approximately 200 tonnes. Since 2003 commercial landings of SUR 1A and 1B have been relatively consistent, with the respective TACCs constraining the total commercial harvest at or near 40 tonnes in SUR 1A (Figure 4) and 140 tonnes in SUR 1B (Figure 5).

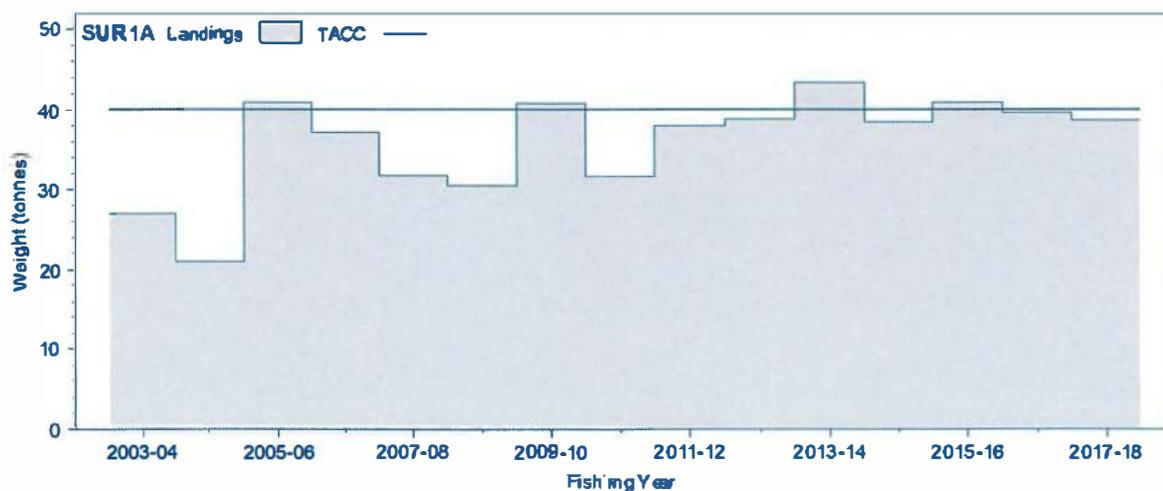


Figure 4: Landings for SUR 1A

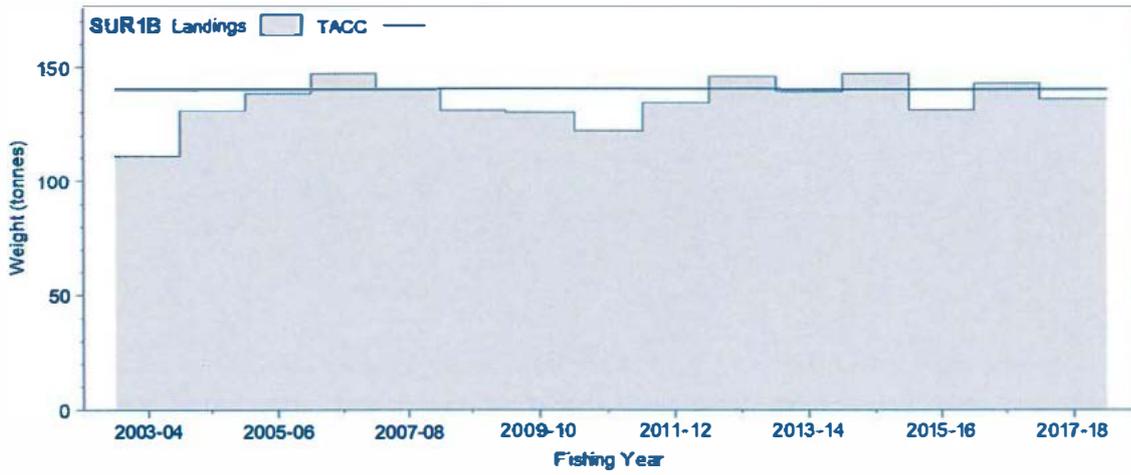


Figure 5: Landings for SUR 1B

Catch estimates and effort reporting shows the eastern Coromandel (statistical area 008, part of SUR 1B) has consistently had the highest level of catch in the region (60-100 tonnes annually) and Northland (statistical area 003, part of SUR 1A) has the second highest catches (increasing from 20 tonnes to approximately 40 tonnes over the last 15 years).

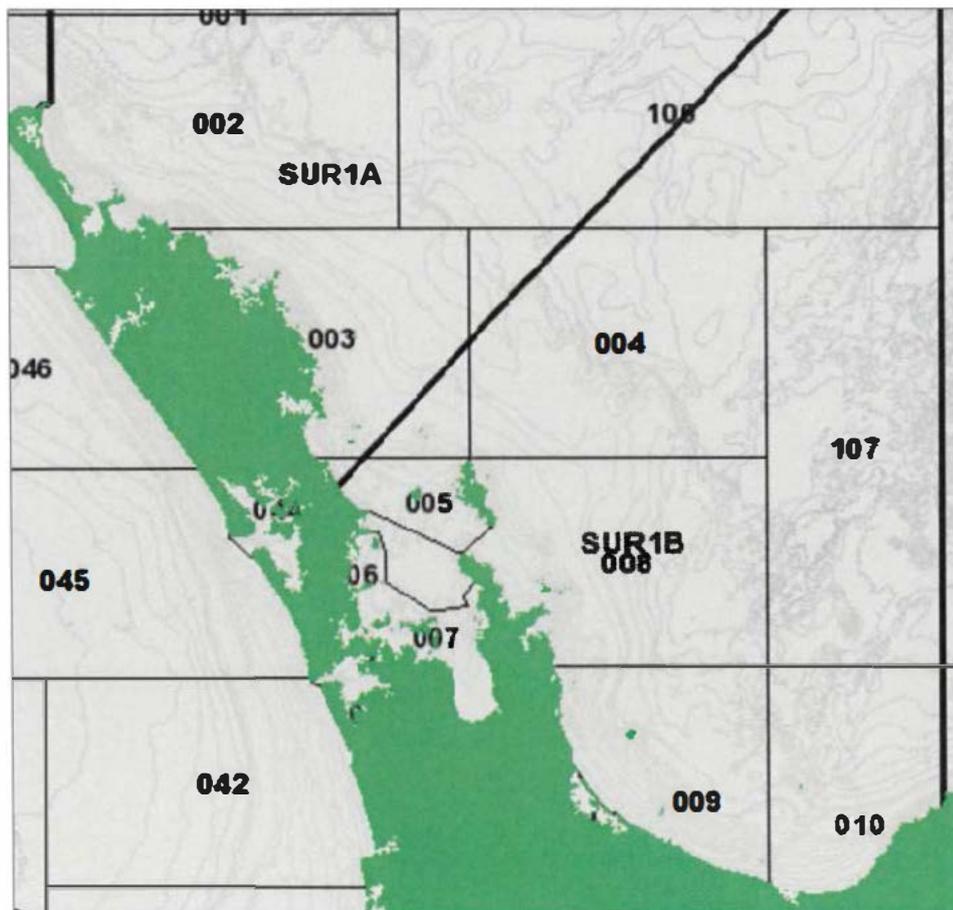


Figure 6: Statistical areas currently used for commercial catch reporting in SUR1A and SUR1B

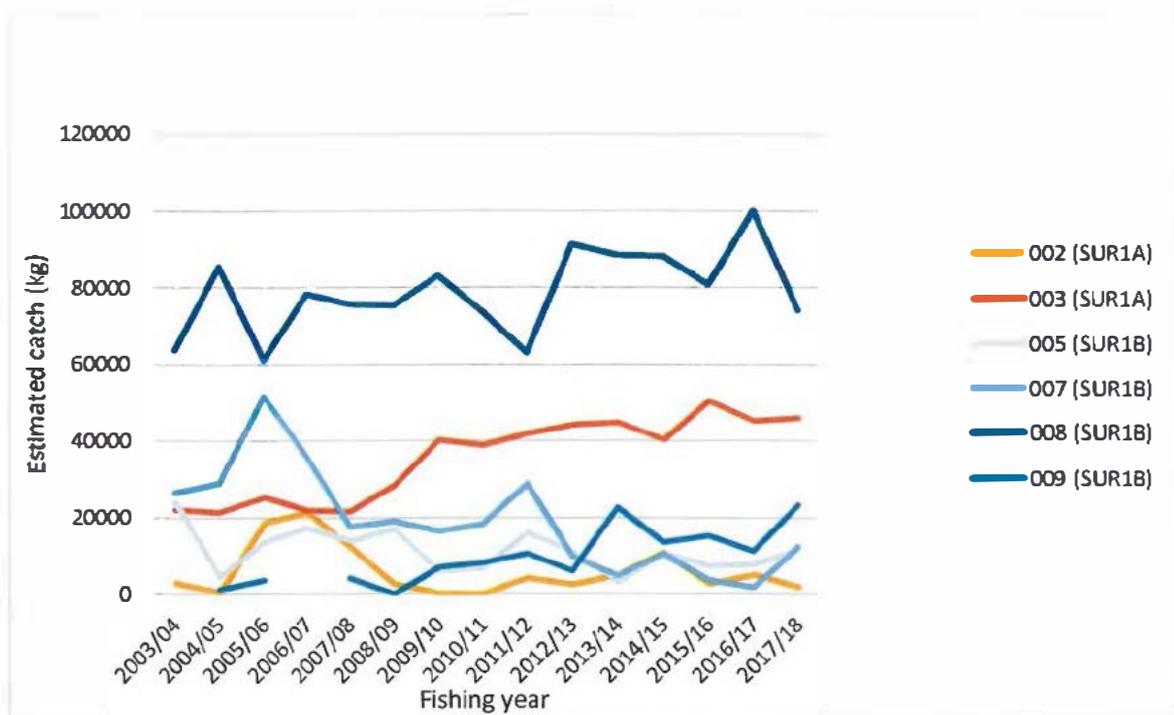


Figure 7: Estimated commercial catches by statistical area 2003/04-2017/18 (main areas of catch shown only)

Some information is also available from reporting of customary fishing authorisations and from recreational fishing surveys. Customary reporting shows that kina is actively fished. Recreational fishing surveys indicate kina harvest could be relatively high in this region. Neither of these sources of information can be used to show a trend or specific areas of harvest.

An international review of sea urchin fisheries completed in 2002 (Andrew, et al) noted a history of depletion around the world, including in Chile (which supports the largest sea urchin fishery), France and parts of the United States. These experiences support a cautious approach to management.

2.2. Information source and quality

Commercial reporting

The finest scale information currently available from commercial reporting is catch estimates and effort information reported by fishers at a general fisheries statistical area scale (see Figure 7).

A concern with statistical area scale reporting is that, in particular for sedentary species such as kina, it is difficult to determine if catches are being sustained from a smaller sub-area or if catch rates remain high due to fishers changing location within the area. There is, therefore, some risk associated with using this information to assess trends in fishing.

However, new requirements for electronic reporting of catch, effort and landing information, as well as geospatial position reporting (GPR), will provide finer scale information on commercial effort and catch. This will improve the ability to monitor catch per unit effort and help to increase our understanding of how kina stocks are impacted by commercial fishing. This finer scale information will also increase understanding of the location of commercial fishing relative to important beds for customary and recreational fishers. The digital monitoring requirements come into force this year and therefore will only provide monitoring of future activity. While this will provide significant improvements for monitoring, it will not provide as robust information as fisher-independent surveys of kina beds (which have previously been cost-prohibitive for kina stocks).

Customary reporting

Customary catches have been reported in both SUR 1A and SUR 1B in the last five fishing years. However, the measurement units vary (kilogram, number, sacks, bins and unspecified), which makes it difficult to estimate the total quantity reported. Assuming that reports with unspecified units refer to number of kina, the reports indicate up to approximately 5 tonnes per year in SUR 1A and up to 20 tonnes per year in SUR 1B. In any case, these figures will underestimate customary catch, as reporting of customary catch is not currently mandatory in the majority of the area covered by SUR 1A and SUR 1B.

Recreational survey information

The most reliable estimate of recreational harvest comes from the National Panel Survey of Marine Recreational Fishers 2017/18, which estimates that 296,104 kina were taken across SUR 1A and SUR 1B between 1 October 2017 and 30 October 2018. However, the amount of recreational fishing effort is likely to vary from year to year depending on factors such as weather, and the condition of the kina. The same survey methods were also applied in 2011/12, but the result in that year (an estimate of 2,018,810 kina taken) was considered highly uncertain.

A weight estimate is not available specific to recreational harvest of kina. The average commercial weight was estimated at approximately 250 grams in 2009. Assuming the kina taken by recreational fishers averaged 250 grams, the 2017/18 estimate translates to approximately 75 tonnes across SUR 1A and SUR 1B.

3. Allowances for setting TACC

3.1. Māori customary interests

Kina is an important taonga species for tangata whenua and is regarded as a regular food source for many Māori.

When allowing for Māori customary interests you must take into account any mātaihai reserve declared under s186 and any closure imposed under section 186A. The relevant mātaihai reserves area are the Te Puna mātaihai in SUR 1A and Te Maunga o Mauao mātaihai in SUR 1B. These reserves are small relative to the respective QMAs and the majority of customary harvest of kina is likely to occur outside of these reserves. The two current section 186A closures are both in SUR 1A. The closure at Maunganui Bay (Deepwater Cove) prohibits all fishing except for kina, as kina barrens are considered to be having an impact on customary fisheries in the area. The closure at Marsden and Mair Bank restricts harvest of all shellfish but is not a habitat where kina are found. In summary, the implementation of the customary tools identified above does not reduce the need to make an allowance for Māori customary interests across the broader stock.

While the information about customary catch is uncertain, it is proposed to increase the allowance for Māori customary fishers proportionally if any increase is made to the TAC. This is in recognition of the importance of the species to Māori, and the uncertainty about current catch.

3.2. Recreational interests

Recreational fishers are restricted to taking no more than 50 kina per person per day. The allowance for recreational fishers provides for the cumulative catch taken by recreational fishers, over a fishing year.

While the information about annual recreational catches is uncertain, it is proposed to increase the allowance for recreational fishers proportionally if any increase is made to the TAC. This is in recognition that kina is an important non-commercial species, and available information about catches are uncertain.

3.3. All other mortality caused by fishing

Other sources of mortality caused by fishing is an allowance intended to provide for unrecorded mortality of fish associated with fishing activity including incidental mortality from fishing methods or illegal fishing.

The allowance for other mortality for SUR 1A and 1B is currently set low relative to other allowances, as the primary method for harvest is hand-gathering (this is the only method permitted for commercial fishing), which has little associated incidental mortality.

While the information about all other mortality is uncertain, it is proposed to increase the allowance proportionally if any increase is made to the TAC, in recognition that additional incidental mortality may occur in proportion with increased levels of harvest.

4. Options and analysis

4.1. Options

The options presented in the consultation document are shown in Table 9 below.

Table 9: Proposed management settings in tonnes for SUR 1A and SUR 1B from 1 October 2019, with the percentage change relative to the status quo in brackets.

Stock	Option	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
				Customary Māori (tonnes)	Recreational (tonnes)	All other mortality to the stock caused by fishing (tonnes)
SUR 1A	Option 1 (<i>Status quo</i>)	172	40	65	65	2
SUR 1A	Option 2	206 ↑ (20%)	48 ↑ (20%)	78 ↑ (20%)	78 ↑ (20%)	2
SUR 1A	Option 3	259 ↑ (50%)	60 ↑ (50%)	98 ↑ (50%)	98 ↑ (50%)	3 ↑
SUR 1B	Option 1 (<i>Status quo</i>)	324	140	90	90	4
SUR 1B	Option 2	389 ↑ (20%)	168 ↑ (20%)	108 ↑ (20%)	108 ↑ (20%)	5 ↑
SUR 1B	Option 3	486 ↑ (50%)	210 ↑ (50%)	135 ↑ (50%)	135 ↑ (50%)	6 ↑

4.2. Analysis

Input and participation of tangata whenua

The review was discussed with the three iwi fisheries forums currently established in the area covered by SUR 1A and SUR 1B. They are Te Hiku o Te Ika (Far North), the yet to be formally named 'mid-north' forum, and Mai I Nga Kuri a Whareki Tihirau (Bay of Plenty).

Kaitiakitanga

Kina is identified in the Te Hiku O Te Ika Iwi Fisheries Forum Fisheries Plan as a taonga species. Kina is also identified as a taonga species in the Mai I Nga Kuri a Whareki Tihirau Iwi Forum Fisheries Plan. While the mid-north forum has yet to draft their formal fisheries plan, members identified kina as a very important species and its management to be of high interest to the forum.

During discussions about the proposals each forum raised concerns about the lack of information available to inform adjusting the catch limits and the potential for increased commercial harvest to impact customary catches, particularly with respect to localised depletion effects in areas of significance for customary gathering. The Bay of Islands was identified as an area of particular concern, with mid-north forum members stating that they would not want to see "yet more kai going out of their food cupboard (the Bay of Islands) and not being there to feed their tamariki".

The mid-north forum and Mai I Nga Kuri a Whareki Tihirau (Bay of Plenty) supported retaining status quo management settings (Option 1). Te Hiku o Te Ika indicated support for increases in commercial take, on the condition that the industry worked actively with the forum to discuss the location and extent of harvest within their region.

Submissions

Broader consultation occurred through the release of the consultation document; 22 submissions commented on SUR 1 and 2.

A key theme across the majority of submissions was that kina has been observed as being abundant in a number of areas, and that there are significant concerns about kina barrens (areas of high kina abundance and reduced abundance of other species).

The Kina Industry Council submits that the current TACC has been set conservatively and proposes that provision for more commercial fishing is a principal solution to address kina barrens. The Kina Industry Council also considers that the interests of other harvesters (customary and recreational) should be accommodated, and that could occur through the options proposed. They support either Option 2 for both SUR 1A and 1B with a further review in 2021, or Option 3 for both SUR 1A and 1B. The Specialty and Emerging Fisheries Group (an industry organisation) also submitted support for either Option 2 with a further review in two years, or for Option 3. Peter Herbert (Sea Urchin New Zealand) supports Option 3 for SUR 1B and submits that SUR 1A could also be increased as high as SUR 1B.

Peter Herbert (Sea Urchin New Zealand) notes that kina quality increases in areas that are 'groomed' by harvesters, providing for a better product to develop local and export markets. Dave Henare, factory manager at Sea Urchin New Zealand also submitted on the improved quality of kina in fished areas.

16 additional submissions were received in support of Option 3:

- Daryll Walker (quota owner and commercial kina diver for 15 years)
- Greg Relph (father of a commercial kina diver)
- Mark Jones (owner/operator of Glass Bottom Boat tourism at Hahei)
- Dive Zone Whitianga and Northland Dive, who both noted support for the Kina Industry Council submission
- 11 submissions of a similar format ('the form submission') from
 - Benjamin Davis (Trustee Ngawai Parehingawatea Trust, Hauraki Māori Trust Board and Ngati Hei Fisheries Trust)
 - Chris Pascoe (Mercury Bay, Whitianga Resident)
 - Dave Henare (Factory Manager at Sea Urchin New Zealand)
 - Jeremy Foxley (Commercial diver for 26 years)
 - Jack Roscoe (Commercial diver for 5 years, from Cooks Beach)
 - Jim Johnstone (Recreational fisher from Hahei, concerned kina are affecting rock lobster abundance)
 - Joseph Davis (Pare Hauraki Trust, Ngati Hei Trust)
 - Kara Lilley (employee for Sea Urchin New Zealand with 15 years in industry)

- Quinten Tangohau (commercial diver and recreational spear fisher)
- Tom Hussona (commercial diver from Hahei)
- Wiremu Davis (Trustee Ngawai Parehinapiwaka Whanau Trust, Hauraki Māori Trust Board, Ngati Hei Trust, Pare Hauraki Fisheries Trust).

Fish Forever (advocates for a marine sanctuary in the Bay of Islands) submitted that they would not oppose Option 3, if it is implemented in conjunction with monitoring.

Responses and submissions were received in support of Option 1 (status quo). These were from Te Ohu Kaimoana and RNZRNZSPCA, and both raise concerns with the level of information available on the status of the stocks.

Te Ohu Kaimoana proposes retaining current settings and developing a fisheries plan to guide management, with a further review in 2020 following a series of pre-consultation workshops. They reject the proposition that increased commercial harvest on its own will reduce kina barrens, and submit that commercial fishers are unlikely to choose to fish barrens as those kina are generally lower quality.

Environmental principles (section 9 of the Act)

In the North Island, kina are harvested by hand-gathering. This method is highly selective and there is no known by-catch of any associated, dependent or protected species.

As noted in submissions, kina play a role in the dynamics of the biological community structure of coastal reef systems. The 'barrens habitat', comprising a characteristic flora and fauna, usually within a particular depth zone of less than 12 metres, is maintained by high densities of kina populations, and results in different assemblages of seaweeds, invertebrates and fish life.

A reduced number of kina in an area, as a result of harvest activities or the influence of other natural events (such as disease), is likely to result in a re-colonisation of seaweeds that will subsequently affect the assemblage of species co-existing with it. The effect of this change would vary depending on latitude, depth and exposure to wave action. Harvesting regimes that might significantly affect kina densities might also have impacts on biodiversity, although these relationships are complex and not well understood. Under differing circumstances, biodiversity might either decrease or increase.

Similarly, the role that kina play in facilitating the creation or maintenance of habitats of particular significance to fisheries management is unknown. There is likely to be a range of interacting ecological processes that generally affect the prevalence of such habitat.

Sustainability measures (section 11 of the Act)

Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment, and any relevant fisheries plan.

As noted above, kina are harvested by hand-gathering and the impacts on the aquatic environment of the increases proposed are considered likely to be low. There is currently no fisheries plan in place that includes SUR 1A or SUR 1B.

Section 11(2)(c) of the Fisheries Act 1996 requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when varying the TAC relating to stocks with boundaries intersecting with the Park.

The Hauraki Gulf Marine Park is within the SUR 1B stock boundary and best available information indicates that the highest levels of catch (eastern Coromandel) are within the boundaries of the Hauraki Gulf Marine Park. Providing for sustainable utilisation of kina is consistent with objectives of the HGMPA and Fisheries New Zealand considers that all options would provide for this, although there are some risks due to limited information. The State of the Gulf 2017 report produced by the Hauraki Gulf Forum in accordance with the HGMPA highlights concerns about kina barrens. However, this report focuses on the impact that harvest of snapper may be having on prevalence of the barrens.

The Bay of Plenty Regional Council has included measures within its revised Coastal Plan to exclude fishing from certain defined spaces within the inshore area of the Bay of Plenty, which fall within SUR 1B. These are relatively small areas and do not significantly affect the options proposed.

4.3. Option 1- status quo

Option 1 places weight on the lack of information available on stock status and favours a cautious approach, noting the depletion in international sea urchin fisheries and the relatively slow growth characteristics of kina (estimated to live up to 20 years). This option also acknowledges the potential risks of increased commercial harvest resulting in localised depletion and the significance of such an effect on customary utilisation.

Under Option 1 for both SUR 1A and SUR 1B there will be no increase to the TACCs.

Constraining catches within current limits will limit the capacity to groom a greater area of kina to support the development of markets, which could be beneficial for non-commercial fishers and/or for the environment more generally.

4.4. Options 2 and 3

Option 2 and 3 provide for increased utilisation and place more weight on the ability to use newly available fine scale commercial reporting requirements to closely monitor the commercial fishery and reduce catches, if there are signals that the stock is not being managed consistently with the objectives of the Act.

SUR 1A

Under Option 2 the TACC would increase from 40 tonnes to 48 tonnes. Based on the reported port price (which does not reflect the total economic benefit), this increase may support an approximate increase in revenue of \$1,000 per year.

Under Option 3 the TACC would increase from 40 to 60 tonnes. Based on the reported port price, this increase may support an approximate increase in revenue of \$2,500 per year.

SUR 1B

Under Option 2 the TACC would increase from 140 to 168 tonnes. Based on the reported port price this increase may support an approximate increase in revenue of \$27,000 per year.

Under Option 3, the TACC would increase from 140 tonnes to 210 tonnes. Based on the reported port price, this increase may support an approximate increase in revenue of \$67,000 per year.

The form submission supporting Option 3 puts forward the following arguments:

- the original commercial catch limits were set at a low/ cautious level;
- commercial kina catches have been constrained by the TACC for over 10 years;
- commercially fished/managed areas can improve the quality of kina, which is of benefit to all stakeholders;
- there are too many kina barrens, and that the level of increase provided for by Option 2 is insufficient to help address the issue;
- any risks from this approach will be mitigated by improved monitoring, and fine scale management, supported by the roll out of digital monitoring requirements.

As noted earlier, Te Ohu Kaimoana raises the need to work collaboratively to develop fisheries plans, before increasing catch limits.

4.5. Other considerations

The Kina Industry Council, Herb Herbert, and the form submission all propose that commercial fishers should be able to use Underwater Breathing Apparatus (UBA) while harvesting kina and that this would make diving more safe. This issue is out of scope of the current review but could be considered as part of future management plans.

Te Ohu Kaimoana's response and the form submission raise concerns about the need for improved information on customary and recreational fishing. This could also be discussed within the scope of a management plan.

Te Ohu Kaimoana opposes increases to the allowances for both customary and recreational fishing without supporting information, and submits that an increase in the allowance for recreational fishing would undermine the Deed of Settlement and diminish the customary commercial stake in the fishery.

Overall, Fisheries New Zealand considers that under all options, the risks to sustainability could be further mitigated through close monitoring of newly available fine scale fishing data, and a further review of the stocks in the future. The range of input and responses received during this review reflect the varied interest in the kina fishery.

Given the status of kina as a significant taonga species for Māori, the very strong customary interest in the species, and concern about changes to the catch limits expressed through Iwi fisheries forums, Fisheries New Zealand recommends Option 1, (retaining the status quo). If there is interest from the industry, Fisheries New Zealand could support further work to develop a collaborative management plan which clearly identifies stakeholder outcomes and considers ways of gathering further information in the fishery. Following the development of a plan, and at such a time where sufficient information had been collected, Fisheries New Zealand would look to review the stocks again within 2-4 years.

5. Decision: Kina (SUR 1A & 1B: north east coast of North Island)

Option 1 (Status quo) – Fisheries New Zealand preferred

SUR 1A

Agree to retain the SUR 1A TAC at 172 tonnes and within the TAC:

- i. Retain the allowance of 65 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 65 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for all other sources of fishing related mortality;
- iv. Retain the SUR 1A TACC at 40 tonnes.

AND

SUR 1B

Agree to retain the SUR 1B TAC of 324 tonnes and within the TAC:

- i. Retain the 90 tonnes allowance for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 90 tonne for recreational fishing interests;;
- iii. Retain the 4 tonne allowance for all other sources of fishing related mortality;
- iv. Retain the SUR 1B TACC at 140 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

SUR 1A

Agree to increase the SUR 1A TAC from 172 tonnes to 206 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 65 tonnes to 78 tonnes;
- ii. Increase the allowance for recreational fishing interests from 65 tonnes to 78 tonnes;
- iii. Retain the allowance of 2 tonnes for all other sources of fishing related mortality;
- iv. Increase the SUR 1A TACC from 40 tonnes to 48 tonnes.

AND

SUR 1B

Agree to increase the SUR 1 B TAC from 324 tonnes to 389 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 90 tonnes to 108 tonnes;
- ii. Increase the allowance for recreational fishing interests from 90 tonnes to 108 tonnes;
- iii. Increase the allowance for all other sources of fishing related mortality from 4 tonnes to 5 tonnes;
- iv. Increase the SUR 1B TACC from 140 tonnes to 168 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

SUR 1A

Agree to increase the SUR 1A TAC from 172 tonnes to 259 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 65 tonnes to 98 tonnes;
- ii. Increase the allowance for recreational fishing interests from 65 tonnes to 98 tonnes;
- iii. Increase the allowance for all other sources of fishing related mortality from 2 tonnes to 3 tonnes;
- iv. Increase the SUR 1A TACC from 40 tonnes to 60 tonnes.

AND

SUR 1B

Agree to increase the SUR 1 B TAC from 324 tonnes to 486 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 90 tonnes to 135 tonnes;
- ii. Increase the allowance for recreational fishing interests from 90 tonnes to 135 tonnes;
- iii. Increase the allowance for all other sources of fishing related mortality from 4 tonnes to 6 tonnes;
- iv. Increase the SUR 1B TACC from 140 tonnes to 210 tonnes.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

11 / 09 / 2019

East Coast Tarakihi TAR 1, 2, 3 and 7 (East Coast North and South Island)

Nemadactylus macropterus; tiki

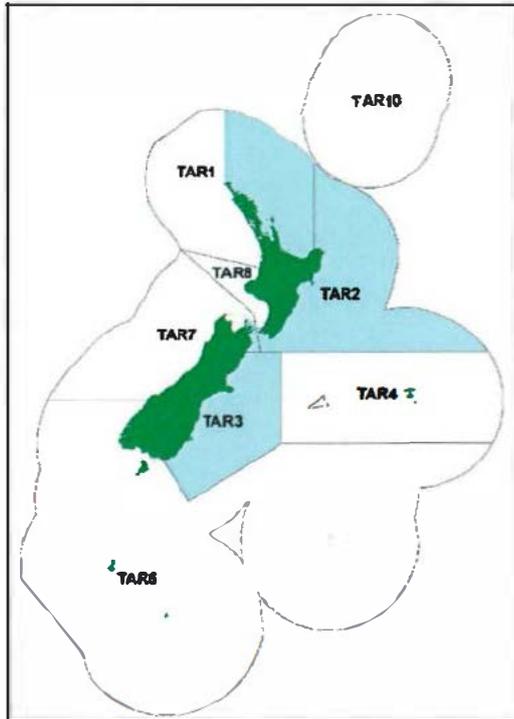


Figure 8: The Quota Management Areas (QMAs) for East Coast tarakihi (TAR 2 and 3, and East Coast portions of TAR 1 and 7)

6. Current TAC, TACC and Allowances

As part of your decisions on the 2018 October Sustainability Round, you decided to initiate a two-stage process aimed at rebuilding the East Coast tarakihi stock. This approach provided the commercial fishing industry an opportunity to plan and adjust their operations before any additional changes. You also invited the industry to develop a package of measures to support the rebuild, which could be considered as part of this year's Sustainability Round.

Table 10 sets out current Total Allowable Catches (TACs), Total Allowable Commercial Catches (TACCs) and allowances for TAR 1, TAR 2, TAR 3 and TAR 7 that were implemented as part of the first stage of the East Coast tarakihi rebuild. The values for TAR 1 and TAR 7 are for the entire QMA, including the sub-areas TAR 1 (east) and TAR 7 (Cook Strait).

Table 10: Total Allowable Catch for TAR 1, 2, 3, & 7

Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances (tonnes)		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality to the stock caused by fishing (tonnes)
TAR 1	1390	1097	73	110	110
TAR 2	1823	1500	100	73	150
TAR 3	1174	1040	15	15	104
TAR 7	1174	1042	5	23	104

7. Why are we proposing that you vary the TACs?

7.1. About the stock

Tarakihi is a relatively long-lived species, with a maximum age of 40+ years, reaching sexual maturity, on average, at 6 years of age and 33 cm in length. Tarakihi reach minimum legal size (25cm fork length) at 4 years; the first 8 years is a period of rapid growth. The biological characteristics and natural mortality rate of tarakihi indicate that it is a low productivity species (according to the Harvest Strategy Standard), which means that it is less resilient to high levels of fishing pressure than high productivity species.

Tarakihi are caught in coastal waters off the North and South Islands in depths from 50m to 250m. Due to inshore habitat, preferences, and relative ease of harvest, tarakihi is an important species to recreational and customary fishers. However, more than 80% of the combined TAC is caught by the commercial sector. The predominant commercial catch method used is bottom trawl, as well as a targeted set net fishery off Kaikōura.

7.2. State of the stock

Abundance across the East Coast stock is estimated at 15.9% SB_0 , which is below the level that would support the maximum sustainable yield. The assessment indicates that the stock has been near the current level since the early 2000's and has declined slowly since the mid 1970's to a low point in 2013 (refer Figure 9. Since then, it has begun to show an increasing trend, with a slight dip in the most recent year.

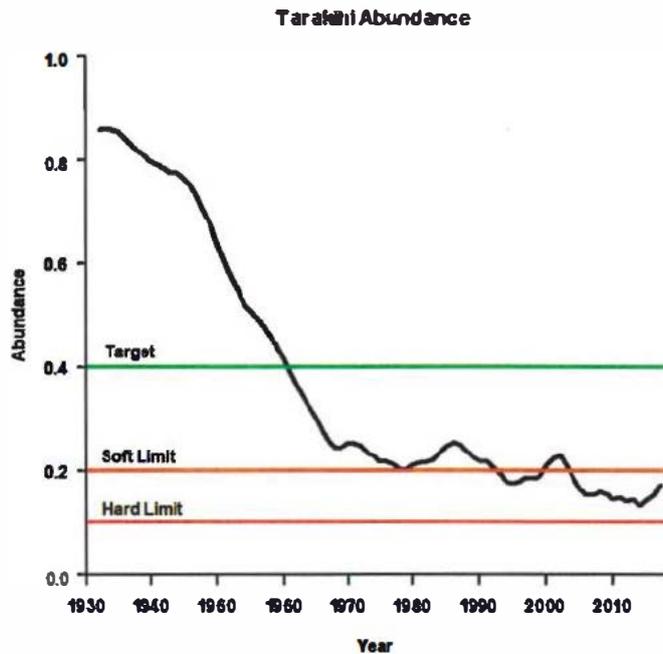


Figure 9 Historical performance of East Coast tarakihi abundance

The previous stock assessment in 2018 estimated the abundance to be 17% SB_0 . The difference between 15.9% SB_0 in 2019 and 17% SB_0 in 2018 does not represent a reduction in abundance, but indicates a more accurate estimation of abundance as a result of refinements to the modelling. It is too soon to track any changes in abundance that have resulted from your decisions last year. However, under current catch limits, the stock is predicted to rebuild.

In the absence of a dedicated species target, the Harvest Strategy Standard suggests a proxy management target of 40% SB_0 be used for long-lived finfish species similar to tarakihi. Abundance of East Coast tarakihi is significantly below the management target of 40% SB_0 , and recent assessments have indicated that the stock has been below the soft limit of 20% SB_0 since the early 2000s.

When a stock declines below the soft limit a formal, time-constrained, rebuilding plan is recommended. The Harvest Strategy Standard recommends that a rebuilding plan should aim to restore the stock to, at least, the target level of biomass within a timeframe of between T_{min} (minimum timeframe to achieve rebuild to target in the absence of fishing) and $2 * T_{min}$ (twice the minimum timeframe), with a 50% probability. T_{min} for tarakihi has been determined to be 5 years for a target of 40% SB_0 , or 4 years for a target of 35% SB_0 . 35% SB_0 is the species specific management target for tarakihi that has been proposed by the industry.

Under the current catch limits the stock is projected to reach 40% SB_0 in 35 years (with a 50% probability)¹¹ (refer to Figure 10).

Projected spawning biomass under current catch settings

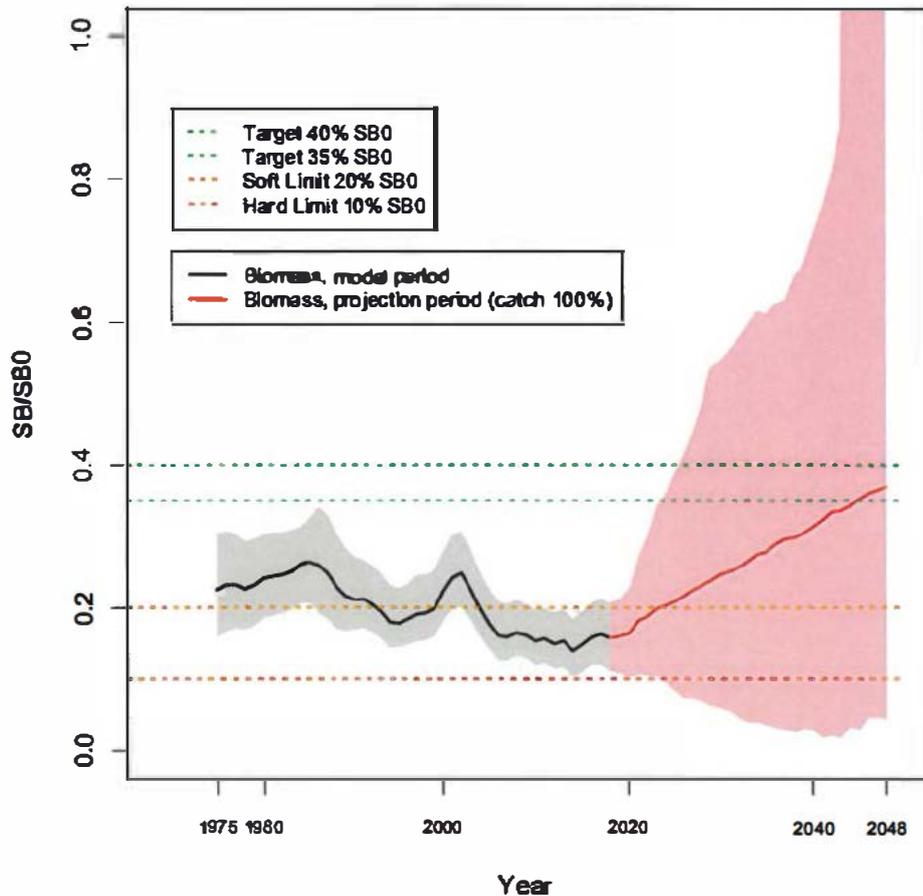


Figure 10 Spawning biomass levels. The projection, from 2018 forward is based on current catch and the large confidence intervals (red shading) are due to uncertainty in spawning success and subsequent recruitment (fish above the minimum legal size entering the fishery).

7.3. Information source and quality

The stock assessment provides the basis for the abundance estimate for East Coast tarakihi. This type of assessment is considered to be international best practice. The assessment model has been peer reviewed and accepted by the Fisheries New Zealand Southern Inshore Fisheries Assessment Working Group, as well as the stock assessment Plenary. The assessment model provided the basis for the 2018 decisions, and is considered to represent the best available information.

¹¹ The simulation period is for 30 years, therefore the rebuild timeframe of 35 years for a target of 40% SB_0 has been estimated based on continuation of the same linear trend.

Not with standing this, there are uncertainties around the estimated stock structure and other assumptions in the assessment model. These lead to uncertainty in estimates of stock status, demonstrated by the grey shading in Figure 10. There is also uncertainty around projections of future stock status based on alternative TACC options, unpredictable fluctuations in recruitment and environmental factors (red shading in Figure 10).

The next stock assessment for East Coast tarakihi is due for completion in 2021.

8. Allowances for Setting TAC

When setting a TACC, you are first required to make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other sources of mortality caused by fishing.

8.1. Māori customary interests

Tarakihi (tiki) is an important species for customary fishing and is identified as a taonga (treasured) species in Iwi Fisheries Plans that apply to the East Coast of the North and South Islands. Customary non-commercial catch in the East Coast tarakihi fishery makes up only a small amount of total removals (<5%). Based on the best available information, the current settings are considered to meet the needs of tangata whenua. There are no proposals to change the current allowances for customary non-commercial catch.

All the proposals are likely to positively impact on taiāpure and mātaihai reserves by contributing to increasing abundance through the rebuild.

8.2. Recreational interests

Tarakihi is one of the preferred recreational finfish species throughout New Zealand. Recreational catch in the East Coast tarakihi fishery makes up only a small amount of total removals (<5%).

The National Panel Survey of Marine Recreational Fishers represents the best available information on recreational harvest. The preliminary results of the 2017-18 survey show that the recreational harvest is within the allowance for TAR 1, TAR 3 and TAR 7. For TAR 2, the survey estimates the recreational harvest to be 110 tonnes (\pm 48 tonnes). This is approximately 50% greater than the current recreational allowance for TAR (73 tonnes), however, the allowance falls within the confidence intervals of the survey. The survey also shows that, despite the daily bag limit for tarakihi being between 10 and 20 per person per day, depending on location, 4 tarakihi or less per person per day were landed on 76% of recreational fishing trips across East Coast tarakihi.

Fisheries New Zealand considers the current recreational allowances adequately meet the needs of the sector, and there are no proposals to change the current allowances for recreational catch at this time. However, to secure the success of the rebuild, it may be appropriate to review recreational controls for tarakihi in future years.

8.3. All other mortality caused by fishing

All options propose allowances for other sources of fishing mortality equivalent to 10% of the TACC. The proposed allowances account for illegal take, under-reporting, death of fish required to be returned to sea, “ghost fishing” by lost gear and burst nets.

Estimates of other sources of fishing mortality (including incidental mortality from non-commercial fishing) are highly uncertain. In general, an estimate equating to 10% of commercial catch is considered appropriate in mixed inshore finfish fisheries.

9. Options for Sustainability Measures

All of the options provide for a rebuild of the East Coast tarakihi stock. However, the target, way and rate of rebuild will differ depending on the option chosen.

- Options 1 and 2 are achieved by way of reductions to the TACC.
- Option 3 is achieved through implementation of the Industry Rebuild Plan only (and no TACC reduction).
- Option 4 is a blended option which includes a reduction to the TACC as well as adoption of the Industry Rebuild Plan.

Option 4 is an additional option, included post consultation. It represents a middle ground between the higher TACC reductions proposed under Options 1 and 2 and the approach under Option 3 (implementation of the Industry Rebuild Plan). Option 4 proposes a 10% reduction to the East Coast tarakihi stock spread evenly across the TAR 2, TAR 3, the East Coast portion of TAR 1, and the Cook Strait portion of TAR 7). As with Option 3, Option 4 also proposes the adoption of the Industry Rebuild Plan, but is aimed at increasing the certainty rebuild when compared to retaining the TACC at its current level.

The characteristics of the four options are summarised in the following tables.

Option 1: TACC Cuts unevenly shared across East Coast tarakihi

Target	40% SB_0																																						
Method of achieving target	<p>Catch reductions: A mixed catch reduction unevenly spread across the QMAs; implemented in 2019/20. Overall, when considering the whole of TAR 1, 2, 3 & 7 this results in a combined TACC reduction of 31%.</p> <p>The reduction for TAR 1 is assumed to be spread across the entire stock, and not taken solely from the East Coast portion of the QMA. If the TACC reduction was implemented in the East Coast portion it would result in an approximate 90% reduction in catch, effectively closing this fishery.</p> <table border="1"> <thead> <tr> <th rowspan="2">Stock</th> <th rowspan="2">Total Allowable Catch (tonnes)</th> <th rowspan="2">Total Allowable Commercial Catch (tonnes)</th> <th rowspan="2">TACC % change</th> <th colspan="3">Allowances</th> </tr> <tr> <th>Customary Māori (tonnes)</th> <th>Recreational (tonnes)</th> <th>All other mortality caused by fishing (tonnes)</th> </tr> </thead> <tbody> <tr> <td>TAR 1</td> <td>871</td> <td>625</td> <td>43% ↓</td> <td>73</td> <td>110</td> <td>63</td> </tr> <tr> <td>TAR 2</td> <td>1383</td> <td>1100</td> <td>27% ↓</td> <td>100</td> <td>73</td> <td>110</td> </tr> <tr> <td>TAR 3</td> <td>623</td> <td>539</td> <td>48% ↓</td> <td>15</td> <td>15</td> <td>54</td> </tr> <tr> <td>TAR 7</td> <td>1112</td> <td>985</td> <td>5% ↓</td> <td>5</td> <td>23</td> <td>99</td> </tr> </tbody> </table>	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Allowances			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)	TAR 1	871	625	43% ↓	73	110	63	TAR 2	1383	1100	27% ↓	100	73	110	TAR 3	623	539	48% ↓	15	15	54	TAR 7	1112	985	5% ↓	5	23	99
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Rebuild rate (timeframe)	<p>12 years or $2.4 * T_{min}$, with 50% probability.</p> <p>2 years longer than target recommended by Harvest Strategy Standard.</p>																																						

Option 2: TACC Cuts proportionately shared across East Coast tarakihi

Target	40% SB_0																																						
Method of achieving target	<p>Catch reductions: A 50% catch reduction to the East Coast tarakihi stock; implemented in 2019/20.</p> <p>The TACC reductions are evenly shared across the East Coast tarakihi stock. In practice this amounts to a 50% reduction to the TACC of TAR 2 and TAR 3, and 50% reductions to the East Coast portion of TAR 1 and the Cook Strait portion of TAR 7.</p> <p>Overall when considering the whole of TAR 1, 2, 3 & 7 this results in a combined TACC reduction of 35%.</p> <table border="1"> <thead> <tr> <th rowspan="2">Stock</th> <th rowspan="2">Total Allowable Catch (tonnes)</th> <th rowspan="2">Total Allowable Commercial Catch (tonnes)</th> <th rowspan="2">TACC % change</th> <th colspan="3">Allowances</th> </tr> <tr> <th>Customary Māori (tonnes)</th> <th>Recreational (tonnes)</th> <th>All other mortality caused by fishing (tonnes)</th> </tr> </thead> <tbody> <tr> <td>TAR 1</td> <td>1106</td> <td>839</td> <td>24% ↓</td> <td>73</td> <td>110</td> <td>84</td> </tr> <tr> <td>TAR 2</td> <td>998</td> <td>750</td> <td>50% ↓</td> <td>100</td> <td>73</td> <td>75</td> </tr> <tr> <td>TAR 3</td> <td>602</td> <td>520</td> <td>50% ↓</td> <td>15</td> <td>15</td> <td>52</td> </tr> <tr> <td>TAR 7</td> <td>1077</td> <td>954</td> <td>9% ↓</td> <td>5</td> <td>23</td> <td>95</td> </tr> </tbody> </table>	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Allowances			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)	TAR 1	1106	839	24% ↓	73	110	84	TAR 2	998	750	50% ↓	100	73	75	TAR 3	602	520	50% ↓	15	15	52	TAR 7	1077	954	9% ↓	5	23	95
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TAR 7	1077	954	9% ↓	5	23	95																																	
Rebuild rate (timeframe)	<p>11 years or $2.2 * T_{min}$, with 50% probability.</p> <p>1 year longer than recommended by the Harvest Strategy Standard.</p>																																						

Option 3: Implementation of the Industry Rebuild Plan

Target	<p>35% SB_0</p> <p>The industry proposes that this target more accurately reflects the Harvest Strategy Standard requirements when the species specific biological characteristics of tarakihi are taken into account.</p>																																						
Method of achieving target	<p>No TAC/TACC cuts in 2019/20.</p> <p>Implementation of the Industry Rebuild Plan. This plan outlines a package of measures including catch splitting, move on rules, and increased selectivity to avoid catching unwanted fish.</p> <table border="1"> <thead> <tr> <th rowspan="2">Stock</th> <th rowspan="2">Total Allowable Catch (tonnes)</th> <th rowspan="2">Total Allowable Commercial Catch (tonnes)</th> <th rowspan="2">TACC% change</th> <th colspan="3">Allowances</th> </tr> <tr> <th>Customary Māori (tonnes)</th> <th>Recreational (tonnes)</th> <th>All other mortality caused by fishing (tonnes)</th> </tr> </thead> <tbody> <tr> <td>TAR 1</td> <td>1390</td> <td>1097</td> <td>0%</td> <td>73</td> <td>110</td> <td>110</td> </tr> <tr> <td>TAR 2</td> <td>1823</td> <td>1500</td> <td>0%</td> <td>100</td> <td>73</td> <td>150</td> </tr> <tr> <td>TAR 3</td> <td>1174</td> <td>1040</td> <td>0%</td> <td>15</td> <td>15</td> <td>104</td> </tr> <tr> <td>TAR 7</td> <td>1174</td> <td>1042</td> <td>0%</td> <td>5</td> <td>23</td> <td>104</td> </tr> </tbody> </table>	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC% change	Allowances			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)	TAR 1	1390	1097	0%	73	110	110	TAR 2	1823	1500	0%	100	73	150	TAR 3	1174	1040	0%	15	15	104	TAR 7	1174	1042	0%	5	23	104
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Rebuild rate (years)	<p>≤ 20 years or $5 * T_{min}$</p> <p>The Industry Rebuild Plan proposes that the management actions outlined in its plan will accelerate the rate of rebuild without the need for further reductions to the TACC.</p> <p>There is uncertainty as to whether the Industry Rebuild Plan will deliver an accelerated rate of rebuild. However to provide certainty, industry have committed to a maximum 20 year rebuild timeframe.</p> <p>In the absence of any additional management actions and solely taking into account catch, the rebuild timeframe would be 27 years or $6.75 * T_{min}$.</p>																																						

Option 4: TACC cuts combined with the Industry Rebuild Plan

Target	40% SB_0 as an interim proxy target and agree to develop a species specific management target as part of the 2021 Stock Assessment.																																						
Method of achieving target	<p>A 10% catch reduction to the East Coast tarakihi stock in 2019/20, combined with implementation of the Industry Rebuild Plan.</p> <p>The TACC reductions are evenly shared across the East Coast tarakihi stock. In practice this amounts to a 10% reduction to the TACC of TAR 2 and TAR 3, and 10% reductions to the East Coast portion of TAR 1 and the Cook Strait portion of TAR 7.</p> <p>Overall when considering the whole of TAR 1, 2, 3 & 7 this results in a combined TACC reduction of 7%.</p>																																						
Rebuild rate (years)	<p>≤ 20 years or $4 - 5 * T_{min}^{12}$</p> <p>The Industry Rebuild Plan proposes that the management actions outlined in the plan will accelerate the rate of rebuild and have committed to a maximum 20 year rebuild timeframe.</p> <p>Fisheries New Zealand notes there is uncertainty as to whether the Industry Rebuild Plan will deliver an accelerated rate of rebuild.</p> <p>In the absence of any additional management actions and solely taking into account catch, the rebuild timeframe would be 25 years ($5 * T_{min}$) or 19 years ($4.75 * T_{min}$) for a target of 40% SB_0 or 35% SB_0 respectively.</p> <table border="1"> <thead> <tr> <th rowspan="2">Stock</th> <th rowspan="2">Total Allowable Catch (tonnes)</th> <th rowspan="2">Total Allowable Commercial Catch (tonnes)</th> <th rowspan="2">TACC% change</th> <th colspan="3">Allowances</th> </tr> <tr> <th>Customary Māori (tonnes)</th> <th>Recreational (tonnes)</th> <th>All other mortality caused by fishing (tonnes)</th> </tr> </thead> <tbody> <tr> <td>TAR 1</td> <td>1333</td> <td>1045</td> <td>5% ↓</td> <td>73</td> <td>110</td> <td>105</td> </tr> <tr> <td>TAR 2</td> <td>1658</td> <td>1350</td> <td>10% ↓</td> <td>100</td> <td>73</td> <td>135</td> </tr> <tr> <td>TAR 3</td> <td>1060</td> <td>936</td> <td>10% ↓</td> <td>15</td> <td>15</td> <td>94</td> </tr> <tr> <td>TAR 7</td> <td>1155</td> <td>1024</td> <td>2% ↓</td> <td>5</td> <td>23</td> <td>102</td> </tr> </tbody> </table>	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC% change	Allowances			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)	TAR 1	1333	1045	5% ↓	73	110	105	TAR 2	1658	1350	10% ↓	100	73	135	TAR 3	1060	936	10% ↓	15	15	94	TAR 7	1155	1024	2% ↓	5	23	102
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10. Eastern Tarakihi Management Strategy & Rebuild Plan 2019

As part of your decisions in 2018, you invited the industry to consider new and innovative ways to help the fishery rebuild, and to then present a finalised and updated version of its plan by no later than mid-2019. You also signalled that such a plan would be considered alongside commercial catch reduction proposals as part of the 1 October 2019 Sustainability Round process.¹³

The *Eastern Tarakihi Management Strategy and Rebuild Plan* (the Industry Rebuild Plan) has been developed by Fisheries Inshore New Zealand, Te Ohu Kaimoana and Southern Inshore Fisheries. It represents the industry's commitment to the sustainable management of East Coast tarakihi fishery, and desire to work with Fisheries New Zealand to provide for the rebuild of the fishery, while also maintaining a viable inshore fishing industry.

¹² Based on a management target of either 35% SB_0 or 40% SB_0

¹³ Ministerial Decision Letter, Changes to Sustainability Measures and Other Management Controls for 1 October 2019, <https://www.mpi.govt.nz/dmsdocument/30846-2018-october-sustainability-round-decision-letter-signed>

The Industry Rebuild Plan was submitted to you, and Fisheries New Zealand, in May 2019, and was consulted on as Option 3 in this year's review. Option 4 has been included post-consultation, and is a combination of a TACC reduction supported by the Industry Rebuild Plan.

Overall, Fisheries New Zealand considers there is uncertainty as to whether the Industry Rebuild Plan will deliver an accelerated rate of rebuild. However, we note that to provide certainty of a rebuild, industry have committed to a maximum 20 year rebuild timeframe, and state that they will amend and adapt the plan should monitoring suggest this rate of rebuild is not being achieved.

10.1. Improvements to the Industry Rebuild Plan

In response to feedback from Fisheries New Zealand, yourself and stakeholders, the industry has strengthened its plan during the consultation period. These changes are aimed at providing greater confidence that the industry is committed to the plan's implementation, and secondly, demonstrate that the plan will provide tangible results that will rebuild the stock. In summary, the improvements made to the rebuild plan are as follows:

- Each management measure now has specific Key Performance Indicators (KPIs), milestones, and reporting requirements to demonstrate progress.
- The industry has committed to a time bound rebuild period of 20 years with an interim target of 35% SB_0 , while noting that measures proposed in the Industry Rebuild Plan are likely to expedite this timeframe.
- Quota holders have demonstrated their explicit commitment to the plan by becoming signatories to it.
- Industry has committed to monthly reporting and quarterly meetings with Fisheries New Zealand to ensure the actions in the plan are being delivered on, and KPIs are met.

A full copy of the Industry Rebuild Plan is provided in Appendix 1, this includes the covering update to the Industry Rebuild Plan which was submitted during the consultation period.

10.2. Explicit commitment from industry to the Industry Rebuild Plan

Regional Management and Monitoring Plans for TAR 1, TAR 2, TAR 3 and TAR 7 are an integral part of operationalising the measures outlined in Industry Rebuild Plan. The industry is committing to these plans by becoming signatories to them. The industry has set a KPI of 90% of quota shareholders (of TAR 1, TAR 2, TAR 3 and TAR 7) being signatories to the relevant Regional Management and Monitoring Plans by 1 October 2019. Table 11 shows the progress as at 29 August 2019.

Table 11 Signatories to the regional monitoring and management plans

	% total quota shares			
	TAR 1	TAR 2	TAR 3	TAR 7
All quota holdings	87%	86%	97%	91%

10.3. Analysis of core elements of the Industry Rebuild Plan

The core elements of the Industry Rebuild Plan, and our analysis of their effectiveness are set out below.

Commitment to a time constrained Rebuild

The industry has committed to a rebuild of 20 years from the base year 2017/18, with an interim target of 35% SB_0 . The additional measures outlined in the plan, such as selectivity improvements, avoiding juvenile tarakihi and move-on rules, could shorten this rebuild timeframe. In essence, industry are proposing that 20 years be the maximum rebuild period.

Fisheries New Zealand welcomes the addition of a maximum rebuild timeframe to the Plan, as it provides greater confidence to all users of the resource as to when the stock will be rebuilt. Further work is needed to determine whether 35% SB_0 is an appropriate management target for tarakihi and this is discussed in the sections below.

Catch Splitting – West/East Split

The aim of this measure is to achieve catch reductions at the sub-Quota Management Area (sub-QMA) level, e.g. the East Coast portion of TAR 1 and TAR 7 (Refer Table 12). This is proposed to ensure the catch reductions are in line with the rebuild objectives for East Coast tarakihi and don't affect the West Coast portion of these QMAs.

Quota holders have agreed to maintain these arrangements for up to the next 3 years. We note that there will be a further review of the stock within this period, with the next stock assessment planned for 2021.

Table 12 Catch Splitting Arrangements in Industry Rebuild Plan 2018/19 onwards

Catch Splitting Arrangement ¹⁴	Industry KPI	
	West	East
TAR 1	52.78%	47.22%
TAR 7	82.84%	17.16%

The current fishing year (starting 1 October 2018) represents the first year that the catch splitting arrangement has been in place, and fishers are having to adjust their practices and work collectively throughout the year to ensure that the catch splitting arrangement balances at the end of the year.

¹⁴ The proportions by which the east and west zones are split have been calculated based on historical catch.

The year is not yet complete, but the industry has been tracking, and regularly reporting on their progress with the catch splitting arrangement. As at 22 July 2019, industry have reported that the:

- TAR 1 (East) sub-area catch limit is **under caught by 5%**.
- TAR 7 (East) sub-area catch limit **over caught by 8%**.

Based on the July reporting, it is unclear whether the industry will meet its KPI of 80% adherence to the catch splitting arrangements this year. It may be that East Coast portion of the catch in 2018/19 is greater than what has been agreed for the east west split.

Since the close of submissions, Fisheries New Zealand has met with industry representatives to signal our concerns with how the catch splitting arrangement is tracking for this fishing year. The industry is proactively working to improve performance with catch splitting arrangements in future years, and has acknowledged that year one was always going to be the hardest year because it required the biggest adjustment from industry.

Fisheries New Zealand notes that when implemented successfully, voluntary catch splitting arrangements provide a responsive mechanism for achieving catch reductions at the sub-QMA level. These arrangements are important in ensuring that any catch reductions directly support the rebuild by targeting them to the east coast portions of TAR 1 and TAR 7. Compliance with catch splitting arrangements is able to be accurately monitored and verified through new electronic reporting requirements.

Reporting sub Minimum legal size

Understanding the level of sub minimum legal size (MLS) tarakihi caught, and its distribution, is important information that can assist fishers, fisheries management, and scientific understanding as we rebuild the East Coast tarakihi stock. Reducing catch of sub-MLS tarakihi will also ensure that a greater number of juveniles will remain in the water to feed into the wider fishery.

Industry KPI	100% compliance with sub-MLS reporting.
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Fisheries New Zealand is currently working with industry to ensure continued confidence in reporting of sub-MLS tarakihi as we transition from paper-based reporting to the electronic reporting regulations. Reporting of sub MLS catch also supports monitoring of the effectiveness of measures such as the 'move on rule' and gear selectivity (see below).

Selectivity Trials

The industry has committed to undertake trials to improve the selectivity of trawl nets through modifications to fishing gear and these trials are already underway. Science modelling for tarakihi indicates that increasing the average size of fish caught, otherwise interpreted as the age, by one year, through catch selectivity improvements is projected to reduce the current rebuild time by approximately 12 years.

Industry KPI	Completion of trials. 75% uptake of required gear to achieve shift to right on selectivity curve.
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In addition to this work, the industry is also exploring undertaking an innovative research project that looks at using engineering, camera technology and artificial intelligence to automatically detect and record length frequency information of sub-MLS catch.

Fisheries New Zealand agrees that increasing selectivity will support a reduction in the rebuild time. We will not know if industry are able to achieve increased selectivity through gear modification until the results of their trials are known. Some early trials have already been completed with mixed success. The industry however, remains committed to progressing these trials throughout 2020.

Move on Rule

To avoid catch of juvenile sub-MLS tarakihi, the industry has committed to the use of a 'move on rule'. When triggered, a fisher is required to move more than one nautical mile from all parts of the line where small fish are encountered, or move so that the net is at a depth of at least 10 metres more along all points of the line. The move-on rule applies when both of the following triggers are met:

- TAR is greater than 10% of the catch in any haul; and
- Sub-MLS catch is greater than 15% of the TAR catch by weight.

Industry KPI	90% adherence to move on rules.
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Provided there is accurate reporting of sub-MLS catch, compliance with the move on rule can be monitored and verified through electronic reporting requirements.

Fisheries New Zealand note that move-on rules are a useful tool for reducing the amount of sub-MLS fish caught. However, the extent to which they are effective is difficult to quantify. This is because:

- They have not been traditionally used as a sustainability measure for increasing abundance; and
- Historically there hasn't been accurate reporting of sub-MLS catch to provide a comparative analysis.

Voluntary Closed Areas

Voluntary closed areas (VCAs) provide a tool for avoiding areas where small tarakihi are abundant year-round. VCAs have been identified by industry in the TAR 2 Regional Management and Monitoring Plan and provide an additional measure to the move on rule for avoiding juvenile fish.

Industry KPI	90% adherence to regional management and monitoring plans.
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Fisheries New Zealand note that the efficacy of VCAs are similar to that of move on rules, but are simpler and easier to enforce. They are however, only appropriate in areas where small tarakihi are abundant year round, and therefore a limited in their application - Hence why industry have only identified VCAs in TAR 2, at this stage. Notwithstanding this, Fisheries New Zealand would support industry investigating opportunities for the implementation of VCAs in other areas within East Coast tarakihi.

Furthermore, compliance with VCAs can be accurately monitored and verified through electronic reporting requirements.

Development of a species specific target

The industry has committed to working with Fisheries New Zealand to develop a species specific management target for East Coast tarakihi as part of the 2020/21 stock assessment. This will resolve the question of whether 40% SB_0 or 35% SB_0 is a more appropriate target for tarakihi.

Industry KPI	Development of target as part of the 2020/21 stock assessment.
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Fisheries New Zealand considers, that in the short term, and in the absence of adequate peer review of scientific evidence, the proxy target of 40% SB_0 as recommended by the Harvest Strategy Standard remains appropriate for East Coast tarakihi. However, we remain committed to working with the industry to develop a species specific target as part of the 2021 stock assessment.

Enhancing Science

Industry has committed to enhancing science relating to East Coast tarakihi to increase our understanding of the fishery, reduce key uncertainties, and assess the effectiveness of the Industry Rebuild Plan. Key commitments include:

- The re-establishment of a fisheries independent trawl survey for the North Island and continuation of the East Coast South Island trawl survey.
- Ongoing industry support of catch sampling.
- Development of a gear database to improve gear understanding across industry.
- Support for genetics research of tarakihi.
- Assessing the impact of changing environmental conditions.

Fisheries New Zealand support improving the scientific knowledge base on which decisions relating to East Coast tarakihi are made. We appreciate industry support of these projects, but note that some of the work mentioned such as the gear data base and the genetic study is underway and has already been committed to.

11. Economic analysis

Fisheries New Zealand engaged the New Zealand Institute of Economic Research (NZIER) to undertake an independent economic impact assessment of the proposed options relating to the 2019 review of sustainability measures for the East Coast tarakihi stock (refer Appendix two).

The report is based on a 'Regional Computable General Equilibrium (CGE) Model', and provides estimates of the national and regional economic impacts for each option when compared to the pre-rebuild levels, e.g. before 1 October 2018. It shows how the options affect demand for, and prices of, inputs and outputs of the fishing industry.

It is important to note that the impacts outlined in Table 13, Table 14 and Table 15. are annual economic impacts associated with the first year of the proposed catch limit settings for each option. When considering the total economic impact in relation to the relative rebuild period of each option, these figures should not be multiplied by the total number of years of the rebuild under each option. This is because the impacts are likely to reduce over time as fishers adapt their behaviour, respond to fishing technology and strive for greater fishing precision.

Furthermore, there will be both costs (additional research), and benefits (reduced rebuild timeframe), associated with the Industry Rebuild Plan. As it is not possible to quantify the economic impacts of these cost and benefits they have not been included in the sections below. The impacts outlined below are directly related to changes in commercial catch limits when compared to pre-rebuild catch limits (i.e. pre 1 October 2018).

11.1. National impacts

Table 13 shows the annual impact to the national economy of the new TACC options on a per annum basis. At the national level, Gross Domestic Product (GDP) is expected to fall by between \$6.06 million (-0.002%) and \$15.86 million (-0.006%) per annum until the stock is rebuilt.

National household spending (the best measure of economic wellbeing and discretionary income) is driven by regional household consumption which is, in turn, negatively affected by the decrease in employment and lower wages at the regional level derived from the reduction in TACC levels. New Zealand household spending may be reduced by between \$2.96 million (-0.002%) and \$7.88 million (-0.005%).

New Zealand export revenue may reduce by between \$3.3 million (-0.004%), and \$8.68 million (-0.011%). Because commercial tarakihi is primarily caught for domestic consumption, a reduction in exports is mostly due to a reduction in by-catch product exports.

Table 13: Economy wide effects of the new catch limit options (Changes in 2018 \$ million per year (real terms))

Indicators	Option 1	Option 2	Option 3	Option 4
GDP	-14.83	-15.86	-6.06	-8.00
Household spending	-7.37	-7.88	-2.96	-3.92
Exports	-8.12	-8.68	-3.30	-4.36
All industry outputs ¹⁵	-18.54	-19.80	-7.18	-9.56

Notes: Each row represents a distinct indicator about the New Zealand economy. These rows are not additive.

Source: NZIER

11.2. Regional impacts

Canterbury, Bay of Plenty, Nelson-Tasman, Auckland and Hawke's Bay experience the greatest impacts on GDP and household spending under the proposed TACC options.

The GDP and household spending impacts would be the highest in these regions because the tarakihi and by-catch industries account for a larger share of the regional GDPs. These regions are also the main ports of origin for commercial tarakihi fishing vessels and, therefore, are expected to be more affected by proposals to decrease the TACC of TAR.

Table 14 presents the GDP impacts in dollar-value for these five most affected regions.

Table 14 GDP impacts in the five most affected regions (Changes in 2018 \$ million per year (real terms))

Region	Option 1	Option 2	Option 3	Option 4
Canterbury	-4.12	-4.27	-1.46	-2.08
Bay of Plenty	-3.12	-3.03	-1.22	-1.75
Nelson-Tasman	-1.70	-1.87	-1.00	-1.44
Auckland	-1.98	-1.81	-0.69	-1.81
Hawke's Bay	-1.44	-1.99	-0.61	-0.89

Source: NZIER

¹⁵ All industry outputs represents the sum of all the outputs in the New Zealand economy from the 106 industries defined by Statistics New Zealand

Table 15 presents the household spending impacts, in dollar value, for these five most affected regions.

Table 15 Impact on regional household spending (Changes in 2018; \$ million per year (real terms))

Region	Option 1	Option 2	Option 3	Option 4
Canterbury	-1.51	-1.58	-0.52	-0.75
Bay of Plenty	-0.81	-0.78	-0.30	-0.43
Nelson-Tasman	-0.37	-0.41	-0.24	-0.34
Auckland	-2.05	-2.11	-0.80	-1.16
Hawke's Bay	-0.29	-0.44	-0.13	-0.19

Source: NZIER

In addition to the impacts mentioned above, industries closely related may also suffer from a decrease in TACC for tarakihi. For example:

- Upstream industries¹⁶ that supply the tarakihi and by-catch fishing industries (e.g. boat servicing and building) are likely to be negatively affected by the reduced demand for their goods and services.
- Downstream industries (e.g. transport), which use the output of the tarakihi and by-catch industry in a finished or different product to reach consumers, are also likely to be negatively affected.
- Industries on which households spend their income are also affected by a decrease in household incomes. Lower household incomes suppress domestic demand in industries producing goods and services that are not of first necessity, e.g. hospitality.

Partly offsetting the losses mentioned above, is the expansion of competing industries. These industries gain from the decrease in tarakihi TACC levels as they compete for resources (labour and capital), which become less expensive. Typically, these industries are the labour-intensive and/or export industries, such as services and manufacturing industries.

In addition to the impacts mentioned above, Fisheries New Zealand considers that you should also give weight to the level of socio-economic impact and the impact of any catch reductions at the individual fisher level, as well as industry's ability to fund additional innovation (discussed in section 13) when deciding on the appropriate balance between sustainability and use, and the way and rate of rebuild.

¹⁶ These are industries classified under the ANZSIC classification system:
<http://archive.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/industrial-classification.aspx>

12. Input and Participation of Tangata Whenua

Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui), Te Hiku o te Ika Fisheries Forum, Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum, Te Taihauauru and Ngā Hapū o te Uru Fisheries Forum all had input into the selection of stocks to be reviewed in the 2019 sustainability reviews.

Te Waka a Māui Forum (TAR 3 & 7) (South Island) supported a review of TAR 3 and TAR 7 during the 2018 review, but did not support setting a customary allowance for TAR 7 based on reported catch as this does not account for the full harvest. Regarding the 2019 review, Te Waka a Māui supports Option 1 as their preferred option as stated at a Hui in Nelson on 9 July 2019.

During 2018, Ngā Hapū o Te Uru Fisheries Forum (TAR 1) (Taranaki to the Waikato River mouth) recognised this species is a taonga to Māori. It recognised the importance of tarakihi to tangata whenua for customary, commercial, subsistence and recreational purposes, but also acknowledged this is an East Coast fishery and therefore not within their rohe moana.

The Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum (TAR 1) (Bay of Plenty) noted concerns with the science and significant uncertainties surrounding it. Therefore the forum didn't reach a consensus in support of any option.

The Te Hiku o te Ika Fisheries Forum (TAR 1) (Northland) indicated support for Option 3. They highlighted concerns that abundance should not have fallen to such a low level, and considered that better research planning and prioritisation is needed to manage this risk going forward.

During the consultation period Fisheries New Zealand undertook an additional meeting in Napier to allow for input and participation of tangata whenua in Fisheries Management Area 2 (FMA 2). This was done because currently there is no active Iwi Fisheries Forum for this area. Discussions at this meeting tended to focus on understanding the science and information relating to the stock. Representatives acknowledged the importance of tarakihi and ensuring its sustainability, but there was no consensus in support of any option.

13. Submissions

Table 16: Written Submissions Received

Submitter	Option Support			
	1	2	3	Other
Andrew Tumwald				✓
Doug Hitchhon				✓
Environment and conservation organisation of New Zealand		✓		
Environmental Defence Society Incorporated	✓			
Forest and Bird				✓
Geoff Burgess Vela Group			✓	
Geoff Donley			✓	
Gisborne Fisheries			✓	
Harbour Fish South Island Seafood			✓	
Industry Proposal - Fisheries Inshore New Zealand, Southern Inshore Fisheries and Te Ohu Kaimoana			✓	
Iwi Collective Partnership			✓	
John McGrath			✓	
Karl Warr		✓		
Michael and Judith Terry			✓	
Neil and Paula Gwillim			✓	
New Zealand Sportfishing Council / LegaSea				✓
Ngati Kahungunu Iwi Incorporated			✓	
Ngati Porou Seafoods Ltd			✓	
Nigel Bryant			✓	
Ocean Fisheries Ltd			✓	
Our Seas Our Future	✓			
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc		✓		
Sealord Group Ltd			✓	
Southern Inshore Fisheries			✓	
Spearfishing New Zealand		✓		
Te Ohu Kaimoana			✓	
Te Runanga o Ngati Whatua			✓	
Whitianga and Coromandel Peninsula Commercial Fishermen's Association			✓	

13.1. Online survey

In addition to written submissions, there were 43 responses to the online survey, 30 of which were from recreational fishers. Survey respondent's support for the options can be summarised as:

- 24 people supported Options 1 or 2;
- 5 people supported Option 3; and
- 14 people supported an alternative option, ranging from banning all fishing, to maintaining the status quo for up to 5 years until the impact of the current cuts can be adequately assessed, or didn't specify a preferred option.

13.2. Public Meetings

During the consultation period Fisheries New Zealand also held three public meetings (refer Table 17). The purpose of these meetings was to explain the proposals for East Coast tarakihi, provide time for questions and answers, and encourage people to submit on the proposals.

Table 17: East Coast tarakihi public meetings: location, date and attendance

Location	Date	Attendance (approx.)
Christchurch	5 July 2019	15
Auckland	11 July 2019	40
Napier	12 July 2019	40

13.3. Submission themes

Very few submitters cited a lack of, or inability, to catch fish, either recreational or commercial. However, most if not all, of the submissions supported the science, and agreed that the abundance of East Coast tarakihi needs to be increased to a more sustainable level.

While most submitters supported a rebuild of East Coast tarakihi, they strongly differed in terms of the way and rate the rebuild should occur. The submissions can broadly be characterised into two groups:

- Those supporting management intervention that will rebuild the stock to the target in the shortest possible time; and
- Those acknowledging the significant, and potentially irreversible consequences on the fishing industry, and wider community, of any additional cuts. They proposed a more gradual rebuild rate be selected, that allows the stock to rebuild while minimising the socio-economic impacts.

13.4. Rebuilding the stock to the target in the shortest possible time

Submitters supporting a fast rebuild did so based on the stock being below the soft limit and having been there for a long time. Submitters in support of this included New Zealand Sport Fishing Council, Spearfishing New Zealand, the Environmental Defence Society, Environment and Conservation Organisation of New Zealand, Our Seas Our Future, Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. and Forest and Bird.

Submitters that supported Options 1 or 2 generally opposed Option 3, noting that the Industry Rebuild Plan lacked certainty, was not 'time constrained', doesn't propose cuts, and that the target of 35 % SB_0 remains unsubstantiated. As the plan doesn't propose cuts some submitters considered it nothing more than a tactic by industry to delay action.

Some submitters for example, the New Zealand Sport Fishing Council/LegaSea and Forest and Bird, also considered Option 1 and 2 didn't go far enough and suggested an alternative option. They indicated a preference for larger catch reductions to ensure a rebuild timeframe of 10 years, which aligns with the Harvest Strategy Standard. Options 1 and 2 provide a rebuild timeframe of 11 and 12 years respectively. Fisheries New Zealand considers these options to be broadly consistent with the Harvest Strategy Standard, while noting that it is a guideline, to which you are not bound.

Some supporters of Options 1 or 2, like the New Zealand Sport Fishing Council/LegaSea did express some sympathy for commercial fishers who have worked hard and will "bear the lion's share" of the financial implications associated with any cuts. They also acknowledged the innovation underway, but that it is driven by a few dedicated fishers and is long overdue.

13.5. Gradual rebuild timeframe to minimise social and economic impacts

67% of individual submitters supported Option 3, the Industry Rebuild Plan. This was supported by Te Ohu Kaimoana, Ngati Kahungunu Iwi Incorporated, Ngati Porou Seafoods, Iwi Collective Partnership, Southern Inshore Fishers, Fisheries Inshore New Zealand, and Sealord Group Ltd, among other submitters.

The industry argue that they sustained a 20% reduction to the TACC during 2018 which has already put the stock on a path towards rebuild. Furthermore, these reductions came at social and economic cost to fishers directly, and the broader community. As a result of the catch limit reductions in 2018, many submitters consider there is currently no direct threat to sustainability, because under the current catch limits the stock is projected to rebuild.

Furthermore, many submitters consider the direct impacts of your 2018 decision are already being felt, with some operators having to limit their vessel activity this year to fortnightly fishing trips instead of weekly.

Industry consider tarakihi to be an iconic species caught by New Zealanders, for New Zealanders. It is caught around the country, throughout the year and consumed locally with more than 90% of TAR sold domestically to New Zealanders. Under Options 1 and 2, between 1430 and 1,616 tonnes will be removed from the domestic market. This will likely have an impact on the price of tarakihi in supermarkets and fish shops. Further constraints on catch will therefore not only impact on the commercial industry, but also on the community in respect to the availability, and cost of tarakihi in the retail market.

Many submitters consider the cuts proposed under Option 1 and 2 will have significant, and potentially irreversible socio-economic impacts on the commercial inshore fishing industry. These impacts are anticipated to include unemployment, vessels off the water, loss of income to the catching sector, quota owners, processors and distributors, inability to service debt, reduced economic viability, forced exit and bankruptcy, stranded assets, and social impacts on iwi and regional communities. Overall, this will mean job losses, impacts on local businesses and indirect impacts on local economies such as a lack of fish supply to local companies.

Ngati Porou Seafoods have estimated that under Options 1 and 2 companies which manage inshore vessels, like Moana NZ and Gisborne Fisheries through Gisborne Port, will lose up to 600 tonnes of Annual Catch Entitlement which, based on current valuations, is approximately a \$6 million asset reduction, and does not include the additional loss through the supply and distribution chain. In addition to this, multiple vessels will be removed from the fishing fleet and up to 12 staff made redundant. Submitters generally referred to the far-reaching indirect implications of Options 1 and 2, which will negatively affect ancillary servicing and support businesses that rely on the fishing industry, for example transport, storage, engineering, boatyards, marine electronics, retail shops, and bait suppliers.

Associated mental health and wellness implications have also been highlighted by submitters, noting that some fishers may be forced to exit the industry and may be unable to provide for their families and service debt.

Tarakihi is considered by many commercial submitters to be the economic backbone of many inshore vessel's annual catch plan. Reductions of the scale proposed under Option 1 and 2 are likely to directly impact the viability of these businesses. This is because, in some areas, there is limited ability to catch other fish due to a lack of Annual Catch Entitlement. The inability to replace tarakihi in catch plans will result in lost revenue.

Options 1 and 2 would result in quota owners having less capital to support innovation, and this will impact on incentives to improve management and catch methods.

The industry have emphasised that innovation does not exist in isolation. They state that it is intrinsically linked with the core elements of fisheries management: confidence, certainty, investment and performance.

Furthermore, the industry consider that you challenged them to provide a meaningful and innovative rebuild plan in 2018, and that they have done so. There has been a large amount of work undertaken over the last 12 months to galvanise the inshore industry for the first time. They argue that this should be recognised by allowing them to implement their proposed rebuild plan and allow enough time to see results through the stock assessment process, prior to making any additional changes. In addition to this, there has been insufficient time since the 2018 cuts to adequately determine any improvement in stock abundance. Submitters suggest waiting until the after 2021 stock assessment prior to implementing any additional cuts.

Industry representatives and other commercial submitters consider the rebuild timeframe under Option 1 and 2 is too short given the stock has been low, and relatively stable, for the last 30 years. While all submitters recognise that abundance needs to be increased, most submitters consider it should not be increased at a rate that unnecessarily impacts the industry, and the regional communities that support the industry. Instead it should be rebuilt at a pace that more closely reflects the decline – slow and steady.

Some commercial submitters consider that tarakihi has a wide depth profile, and therefore as abundance increases it will impact on fisher's ability to avoid tarakihi when targeting other species. In the industry this is referred to as a 'choke' species.

Management measures affecting tarakihi should reflect the interconnectedness of related fisheries, and that any cuts to tarakihi will impact on the ability of fishers to then catch other species. This has already become an issue in Hawke Bay, with some submitters stating they are having trouble avoiding tarakihi due to its increasing abundance. To further avoid tarakihi they indicate that they would need to move inshore and fish shallower waters, targeting snapper and gurnard.

Industry consider the implications of the tarakihi decision should be viewed in light of other management measures and closures being considered as multiple changes to a fishery can have cumulative effects. Of particular note are the current proposals relating to Hector's dolphin closures, and pending proposals with respect to South East Marine Protected Areas.

14. Analysis

14.1. Legal requirements

When making decisions in relation to catch limit and allowance adjustments under the Fisheries Act there are a number of things you are required to, take into account, or have regard to, as set out in sections 9 to 13, and 21 of the Fisheries Act 1996. All the options proposed in this Discussion Document meet the requirements outlined in those sections and are discussed throughout this document in the relevant sections.

14.2. Regional policy documents and the Hauraki Gulf Marine Park Act 2000

Fisheries New Zealand notes that the Marlborough District Council has included in its Coastal Plan measures to exclude trawling and dredging from specified areas within the Marlborough Sounds, which is within TAR 7. Similarly, the Bay of Plenty Regional Council has included measures to exclude some types of fishing from inshore areas, which includes TAR 1. Given that these measures are generally outside the areas where tarakihi are targeted, Fisheries New Zealand does not consider these measures affect your decisions.

The boundaries of the Hauraki Gulf Marine Park also intersect with TAR 1, however, there is little fishing for tarakihi within the park area. Fisheries New Zealand considers that the proposals to rebuild the biomass of the East Coast tarakihi stock are consistent with the objectives of the Hauraki Gulf Marine Park Act.

14.3. Target

The Harvest Strategy Standard recommends for low productivity species, such as tarakihi, the proxy for the biomass that produces the maximum sustainable yield is 40% of unfished levels (40% SB_0). Submitters from the recreational and environmental sector generally supported using this as the management target.

Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana, who are the co-authors of the Industry Rebuild Plan, support the use of a species specific management target rather than a proxy target under the Harvest Strategy Standard. They recommend that a management target of 35% SB_0 be implemented, and have presented this proposal to the Southern Inshore Science Working Group for assessment.

Through computer modelling the industry was able to demonstrate to the Southern Inshore Fisheries Assessment Working Group that a management target of 35% SB_0 met the risk profile¹⁷ as set out in the Harvest Strategy Standard. However, there is insufficient evidence as to whether a target 35% SB_0 will provide for Maximum Sustainable Yield, as required under the Fisheries Act 1996.

The proxy target of 40% SB_0 in the Harvest Strategy Standard is based on the results of many stock assessments and management strategy evaluations that have been done for finfish stocks globally. 40% SB_0 is a typical target for the biomass that supports the maximum sustainable yield in low productivity stocks, and tarakihi is in this low productivity category.

Fisheries New Zealand recognises, however, that for a high value shared fishery like tarakihi, a species specific management target will provide the greatest level of certainty that the stock is being managed sustainably.

Further work is required to determine what the most appropriate management target would be for East Coast tarakihi. Fisheries New Zealand's preference is to maintain the proxy target of 40% SB_0 in the short term, and continue to work with industry and use the upcoming stock assessment in 2021 to determine a species specific management target, which can include considerations of Maximum Sustainable Yield.

Regardless of the target, almost all submitters, across a range of sectors, agree that the current level of abundance (15.9 % SB_0) is undesirable and action is needed to increase abundance of the stock.

14.4. Way and rate

When deciding the way and rate a fish stock is rebuilt to its management target the *Fisheries Act 1996* identifies the need to consider a number of factors. These are discussed below.

Biological characteristics of the stock and any relevant environmental conditions

Due to the rapid growth of tarakihi in their first eight years, there is potential to rebuild the stock in a shorter timeframe than other slower growing stocks. Projections suggest the East Coast tarakihi stock has a 50% probability of rebuilding to a target of 40% SB_0 within five years in the absence of fishing. A 50% probability of reaching the target is considered acceptable, due to the natural variation caused by fluctuations in recruitment and environmental conditions.

Regard to the social, cultural and economic factors you consider relevant

There are costs and benefits associated with rebuilding the tarakihi stock. Fisheries New Zealand expects that restoring the East Coast tarakihi stock will bring the following benefits:

- Increase the resilience of tarakihi from years of poor or below average recruitment and the negative effects of climate change;
- Improve catch rates in the long term, which will reduce the costs of fishing for the commercial sector;

¹⁷ The probability of breaching the soft limit does not exceed 10% and the probability of breaching the hard limit does not exceed 2%.

- Tarakihi will become more widespread and accessible to customary, commercial, and recreational fishers;
- Reduce environmental impacts associated with fishing; and
- Increase benefits for recreational and customary fishers due to increased catchability.

Tarakihi is taken as a target species and as bycatch in a number of fisheries. Any decrease in the TACCs for tarakihi will have impacts on other bycatch and target species. Industry has raised concerns about the risk of tarakihi becoming a choke species. This is likely to result in catch of species caught in combination with tarakihi becoming constrained, unless ways to avoid tarakihi can be found. Subsequent flow-on economic impacts associated with other species are anticipated, and this has been taken into account as part of the economic analysis undertaken by NZIER.

There is also a risk that reductions in tarakihi ACE may create incentives to discard tarakihi, whilst fishers continue to target the other species. Fisheries New Zealand notes this risk is associated with any stock when it is proposed to reduce the commercial catch limits and should not be used as justification to not reduce catch limits if you think that is necessary. Furthermore, it is a legislative requirement that all QMS species caught, unless specifically listed on Schedule 6 of the Fisheries Act, are landed and accounted for with ACE, or a deemed value cost will be incurred.

While most submitters agree abundance of East Coast tarakihi is low and requires rebuilding, they differ in terms of the way and rate of the proposed rebuild. This is largely due to whether or not submitters are concerned by the potential impacts to the commercial sector associated with larger cuts.

There are varying costs associated with the way and rate of rebuild. All commercial submitters, and some recreational and customary responders and submitters, noted concerns about the socio-economic impacts associated with the cuts proposed under Options 1 and 2.

All options will impact on the commercial fishing industry and affiliated industries. The larger reductions (Options 1 and 2), are likely to have the greatest and immediate socio-economic impact when compared to Options 3 and 4. Under Options 1 and 2, some individual companies have submitted that they will need to lay-off up to 12 staff and will lose millions of dollars annually. These companies are spread regionally, and the impacts they face will be felt within the regional communities they operate. Where there are impacts on employment, it may be difficult for people for transition to other work, either due to limited employment opportunities and/or lack of transferable skills.

Option 3 does not propose additional reductions, therefore there will be no direct immediate socio-economic impacts beyond those already being felt as part of your 1 October 2018 decision. In relation to the Industry plan there will be both costs and benefits associated with the implementation of this plan, however currently they are unable to be economically quantified so have not been included in the economic assessment. Due to the extended rebuild timeframe associated with the Industry Rebuild Plan, it will be much longer until the benefits of a rebuilt stock are realised under this option.

Of the options that propose catch limit reductions, Option 4 proposes the smallest reduction, therefore the immediate socio-economic impact will be reduced, while at the same time this option provides more confidence in the rebuild timeframe when compared to Option 3. As with Option 3, however, it will be longer until the benefits of a rebuilt stock are realised when compared to Options 1 or 2.

Options 3 and 4 also step outside the guidelines in the Harvest Strategy Standard and deliver an initial rebuild rate that is between $4-5 * T_{min}$, instead of $2 * T_{min}$. There is uncertainty whether the measures outlined in the Industry Rebuild Plan will lead to an expedited rebuild timeframe within the 20 year horizon proposed. Science modelling has indicated that increasing the age of fish caught by one year will accelerate the rebuild, but it is difficult to predict to what extent the measures proposed by industry will achieve this.

It is not common for Fisheries New Zealand to propose options that are outside of the Harvest Strategy Standard, but Options 3 and 4 have been included in recognition of the social, cultural and economic factors. These factors are relevant to your decision making, and are not taken into account by the Harvest Strategy Standard.

14.5. Option 1: TACC Cuts unevenly shared across East Coast tarakihi

Option 1 proposes a 31% reduction to the combined TACC for TAR 1, TAR 2, TAR 3 and TAR 7. This option is consistent with the approach you ask be considered as part of this year's review, when you made your decisions in 2018. Under this option, it is predicted that the stock will achieve a target of 40% SB_0 within 12 years, with cuts spread unevenly across QMAs (unlike option 2 where the reductions are spread proportionally). In addition, the reduction for TAR 1 is assumed to occur across the entire QMA, and not just the East Coast portion of that stock.

Economic impact - NZER analysis	\$14.83 million reduction in GDP nationally per annum. Impacts at the regional level range from a \$1.44 to \$4.12 million reduction in GDP per annum. Canterbury and Bay of Plenty are most affected.						
Alignment with Iwi Fisheries Forum plans	Aligned: The stock would rebuild to a level that supports specific goals, such as ensuring a thriving fishery with reduced environmental impact. This option represents the second fastest rebuild time.						
Catch limits and allowances	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Allowances		
					Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
	TAR 1	871	625	43% ↓	73	110	63
	TAR 2	1383	1100	27% ↓	100	73	110
	TAR 3	623	539	48% ↓	15	15	54
	TAR 7	1112	985	5% ↓	5	23	99

While this option is supported by some submitters, due to the short rebuild timeframe and that it broadly aligns with the Harvest Strategy Standard, Fisheries New Zealand considers this option may be seen as unfairly impacting on fishers in TAR 1 due to the relatively large TACC reductions in this area. Furthermore, if the proposed TACC reductions were to be taken solely out of the eastern portion of TAR 1, it will result in approximately a 90% reduction in catch, effectively closing the TAR 1 (east) fishery and have a major impact on operators in this area.

Spreading the reductions across the east and west portions of the TAR 1 stock may unfairly impact fishers in the western portion of TAR 1, as that is believed to be a separate biological stock and reductions to the western portion of TAR 1 will not assist in the rebuild of East Coast tarakihi.

Fisheries New Zealand notes that Option 1 will limit the industry’s ability to invest and innovate, particularly in TAR 1. This option is likely to have severe impacts on the profitability of the inshore fishing industry involved in the catch of East Coast tarakihi.

14.6. Option 2: TACC Cuts proportionately shared across East Coast tarakihi

Option 2 proposes a proportionate 50% catch reduction to the East Coast tarakihi stock (TAR 2 and TAR 3 and the East Coast portion of TAR 1 and TAR 7). When taking into account the whole of TAR 1, 2, 3 & 7 this results in a combined TACC reduction of 35%. This option differs from Option 1 where the reductions are spread unevenly between TAR1, 2, 3 and 7.

This option is predicted to achieve a target of 40% SB_0 within 11 years, which is generally consistent with Fisheries New Zealand’s Harvest Strategy Standard.

Economic impact - NZIER analysis	\$15.86 million reduction in GDP nationally per annum. Impacts at the regional level range from a \$1.81 to \$4.27 million reduction in GDP per annum. Canterbury and Bay of Plenty are affected most.						
Alignment with Iwi Fisheries Forum plans	Aligned: The stock would rebuild to a level that supports goals, such as ensuring a thriving fishery with reduced environmental impact. This options represents the fastest rebuild time.						
Catch limits and allowances					Allowances		
	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
	TAR 1	1106	839	24% ↓	73	110	84
	TAR 2	998	750	50% ↓	100	73	75
	TAR 3	602	520	50% ↓	15	15	52
TAR 7	1077	953	9% ↓	5	23	95	

This option represents a more equitable approach to achieving catch reductions across the whole of the East Coast tarakihi than Option 1. It is also the option that most closely aligns with the Harvest Strategy Standard. As with Option 1, many submitters support this option due to the short rebuild timeframe and alignment with the Harvest Strategy Standard.

This option has significant impacts in terms of social, cultural and economic factors. Industry has noted the impacts on fishing businesses will run into millions of dollars annually, and that they will be forced to reduce staffing levels. Given many of these businesses are located in regional communities, opportunities for re-employment are limited. This will have long-term impacts on the fishers, their families and the wider community in which they live.

As with Option 1, Fisheries New Zealand notes that Option 2 will limit the industry’s ability to invest and innovate. This is option is likely to have severe impacts on the profitability of the inshore fishing industry involved in the catch of East Coast tarakihi.

14.7. Option 3: Implementation of the Industry Rebuild Plan

Option 3 maintains TACCs at current levels, and adopts additional management controls as proposed through the commercial fishing industry's Industry Rebuild Plan. While the Industry Rebuild Plan does not have an estimated rebuild timeframe based on predictive modelling, industry have committed to a rebuild timeframe of 20 years to a target of 35% SB_0 .

Economic impact - NZIER analysis	\$6.06 million reduction in GDP nationally per annum. Impacts at a regional level range from a \$610,000 to \$1.46 million reduction in GDP per annum. Canterbury and Bay of Plenty are affected most.						
Alignment with Iwi Fisheries Forum plans	Aligned: The stock would rebuild to a level that supports specific goals, such as ensuring a thriving fishery. This options represents a longer rebuild time than Options 1 and 2, but reduces the short term impact on Māori Quota and commercial interests.						
Catch limits and Allowances				Allowances			
	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
	TAR 1	1390	1097	0%	73	110	110
	TAR 2	1823	1500	0%	100	73	150
	TAR 3	1174	1040	0%	15	15	104
	TAR 7	1174	1042	0%	5	23	104

As there are no TACC reductions associated with Option 3, any additional economic impacts associated with this review will be marginal. The impacts referred to in the table above related to the impact of your 2018 decision and any additional costs related to the voluntary measures in the Industry Rebuild Plan. Industry have emphasised that their ability to innovate is directly linked to certainty of income. Therefore, their position is that Option 3 provides for the largest scope for innovation. However, there is the trade off of additional uncertainty around the rebuild timeframe and the benefits from increased biomass.

The majority of submitters (mainly commercial) support this option as a pathway for rebuilding the stocks while taking into account the economic impacts of further catch reductions. They consider that under the current TACC the stock is rebuilding, therefore any immediate sustainability risk has been removed following your decisions in 2018. Furthermore, industry argue that there has not been sufficient time since the 2018 TACC cuts to establish their efficacy. Most of these submitters support waiting until the 2021 stock assessment prior to making further catch reductions.

Submitters that supported Option 1 or 2 consistently noted that they didn't support the industry plan because there was no rebuild timeframe associated with it and there was no guarantee of rebuild. Following consultation, the industry has provided a response to concerns raised by Fisheries New Zealand and other stakeholders, and has committed to rebuilding the stock within 20 years. The industry has also established key performance indicators to clearly track progress and committed to regular reporting and meetings with Fisheries New Zealand to ensure the stock is rebuilding.

Fisheries New Zealand notes that there is uncertainty as to whether the Industry Rebuild Plan will deliver an accelerated rate of rebuild. To provide certainty, industry have committed to a maximum 20 year rebuild timeframe. In the absence of any additional management actions and solely taking into account catch, the rebuild timeframe would be 27 years or $6.75 * T_{min}$ to reach the target of 35% SB_0 that is proposed under this option.

14.8. Option 4: TACC cuts combined with the Industry Rebuild Plan

Option 4 proposes a proportionate 10% catch reduction to the East Coast tarakihi stock (TAR 2 and TAR 3 and the East Coast portion of TAR 1 and TAR 7) and adopts the Industry Rebuild Plan. When taking into account the whole of TAR 1, 2, 3 & 7 this results in a combined TACC reduction of 7%.

Economic impact - NZIER analysis	\$8.00 million reduction in GDP nationally per annum. Impacts at a regional level range from an \$880,000 to \$2.05 million reduction in GDP per annum. Canterbury and Bay of Plenty are affected most.						
Alignment with Iwi Fisheries Forum plans	Aligned: The stock would rebuild to a level that supports specific goals, such as ensuring a thriving fishery with reduced environmental impact. This options represents a longer rebuild time than Options 1 and 2, but reduces the short term impact on Māori quota and commercial interests.						
Catch limits and Allowances					Allowances		
	Stock	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	TACC % change	Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
	TAR 1	1333	1045	5% ↓	73	110	105
	TAR 2	1658	1350	10% ↓	100	73	135
	TAR 3	1060	936	10% ↓	15	15	94
TAR 7	1155	1024	2% ↓	5	23	102	

Industry are currently operating catch splitting arrangements in TAR 1 and TAR 7. Like Option 2, Fisheries New Zealand would continue to monitor catch alongside industry and could implement a closure under section 11 of the Act, if the catch limit under the catch splitting arrangement is exceeded within a season.

As with Option 3 above, the Industry Rebuild Plan commits to a maximum rebuild time period of 20 year but there is uncertainty associated with this. In the absence of any additional management actions and solely taking into account catch, the rebuild timeframe would be 25 years ($5 * T_{min}$) or 19 years ($4.75 * T_{min}$) for a target of 40% SB_0 or 35% SB_0 respectively.

Option 4 proposes smaller catch reductions, compared to Options 1 and 2, to minimise the financial impacts on the industry in the short term, allowing them to continue to fund innovation and improve selectivity. This option acknowledges the work done to date by the industry to develop a plan and lead innovation.

Fisheries New Zealand considers this option provides additional certainty, over and above Option 3, that the stock will rebuild within the industry proposed 20 year timeframe, while also providing time for fishers to prove the efficacy of the Industry Rebuild Plan. Compared to Options 1 and 2, it allows fishing to continue at a level that mitigates the socio-economic impacts to the industry, but does result in a slower rebuild rate. Fisheries New Zealand notes that the Industry Rebuild Plan now has clear key performance indicators which should ensure the plan is delivered as agreed.

The next stock assessment for East Coast tarakihi is planned for 2021 and will provide new information on how the rebuild of the stock is progressing. The decisions you make this year do not preclude you from making a decision to introduce additional TACC cuts or management controls in future years. An option available to you could be to choose Option 3 or 4 this year, and consider making further TACC cuts depending on, the effectiveness of the Industry Rebuild Plan and any new information from the 2021 stock assessment.

14.9. Preferred option

Overall, Fisheries New Zealand's preferred option is either Option 2 or Option 4.

Option 2: A 50% reduction to commercial catch in the areas that make up the East Coast tarakihi stock; or

Option 4: Implementation of the Industry Rebuild Plan and a 10% reduction to commercial catch in the areas that make up the East Coast tarakihi stock.

There are socio-economic impacts associated with all the options and the size of these impacts are directly related to catch limit reductions and rebuild timeframes. The shorter the rebuild, like that suggested by the Harvest Strategy Standard, the greater the immediate and potentially irreversible impact on the inshore trawl fishery.

When making a decision regarding the rebuild of East Coast tarakihi, you are required to have regard to the aim of restoring the stock to, or above, a level that can produce the maximum sustainable yield while having regard to:

- The biological characteristics of the stock;
- Environmental conditions affecting the stock;
- The interdependence of stocks; and
- Such social, cultural, and economic factors you considers relevant.

If you considered it a priority to rebuild the stock as quickly as possible, in a timeframe that most closely corresponds to the Harvest Strategy Standard, Fisheries New Zealand recommends Option 2.

Alternatively, if you consider minimising the socio-economic impacts on fishers, their families and the regional communities an important factor to have regard to, then Fisheries New Zealand recommends Option 4. While this option proposes a catch reduction to ensure an increased rate, and certainty of rebuild when compared to Option 3, the proposed reduction to the TACC is not as severe as for Option 2. Therefore, this option minimises the financial impact on the fishing industry in the short term, allowing them to continue to implement the Industry Rebuild Plan and support the innovative measures proposed through this plan.

While the Harvest Strategy Standard is considered international best practice, and has rarely been deviated from in the past, the guidance outlined in it is only part of what is required to be considered when making your decision. You are required to consider many factors, as mentioned above, and you may consider it is warranted to deviate from the Harvest Strategy Standard in this instance.

14.10. Additional considerations

Recreational bag limits

As the East Coast tarakihi rebuild progresses, the recreational sector is likely to experience the benefits of increasing abundance in the fishery. This could result in increasing recreational catch, particularly when current bag limits are not being fully utilised by the sector. Significant increases in recreational catch has the potential to jeopardise the rebuild of East Coast tarakihi.

There are no proposals to change the current allowances for recreational catch at this stage, but Fisheries New Zealand recommend that you consider a review of recreational controls as part of subsequent reviews of this fishery.

Future Sustainability Reviews of East Coast Tarakihi

Fisheries New Zealand considers the most appropriate time to undertake the next review of East Coast tarakihi would be in 2021 to align with the results of the next stock assessment.

Fisheries New Zealand advises against reviewing the stock next year. In the absence of any new information, a review next year would be undertaken on the basis of the existing stock assessment and is unlikely to provide a basis for any new decisions. In addition, it will be too soon to see any substantial changes in stock status as a result of the 2018 and 2019 sustainability reviews.

A review next year is also likely to create added uncertainty for industry and distract away from efforts to adapt to your decisions, and from implementation of the Industry Rebuild Plan (should you choose Options 3 or 4).

28N rights

There are 1.915 tonnes of preferential allocation rights (28N rights) in TAR 2. These rights would be discharged only on a future increase to the TACC of the TAR 2 stock, so have no effect under the options proposed.

15. Decision: Tarakahi (TAR 1, 2, 3 & 7: east coast North and South Islands)

Fisheries New Zealand recommends that you decide on one of the options below, to be implemented from 1 October 2019:

Option 1 - Implemented through changes to the TAC, TACC, and allowances

- i. Agree to vary the TAC for TAR 1, TAR 2, TAR 3 and TAR 7 and within the TAC, vary the TACC and allowances as outlined in the table below

	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
TAR 1	871 ↓	625 ↓ (43%)	73	110	63 ↓
TAR 2	1383 ↓	1100 ↓ (27%)	100	73	110 ↓
TAR 3	623 ↓	539 ↓ (48%)	15	15	54 ↓
TAR 7	1112 ↓	985 ↓ (5%)	5	23	99 ↓

Agreed / Agreed as Amended / Not Agreed

Option 2 - Implemented through changes to the TAC, TACC, and allowances

- ii. Agree to vary the TAC for TAR 1, TAR 2, TAR 3 and TAR 7 and within the TAC, vary the TACC and allowances as outlined in table below

	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
TAR 1	1106 ↓	839 ↓ (24%)	73	110	84 ↓
TAR 2	998 ↓	750 ↓ (50%)	100	73	75 ↓
TAR 3	602 ↓	520 ↓ (50%)	15	15	52 ↓
TAR 7	1077 ↓	954 ↓ (9%)	5	23	95 ↓

Agreed / Agreed as Amended / Not Agreed

Option 3 - Retain the TAC, TACC, and allowances and adopt the Industry Rebuild Plan

- iii. Agree to retain the TAC for TAR 1, TAR 2, TAR 3 and TAR 7 as outlined in table below:

	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
TAR 1	1390	1097 (0%)	73	110	110
TAR 2	1823	1500 (0%)	100	73	150
TAR 3	1174	1040 (0%)	15	15	104
TAR 7	1174	1042 (0%)	5	23	104

Agreed / Agreed as Amended / Not Agreed

AND

- iv. Agree as part of Option 3 to adopt the Industry Rebuild Plan.

Agreed / Agreed as Amended / Not Agreed

Option 4 – Implemented through changes to the TAC, TACC, and allowances, and adoption of the Industry Rebuild Plan

- v. Agree to vary the TAC for TAR 1, TAR 2, TAR 3 and TAR 7 and within the TAC, vary the TACC and allowances as outlined in table below:

	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality caused by fishing (tonnes)
TAR1	1333 ↓	1045 ↓ (5%)	73	110	105 ↓
TAR2	1658 ↓	1350 ↓ (10%)	100	73	135 ↓
TAR3	1060 ↓	936 ↓ (10%)	15	15	94 ↓
TAR7	1154 ↓	1024 ↓ (2%)	5	23	102 ↓

Agreed / Agreed as Amended / Not Agreed

AND

- vi. Agree as part of Option 4, to adopt the Industry Rebuild Plan. + en-bardanas (in principle) as per my decision letter.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash

Minister of Fisheries

24/09/2019

Top of the South Island Trawl fishery

Red gurnard (GUR 7)

(*Chelidonichthys kumu*), Kumukumu

Rig (SPO 7)

(*Mustelus lenticulatus*), pioke, makō, mango

John dory (JDO 7)

(*Zeus faber*), Kuparu

Elephant fish (ELE 7)

(*Callorhynchus milii*), Reperepe

Flatfish (FLA 7)

(flounders, soles, brill and turbot species), Patiki

Snapper (SNA 7)

(*Pagrus auratus*), Tamure, Kouarea



Figure 11: The review stocks Quota Management Areas are generally consistent with the Challenger/Central (Plateau) Fisheries Management Area 7 boundaries shown above, with the Top of the South Trawl Fishery Area (indicative area shaded yellow).

Fisheries New Zealand proposes that you set or vary TACs, TACCs and allowances for species that are taken together in the Tasman and Golden Bays mixed trawl fishery (Top of the South trawl fishery).

We are reviewing these stocks together because a multi-species approach allows more explicit consideration of the linkages and interdependencies between the stocks, the biological factors (such as stock productivity and abundance), and target and bycatch interactions. This is the first time we have undertaken a multi-species approach, which is a step towards more explicit consideration of ecosystem based fisheries management.

The Top of the South trawl fishery covers only part of FMA 7, however, TACs, TACCs and allowances are set for the stock as a whole. For three Top of the South trawl stocks; red gurnard, rig and John dory, new scientific assessments suggest an opportunity to increase limits, because they are likely or very likely to be above the target biomass. Elephant fish is likely to be at the target biomass and no change to the TACC is proposed, however a TAC and allowances have not previously been set for this stock and are proposed. Our preferred options are:

- GUR 7: Option 3 – to increase the TAC to 1,273 tonnes, retain current customary and other sources of fishing related mortality, increase recreational allowance to 38 tonne (50% increase), and increase the TACC to 1,170 tonne (20% increase);
- SPO 7: Option 3 – to increase the TAC to 400 tonnes, retain current allowances for customary, recreational and other sources of fishing related mortality, and increase the TACC to 325 tonne (20% increase);
- JDO 7: Option 2 – to increase the TAC to 247 tonnes, retain current allowances for customary, recreational and other sources of fishing related mortality, and increase the TACC to 230 tonne (10% increase); and
- ELE 7: set a TAC of 127 tonnes and allowances for customary, recreational and other sources of fishing related mortality, and retain the current TACC of 102 tonne.

For flatfish and snapper, further stock assessment information and broader consultation is required to make robust recommendations on changes to sustainability settings. Final advice on these stocks will be provided in 2020.

1. Current TACs, TACCs and allowances

Table 18: Current TACs, TACCs and allowances in tonnes for red gurnard, rig, John dory and elephant fish.

Stock	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
			Customary Māori (t)	Recreational (t)	All other mortality caused by fishing (t)
GUR 7	1,065	975	15	25	50
SPO 7	346	271	15	33	27
JDO 7	226	209	2	4	11
ELE 7		102			

A TAC and allowances have not been previously set for ELE 7, as only a TACC was required when it entered the QMS. It is timely to set a TAC for this stock through this multi-species review.

2. Why are we proposing that you set or vary TACs and TACCs?

2.1. State of the stock

The best available information suggests the biomass for red gurnard and John dory is very likely to be at or above target biomass (see Table 19 for reference points for target biomass). Rig is likely to be at or above the target, and elephant fish is about as likely as not to be at or above target. This information suggests that there is an opportunity to increase (or set) catch limits for these stocks, while still maintaining them at or above a level that will produce maximum sustainable yield, having regard to the interdependence of stocks.

2.2. Information source and quality

Table 19: Information source and quality

Stock	Status	Reference point	Probability	Information source and quality
GUR 7 (Red gurnard)	Very likely to be at or above target levels.	B_{MSY} -compatible proxy based on the mean WCSI trawl survey indices from 1992-2013, but excluding the 2003 index because of a large negative change in catchability for this year.	>90% probability	The West Coast South Island (WCSI) trawl survey series provides relative biomass indices for GUR 7. The Southern Inshore Working Group regards the WCSI trawl survey series as a reliable index of abundance.
SPO 7 (Rig)	Likely to be at or above target levels.	B_{MSY} proxy based on twice the soft limit. The soft limit is the mean WCSI trawl survey biomass estimates for 2003 and 2005	>60% probability	The WCSI trawl survey series provides relative biomass indices for SPO 7. This is a reliable index.
JDO 7 (John dory)	Very likely to be at or above target levels.	Mean total biomass from WCSI trawl survey from 1992-2011	>90% probability	The WCSI trawl survey series provides relative biomass indices for JDO 7. This is a reliable index. The preliminary 2019 WCSI trawl survey results indicate a decline in biomass. This uncertainty has been taken into account in the options presented in this paper.
ELE 7 (Elephant fish)	As likely as not to be at or above target levels.	Not established but B_{MSY} assumed	40-60% probability	Standardised CPUE is considered a credible measure of abundance for this fishery. The WCSI trawl survey biomass trends for this stock are considered less reliable.

The 2017/18 National Panel Survey of Marine Recreational Fishers (National Panel Survey) results provide the best available qualitative information on recreational fishing effort for red gurnard, rig and John dory. The results suggest that recreational catch of red gurnard has increased since the previous survey, however, the estimates for rig and John dory are relatively consistent (see Table 20).

Table 20: Summary of the National Panel Survey of Marine Recreational Fishers results from QMA 7 for red gurnard, rig, John dory and elephant fish

Fish stock	2011/12 Estimated harvest (tonnes)	2017/18 Estimated harvest (tonnes)
GUR 7	12.48	37.59 (200% ↑)
SPO 7	20.76	18.58 (11% ↓)
JDO 7	1.79	0.83 (54% ↓)
ELE 7	Not enough catch to make estimates in either year.	

2.3. Characterisation of the Top of the South trawl fishery

Fisheries New Zealand has moved towards more explicit consideration of interactions within a fisheries complex with this multi-species review. To test the wider impacts of the proposed TAC and TACC options across the multiple stocks in the Top of the South trawl fishery, we have taken into account the following information:

- catch proportions across the six stocks;
- percentage of TACC caught per fishing year for each stock;
- the target and bycatch relationship between the six stocks over the last five years;
- biological information (eg, stock productivity); and
- stock status information.

Analyses of the above suggests there are three tiers of interdependency (where target catch influences bycatch) between stocks within the Top of the South trawl fishery:

- one with flatfish, snapper and gurnard;
- the second with gurnard, snapper and John dory; and
- the third with rig and gurnard.

Elephant fish is not a target species but does occur as bycatch, typically in the red gurnard and John dory target trawls. Elephant fish was also a relatively significant bycatch in the rig target trawls in the 2015/16 fishing year.

These fish stocks have a range of productivities. For example, snapper is a low productivity stock (it is long-lived and has low natural mortality) while gurnard and John dory are higher productivity stocks as they are shorter lived and have relatively high natural mortality. Elephant fish has very low productivity.

Species with high productivities are more resilient to fishing pressure, and take less time to rebuild from a depleted state than those with low productivity. An appropriate management strategy for species such as red gurnard and John dory is to be responsive to fluctuations in stock biomass (for example, to increase catches at times of high stock biomass and reduce catches at times of low biomass).

Conversely, an appropriate management approach for snapper and elephant fish is to set a longer-term, more stable TAC.

3. Setting or varying the TACCs - allowances

This is the first time a TAC has been set for elephant fish in the ELE 7 fishery; therefore, customary, recreational, and other sources of mortality allowances are being set for this stock.

3.1. Māori customary interests

The current level of Māori customary catch for finfish in QMA 7 is uncertain. Rig (*pioke, makō, mango*), elephant fish (*reperere*), snapper (*tamure, kouareā*) and flatfish have been reported under the South Island customary fishing regulations in past years. However, there is no recent recorded customary catch for any of the review species. Tangata whenua north of Kahurangi Point and in the Marlborough Sounds and Tasman/Golden Bays area are still operating under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which does not require that customary permits or catches be reported. The absence of customary reporting may also reflect that tangata whenua are harvesting to meet their customary needs using recreational fishing regulations.

In 2017, the customary allowance for GUR 7 was increased from 10 tonnes to 15 tonnes. Te Waka a Māui me Ōna Toka Iwi Forum sought this increase to accommodate future pataka (catch of fish for customary purposes taken on commercial vessels), and the roll out of the amended Fisheries (South Island Customary Fishing) Regulations 1999. These regulations are currently with the Parliamentary Council Office for drafting. Pending completion of these amendments it is appropriate that the current customary allowances be retained.

We propose a customary allowance of 5 tonnes for elephant fish in ELE 7 to reflect the expected take of elephant fish. This is similar to the customary catch allowance in other ELE stocks.

3.2. Recreational interests

The National Panel Survey estimates suggest catch of red gurnard may be exceeding the current recreational allowance for GUR 7, probably reflecting the increase in abundance and catchability of this stock. We therefore propose an increase in the recreational allowance for red gurnard.

The National Panel Survey estimates for rig and John dory remain within the current recreational allowances. No changes are proposed for these stocks.

We propose a recreational allowance of 10 tonnes for elephant fish in ELE 7 to reflect estimated take in the National Panel Survey. This is similar to the recreational catch allowance for other ELE fish stocks.

3.3. All other mortality caused by fishing

The current allowances for other sources of fishing mortality are at or above 5% of the TAC. We consider this level is appropriate and is consistent with our advice in previous reviews.

We propose an allowance for other sources of fishing-related mortality of 10 tonnes (8% of the TAC) for elephant fish in ELE 7. This allowance takes into account the robustness of the species and the likely incidental mortality from fishing.

4. Options and analysis for setting or varying TACs, TACCs and allowances

When setting a TAC you are required maintain the stock at or above a level that can produce *MSY*; or if below a level that can produce *MSY* vary the TAC to a level that enables the stock to return to *MSY*, or if above the level of *MSY* alter it in a way and at a rate that will result in the stock moving towards *MSY*.

We consulted on a number of TAC, TACC and allowance options for red gurnard, rig, John dory and elephant fish (provided in Table 21). Industry requested a further option for John dory only through the consultation process, which has been included in Table 21 to provide you a full table of options to consider when making your decision.

Table 21: Current and proposed TACs, TACCs and allowance options in tonnes for red gurnard, rig, John dory and elephant fish.

Stock	Option	Total Allowable Catch (t)	Total Allowable Commercial Catch (t)	Allowances		
				Customary Māori (t)	Recreational (t)	All other mortality caused by fishing (t)
GUR 7	Option 1 (<i>Status quo</i>)	1,065	975	15	25	50
	Option 2	1,176 ↑	1073 ↑ (10%)	15	38 ↑ (50%)	50
	Option 3	1,273 ↑	1170 ↑ (20%)	15	38 ↑ (50%)	50
SPO 7	Option 1 (<i>Status quo</i>)	346	271	15	33	27
	Option 2	373 ↑	298 ↑ (10%)	15	33	27
	Option 3	400 ↑	325 ↑ (20%)	15	33	27
JDO 7	Option 1 (<i>Status quo</i>)	226	209	2	4	11
	Option 2	247 ↑	230 ↑ (10%)	2	4	11
	Option 3 (request ed by Industry)	267 ↑	250 ↑ (20%)	2	4	11
ELE 7	Current setting		102			
	Option 1	127	102	5	10	10

4.1. Input and Participation of tangata whenua

On 9 July 2019, Fisheries New Zealand met with Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) to discuss the options for the October 2019 sustainability round. Te Waka a Māui advised during this korero that FLA 7 is a between-season fishery, and therefore it is very useful to have quota for this stock. Te Waka a Māui did not believe FLA 7 had any sustainability concerns, so should not be a priority for review. No other feedback on the suggested options for the Top of the South trawl fishery was provided.

4.2. Kaitiakitanga

Red gurnard, rig, flounder and snapper are identified as taonga species in the Te Waipounamu (South Island) Iwi Forum Fisheries Plan; in addition, the Te Waka a Maui me Ona Toka Iwi Forum considers all fish species taonga. The Forum Fisheries Plan contains objectives to support and provide for the interests of South Island iwi, including the following which are relevant to the options proposed in this paper:

Management objective 1: To create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and whanau;

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 and;

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

4.3. Response and submissions

On 26 August 2019 Te Ohu Kaimoana provided a response to the October 2019 sustainability round.

We also received twenty seven submissions on the options proposed in the Top of the South trawl fishery consultation document, from the following individuals and organisations:

- Southern Inshore Fisheries Management Company Limited (Southern Inshore)
- Fisheries Inshore New Zealand (FINZ) – which endorses Southern Inshore submission on these stocks
- Joint New Zealand Sport Fishing Council, LegaSea and New Zealand Angling Casting Association (hereafter referred to as recreational fishers)
- Forest and Bird
- Our Seas our Future
- RNZSPCA
- Environment and Conservation Organisations of NZ Incorporated (ECO)
- 13 individual recreational fishers
- individuals with environmental interests
- general public submitters
- two individual commercial fishers.

Table 22 provides a summary of Te Waka a Māui, Te Ohu Kaimoana and submitters' preferred options.

Table 22: Summary of preferred options

Submitter	GUR 7			SPO 7			JDO7		ELE 7
	1 (Status quo)	2 (↑10% com; 50% rec)	3 (↑20% com; 50% rec)	1 (Status quo)	2 (↑10% com)	3 (↑20% com)	1 (Status quo)	2 (↑Com 10%)	1
Te Waka a Māui	Forum members did not provide comments on these fish stocks because they chose to focus on other sustainability round stocks also presented to them during the hui. The forum was also provided a summary of their input on the proposed options for the stocks being reviewed, and therefore, given a further opportunity to provide comment on these stocks. However, no amendments were sought.								
Southern Inshore and FINZ			√			√	Request that the TACC be set at 250 tonnes		Dissatisfied that we did not propose an increase TACC
TeOhu Kaimoana		√	√ would support with a fisheries plan with full commitment of quota owners		√	√ would support with a fisheries plan that has full commitment of quota owners		√	Support setting a TAC
Recreational fishers	√			√			√		Support setting a TAC
ECO	√			√			√		Do not support, perceived it as an increase
Forest and Bird	√	√ subject to Māui/Hector's dolphin requirements and 100% observer coverage		√			√		Do not support, perceived it as an increase
Our Seas our Future	√			√			√		Do not support, perceived it as an increase
RNZSPCA	√			√			√		Urges caution
Individual Recreational fishers	8 submitters' preferred option was status quo for all stocks, 3 suggested trawling should be banned, 1 did not support an increase for JDO, and 1 proposed the removal of 'all nets'.								

Submitter	GUR 7			SPO 7			JDO 7		ELE 7
	1 (Status quo)	2 (↑10% com; 50% rec)	3 (↑20% com; 50% rec)	1 (Status quo)	2 (↑10% com)	3 (↑20% com)	1 (Status quo)	2 (↑Com 10%)	1
Individual environmental submitters	Both submitted for the status quo for all stocks								
General public submitters	1 submitter was supportive of the status quo for all stocks, the other would like large marine reserves to be established.								
Individual commercial fishers	Both submitted that snapper abundance is increasing and that snapper should be reviewed this year.								

The input and participation, responses and submissions received followed five common themes: the multi-species approach and the sustainability round prioritisation process, environmental impacts from trawl fishing method, setting allowances, phase two of the review (SNA 7 and FLA 7), and low knowledge stocks. These are discussed in the following section:

Multi-species approach and the sustainability round prioritisation process

Southern Inshore and FINZ (Industry) and Te Ohu Kaimoana raised dissatisfaction about Fisheries New Zealand's prioritisation process for the review of stocks in the October 2019 round.

The multi-species review approach is supported by Te Ohu Kaimoana and recreational fishers, but not Industry. Industry would like further discussion about this approach before it is adopted widely.

Environmental impacts from trawling

Forest and Bird, and recreational organisations do not support any increase in inshore trawl effort in areas where Hector's and Māui dolphins are known to forage until the new Threat Management Plan is implemented and 100% observer coverage is required.

Forest and Bird recommends excluding trawl and set net fishing methods out to the 100m contour, to protect dolphin habitat. If this recommendation were applied, Forest and Bird would support increasing the TACC by 10% for GUR 7.

RNZSPCA does not agree that the statistics support the proposed increases for GUR 7, SPO 7 and JDO 7, and setting a TAC for ELE 7. It considers that setting the TACs too high will be harmful to the ecosystem and environment, and does not support the damage caused by trawl fishing.

Individual submitters and ECO are also concerned about the impact of bottom harvest methods on the benthos and ecology of Tasman and Golden Bays.

Allowances

Te Ohu Kaimoana oppose recreational allowance increases as it considers it will adversely affect iwi interest by reducing their share of the TAC. A recreational fisher considers that TACC's and customary allowances should be reduced.

Recreational fishers advocate for a consistent 10% default for other sources of fishing related mortality and expect any variation from this default to be explained. They also question why Fisheries New Zealand is proposing increases when the stocks are showing a decline in biomass.

Our Seas our Future raised concerns regarding the quality of fisheries modelling and accuracy of customary and recreational estimates.

ECO believes the absence of observers or cameras on inshore vessels undermines the management and monitoring regime in place, that a full stock assessment is required for each stock, and that a Fisheries Plan should be developed as a priority.

Phase two review (SNA 7 and FLA 7)

Industry, individual commercial fishers and Te Ohu Kaimoana consider that:

- snapper are abundant and avoidance of snapper is impacting their business;
- SNA 7 should have been included in the options put forward as it is a key fish stock in the Top of the South trawl fishery; and
- allowances should be reallocated back to commercial from recreational fishers, given that the existing settings were made with inaccurate information. Te Ohu Kaimoana consider the allocation of SNA 7 needs to be resolved to ensure it is consistent with the Deed of Settlement.

Te Waka a Māui does not consider FLA 7 has any sustainability issues and does not see this stock as a priority for review.

Low knowledge stocks

Southern Inshore considers low knowledge stocks (including ELE 7) could be further utilised. It does not believe low knowledge stocks need significant science investment and that precautionary increases should be made for these stocks along with management and monitoring plans.

4.4. Analysis

Interdependency between stocks and appropriate management strategies

Our characterisation of the Top of the South trawl fishery suggests there are interdependencies across the six stocks assessed in this review. These six stocks have a range of productivities; productivity is a function of the biology of a species and the environment in which it lives including growth rates, natural mortality, age at maturity, and other relevant life history characteristics. A stock's productivity influences an appropriate management strategy for that stock. The options we have proposed for these four stocks takes into account the appropriate management strategy for each stock, as well as the interdependencies of these stocks caught together and how changes to TACC may influence catch.

The interdependencies mean that:

- an increase in the TACC for red gurnard may result in an increase in bycatch of John dory and rig;
- an increase in the TAC and TACC of rig is likely to see an increase in the catch of red gurnard, which in turn may influence the bycatch of John dory;
- Elephant fish catch appears to be more independent of catch of the other species in this fishery, although, under certain circumstances an increase in the TACC for rig may result in increased catch of elephant fish;
- Flatfish has adequate headroom in its TACC to cover increases in catch in response to an increase in gurnard TACC; however
- there is a risk the proposed increase in gurnard TACC will increase the catch of snapper. SNA 7 has been over caught in each of the last three years. Fisheries New Zealand considers this risk will likely have financial implications for fishers, given the relatively high deemed value setting. However, the success industry has had in modifying fishing patterns to avoid snapper to-date may mitigate some of this risk.

Overall, we consider the proposed increases in gurnard, rig and John dory, and the proposed TAC for elephant fish, are sustainable in the context of high biomass trends and/or stocks that are above target levels of abundance. These stocks are also regularly monitored biennially by the independent WCSI trawl survey series.

No feedback was provided through consultation on the tiers of independencies proposed. However, both Te Ohu Kaimoana and Industry consider that Fisheries New Zealand should review and reallocate the SNA 7 TAC between commercial and recreational fishers until such time as a new stock assessment is completed.

As part of the consultation document for this multi-species review, we advised that we considered a new stock assessment was required to review snapper and flatfish, and invited initial feedback from tangata whenua and stakeholders on their preferred engagement and management options for these species. This is because in 2016 we deemed SNA 7 a shared fishery and committed to a multi-sector engagement approach to manage SNA 7, including ensuring longer timeframes and wider engagement to maximise benefits for all sectors. We will continue to work with all sectors, and have committed to prioritising a full review of SNA 7, once a new stock assessment is completed.

Impact of the proposed TAC increases

We consider the proposed increases will maintain the stocks at or above maximum sustainable yield. The proposed increases in gurnard, rig and John dory, and the proposed TAC for elephant fish are sustainable in the context of high biomass trends and/or stocks that are above target levels of abundance. These stocks are performing well and are regularly monitored biennially by an independent WCSI trawl survey.

The proposed increases will contribute towards achieving the Te Waipounamu Iwi Forum Fisheries Plan management objectives. Particularly objective 3, to support environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi.

Industry has requested a further option to increase the TACC for John dory in JDO 7 to 250 tonnes. However, other submitters are seeking a precautionary approach given the preliminary results of the 2019 WCSI trawl survey indicate a decline in relative biomass. This decline is not statistically different from the last survey in 2017, and JDO 7 may therefore still be above the interim target biomass level. Therefore, we consider there is an opportunity to increase catch levels for this stock. Nevertheless, the confidence intervals are large for the 2019 survey, crossing well over the interim target biomass level, and the scientific basis for an increase is weaker than for GUR 7 and SPO 7. Therefore, Fisheries New Zealand does not support the further increase proposed by Industry.

Te Ohu Kaimoana advises it supports a precautionary increase to GUR 7, SPO 7 and JDO 7. Although it would support Option 3 (20% increase) for GUR 7 and SPO 7 in conjunction with a fisheries plan that has full commitment of quota holders. We are supportive of the fisheries plan approach, however in this case we are satisfied that the scientific information for these fisheries supports a level of abundance that allows more utilisation.

Recreational and environmental submitters support the status quo for various reasons, including quality of information to support decision making, the information principles of the Act (section 10) and declining abundance. We have used the best available information to make recommendations to vary the TAC, TACCs and allowances for these fish stocks. While the 2019 WCSI trawl survey results suggest a decline in biomass, the overall trends are still relatively high and above target for those stocks where an increase is recommended.

For ELE 7 we propose that you set a TAC, as required by the Act, and make allowances for customary and recreational catch and other sources of mortality. This is the first time a TAC will be set for ELE 7 and as such this does not represent an increase in TACC; the proposal is to set the TAC at the current TACC plus the allowances.

Industry expressed frustration that we did not consult on an option to vary the TACC for ELE 7, particularly given that a characterisation and CPUE update was reviewed and agreed by the Southern Inshore Working Group. However, we could not justify recommending to vary the TACC for ELE 7 because the current stock status (determined from the characterisation and CPUE update) is at About as Likely as Not (40-60% probability) to be at or above target, suggesting the fishery is being managed optimally.

Industry considers Fisheries New Zealand is being over-cautious and not looking at long-term trends for low information stocks such as elephant fish. ECO requests a full stock assessment, and, in the case of elephant fish and rig, that these stocks should be managed in line with the National Plan of Action (NPOA) for Sharks (2013).

We note that one of the goals of the NPOA Sharks is to maintain the biodiversity and long-term viability of New Zealand shark populations, based on a risk assessment framework including, maintaining those species in the QMS at or above target. Best available information suggests that both rig and elephant fish are at or above target; the proposed options for these stocks reflect options to maintain this.

We acknowledge that low knowledge stocks may not be being managed optimally, and will continue to work with Industry through planning processes to review and obtain better information on these stocks.

Recreational fishers consider that a 10% default for other sources of mortality should be set for all fish stocks. Fisheries New Zealand supports better calculation and attribution of this allowance to the sector that causes it. If the catch can be attributed to a sector, then it provides a collective incentive for the sector to reduce their other sources of fishing related mortality.

Environmental interactions

Some submitters have raised concerns about the impact of trawl effort on the ecosystem and environment. We consider the proposed increases are modest and are not likely to significantly increase trawl effort, as they reflect increased fish abundance and CPUE. Trawling in this fishery is also typically confined to areas that have been consistently fished over time (rather than areas of high biodiversity).

The fisheries risk to Hector's dolphins for the north coast South Island is moderate; it is estimated that commercial fishing is currently responsible for on average around one Hector's dolphin death per year (range 0.36-2.2). Of these, commercial trawls are estimated to be responsible for around 30% of the deaths. However, the estimated population size and spatial distribution that underlie this estimate are both uncertain.

Tasman and Golden Bays are not areas of high abundance for at-risk ocean going seabirds that typically have interactions with trawl vessels and associated gear. Due to the low abundance of seabirds, these areas are considered low risk for seabird interactions.

There are a number of NPOAs (eg, for seabirds, sharks), existing regulatory and voluntary restrictions in FMA 7 to manage the impacts of fishing in this area. Additionally, the Maui and Hector's Dolphin Threat Management Plan (the TMP) is currently being reviewed. Measures taken to mitigate the effects of fishing on protected species and habitats of importance will be managed through the TMP, NPOAs and spatial planning processes.

Fisheries New Zealand's preferred options are to:

- Increase the GUR 7 TAC to 1,273 tonnes with a 15 tonne customary allowance, a 38 tonne recreational allowance, a 50 tonne allowance for other sources of fishing related mortality, and a 1,170 tonne TACC (Option 3)
- Increase the SPO 7 TAC to 400 tonnes with a 15 tonne customary allowance, a 33 tonne recreational allowance, a 27 tonne allowance for other sources of fishing related mortality, and a 325 tonne TACC (Option 3)
- Increase the JDO 7 TAC to 247 tonnes with a 2 tonne customary allowance, a 4 tonne recreational allowance, a 11 tonne allowance for other sources of fishing related mortality, and a 230 tonne TACC (Option 2); and
- Set a TAC for ELE 7 of 127 tonnes with a 5 tonne customary allowance, a 10 tonne recreational allowance, a 10 tonne allowance for other sources of fishing related mortality, and a 102 tonne TACC (Option 1).

We consider that these options best meet the purpose and principles of the Fisheries Act 1996 (the Act), and take into account section 11 – sustainability measures of the Act.

5. Decision: Top of the South Trawl - Red gurnard (GUR 7), Rig (SPO 7), John dory (JDO 7), Elephant fish (ELE 7): Top of the South Island

GUR 7

Option 1 (Status quo)

Agree to retain the GUR 7 TAC at 1,065 and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 25 tonnes for recreational fishing interests;
- iii. Retain the allowance for 50 tonnes for all other sources of fishing related mortality;
- iv. Retain the GUR 7 TACC at 975 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the GUR 7 TAC from 1,065 to 1,176 tonnes and within the TAC:

- i. Retain the 15 tonnes allowance for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 25 to 38 tonnes;
- iii. Retain the 50 tonnes allowance for all other sources of fishing related mortality;
- iv. Increase the GUR 7 TACC from 975 to 1,073 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 – Fisheries New Zealand's preferred option

Agree to increase the GUR 7 TAC from 1,065 to 1,273 tonnes and within the TAC:

- i. Retain the 15 tonnes allowance for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 25 to 38 tonnes;
- iii. Retain the 50 tonnes allowance for all other sources of fishing related mortality;
- iv. Increase the GUR 7 TACC from 975 to 1,170 tonnes.

Agreed / Agreed as Amended / Not Agreed

SPO 7

Option 1 (Status quo)

Agree to retain the SPO 7 TAC at 346 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Retain the allowance for 27 tonnes for all other sources of fishing related mortality;
- iv. Retain the SPO 7 TACC at 271 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the SPO 7 TAC from 346 to 373 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Retain the allowance for 27 tonnes for all other sources of fishing related mortality;
- iv. Increase the SPO 7 TACC from 271 to 298 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 – Fisheries New Zealand's preferred option

Agree to increase the SPO 7 TAC from 346 to 400 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Retain the allowance for 27 tonnes for all other sources of fishing related mortality;
- iv. Increase the SPO 7 TACC from 271 to 325 tonnes.

Agreed / Agreed as Amended / Not Agreed

JDO 7

Option 1 (Status quo)

Agree to retain the JDO 7 TAC at 226 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Retain the allowance for 11 tonnes for all other sources of fishing related mortality;
- iv. Retain the JDO 7 TACC at 209 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 – Fisheries New Zealand preferred option

Agree to increase the JDO 7 TAC from 226 to 247 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Retain the allowance for 11 tonnes for all other sources of fishing related mortality;
- iv. Increase the JDO 7 TACC from 209 to 230 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 – Industry requested

Agree to increase the JDO 7 TAC from 226 to 267 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Retain the allowance for 11 tonnes for all other sources of fishing related mortality;
- iv. Increase the JDO 7 TACC from 209 to 250 tonnes.

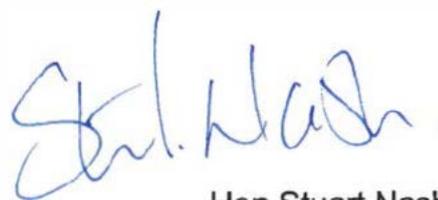
Agreed / Agreed as Amended / Not Agreed

ELE 7

Set a TAC for ELE 7 at 127 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 10 tonnes for recreational fishing interests;
- iii. Set an allowance of 10 tonnes for all other sources of fishing related mortality;
- iv. Retain the ELE 7 TACC at 102 tonnes.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

10 / 09 / 2019

Hake (HAK 7) West Coast South Island

(*Merluccius australis*; kehe, tiikati)

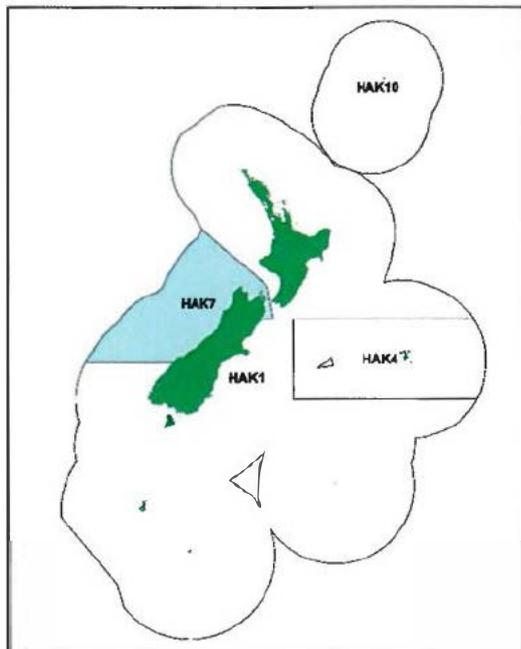


Figure 12: Quota management areas (QMAs) for hake, with HAK 7 highlighted in blue.

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for hake in HAK 7 are shown in Table 23. These settings have been in place since the start of the 2017/18 fishing year.

Table 23: Existing TAC, TACC and allowances (tonnes) for HAK 7

Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
		Customary Māori	Recreational	All other mortality to the stock caused by fishing
5,120	5,064	5	0	51

2. Why are we proposing that you vary the TAC and TACC?

2.1. State of the stock

The base model used in the 2019 HAK 7 stock assessment estimated that the 2019 biomass was 17% of unfished biomass (B_0) (see Figure 13). When a stock is below the soft limit (20% B_0), the Harvest Strategy Standard guidance is that a formal, time-constrained rebuilding plan be developed. The Harvest Strategy Standard suggests the stock should be rebuilt to at least the target level of biomass within a timeframe of between T_{min} , and $2 * T_{min}$, with an acceptable level of probability. T_{min} is defined as the number of years required to rebuild a stock to the target, in the absence of fishing.

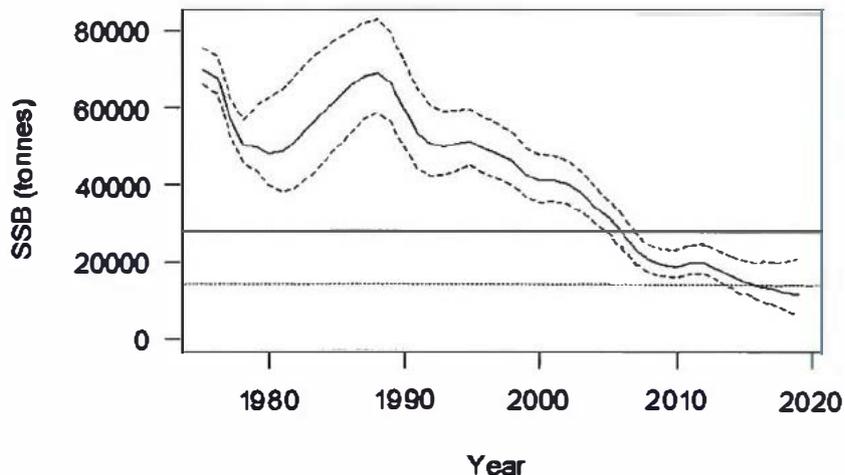


Figure 13: Estimated spawning stock biomass trajectory for the base case model. The management target (40% B_0) and soft limit (20% B_0) are shown as solid and dotted horizontal lines respectively.

2.2. Information source and quality

Hake in HAK 7 is assessed using a full quantitative stock assessment. The main data inputs, which are all ranked as high quality, are:

- Research trawl surveys dating back to 2000;
- Proportions-at-age data from the commercial fishery and research surveys; and
- Estimates of fixed biological parameters (biological characteristics that relate to age, growth, and mortality).

CPUE for the HAK 7 trawl fishery is ranked as medium or mixed quality. Because of concerns about changing fishing behaviour, including targeting and avoidance, advances in gear technology, and changes in fleet structure, CPUE is considered to be a less reliable index of abundance than trawl survey data.

The major sources of uncertainty in the assessment are:

- Uncertainty about the size of recent year classes affects the reliability of stock projections;
- The spatial and temporal representativeness of the trawl survey of the hake stock on the West Coast South Island is not known;
- Although the catch history used in the assessment has been corrected for some misreported catch, it is possible that additional misreporting exists; and
- It is assumed in the assessment models that natural mortality is constant over all ages and years.

2.3. Submissions

Written submissions were received from:

- Deepwater Group Ltd
- Environment and Conservation Organisations of NZ
- Iwi Collective Partnership

- Our Seas Our Future
- Royal Forest and Bird Protection Society of New Zealand
- Royal New Zealand Society for the Prevention of Cruelty to Animals
- Te Ohu Kaimoana
- Sealord Group Ltd

3. Allowances for setting TACC

3.1. Māori customary interests

No information was received through the consultation process to suggest that the allowance for customary catch should be changed. We therefore recommend retaining the current allowance of five tonnes.

3.2. Recreational interests

No information was received as a result of the consultation process to suggest that the allowance for recreational catch should be changed. We therefore recommend retaining the current nil allowance.

3.3. All other mortality caused by fishing

An allowance for other sources of mortality caused by fishing provides for unrecorded mortality of fish associated with fishing activity. This includes fish that escape through trawl net mesh and subsequently die from injuries, accidental loss from lost or ripped trawl net cod-ends, predation, loss of fish taken on bottom longlines, and illegal take.

For HAK 7, this allowance is currently set at 1% of the TACC. The basis of this allowance remained unchanged under all options that were consulted on. In the absence of further information, we recommend this allowance continues be set at around 1% of the TACC.

4. Options and analysis for sustainability measures

4.1. Options

The options presented in the consultation document are shown in Table 24 below.

Table 24: Proposed management settings in tonnes for HAK 7 from 1 October 2019.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current setting	5,120	5,064	5	0	51
Option 1	3,200 ↓ (38%)	3,163 ↓ (38%)	5	0	32
Option 2	2,300 ↓ (55%)	2,272 ↓ (55%)	5	0	23
Option 3	1,400 ↓ (73%)	1,381 ↓ (73%)	5	0	14

4.2. Varying the TAC (section 13 of the Act)

Under s 13(4) you may reduce a TAC after having regard to the matters specified in s 13(2), (2A) or (3). Under s 13(2)(b) of the Act (stocks whose current level is below that which can produce the maximum sustainable yield) a TAC is set (i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to interdependence of stocks; and (ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock.

All options are consistent with rebuilding the stock to the target level within the $T_{min} - 2 * T_{min}$ timeframe indicated in the Harvest Strategy Standard (refer section 2.1).

There is no information to suggest that the interdependence of any stocks would limit the HAK 7 TAC options that are proposed. All options involve significant reductions to the HAK 7 TAC, which would result in reduced catch of all species taken as bycatch in hake target tows.

4.3. Environmental principles (section 9 of the Act)

As all options involve significant reductions to the HAK 7 TAC, the resulting decrease in fishing effort would result in reduced effects of fishing on the aquatic environment.

4.4. Sustainability measures (section 11 of the Act)

Hake in HAK 7 is managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries 2019 – Part 1A (National Deepwater Plan), approved under section 11A of the Act. All options are consistent with the reference points for hake (see Table 25), which are based on the default reference points in the Harvest Strategy Standard.

Table 25: Hake default reference points, and associated management responses

Reference point	Management response
Management target 40% unfished biomass (B_0)	Stock permitted to fluctuate around this management target. TAC/TACC changes to keep the stock around the target (with a 50% probability of being at 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
Rebuild strategy	$2 * T_{min}$ (T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing)

4.5. Kaitiakitanga

Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery, and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

Hake (kehe, tiikati) 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.

Fisheries New Zealand considers that the management options presented in this decision document will contribute towards achieving the relevant management objectives in the Plan in ensuring that the fishery remains sustainable, and that environmental impacts are minimised.

4.6. Input and participation of tangata whenua

The proposal to reduce the HAK 7 TAC was discussed at Te Waka a Māui me Ōna Toka Forum hui, held in Nelson on 9 July. No feedback on the suggested options for HAK 7 was provided.

5. Analysis of Options

5.1. Rebuilding plan

As noted in section 2.1, the Harvest Strategy Standard guidance is that a formal, time-constrained rebuilding plan be developed when a stock is below the soft limit. It suggests that a stock should be rebuilt to at least the target level of biomass (40% B_0) no longer than twice the timeframe it would take in the absence of fishing.

The first step towards developing a rebuilding plan is to estimate how long it would take for the stock to rebuild to the target level in the absence of fishing. This was undertaken using the base case stock assessment model. Two sets of calculations were made that used different recruitment assumptions. The rationale for using different recruitment assumptions is the impact recruitment has on rebuilding. Below average recruitment means fewer juvenile fish coming into the fishery, a slower rate of rebuild, and fewer adults for fishers to catch. Conversely, average recruitment means more juvenile fish coming into the fishery, a faster rate of rebuild, and more fish available to catch.

The first of the two recruitment assumptions used in the calculations used data for the period between 2006 and 2015. The stock assessment model indicates that recruitment during this period was below average. The second recruitment assumption used the long term average between 1973 and 2015.

Results of the T_{min} (absence of fishing) and $2 * T_{min}$ estimations using the two recruitment assumptions are shown in Table 26 below.

Table 26: Outputs from stock assessment model for rebuild time periods

	Rebuild time period	
	T_{min} (absence of fishing)	$2 * T_{min}$
Recruitment assumption		
Below average recruitment	8 years	16 years
Average recruitment	5 years	10 years

The second step is to calculate how much catch can be taken from a fishery that would allow a stock to rebuild to the target level within twice the timeframe it would take in the absence of fishing.

Again, the base case stock assessment model was used to perform these calculations. The model analyses a range of catch scenarios, and assesses which meet the criteria of rebuilding to the target level within the required time period and with 50% probability.

Using the *average* (long term) recruitment assumption, the model was used to analyse catch scenarios of between 3,000 and 3,500 tonnes. It was calculated that the stock would reach 40% B_0 within the 10 year timeframe under a future catch scenario of 3,200 tonnes per annum. This formed the basis of Option 1.

Using the *below average* recruitment assumption, the model analysed catch scenarios of between 1,100 and 1,900 tonnes. It calculated the stock would reach the target level within the 16 year timeframe under a future catch scenario of 1,400 tonnes per annum. This information formed the basis of Option 3.

To inform the options included in the consultation document, projections were run under an additional catch scenario. The scenario (future catch of 2,300 tonnes) represented the midpoint between the catch levels that would achieve the rebuild under the below average recruitment assumption (1,400 tonnes) and average recruitment assumption (3,200 tonnes) respectively. Rationale for this scenario was to test rebuild timeframes for a TAC midway between these two points. This catch scenario formed the basis of Option 2 in the consultation document.

Inclusion of this option provided a means to acknowledge that both the 2018 West Coast South Island trawl survey and the 2017 inshore trawl survey indicated that a strong year class was expected to recruit into the fishery. This information was unable to be used in any of the projections, as fish from this year class had not yet recruited to the fishery. A strong year class may mean the below average recruitment assumption represents a somewhat pessimistic view of recruitment in the short term.

Projections using the two recruitment assumptions and a catch of 2,300 tonnes indicate that:

- Under the average (long term) recruitment assumption, the stock would reach 40% B_0 within a timeframe of 7 years; and
- Under the below average recruitment assumption, the stock would not reach 40% B_0 within a timeframe consistent with the Harvest Strategy Standard

Rebuild information is summarised in Table 27.

Table 27: Summary of rebuild information used to inform TAC options. N/a refers to a rebuild not being achieved or not achieved within a timeframe consistent with the Harvest Strategy Standard.

Catch scenario (tonnes)	Corresponding TAC option	Rebuild time under <i>below average</i> recruitment assumption	Rebuild time under <i>average</i> recruitment assumption
5,120	Status quo	N/a	N/a
3,200	Option 1	N/a	10 years
2,300	Option 2	N/a	7 years
1,400	Option 3	16 years	5-7 years

5.2. Option 1

Option 1 is based on projections indicating that under the long term (average) recruitment assumption, the stock will rebuild to 40% B_0 in 10 years at a future catch of 3,200 tonnes per annum. However, we think that in the short term recruitment is unlikely to be at the average level due to a prolonged period of below average recruitment. For this reason, using Option 1 as the basis for making your decision carries a higher risk of the objectives of the rebuilding plan not being achieved.

Catch of hake in HAK 7 has been at a level comparable to that of the proposed TACC under Option 1 in three of the last five completed fishing years.

Fisheries New Zealand estimates the short-term potential economic loss under Option 1 as being \$1.3m per annum. This estimate is based on the most commonly-produced state (headed, gutted and tailed) in 2017/18, a 2018 export value for that state of \$5.55 per kg, and the average HAK 7 catch during the last three completed fishing years (3,545 tonnes).

Deepwater Group Ltd, Te Ohu Kaimoana, Sealord Group, and the Iwi Collective Partnership all support Option 1, which is the smallest of the TAC reductions. The submitters note the information that was unable to be incorporated into the five-year projections regarding recent year classes being above average. They consider that for this reason, the projections based on average recruitment can be considered conservative, i.e. the rate of rebuild may be faster than that used in the projections.

Deepwater Group also notes that under this option, target fishing for hoki within the HAK 7 QMA is unlikely to be inhibited.

We consider that while the presence of what may be a strong year class is encouraging, one strong year class that comes after a prolonged period of below average recruitment is unlikely to be sufficient to lift the recent series to average or above average. We therefore do not consider that this option is conservative.

5.3. Option 2 (recommended)

Option 2 was developed to acknowledge economic factors and trawl survey information suggesting that a strong year class may soon recruit to the fishery. Effectively, this means that in the short term, recruitment would lie somewhere between the short term (below average) and long term (average) assumptions. The proposed TAC under this option of 2,300 tonnes also lies between proposed TACs based on the below average and average assumptions of 1,400 and 3,200 tonnes respectively.

Using the same assumptions as for Option 1, we estimate the short-term potential economic loss under Option 2 as being \$4.4m per annum.

None of the submissions stated a preference for Option 2.

We note that under existing hoki management measures, fishers may not be able to catch their hoki ACE without exceeding their HAK 7 ACE if this TAC is adopted. However, this scenario is less likely given proposed future management measures for hoki.

On this basis, we recommend Option 2. The next stock assessment is scheduled to take place after the winter 2021 West Coast South Island trawl survey. This will inform the October 2022 sustainability round. In the interim, we will use information collected by observers to monitor year classes recruiting into the fishery. Depending on results, we may review the TAC prior to October 2022.

5.4. Option 3

Option 3 is based on projections indicating that under the below average recruitment assumption, the stock will rebuild to 40% B_0 in 16 years at catch levels of 1,400 tonnes per annum. As noted above, we think that in the short term, recruitment could be higher than the below average level. This would result in a decision based on this outcome not providing for optimal use of this stock.

Using the same assumptions as for Option 1, Fisheries New Zealand estimates the short-term potential economic loss under Option 3 as being \$7.5m. All options involve a short-term potential annual loss in economic value that should be considered in the context of the value of a fully rebuilt fishery (e.g. higher catch rates and a more efficient fishery), and the potential benefits from a more rapid rebuild.

The submissions from Our Seas Our Future, the Royal Society for the Prevention of Cruelty to Animals, and the Royal Forest and Bird Protection Society all favour Option 3, which is the most conservative of the proposed options.

Deepwater Group noted that this option should not be used to inform management due to the likelihood that the below average recruitment assumption was overly pessimistic.

As with Option 2, submissions did not comment on whether the TACC under Option 3 would affect fishers' ability to target hoki on the West Coast of the South Island. We consider that a TACC under Option 3 would likely preclude any hake target fishery in HAK 7. Additionally, fishers may not be able to catch their hoki ACE, under both current and proposed future management measures, without exceeding their HAK 7 ACE.

5.5. Other considerations

Deepwater Group suggests that the sources of uncertainty identified as part of the stock assessment process be investigated by Fisheries New Zealand and that the assessment is updated in 2020. As noted above, the next West Coast South Island trawl survey is scheduled for winter 2021 and this survey is an important contributor to the stock assessment. The next stock assessment will therefore remain scheduled to be completed prior to the 2022/23 fishing year.

6. Decision: Hake (HAK 7: West Coast South Island)

Option 1

Agree to decrease the HAK 7 TAC from 5,120 to 3,200 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Decrease the allowance for other sources of mortality to the stock caused by fishing from 51 to 32 tonnes;
- iv. Decrease the HAK 7 TACC from 5,064 to 3,163 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (recommended)

Agree to decrease the HAK 7 TAC from 5,120 to 2,300 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Decrease the allowance for other sources of mortality to the stock caused by fishing from 51 to 23 tonnes;
- iv. Decrease the HAK 7 TACC from 5,064 to 2,272 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to decrease the HAK 7 TAC from 5,120 to 1,400 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- i. Retain the nil allowance for recreational fishing interests;
- ii. Decrease the allowance for other sources of mortality to the stock caused by fishing from 51 to 14 tonnes;
- iii. Decrease the HAK 7 TACC from 5,064 to 1,381 tonnes.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

11 / 09 / 2019

Hoki (HOK 1) Entire New Zealand EEZ

(*Macruronus novaezelandiae*)

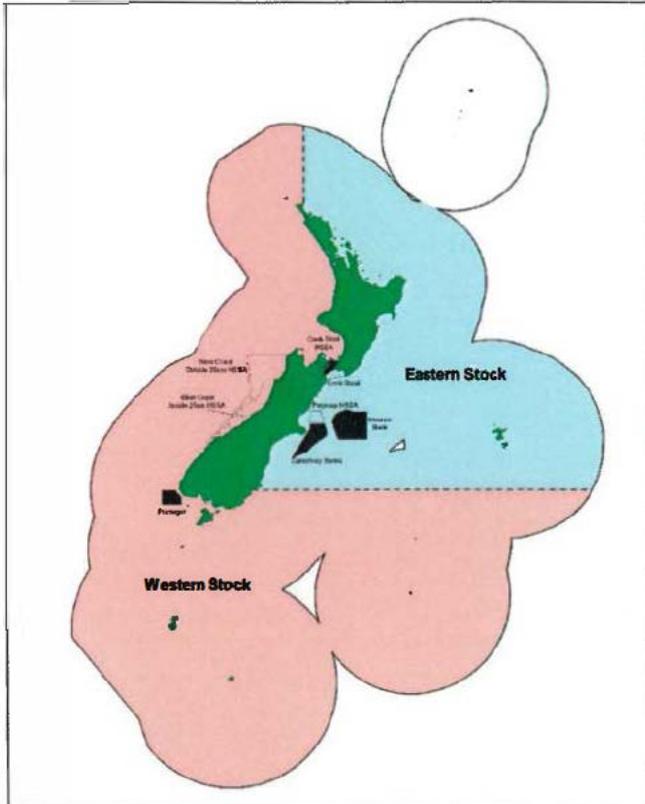


Figure 14: Quota management area (QMA) for HOK 1 showing eastern and western stock areas, hoki management areas (solid) and hoki seasonal spawn areas.

1. Current TAC, TACC, allowances, and non-regulatory catch split arrangement

The HOK 1 stock covers the whole of New Zealand’s EEZ (excluding FMA 10 – the Kermadecs). It is assessed and managed as two separate biological stocks: an eastern stock and a western stock (refer Figure 14). A separate catch limit is set for each stock and implemented via a non-regulatory catch split arrangement.

The current total allowable catch (TAC), total allowable commercial catch (TACC), allowances, and non-regulatory catch limits for hoki in HOK 1 are shown in Table 28. These settings have been in place since the start of the 2015/16 fishing year.

Table 28: Existing TAC, TACC, allowances and non-regulatory catch limits (tonnes) for HOK 1

TAC	TACC	Non-regulatory catch split arrangement		Allowances (tonnes)		
		Eastern stock limit	Western stock limit	Customary Māori	Recreational	Other sources of fishing related mortality
151,540	150,000	60,000	90,000	20	20	1,500

Due to ACE shelving arrangements implemented by quota holders for the 2018/19 fishing year, the effective western stock catch limit for the current fishing year is 70,000 tonnes.

2. Why are we proposing that you vary the TAC and TACC?

2.1. State of the stock

Hoki is New Zealand's most valuable deepwater fishery and undergoes a stock assessment every year.

2.2. Eastern stock

The 2019 hoki stock assessment indicates that biomass of the eastern stock is above the management target range of 35-50% B_0 and is expected to increase slowly under current catch levels. No change is proposed to catch limits for the eastern stock.

2.3. Western stock

In relation to the western stock, the 2019 assessment was uncertain and did not result in a single base case. It showed a range of possible biomass estimates depending on the assumptions used to inform inputs to the model. One model run focused on the western stock and gave more weight to fishery-independent biomass indices (see Figures 15 and 15). This run indicated the western stock could be at 29% of unfished biomass (B_0). Another model run, which used the same model as the 2018 assessment but with additional trawl survey and age data, indicated the stock could be at 56% B_0 (refer Figure 15).

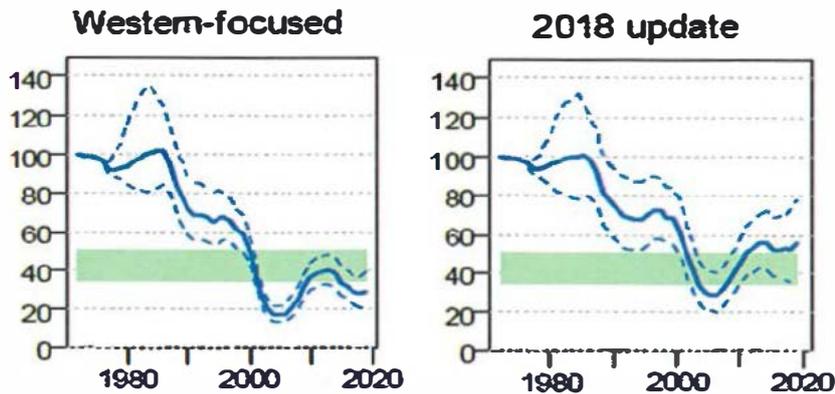
The key biomass indices that are given greater weight in the western-focused model include:

- The Sub-Antarctic trawl survey estimate from Nov-Dec 2018, which was the lowest in the series since 2003-2005;
- The 2017 Cook Strait acoustic survey biomass, which was the lowest since 2008;
- The 2018 West Coast South Island acoustic survey biomass, which was the lowest in the time series going back to 2008; and
- Data from the 2018 Chatham Rise trawl survey, some components of which had declined since the 2016 survey.

Western stock catch has been below the catch limit for the last three completed fishing years. Fishers operating in the West Coast South Island hoki fishery have expressed concern about reduced catch rates of hoki in that fishery in recent seasons.

For these reasons, and the risk to the fishery resulting from not taking appropriate management action, the options presented in this decision document are based on the outputs of the western-focused model. This model indicated the stock was at 29% B_0 , which is below the management target range of 35-50% B_0 .

Model run outputs produced by the 2019 HOK 1 stock assessment.



Figures 15 (left) and 16 (right). The solid blue lines show the median, the broken blue lines show 95% credible intervals, and the green band represents the management target range of 35-50% B_0 .

2.4. Information source and quality

Hoki is assessed using a full quantitative stock assessment. The main data inputs, which are all ranked as high quality, are:

- Research time series of abundance indices (trawl and acoustic surveys);
- Proportions at age data from the commercial fisheries and trawl surveys; and
- Estimates of fixed biological parameters (biological characteristics that relate to age, growth, and mortality).

CPUE data is not used as it is not thought to track stock biomass.

The major sources of uncertainty in the assessment are:

- Stock structure and migration patterns;
- Split of the 2014, 2015, and 2016 year classes between eastern and western stocks with respect to projections;
- Conflicting abundance trends between the biomass indices and composition data; and
- Catchability changes in Sub-Antarctic trawl surveys.

Fisheries New Zealand has contracted research to better inform the 2020 hoki stock assessment, with the aim of reducing uncertainty in estimating stock status. This includes reviewing the stock assessment model.

The influence of environmental drivers on hoki migration patterns, recruitment, and apparent changes in distribution, remains uncertain. Fisheries New Zealand is currently considering how this could be investigated.

3. Submissions

Written submissions were received from:

- Deepwater Group Ltd
- Environment and Conservation Organisations of NZ
- Iwi Collective Partnership

- LegaSea, New Zealand Angling and Casting Association, New Zealand Sport Fishing Council (joint recreational submission)
- Our Seas Our Future
- Royal Forest and Bird Protection Society of New Zealand
- Royal New Zealand Society for the Prevention of Cruelty to Animals
- Te Ohu Kaimoana
- Sealord Group Ltd

Input was also received from Te Waka a Māui me Ōna Toka Forum hui, held in Nelson on 9 July 2019.

4. Allowances for setting TACC

4.1. Māori customary interests

No information was received through the consultation process to suggest that the allowance for customary catch should be change. We therefore recommend retaining the current allowance of 20 tonnes.

4.2. Recreational interests

No information was received as a result of the consultation process to suggest that the allowance for recreational catch should be changed. We therefore recommend retaining the current allowance of 20 tonnes.

4.3. All other mortality caused by fishing

This allowance provides for unrecorded mortality of fish associated with fishing activity. This includes fish that escape through trawl net mesh and subsequently die from injuries and accidental loss from lost or ripped trawl net cod-ends.

For HOK 1, this allowance is currently set at 1% of the TACC. The joint recreational submission suggests that for all trawl fisheries, the default setting for this allowance should be 10% of the TACC, although no specific information was provided to support this suggestion. We agree that setting this allowance based on an analysis of the available information is desirable. However, in the absence of that work having been undertaken, we recommend this allowance continue be set at around 1% of the TACC.

5. Options and analysis for sustainability measures

5.1. Options

The options presented in the consultation document are set out in Table 29.

Table 29: Proposed management settings in tonnes for HOK 1 from 1 October 2019, with the percentage change relative to the *status quo* in brackets.

Option	TAC	Non-regulatory catch split arrangement		Allowances (tonnes)			
		TACC	Eastern stock limit	Western stock limit	Customary Māori	Recreational	Other sources of fishing related mortality
Status quo	151,540	150,000	60,000	90,000	20	20	1,500
Option 1	131,340 ↓ (13%)	130,000↓	60,000	70,000↓ (22%)	20	20	1,300
Option 2	121,240 ↓ (20%)	120,000↓	60,000	60,000↓ (33%)	20	20	1,200

5.2. Varying the TAC (section 13 of the Act)

Under s 13(4) you may reduce a TAC after having regard to the matters specified in s 13(2), (2A) or (3). Under s 13(2)(a), a TAC is set that maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

For the western hoki stock, the biomass that can produce the maximum sustainable yield (B_{MSY}), is estimated to be around 27% B_0 . However, the harvest strategy for hoki (refer Table 30) is to manage the stock within a range of 35-50% B_0 . The broad rationale for managing within a conservative target range is that it provides greater certainty the stock will remain at or above B_{MSY} and within the optimum range for both long-term sustainability and economic harvest levels.

The western-focused model run conducted as part of the 2019 stock assessment indicated the western stock was below the lower end of this management target range. Reducing the TAC will maintain the stock above B_{MSY} and support the stock to increase to within the management target range.

There is no information to suggest that the interdependence of any stocks would limit the HOK 1 TAC options proposed. Both options involve reductions to the HOK 1 TAC, which would likely result in reduced catch of all species taken as bycatch in hoki target tows.

5.3. Environmental principles (section 9 of the Act)

Both options involve reductions to the HOK 1 TAC. The resulting decrease in hoki target fishing, which is expected to be most pronounced in the West Coast South Island winter spawn fishery, would result in a reduction in the effects of fishing on the aquatic environment.

5.4. Sustainability measures (section 11 of the Act)

Hoki in HOK 1 is managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries 2019 – Part 1A (National Deepwater Plan), approved under section 11A of the Act. Both options are consistent with the hoki harvest strategy (see Table 30) and the National Deepwater Plan.

No other plans, strategies or statements are relevant to hoki in HOK 1.

Table 30: Hoki harvest strategy

Harvest strategy components	Management response
Management target range of 35-50% B_0	Stock permitted to fluctuate within this management target to an acceptable level
Soft limit of 20% B_0	A formal time constrained rebuilding plan should be implemented if this limit is reached
Hard limit of 10% B_0	The limit below which fisheries should be considered for closure

5.5. Kaitiakitanga

Hoki is identified as a taonga species in the Chatham Islands Forum Fisheries Plan @ 44°, Mai i Nga Kuri a Whareki Tihirau Iwi Fisheries Plan, Te Taihauauru Iwi Forum Fisheries Plan, Te Hiku o Te Ika Iwi Fisheries Forum Fisheries Management Plan, and Te Waka a Māui me Ōna Toka Iwi Forum Fisheries Plan.

Fisheries New Zealand considers that all management options presented in this decision document are consistent with the relevant objectives of the Iwi Forum Fisheries Plans.

5.6. Input and participation of tangata whenua

The proposal to reduce the HOK 1 TAC was discussed at Te Waka a Māui me Ōna Toka Forum hui held in Nelson on 9 July. The Forum noted that hoki was not an easy species to manage due to difficulties with assessing and monitoring the stock. The Forum also questioned the appropriateness of fishing on spawning aggregations.

6. Analysis of Options

6.1. Projections

The 2019 stock assessment models were used to project biomass forward for five years under three catch scenarios consistent with the TAC options (refer to Table 29) The results of the projections for the western hoki stock are presented in Table 31.

Table 31: Projected status of western hoki stock under future catch scenarios

	2019 Estimated Stock Status (% B_0)	2024 Estimated Stock status (% B_0)	Probability of being below 35% B_0 in 2024	Probability of being below the Soft Limit in 2024	Probability of being below the Hard Limit in 2024
Catch equivalent to TACC					
Updated 2018 model	56	58	7%	0%	0%
Western-focused model	29	24	82%	32%	5%
Option 1 (20,000 tonne reduction)					
Updated 2018 model	56	62	3%	0%	0%
Western-focused model	29	30	67%	13%	0%
Option 2 (30,000 tonne reduction)					
Updated 2018 model	56	65	2%	0%	0%
Western-focused model	29	35	50%	4%	0%

6.2. Status quo

Projections using the *updated 2018 model* indicate the western stock will increase slowly if catch is equivalent to the existing 90,000 tonne non-regulatory catch limit.

Projections using the *western-focused model* show that at this catch level, the stock will decline towards the soft limit. This model indicates there is an 82% probability that the stock status will remain below the management target range under this option, a 32% probability of moving below the soft limit and a 5% probability of moving below the hard limit. There is also a >50% probability of the stock moving below B_{MSY} .

Although not presented as an option in the consultation document, Deepwater Group favours continuation of the *status quo* in terms of the statutory management measures for the HOK 1 fishery. They state that HOK 1 quota owners have reached agreement on a package of non-regulatory management controls to be set in place for the next three years. The key controls being:

- The TACC to remain at 150,000 tonnes;
- The western stock catch limit to be reduced from 90,000 to 55,000 tonnes; and
- Implementation of the western stock catch limit reduction to be achieved by shelving 35,000 tonnes of ACE together with any carry forward western stock ACE.

The industry agreement goes beyond the options that were consulted on. Deepwater Group notes that this reflects the conservative approach that industry believes is warranted given their observations in regard to fishery performance. They also note that an annual review will be undertaken and quota owners are open to increasing the amount shelved within the next three years if appropriate.

We agree that a reduction in western stock catch beyond the 30,000 tonne reduction proposed under Option 2 further increases the probability of stock status returning the management target range within five years.

We also acknowledge Deepwater Group's preference to use shelving to achieve the desired increase in biomass. The way in which ACE shelving arrangements are relevant to your decisions on sustainability measures is described under 'Shelving' in the introduction. Neither the National Deepwater Plan nor the hoki chapter of the National Deepwater Plan explicitly provide for ACE shelving arrangements. So the reference in paragraph 7.2 of the agreement relating to PAU 4 and PAU 7 among Fisheries New Zealand, Te Ohu Kaimoana and PauaMAC 4 is not relevant to your decisions on hoki.

Deepwater Group also confirmed continuation of a series of additional precautionary fine-scale management measures that complement statutory controls. With the exception of spawning closures, which were reintroduced this year after last being used over 10 years ago, all are longstanding measures that have been in place for many years. The measures comprise:

- Delivery of the east-west catch split arrangement;
- A staged series of four week-long closures of the main spawning areas (refer Figure 14) between July and September, to reduce fishing pressure on spawning fish;
- Measures to minimise fishery impacts on juvenile hoki;
- Measures to avoid impacts on other marine species including an Environmental Liaison Officer;
- Fisheries New Zealand audit of industry performance against non-regulatory measures;
- Marine Stewardship Council certification; and
- Observer coverage as a means to monitor fleet performance against statutory and non-statutory management measures.

With respect to the spawning closures and measures to minimise catch of juvenile hoki, we would expect that these measures are likely to benefit the stock, however, quantifying their effectiveness is not possible.

Deepwater Group also requests that Fisheries New Zealand review the HOK 1 stock assessment model and commission research to assess how oceanographic changes may affect the seasonal and spatial distribution of adult hoki. As noted earlier, research has been contracted to better inform the 2020 hoki stock assessment. Fisheries New Zealand is also exploring further research to understand potential impacts of oceanographic change.

Responses from Te Ohu Kaimoana, Sealord Group, and Iwi Collective Partnership support Deepwater Group's position.

6.3. Option 1 (20,000 tonne reduction)

Under Option 1, the TACC would be reduced by 20,000 tonnes, with the reduction taken entirely from the western stock catch limit. The amount of the TACC reduction is the same as the amount of ACE shelved by Deepwater Group for the 2018/19 fishing year.

Five-year projections using the *updated 2018 model* indicate the western stock will increase if catch is around 70,000 tonnes per annum.

Projections using the *western-focused model* show that at this catch level, the stock will remain flat. This model indicates there is a 67% probability that the stock status will remain below the management target range under this option, a 13% probability of moving below the soft limit and nil probability of moving below the hard limit.

Fisheries New Zealand estimates the short-term potential economic loss under Option 1 as being \$34m per annum.¹⁸ The actual economic impact is likely to be neutral, as the voluntary ACE shelving is the same as the TACC reduction proposed under this Option.

We understand that if you agree to this option, quota owners are likely to still shelve at least a further 15,000 tonnes of western stock ACE in order to achieve a catch limit for this stock of 55,000 tonnes for the next three years.

No submissions explicitly supported this option.

6.4. Option 2 (30,000 tonne reduction, recommended)

Under Option 2 the TACC would reduce by 30,000 tonnes. As with Option 1, the reduction would come off the western stock catch limit.

Five-year projections using the *updated 2018 model* indicate the western stock will increase if catch is around 60,000 tonnes per annum.

Projections using the *western-focused model* show that at this catch level, the stock will increase slowly. There is a 50% probability that the stock status will be at the lower end of the management target range, a 4% probability of moving below the soft limit and nil probability of moving below the hard limit.

Using the same assumptions outlined for Option 1, Fisheries New Zealand estimates the short-term potential economic loss under Option 2 as being \$47m per annum. Due to the ACE shelving arrangements in place the actual annual economic impact under this option may be closer to \$17m.

Option 2 would result in a reduction in fishing effort on the West Coast of the South Island during the winter spawn fishery compared with the 2018 and 2019 seasons. This will be matched by an increase in effort in other fisheries, as the fishing effort would be redeployed.

¹⁸ The estimate of value is based on the most commonly-produced state during 2017/18 (headed, gutted and tailed), a 2018 export value of \$2.79 per kg, and the 150,000 tonne TACC being fully caught.

The submissions from the Royal New Zealand Society for the Prevention of Cruelty to Animals, the Royal Forest and Bird Protection Society, the joint recreational submission, and Environment and Conservation Organisations of NZ, all suggest a preference for Option 2. Further, three of those four submitters, as well as Our Seas Our Future, suggested decreasing the TACC by more than the 30,000 tonnes proposed under Option 2. Rationale for a greater TACC decrease included increased certainty that biomass can rebuild and reducing the risk to seabirds posed by hoki fishing.

Around 15 other responses were received from submitters who mostly identified themselves as being involved with recreational fishing. One respondent identifying with each of commercial, tangata whenua and general public also commented. Most responses indicated a preference for Option 2, and suggest a precautionary approach be taken to management of the hoki fishery.

As already noted, the different model runs used in the 2019 assessment, and associated projections, produce a range of results in terms of current and future stock status. One of the key differences between the models is that the western-focused model has a greater emphasis on better fitting the available fishery-independent biomass indices. In effect, this model gives greater weight to those indices, which, as noted earlier, are mostly trending down.

Although sources of uncertainty remain regarding the 2019 stock assessment, Fisheries New Zealand considers that basing your decision on the outputs of the western-focused model carries the least risk that the stock will be further depleted pending a review of the stock assessment model.

We understand that if you agree to this option, quota owners are likely to still shelve at least a further 5,000 tonnes of western stock ACE in order to achieve a catch limit for this stock of 55,000 tonnes for the next three years.

6.5. Other information

As well as research to better inform the 2020 stock assessment, we are also looking at research to better understand the environmental drivers that may influence fish and fisheries distributions.

7. Decision: Hoki (HOK 1: entire New Zealand EEZ, excluding Kermadecs)

Status quo

Agree to retain the HOK 1 TAC at 151,540 tonnes and within the TAC:

- i. Retain the allowance of 20 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 20 tonnes for recreational fishing interests;
- iii. Retain the allowance 1,500 tonnes for other sources of mortality to the stock caused by fishing;
- iv. Retain the HOK 1 TACC at 150,000 tonnes.

Agreed / Agreed as Amended / **Not Agreed**

AND

Note the package of measures agreed to by quota owners for the next three years including shelving ACE to achieve a reduction in the western stock catch limit from 90,000 tonnes to 55,000 tonnes.

Noted

OR

Option 1

Agree to decrease the HOK 1 TAC from 151,540 to 131,340 tonnes and within the TAC:

- i. Retain the allowance of 20 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 20 tonnes for recreational fishing interests;
- iii. Decrease the allowance for other sources of mortality to the stock caused by fishing from 1,500 to 1,300 tonnes;
- iv. Decrease the HOK 1 TACC from 150,000 to 130,000 tonnes.

Agreed / Agreed as Amended / **Not Agreed**

AND

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 130,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Eastern stock catch limit of 60,000 tonnes; and
- b) Western stock catch limit of 70,000 tonnes

Noted

OR

Option 2 (recommended)

116,190

Agree to decrease the HOK 1 TAC from 151,540 to ~~121,240~~ tonnes and within the TAC:

- i. Retain the allowance of 20 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 20 tonnes for recreational fishing interests;
- iii. Decrease the allowance for other sources of mortality to the stock caused by fishing from 1,500 to ~~1,200~~ tonnes; *1,150*
- iv. Decrease the HOK 1 TACC from 150,000 to ~~120,000~~ tonnes. *115,000*

Agreed / Agreed as Amended / Not Agreed

AND

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 120,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Eastern stock catch limit of 60,000 tonnes; and
- b) Western stock catch limit of ~~60,000~~ tonnes

55,000

Stuart Nash **Noted**

Hon Stuart Nash
Minister of Fisheries

11 109 / 2019

Ling (LIN 7) West Coast South Island

(*Genypterus blacodes*; Hoka, Rari, Hokarari)

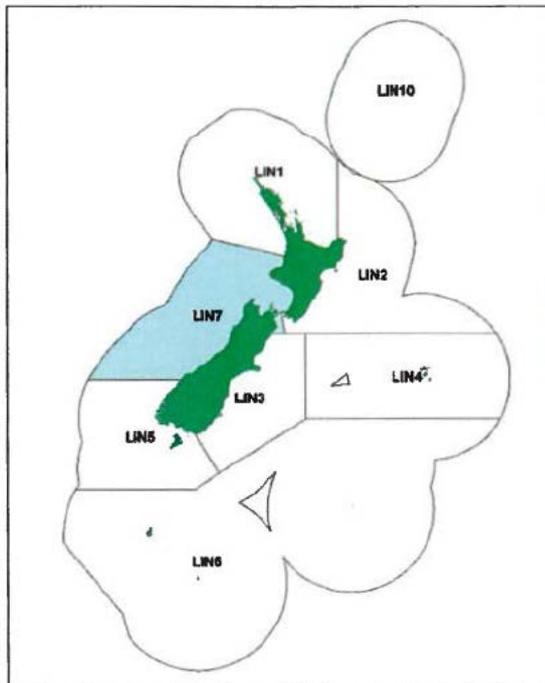


Figure 17: Quota management areas (QMAs) for Ling (LIN), with LIN 7 highlighted in blue

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for ling in LIN 7 (Figure 17) are shown in Table 32. These settings have been in place since the start of the 2013/14 fishing year.

Table 32: Current TAC, TACC and allowances (in tonnes) for LIN 7

TAC	TACC	Allowances (tonnes)		
		Customary Māori	Recreational	Other sources of fishing related mortality
3,144	3,080	1	1	62

2. Why are we proposing that you vary the TAC and TACC?

2.1. State of the stock

The 2017 stock assessment for LIN 7 indicates that the biomass is very likely to be at or above the management target. This indicates there is an opportunity to sustainably increase the catch limits for this stock.

The Fisheries New Zealand Deepwater Fisheries Assessment Working Group assessed three alternative model runs in 2017 for the provision of fishery management advice. All model runs indicated an unfished biomass (B_0) greater than 60,000 tonnes and estimated the stock status (B_{2017}) to be around 79% B_0 , 66% B_0 , or 54% B_0 . In all model runs, the stock was assessed as being very likely (>90%) to be at or above the management target of 40% B_0 . Biomass is estimated to have been stable or slowly decreasing.

Fishing pressure appears to be low because fish of varying ages were caught in both the commercial ling catch and the trawl survey. This indicates a low exploitation rate.

The Working Group concluded that the 2017 stock assessment indicates that B_{2017} is exceptionally unlikely to be below the soft limit (20% B_0) or hard limit (10% B_0). There is a very low likelihood of overfishing in 2017.

2.2. Information source and quality

LIN 7 is assessed using a full quantitative stock assessment. The key data inputs, which are all ranked as high quality, are:

- Catch history;
- Abundance index from West Coast South Island trawl surveys;
- Abundance index from the commercial trawl hoki-hake-ling target fishery CPUE;
- Proportions at age data from the commercial fisheries and trawl surveys; and
- Estimates of fixed biological parameters.

The major sources of uncertainty in the assessment are:

- There is a lack of contrast in the biomass indices to inform the absolute level of biomass;
- Although the catch history used in the assessment has been corrected for some misreported catch, it is possible that additional misreporting exists;
- The assessment models assume that natural mortality is constant over all ages; and
- The model estimates that a relatively high proportion of ling biomass is not vulnerable to fishing around the age of first maturity.

2.3. Submissions

Eight submissions were received from the following companies and organisations on the proposed options for LIN 7:

- Deepwater Group Ltd
- Sealord
- Environment and Conservation Organisations of NZ Inc. (ECO)
- Iwi Collective Partnership
- Our Seas Our Future
- Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)
- Te Ohu Kaimoana
- The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird)

Input was also received from Te Waka a Māui me Ōna Toka Iwi Forum.

3. Allowances for setting TACC

3.1. Māori customary interests

There was no proposal to change the existing customary Māori allowance of one tonne, and no written submissions were received on this allowance.

At the Te Waka a Māui me Ōna Toka forum meeting it was proposed that the customary Māori allowance be increased to two tonnes in recognition of the pātaka recently established in Fisheries Management Area 7. This forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The pātaka provides for customary fishing authorisations to be exercised on a commercial vessel. Ling is one of the species that are likely to be taken for customary purposes. As a result, the customary take is likely to increase. Fisheries New Zealand therefore proposes that the two options are modified by doubling the customary Māori allowance to two tonnes.

3.2. Recreational interests

No submissions or new information have been received to suggest that this allowance should be revised. Fisheries New Zealand proposes the retention of a one tonne allowance for this sector.

3.3. All other mortality caused by fishing

The allowance for other sources of fishing related mortality provides for ling mortality that is not reported, such as ling lost due to burst nets, broken hooks, ling that are damaged by fishing activity but not caught, or fish that have been discarded at sea and not reported.

No submissions or new information have been received to suggest that this allowance should be revised. Fisheries New Zealand proposes that this allowance remains at 2% of the TACC.

4. Options and analysis

4.1. Options

Fisheries New Zealand consulted on two options regarding the management settings of LIN 7 (Table 33).

Table 33: Proposed TACs, TACC and Allowances in tonnes for LIN 7 from 1 October 2019, with the percentage change relative to the current settings in brackets

Option	Allowances				
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing related mortality (t)
Current Setting	3,144	3,080	1	1	62
Option 1	3,458 ↑ (10%)	3,388 ↑ (10%)	1	1	68 ↑ (10%)
Option 2	3,772 ↑ (20%)	3,696 ↑ (20%)	1	1	74 ↑ (20%)

4.2. Analysis

Section 13 – Varying the TAC (section 13 of the Act)

The TAC for LIN 7 is varied under section 13(4) of the Act which in this case requires you to have regard to the matters in section 13(2)(c) of the Act. This section applies to stocks whose current level is above that which can produce the maximum sustainable yield (B_{MSY}) and provides for the TAC to be altered in a way and at a rate that will result in the stock moving towards or above B_{MSY} , having regard to the interdependence of stocks.

The LIN 7 stock is estimated to be above B_{MSY} . Projections indicate that none of the proposed options are likely to reduce the stock below the management target or B_{MSY} in the medium term.

Fisheries New Zealand considers all options are consistent with section 13 of the Act and will result in the stock remaining above a level that can produce B_{MSY} .

Section 9 – Environmental Principles

The main fishing area for LIN 7 is the west coast of the South Island, where around 96% of LIN 7 catch is taken. A small amount of LIN 7 comes from Cook Strait (around 4% of total catch).

Around 56% of LIN 7 catch is currently taken as bycatch by large deepwater vessels (greater than 28 metres) using bottom and midwater trawl gear to target hoki and hake. If you reduce the hoki and hake (HAK 7) TACCs as is proposed in other sections of this paper, the amount of ling taken in this fishery is expected to decrease.

Currently around 46% of LIN 7 is caught by small bottom trawl and bottom longline vessels (under 28 metres). The majority of this catch (80%) is from bottom longline. Fisheries New Zealand considers that any increase in TACC is more likely to be taken by the small trawl and longline vessels, and has focused the assessment of environmental impacts on those fisheries.

Observer coverage on small vessels on the west coast of the South Island has historically been low, making it difficult to draw conclusions about the potential impacts of proposed TAC options.

Marine Mammals

The only marine mammal species known to be captured in ling fisheries is the New Zealand fur seal, which is currently classified as 'not threatened' in the Department of Conservation Threat Classification Scheme.

Fur seals are rarely captured in bottom longline fisheries (no fur seal has ever been observed captured in bottom longline fisheries on the west coast of the South Island). Captures generally occur during the hauling of the line. Observers have noted that fur seals are likely to survive the capture event if it occurs at hauling.

Trawl fisheries, including those for ling, are known to interact with fur seals relatively regularly (average observed capture rate of 4.4 fur seals per 100 tows in the last three years). However, the Fisheries New Zealand marine mammal risk assessment estimated the risk to the New Zealand fur seal population across all New Zealand fisheries to be low.

Our Seas Our Future consider that low capture rates of fur seals is due to low observer coverage. Fisheries New Zealand will continue to monitor marine mammal interactions and is progressing work to better estimate risk from fisheries to marine mammal species, including fur seals.

Forest & Bird do not support any increase in targeted ling inshore trawl effort in areas where Hector's or Maui dolphins are known to forage until the new Threat Management Plan is implemented. Forest & Bird support 100% observer coverage of inshore trawl effort. However, the risk to Hector's dolphin from commercial fishing on the west coast of the South Island has recently been assessed as very low.

Seabirds

The ling bottom longline fishery in LIN 7 is estimated to have captured an average of 40 seabirds per year over the last five years. Based on observed captures, the main species captured by the ling bottom longline fishery in LIN 7 was white-chinned petrel, which are assessed as being at low risk from all fishing in New Zealand.

The ling trawl fisheries in LIN 7 are estimated to have captured an average of 4 seabirds per year over the last five years. Based on observed captures, the main species captured by the ling trawl fisheries is white-capped albatross. White-capped albatross are listed by the IUCN¹⁹ as 'Near Threatened' and by the Department of Conservation as 'At Risk.' They are assessed as being at medium risk from New Zealand fisheries. The estimated risk from ling trawl fisheries in LIN 7 to white-capped albatross is assessed to be negligible.

Our Seas Our Future consider that the recorded low capture rate of seabirds in LIN 7 is due to observer coverage being low. However, the spatially explicit fisheries risk assessment for seabirds is not reliant on high observer coverage. It estimates risk by employing information on seabird distributions and behaviour with the capture rates from fishing gear types and effort. The rate of seabird captures will continue to be carefully monitored to assess risk. Seabird mitigation measures must be deployed on trawlers larger than 28 metres and bottom longline vessels larger than 7 metres when fishing gear is in use.

Benthic Effects

ECO is concerned that an increase in the LIN 7 TAC/TACC will increase benthic impacts of bottom trawl fishing because there is no strategy in place to avoid, remedy or mitigate the impacts of bottom fishing. They note that habitats of particular significance for fisheries management have not been identified.

Overall the proposed increase in LIN 7 catch limit is not considered likely to result in additional impact on the benthic environment, primarily because any increase in effort is expected to be in bottom longline fisheries which have very small impact on the benthic environment. However, the footprint of the trawl fisheries will continue to be mapped and monitored annually to assess if new areas are being impacted.

¹⁹ The International Union for Conservation

Section 11

Ling in LIN 7 are managed as a Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan) approved under Section 11A of the Act. A species-specific chapter of the National Deepwater Plan for ling (Part 1B) was completed in 2012. Fisheries New Zealand considers all proposed options are consistent with the management objectives of the National Deepwater Plan.

No other plans, strategies or statements are relevant to LIN 7.

Kaitiakitanga

Ling is identified as a taonga species in Te Tai Hauāuru Iwi Forum Fisheries Plan which covers the North Island portion of LIN 7. This Fisheries Plan has the following high level management outcomes:

- Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit;
- The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use; and
- Commercial fisheries are sustainable and support the economic wellbeing of Te Taihauāuru Iwi; ACE values for core commercial stocks are stable or increasing.

The proposals in this paper are likely to support the objectives identified by Te Tai Hauāuru Iwi.

At the Te Waka a Māui me Ōna Toka forum meeting it was proposed that the customary Māori allowance be increased to two tonnes in recognition of the pātaka recently established in Fisheries Management Area 7. The pātaka provides for customary fishing authorisations to be exercised on a commercial vessel.

4.3. Current setting – Status quo

Maintaining the status quo for LIN 7 was supported by ECO, RNZSPCA and Our Seas Our Future. They do not support any increase in the LIN 7 TAC/TACC for environmental reasons (as covered above), and because of the uncertainties identified in the 2017 LIN 7 stock assessment. They consider that there is no justification for an increase in LIN 7 TAC or TACC if the ling population is stable at current settings.

Fisheries New Zealand note that the LIN 7 fishstock is assessed to be well above the management target and not likely to decline below it in the short term under either of the proposed options to increase the TAC.

4.4. Option 1 (recommended)

Option 1 is to increase the LIN 7 TAC by 10% to 3,458 tonnes and the TACC by 10% to 3,388 tonnes. The customary Māori and recreational allowance is unchanged and the allowance for other sources of fishing related mortality would remain at 2% of the TACC, which would equal 68 tonnes.

The 2017 LIN 7 stock assessment was used to project biomass out to 2022 with catch levels equal to Option 1. These projections indicate that ling biomass would be likely to remain about the same if there were a 10% increase in catch.

The TACC increase under Option 1 would set the TACC at a level almost equivalent to current catch (average of 3,362 tonnes over five years). It is unlikely to result in significant additional revenue to New Zealand, but will allow for the catch to be taken without incurring deemed value charges, which were around \$1.7 million in the 2017/18 fishing year.

Te Waka a Māui support this option because a conservative increase is the forum's preference. Forest & Bird support this option but have concerns regarding the interdependence of ling in LIN 7 with other stocks. They note that half of the total catch of LIN 7 is taken in the West Coast South Island hake and hoki fisheries which will likely have TAC reductions in the current sustainability round. If targeted ling bottom trawling increases as a result of a LIN 7 TAC increase, Forest & Bird are concerned that these tows will also catch hoki and hake.

Hoki and hake are very rarely caught in bottom longline fisheries, and Fisheries New Zealand does not consider that any increase in the LIN 7 TAC and TACC would increase take of hoki or hake in the area.

Option 1 is Fisheries New Zealand's preferred option because it is very similar to current catch levels over the last five fishing years and, while it recognises the increased catch opportunity currently being realised in the fishery, it is unlikely to result in an increase in the effects of fishing on the aquatic environment.

At the Te Waka a Māui me Ōna Toka forum meeting it was proposed that the customary Māori allowance be increased to two tonnes in recognition of the pātaka recently established in Fisheries Management Area 7. The pātaka provides for customary fishing authorisations to be exercised on a commercial vessel. Ling is one of the species that are likely to be taken for customary purposes. As a result, the customary take is likely to increase.

Fisheries New Zealand therefore proposes that Option 1 and Option 2 are modified by doubling the customary Māori allowance to two tonnes and reducing the TACC by one tonne. For Option 1 the TACC would reduce from 3,388 tonnes to 3,387 tonnes.

4.5. Option 2

Option 2 is to increase the LIN 7 TAC by 20% to 3,772 tonnes and the TACC by 20% to 3,696 tonnes. The customary Māori and recreational allowance is unchanged and the allowance for other sources of fishing related mortality increases to 74 tonnes.

Based on \$9.80 per kilogram for dressed frozen fillets, the additional catch available under Option 2 would result in an estimated \$2.24 million additional export earnings per annum. Similar to Option 1, it would also remove the deemed value charges currently incurred for catch over the TACC.

Deepwater Group, Sealord and Iwi Collective Partnership support Option 2. Deepwater Group note the best available science and current catches indicate the stock can sustain an increase in the TACC and their shareholders remain committed to minimising and managing interactions with other species. Deepwater Group request that observer coverage of LIN 7 is increased to support its management. Sealord note the LIN 7 fishery is in strong health and that ling is caught as bycatch in the West Coast South Island hoki fishery therefore effort and catch are unlikely to increase as a result of this proposal.

We note the more cautious approach suggested by Te Ohu Kaimoana which is in principle supportive of a 20% increase under this option, if industry can put in place a shelving mechanism to manage the increase. It notes that increasing the TACC by 20% with half of the increase shelved would give industry flexibility to manage the fishery into the future without consuming Fisheries New Zealand resources.

The 2017 LIN 7 stock assessment was used to project biomass out to 2022 based on current catch. These projections were not based on particular levels of catch increase, but do suggest an increased catch is possible. There is a greater level of risk associated with a 20% increase in catch. The next stock assessment of LIN 7 will take place in 2020, and will provide an updated assessment of biomass. Projections of stock status can be assessed under varied catch scenarios at that time. The impacts of any future increase would be available with more certainty. For this reason, we favour the more conservative approach in Option 1.

At the Te Waka a Māui me Ōna Toka forum meeting it was proposed that the customary Māori allowance be increased to two tonnes in recognition of the pātaka recently established in Fisheries Management Area 7. Fisheries New Zealand therefore proposes that Option 2 is modified by doubling the customary Māori allowance to two tonnes and reducing the TACC by one tonne. For Option 2 the TACC would reduce from 3,696 tonnes to 3,695 tonnes.

5. Decision

Option 1 (Fisheries New Zealand preferred)

Agree to increase the LIN 7 TAC from 3,144 to 3,458 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 1 to 2 tonnes;
- ii. Retain the one tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 62 to 68 tonnes;
- iv. Increase the LIN 7 TACC from 3,080 to 3,387 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the LIN 7 TAC from 3,144 to 3,772 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 1 to 2 tonnes;
- ii. Retain the one tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 62 to 74 tonnes;
- iv. Increase the LIN 7 TACC from 3,080 to 3,695 tonnes.

Agreed / Agreed as Amended / **Not Agreed**



Hon Stuart Nash
Minister of Fisheries

04/09/2019

Orange roughy (ORH 3B) East coast South Island

(*Hoplostethus atlanticus*; *nihorota*)

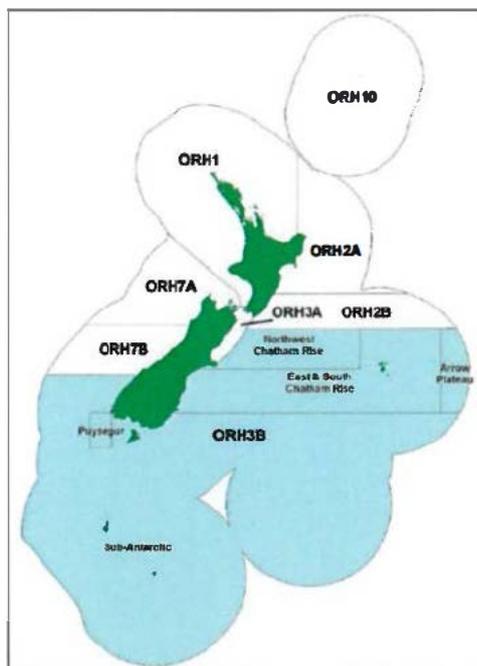


Figure 18: ORH 3B and the sub-areas

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC), allowances, and non-regulatory catch limits for ORH 3B are shown in Table 34. Sub-areas are a voluntary subdivision of a quota management area that industry and the Minister have agreed upon; these are shown in Figure 18. The sub-area catch limits for orange roughy in ORH 3B are shown in Table 35. These settings have been in place since the start of the 2018/19 fishing year.

Table 34: Existing TAC, TACC, allowances and non-regulatory catch limits (tonnes) for ORH 3B

Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
		Customary Māori	Recreational	All other mortality to the stock caused by fishing
6,413	6,091	5	0	317

Table 35: Sub-area catch limits (tonnes) for ORH 3B

Northwest Chatham Rise	1,150
East & South Chatham Rise	4,095
Puysegur	347
Arrow Plateau	0
Sub-Antarctic	500

2. Why are we proposing that you vary the TAC and TAAC?

In 2018, you agreed to a three-year staged increase of the ORH 3B TAC and TACC based on a stock assessment that indicated the biomass was within the management target range for the stock, and an opportunity to increase catch 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 your decisions in 2018.

Staging the potential TAC/TACC increase that was identified in 2018 over three years is a cautious approach to management, in that the anticipated increase in year three could be cancelled or deferred should any information become available that the TAC/TACC increase is having an adverse impact on the orange roughy stock or associated and dependent species. There is no information to suggest that there is any issue at this time.

2.1. State of the stock

For East and South Chatham Rise, 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 19).

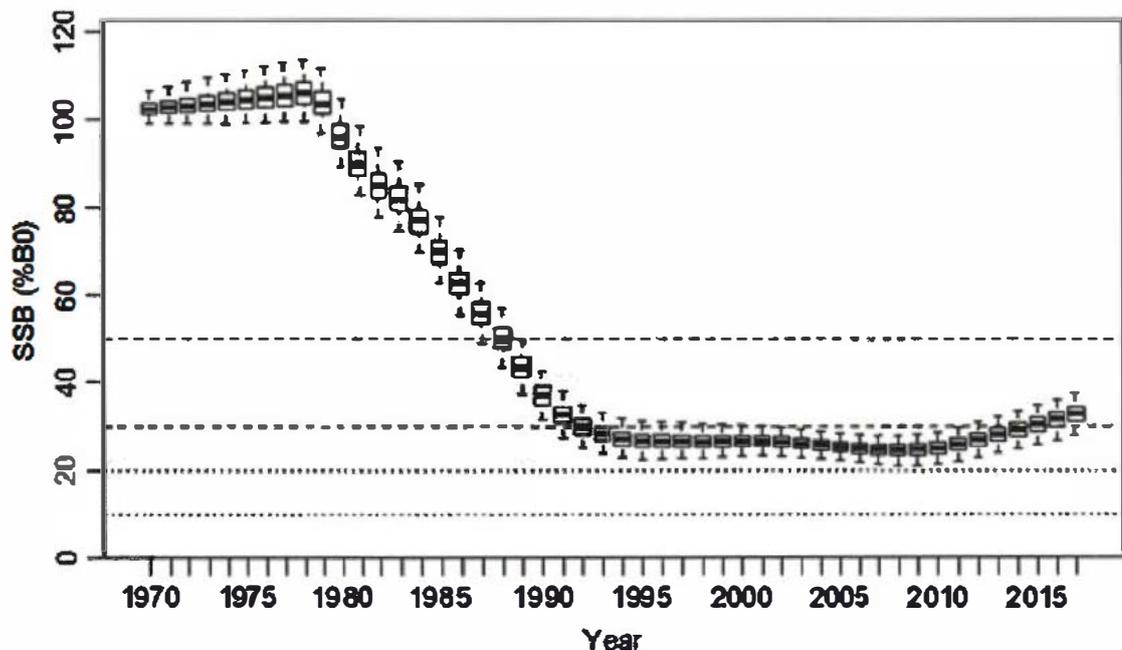


Figure 19: East and South Chatham Rise estimated spawning stock biomass trajectory. Dotted lines indicate the hard limit (10% B_0) and the soft limit (20% B_0), and the dashed lines the biomass target range (30-50% B_0)

2.2. Information source and quality

Orange roughy in ORH 3B is assessed using a full quantitative stock assessment. The main data inputs (which are all ranked as high quality) are acoustic survey indices for a number of aggregations, and age composition data.

3. Responses and submissions

There were nine responses or submissions specific to ORH 3B:

- Deepwater Group Ltd
- Deep Sea Conservation Coalition
- ECO
- Greenpeace New Zealand
- Iwi Collective Partnership
- Royal Forest & Bird Protection Society of New Zealand (Forest & Bird)
- Royal Society for the Prevention of Cruelty to Animals (RNZSPCA)
- Sealord Group Ltd
- Te Ohu Kaimoana

In addition, input was received from Te Waka a Māui me Ōna Toka, which represents the nine South Island iwi.

4. Allowances for varying the TACC

4.1. Māori customary interests

No information was received as a result of the consultation process indicating that provision should be made for additional customary catch. Fisheries New Zealand recommends retaining the current Māori customary allowance of five tonnes.

4.2. Recreational interests

No information was received as a result of the consultation process indicating that provision should be made for recreational catch. Fisheries New Zealand recommends retaining the current zero recreational allowance.

4.3. All other mortality caused by fishing

An allowance for other sources of mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing activity. This includes fish that escape through trawl net mesh and subsequently die from injuries, accidental loss from lost or ripped trawl net cod-ends, predation, and illegal take.

For ORH 3B, this allowance is currently set at 5% of the TAC. In the absence of further information on this subject, Fisheries New Zealand recommends this allowance continues to be set at around 5% of the TACC.

5. Options and analysis for sustainability measures

5.1. Option

A single option is proposed by Fisheries New Zealand, based upon your decision last year to implement a phased increase in the TAC:

- 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 allowance for customary Māori take (5 tonnes);
- retain current allowance for recreational fishing (0 tonnes); and
- apply all of the catch increase to the East and South Chatham Rise.

5.2. Analysis

5.3. Section 13 – Varying the TAC

The TAC for ORH 3B is varied under section 13(4) of the Act, which in this case requires you to have regard to the matters in section 13(2)(c) of the Act. This provision indicates that the TAC should be set at a level that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield (B_{MSY}) to be altered in a way and at a rate that will result in the stock moving towards or above B_{MSY} , having regards to the interdependence of stocks.

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. The most commonly caught deepwater shark species when targeting orange roughy is shovel nosed dogfish. It is estimated that the proposed orange roughy TACC increase may lead to an increase of approximately 4 tonnes of shovel nosed dogfish caught.

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.

Section 13(3) requires you to have regard to social, cultural and economic factors you consider to be relevant, when considering the way and rate at which the ORH 3B stock should be moved to a level that will support B_{MSY} . 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 FOB²⁰ exports of NZ\$ 8.26 million per annum.

Orange roughy abundance in East and South Chatham Rise was estimated to be increasing in 2018. 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 bound of the management target range of 30% of B_0 in 2018. Projections from the stock assessment show the median orange roughy biomass for East and South Chatham Rise increasing each year for the next five years, to 37% of B_0 by 2023 under the proposed increased catch limit.

Deep Sea Conservation Coalition, Forest & Bird and ECO consider that the ORH 3B TAC/TACC should not be increased, noting that the current biomass for East and South Chatham Rise (33% B_0) is near the bottom end of the target range (30-50% B_0).

²⁰ Export value based on price per kg of whole orange roughy exported to China in 2018 of \$7.65 - FOB: 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.

Te Ohu Kaimoana, Iwi Collective Partnership, Sealord Group Ltd and Deepwater Group support Option 1 on the basis that the stock assessment results and application of Harvest Control Rules indicate the East & South Chatham Rise sub-stock can sustain an increase in catch.

The stock trajectory has shown a clear upward trend over the last nine years, and increasing the TAC/TACC as proposed is unlikely to reduce the stock below the management target range or B_{MSY} . Based on the projections from the stock assessment detailed above, the requirements of s 13(2)(c) of the Act would be met under the proposed option.

5.4. Section 9 - Environmental Principles

Fisheries New Zealand considers the proposed increase in the TACC will have negligible impact on marine mammals and seabirds, due to very low capture rates of these species in orange roughy fisheries.

Orange roughy is fished using bottom trawl gear, which is known to impact on the benthic environment including sessile sponge, coral and bryozoan communities.

Environmental Non-government Organisations (eNGO) including Deep Sea Conservation Coalition, Forest & Bird and Greenpeace call for an end to bottom trawling on seamounts and other underwater features. Furthermore, eNGOs note that New Zealand hasn't defined habitats of significance for fisheries management and express concern over destruction of deepwater corals, sponges and other habitat-forming deepwater organisms, noting that they form crucial ecosystems that are biodiversity hotspots with high levels of endemism. The Deepwater Group note their shareholders' ongoing commitment to minimise and manage interactions with non-target and bycatch species.

Over the last 25 years, 8% of New Zealand's EEZ has been trawled, and there is very little new area trawled each year. Between 2008 and 2017, the trawl footprint covered just under 5,000 km² or 11% of the East and South Chatham Rise area.

Research completed in 2015 by NIWA indicates that underwater features that have been heavily fished still contain diverse assemblages of corals and other epibenthic fauna and no difference in species numbers or community structures in coral-dominated features within or outside of protected areas has been observed. This suggests that coral diversity continues to be maintained on fished features, as most are fished only on established tow lines.

Analysis carried out in 2015 explored the predicted overlap of the ORH 3B East & South Chatham Rise fishery and three key coral species. The analysis estimated that for the years from 2009 to 2013, the fishery overlapped with 22% of the predicted distribution of black corals, 4% of the predicted distribution of gorgonian corals, and 9% of the predicted distribution of stony corals.

A similar analysis predicted that around 20% of black corals, 14% of gorgonian corals, and 7% of stony corals in East and South Chatham Rise were in areas that are closed to bottom fishing, and that throughout the EEZ, 27% of black corals, 13% of gorgonian corals, and 21% of stony corals are in areas that are closed to bottom trawling.

The research cited by stakeholders (Clark et. al 2019), which indicated very little recovery of some coral species after 15 years, was part-funded by Fisheries New Zealand and supports the current management approach, which is to ensure that sufficient representative areas of pristine habitat are closed to fishing.

Fisheries New Zealand agrees that an increase in catch limits for the ORH 3B fishery may increase effort, however it does not necessarily follow there will be a significant, or any, increased trawl footprint, and therefore increased benthic impacts outside of previously trawled areas. Fisheries New Zealand considers the proposed option is consistent with s 9 of the Act.

5.5. Section 11 - Sustainability Measures

Orange roughy in ORH 3B are managed within the National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019 – Part 1A (National Deepwater Plan) approved under Section 11A of the Act. Fisheries New Zealand considers the proposed option is consistent with the management objectives of the National Deepwater Plan. No other plans, strategies or statements are relevant to orange roughy in ORH 3B.

5.6. Kaitiakitanga

Orange roughy is listed as a taonga species in Te Waipounamu Iwi Fisheries Plan which covers all of the South Island. In addition, Te Waka a Māui me Ōna Toka Iwi Forum consider all fish species taonga. 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 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whanau.

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.

Fisheries New Zealand considers the proposal meets those objectives in developing responsible, productive, sustainable and culturally appropriate commercial fisheries.

Input and participation of tangata whenua

The proposal to increase the ORH 3B TAC was discussed at the Te Waka a Māui me Ōna Toka Forum hui held in Nelson on 9 July. The Forum proposed that the customary allowance should be maintained to provide for customary access, noted that evidence of orange roughy has been found in middens along the Marlborough Sounds coast, and expressed doubts about the results of the stock assessment given the biology of the species. They did not support any catch increases for ORH 3B.

6. Decision: Orange roughy (ORH 3B: East coast South Island)

Option 1

Agree to increase the ORH 3B TAC from 6413 to 7116 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of mortality to the stock caused by fishing from 317 to 339 tonnes;
- iv. Increase the ORH 3B TACC from 6091 to 6772 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Note Fisheries New Zealand expects that quota owners will implement the following sub-area catch limits within the TACC of 6772 tonnes and will monitor to ensure this is the case:

- a) Northwest Chatham Rise sub-area catch limit of 1150 tonnes;
- b) East and South Chatham Rise sub-area catch limit of 4775 tonnes;
- c) Puysegur sub-area catch limit of 347 tonnes;
- d) Arrow Plateau sub-area catch limit of 0 tonnes; and
- e) Sub-Antarctic sub-area catch limit of 500 tonnes.

Noted

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

10 / 09 / 2019

Orange roughy Challenger Plateau (ORH 7A + Westpac Bank) West Coast South Island

(*Hoplostethus atlanticus*; *nihorata*)

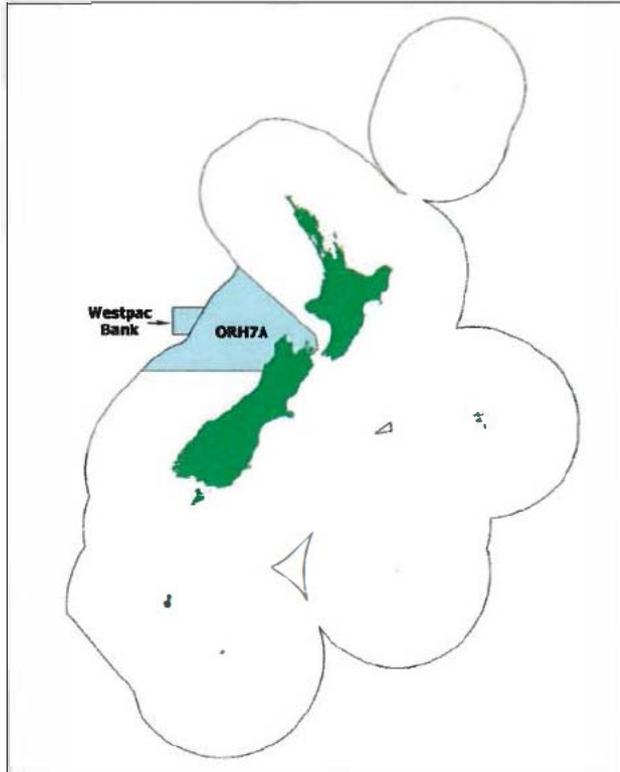


Figure 20: Quota Management Area for ORH 7A and Westpac Bank Area on the high seas

1. Current TAC, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for orange roughy in ORH 7A are shown in Table 36. These settings have been in place since the start of the 2017/18 fishing year.

Table 36: Current TAC, TACC and allowances (tonnes) for ORH 7A

TAC (tonnes)	TACC (tonnes)	Customary Non-Commercial (tonnes)	Recreational (tonnes)	Other Sources of Fishing Mortality (tonnes)
1,680	1,600	0	0	80

The South Pacific Regional Fisheries Management Organisation (SPRFMO) has set a catch limit for New Zealand in the Westpac Bank Area of 190 tonnes for the 2019 calendar year. SPRFMO has set a 10 tonne catch limit for Australia for the Westpac Bank Area.

Catch taken from the Westpac Bank Area is required to be counted against ORH 7A Annual Catch Entitlement (ACE) as a condition of high seas permits, and therefore is accounted for within the ORH 7A TACC. New Zealand fishers may take all of their ACE within the New Zealand exclusive economic zone (EEZ), but collectively only 190 tonnes total may be taken from the Westpac Bank Area. This ensures that no more than the total TACC is taken, regardless of where the fishing takes place in relation to the Challenger Plateau stock.

2. Why are we proposing that you vary the TAC and TACC?

2.1. State of the stock

The 2019 stock assessment for ORH 7A estimated the stock is at 47% of unfished biomass (B_0), which is above the mid-point of the management target range and above the biomass that will support maximum sustainable yield (B_{MSY}) for both the soft limit (20% B_0) and hard limit (10% B_0) (Figure 21, below).

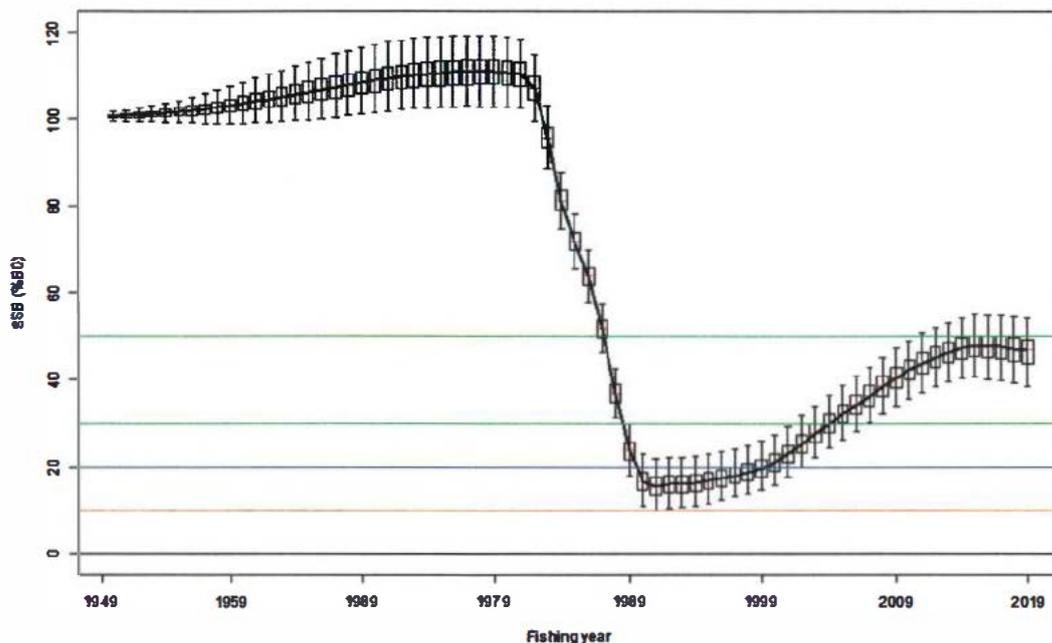


Figure 21: Estimated spawning stock biomass trajectory. The hard limit 10% B_0 (red), soft limit 20% B_0 (blue) and biomass target range 30–50% B_0 (green) are marked by horizontal lines.

The status of the stock is near the upper end of the management target range. The harvest control rule to indicate sustainable yields shows that there is an opportunity to increase the catch limit for this stock.

2.2. Information source and quality

The ORH 7A stock assessment is a full quantitative stock assessment. The main data inputs to the model are acoustic survey indices for a number of aggregations, two trawl survey time series, age frequencies from trawl surveys, and age frequencies from commercial fisheries from some areas.

3. Relevant international obligations

Challenger Plateau orange roughy is a straddling stock, which means that the biological stock extends across the boundary of New Zealand's EEZ and onto the High Seas in the area known as Westpac Bank.

The Westpac Bank portion of the stock falls within the jurisdiction of SPRFMO, which has a mandate to manage fisheries resources listed, including orange roughy fisheries, within the SPRFMO Convention area (on the High Seas).

All vessels fishing in the Westpac Bank Area must comply with the SPRFMO Bottom Fishing Conservation and Management Measure. The measure closes over 98% of the SPRFMO Convention Area to bottom fishing and allows fishing only in limited areas specifically designed to avoid significant adverse impacts on vulnerable marine ecosystems. The measure also includes an 'encounter protocol' which closes a given tow path to fishing if benthic organism bycatch thresholds are reached.

For straddling fish stocks, article 7 of the United Nations Fish Stocks Agreement 1995, and article 4 of the SPRFMO Convention require that conservation and management measures established for the high seas and those adopted for areas under national jurisdiction are compatible in order to ensure conservation and management of straddling fishery resources in their entirety.

4. Responses and submissions

We received ten submissions and responses related to the proposed catch limits for ORH 7A from:

- Deep Sea Conservation Coalition
- Deepwater Group Ltd
- Environment and Conservation Organisations of NZ (ECO)
- Greenpeace New Zealand
- Iwi Collective Partnership
- Our Seas Our Future
- Royal Forest and Bird Protection Society of New Zealand (Forest & Bird)
- Royal New Zealand Society for the Prevention of Cruelty to Animals
- Sealord Group Ltd
- Te Ohu Kaimoana

Input was also received through Te Waka a Māui iwi fisheries forum.

Four submitters and responders supported Option 2 below, two of those also proposed that the customary allowance be increased to two tonnes.

Six submissions did not support any increase in the TAC or TACC. These submitters consider that the impacts from bottom trawling are not sufficiently managed in New Zealand, and that bottom trawling should be banned from all seamounts in New Zealand.

5. Allowances for setting TACC

5.1. Māori customary interests

There was no proposal to change the existing customary Māori allowance of zero tonnes, and no written submissions were received on this allowance.

In setting an allowance you should consider whether the allowance could reasonably be taken, so as to avoid a potential overcatch of the TAC. The 26 iwi of the South Island and the west coast of the North Island from Kāpiti to North Taranaki have established, with Sealord Products Limited, a pātaka where fish is taken for customary purposes on the company's commercial vessels and stored for later use for hui or tangi. Consequently, the iwi have indicated that they will be placing permits on vessels in the ORH 7A fishery for customary purposes.

The Iwi Collective Partnership, Te Ohu Kaimoana, and Te Waka a Māui iwi fisheries forum consider that the customary allowance for ORH 7A should be increased to two tonnes in acknowledgement of the pātaka system. They consider this system will create more opportunities for the customary take of commercially harvested species including orange roughy in ORH 7A.

There is no information or record of any customary catch currently being taken from ORH 7A. Although we made no specific proposal to increase the allowance for Māori customary fishing as part of our 2019 consultation, the recent approval of the pātaka, which allows for take of deepwater species for customary purposes in Fisheries Management Area 7, provides both a rationale and a clear avenue for a modest customary take allowance in ORH 7A. Therefore, Fisheries New Zealand recommends that you consider increasing the customary allowance to 2 tonnes to ensure that customary take is provided for within the TAC.

5.2. Recreational interests

There is no information to suggest a change is required to the current nil allowance.

5.3. All other mortality caused by fishing

There is no information to suggest a change is required to the current allowance for other mortality caused by fishing of 5% of the TACC, therefore all options retain this setting.

6. Options and analysis for sustainability measures

6.1. Options

The options presented in the consultation document are shown in Table 37.

Table 37: Proposed TACs, TACC and Allowances in tonnes for ORH 7A from 1 October 2019.

Option	Total Allowable Catch (tonnes)	Total Allowable Commercial Catch (tonnes)	Allowances		
			Customary Māori (tonnes)	Recreational (tonnes)	All other mortality to the stock caused by fishing (tonnes)
Option 1 (Status quo)	1680	1600	0	0	80
Option 2	2163 ↑ (29%)	2060 ↑ (29%)	0	0	103 ↑ (29%)
Option 3	2310 ↑ (38%)	2200 ↑ (38%)	0	0	110 ↑ (38%)
Option 4	2555 ↑ (52%)	2433 ↑ (52%)	0	0	122 ↑ (52%)

6.2. Analysis

Section 5

The primary international obligations in relation to management of the ORH 7A stock is compatibility with SPRFMO. Compatibility does not require New Zealand to take identical measures to those adopted by SPRFMO. It does require that New Zealand's measures must not undermine the effectiveness of those adopted by SPRFMO.

The options for TAC and TACC take into account the expectation that the SPRFMO Commission may adopt an updated catch limit for the Westpac Bank Area given the updated stock assessment, and this possibility needs to be accounted for within the sustainable yield estimate for the stock.

Fisheries New Zealand considers all options are consistent with international obligations relating to the management of the ORH 7A fishstock.

Section 13 – Varying the TACC

The TAC for ORH 7A is varied under section 13(4) of the Act, which in this case requires you to have regard to the matters in section 13(2)(c) of the Act. This provision indicates that the TAC should be set at a level that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield (B_{MSY}) to be altered in a way and at a rate that will result in the stock moving towards or above B_{MSY} , having regards to the interdependence of stocks.

The ORH 7A stock is estimated to be well above B_{MSY} and above the mid-point of the management target range. None of the proposed options are estimated to reduce the stock below the management target range or B_{MSY} in the medium term. Therefore, Fisheries New Zealand considers all options are consistent with section 13 of the Act and will result in the stock remaining above a level that can produce B_{MSY} .

Section 9 – Environmental Principles

The ORH 7A fishery has negligible interactions with marine mammals and seabirds. In the last five years, 94% of the catch in the fishery has been orange roughy. Key bycatch species include deepwater sharks, which have made up less than 2% of the catch. Catch of sharks is managed through the National Plan of Action for Sharks, and Fisheries New Zealand has a comprehensive work programme on deepwater sharks to ensure that fishing does not impact on their long-term viability.

Orange roughy is fished using bottom trawl gear, which is known to impact on the benthic environment.

In the New Zealand EEZ, the impacts of fishing on the benthic environment are primarily managed through the closure of the EEZ to bottom trawling through Seamount Closures (implemented in 2001), and Benthic Protected Areas (implemented in 2007), with over 30% closed.

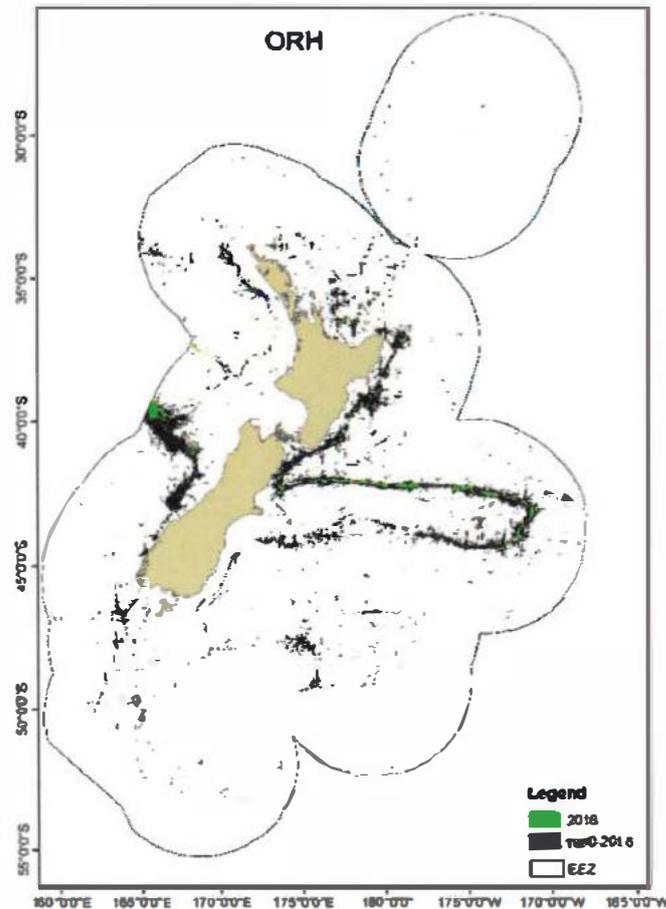


Figure 22: Estimated trawl footprint for orange roughy target fishing from 1990 to 2016, with the 2015-16 fishing year footprint in green

The New Zealand deepwater trawl footprint, measured from 1989/90 to 2015/16, is estimated to cover roughly 8% (335,812 km²) of the EEZ or 23.5% of the fishable area (shallower than 1600 metres and currently open to bottom trawling). The orange roughy fishery in ORH 7A is estimated to have contacted 3% (2,551 km²) of the seabed in the ORH 7A QMA within the New Zealand EEZ, and 0.5% (65 km²) of the Westpac Bank Area between 800-1600m depths from 2008-2017 (Figure 22). Note that the fishery was closed from 2000 to 2010, so this likely an underestimate of total historical contact in these areas. 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.

In the Westpac Bank Area, fishing vessels must comply with high seas fishing permits which implement the SPRFMO Bottom Fishing Conservation and Management Measure. The permit specifies where fishing may take place, and implements an 'encounter protocol', which closes a specified tow path to all bottom fishing if benthic organism bycatch thresholds are reached.

Submissions from Deep Sea Conservation Coalition, ECO, Forest & Bird, Greenpeace New Zealand, and RRNZSPCA referenced petitions begun in May 2019 by LegaSea and environmental groups and repeated their call for the government to protect all seamounts and similar deep-sea features from bottom trawling. Key considerations provided in support of their submission are listed as follows, with FNZ's response:

A view that protection of 30% of the EEZ allows for the other 70% to be destroyed, even without establishing what is down there

Approximately 34% of the New Zealand EEZ is considered 'fishable', meaning it is shallower than 1,600 metres and open to fishing (ie, not within a Benthic Protection Area or other closure to bottom trawling). The total footprint of orange roughy fisheries in New Zealand is estimated to have contacted 2.4% of the fishable area from 1990 to 2016. The fact that 70% of the New Zealand EEZ is open to bottom trawling does not mean that it is or will be fished.

A view that there is an extinction crisis, noting that the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) warned that around one million species face extinction

Fisheries New Zealand notes that the IPBES report is much broader than the marine environment and, while it notes that fishing has had an impact on marine biodiversity, most of the focus is on the effects of climate change, land use impacts on the marine environment, and an objective for additional marine protection areas to be developed.

An analysis carried out in 2015 explored the predicted overlap of the ORH 7A fishery and three key coral species. The analysis estimated that for the years from 2009 to 2013, the fishery overlapped with 1% of the predicted distribution of black corals, 2% of the predicted distribution of gorgonian corals, and 5% of the predicted distribution of stony corals.

A similar analysis estimated that around 20% of black corals, gorgonian corals, and stony corals in ORH 7A were in areas that are closed to bottom fishing, and that throughout the EEZ, 27% of black corals, 13% of gorgonian corals, and 21% of stony corals are in areas that are closed to bottom trawling.

Recent research shows little evidence of benthic community resilience to bottom trawling

Research completed in 2015 by NIWA indicates that underwater features that have been heavily fished still contain diverse assemblages of corals and other epibenthic fauna, and no difference in species numbers or community structures in coral-dominated features within or outside of protected areas has been observed. This suggests that coral diversity continues to be maintained on fished features, as most are fished only on established tow lines.

The research being cited by stakeholders (Clark et. al 2019)²¹, which indicated very little recovery of some coral species after 15 years, was part-funded by Fisheries New Zealand and supports the current management approach, which is to ensure that sufficient representative areas of pristine habitat are closed to fishing.

It is unacceptable for New Zealand to be allowing marine biological diversity in its EEZ to be destroyed through bottom trawling on seamounts.

²¹ Little Evidence of Benthic Community Resilience to Bottom Trawling on Seamounts After 15 Years: <https://www.frontiersin.org/articles/10.3389/fmars.2019.00063/full>

New Zealand's Fisheries Act, which is consistent with international obligations under the UN Convention on the Law of the Sea and other relevant agreements, has a purpose to provide for utilisation while ensuring sustainability. Sustainability is defined as avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment. This does not require that all impacts be avoided, only those that are judged to be adverse, for example, those which may seriously threaten the long term viability of a species or the overall biological diversity.

Fisheries New Zealand does not consider that the continuation of the ORH 7A fishery is likely to threaten the overall biological diversity of the aquatic environment, given the area closures and areas of the New Zealand EEZ that are not contacted by fishing.

New Zealand should strengthen measures required by SPRFMO and apply them within New Zealand waters.

The management measures agreed by the SPRFMO Commission are not within the scope of this decision, particularly the ORH 7A area which is not within the SPRFMO Convention Area. The submitters suggest that there is an obligation for New Zealand to apply the SPRFMO measures within our EEZ. The SPRFMO Convention requires that measures be compatible, and that measures implemented in New Zealand must not undermine the effectiveness of those adopted by SPRFMO. Compatibility does not require identical measures be adopted.

Fisheries New Zealand does not consider the measures within the EEZ, which include the closure of a number of seamounts and underwater features to bottom trawling, undermine the effectiveness of those applied in the SPRFMO Convention Area.

New Zealand has not conducted impact assessments of bottom trawling activity on the high seas, and that impact assessments should be undertaken within the EEZ before any bottom trawling occurs.

New Zealand submitted a Bottom Fishing Impact Assessment consistent with the requirements of SPRFMO in 2008. In addition, New Zealand and Australia completed a joint assessment of the impacts of bottom fishing in support of the new rules for managing bottom fishing in the SPRMFO Convention Area. Inside the New Zealand EEZ, there is no legislative obligation to complete an impact assessment. Fisheries New Zealand has a comprehensive research programme in place to ensure that the impacts of fishing on the benthic environment are appropriately managed.

Fisheries New Zealand considers all options are consistent with Section 9 of the Act.

Section 11

Orange roughy in ORH 7A are managed within the National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019 – Part 1A (National Deepwater Plan) approved under Section 11A of the Act. Fisheries New Zealand considers all proposed options are consistent with the management objectives of the National Deepwater Plan.

No other plans, strategies or statements are relevant to orange roughy in ORH 7A.

Kaitiakitanga

Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

Orange roughy is listed as a taonga species in Te Waipounamu Iwi Fisheries Plan, which covers all of the South Island. In addition, Te Waka a Māui me Ōna Toka Iwi Forum consider all fish species taonga. 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 7A:

Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau

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.

Fisheries New Zealand considers all options, with the addition of the 2 tonne customary allowance, meet those objectives in developing responsible, productive, sustainable and culturally appropriate commercial fisheries.

Input and participation of tangata whenua

The proposal to increase the ORH 7A TAC was discussed at Te Waka a Māui me Ōna Toka Forum hui held in Nelson on 9 July. The Forum proposed that the customary allowance should be increased to provide for customary access, noted that evidence of orange roughy has been found in middens along the Marlborough Sounds coast, and expressed doubts about the results of the stock assessment given the biology of the species.

6.3. Option 1 – Status quo

Option 1 is no change to the TAC (1680 tonnes) or TACC (1600 tonnes) for ORH 7A.

This option was supported by Deep Sea Conservation Coalition, ECO, Forest & Bird, Greenpeace NZ, Our Seas Our Future, and RRNZSPCA on the basis that bottom trawling has unacceptable impacts on the benthic environment.

Retaining the TAC and TACC at their current settings is projected to maintain the stock above the midpoint of the management target range for the next 8 years, estimating the stock will be at 43% in 2027. This would result in an annual average yield over the next 8 years of 1600 tonnes per year.

Option 1 does not make full use of the identified opportunity for a catch increase; the harvest control rule and projections indicate that additional fish could be taken without the stock status dropping below the bottom of the management target range.

This option would likely have the least environmental impact, as there would be no increase in fishing activity. However, there remains scope for fishing effort to move within the area.

A decision to maintain the status quo and forego the additional yield available within the EEZ in ORH7A would not limit the ability of the SPRFMO Scientific Committee to recommend, and Commission to agree, to increase the Westpac Bank Area catch limit to take advantage of the utilisation opportunity indicated by the stock assessment and harvest control rule.

6.4. Option 2 (recommended)

Option 2 is to increase the TAC from 1,680 tonnes to 2,163 tonnes, and the TACC from 1,600 tonnes to 2,060 tonnes. As consulted on, the nil customary Māori allowance would remain.

Option 2 was supported by Deepwater Group Ltd, Sealord Group Ltd, the Iwi Collective Partnership and Te Ohu Kaimoana, considering that a cautious approach is appropriate for 2019/20 given the history of this fishery.

Increasing the TAC and TACC to 2,163 tonnes and 2,060 tonnes respectively is expected to result in a slight decline in stock status, but to maintain it within the management target range for the next 8 years. It is estimated the stock status would be 40% B_0 in 2027. This would result in an annual average yield over the next 8 years of 2060 tonnes per year.

At the Te Waka a Māui me Ōna Toka forum meeting it was proposed that the Māori customary allowance be increased to two tonnes in recognition of the pātaka recently established in Fisheries Management Area 7. The pātaka provides for customary fishing authorisations to be exercised on a commercial vessel.

Although the 2 tonne Māori customary allowance would be deducted from the TACC, Fisheries New Zealand considers that the 2 tonne adjustment should not significantly impact the support for this option by submitters.

Fisheries New Zealand therefore proposes that Options 2, 3 and 4 are modified by increasing the customary Māori allowance to two tonnes and reducing the TACC by two tonnes. For Option 2 the TACC would be 2,058 tonnes instead of the 2,060 tonnes that we consulted on.

Option 2 increases the TACC by 458 tonnes, which could represent an additional FOB export value of \$3.5 million per year²² and an estimated \$21.8 million over the next 8 years.

The proposed TACC of 2,058 tonnes is less than 20% of what the peak catch in the fishery was, and is similar to catch levels in the early 1990s, when the footprint of the fishery was estimated to be around 27% larger than it was in 2016. Based on this, the footprint of the fishery may expand by up to 30%, but is unlikely to expand beyond areas that have previously been fished. Additionally, fishing is likely to be more targeted and better optimised than it was in the early 1990s, reducing the potential expansion of the fishery. In particular, it is not expected that fishing would expand onto any new underwater features or seamounts.

²² Export value based on price per kg of whole orange roughly exported to China in 2018 of \$7.65 - FOB: 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.

Option 2 represents the most conservative TAC and TACC increase, and would forego some opportunity for increased catch. It maintains the stock at a level similar to other options over the next 4 years, and has a very low risk of reducing the stock below the management target range in 2023.

6.5. Option 3

Option 3 would result in an increase in the TAC from 1,680 tonnes to 2,310 tonnes, and the TACC from 1,600 tonnes to 2,200 tonnes. As consulted on, the nil customary Māori allowance would remain.

No submissions were received in support of Option 3.

Increasing the TAC and TACC to 2,310 tonnes and 2,200 tonnes respectively is expected to result in a decline in stock status, but to maintain the stock within the management target range for the next 4 years, and for the next 8 years assuming the TAC and TACC are decreased by around 160 tonnes in 2023. It is estimated the stock status would be 43% B_0 in 2023, and 39% B_0 in 2027 if the TAC is decreased in 2023. This would result in an annual average yield over the next 8 years of 2119 tonnes per year.

Option 3 would represent an increase in catch of 600 tonnes per year for the next four years, representing an additional \$4.6 million annually in export values. If future TAC adjustments are based on the harvest control rule, the increase in average annual yield over the 8 years of 519 tonnes would represent an estimated \$31.7 million over the next 8 years.

This option would likely result in an increase in fishing effort in ORH 7A. Given the low fish bycatch rates and low interaction rates of orange roughy fishing with seabirds and marine mammals, Fisheries New Zealand does not expect this increase to have any adverse impact on seabirds, marine mammals, or other fish species.

To accommodate the two tonne increase in the customary Māori allowance, the TACC under Option 3 would be 2,198 tonnes instead of the 2,200 tonnes that we consulted on.

The proposed TACC of 2,198 tonnes is less than 20% of what the peak catch in the fishery was, but would represent the highest TACC and catch in the fishery since 1989/90. It is considered that the fishery is unlikely to expand beyond areas that have previously been fished, but may expand beyond those that have been fished in the last 15-20 years. This option is therefore considered likely to have some additional impact on the benthic environment. However, it is not expected that fishing would expand onto new underwater features or seamounts. This option is more likely to result in additional impacts on the benthic environment than option 1 or 2.

6.6. Option 4

Option 4 would result in an increase in the TAC from 1,680 tonnes to 2,555 tonnes, and the TACC from 1,600 tonnes to 2,433 tonnes. As consulted on, the nil customary Māori allowance would remain.

No submissions were received in support of Option 4.

Increasing the TAC and TACC to 2,555 tonnes and 2,433 tonnes respectively is expected to result in a decline in stock status, but to maintain it within the management target range for the next 4 years, and for the next 8 years assuming the TAC and TACC are reduced by around 500 tonnes in 2023. It is estimated that the stock status would be 42% B_0 in 2023, and 38% B_0 in 2027 if the TAC is reduced. This would result in an annual average yield over the next 8 years of 2194 tonnes per year.

Option 4 would represent an increase of 833 tonnes per year for the next four years, representing an additional \$6.5 million in export value per year. If the TAC is reduced in accordance with the harvest control rule in 2023, the average annual yield over the 8 years of 594 tonnes would represent a total estimated \$36.3 million over the next 8 years.

This option would result in an increase in fishing effort in ORH 7A. However, given the low fish bycatch rates and low interaction rates of orange roughy fishing with seabirds and marine mammals, Fisheries New Zealand does not expect this option to have any material additional impact on seabirds, marine mammals, or other fish species.

To accommodate the two tonne increase in the customary Māori allowance, the TACC under Option 4 would be 2,431 tonnes instead of the 2,433 tonnes that we consulted on.

The proposed TACC of 2,431 tonnes is around 20% of the peak catch in the fishery in the late 1980s. It is therefore considered unlikely that the fishery expand beyond areas that have previously been fished but may expand into areas not fished since before 1989/90. This option would have the highest likelihood of having additional impact on the benthic environment.

This option maximises the opportunity to increase catch, but also results in the lowest estimated stock status in 2023 of 42% B_0 and a 1% probability that the stock will decline below the lower bound of the management target range by 2023.

The next survey and stock assessment of ORH 7A is scheduled for 2023.

7. Decision: Orange roughy (ORH 7A + Westpac Bank: West Coast South Island)

Option 1 (status quo)

Agree to retain the ORH 7A TAC at 1680 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Retain the 80 tonne allowance for other sources of fishing-related mortality;
- iv. Retain the ORH 7A TACC at 1600 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand preferred)

Agree to increase the ORH 7A TAC from 1680 to 2163 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 2 tonnes;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 80 to 103 tonnes;
- iv. Increase the ORH 7A TACC from 1600 to 2058 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to increase the ORH 7A TAC from 1600 to 2310 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 2 tonnes;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 80 to 110 tonnes;
- iv. Increase the ORH 7A TACC from 1600 to 2198 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 4

Agree to increase the ORH 7A TAC from 1600 to 2555 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 2 tonnes;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 80 to 122 tonnes;
- iv. Increase the ORH 7A TACC from 1600 to 2431 tonnes.

Agreed / Agreed as Amended / Not Agreed

A handwritten signature in blue ink, appearing to read 'Stuart Nash'.

**Hon Stuart Nash
Minister of Fisheries**

11 / 09 / 2019

Gemfish (SKI 3 & SKI 7) Entire South Island and lower west coast North Island (Maka-Tikati) (*Rexea solandri*)

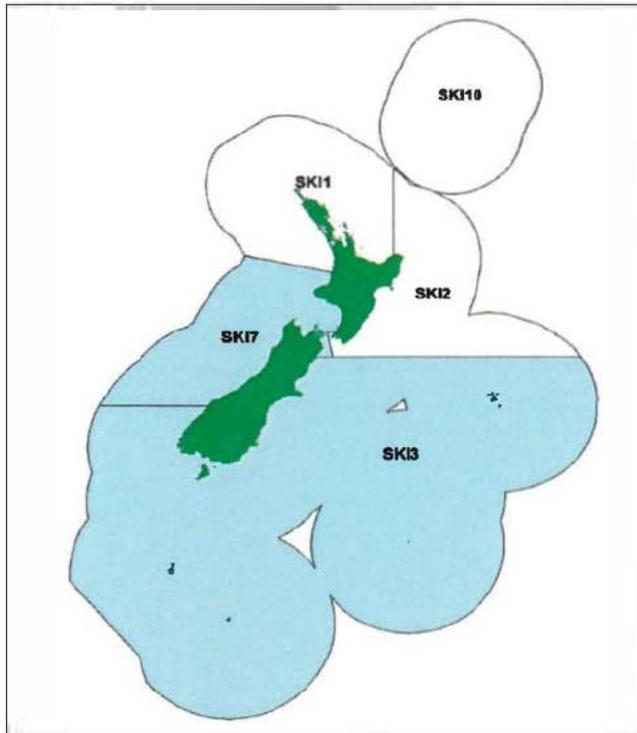


Figure 23: Quota management areas (QMAs) for gemfish (SKI), with SKI 3 and SKI 7 highlighted in blue

1. Current sustainability measures, TACC and allowances

The current total allowable catch (TAC), total allowable commercial catch (TACC) and allowances for gemfish in SKI 3 and SKI 7 are shown in Table 38. These settings have been in place since the start of the 1997/98 fishing year.

Table 38: TAC, TACC and allowances (in tonnes) for SKI 3 and SKI 7

Stock	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
SKI 3	300	300	0	0	0
SKI 7	300	300	0	0	0

2. Why are we proposing that you vary the TACs and TACCs?

2.1. State of the stock

A preliminary stock assessment of the southern gemfish biological unit, comprising SKI 3 and SKI 7, was conducted in 2019. The stock assessment was presented to, and evaluated by, the Fisheries New Zealand Science Deepwater Working Group. The Working Group concluded that the biomass of gemfish in both SKI 3 and SKI 7 has increased considerably during recent years due to above average recruitment (Figure 24).

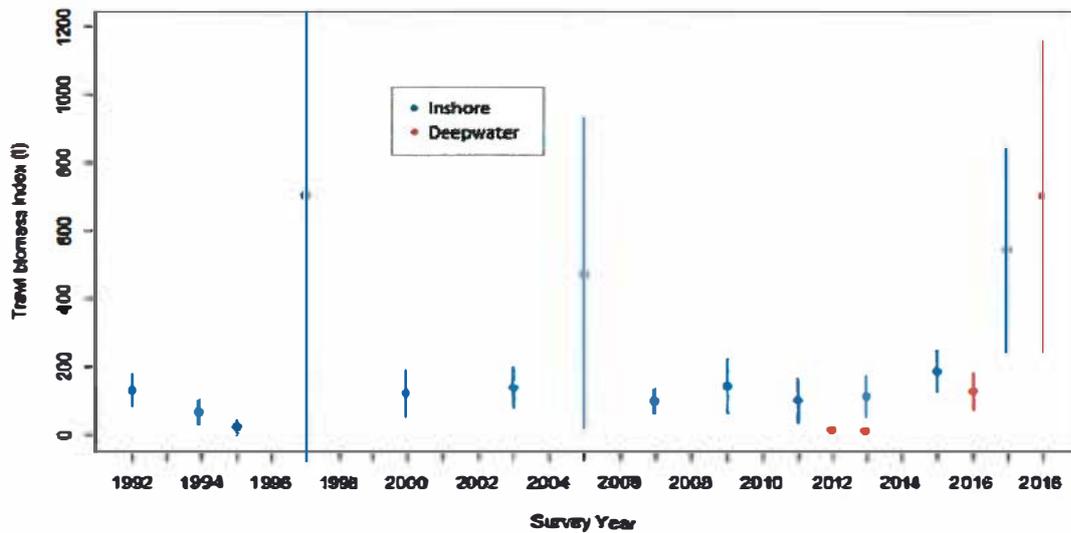


Figure 24: Relative gemfish biomass estimates from inshore and deepwater West Coast South Island trawl surveys between 1992 and 2018. Error bars represent uncertainty based on reported coefficient of variations (CVs)

As gemfish in SKI 3 and SKI 7 are almost entirely taken as bycatch, the increase in stock abundance has resulted in a considerable increase in catches from both stocks (Figure 25). As a result of catch in excess of the available annual catch entitlement (ACE), both stocks incurred substantial deemed value payments during the 2017/18 fishing year (\$263k and \$591k for SKI 3 and SKI 7 respectively).

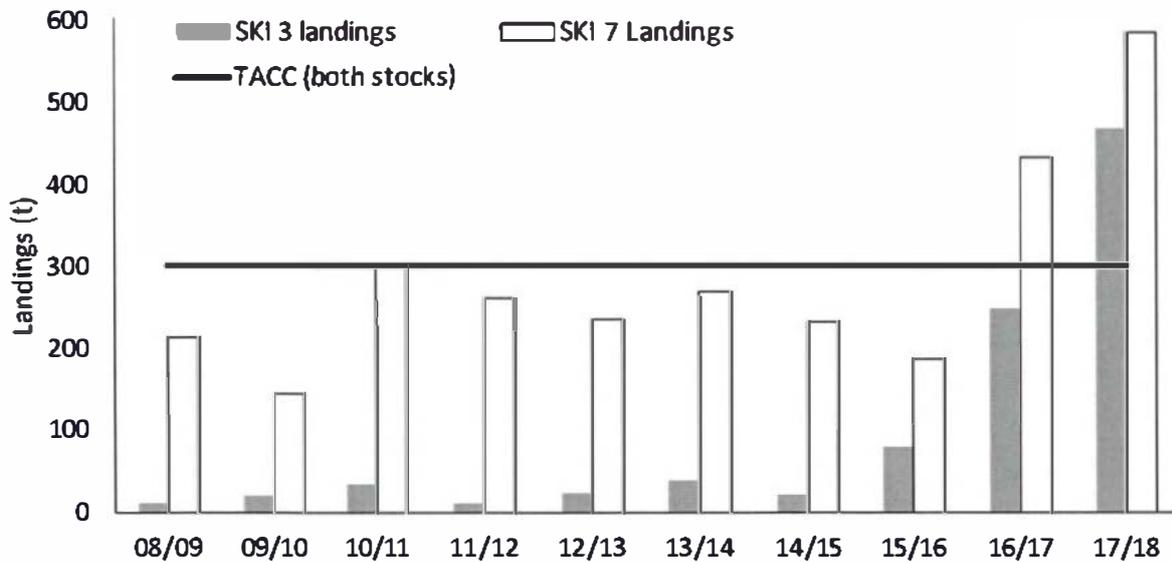


Figure 25: Landings of gemfish from SKI 3 and SKI 7 and the TACC between the 2008/09 and 2017/18 fishing years

Data from the current (2018/19) fishing year indicates that the trend of increasing SKI 3 catches has continued, with SKI 3 landings (as of June 2019) 24% higher than at the same time in 2017/18. As the majority of the SKI 7 catch is typically taken between June and September, at the time of consultation it was not possible to estimate the likely level of SKI 7 landings during the 2018/19 fishing year. As of the end of July 2019, estimated catches of gemfish from SKI 7 are slightly higher than at the same point last year.

Given recent strong recruitment, the Working Group estimated that stock size is likely to increase over the next 1-3 years and that future catches at 2017/18 levels are unlikely to result in a gemfish biomass reduction over the short term.

2.2. Information source and quality

The 2019 partially quantitative stock assessment represents the best available information on gemfish in SKI 3 and SKI 7. This assessment incorporates catch per unit effort (CPUE) indices, observer-derived length composition data, and fisheries-independent data sets from research trawl surveys.

Whilst accepted by the Working Group as meeting the Research and Science Information Standard for New Zealand Fisheries, the Working Group considered that the stock assessment was not sufficiently reliable to provide estimates of current biomass and/or stock status.

3. Submissions

Eight written submissions were received regarding the management settings of SKI 3 and SKI 7.

- Deepwater Group Ltd
- The Environment and Conservation Organisations of NZ (ECO)
- Iwi Collective Partnership
- Our Seas Our Future
- Royal New Zealand Society for the Prevention of Cruelty to Animals (RNZSPCA)
- Sealord
- Southern Inshore Fisheries Management Company Ltd
- Te Ohu Kaimoana.

Input was also received from Te Waka a Māui me Ōna Toka (Te Waka a Māui) iwi fisheries forum on the gemfish management proposals.

4. Allowances for setting TACC

4.1. Māori customary interests

SKI 3 and SKI 7 each currently have a 0 tonne Māori customary allowance.

Te Waka a Māui proposed the introduction of a one tonne customary allowance for both stocks to allow for the take of gemfish under a pātaka arrangement. The pātaka provides for customary fishing authorisations to be exercised on a commercial vessel. Gemfish is one of the species that are likely to be taken for customary purposes. As a result, the customary take is likely to increase.

Fisheries New Zealand therefore proposes that all options are modified by introducing a Māori customary allowance of one tonne. Fisheries New Zealand notes that this allowance does not limit the customary take but acknowledges the potential take and provides for it within the TAC.

4.2. Recreational interests

Both SKI 3 and SKI 7 currently have a 0 tonne recreational allowance. No information was received during consultation regarding the recreational take of gemfish in SKI 3 and SKI 7. Consequently, Fisheries New Zealand proposes the retention of a 0 tonne recreational allowances, noting that this does not preclude any recreational take.

4.3. All other mortality caused by fishing

For both stocks, Fisheries New Zealand proposes the introduction of an allowance for all other sources of mortality caused by fishing to account for unreported gemfish mortality (such as escape through trawl mesh). There is no information available to quantify all other mortality to the stock caused by fishing, so Fisheries New Zealand proposes setting this allowance at 1% of the TACC based on the allowance established for hake, which is a similar species.

5. Options and analysis for sustainability measures

5.1. Options

Fisheries New Zealand consulted on two options to vary settings for SKI 3, and one option to vary the settings for SKI 7 (Table 39).

Table 39 Proposed TACs, TACCs and allowances (in tonnes) for SKI 3 and SKI 7 from 1 October 2019, with the percentage change relative to the current settings in brackets

Stock	Option	Total Allowable Catch (TAC) (tonnes)	Total Allowable Commercial Catch (TACC) (tonnes)	Allowances (tonnes)		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
SKI3	Status quo	300	300	0	0	0
	Option 1	455 ↑ (52%)	449 ↑ (50%)	1*↑	0	5 ↑
	Option 2	606 ↑ (106%)	599 ↑ (100%)	1*↑	0	6 ↑
SKI 7	Status quo	300	300	0	0	0
	Option 1	606 ↑ (106%)	599 ↑ (100%)	1*↑	0	6 ↑

* Following consultation, for all options the Māori customary allowance is increased from 0 to 1 tonnes with the TACC reduced by 1 tonne.

5.2. Analysis

Setting the TAC (section 13)

In cases such as SKI 3 and SKI 7, where the current level of the stock is not able to be reliably estimated, section 13(2A) of the Act provides for you to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

The best available information suggests that increases in catch limits would be unlikely to result in a biomass reduction. Consequently, there is an opportunity to increase the TAC of both SKI 3 and SKI 7, whilst ensuring sustainability, in a manner that is not inconsistent with the objectives of section 13.

Section 11 considerations

Gemfish in SKI 3 and SKI 7 are managed within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan) approved under Section 11A of the Act. Fisheries New Zealand considers all proposed options to be consistent with the management objectives of the National Deepwater Plan.

No other plans, strategies or statements are relevant to gemfish in SKI 3 or SKI 7.

Environmental principles

As there is negligible targeting of gemfish in SKI 3 and SKI 7, Fisheries New Zealand considers it unlikely that the proposed increases to the TAC would result in a material increase in the level of commercial fishing effort targeting gemfish. As such, the impacts of the proposed options on associated or dependent species, the biological diversity of the aquatic environment and habitats of particular significance for fisheries management are likely to be negligible.

Kaitiakitanga

Te Tai Hauāuru Iwi Fisheries Forum and Te Waka a Māui Iwi Forums represent iwi with an interest in SKI 3 and SKI 7. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of the management objectives contained in Iwi Forum Fisheries Plans.

Input and participation of tangata whenua

The proposal to increase the SKI 3 and SKI 7 TACC was discussed at Te Waka a Māui Forum hui held in Nelson on 9 July 2019. The Forum did not support any increases to the TACC of SKI 7 due to the effect such an increase would have on the proportion of settlement quota (see discussion below regarding '28N' rights). The Forum also recommended the introduction of a Māori customary allowance of one tonne for both stocks.

5.3. SKI 3

Option 1

Option 1 would increase the TACC by 50% to reflect catch levels during the 2017/18 fishing year. Option 1 would introduce a 1 tonne Māori customary allowance to provide for gemfish taken under a pātaka arrangement. Option 1 would also set the allowance for all other sources of mortality caused by fishing at 1% of the TACC.

As the Working Group estimated that catches at 2017/18 levels are unlikely to result in a reduction in gemfish biomass, Option 1 is unlikely to result in a sustainability concern for the stock.

ECO and Our Seas Our Future considered the available information insufficiently reliable to support an increase in catch limits, and therefore supported the status quo. The RNZSPCA urged caution in relation to increasing catch limits and therefore supported Option 1.

Based upon the predicted 2018/19 catch, Option 1 would alleviate future deemed value payments of approximately \$150k. However if such catches continue into future years (which is probable given the recent strong recruitment), Option 1 would not provide sufficient SKI 3 ACE to cover all gemfish taken as bycatch. Under such a scenario, fishers would be subject to annual deemed value payments of around \$150k.

Option 2

Option 2 would provide for catches above 2017/18 levels by increasing the TACC by 100% so that it is set at the level of the predicted 2018/19 catch. Option 2 would introduce a 1 tonne Māori customary allowance to provide for gemfish taken under a pātaka arrangement. Option 2 would also set the allowance for all other sources of mortality caused by fishing at 1% of the TACC.

By providing fishers with additional ACE to balance against catch, Option 2 would reduce the potential for future deemed value payments. Based upon the predicted 2018/19 catch, Option 2 would result in the alleviation of future deemed value payments of approximately \$300k.

Option 2 was supported by Deepwater Group, the Iwi Collective Partnership, Sealord, Southern Inshore and Te Ohu Kaimoana.

As data from the 2018/19 fishing year was not available at the time of assessment, the Working Group did not comment on the likely effect of catches above 2017/18 levels. Therefore, the sustainability risk associated with Option 2 is more uncertain. However, Fisheries New Zealand does not anticipate that Option 2 will result in a decline in SKI 3 biomass due to the presence of multiple year classes in the fishery. Therefore, Fisheries New Zealand recommends Option 2.

To assess the effect of catches above 2017/18 levels on the sustainability of the stock, the preliminary stock assessment will be reviewed in the next few years to incorporate updated CPUE indices and data from research trawl surveys.

5.4. SKI 7

Preferential allocation ('28N') rights

There are 152.5 tonnes of preferential allocation ('28N') rights associated with the SKI 7 stock. Under options to increase the TACC of SKI 7, these rights would be discharged, in that the quota shares of owners who do not have '28N' rights would be reduced and redistributed to the holders of '28N' rights (in accordance with the formulas set out in section 23 of the Act). The effect on iwi quota holdings derived from the 1992 Fisheries Settlement would be to permanently reduce the proportion of the quota shares iwi hold in this stock. For a full discussion of this issue, see the 'Preferential allocation rights' section in the Introduction section of this paper.

Te Ohu Kaimoana and Te Waka a Māui do not support any increases to the TACC of SKI 7 due to the effect such an increase would have on the proportion of settlement quota.

Option 1

Option 1 would increase the TACC by 100% to reflect catch levels during the 2017/18 fishing year. Option 1 would introduce a 1 tonne Māori customary allowance to provide for gemfish taken under a pātaka arrangement. Option 1 would also set the allowance for all other sources of mortality caused by fishing at 1% of the TACC.

As the Working Group estimated that catches at 2017/18 levels are unlikely to result in a reduction in gemfish biomass, Option 1 is unlikely to result in a sustainability concern for the stock. Option 1 would result in the alleviation of deemed value payments of approximately \$300k (if 2018/19 catches approximate those from 2017/18).

ECO and Our Seas Our Future considered the available information insufficiently reliable to support an increase in catch limits, and therefore supported the status quo. The RNZSPCA urged caution in relation to increasing catch limits and proposed that the SKI 7 TACC be increased by 50% (as per Option 1 for SKI 3).

Sealord supported the proposed Option. Deepwater Group and the Iwi Collective Partnership both supported the proposed Option providing that the increase gives effect to both '28N' and Māori Settlement rights. Southern Inshore also supported Option 1 but indicated that, while they recognise the effect the discharge of '28N' rights will have on iwi quota shares, such concerns need to be balanced against the financial impact imposed on fishers from continued deemed value payments.

Notwithstanding the association of '28N' rights with the SKI 7 stock, Fisheries New Zealand recommends Option 1, given that the best available information suggests there is an opportunity to increase catch limits without compromising the sustainability of the stock.

6. Decision

SKI 3

Option 1

Agree to increase the SKI 3 TAC from 300 to 455 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonnes;
- ii. Retain the 0 tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 0 to 5 tonnes;
- iv. Increase the SKI 3 TACC from 300 to 449 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand preferred)

Agree to increase the SKI 3 TAC from 300 to 606 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonnes;
- ii. Retain the 0 tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 0 to 6 tonnes;
- iv. Increase the SKI 3 TACC from 300 to 599 tonnes.

Agreed / Agreed as Amended / Not Agreed

SKI 7

Option 1 (Fisheries New Zealand preferred)

Agree to increase the SKI 7 TAC from 300 to 606 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonnes;
- ii. Retain the 0 tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 0 to 6 tonnes;
- iv. Increase the SKI 7 TACC from 300 to 599 tonnes.

Agreed / Agreed as Amended / Not Agreed


Hon Stuart Nash
Minister of Fisheries
04 / 09 / 2019

Deemed values

1. The deemed value framework

By providing incentives for commercial fishers to not exceed catch limits, the deemed value framework is a key mechanism to ensure the integrity of the Quota Management System (QMS). As commercial catches of many fish stocks are inherently unpredictable, the deemed value framework must be sufficiently flexible to provide fishers with a mechanism to deal with unintended and accidental catch in excess of catch limits, while providing incentives and constraints to limit over-catch.

Under the deemed value framework, fishers have two options with which to balance unintended catch; they can either purchase the extra ACE required, or pay the relevant deemed value. Failure to pay a deemed value invoice in excess of \$1,000 results in suspension of an operators' fishing permit, making all subsequent commercial fishing illegal. The flexibility afforded by the deemed value framework comes from allowing fishers to purchase annual catch entitlement (ACE) to cover catch after fishing (retrospective balancing) and by allowing periodic rather than continuous balancing of catch with ACE.

The deemed value framework does not create a standard deemed value rate, but a set of rates that apply under different circumstances. Interim deemed value rates are charged each month for any catch landed in excess of ACE. If the fisher subsequently sources ACE to cover his/her catch, the interim rates are remitted to them. If the fisher does not source adequate ACE by the end of the fishing year, the difference between the interim and the annual (base) deemed value rate is charged for all catch in excess of ACE. For the majority of stocks, progressively increased (differential) deemed value rates apply as the percentage by which catch exceeds the available ACE increases.

The operation of the deemed value framework is described within the supplemental information.

2. Legal context

Section 75(1) of the Act requires you to set deemed value rates for all stocks managed under the QMS.

When setting deemed value rates, section 75(2)(a) requires you to take into account the need to provide an incentive for every commercial fisher to acquire or maintain ACE that is not less than the fisher's total catch of each stock taken. Section 75(2)(b) allows you to have regard to:

- The desirability of commercial fishers to land catch for which they do not have ACE;
- The market value of ACE;
- The market value of the stock;
- The economic benefits obtained by the most efficient fisher, licensed fish receiver, retailer or any other person from the taking, processing or sale of the fish or associated with the fish;
- The extent to which the catch of that stock has exceeded or is likely to exceed the TACC for the stock in any year; and
- Any other matters that you consider relevant.

Setting deemed value rates

The practical application of your obligations under section 75 is set out in the Deemed Value Guidelines (2012), which are summarised below:

Principle 1 Deemed value rates must generally be set between the ACE price and the reported landed (port) price.²³

Principle 2 Deemed value rates must generally exceed the ACE price by transaction costs.

Principle 3 Deemed value rates must avoid creating incentives to misreport.

Principle 4 Deemed value rates for constraining bycatch species may be higher.

Principle 5 Deemed value rates must generally be set at twice the port price for high value single species fisheries and species subject to international catch limits.

Principle 6 Deemed value rates for Chatham Island landings may be lower.

Principle 7 Interim deemed value rates must generally be set at 90% of the annual deemed value rate.

Principle 8 Differential deemed value rates must generally be set.

The operation of the deemed values regime is currently under review through a joint Deemed Values Working Group comprising industry and iwi representatives, an independent economist and MPI/Fisheries New Zealand officials. The findings of the Deemed Values Working Group will be presented to the Head of Fisheries New Zealand by the end of September and will contain recommendations on suggested amendments to the Deemed Value Guidelines (2012), and associated processes for setting deemed value rates.

As the Working Group has yet to finalise its recommendations, all proposals for deemed value rate adjustments contained within this paper were guided by the Deemed Value Guidelines (2012).

Identifying stocks for deemed value rate review

To identify which stocks may be suitable for deemed value rate review, Fisheries New Zealand:

- Considered stocks where total allowable catch (TAC) reviews were proposed for 1 October 2019;
- Compared the deemed value rates of October stocks against the Principles of the Guidelines; and

²³ Reported port prices are the average price for greenweight fish of each stock reported to be paid to independent fishers by licensed fish receivers (LFRs). These values ignore differences in size, quality and state of fish landed (i.e. fishing method), location of landings, seasonal price variations, deductions that fishers may pay to LFRs from time to time, and price differentials for vertically integrated fishing companies. Reported port prices are therefore an indicator of limited reliability. In general, real port prices for average size and quality fish landed in the main ports by individual fishers would tend to be higher than the average prices reported by LFRs.

- Assessed October stocks against the performance measures outlined in the Guidelines:
 - the number of stocks over-caught and the level of over-catch per stock;
 - The percentage and/or quantity of catch for each stock which is not balanced with ACE; and
 - The ratio of the total deemed value payments to the value of quota (the target in relation to this indicator is less than 0.1% of the value of the quota in any fishing year).

Table 40 sets out the stocks we are reviewing in 2019 and the rationale for review based on the performance measures listed above.

Table 40: Rationale for fish stocks prioritised or review in 2019

Species	Stock	Rationale for review
Bluenose	BNS 7	- 113% caught in 2017/18
Black cardinalfish	CDL 5	- 351% caught in 2018/19 (as of April 2019) - Predicted deemed value payments to quota value ratio of 63% (2018/19)
Jack mackerel	JMA 7	- 104% caught in 2017/18
Kingfish	KIN 3	- 421% caught in 2017/18, but since 1 October 2018 the TACC has been increased
Rubyfish	RBY 5	- 0 t TACC - Differential schedule not appropriate
	RBY 6	- 0 t TACC - Differential schedule not appropriate
Silver warehou	SWA 3	- 101% caught in 2017/18 - Annual deemed value rate set higher than the port price
	SWA 4	- 107% caught in 2017/18 - Annual deemed value rate set higher than the port price

Table 41 sets out the key information that informed the development of proposals for the prioritised stocks for 2019.

Table 41: Information to support the review of deemed value rates for prioritised stocks

Stock	2018/19 TACC (tonnes)	% caught 2017/18 ²⁴	ACE \$/kg ²⁵	Interim DV\$/kg	Annual DV \$/kg	2017/18 Port Price \$/kg	Ratio of 2017/18 DV payments to QV (%)
BNS 7	34	113%	2.35	2.70	3.00	3.47	1%
CDL 5	22	351% (2018/19)	0.12	0.26	0.51	1.00	63% (2018/19)
KIN 3	6	421%	7.45	8.00	8.90	3.62	12%
JMA 7	32,537	104%	0.15	0.14	0.15	0.20	0.5%
RBY 5	0	-	-	0.25	0.28	-	-

²⁴ 2017/18 landings against available ACE, as opposed to the TACC.

²⁵ Average price paid per kg of ACE transferred (exc. GST) during the 2017/18 fishing year (as reported by FishServe)

RB Y 6	0	-	-	0.25	0.28	-	-
SWA 3	3,280	101%	0.71	1.57	1.74	0.73	0.24%
SWA 4	4,090	107%	0.70	0.50	1.22	0.70	0.91%

The initial proposals for deemed value rate adjustments are shown in Table 42.

Table 42: Current and proposed deemed value rates (\$/kg) for selected stocks from 1 October 2019

Species	Stock	Current				Proposed			
		Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential ²⁶
Bluenose	BNS 7	2.70	3.00	10.00	Special	3.60	4.00	11.00	Special
Black cardinalfish	CDL 5	0.26	0.52	0.52	-	0.27	0.30	0.30	-
Jack Mackerel	JMA 7	0.14	0.15	0.30	Standard	0.18	0.20	0.30	Special
Kingfish	KIN 3	8.00	8.90	17.80	Standard	4.00	4.45	8.90	Standard
Rubyfish	RB Y 5	0.25	0.28	0.56	Standard	0.25	0.28	0.28	-
	RB Y 6	0.25	0.28	0.56	Standard	0.25	0.28	0.28	-
Silver warehou	SWA 3	1.57	1.74	3.00	Special	0.63	0.70	2.00	Special
	SWA 4	0.50	1.22	3.00	Special	0.63	0.70	2.00	Special

Consultation, and submissions and responses received

Before setting any interim or annual deemed value rate, section 75(A) of the Act requires you to, if practicable, consult with tangata whenua and stakeholders. Fisheries New Zealand sought input on the proposed adjustments to deemed value rates during the formal consultation process during July and August 2019.

Fisheries New Zealand received five submissions relating to the proposed deemed value rate adjustments.

Submitters' comments on the proposed deemed value rate settings for specific stocks are addressed in the analysis of each species or stock below.

The Environment and Conservation Organisations of NZ (ECO) supported changes to deemed value rates that reduce the incentives for over-fishing and promote the rebuild of over-fished and depleted stocks. However, ECO did not provide stock-specific comments on the proposed deemed value rate adjustments.

²⁶ Where there is already a special differential set, the change to the special in this column is due to the annual rate change and not to the differential percentages applied.

Whilst outside the scope of this review, various submissions raised concerns regarding the operation of the deemed value regime, including the incentives created by deemed values and the processes followed when reviewing the management settings of stocks for which catch exceeds the available ACE. Such concerns are being addressed through the joint Deemed Values Working Group, and will not be discussed further in this paper.

Deemed value rate adjustments

Fisheries New Zealand recommends that you approve changes to the deemed value rates for selected stocks as outlined in Table 42. No input or feedback received through consultation suggests that Fisheries New Zealand's initial proposals should change, hence these recommendations are the same as those consulted on and are discussed below.

Fisheries New Zealand considers all recommended deemed value rates consistent with your statutory obligations under section 75(2)(a) and 75(2)(b) of the Act.

3. Bluenose (BNS 7) – West Coast South Island

Between the 2001/02 and 2016/17 fishing years, landings of bluenose from BNS 7 did not exceed the available ACE. Due to sustainability concerns, the TACC of BNS 7 was reduced by 33% from 1 October 2017. Although catches did reduce, BNS 7 landings for the 2017/18 fishing year exceeded the available ACE by 13%. During the 2017/18 fishing year, approximately one third of bluenose in BNS 7 was taken during fishing events targeting bluenose.

Given the importance of constraining catch to available ACE under the bluenose rebuild plan, Fisheries New Zealand proposes that you increase the deemed value rates so as to provide a stronger incentive for catch to not exceed the available ACE.

3.1. Submissions

Fisheries New Zealand received four submissions regarding the proposed deemed value rates for BNS 7.

Fisheries Inshore New Zealand and Southern Inshore opposed the proposed adjustment on the basis that the rationale for including this stock within this review of deemed value rates was incorrect (Table 3 of the consultation paper incorrectly stated that BNS 7 was subject to a TAC review for 1 October 2019).

Sealord consider the proposed deemed value rates as unlikely to result in a decrease in BNS 7 landings and therefore oppose the proposed adjustment.

Te Ohu Kaimoana opposed the proposed adjustment as it would set the annual deemed value rate above the port price. Te Ohu Kaimoana also opposed the application of a stringent differential schedule.

3.2. Analysis of submissions

Fisheries New Zealand acknowledges that Table 3 of the consultation paper contained an error. However, as the BNS 7 stock was over-caught by 113% during the 2017/18 fishing year, the stock met the criteria for deemed value rate review (as detailed in the Deemed Value Guidelines). As such, Fisheries New Zealand considers including BNS 7 within this review of deemed value rates appropriate.

Given that one third of bluenose in BNS 7 during 2017/18 was taken through targeted fishing, Fisheries New Zealand considers that fishers have the capacity to reduce their catches of this stock. Given the sustainability status of the stock²⁷, Fisheries New Zealand considers it appropriate to increase the deemed value rates so as to provide a greater incentive for fishers to balance catch with available ACE.

Principle 1 of the Guidelines states that the annual deemed value rate must generally be set between the ACE price and the landed price. Fisheries New Zealand considers departing from this Principle appropriate in this case given the importance of constraining BNS 7 catch to the available ACE under the rebuild strategy. Fisheries New Zealand also notes that the proposed annual deemed value rate of BNS 7 is below the reported port price of BNS 7 from both the 2015/16 and 2016/17 fishing years (\$4.23 & \$5.48 respectively).

Fisheries New Zealand considers retaining the special differential schedule appropriate given the importance of constraining BNS 7 catch to the available ACE under the rebuild strategy.

3.3. Recommendation

Fisheries New Zealand recommends that the deemed value rates of BNS 7 be adjusted as shown in Table 43.

Table 43: Current and recommended deemed value rates (\$/kg) for BNS 7

Stock	Option	Interim rate	Annual rate	Special annual differential rates for excess catch (% of ACE)						
				105-110%	110-120%	120-130%	130-140%	140-150%	150-160%	>160%
BNS 7	Current	2.70	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	Recommended	3.60	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00

The recommended adjustment retains the special differential schedule but increases the rate at each step of the schedule so as to continue to provide a strong incentive for catch to not exceed the available ACE.

The recommended adjustment would also set the annual deemed value rate of BNS 7 at the same rate as other bluenose stocks (excluding BNS 10), consistent with Principle 3 of the Guidelines.

4. Black cardinalfish (CDL 5) – Southland

All black cardinalfish in CDL 5 are taken as bycatch by large trawl vessels targeting middle-depth or deepwater species. Catches of black cardinalfish in CDL 5 are very sporadic, and likely unavoidable. However catches can occasionally occur in large quantities.

As CDL 5 has a relatively low TACC (22 tonnes) to account for occasional bycatch, variability in the size and frequency of CDL 5 catches can occasionally result in catches exceeding the available ACE by considerable margins. As of August 2019, the available CDL 5 ACE for the 2018/19 fishing year was 353% caught, with more than 90% of the total catch taken during one fishing event (tow).

²⁷ The 2016 biomass of bluenose (all QMAs combined) was estimated to be between 17-27% of original biomass (Ba) and was considered 'Unlikely' to be at or above the default target biomass.

Based on current levels of over-catch, the 2018/19 ratio of deemed value payments to quota value for CDL 5 will be approximately 64%, greatly exceeding the performance measure target of 0.1%. Therefore, Fisheries New Zealand proposed that you decrease the annual deemed value rate of CDL 5 so as to reduce the deemed value payments to quota value ratio during those years when catch exceeds the available ACE.

4.1. Submissions

A single response was received on the deemed value rates of CDL 5. Te Ohu Kaimoana supported the proposed change.

4.2. Recommendation

Fisheries New Zealand recommends that the deemed value rates of CDL 5 be adjusted as shown in Table 44.

Table 44: Current and recommended deemed value rates (\$/kg) for CDL 5

Stock	Option	Interim rate	Annual rate
CDL5	Current	0.26	0.52
	Recommended	0.27	0.30

The recommended adjustment would set the annual deemed value rate at the same level of those of adjacent black cardinalfish stocks CDL 5 and CDL 6 (consistent with Principle 3 of the Guidelines). Fisheries New Zealand considers such an adjustment appropriate given that all three stocks have relatively low TACCs and show strong similarities in both port and ACE price.

Consistent with Principle 7 of the Guidelines, Fisheries New Zealand recommends increasing the interim deemed value rate by one cent so that it is set at the recommended level (90% of the annual rate).

5. Jack mackerel (JMA 7) – West Coast North Island

Since 2001/02, landings of JMA 7 have generally remained within the available ACE. However, during the 2017/18 fishing year landings of JMA 7 exceeded the available ACE by 4% (over 1,200 tonnes). Over-catch during the 2017/18 fishing year was driven by one significant JMA 7 ACE holder catching in excess of their ACE holdings by 15%.

Given that the vast majority (>95%) of jack mackerel in JMA 7 are taken through targeted trawling, Fisheries New Zealand proposed that the deemed value settings of JMA 7 be adjusted to provide a stronger incentive for fishers to balance catch with available ACE.

5.1. Submissions and responses

Two responses were received on the proposed deemed value rates of JMA 7.

Given that JMA 7 are also taken as a bycatch in other trawl fisheries, Sealord consider the proposed changes as unlikely to result in a change in fishing behaviour and therefore oppose the proposed adjustment.

Te Ohu Kaimoana opposed the proposed change on the basis that over-fishing thresholds should be used in lieu of deemed value rate adjustments in cases where catch in excess of available ACE is driven by the actions of a single permit holder.

5.2. Analysis of submissions

Given the very large TACC of JMA 7 (32,537 tonnes) and the large proportion (>95%) of the stock taken through targeted fishing, Fisheries New Zealand considers operators to have a high level of control over the amount of JMA 7 landed. Given the over-catch during 2017/18, Fisheries New Zealand considers it appropriate to adjust the deemed value settings of JMA 7 to provide a stronger incentive for fishers to balance catch with available ACE.

Over-fishing thresholds are set for specific quota management stocks under section 77 of the Act. Where over-fishing thresholds are exceeded, the relevant commercial fisher's permit is deemed to contain a condition prohibiting the taking of the stock in the relevant quota management area.

Fisheries New Zealand acknowledges that over-fishing thresholds are a potentially useful management tool. However, as no over-fishing threshold has been set for JMA 7, it is not possible to utilise such thresholds in this fishery at this time.

5.3. Recommendation

Fisheries New Zealand recommends that the deemed value rates of JMA 7 be adjusted as shown in Table 45.

Table 45: Current and proposed deemed value rates (\$/kg) for JMA 7.

Stock	Option	Interim rate	Annual rate	Standard annual differential rates for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
JMA 7	Current	0.14	0.15	0.18	0.21	0.24	0.27	0.30
	Recommended	0.18	Annual rate		Special annual differential rates for excess catch (% of ACE)			
			100-105%	105-120%	>120%			
			0.20	0.25	0.30			

The recommended adjustment is a departure from the standard differential schedule recommended for most stocks by Principle 8 of the Guidelines. However, Fisheries New Zealand considers the proposed differential schedule appropriate given the need to provide a stronger incentive for fishers to balance catch with available ACE.

6. Kingfish (KIN 3) – South Island

The TACC of KIN 3 is set to account for occasional bycatch, with the majority of commercially caught kingfish in KIN 3 taken as unintended bycatch in the coastal set net fishery. Catches of kingfish in KIN 3 have exceeded the available ACE for each of the last seven years (including 2018/19), despite the increase in the TACC (from one tonne to six tonnes) from 1 October 2018.

The deemed value rates of KIN 3 are set considerably higher than the port price (\$3.62/kg in 2017/18) to incentivise fishers to avoid catching kingfish and to return live kingfish to the sea where permitted under schedule 6 of the Act. However, since most kingfish in KIN 3 is incidentally taken by commercial fishers in set nets, these fish do not meet the conditions of the sixth schedule. Such fish are required to be landed and balanced with available ACE.

Kingfish deemed values have been generally set based on the shadow value²⁸ the species has when taken as bycatch in other target fisheries (particularly the jack mackerel trawl fishery). Such considerations do not necessarily extend to KIN 3 given the lower, and more unpredictable, nature of kingfish catches in KIN 3. Therefore, the current deemed value rates of KIN 3 (which are set based upon maintaining consistency with the deemed value rates of other kingfish stocks) may no longer be justified.

The current deemed value rates are likely to result in substantial deemed value payments if current catch levels continue. Therefore, Fisheries New Zealand proposed to decrease both the interim and annual deemed value rates, and the rate at maximum excess, of KIN 3 by 50%.

6.1. Submissions and responses

Fisheries New Zealand received three submissions regarding the proposed deemed value rates for KIN 3.

Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana supported decreasing the deemed value rates of KIN 3 whilst noting that the KIN 3 TACC settings and the prohibition on returning set net caught kingfish to the sea under the sixth schedule were also in need of review.

6.2. Analysis of submissions

Concerns from submitters relating to the wider management of KIN 3 are not within the scope of this deemed value rate review.

²⁸ For some species taken as bycatch in a mixed fishery, the bycatch species may constrain the ability to catch the target species. Such species are said to have a 'shadow value' reflecting the species value in allowing greater catches of the target species in the overall fisheries complex.

6.3. Recommendation

Fisheries New Zealand recommends that the deemed value rates of KIN 3 be adjusted as shown in Table 46.

Table 46: Current and proposed deemed value rates (\$/kg) for KIN 3.

Stock	Option	Interim rate	Annual rate	Standard annual differential rates for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
KIN 3	Current	8.00	8.90	10.68	12.46	14.24	16.02	17.80
	Recommended	4.00	4.45	5.34	6.23	7.12	8.01	8.90

The recommended adjustment would continue to set the annual deemed value rate higher than the port price. As such, the deemed value settings of KIN 3 would continue to provide a strong incentive for fishers to avoid kingfish and return live kingfish to the sea under the sixth schedule (other than those caught by set netting).

7. Rubyfish (RBY 5 & RBY 6) – Southland and sub-Antarctic

Both RBY 5 and RBY 6 have a zero tonne TACC (and TAC) and have done so since introduction to the QMS. As such, there is no ACE available for either stock with which to balance catch.

Very small quantities of rubyfish in RBY 5 and RBY 6 are occasionally taken as bycatch by trawl vessels targeting middle-depth species. Approximately five tonnes of RBY 5 have been landed (in total) since Oct 2001, with annual landings exceeding one tonne on only two occasions. Less than one tonne of RBY 6 has been landed since Oct 2001 (all years combined).

As there is no ACE available with which to balance catch, the interim and annual deemed value rates, and differential schedule, of both RBY 5 and RBY 6 are redundant, as any catch automatically results in deemed value invoices at the highest possible rate (\$0.56/kg). Fisheries New Zealand therefore proposed to remove the differential schedule of both stocks so that any catch incurs deemed value invoices at the current annual rate (\$0.28/kg).

7.1. Submissions and responses

Fisheries New Zealand received three submissions regarding the proposed deemed value rates for RBY 5 and RBY 6.

Te Ohu Kaimoana supported the proposed adjustment while noting that setting the TACC at zero tonnes seems inconsistent with the Deed of Settlement. Fisheries Inshore and Southern Inshore commented that adjusting the deemed value rates for both stocks should not be considered a substitute for setting a TACC of greater than zero tonnes.

7.2. Analysis of submissions

While section 13(5) of the Act does allow for the setting of zero tonne TACs, Fisheries New Zealand notes that setting the TACC of RBY 5 and RBY 6 at zero tonnes may no longer be appropriate given the regular (but very small) levels of bycatch. As such, Fisheries New Zealand will consider including RBY 5 and RBY 6 within future sustainability reviews (subject to stock prioritisation and resource availability).

7.3. Recommendation

Fisheries New Zealand recommends that the deemed value rates of RBY 5 and RBY 6 be adjusted as shown in Table 47.

Table 47: Current and recommended deemed value rates (\$/kg) for RBY 5 & RBY 6

Stock	Option	Interim rate	Annual rate	Standard annual differential rates for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
RBY5 RBY6	Current	0.25	0.28	0.34	0.39	0.45	0.50	0.56
	Recommended	0.25	Annual rate 0.28					

Although Principle 8 of the Guidelines states that differential deemed value rates must generally be set, Fisheries New Zealand considers departing from this Principle appropriate in this case given the zero tonne TACCs of both stocks.

Despite the interim deemed value rates of both stocks being also redundant, section 75 of the Act requires the Minister to set an interim deemed value rate that is less than the annual rate. Fisheries New Zealand therefore recommends retaining the current interim rate while recognising that such a rate has no effect.

8. Silver warehou (SWA 3 & SWA 4) – East Coast South Island, Chatham Rise and sub-Antarctic

Approximately one third of silver warehou caught in both SWA 3 and SWA 4 are taken as part of a target trawl fishery with the remainder taken as bycatch, predominantly by large trawl vessels targeting other middle-depth species.

Since 2007, catches of silver warehou in SWA 3 have generally remained within the available ACE. However, landings exceeded the available ACE by between 1% and 14% four times between 2012/13 and 2017/18. Catches of silver warehou in SWA 4 have remained within the available ACE each year, except for 2017/18 when landings exceeded the available ACE by 7%. Fisheries New Zealand does not consider that such catches represent a recurrence of operators deliberately targeting silver warehou without sufficient ACE (which occurred between the 2001/02 and 2006/07 fishing years).

Due to the historical targeting of both stocks in excess of an operators ACE holdings, the annual deemed value rates of both SWA 3 and SWA 4 are currently set above the current port price. As there has been no evidence of such behaviour since 2007, Fisheries New Zealand proposed to reduce the annual deemed value rate of both stocks so that the annual rate is set between the ACE price and the port price (consistent with Principle 1 of the Guidelines).

8.1. Submissions and responses

A single response was received on the deemed value rates of SWA 3 and SWA 4.

Te Ohu Kaimoana supported decreasing the deemed value rates of both stocks but signalled that, as there are no sustainability concerns associated with either stock, the deemed value rates should be set closer to the ACE price. Te Ohu Kaimoana also stated that the TACC of both stocks should be reviewed, as did Deepwater Group Ltd (who did not comment directly on the proposed deemed value rate adjustments).

8.2. Analysis of submissions

Concerns from submitters relating to the wider management of SWA 3 and SWA 4 are not within the scope of this deemed value rate review. However work is current underway to characterise the SWA 3 and SWA 4 fisheries. Based upon this work, Fisheries New Zealand will consider both stocks for TAC review as part of the October 2020 Sustainability Round.

8.3. Recommendation

Fisheries New Zealand recommends that the deemed value rates of SWA 3 and SWA 4 be adjusted as shown in Table 48.

Table 48: Current and recommended deemed value rates (\$/kg) for SWA 3 and SWA 4

Stock	Option	Interim rate	Annual rate	Special annual differential rates (\$/kg) for excess catch (% of ACE)	
				110-130%	>130%
SWA 3	Current	1.57	1.74	2.00	3.00
	Recommended	0.63	0.70	1.00	2.00
SWA 4	Current	0.50	1.22	1.74	3.00
	Recommended	0.63	0.70	1.00	2.00

Fisheries New Zealand considers it appropriate to maintain a stringent differential schedule for both stocks so as to ensure deliberate targeting in excess of available ACE does not occur in the future. However, the rate at each step on the schedule would be adjusted in accordance with the recommended reduction to the annual deemed value rate.

As both stocks are contiguous and have relatively similar port prices (+/- 10% for each of the last five years), the proposed deemed value rates for both stocks are identical (consistent with Principle 3 of the Guidelines).

9. Decision: Deemed Values

Species	Stock	Current				Proposed			
		Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential ¹
Bluenose	BNS 7	2.70	3.00	10.00	Special	3.60↑	4.00↑	11.00↑	Special
Black cardinalfish	CDL 5	0.26	0.52	0.52	-	0.27↑	0.30↓	0.30↓	-
Jack Mackerel	JMA 7	0.14	0.15	0.30	Standard	0.18↑	0.20↑	0.30 -	Special
Kingfish	KIN 3	8.00	8.90	17.80	Standard	4.00↓	4.45↓	8.90↓	Standard
Rubyfish	RBY 5	0.25	0.28	0.56	Standard	0.25 -	0.28 -	0.28↓	-
	RBY 6	0.25	0.28	0.56	Standard	0.25 -	0.28 -	0.28↓	-
Silver warehou	SWA 3	1.57	1.74	3.00	Special	0.63↓	0.70↓	2.00↓	Special
	SWA 4	0.50	1.22	3.00	Special	0.63↑	0.70↓	2.00↓	Special

- i. **Agree** to change the deemed value rates for bluenose (BNS 7) as outlined in the Table above.
Agreed / Not Agreed
- ii. **Agree** to change the deemed value rates for black cardinalfish (CDL 5) as outlined in the Table above;
Agreed / Not Agreed
- iii. **Agree** to change the deemed value rates for jack mackerel (JMA 7) as outlined in the Table above;
Agreed / Not Agreed
- iv. **Agree** to change the deemed value rates for kingfish (KIN 3) as outlined in the Table above;
Agreed / Not Agreed
- v. **Agree** to change the deemed value rates for rubyfish (RBY 5 & 6) as outlined in the Table above.
Agreed / Not Agreed
- vi. **Agree** to change the deemed value rates for silver warehou (SWA 3 & 4) as outlined in the Table above.
Agreed / Not Agreed

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

11 / 09 / 2019

¹ Where there is already a special differential set, the change to the special in this column is due to the annual rate change and not to the differential percentages applied.

Deemed values supplemental information - The deemed value framework

The Quota Management System (QMS) is the backbone of the New Zealand fisheries management regime, and includes a total of 642 fish stocks representing 98 species or species groups. The system for balancing catch against catching rights is known as the catch balancing regime and is key to ensuring the integrity of the QMS. The deemed value system is one component of the catch balancing regime, which overall provides considerable flexibility for fishers.

The deemed value system is a civil as opposed to a criminal regime (overfishing does not result in prosecution). With some exceptions, ACE is not required before fishing commences, instead fishers are provided flexibility to balance their catch against ACE during the course of the fishing year by a system of financial incentives.

The purpose of the deemed value framework is to encourage commercial fishers to balance their catch with ACE, while not discouraging them from landing and accurately reporting catch. The intent is to protect the long-term value of stocks, and to support kaitiakitanga, by providing incentives for the overall commercial catch for each QMS stock to remain within the total available ACE. The effectiveness of this incentive is dependent on individual fishers' compliance with landing and reporting requirements, their responses to the incentives provided, and on the impact of other incentives such as those created by market conditions.

Effective deemed value rates contribute to both sustainability and utilisation objectives under the Act. Section 8 of the Act states that the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Sustainability objectives are achieved because appropriate deemed value rates encourage fishers to balance catch with ACE and, in doing so, encourage harvesting to remain within the TACC. Harvesting over the TACC has the effect of undermining the sustainability of the fishery. The deemed value framework also provides flexibility for commercial operators to manage small, unexpected amounts of catch by balancing unintentional catches in excess of ACE.

On the first day of the fishing year, all quota owners are provided with ACE based on their quota share and the current TACC. Under the catch balancing regime, fishers are required to balance their catch with ACE, or pay a deemed value on every kilogram of fish landed in excess of ACE. Fishers self-report their catch of quota species on a monthly basis. ACE may be freely traded during the course of the fishing year, but the value of ACE may change during the year depending upon its availability. Often the fisher is not a quota holder and holds only ACE.

In order to provide the right balance of financial incentives, the deemed value system does not create a standard deemed value rate, but a set of rates that apply under different circumstances. The base rate is the annual deemed value which is charged at the end of the fishing year on catch in excess of available ACE. Interim deemed value rates are charged each month to commercial fishers for every kilogram of fish landed in excess of ACE holdings. Annual deemed value rates must be set higher than the interim rate. If the fisher sources enough ACE to cover his or her catch, the interim rates paid are remitted. If the fisher does not source enough ACE by the end of the fishing year, the difference between the interim and annual deemed value rates is charged for all catch in excess of ACE.

In general if set too low, deemed value rates will not provide sufficient incentive for fishers to acquire ACE, and will lead to individuals continuing to fish and pay deemed values. In turn this may lead to catches in excess of the TACC which may have negative implications for sustainability and the long-term value of the resource. Likewise, if set too high, deemed value rates may discourage landing and accurate reporting, (i.e. behaviours such as illegal dumping and/or misreporting) which can compromise fisheries management.

Previous abuse of the regime suggests that, beyond a certain level of flexibility, incentives need to become more onerous to prevent individuals avoiding the need to balance their catch against ACE. If required, there is provision in legislation to set overfishing thresholds which result in automatic exclusion from the fishery, if they are exceeded by more than a predetermined tolerance level.

The Deemed Value Guidelines recommends that the interim deemed value rates for the majority of fish stocks be transitioned from the historic 50% of the annual rate to 90%. This is to incentivise fishers to cover deemed value payments on a regular basis should targeted or bycatch landings change throughout the fishing year.

For most stocks, progressively increased (differential) annual deemed value rates are set. Differential deemed value rates (also known as 'ramping') result in an escalated schedule of rates as the percentage by which catch exceeds the available ACE increases. The standard approach sets increases in 20% increments up to a maximum of 200% of the annual deemed value (see Table 49). Differential rates reflect the increasingly detrimental impact on sustainability of higher levels of over-catch, by providing stronger incentives to avoid over-catch. The setting of differential deemed value rates is permitted under section 75(4) of the Act.

Table 49: Standard differential deemed value rate schedule recommended for most stocks

Catch in excess of ACE holdings	Differential deemed value rate (as a percentage of the annual deemed value rate)
0-20%	100%
>20%	120%
>40%	140%
>60%	160%
>80%	180%
>100%	200%

For vulnerable or rebuilding fish stocks, or targeted stocks with high selectivity and low vulnerability to bycatch, a more stringent non-standard differential or 'special' annual deemed value schedule (e.g. applying from 5% or 10% over-catch) may be more appropriate than the standard schedule. Alternative, less stringent differential schedules may also be applied to low value, low TACC stocks where targeted fishing does not occur.

The deemed value rate changes proposed in this paper are aimed at ensuring catch does not exceed the TACC, regardless of the level at which it is set, by encouraging balancing of landings with ACE while avoiding creating incentives to discard and misreport catch.