Fisheries New Zealand
Tini a Tangaroa

Review of Sustainability Measures for selected stocks for 1 October 2020

Fisheries New Zealand Decision Paper

ISBN No: 978-1-99-002573-0 (online)

July 2020

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1 Introduction

1. This paper seeks your decisions in relation to the October 2020 Sustainability Review. You are asked to make decisions on catch settings and deemed value rates for a selected number of fishstocks for implementation for the 1 October 2020 fishing year.

2. The catch settings you are asked to consider are:

   - setting or varying the Total Allowable Catch (TAC);
   - setting or varying allowances for Māori customary catch and recreational catch, and allowances for other sources of mortality to stocks from fishing; and
   - setting or varying the Total Allowable Commercial Catch (TACC).

3. You are also asked to decide whether to adjust deemed value rates for a selection of stocks.

4. This Decision Document provides you with Fisheries New Zealand's final advice on these proposals. The fishstocks that have been reviewed and proposed for implementation on 1 October 2020 are below in Table 1:

Table 1: Stocks reviewed in October 2020 Sustainability Round

Deepwater stocks	Inshore stocks
• **Orange roughy** (ORH 3B, South East Chatham Rise, Southland & Sub-Antarctic) • **Frostfish** (FRO 3, 4, 7, 8 & 9, Chatham Rise, South East Coast, West Coast) • **Silver warehou** (SWA 3 & 4, South East Coast & Chatham Rise) • **Scampi** (SCI 1, Auckland east) • **Rubyfish** (RBY 4, Chatham Rise) • **Black cardinalfish** (CDL 5, Southland)	• **Rig** (SPO 2, Central East) • **Blue cod** (BCO 5, Southland) • **Snapper** and **Gurnard** (SNA 7 & GUR 7, Challenger) • **Stargazer** (STA 7, South West Coast) • **Kingfish** (KIN 2, 3, 7 & 8, East Coast, South Island, Challenger, Auckland and Central West) • **Gemfish** (SKI 1 & 2 (Auckland & Central East)* • **Deepwater Clam/Geoduck** (PZL 7, Challenger) • **Pōrae** (POR 1, Auckland West) • **Sea perch** (SPE 9, Auckland West) • **ECSI multispecies fishery** (GUR 3, LEA 3, MOK 3, SPO 3, South East Coast)
Deemed value rates	
• **Arrow squid** (SQU 1T, 6T & 1J, Entire New Zealand EEZ) • **Bluenose** (BNS 3, Southland, Chatham Rise and Sub-Antarctic) • **Redbait** (RBT 3, Southland, Chatham Rise and Sub-Antarctic) • **Pilchard** (PIL 7 & 8, West Coast) • **Trevally** (TRE 2, Central East) • **Gemfish** (SKI 1, 2 & 7, North Island, Challenger)	

* Both the deemed value rates and the TAC, TACC and allowances were reviewed for SKI 1, SKI 2 and KIN 7

5. We have consulted on these proposals 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.

6. 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.

7. Full submissions on all of the proposals are available in a separate document titled "Public Submissions Received for 1 October 2020 Review of Sustainability Measures".

2 Overview of powers and obligations under the Fisheries Act 1996

2.1 Decisions Ministers may make in relation to sustainability reviews

8. There are three things you, as Minister of Fisheries, may do relating to sustainability under the Fisheries Act 1996:

Part 3: Sustainability measures

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

Part 4: Quota Management System

- Set and vary the Total Allowable Commercial Catch (TACC) within the limits of the TAC and make 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 annual catch entitlement (ACE).

9. In making decisions on those things there are a number of things you are required to do and take account of.

2.2 Overarching requirements

10. 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.

11. Section 8: The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

- "Ensuring sustainability" is defined as: "maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment".

- "Utilisation" of fisheries resources is defined as "conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing."

12. The Supreme Court has stated that the purpose statement incorporates "the two competing social policies reflected in the Act" and that "both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system. In the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability".

13. 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.

14. 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.

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

2.3 The Hauraki Gulf Marine Park Act 2000

16. 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 a TAC that includes the area of the Hauraki Gulf as defined in that Act. 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.

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

18. The HGMPA is discussed in stock or multi-stock chapters where this is relevant.

2.4 Statutory Considerations

19. Table 2 provides an overview of your central statutory considerations for varying TACs and TACCs under the Fisheries Act 1996 (the Act). Where relevant, stock-specific details relating to these considerations are set out in the stock or multi-stock chapters within this paper.

Table 2: Information on your key requirements when making decisions under the Act.

Decisions you may make	Requirements – things you must do when making decisions
Part 3 Sustainability Measures	
Section 11 You may set or vary sustainability measures for any stock S11(3) Sustainability measures may relate to (but are not limited to): • Catch limits • Size, sex or biological state • Areas • Fishing methods	(1) after taking into account: (a) effects of fishing on any stock and aquatic environment; and (b) existing controls under this Act that apply to the stock or area concerned; and (c) the natural variability of the stock concerned. (2) before setting or varying any sustainability measure, have regard to: (a) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; and (b) any management strategy or plan under the Conservation Act 1987; and (c) sections 7-8 of the Hauraki Gulf Marine Park Act 2000; and (ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and (d) a planning document lodged with you by a customary marine title group under s 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 –

Decisions you may make	Requirements – things you must do when making decisions
• Fishing seasons	that apply to the coastal marine area and are considered by you to be relevant. (2A) before setting or varying any sustainability measure, take into account: (a) any conservation or fisheries services; and (b) any relevant fisheries plan approved under section 11A; and (c) any decisions not to require conservation or fisheries services.
Section 11A You may approve or revoke fisheries plans	Fisheries plans may include: (a-c) fisheries management objectives, strategies to achieve them, and performance criteria to measure achievement; (d) conservation or fisheries services; or (e) contingency strategies to deal with foreseeable variations in circumstances. 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).
Section 13 You shall set (unless you do not intend to set an initial TACC under section 20), and may vary, a TAC for stocks in the Quota Management System (QMS)	(2) You shall set (and may vary – s(4)) a TAC that: (a) maintains the stock at or above a level that can produce the maximum sustainable yield (*MSY*), having regard to the interdependence of stocks; or (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 the interdependence of stocks; and (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 that which can produce *MSY* to be altered in a way and at a rate to move the stock toward or above that which can produce *MSY* having regard to the interdependence of stocks. (2A) If you consider that the stock level to produce *MSY* is not able to be estimated reliably using best available information, you must: (a) not use this as a reason to postpone or fail to set a TAC; and (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; and (ii) 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 *MSY*. (3) In considering the way and rate at which a stock is moved toward or above a level that can produce *MSY* you shall have regard to such social, cultural and economic factors as you consider relevant. (4) You may, by notice in the *Gazette*, vary any total allowable catch set for any quota management stock under this section. When considering any variation, you are to have regard to the matters specified in subsections (2), (2A) (if applicable), and (3).
Part 4 Quota Management System	
Section 20 You shall set and may vary TACC for quota management stocks, unless a TAC has not been set for the stock	**Section 21** You must take the following into account when setting or varying TACC: (1) In setting or varying TACC you shall have regard to the TAC and shall allow for (a)(i) Māori customary interests; and (a)(ii) Recreational interests; and (b) all other mortality to the stock caused by fishing. (2-3) Before setting or varying TACC you 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 you must take into account (a) any mātaitai reserve in the QMA declared under s186: (b) any area closure or method restrictions/prohibitions imposed under s186A. (5) When allowing for recreational interests you must take into account any regulations that prohibit or restrict fishing under s311.

Decisions you may make	Requirements – things you must do when making decisions
Section 75 You must set and may vary interim and annual deemed value rates for each quota management stock	(2) In setting deemed values you: (a) must take into account the need to provide incentive for fishers to acquire or maintain sufficient ACE (b) may have regard to: (i) the desirability of fishers landing catch for which they do not have ACE (ii) the market value of the ACE for the stock (iii) the market value of the stock (iv) the economic benefits obtained by (parties involved in commercial fishing, processing, sale) (v) the extent to which catch has exceeded/is likely to exceed TACC for the stock in any year (vi) any other matters you consider relevant. (3) Annual deemed values must be greater than interim deemed values (4) Different deemed values may be set for different levels of excess catch (5) Different deemed values may be set for the Chatham Islands (6) When setting deemed value rates, you must not: (a) have regard to the personal circumstances of individuals or class of person (b) set separate deemed values in individual cases.

3 Relevant Standards and Guidelines

3.1 Overview of the Harvest Strategy Standard

20. 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 fishstocks 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.

21. The HSS outlines the Ministry's approach to relevant sections of the Act. It is therefore a core input to the Ministry's advice to you on the management of fisheries, particularly the setting of TACs under sections 13 and 14.

22. The HSS however is not legally binding and you are not obliged to choose options based upon it.

23. 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 (Table 3):

Table 3: Guidelines on default targets as set out in the Harvest Strategy 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.

3.2 Deemed Value Guidelines

24. The Deemed Values Guidelines set out operational policy, including a set of principles to be applied when setting deemed value rates.

4 Input and consultation

4.1 Input and participation of tangata whenua

25. Among other things, 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 also have particular regard to kaitiakitanga.

26. 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 (or are in the process of developing) 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.

27. 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. Due to COVID-19 travel restrictions, this input was sought through virtual mechanisms where meetings were unable to be held. This has resulted in limitations on participation for some Forums.

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

4.2 Consultation process

29. Consultation on the October 2020 Sustainability Round commenced on 25 May 2020 for all stocks.

30. Fisheries New Zealand notified Treaty partners and stakeholders that the consultation documents were available and directed them to consultation pages on the Fisheries New Zealand website. The consultation pages had links to each of the consultation papers, and an invitation to provide written submissions on any or all of the papers.

31. Submissions closed at 5.00 pm on 1 July 2020, providing a five-and-a-half-week consultation period. In total we received 70 substantive submissions from 68 submitters and 1927 form submissions.

32. Table 4 below gives a full summary of the submissions received during consultation in this sustainability round.

33. Forty of the 70 submissions received were from groups, while the other 30 submissions were from individuals that did not identify an affiliation to a particular group. Te Ohu Kaimoana and the Iwi Collective Partnership responded in relation to Māori commercial and customary interests, as did a number of individual iwi groups. A few major eNGOs made submissions, including Environmental Defence Society, Deep Sea Conservation Coalition and Our Seas Our Future. Quota owner and commercial representative groups including Deepwater Group Limited (DWG), Fisheries Inshore New Zealand Ltd (FINZ), Southern Inshore and Sealord Group Limited (Sealord) also provided detailed submissions on multiple stocks.

34. SNA 7, GUR 7 and BCO 5 were the most commented upon stocks (Table 4). ORH 3B received 1,927 individual submissions through a separate form that was available to public via the Greenpeace NZ website (see the ORH 3B chapter for more information).

Table 4: Summary of submissions received on fishstocks and fishstock groupings included in the October 2020 Sustainability Round.

Fish stock(s)	Total submissions	Submissions by main interest group of submitters				
		Commercial fishing	Recreational fishing	Conservation/ Environmental	Tangata whenua and Iwi representatives	Other [1]
Total	**70**	15	28	17	6	5
Deepwater						
SCI 1	**8**	1	0	2	4	1
ORH 3B	**10*[2]**	2	0	3	4	1
SWA 3, 4	**8**	2	0	1	4	1
CDL 5	**9**	2	0	2	4	1
RBY 4	**8**	2	0	1	4	1
FRO 3, 4, 7, 8, 9	**10**	3	0	2	4	1
Inshore						
SNA 7, GUR 7	**39**	3	18	12	2	4
SKI 1, 2	**9**	2	1	1	4	1
PZL 7	**7**	4	0	0	2	1
KIN 2, 3, 7 ,8	**13**	4	3	2	3	1
BCO 5	**17[3]**	3	9	1	3	1
POR 1	**7**	1	1	1	4	0
SPO 2	**5**	1	0	0	3	1
SPE 9	**8**	2	0	1	4	1
STA 7	**5**	2	0	0	2	1
MOK 3, LEA 3, GUR 3, SPO 3	**8**	4	1	0	2	1
Deemed values	**13**	5	1	1	5	1

[1] Other groups included science-related, members of the public and unknown interests

[2] An additional 1,927 form submissions were put forward for ORH 3B through a separate form on the Greenpeace website

[3] Totals include out of scope submissions which did not explicitly comment on proposed options for the stocks

5 Generic feedback received

5.1 Preferential allocation (Section 28N) rights

35. A number of submitters commented on proposals to increase catch limits for stocks in which preferential allocation rights (28N rights) are held. The two stocks in this year's round where this is relevant are:
    - **SKI 2** with **46.8 tonnes** of preferential allocation (28N) rights; and
    - **SPO 3** with **1 tonne** of preferential allocation (28N) rights**.**[1]

36. Preferential allocation rights were granted to permit holders under section 28N of the Fisheries Act 1983 who elected to take administrative rather than compensated reductions to their catch allocations. When the TACC is 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.[2]

37. Te Ohu Kaimoana and other Iwi representatives (Te Arawa Fisheries and the Iwi Collective Partnership) oppose the application of 28N rights deeming them to be inconsistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 because they have the effect of reducing the proportion of settlement quota shares. As a consequence, these entities do not support TACC increases where there are 28N rights held until there is a wider resolution to matter.

38. In situations where decisions have been made to increase a TACC to which 28N rights apply, Te Ohu Kaimoana, as a matter of principle, has stated that they are required to legally challenge the decision. To this effect, there are currently proceedings underway in relation to PAU 5B and SKI 7, with your decisions on TACC increases for these stocks frozen by court order. Parties are due to report back to the Court by 31 July 2020 with an update on the progress of settlement discussions in relation to 28N rights.

39. Legal challenges have the effect of delaying the implementation of any TACC increase, thereby preventing increased utilisation of a stock. Acknowledging this FINZ and Southern Inshore Fisheries have asked Government to reach a resolution on this issue as a matter of urgency. In the interim Sealord also proposes using deemed value rates set as close to the ACE price as a means to provide for utilisation that is not cost-prohibitive whilst these matters are worked through.

40. It is Fisheries New Zealand's view that 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. Officials are progressing a further assessment of options in response to 28N Rights issues, including further engagement with a range of 28N Rights holders that hold disparate views. Further advice on such options will be provided later in 2020.

41. Stocks for which court proceedings due to 28N rights have prevented your decisions on TAC increases from being given effect are unique in that there are known to be no sustainability risks associated with catching in excess of the available ACE (providing that total commercial catches do not exceed a defined amount). To reflect this, Fisheries New Zealand considers that adjusting the deemed value rates (and differential schedules) of such stocks may be appropriate.

[1] SPO 3 is being considered within in the multi-stock chapter: *East Coast South Island Multispecies Trawl Fishery*
[2] This is done in accordance with formulas set out in Section 23 of the Act.

5.2 Allowances within the TAC

42. Te Ohu Kaimoana notes that Section 5 (b) of the Act 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 sources of mortality caused by fishing.

43. FINZ also expressed concerns regarding how allocation within the TAC is managed. They have suggested that reallocation of the commercial share of the catch to the recreational sector is inappropriate considering that recreational catch is not constrained or precisely managed and transferring progressively greater shares to the recreational sector is contrary to the fairness and promotion of benefits that Fisheries New Zealand acknowledge is needed when making allocation decisions. Overall, they support appropriate allocation based on a case by case basis and believe allocation should reflect the status of a stock and management factors at the time.

44. Fisheries New Zealand notes that the law provides you discretion in considering relevant matters when setting allowances within the TAC. 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.

45. In a case relating to Kahawai the Supreme Court[3] 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 mortality caused by fishing, the remainder constitutes the TACC. 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 catch. That does not, however, mandate any particular outcome.

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

47. 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 pain.

48. The requirement to 'allow for' the recreational interest can be construed as meaning to "allow for in whole or part". 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.

49. Historically the recreational sector has argued that it is not reasonable to restrain that sector to levels of catch estimated at low levels of stock abundance. There is merit to the argument that case by case consideration based on current levels of stock abundance is required when allowing for recreational interests.

5.3 Feedback on setting other mortality allowance for inshore stocks

50. Other sources of mortality caused by fishing is an allowance that includes any mortality to a fish stock that occurs due to fishing activity that is not otherwise accounted for in the TAC. This includes incidental mortality associated with the requirement to return fish below the minimum

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

legal size to the sea, mortality from accidental loss due to damaged or lost fishing gear and misreporting or illegal take. Fisheries New Zealand estimates this allowance where possible using best available information, whether that be stock specific or otherwise, and can include data derived from fisheries research and enforcement activities.

51. Other sources of mortality caused by fishing is naturally difficult to quantify when you consider the range of contributing sources and this means that for some stocks there is a high degree of uncertainty and/or nominal allowances are proposed. As part of your decisions on the *Review of Sustainability Measures for selected stocks for 1 October 2018* you suggested that the allowance for all other sources of mortality caused by fishing should generally equate to a minimum of 10% of the TACC for inshore stocks taken predominantly by trawl.[4]

52. This was concluded on the basis that a clear and consistent approach was needed for calculating the allowance for all other sources of mortality caused by fishing, and at the time, it was noted that a level of 10% best reflects the overall level of uncertainty in this information across all of the stocks taken predominantly by the trawl method. However, it was also noted that for stocks where there is information to suggest the allowance should be either higher or lower than 10%, this will be reflected in decisions for setting or changing this allowance.

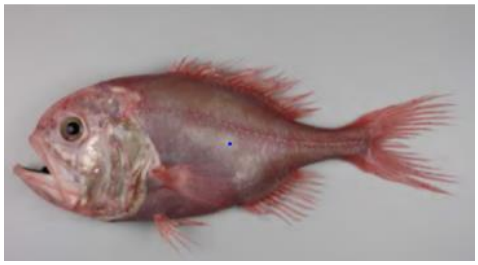
53. A number of submitters including Te Ohu Kaimoana expressed concerns relating to the above approach, suggesting that for some inshore fishstocks, there is a lack of rationale to support increasing the other mortality allowance. Southern Inshore Fisheries and FINZ both did not agree with the approach to generally setting the other mortality allowance at 10% for inshore stocks caught by trawling. Southern Inshore Fisheries acknowledged that the requirement to report all catch of stocks below minimum size as part of the introduction of digital monitoring was long overdue, but where there is a current lack of this information we should not be introducing uncertain or arbitrary figures for the allowance with no bearing on what actually happens. In the same vein, FINZ suggested that we should not use a generic approach without considering the nuances required to understand and manage different fishstocks.

54. Fisheries New Zealand considers it is appropriate to consider your directive but agrees with submitters that it is not appropriate to apply this approach arbitrarily (and is not doing so). Where there is information that can support a more accurate approach for certain stocks Fisheries New Zealand has considered this and provided that information in our advice to you. This is provided for in the relevant stock papers.

[4] For further infortmation see your Decision Letter for the 2018 October Sustainability Round.

Orange roughy (ORH 3B) - Chatham Rise and Sub-Antarctic

Hoplostethus atlanticus; nihorota



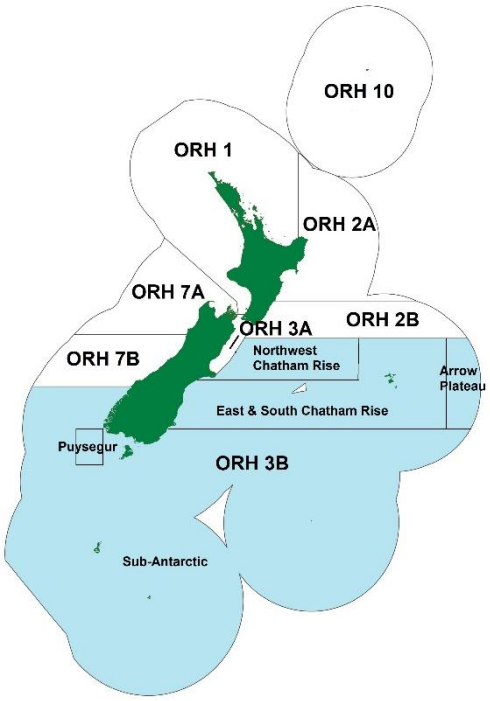


Figure 1: Quota management areas (QMAs) for orange roughy (ORH), with ORH 3B highlighted in blue. An orange roughy is pictured on the left.

Table 1: Summary of options proposed for ORH 3B from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option		Current (status quo)	Option 1	Option 1A (new)	Option 2
TAC		7,116	8,055 ↑	8,355	8,767 ↑
Allowances	Customary Māori	5	5	5	5
	All other mortality caused by fishing	339	383 ↑	383 ↑	417 ↑
TACC		6,772	7,667 ↑ (13%)	7,967 ↑ (18%)	8,345 ↑ (23%)
Sub-QMA catch limits	Northwest Chatham Rise	1,150	1,150	1,150	1150
	East/South Chatham Rise	4,775	5,670 ↑ (19%)	5,970 ↑ (25%)	6,348 ↑ (33%)
	Puysegur	347	347	347	347
	Arrow Plateau	0	0	0	0
	Sub-Antarctic	500	500	500	500

New option incorporated following consultation?	Yes (Option 1A)	
Total submissions received	1,937 (1,927 using a template submission)	
Number of submissions received supporting each option	Option 1	0
	Option 1A	7
	Option 2	0
	Other	1,930

1 Why are we proposing that you review the TAC and TACC?

1. In 2018 you agreed to a 3-year staged increase of the ORH 3B total allowable catch (TAC) and total allowable commercial catch (TACC); this is the final year of that staged increase. An update of the stock assessment in 2020 indicates the orange roughy biomass has continued to increase and a larger TAC and TACC increase than considered previously may be warranted.

1.1 About the stock

1.1.1 Fishery Characteristics

2. Orange roughy is a commercial-only, bottom trawl fishery often focused on spawning aggregations over and around deep (generally 600m-900m) bottom features such as hills and canyons.

3. Vessels involved in the orange roughy fishery generally operate bottom trawl configurations with heavy ground gear (heavy bobbins, rollers and rock hopper gear).

4. Orange roughy was introduced into the QMS in 1986 with eight Quota Management Areas (QMAs). The ORH 3B QMA comprises at least three separate fisheries, with the two main fishing grounds on the Chatham Rise (Northwest Chatham Rise and East & South Chatham Rise), with smaller fisheries occurring at Puysegur and in the sub-Antarctic (Figure 1).

5. You set the TAC for the ORH 3B stock as a whole. DWG, which represents approximately 98% of the ORH 3B quota owners, agrees each year to adhere to catch limits at a sub- QMA level for the individual sub-stocks (catch limits).

1.1.2 Biology

6. Orange roughy are a very slow-growing and long-lived species, reaching a maximum age of 230 years and a maximum size of about 50 cm. Orange roughy are estimated to reach sexual maturity between 32 and 41 years of age, and become vulnerable to fishing at 15-20 years of age (c. 23-25 cm).

7. Orange roughy are widespread in New Zealand waters, occurring in depths between 600 and 1,500 m. In the spawning season (June/July), they form dense aggregations in areas often associated with bottom features such as hills and canyons.

8. Additional aggregations form outside the spawning season, presumably for feeding. The main prey of orange roughy are mid-water and bottom species (prawns, fish and squid).

1.1.3 Management Strategy

9. The harvest strategy for ORH 3B is based on a Management Strategy Evaluation (MSE)[5], which has been reviewed and accepted by the Deepwater Working Group. The MSE sets a management target range of 30-50% B_0 to ensure the stock is resilient to periodic recruitment fluctuations and long-term fluctuations in biomass (Table 2), and to provide a high level of confidence that the stock will remain above the soft limit of 20% B_0.

[5] Accessible at: http://deepwatergroup.org//wp-content/uploads/2014/08/Cordue-2014-A-Management-Strategy-Evaluation-for-Orange-Roughy.-ISL-Re....pdf

Table 2: Harvest Strategy for ORH 3B, with reference points and associated management responses

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

10. Abundance is monitored using acoustic surveys and stock assessments that are completed every four years, as outlined by the MSE. An acoustic survey was planned for the Chatham Rise orange roughy stocks in the winter of 2020. This survey was expected to provide updated information to complete a comprehensive update of the stock assessments for Chatham Rise orange roughy stocks next year. Unfortunately the survey could not be completed as planned, which reduces our ability to monitor the impacts of the recent catch limit increase on the stock. It is expected that the survey will be carried out in the next year or two.

11. The MSE underpinned the development of a Harvest Control Rule (HCR). This involved testing the performance of a number of potential harvest control rules against simulated stock trajectories over long periods of time to allow for uncertainty in the inputs into the HCR. The agreed HCR is estimated to have a greater than 97% probability of maintaining the stock above the lower bound of the management target range (30% B_0) under a range of assumptions about stock-recruit relationships and estimates of natural mortality.

12. The HCR is used to suggest catch limits based on the estimated stock status in relation to the management target range. Where a stock is estimated to be below the midpoint of the target range, recommended catch limits are lower than for a stock near the top of the target range. Likewise, the HCR allows for a higher catch limit for stocks that are above the mid-point of the target range.

13. The HCR is based on an exploitation rate of 0.045 (meaning 4.5% of vulnerable biomass can be caught) for a stock that is at the midpoint of the management target range. For a stock at the lower bound of the management target range, the exploitation rate would be 0.03375 (or 3.375% of the vulnerable biomass can be caught), and similarly, for a stock at the upper bound, the exploitation rate would be 0.05625.

1.2 Status of the stock

14. An acoustic survey in 2016 underpinned stock assessments in 2017 for two key sub-stocks in ORH 3B: Northwest Chatham Rise (NWCR), and East and South Chatham Rise (ESCR). Orange roughy abundance in both NWCR and ESCR was estimated to be increasing.

15. For ESCR, the 2017 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 2017.

16. The HCR was applied to this biomass estimate, using an exploitation rate of 0.038, which resulted in an estimate of sustainable yield of 5,970 tonnes for the ESCR. This, adjusted for other mortality caused by fishing (comprising 300 tonnes), formed the basis of the three-year staged increase you agreed to in 2018.

17. Biomass is estimated to continue increasing to be 41% B_0 in 2028 after applying a catch limit of 5,670 tonnes (Option 1).

18. In 2020, the stock assessment for ESCR was updated to incorporate recent catch information. There were no updated abundance indices to inform the update of the assessment. The 2020 assessment estimated the stock to have increased to 36% B_0.

19. The HCR was applied to the outputs of the updated stock assessment which gave a HCR-derived suggested catch limit of 6,348 tonnes based on an exploitation rate of 0.04275. Biomass is estimated to continue increasing to be 40% B_0 in 2028 after applying a catch limit of 6,348 tonnes plus 5% to allow for other mortality caused by fishing.

1.3 Catch information

1.3.1 Commercial

20. The TACC for ORH 3B was set at 6,772 tonnes on 1 October 2019, with a sub-area catch limit of 4,775 tonnes for ESCR. Estimated catches of orange roughy for ESCR have been close to the sub-area catch limits since 2008/09 but exceeded the limit in 2011/12 and 2012/13 (Figure 2); over the same time period around 78% of the ORH 3B TACC was caught. In the 2018/19 fishing year around 92% of the ESCR catch limit was caught; this compares with ORH 3B, where 85% of the TACC was caught.

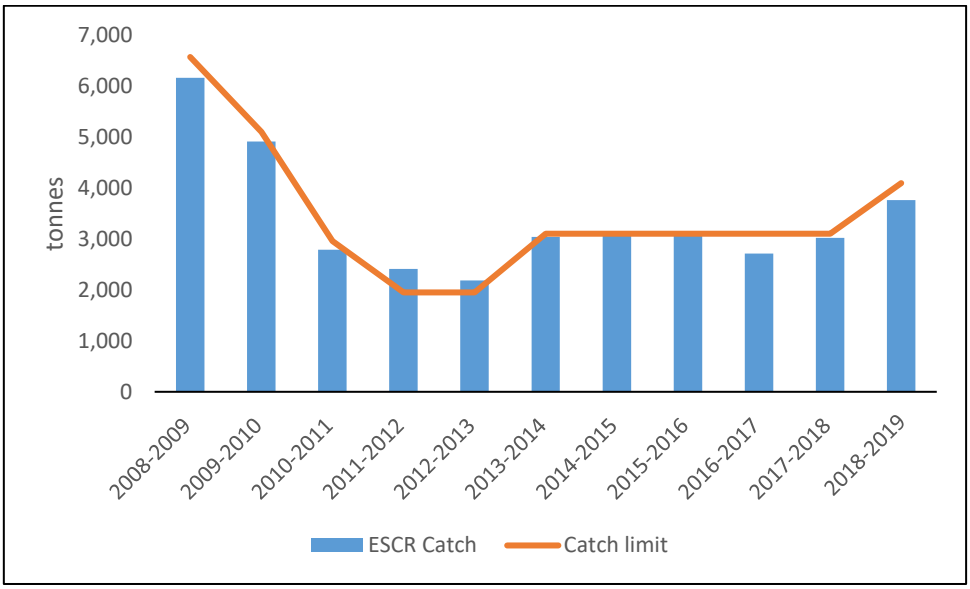


Figure 2. ESCR estimated catch vs catch limit for ORH 3B (in tonnes) 2008/09 - 2018/19

1.3.2 Customary Māori

21. Due to the depths and locations at which orange roughy are found, the customary take of orange roughy is either negligible or non-existent. Orange roughy catches have not been recorded in the customary fishing database.

1.3.3 Recreational

22. Due to the depths and locations at which orange roughy are found, there is no recreational take of orange roughy is either negligible or non-existent. Orange roughy was not recorded in the National Panel Surveys of Marine Recreational Fishers undertaken in 2011/12 and 2017/18.

2 Allowances within the TAC

2.1 Māori customary interests

23. There is no new information indicating that there is any customary catch of orange roughy in ORH 3B. There are no reported customary authorisations for ORH 3B at this time. Fisheries New Zealand proposes to maintain the current 5 tonne allowance for Māori customary take to allow for any customary harvest using commercial boats.

2.2 Recreational interests

24. There has been no reported recreational take of orange roughy and we do not expect any in this fishery because depths and the distance from shore that the species is found. Fisheries New Zealand proposes to maintain the current zero tonne allowance for recreational take.

2.3 All other mortality caused by fishing

25. All other mortality caused by fishing is an allowance intended to provide for unrecorded mortality of fish associated with fishing activity and illegal fishing.

26. Fisheries New Zealand proposes to set the current allowance for all other mortality caused by fishing at 383 tonnes for Option 1, and 417 tonnes under Option 2. These equate to roughly 5% of the combined catch limits for the ORH 3B sub-areas.

3 Options, submissions, and analysis

3.1 Summary of options

27. Three options are proposed for the TAC, TACC and allowances of ORH 3B (Table 3). Option 1A was not consulted on and was introduced following the consultation period.

Table 3: Summary of proposed management settings in tonnes for ORH 3B from 1 October 2020. Figures are all in tonnes.

Option		Option 1	Option 1A (new)	Option 2
TAC		8,055 ↑	8,355	8,767 ↑
Allowances	Customary Māori	5	5	5
	All other mortality caused by fishing	383 ↑	383 ↑	417 ↑
TACC		7,667 ↑ (13%)	7,967 ↑ (18%)	8,345 ↑ (23%)
Sub-QMA catch limits	Northwest Chatham Rise	1,150	1,150	1150
	East/South Chatham Rise	5,670 ↑ (19%)	5,970 ↑ (25%)	6,348 ↑ (33%)
	Puysegur	347	347	347
	Arrow Plateau	0	0	0
	Sub-Antarctic	500	500	500

3.2 Submissions and responses

28. A total of 1,935 submissions and responses were received for ORH 3B (Table 4). The bulk of these submissions (1,927) are based upon a template email that appears to have been set up by Greenpeace New Zealand. FINZ did not make specific comments on this stock but stated that they endorse DWG's response for ORH 3B.

Table 4: Written submissions and responses received for ORH 3B (in alphabetical order)

Submitter	Option Support			
	1	1A	2	Other
Deep Sea Conservation Coalition (DSCC)				1
Deepwater Group Limited (DWG)		1		
Fisheries Inshore New Zealand Ltd (FINZ)		1		
Iwi Collective Partnership (ICP)		1		
Mike Currie				1
Our Seas Our Future (OSOF)				1
Sealord Group Limited (Sealord)		1		
Submitters who used the template				1,927
Te Arawa Fisheries		1		
Te Kupenga o Maniapoto Limited		1		
Te Ohu Kaimoana		1		

3.3 Analysis

3.3.1 Input and participation of tangata whenua

29. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

30. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries. Input and participation on the proposal to increase the TAC and TACC for ORH 3B through a series of staged increases over three years was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (representing the nine iwi of the South Island) in 2018. This forum supported a review of the ORH 3B fishery. The proposal for a staged increase was also discussed with Chatham Islands iwi and imi as part of a general engagement process in 2018.

31. No views were expressed by the Chatham Islands groups. Te Waka a Māui me Ōna Toka Iwi Forum, Kahungunu Asset Holding Company, and Ngati Whatua Fisheries all made submissions on the 2018 consultation. None of the iwi groups opposed TAC/TACC increases.

32. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, a two-page document with information on the proposal to review ORH 3B was provided to Iwi Fisheries Forums electronically, and input sought. No further input relating to the proposals for ORH 3B has subsequently been received.

3.3.2 Kaitiakitanga

33. Orange roughy (nihorota) is listed as a taonga species in Te Waipounamu (all of South Island) Iwi Fisheries Plan.

34. Te Waipounamu plan contains objectives to support and provide for the interests of South Island iwi, and contains two objectives relevant to the management options proposed for ORH 3B:

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

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

35. Imi (Moriori) and iwi (Ngāti Mutunga of Chatham Islands (Rēkohu/Wharekauri)) have listed orange roughy as a taonga species in their CIFF@44º (Chatham Island Fisheries Forum plan; includes Rangihaute/Rangiauria-Pitt Island). Two management objectives of CIFF@44º which are particularly relevant to the management options proposed for ORH 3B are:

    - **Management Objective 2**: Kaitiakitanga is fundamental to the management of all fisheries resources.

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

36. There are no mātaitai reserves, closures or restrictions under s186B of the Fisheries Act 1996 that impact, or are impacted by, orange roughy fishing in ORH 3B.

37. In Fisheries New Zealand's view, the proposed TAC/TACC increase under both options contributes towards Te Waipounamu plan and Chatham Island Fisheries Forum plan objectives described above. This is based on the potential to increase commercial activity and therefore economic development opportunities for South Island iwi and Chatham Islands iwi and imi quota holders. At the same time, the mauri and wairua of fisheries is maintained or enhanced because the abundance of orange roughy in ORH 3B continues to improve, whilst environmental impacts are avoided or mitigated by existing regulatory and non-regulatory arrangements.

3.3.3 Environmental principles (section 9 of the Act)

38. The recommended increase to the TAC/TACC for ORH 3B is likely to result in an increase in the total amount of fishing effort. The key environmental interactions within the ESCR orange roughy fishery which must be taken into account when considering sustainability measures, are:

Marine mammals

39. The capture rate of marine mammals in ORH 3B target tows is very low; there was one observed fur seal capture between the 2013/14 and 2017/18 fishing years (the average annual observer coverage was 27% over this period). The proposed TAC/TACC increases under either option are not expected to adversely affect any population of marine mammal given the low capture rate.

Seabirds

40. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action - Seabirds 2020; Reducing the incidental mortality of seabirds in Fisheries (NPOA-Seabirds 2020). The NPOA-Seabirds 2020 establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species.

41. Trawlers more than 28 metres in length are required to deploy seabird mitigation devices when fishing. Protected Species Risk Management Plans (PSRMPs)[6] may include additional practices to avoid seabird interactions, including offal management. Fisheries New Zealand

[6] Protected Species Risk Management Plans were formerly known as Vessel Management Plans (VMPs).

monitors and audits performance against these plans.

42. The risk to seabirds from orange roughy fishing is considered to be negligible. The best available data[7] shows that between 2002–03 and 2017–18, there were 39 total captures observed of all seabirds in orange roughy trawl fisheries in the Chatham Rise area. Based on statistical modelling, this results in an estimate of 133 seabirds captured in total, or 8 seabirds per year on average.

43. The risk to seabird populations from orange roughy fisheries is likely to continue to be low under any of the options proposed. The proposed TAC/TACC increases under either option are not expected to adversely affect the population of any seabird species given the low seabird capture rates in orange roughy fisheries.

Fish bycatch

44. Catch of associated fish species is expected to increase as the result of the proposed increases. The main fish bycatch species associated with orange roughy fishing include oreo (black and smooth oreo in OEO 4), and deepwater sharks.

45. OEO 4 has a TACC of 3,600 tonnes that is fully caught in most years. It has not been considered for any change as part of the October 2020 sustainability round. Voluntary catch limits for individual oreo species that make up OEO 4 apply; for the 2019/20 fishing year the smooth oreo catch is constrained to a maximum of 2,600 tonnes, with black and spiky oreo limited by the remaining available TACC. Therefore fishers will need to adjust their effort when targeting oreo to avoid exceeding the TACC and the voluntary catch limit for smooth oreo, and/or reserve some oreo ACE for when they are orange roughy fishing.

46. Based on the average annual smooth and black oreo catch from OEO 4 when targeting orange roughy between 2009/10 and 2018/19, it is estimated that the proposed orange roughy TACC increases may lead to an increase of 13 tonnes of black oreo and 66 tonnes of smooth oreo caught under Option 1, 18 tonnes of black oreo and 89 tonnes of smooth oreo under Option 1A and 23 tonnes of black oreo and 111 tonnes of smooth oreo caught under Option 2, if the increase in ORH 3B TACC is fully caught, and if fishers don't actively avoid catching oreos. The risk of over-catching OEO 4 is less under Option 1 and 1A than Option 2. Fisheries New Zealand will continue to monitor catch of oreos and consider management action (e.g. amending deemed values) if oreo catch exceeds the TACC.

47. Sharks are managed under the National Plan of Action for Sharks (NPOA-Sharks) 2013. Fisheries New Zealand has also completed a qualitative risk assessment for sharks in New Zealand. While the species caught in orange roughy fisheries were identified as having limited data available, it was considered that there were no major sustainability risks to those species from fishing.

48. 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. Reporting for sharks in connection with deepwater fisheries includes information on the total catch of shark species during deepwater fishing activity, catch of protected shark species, the level of the use of generic reporting codes, and information about the utilisation and processing of sharks in deepwater fisheries. Information on shark captures is reported each year in the Annual Review Report[8].

[7] https://psc.dragonfly.co.nz/2019v1/released/birds/orange-roughy-trawl/all-vessels/eez/2002-03-2017-18/

[8] https://www.fisheries.govt.nz/dmsdocument/39770/direct

Benthic Impacts

49. Bottom trawling interacts with the seabed and the benthic environment. In 2001, bottom trawling was prohibited in 17 diverse seamount areas to protect vulnerable seabed biodiversity. Additionally, in 2007, 'Benthic Protection Areas', that protect another 18 areas of mostly pristine marine environment from bottom trawling and dredging, were implemented. Almost a third of New Zealand's waters (over 1.2 million square kilometres) are completely closed to bottom trawling and dredging. In combination, these closures include 28% of underwater topographic features (including underwater hills, knolls, and seamounts); 52% of the seamounts over 1000m high; and 88% of known hydrothermal vents. Three BPAs are within the ESCR and NWCR ORH 3B subareas – Mid Chatham Rise, East Chatham Rise and Blink (Figure 3).

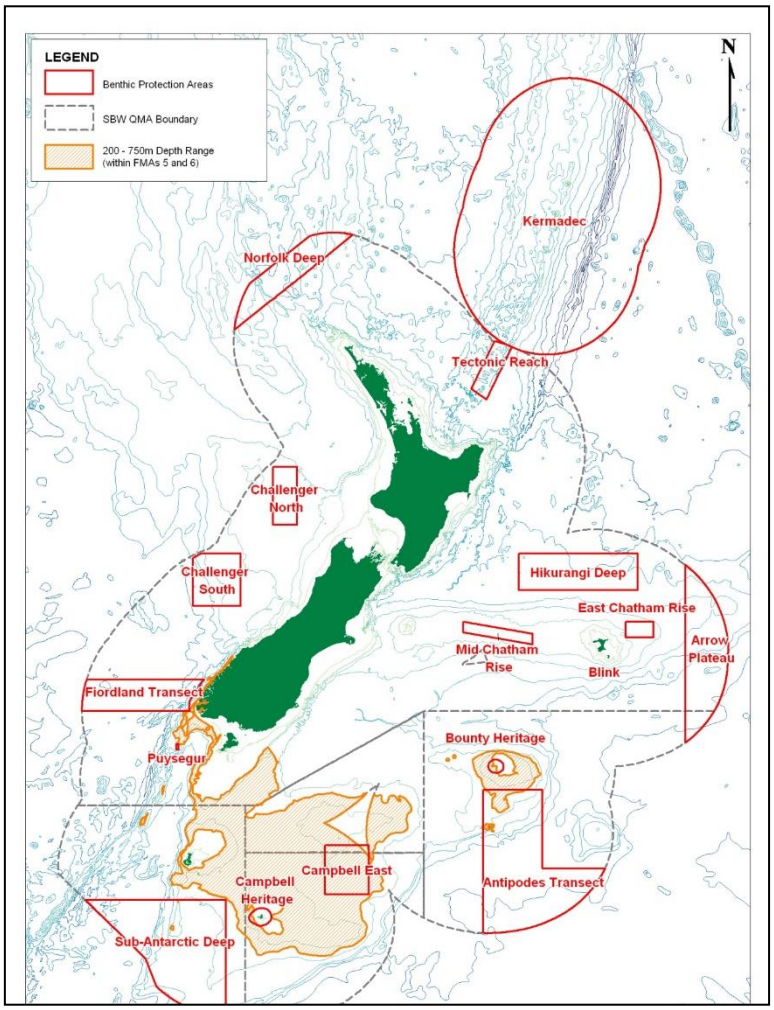


Figure 3. Benthic Protection Areas relevant for ORH 3B in New Zealand

50. Deepwater fisheries were estimated to have contacted 180,100 km² of the seabed in the 10 fishing years between 2007/08 and 2016/17. This is equivalent to 4.4% of the total Territorial Sea and EEZ seafloor area, or 13% of the 'fishable' seafloor area open to bottom-contacting trawling in waters shallower than 1,600 m.

51. The trawl footprint in ESCR is estimated in the most recently published report[9] to have contacted 4,942 km² of the seabed at depths of 800-1600 metres in the period October 2007 - September 2017. Most fishing occurs within areas that have been fished for a number of years

[9] https://www.mpi.govt.nz/dmsdocument/37050-aebr-229-extent-of-bottom-contact-by-new-zealand-commercial-trawl-fishing-for-deepwater-tier-1-and-tier-2-target-species-determined-using-catchmapper-software-fishing-years-200817

prior to 2008, and it is estimated that there is little ‘new’ area trawled each year.

52. Submitters who used the template suggest that despite claims the trawl footprint will not increase with a TAC increase, the footprint has grown some 800 km² between 2013 and 2018.

53. Fisheries New Zealand notes that the best available information estimates the trawl footprint in ESCR between 2008 and 2017 and shows that the trawl footprint for ESCR has grown by 812 km² between 2013 and 2017. It is important to note that this growth is relative to the estimated size of the footprint between October 2007 and September 2012, and would likely overestimate ‘new’ area contacted as it does not include historical fishing effort prior to 1 October 2007.

54. Therefore, while increasing the TAC and TACC under either of the proposed options may increase the trawl footprint, this increase is unlikely to be significant relative to the total deepwater footprint or extend significantly into unfished areas given the larger extent of historical (1989-2007) fishing effort. The trawl footprint of the orange roughy fishery will continue to be mapped and monitored annually to assess if new areas are being impacted. Work is currently underway to assess estimates of the trawl footprint in recent fishing years to the trawl footprint prior to 2007.

55. Submitters suggest bottom trawling is a destructive fishing method and want to see bottom trawling banned on important marine ecosystems like seamounts because they consider it destroys important habitats and ecosystems which underpin the health of the ocean.

56. Deepsea Conservation Coalition (DSCC) states that the only way for there to be any chance of recovery for trawled areas is if they are left alone for significant periods of time. DSCC states there should be no increase in ORH 3B catch limits until comprehensive measures are in place to protect all habitats of significance to fisheries management including seamounts and similar features.

57. Submitters who used the template suggest that the argument that bottom trawling has already destroyed the environment in existing trawl tracks, and therefore can keep doing so, is unacceptable. DSCC call on the New Zealand Government to protect all seamounts within the EEZ, and cite research finding little evidence of benthic community resilience to bottom trawling.

58. Submitters infer that by acknowledging areas that are closed to bottom trawling, Fisheries New Zealand is arguing that it is acceptable to continue to destroy other seamount ecosystems, and that biodiversity loss can be justified by Fisheries New Zealand because of the existence of Benthic Protection Areas.

59. Fisheries New Zealand agrees that bottom trawling does impact on the seabed and the corals, sponges and other structure-forming life found there. Fisheries New Zealand is committed to managing adverse effects of fishing on the benthic environment and is progressing research to better understand the nature and extent of these effects.

60. Submitters state that slow-growing coral take decades to recover after the destruction of trawlers and claim that last year the New Zealand fishing industry destroyed up to 3,000 tonnes of coral.

61. This quantity is not consistent with the information available to Fisheries New Zealand. Fisheries New Zealand monitors catch of benthic species in these fisheries. In 2018/19, 28 tonnes of coral, including coral rubble, was reported by the core deepwater fleet for all deepwater fisheries. Observers recorded 8.1 tonnes of coral caught in the Chatham Rise orange roughy fishery in 2018/19 with 27% of tows observed. Fisheries New Zealand understands that the 3,000 tonne figure is derived by scaling up known coral captures by a

multiplier to give an estimate of total coral impacted but not landed on deck and notes that there are a range of views on the validity of this type of estimate.

62. Fisheries New Zealand is currently funding research projects[10] to better understand the extent and intensity of trawling activity and to evaluate the effects. This research will inform future decisions on managing any adverse effects of fishing on the benthic environment.

3.3.4 Sustainability measures (section 11 of the Act)

63. 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, the natural variability of the stock concerned and any relevant fisheries plan.

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

- **Management Objective 1**: Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
- **Management Objective 4**: Ensure deepwater and middle-depth fishstocks and key bycatch fishstocks are managed to an agreed harvest strategy or reference points.

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

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

3.3.5 General feedback

67. The following feedback received by submitters and responders doesn't fit into any single option but is general feedback that is relevant information to consider when making your decision.

Concern about sustainability of orange roughy

68. Our Seas Our Future (OSOF) does not support either option for revising the TACs and allowances, suggesting that it would be better to wait until the current biomass reaches 40% B_0, given that the management target is 30-50% B_0. They note that B_{2020} is 36% B_0 which is towards the lower end of the 30-50% B_0 target.

69. OSOF also opposes increasing the TAC due the fact that the acoustic survey scheduled for 2020 did not take place, reducing the ability to test whether catch limits implemented since 2017 are impacting on orange roughy stock status.

70. Mike Currie submitted that orange roughy have suffered from years of over fishing and there is a mismatch between model projections and catch effort information. Consequently, he contends that orange roughy catch should be banned.

Fisheries New Zealand response

71. Fisheries New Zealand notes that orange roughy biomass is projected to continue to increase to at least 40% B_0 in 2028 under all three options proposed in this paper, which is the midpoint

[10] For more information please refer to the table of research projects on pages 30-31 of the Deepwater Annual Operational Plan (AOP) at https://www.mpi.govt.nz/dmsdocument/36804-annual-operational-plan-for-deepwater-fisheries-201920

of the management target range.

Concern about United Nations Resolutions

72. Submitters who used the template suggest that New Zealand committed to the UN Resolutions to protect seamounts and other vulnerable marine ecosystems from bottom trawling, but are failing to meet those commitments.

Fisheries New Zealand response

73. Fisheries New Zealand notes that each year the United Nations General Assembly (UNGA) adopts a resolution on sustainable fisheries which canvasses developments in international fisheries. The resolutions call for the adoption of prescribed measures to prevent significant adverse impacts on vulnerable marine ecosystems by bottom fishing on the high seas. However, since the UNGA resolutions on sustainable fisheries apply only in areas beyond national jurisdiction, they are outside the scope of this review.

3.4 Option 1

74. Option 1 is a TAC of 8,055 tonnes set on the basis of the application of the HCR to the 2017 stock assessment, adjusted to account for other sources of mortality. We expect stock status to continue to increase under this option, and the updated assessment estimates that the stock will be at 41 % B_0 in 2028 with an ESCR catch of 5,670 tonnes.

75. DWG notes that the HCR was applied in 2018 to derive a catch limit recommendation of 5,970 tonnes for the 2018-19 fishing year (Cordue 2018[11]). However, Fisheries New Zealand proposed that the annual catch from ORH 3B ESCR be increased (in steps over a three year period) to a limit of 5,670 tonnes (the final step to occur on 1 October 2020) rather than to 5,970 tonnes.

76. DWG [correctly] surmised the reason for the difference in the HCR catch limit of 5,970 tonnes and the figure proposed by Fisheries New Zealand of 5,670 tonnes is that Fisheries New Zealand assumed the catch limit calculated by applying the HCR did not include an allowance for other mortality caused by fishing and has adjusted it on this basis. In the simulations used to test the HCR, the actual annual removals were assumed to exceed the catch limit by 5% to allow for other mortality from fishing (Cordue 2014[12]). Therefore it was not necessary for the 5,970 tonnes to be adjusted.

3.5 Option 1A

77. This option is based on the outputs from the HCR application to the 2018 stock assessment, but does not adjust it by 5% for other sources of mortality caused by fishing, as it has become clear (as pointed out in submissions) that this allowance was accounted for in projections on top of the 5,970 tonne catch limit.

78. Amending the ESCR catch limit to 5,970 tonnes to be consistent with the outputs of the HCR results in a TAC of 8,355 tonnes and a TACC of 7,967 tonnes. Catch limits for the other sub-QMAs remain unchanged, as do the allowances for Māori customary fishing and recreational fishing. All other sources of mortality to the stock caused by fishing is set at 383 tonnes.

79. Based on the assessment, we expect stock status to continue to increase under Option 1A, and projected stock status to be approximately the same as that estimated for Option 1, that is, around 41% B_0 in 2028.

[11] Cordue, P.L. 2018. A brief update of the ORH 3B ESCR and NWCR stock assessments to the end of the 2016–17 and 2017–18 fishing years with application of the Harvest Control Rule in both years. ISL Client Report for Deepwater Group Ltd.

[12] Cordue, P.L. 2014. A management strategy evaluation for orange roughy. ISL Client Report for Deepwater Group Ltd

80. This option is supported by DWG, Te Arawa Fisheries, Te Kupenga o Maniapoto Limited, Te Ohu Kaimoana, ICP, FINZ and Sealord. DWG shareholders confirm that they agree to continue the current non-regulatory regime of agreed ORH 3B catch limits for 2020-21.

81. Iwi Collective Partnership (ICP) supports Option 1A because the science demonstrates a healthy stock: ICP notes the 2017 stock assessment estimated the stock was at 33% B_0. In 2020, the stock assessment was updated to incorporate recent catch information and estimated the stock to have increased to 36% B_0.

82. Sealord and Te Ohu support Option 1A. Sealord wishes to follow the continuation of the cautious staged approach to TACC increase in the ORH 3B ESCR fishery that has occurred over the two previous fishing years as well as accounting for the cancellation of the scheduled survey in 2020 that would have tested the impact of previous catch limit increases on the biomass.

83. Te Ohu suggests that multi-stock management is desirable, and the TAC/TACC for OEO 4 should be reviewed in association with ORH 3B.

84. DWG notes that the increase of the ESCR sub-area catch limit should not lead to over-catching the OEO 4 TACC and supports Fisheries New Zealand's assessment of the environmental considerations of this fishery. DWG shareholders remain committed to minimising and managing interactions with other species.

3.6 Option 2

85. Option 2 sets a TAC of 8,767 tonnes on the basis of the application of the HCR to the 2020 stock assessment. In 2020, the stock assessment for ESCR was updated to incorporate recent catch information, although there were no updated abundance indices to inform the update of the assessment. The 2020 assessment estimated the stock to have increased to 36% B_0. The HCR was applied to the outputs of the updated stock assessment which gave a HCR derived suggested catch limit of 6,348 tonnes for ESCR.

86. Option 2 allows for greater utilisation compared with Option 1. However, the HCR assumes that stocks will be surveyed and assessed every four years. Since the survey planned for winter 2020 was not able to be completed as planned, there is less ability to monitor whether a higher TAC/TACC as proposed under Option 2 would impact on the long term sustainability of the stock. Since Option 2 is associated with more uncertainty and risk than the other options with regards to the sustainability of the stock, and no submitters or respondents supported this option, it is not a preferred option.

3.7 Economic analysis

87. Under Option 1, the TACC would increase by 13% from 6,772 tonnes to 7,667 tonnes. Based on orange roughy export data for the 2019 calendar year, the estimated short-term financial implication of increasing the TACC by 895 tonnes under Option 1 is an increase in FOB exports[13] of NZ$ 11.4 million per annum if the entire TACC was caught.

88. Under Option 1A, the TACC would increase by 18% from 6,772 tonnes to 7,967 tonnes. Based on orange roughy export data for the 2019 calendar year, the estimated short-term financial implication of increasing the TACC by 1,195 tonnes under Option 1A is an increase in FOB exports of NZ$ 15.2 million per annum if the entire TACC was caught.

[13] 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.

89. Under Option 2, the TACC would increase by 23% from 6,772 tonnes to 8,345 tonnes. For Option 2, the estimated short-term financial benefit of increasing the TACC by 1,573 tonnes is an increase in exports of approximately NZ$ 20.1 million per annum if the entire TACC was caught.

3.8 Other Considerations

90. Fisheries New Zealand notes that you set the TAC and TACC for the ORH 3B stock as a whole. ORH 3B quota owners, through DWG (which representing approximately 98% of the ORH 3B quota owners), agree each year to adhere to catch limits at a sub-QMA level for the individual sub-stocks.

91. Adherence to the non-regulatory catch limits is monitored by Fisheries New Zealand and reported annually in the Deepwater Fisheries Annual Review Report. There have been high levels of adherence to the sub-QMA catch limits in recent years.

4 Conclusion and recommendations

92. Fisheries New Zealand recommends Option 1A. This option amends the HCR-recommended TAC/TACC to reflect what we now understand the science to have said. Option 1A is consistent with the three-year phased increase you agreed to in 2018 and is a relatively conservative increase compared to what the updated science says could be taken. This option allows for a significant increase in catch (18% rise) and subsequent export earnings ($15.2 million per annum) over the status quo. At the same time, any additional impact on the benthic environment in terms of an expanded trawl footprint, damage to corals and other sessile organisms, as well as non-target fish species as a result of increased effort, is likely to be small.

93. The HCR assumes that stocks will be surveyed and assessed every four years. When the decision was made on the 2017/18 and 2018/19 catch limits, an acoustic survey for the Chatham Rise orange roughy stocks was scheduled for winter 2020. Since the survey did not occur as planned in 2020, this reduces our ability to test whether the catch limit increases implemented since 2017 are having a different impact on biomass than projected.

94. On balance, Fisheries New Zealand recommends Option 1A because it carries less sustainability risk than Option 2, but still allows for increased utilisation. The Chatham Rise survey that was scheduled for 2020 is expected to go ahead within the next year or two; this will provide further insight into the impact of the phased catch increases since 2018/19 on the Chatham Rise orange roughy fishstocks.

95. Fisheries New Zealand recommends that you approve Option 1A, and request that industry adhere to the voluntary sub-QMA catch limits by applying all of the TACC increase to the ESCR.

5 Decision for ORH 3B

Option 1

Agree to set the ORH 3B TAC at 8,055 tonnes and within the TAC:

i. retain the current allowance for Māori customary non-commercial fishing interests (5 tonnes);
ii. retain the current allowance for recreational interests (0 tonnes);
iii. increase the allowance for all other sources of mortality to the stock caused by fishing to 383 tonnes;
iv. increase the ORH 3B TACC to 7,667 tonnes; and
v. request that industry apply all of the TACC increase to the East and South Chatham Rise (ESCR) so that the catch limit for ESCR is 5,670 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1A *(Fisheries New Zealand preferred option)*

Agree to set the ORH 3B TAC at 8,355 tonnes and within the TAC:

i. retain the current allowance for Māori customary non-commercial fishing interests (5 tonnes);
ii. retain the current allowance for recreational interests (0 tonnes);
iii. increase the allowance for all other sources of mortality to the stock caused by fishing to 383 tonnes;
iv. increase the ORH 3B TACC to 7,967 tonnes; and
v. request that industry apply all of the TACC increase to the East and South Chatham Rise (ESCR) so that the catch limit for ESCR is 5,970 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the ORH 3B TAC at 8,767 tonnes and within the TAC:

i. retain the current allowance for Māori customary non-commercial fishing interests (5 tonnes);
ii. retain the current allowance for recreational interests (0 tonnes);
iii. increase the allowance for all other sources of mortality to the stock caused by fishing to 417 tonnes;
iv. increase the ORH 3B TACC to 8,345 tonnes; and
v. request that industry apply all of the TACC increase to the East and South Chatham Rise (ESCR) so that the catch limit for ESCR is 6,348 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Scampi (SCI 1) - Bay of Plenty

Metanephrops challenger, Kourarangi

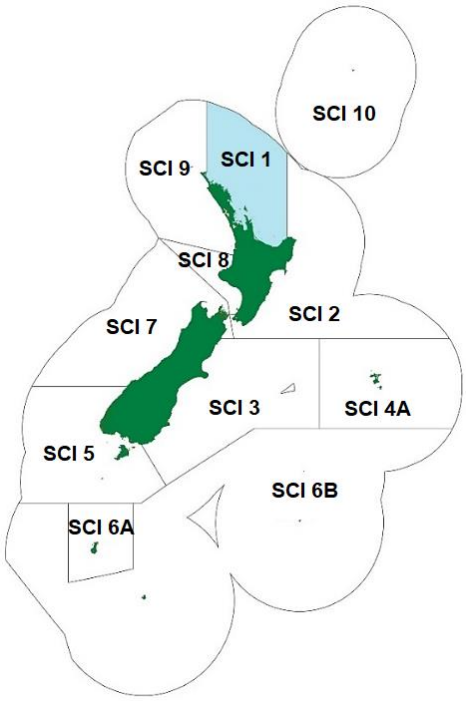


Figure 1: Quota Management Area (QMAs) for scampi (SCI), with SCI 1 highlighted in blue. A scampi is pictured on the left.

Table 1: Summary of options proposed for SCI 1 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Current *(Status quo)*	126	120	0	0	6
Option 1	139 ↑ (10%)	132 ↑ (10%)	0	0	7 ↑
Option 2	151 ↑ (20%)	144 ↑ (20%)	0	0	7 ↑

New option incorporated following consultation	No	
Total submissions received	8	
Number of submissions received in support of each option	Option 1	3
	Option 2	3
	Other	2

1 Why are we proposing that you review the TAC and TACC?

1. The best available information indicates that the scampi stock in SCI 1 has increased in abundance and a utilisation opportunity now exists. The 2019 stock assessment for SCI 1 estimates that the SCI 1 stock biomass is very likely to be above the management target of 40% unfished biomass (B_0). Therefore, Fisheries New Zealand considers that there is an opportunity to increase utilisation of SCI 1 whilst maintaining the status of the stock above the management target.

1.1 About the stock

1.1.1 Fishery characteristics

2. Virtually all scampi in SCI 1 (>99% of catches) are taken by target bottom trawl. The scampi fishery is a low volume target fishery, with total catch per tow averaging between one and two tonnes. Negligible quantities of scampi are caught by alternate fishing methods, or as non-target bycatch in other fisheries.

3. Vessels used to target scampi are typically between 20 and 32 metres in length and deploy light, low headline trawl gear (less than two metres) with a double or triple rig configuration. When targeting scampi, vessels typically conduct three long (around seven hour) tows per day and remain at sea for between two and six weeks (all product is frozen on board).

1.1.2 Biology

4. Scampi (*Metanephrops challengeri*) are mobile, bottom dwelling crustaceans widely distributed but patchily abundant around the coast of New Zealand. They are found on mud or sandy-mud substrates between 200 and 500 metres in depth. The maximum age of scampi in New Zealand is not known. However, analysis of tag return data and aquarium trials coupled with studies of similar species overseas, suggests that scampi may achieve a maximum age of 15 to 20 years.

1.1.3 Management Strategy

5. The TACs and TACCs of Tier 1 scampi stocks such as SCI 1 are set based upon the status of the stock (as determined by stock assessment) in relation to the default reference points set out in the Harvest Strategy Standard[14]. The management target for SCI 1 is 40% B_0, the soft limit is 20% B_0 and the hard limit is 10% B_0.

1.2 State of the stock

6. An update of the SCI 1 stock assessment was presented to the Shellfish Working Group in 2019. The stock assessment model incorporated updated photographic and trawl survey indices from the 2018 trawl survey alongside updated catch history and standardised Catch Per Unit Effort (CPUE) indices. The 2018 photo survey shows a slight increase in the biomass, and the CPUE shows a slight increase too. The trawl survey index remains stable. The model estimated a slowly increasing biomass since 2010 (Figure 2). The SCI 1 biomass was estimated to be 76% B_0 in 2019.

7. Projections were examined for the base model with constant annual catch remaining at current levels (current TACC), or at 10% and 20% higher levels. Median estimates of stock status from the projections suggest that the stock would remain above 70% B_0 (and well above 40% B_0) by 2024 with either a 10% or 20% increase in TACC.

8. The 2019 spawning stock biomass is 'Very Likely' (greater than 90% probability) to be at or above the default management target of 40% B_0 and exceptionally unlikely (less than 1% probability) to be below the soft or hard limits. Overfishing is very unlikely (less than 10% probability) to be occurring.

9. There are three primary sources of uncertainty incorporated in the 2019 SCI 1 model: the first is in regards to photographic survey abundance indices; the second relates to the size distribution of scampi associated with the major burrow openings recorded in the surveys (growth, burrow occupancy and catchability); and third the relationship between stock size and recruitment for scampi is unknown.

[14] https://www.mpi.govt.nz/dmsdocument/728/loggedIn

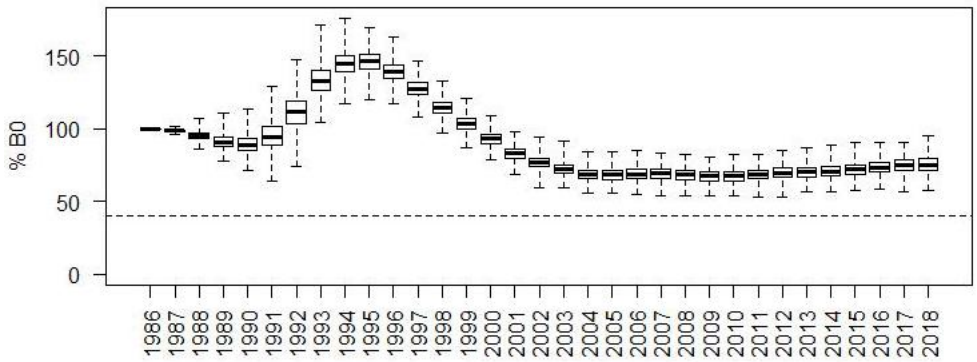


Figure 2: Spawning stock biomass from SCI 1 base model as a percentage of B_0. The management reference point (40% B_0) is shown as a dashed line.

1.3 Catch information

1.3.1 Commercial

10. The catch limit for SCI 1 was set at 120 tonnes on 1 October 1990. The TACC was set at the same amount (120 tonnes) when SCI 1 was introduced to the QMS in 2004. Landings since 1990 have been relatively stable around the TACC (Figure 3). Stable annual catches of 100 to 120 tonnes over the last 30 years are low relative to the current estimated spawning stock biomass and do not appear to have had an effect on biomass.

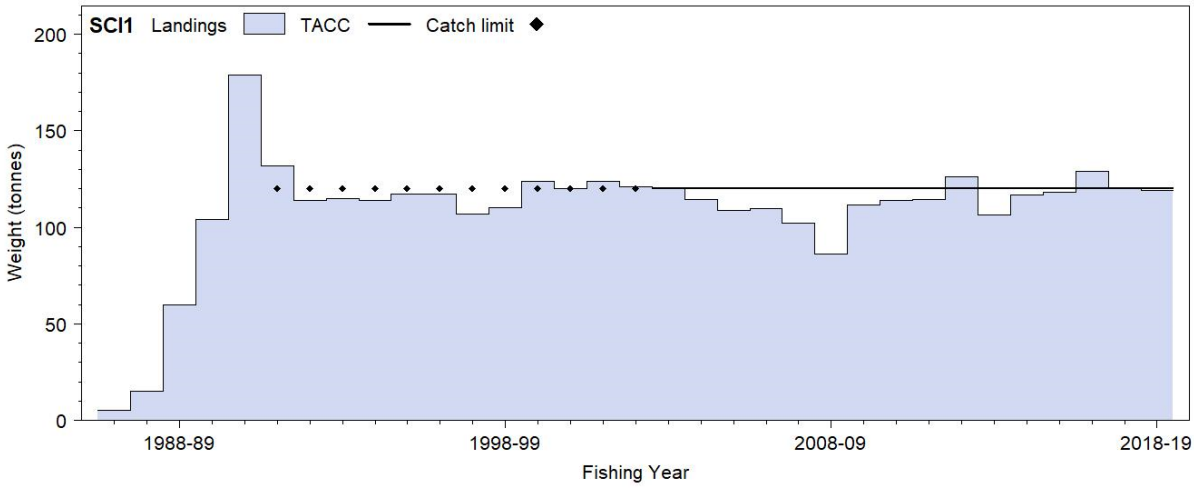


Figure 3: Landings for SCI 1 (in tonnes) since 1986/87

1.3.2 Customary Māori

11. Due to the depths at which scampi occur and specialised gear required, the customary non-commercial take of scampi is likely to be negligible. The best available information for Māori customary take is under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 (NI Customary Regulations). No permits have been issued, and scampi has not been reported under the NI Customary Regulations. There are no reported customary authorisations for SCI 1.

1.3.3 Recreational

12. There is no reported recreational take of scampi in SCI 1.

2 Allowances within the TAC

2.1 Māori customary interests

13. There is no recorded Māori customary take of scampi in SCI 1. Fisheries New Zealand proposes retaining a zero allowance for Māori customary take under both options.

2.2 Recreational interests

14. There is no recorded recreational take of scampi in SCI 1. Fisheries New Zealand proposes retaining a zero allowance for recreational take under both options.

2.3 All other mortality caused by fishing

15. Other sources of mortality caused by fishing is an allowance intended to provide for unrecorded mortality of scampi associated with fishing activity, including loss due to ripped nets, the incidental effects of trawl gear on scampi and their burrows, and illegal fishing. Fisheries New Zealand proposes to increase the allocation for other sources of mortality caused by fishing from 6 tonnes to 7 tonnes under both options.

3 Options, submissions, and analysis

3.1 Summary of options

16. Two options are proposed for the TAC, TACC and allowances of SCI 1 (Table 2). No additional options were added following consultation.

Table 2: Proposed management settings in tonnes for SCI 1 from 1 October 2020. All figures are in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1	139 ↑ (10%)	132 ↑ (10%)	0	0	7 ↑
Option 2	151 ↑ (20%)	144 ↑ (20%)	0	0	7 ↑

3.2 Submissions

17. A total of eight submissions or responses were received during the consultation period (Table 3). FINZ did not make specific comments on SCI 1 but stated that they endorse DWG's response relating to the stock.

Table 3: Written submissions and responses received for SCI 1 (in alphabetical order)

Submitter	Option Support		
	1	2	Other
Deepwater Group Limited (DWG)		✓	
Fisheries Inshore New Zealand Ltd (FINZ)		✓	
Iwi Collective Partnership (ICP)	✓		
Mike Currie			✓
Our Seas Our Future (OSOF)			✓
Te Arawa Fisheries	✓		
Te Kupenga o Maniapoto Ltd		✓	
Te Ohu Kaimoana	✓		

3.3 Analysis

3.3.1 Input and participation of tangata whenua

18. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

19. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

20. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, information on the proposal to review the TAC/TACC for SCI 1 was provided to three North Island Iwi Fisheries Forums, and input sought. The proposal for SCI 1 was discussed at the Mai i nga Kuri a Wharei ki Tihirau Iwi Fisheries Forum on 4 May 2020, and with both the Mid North and the Hiku o Te Ika Iwi Fisheries Forums on 8 May 2020. The Mid North Iwi Fisheries Forum requested and were provided with additional information on the Customary Māori allowance, bycatch and the benthic impacts of the SCI 1 trawl fishery.

3.3.2 Kaitiakitanga

21. The SCI 1 fishstock (Figure 1) includes the rohe of Mai i Nga Kuri a Wharei ki Tihirau (Bay of Plenty), Nga Hapu o te Uru o Tainui (Waikato and west coast North Island) and Hiku o Te Ika (far North). Scampi is identified as a taonga (treasured) species in Iwi Fisheries Plans that apply to Mai i Nga Kuri a Wharei ki Tihirau and Te Hiku o Te Ika Iwi.

22. Fisheries New Zealand considers the proposals for SCI 1 to be generally consistent with objectives of the two Iwi Fisheries Forum Plans, in particular those to improve the management of fisheries resources to ensure sustainability for future generations, to ensure that commercial and non-commercial customary needs are met, and that fishstocks are healthy and support the social, cultural and economic prosperity of iwi and hapū.

23. There are no mātaitai reserves or closures or restrictions under s186A of the Fisheries Act 1996 relevant to this review. There are no customary fisheries management tools such as taiāpure or Section 186B temporary closures relevant these proposals as scampi fishing takes place offshore in depths between 300 to 500 metres in SCI 1 (Figure 1).

3.3.3 Environmental principles (section 9 of the Act)

24. The key environmental interactions with the scampi trawl fishery concern marine mammals, seabirds, fish and invertebrate bycatch, and benthic impacts.

Marine mammals

25. No marine mammal captures have been reported from SCI 1 either by fishers or observers on-board vessels in SCI 1. The incidental captures of marine mammals in scampi target trawls in SCI 1 are likely to be very rare events and are therefore considered unlikely to impact upon marine mammal populations under the options proposed.

Seabirds

26. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (NPOA-Seabirds 2020). The NPOA-Seabirds 2020 establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all seabird species.

27. Although most scampi are retained whole, scampi fishing incurs high rates of fish and invertebrate bycatch which results in relatively high rates of fish waste being discharged. The discharge of fish waste attracts seabirds to the vessel, increasing the risk of seabird captures. However, seabird interactions with vessels in the SCI 1 fishery occur at a low rate. In the five fishing years from 2013/14 to 2017/18, observer coverage of SCI 1 on average has been 7% of total tows annually (ranging from 0 to 13.5% per year)[15]. During this period a mean of 0.6 seabirds have been observed caught annually (ranging from 0 to 2 per year). It is estimated that over this five year period, an average of 15 seabirds were caught annually in SCI 1.

28. The two seabird species that are of most concern are black petrels and flesh-footed shearwaters. Both seabirds' at-sea distribution overlaps with the SCI 1 QMA and both have a New Zealand Threat Classification of 'Vulnerable'. The most recent seabird risk assessment[16] that underpins the NPOA-Seabirds 2020 identified black petrel in the 'Very High Risk' category from fishing and Flesh-footed shearwaters as 'High Risk.' The scampi fishery is estimated to be responsible for less than 1% of the risk to black petrel from fishing and 6% of the risk to flesh-footed shearwater from fishing.

29. Mitigation practices are implemented through the Scampi Operational Procedures.[17] Operational Procedures apply to all vessels used to target scampi and set out the fleet wide mitigation measures agreed between Fisheries New Zealand, scampi quota holders and ACE holders. As part of the Operational Procedures, each vessel used for targeting scampi is expected to follow a Protected Species Risk Management Plan (PSRMP)[18] which sets out the specific actions each vessel will follow to reduce the risk to seabirds, and other protected species. These include warp mitigation devices and fish waste management systems. All trawl vessels 28 metres or greater in length (including those targeting scampi) are required to deploy one type of seabird scaring device during all tows in accordance with Seabird Scaring Devices Circular 2010[19] to deter seabirds from approaching trawl warp(s).

30. While we would expect an increase in fishing effort, we do not expect any significant change in risk to (or impacts on) seabird populations under either of the proposed options. Fisheries New Zealand will continue to monitor SCI 1 fishery interactions with seabirds based on observer data together with information reported by fishers. Further management action will be taken considered where necessary consistent with the framework in the NPOA-Seabirds 2020.

Fish bycatch

31. Scampi fishing incurs high rates of fish and invertebrate bycatch. Discards of non-QMS species are predominantly javelinfish, crabs and rattails. The main estimated QMS bycatch species taken in the SCI 1 fishery are sea perch, hoki, ling, silver warehou, giant stargazer, skates and red cod. For all species except for sea perch, total catches of these species from the SCI 1 fishery are low compared to total catch from all fisheries. Some fishers have modified their trawl nets to reduce bycatch by inserting 'windows' (holes) in the trawl to allow some fish species to escape.

32. Sea perch catch fluctuates annually with estimates based on observer data suggesting that catches may exceed the SPE 1 TACC of 53 tonnes in some years. However, observer coverage has been relatively low and unrepresentative so the bycatch estimates are highly uncertain.[20] Therefore, the analysis may either overestimate or underestimate sea perch catch in the SCI 1 fishery in some years. This is because seasonal variations in sea perch catches

[15] Abraham E. R., Thompson F. N. (2015). Captures of all birds in scampi trawl fisheries, in the Bay of Plenty area, during the 2017–18 fishing year. Retrieved from https://psc.dragonfly.co.nz/2019v1/released/birds/scampi-trawl/all-vessels/bay-of-plenty/2017-18/, Apr 30, 2020.

[16] Richard, Y.; Abraham, E.; Berkenbusch, K. (2020). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2016–17. New Zealand Aquatic Environment and Biodiversity Report 237. 57 p.

[17] https://deepwatergroup.org/newsresources/op-manual/

[18] Protected Species Risk Management Plans were formerly known as Vessel Management Plans (VMPs).

[19] https://www.mpi.govt.nz/dmsdocument/20321/loggedIn

[20] Although the fishery typically operates year round, between the 2011/12 and 2015/16 fishing years (the five years preceding the most recent assessment of fish bycatch in scampi fisheries), fishing events in SCI 1 were observed during only five months of the fishing year (Dec – Mar and April.

may not be able to be detected, given the unrepresentative observer coverage in SCI 1 in the past. The status of sea perch stocks is unknown. Fisheries New Zealand recognises that sea perch bycatch may be an area of concern and will continue to monitor fish bycatch.

33. Fisheries New Zealand acknowledges that the quantity of non-target bycatch is likely to increase proportionally under either of the proposed options to increase the TAC. Regular quantification of bycatch in scampi fisheries over time will take place to assess any risks associated with any increase in bycatch. If non-QMS bycatch species are identified through the monitoring process as requiring additional management, the species may be considered for QMS introduction or be managed through alternative sustainability measures under section 11 of the Act.

34. No captures of protected shark or fish species have ever been reported from the scampi trawl fishery (either by observers or from unobserved trips). Therefore, the incidental capture of protected fish or sharks in scampi target trawls are likely to be very rare events and are therefore considered unlikely to impact upon the population of such species under any option.

Benthic Impacts

35. Fishing for scampi may have effects on benthic communities. Fisheries New Zealand estimates the bottom trawl footprint of the entire New Zealand scampi fishery annually with the results summarised in the Deepwater Fisheries Annual Review Report[21]. The trawl footprint of scampi fishing between the 2007/08 and 2016/17 fishing years was estimated to be approximately 1% of the 'fishable area' of New Zealand's Exclusive Economic Zone (EEZ).[22]

36. Bottom trawling for scampi uses relatively light bottom gear in comparison to the trawl gear used to target fish species. The footprint of the SCI 1 fishery is concentrated in a relatively narrow 300-500 metre depth band where vessels typically trawl along previously-trawled tow lines (Figure 4).

37. Scampi are predominantly found in areas where soft sediment/mud substrate predominates, whereas fragile benthic epifauna communities are most abundant in areas of hard benthic substrate. As such, tows targeting scampi are characterised by low capture rates of sessile and fragile benthic invertebrates. Although the scampi trawl fishery in New Zealand is concentrated in areas with soft sediment/mud substrates, the incidental capture of small quantities of protected corals in scampi target tows is occasionally recorded.[23]

[21] https://www.fisheries.govt.nz/dmsdocument/39770/direct

[22] The 'fishable area' is defined as that area shallower than 1600 m and not closed to bottom trawling by benthic protection areas, seamount closures or marine reserves. The 2016/17 trawl footprint is available at: https://www.mpi.govt.nz/dmsdocument/37050-aebr-229-extent-of-bottom-contact-by-new-zealand-commercial-trawl-fishing-for-deepwater-tier-1-and-tier-2-target-species-determined-using-catchmapper-software-fishing-years-200817.

[23] Between the 2010/11 and 2018/19 fishing years, observers recorded the incidental capture of approximately 620 kg of protected coral species from scampi target tows in New Zealand. Observer coverage was approximately 9.1% during this time.

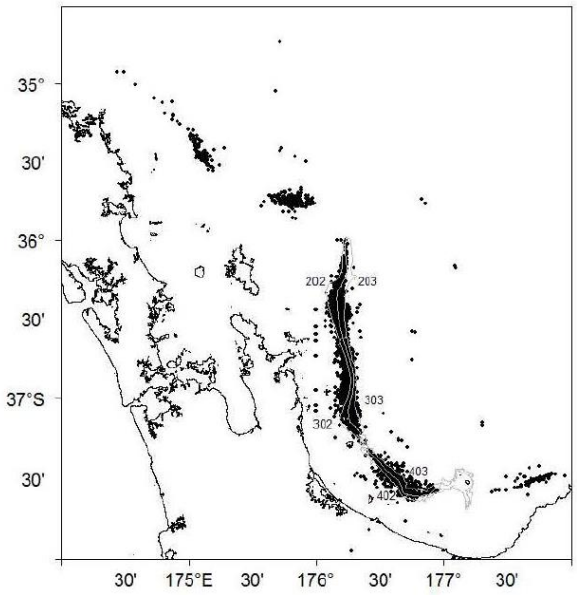


Figure 4: Spatial Distribution of the SCI 1 Fishery since 1988/89. Each dot shows the mid-point of a scampi target tow (Tuck 2020[24])

38. Given that the SCI 1 fishery is concentrated in a specific depth band and substrate, an increase in SCI 1 fishing effort will likely result in an increase in the density of fishing effort within currently or historically fished areas rather than increasing the benthic footprint into new areas.

39. Whilst Fisheries New Zealand acknowledges that the options to increase the TAC (as proposed) will likely result in increased fishing effort and therefore increased contact with the benthos, we consider that the additional risk to the benthic environment is low because vessels trawl along previously-trawled tow lines. Fisheries New Zealand will continue to monitor and review the trawl footprint of scampi annually to confirm this.

3.3.4 Sustainability measures (section 11 of the Act)

40. 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, the natural variability of the stock concerned and any relevant fisheries plan. These matters have been taken into account in the sections above.

41. All scampi stocks are managed as Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019 – Part 1A (National Deepwater Plan). Tier 1 species are high volume and/or high value fisheries and are typically targeted. As part of the National Deepwater Plan, a specific chapter for the scampi fishery is under development and a species-specific harvest strategy is being developed.

42. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to SCI 1 being:
    - **Management Objective 1**: Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations; and
    - **Management Objective 4**: Ensure deepwater and middle-depth fishstocks and key bycatch fishstocks are managed to an agreed harvest strategy or reference points.

[24] Tuck, I. D. (2020) Characterisation and Length-based Population Model for Scampi (*Metanephrops challengeri*) in the Bay of Plenty (SCI 1) and Hawke Bay – Wairarapa (SCI 2). New Zealand Fisheries Assessment Report 2020/06 295p.

43. There are no other plans or statements particularly relevant to this review.

3.4 Option 1

44. Option 1 is the proposal to increase the TAC by 10% from 126 tonnes to 139 tonnes and the TACC from 120 to 132 tonnes.

45. Te Ohu Kaimoana (TOKM) support Option 1. They see a value in maintaining high biomass to enable a greater proportion of scampi to be in the larger size grades which the market pays a premium for. They are cautious about “fishing down” the stock because of the high level of bycatch of QMS and non QMS species. They support investigation into finfish escapement devices as a means of reducing non target catch.

46. Iwi Collective Partnership (ICP) represents mana moana, mana whenua in various rohe throughout Te Ika Māui, mandated to represent the interests of twenty Iwi. ICP support a greater biomass thereby increasing CPUE and providing larger fish size. They are also conscious of the bycatch issue, and therefore support the more conservative increase provided by Option 1.

47. Te Arawa Fisheries, after consultation with ICP, TOKM and by extension Sealord and other Iwi, support Option 1 because commercial partners and science indicate a healthy fishery. They consider that sustainability issues are of as much importance as economic issues and suggest a 10% conservative increase is best practice.

3.5 Option 2

48. Option 2 is the proposal to increase the TAC by 20% from 126 tonnes to 151 tonnes and the TACC from 120 to 144 tonnes.

49. Te Kupenga o Maniapoto Limited is the asset holding company of Maniapoto iwi. They support Option 2 because the SCI 1 fishstock is well above the 40% management target therefore a harvesting opportunity exists.

50. DWG represents the owners of the majority (92%) of deepwater fishing quota. They submit a majority but not unanimous support of Option 2. They acknowledge the importance of catch rate and fish size as value drivers in the fishery. They are keen to develop and implement a Management Strategy Evaluation in the next 12 months for scampi to support future decisions that can incorporate value drivers within the overall biological assessment. Within DWG, the majority of owners of SCI 1 quota support a 20% increase as being a reasonable management approach and support continued close monitoring and review processes. DWG consider that the environmental issues are not of significant nature provided that current management procedures are maintained. They note that DWG will continue with the operational procedures for mitigating the risk of seabird and marine mammal captures for the SCI 1 fleet.

51. FINZ endorse the DWG submission.

3.6 Other options proposed by submitters

52. Our Seas Our Future do not support either of the two options because there is no customary Māori allowance which they consider is inconsistent with the two Iwi Fisheries Forums Plans.

53. Mike Currie would like the catch of scampi banned because of incidental bycatch of fish and invertebrates and the impact of trawling on protected marine mammals, threatened seabirds, sensitive seabed habitats and associated marine life.

3.7 Economic analysis

54. Estimating the value of the SCI 1 fishery is problematic given that scampi is almost entirely exported, however export figures are not reported under a unique Harmonised System (HS)

code. Using a 2019 export price of $42/kg[25] for the top grade of scampi product, it is estimated that catches from SCI 1 were worth up to $5 million in export revenue during the 2019 calendar year. The economic considerations related to the two options proposed are outlined below, including the expected effect on revenue of the proposed options (Table 4).

55. Under Option 1, the TACC would increase by 10% from 120 tonnes to 132 tonnes. Based on an estimated scampi export price in 2019 of NZ $42/kg, this increase would result in an approximate potential increase in revenue of $504,000 per year if the entire TACC was caught (Table 4).

56. Under Option 2, the TACC would increase by 20% from 120 tonnes to 144 tonnes. Based on an estimated scampi export price in 2019 of NZ $42/kg, this increase would result in an approximate potential increase in revenue of $1 million per year if the entire TACC was caught (Table 4).

Table 4: Predicted changes to export revenue for the proposed options, based on estimated average export price in 2019 of $42/kg for SCI 1.

	TACC	Change from status quo (t)	Predicted revenue change ($)
Option 1	132	12 ↑ (10%)	504,000↑
Option 2	144	24 ↑ (20%)	1,008,000 ↑

4 Conclusion and recommendations

57. Fisheries New Zealand recommends Option 1, which increases the TAC and TACC for SCI 1 by 10%. Allowances under this option remain at zero for customary Māori and recreational take. The allocation for other sources of mortality caused by fishing is 7 tonnes.

58. The management of SCI 1 is supported by a fully quantitative stock assessment undertaken every three years. Each stock assessment is preceded by a dedicated photographic and trawl survey. SCI 1 biomass is currently estimated to be between 72-76% B_0. The spawning stock biomass is 'Very Likely' (>90%) to be at or above the default management target of 40% B_0.

59. Submissions were evenly split between Option 1 and Option 2. Fisheries New Zealand support a conservative increase at this time noting that a Management Strategy Evaluation is being developed for scampi.

60. Fisheries New Zealand acknowledge that the increase in TAC will likely result in increased fishing effort and therefore increased fish bycatch and contact with the benthos. We consider that the additional risk is relatively low. Fisheries New Zealand will continue to monitor and review the environmental effects of the SCI 1 fishery annually.

[25] Calculated using figures provided for the 'Shrimps & Prawns cold-water" and 'Norway Lobster' categories. Precise revenue is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

5 Decision for SCI 1

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the SCI 1 TAC at 139 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 6 to 7 tonnes;
iv. Increase the SCI 1 TACC from 120 to 132 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SCI 1 TAC at 151 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 6 to 7 tonnes;
iv. Increase the SCI 1 TACC from 120 to 144 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

7 / 8 / 2020

Black cardinalfish (CDL 5) - Southland

Epigonus telescopus, Akiwa

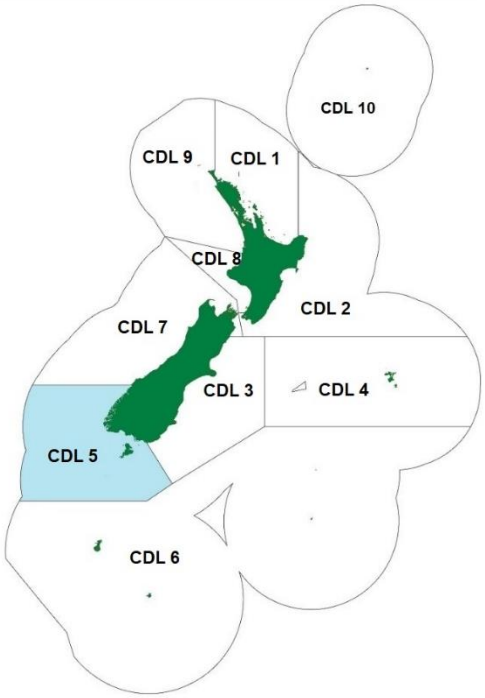


Figure 1: Quota management areas (QMAs) for Black cardinalfish (CDL), with CDL 5 highlighted in blue. A black cardinalfish is pictured on the left.

Table 1: Summary of options proposed for CDL 5 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Current *(status quo)*	22	22	0	0	0
Option 1 *(modified status quo)*	23	22	0	0	1 ↑
Option 2	34 ↑ (55%)	33 ↑ (50%)	0	0	1 ↑

New option incorporated following consultation	No	
Total submissions received	9	
Number of submissions received in support of each option	Current (*status quo*)	1
	Option 1 *(modified status quo)*	1
	Option 2	7

1 Why are we proposing that you review the TAC and TACC?

1. Fisheries New Zealand is proposing to increase the TAC, TACC and the allowance for all other mortality caused by fishing for black cardinalfish in CDL 5 (Southland), based upon recent catch data that suggests that the TAC may not be set appropriately.

1.1 About the stock

1.1.1 Fishery Characteristics

2. In CDL 5, black cardinalfish is a bycatch species caught by deepwater trawl vessels targeting other species such as ling or white warehou. Catches are sporadic but can occasionally occur in very large quantities, sometimes exceeding catch limits in a single fishing event.

3. Black cardinalfish was introduced to the QMS in 1998 with a nominal TAC set for CDL 5 of 2 tonnes. The TAC was last reviewed in 2006 when the TAC and TACC were increased to 22 tonnes based on average catch over the previous eight years, plus an extra 10%. Taking a similar approach, this proposal seeks to increase the TAC based upon more recent catch data.

4. Black cardinalfish occurs throughout the New Zealand EEZ at depths of 300-1100 m. The stock boundaries and number of biological black cardinalfish stocks in New Zealand are unknown, but there are ten CDL quota management areas (QMAs), with most catch occurring in CDL 2.

1.1.2 Biology

5. Black cardinalfish biology is poorly understood, although they are known to be a long-lived and slow growing species with a maximum age of over 100 years. Commercial catch in CDL 2 is typically between 35 and 55 years of age. Spawning areas have been identified in CDL 1, 2, 7 and 9 and outside of New Zealand's EEZ.

1.2 State of the stock

6. As CDL 5 is a low knowledge stock, there is little information with which to reliably estimate stock status. As such, the extent to which the current catch is consistent with maintaining or moving the stock towards or above the biomass that produces maximum sustainable yield is highly uncertain.

1.3 Catch information

1.3.1 Commercial

7. Reported catch in CDL 5 has generally been below the TACC, but with occasional large catches in excess of it. Large catches are usually the result of very few tows and/or fishing trips. For example, the high catches in the 2018/19 fishing year resulted primarily from a single tow targeting ling.

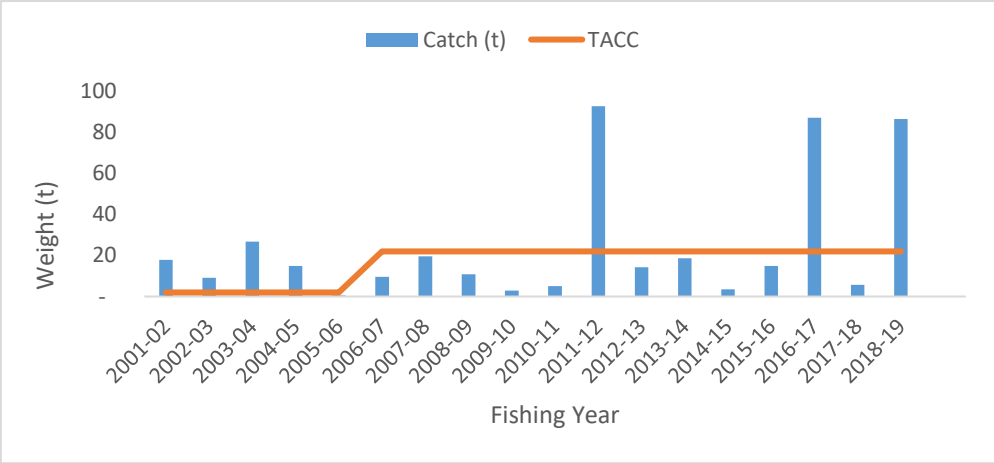


Figure 2: Estimated catch for CDL 5 (tonnes)

1.3.2 Customary Māori

8. There is no reported customary catch of black cardinalfish in CDL 5.

1.3.3 Recreational

9. Black cardinalfish was not recorded in National Panel Surveys of Marine Recreational Fishers undertaken in 2011/2 and 2017/18 and we do not expect any catches of black cardinalfish to occur in this fishery given that they live beyond recreational depths in sub-Antarctic waters.

2 Allowances within the TAC

2.1 Māori customary interests

10. Based on the best available information and following this consultation, 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.

2.2 Recreational interests

11. There has been no recorded recreational take of cardinalfish in CDL 5. Fisheries New Zealand proposes retaining a zero allowance for recreational take under both options.

2.3 All other mortality caused by fishing

12. 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.

13. To date, no allowance for all other mortality caused by fishing has been set for this fishery. Under both options, this allowance would be set at one tonne.

3 Options, submissions, and analysis

3.1 Summary of options

14. Two options are proposed for the TAC, TACC and allowances of CDL 5 (Table 2). No additional options were added following consultation.

Table 2: Summary of proposed management settings for CDL 5 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

			Allowances		
Option	**TAC**	**TACC**	**Customary Māori**	**Recreational**	**All other mortality caused by fishing**
Option 1 *(modified status quo)*	23	22	0	0	1 ↑
Option 2	34 ↑ (55%)	33 ↑ (50%)	0	0	1 ↑

3.2 Submissions

15. Nine submissions or responses were received for CDL 5 (Table 3). FINZ did not make specific comments on CDL 5 but stated that they endorse DWG's response relating to the stock.

Table 3: Submissions and responses received for CDL 5 (in alphabetical order)

Submitter	Option Support		
	1	2	Other
Deepwater Group Limited (DWG)			✓
Fisheries Inshore New Zealand Ltd (FINZ)			✓
Iwi Collective Partnership (ICP)			✓
Mike Currie			✓
Our Seas Our Future (OSOF)	✓		
Sealord Group Limited (Sealord)			✓
Te Arawa Fisheries		✓	
Te Kupenga o Maniapoto Ltd			✓
Te Ohu Kaimoana			✓

3.3 Analysis

3.3.1 Input and participation of tangata whenua

16. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

17. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

18. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. Prior to consultation, information on the proposal to review CDL 5 was provided to Iwi Fisheries Forums electronically, and input sought. No specific input has been received in respect of CDL 5.

19. Te Waka a Māui Iwi Fisheries Forum was also provided with information on CDL 5 prior to a hui on the 14th July 2020. No specific feedback was received for CDL 5.

3.3.2 Kaitiakitanga

20. Black cardinalfish (akiwa) are not named specifically as a taonga species by any Iwi Fisheries Forum Plan, but all fish species are considered taonga in Te Waipounamu Iwi Forum Fisheries Plan.

21. The management objectives of Te Waipounamu Iwi Forum Fisheries Plan which are particularly relevant to the management options proposed for CDL 5 are:

    - **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 proposals in this document for CDL 5 align with these management objectives.

22. There are no customary fisheries management tools such as mātaitai, taiāpure or Section 186B temporary closures relevant to this review.

3.3.3 Environmental principles (section 9 of the Act)

23. CDL 5 is predominantly taken by bottom trawling and is taken as bycatch in a number of other target fisheries, therefore the proposed increase to the TACC for CDL 5 is unlikely to result in any change to the total amount of fishing effort. As a result, Fisheries New Zealand does not foresee significant changes in fishing interactions with marine mammals, fish bycatch, seabirds or the benthic environment from this proposal.

3.3.4 Sustainability measures (section 11 of the Act)

24. 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, the natural variability of the stock concerned, and any relevant fisheries plan.

25. Black cardinalfish in CDL 5 is managed as a Tier 2 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to CDL 5 being:

- **Management Objective 1**: Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
- **Management Objective 11**: Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed.

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

27. There are no other plans, strategies or statements relevant to black cardinalfish or CDL 5.

3.4 Option 1 – modified *status quo*

28. Option 1, a modified *status quo*, is to increase the TAC by 1 tonne to 23 tonnes to allow for the introduction of an allowance for all other mortality to the stock caused by fishing. Under this option, the TACC remains at 22 tonnes and the allowances for customary and recreational catch remain at zero tonnes. This option is the most conservative and carries the least sustainability risk.

29. Based on the absence of information indicating any customary Māori or recreational catches of black cardinalfish, Fisheries New Zealand proposes that you retain these allowances at zero tonnes.

30. Option 1 is supported by one submitter, Our Seas Our Future. They consider that it may not be sustainable to increase the TAC greater than 1 tonne given that CDL 5 is a low knowledge stock with little information with which to reliably estimate stock status, no stock assessment, and no knowledge of its sustainability. They agree that the allowances for other sources of mortality and customary fishing are appropriate under this option.

3.5 Option 2

31. Option 2 is a 55% increase to the TAC from 22 to 34 tonnes, which includes a 50% increase to the TACC to 33 tonnes based on average catches of black cardinalfish in CDL 5 over the past

ten years, and the introduction of an allowance for all other mortality to the stock caused by fishing.

32. Under Option 2, the allowances for customary and recreational catch remain at zero tonnes. Based on the absence of information indicating ongoing customary Māori and recreational catches of black cardinalfish, Fisheries New Zealand proposes that you retain these settings.

33. Under Option 2, the TACC would increase from 22 to 33 tonnes, which would better reflect abundance based on recent catch. As a consequence of the increase, fishers' ability to balance catch with ACE could better be supported. Were higher catches to occur again, based on the 2018/19 reported port price of $0.67/kg for black cardinalfish, the increase could potentially support an increase in revenue of approximately $7,000 per year.

34. As a consequence of a TACC increase, Option 2 would also reduce payment of deemed values for unintentional catch where ACE is unavailable. In 2018/19, catch in excess of the TACC resulted in fishers paying deemed values of $33,879.

35. Option 2 is supported by one submitter, Te Arawa Fisheries. They consider that an increase can be justified by the infrequency of large catches and the fact that this is a non-targeted species with what they consider to be a low sustainability risk.

3.6 Other options proposed by submitters

36. Alternative options were proposed and/or supported by seven submitters, six of whom proposed a higher increase to the TAC and TACC and did not comment on the settings for allowances within the TAC proposed by Fisheries New Zealand.

37. Sealord supports the approach of setting the TAC for CDL 5 at a level high enough to accommodate the irregular accidental catches as previous catch history shows, and note that black cardinalfish is not targeted, nor is it thought to have any sustainability concerns. They suggest that a more realistic TACC would be 100 tonnes when considering the irregular spikes in catch (Figure 2).

38. DWG submit that as the current TACC has been set at a level that is both nominal and arbitrary, quota owners and Fisheries New Zealand should work together to design and implement a project to monitor this stock and to assess its sustainable yield and that, in the interim, the TACC be increased to 80 tonnes and the deemed values be reduced. This submission was endorsed by FINZ.

39. Te Kupenga o Maniapoto Limited also supports a TACC of 80 tonnes, with the rationale that actual catch regularly exceeds 80 tonnes.

40. Te Ohu Kaimoana support a TAC of 61 tonnes, with a TACC of 60 tonnes and allowance for all other mortality caused by fishing of 1 tonne. Their rationale is that catch information suggests there is the potential for greater utilisation of black cardinalfish, but the options proposed do not allow for the current levels of catch. They also suggest that unavoidable CDL 5 catch is constraining the utilisation opportunity from the 2018/19 increase of the TACC in LIN 5, one of the target fisheries in which CDL 5 is bycaught.

41. Te Ohu Kaimoana also suggest that these spikes in annual catch could be a reflection of an increase in abundance, an increase in recruitment to the fishery, or increased effort in the LIN 5 fishery. They point out that the high black cardinalfish catch in 2018/19 around 90 tonnes resulted primarily from a single tow targeting ling, which is almost three times the proposed increased TACC. They also state that increasing the TAC to 61 tonnes and the TACC to 60 tonnes would allow for more of the likely catch to be balanced against ACE, without placing sustainability at risk.

42. The Iwi Collective Partnership support an increased TACC of at least 60 tonnes, on the basis that although there is limited information on stock status, the infrequent high catches and lack of targeted fishing indicate that there is a low sustainability risk if catch limits are increased.

43. Mike Currie does not support either option. He proposes a ban on black cardinalfish catch due to concerns with the impact of trawling on protected corals and sensitive benthic habitats, incidental bycatch of threatened seabirds and deepwater sharks in the fishery, the unknown sustainability of the stock with regards to recent catch and current catch limits, and limited research or operational management plans.

44. Fisheries New Zealand do not consider an increase to the TAC larger than that proposed to be appropriate, on the basis that a larger increase would carry a higher sustainability risk, and high catches are infrequent (Figure 2) and unpredictable. Option 2 is a conservative increase in recognition of the lack of robust information.

45. There is also no indication that a target fishery for black cardinalfish is commencing in FMA 5, as no black cardinalfish have been targeted there since at least 2006/07. Fisheries New Zealand also considers it unlikely that black cardinalfish catch in FMA 5 constrains ling catch, as LIN 5 has been almost completely caught (>95% of available ACE) every year since 2009/10, including with an increase to the TACC from 2018/19. Deemed values of around NZ$55,000 were incurred in LIN 5 in 2018/19.

46. Given that CDL 5 is a low knowledge stock, Fisheries New Zealand welcomes and agrees with the proposal that we work to better understand the status and sustainable yield for this stock.

4 Conclusion and recommendations

47. Fisheries New Zealand acknowledges that the current status of CDL 5 is unknown, and that limited data are available to estimate stock status or sustainability risk. Therefore, a cautious approach is warranted.

48. Fisheries New Zealand recognises that the best available information pertaining to CDL 5 is catch history. Fisheries New Zealand does not consider the small TAC increase proposed in Option 2 is 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.

49. Therefore, Fisheries New Zealand recommends Option 2, on the basis that a moderate increase in TACC will buffer infrequent unpredictable catches and allow for increased utilisation, whilst acknowledging that the current status of this stock is unknown.

5 Decision for CDL 5

Option 1 (modified *status quo*)

Agree to set the CDL 5 TAC at 23 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at zero tonnes;
ii. Retain the allowance for recreational fishing interests at zero tonnes;
iii. Setting for the first time the allowance for all other sources of mortality to the stock caused by fishing from zero to 1 tonnes;
iv. Retain the CDL 5 TACC at 22 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the CDL 5 TAC at 34 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at zero tonnes;
ii. Retain the allowance for recreational fishing interests at zero tonnes;
iii. Setting for the first time the allowance for all other sources of mortality to the stock caused by fishing from zero to 1 tonnes;
iv. Increase the CDL 5 TACC from 22 to 33 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 9 / 2020

Rubyfish (RBY 4) - Chatham Rise

Plagiogeneion rubiginosum

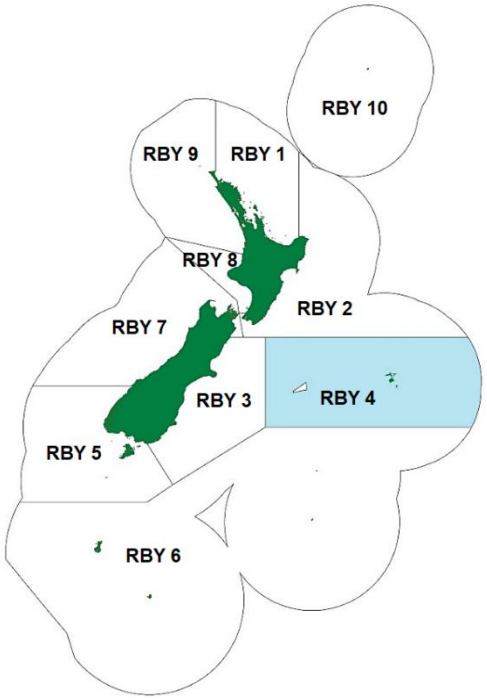


Figure 1: Quota management areas (QMAs) for Rubyfish (RBY 4), with RBY 4 highlighted in blue. A rubyfish is pictured on the left.

Table 1: Summary of options proposed for RBY 4 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

			Allowances		
Option	**TAC**	**TACC**	**Customary Māori**	**Recreational**	**All other mortality caused by fishing**
Current (*status quo*)	19	18	0	0	1
Option 1	25 ↑ (32%)	24 ↑ (33%)	0	0	1
New option incorporated following consultation		No			
Total submissions received		8			
Number of submissions received in support of each option		*Status quo*	0		
		Option 1	4		
		Other	4		

1 Why are we proposing that you review the TAC and TACC?

1. Fisheries New Zealand is proposing to increase the TAC and TACC for rubyfish in RBY 4 (Chatham Rise), based upon recent catch data that suggests that the current TAC may not be set appropriately.

1.1 About the stock

1.1.1 Fishery Characteristics

2. In RBY 4, rubyfish is taken as bycatch by trawl vessels targeting other species such as alfonsino, silver warehou and hoki. Catches can occasionally occur in very large quantities, sometimes exceeding the catch limit in a single fishing event.

3. Rubyfish was introduced to the QMS in 1998 with nominal TAC and TACCs set at 3 tonnes for RBY 4. The last TAC review for RBY 4 occurred in 2010, when the TAC was increased to 19 tonnes. This was based on average catch over the previous seven years plus an extra 10%, and comprised a TACC of 18 tonnes and a 1 tonne allowance for other mortality to the stock caused by fishing.

4. Rubyfish occurs at depths ranging from 50 metres to at least 800 metres, with most commercial catch taken in midwater trawls between 200 and 400 metres.

5. The stock boundaries and number of biological rubyfish stocks in New Zealand are unknown, but there are ten RBY quota management areas (QMAs), with the main fisheries in RBY 1 and 2 in the Bay of Plenty and East Cape.

1.1.2 Biology

6. Rubyfish biology is poorly understood, although they are known to be a long-lived and slow growing species reaching over 100 years of age. There is little information on rubyfish spawning cycles or areas, and there is some evidence that older adult fish may spend some of their life cycle residing in deeper water.

1.2 State of the stock

7. As RBY 4 is a low knowledge stock, there is little information with which to reliably estimate stock status. The occasional catch well in excess of TACC with no increase in effort, suggests that the current TAC is not impacting the sustainability of the stock.

8. However, the extent to which the current catch is consistent with maintaining or moving the stock towards or above the biomass that produces maximum sustainable yield is highly uncertain.

1.3 Catch information

1.3.1 Commercial

9. Figure 2 below shows that reported catch in RBY 4 has generally fluctuated around the TACC with no catch trend. However, catches can occasionally exceed RBY 4 catch limits during fishing targeting other species and large catches are usually the result of very few tows and/or fishing trips. For example, the high catches in the 2019/20 fishing year result from two trips and very few tows.

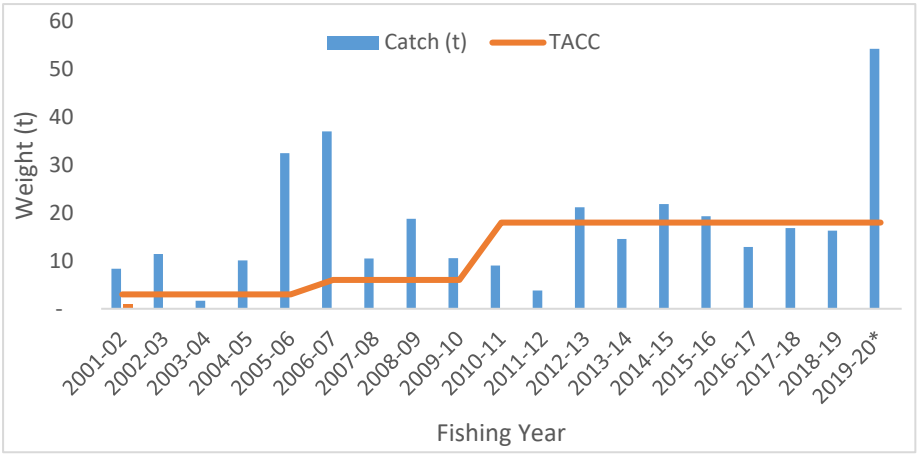


Figure 2: Estimated catch for RBY 4 (tonnes). *note: the 2019/20 fishing year is incomplete

10. There has been no reported targeting of rubyfish in RBY 4 since 2014, when 0.6 tonnes were caught on two rubyfish target tows.

1.3.2 Customary Māori

11. There is no reported customary catch of rubyfish in RBY 4.

1.3.3 Recreational

12. Rubyfish was not recorded in National Panel Surveys of Marine Recreational Fishers undertaken in 2011/2 and 2017/18 and we do not expect any to occur in this fishery given that it operates beyond recreational depths on the Chatham Rise.

2 Allowances within the TAC

2.1 Māori customary interests

13. Based on the best available information and following this consultation, 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.

2.2 Recreational interests

14. There has been no recorded recreational take of rubyfish in RBY 4. Fisheries New Zealand proposes retaining a zero allowance for recreational take under Option 1.

2.3 All other mortality caused by fishing

15. 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.

16. Under the *status quo* and Option 1, the allowance for other mortality to the stock caused by fishing will remain at one tonne. Fisheries New Zealand does not propose to change this setting as there is no new information to indicate that a change is necessary.

3 Options, submissions, and analysis

3.1 Summary of options

17. One option is proposed for the TAC, TACC and allowances of RBY 4 (Table 2). No additional options were added following consultation.

Table 2: Proposed management setting in tonnes for RBY 4 from 1 October 2020. Figures are all in tonnes. This option is preferred by Fisheries New Zealand over the status quo.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1	25 ↑ (32%)	24 ↑ (33%)	0	0	1

3.2 Submissions

18. Eight submissions or responses were received for RBY 4 (Table 3). FINZ did not make specific comments on RBY 4 but stated that they endorse DWG's response relating to the stock.

Table 3: Submissions and responses received for RBY 4 (in alphabetical order):

Submitter	Option Support	
	1	Other
Deepwater Group Limited (DWG)	✓	
Fisheries Inshore New Zealand Ltd (FINZ)	✓	
Iwi Collective Partnership (ICP)		✓
Mike Currie		✓
Sealord Group Limited (Sealord)	✓	
Te Arawa Fisheries	✓	
Te Kupenga o Maniapoto Limited		✓
Te Ohu Kaimoana		✓

3.3 Analysis

3.3.1 Input and participation of tangata whenua

19. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

20. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

21. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms.

22. Prior to consultation, information on the proposal to review RBY 4 was provided to Iwi Fisheries Forums electronically, and input sought. No specific input has been received in respect of RBY 4.

23. Te Waka a Māui Iwi Fisheries Forum was also provided with information on RBY 4 prior to a hui on the 14th July 2020. No specific feedback was received for RBY 4.

3.3.2 Kaitiakitanga

24. Rubyfish from RBY 4 are not named specifically as a taonga species by Iwi Forum Fisheries Plans; however the Te Waipounamu Iwi Forum Fisheries Plan considers all fish species taonga.

25. The management objectives of the Te Waipounamu Iwi Forum Fisheries Plan which are particularly relevant to the management options proposed for RBY 4 are:

    - **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 proposals in this document for RBY 4 align with these management objectives.

26. The RBY 4 stock also overlaps with the rohe moana of the Chatham Islands Forum Fisheries Plan, CIFF@44°. This Forum is currently in recess. However, the following management objectives outlined in the CIFF@44 Fisheries Plan that pertain to RBY 4 are:

    - **Management Objective 1**: Mana and Tino Rangatiratanga. Mana and Rangatiratanga is restored, and our fisheries responsibilities, rights and assets are preserved, maintained and enhanced.

27. There are no customary fisheries management tools such as mātaitai, taiāpure or Section 186B temporary closures relevant to this review.

3.3.3 Environmental principles (section 9 of the Act)

28. RBY 4 is predominantly taken by bottom trawling and is largely taken as bycatch in a number of other target fisheries, therefore the proposed increase to the TACC for RBY 4 is unlikely to result in any change to the total amount of fishing effort. As a result, Fisheries New Zealand does not foresee significant changes in fishing interactions with marine mammals, fish bycatch, seabirds or the benthic environment from these proposals.

3.3.4 Sustainability measures (section 11 of the Act)

29. 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, the natural variability of the stock concerned and any relevant fisheries plan.

30. Rubyfish in RBY 4 is managed as a Tier 2 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to RBY 4 being:

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

- **Management Objective 11**: Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed.

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

32. There are no other plans, strategies or statements relevant to rubyfish or RBY 4.

3.4 Option 1

33. Option 1 proposes to increase the TAC from 19 tonnes to 25 tonnes, which is an approximate 32% increase. This includes an increase to the TACC of 6 tonnes to 24 tonnes (33%), a 1 tonne allowance for all other mortality to the stock caused by fishing, and maintains zero allowances for customary Māori or recreational catch. This option is based upon average catch of rubyfish in RBY 4 over the past five fishing years, including the current fishing year (2015/16 to 2019/20).

34. Option 1 was favoured by four submitters. DWG support Option 1 on the basis that Fisheries New Zealand and industry continue to closely monitor catches of RBY 4 and apply further assessments and/or management as need be. They note that 50 tonnes has been caught this year to date, which is double the new proposed TACC, and also note that there is no assessment or characterisation for RBY 4. The DWG submission was endorsed by FINZ.

35. Sealord supports the TAC and TACC increases as proposed under Option 1, with the rationale that the increase will help support the fluctuations in catch of RBY 4, something they have experienced over the over the past 5-6 years.

36. Te Arawa Fisheries supports Option 1 on the basis of the infrequency of catches and the fact that this is a non-targeted species.

3.5 Other options proposed by submitters

37. Alternative options were proposed and/or supported by four submitters, three of which proposed a higher increase to the TAC.

38. Te Ohu Kaimoana propose a TAC of 51 tonnes, to include a TACC of 50 tonnes with the allowance for all other mortality caused by fishing to remain at 1 tonne, with the rationale that there is a utilisation opportunity for RBY 4 and that the catch for the current fishing year (2019/2020) is above 50 tonnes. They suggest that continued monitoring of the fishery is appropriate to determine whether future catch patterns should warrant further management adjustments, but as an interim step the TAC/TACC should be increased to the level of recent catch. They are also of the opinion that although RBY 4 is a low knowledge stock, there is no known sustainability concern and given that it is not targeted, an increase to the TACC is unlikely to result in any change in fishing pressure. They submit that a higher TACC will enable catch to be covered by ACE.

39. The Iwi Collective Partnership supports the proposal put forward by Te Ohu Kaimoana, with the rationale that RBY 4 is not targeted, but is bycatch with occasional high catches that sometimes exceed the catch limit in a single fishing event. They also note that there is no known sustainability concern for this stock, and that catch this year to date is double the increased TACC proposed by Fisheries New Zealand.

40. Te Kupenga o Maniapoto Limited also propose a TACC of 50 tonnes, with the rationale that periodic RBY 4 overcatch occurs as bycatch, that biomass is available and this stock is not targeted.

41. Mike Currie does not support Option 1 and proposes a ban on rubyfish fishing due to its longevity and concerns with the absence of directed research, the lack of a quantitative stock assessment, the lack of a management plan and the unknown sustainability of recent catch levels. He also has concerns regarding non-target fish and other bycatch, including marine mammals and seabirds, and bottom trawl impacts on seabed communities.

4 Conclusion and recommendations

42. Fisheries New Zealand acknowledges that the current status of RBY 4 is unknown, and that presently limited data are available to estimate stock status or sustainability risk. Therefore, a cautious approach is warranted.

43. Fisheries New Zealand recognises that the best available information pertaining to RBY 4 is catch history; average catch over the past 5 fishing years was used to derive Option 1, including the current fishing year, so the proposed TACC of 24 tonnes is considered to better reflect longer-term trends and recent catch than the current TACC.

44. Fisheries New Zealand does not consider the small TAC increase proposed in Option 1, based upon the best available information, is 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. Therefore, Fisheries New Zealand recommends Option 1.

5 Decision for RBY 4

Option 1 *(Fisheries New Zealand preferred option)*
Agree to set the RBY 4 TAC at 25 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at zero tonnes;
ii. Retain the allowance for recreational fishing interests at zero tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 1 tonnes;
iv. Increase the RBY 4 TACC from 18 to 24 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 9 / 2020

Silver warehou (SWA 3 and SWA 4) - Chatham Rise, Southland, and Sub-Antarctic

Seriolella punctata, silver warehou, warehou

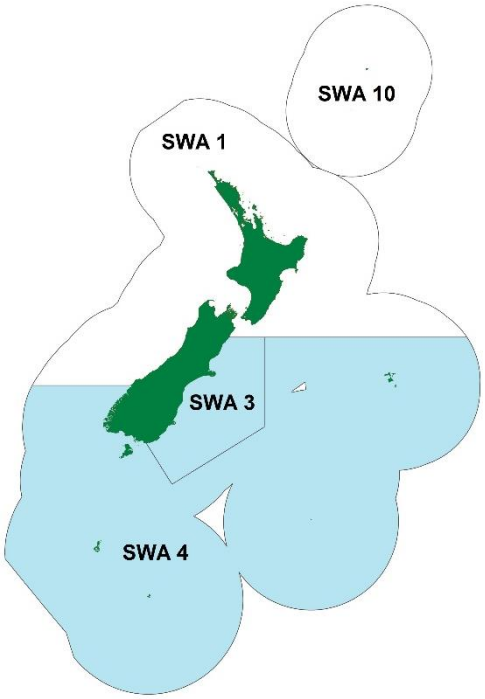


Figure 1: Quota management areas (QMAs) for silver warehou (SWA), with SWA 3 and SWA 4 highlighted in blue. A silver warehou is pictured on the left.

Table 1: Summary of options proposed for SWA 3 and SWA 4 from 1 October 2020 (figures are all in tonnes). Preferred options of Fisheries New Zealand are highlighted in blue. 'New' indicates values being set for the first time.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SWA 3	**Current** *(status quo)*	N/A	3,280.3	N/A	N/A	N/A
	Option 1 *(modified status quo)*	3,313.3 (new)	3,280.3	0 (new)	0 (new)	33 (new)
	Option 2	3,646 (new)	3,610 ↑ (10%)	0 (new)	0 (new)	36 (new)
SWA 4	**Current** *(status quo)*	N/A	4,089.901	N/A	N/A	N/A
	Option 1 *(modified status quo)*	4,130.901 (new)	4,089.901	0 (new)	0 (new)	41 (new)
	Option 2	4,545 (new)	4,500 ↑ (10%)	0 (new)	0 (new)	45 (new)

New option incorporated following consultation	No
Total responses/submissions received	8

Number of responses/submissions received for each option

SWA 3		**SWA 4**	
Option 1 (*Status quo*)	0	Option 1	0
Option 2	1	Option 2	1
Other	7	Other	7

1 Why are we proposing that you review the TAC and TACC?

1. Information from research completed recently indicates that the abundance of silver warehou stocks in quota management areas (QMAs) SWA 3 and SWA 4 has potentially increased. While there is uncertainty regarding the extent to which abundance has increased, there is a potential utilisation opportunity for both stocks.

1.1 About the species

1.1.1 Fishery characteristics

2. Silver warehou is primarily a commercial species that is of importance to the deepwater trawl fleet around the South Island. It is taken both as target and non-target catch, and most catch is taken from fisheries on the western Chatham Rise and on the Stewart/Snares Shelf in Southland (Figure 2).

3. Silver warehou stocks were introduced into the QMS in 1986. The TACCs for SWA 3 and SWA 4 were initially set at 2,600 tonnes and 3,600 tonnes respectively. Between 1988 and 1994, these were gradually increased to the current TACCs of 3,280.3 tonnes (SWA 3) and 4,089.901 tonnes (SWA 4) as a result of administrative processes related to QMS introduction. Other than administrative changes, catch limits for the SWA 3 and SWA 4 stocks have not been reviewed since QMS introduction in 1986 and a TAC has not been set for either stock.

1.1.2 Biology / stock structure

4. Silver warehou is a medium productivity species. Initial growth is rapid and the species reaches sexual maturity at around 45 cm length and four years of age. Maximum age is considered to be 23 years for females and 19 years for males, and fish greater than 60 cm in length are uncommon.

5. Silver warehou is caught predominantly around the South Island. Juveniles typically inhabit shallower water (less than 300 m) than adults (greater than 300 m). Most silver warehou catch is taken by the deepwater trawl fleet. The species is not known to be taken by recreational or customary fishers.

6. Although the stock structure of silver warehou is not well known, three regions within the SWA 3 and SWA 4 QMAs are considered to represent biological stocks on the basis of catch distribution, and the location and timing of spawning. The three areas are shown in Figure 2 and described in Table 2 below.

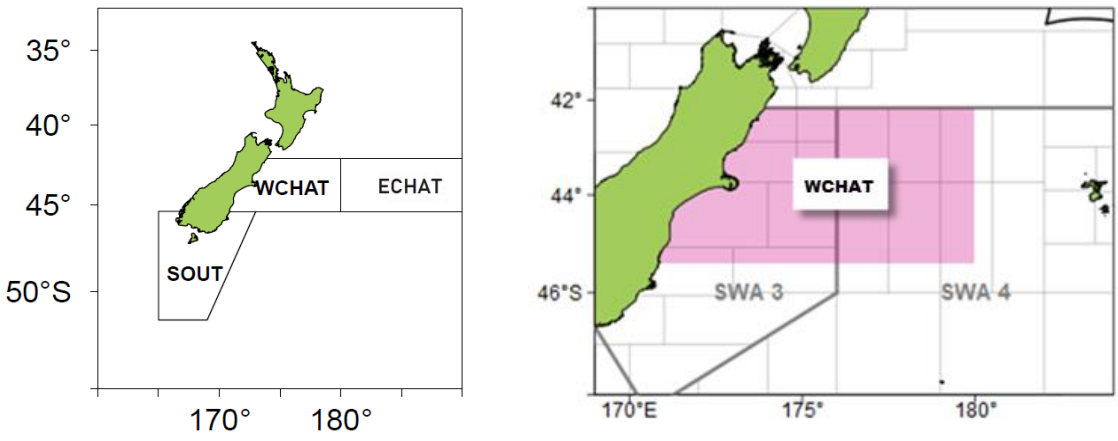


Figure 2: Regions within SWA 3 and SWA 4 considered as biological stocks (left). The diagram on the right shows the overlap between the WCHAT biological stock (shaded area) and the SWA 3 and SWA 4 QMAs.

Table 2: Description of regions within SWA 3 and SWA 4 considered as biological stocks

Region	Description	Quota management area (refer Figure 1)
WCHAT	East coast South Island / western Chatham Rise out to 180˚ longitude	SWA 3 and part of SWA 4
ECHAT	Chatham Rise east of 180˚ longitude	SWA 4
SOUT	Stewart Snares Shelf to Otago Peninsula	SWA 4 and part of SWA 3

7. The current QMAs are therefore not consistent with the distribution of the biological stocks.

1.2 State of the stocks

8. Catch per unit effort (CPUE) analyses have looked at a variety of CPUE indices for the WCHAT and SOUT stocks. For WCHAT, data to the end of the 2018/19 year was used while for SOUT, data up to the 2015/16 fishing year was used.

9. While variable, most indices for the WCHAT area have a similar, generally increasing trend (refer Figure 3). In the SOUT area, indices are generally flat (refer Figure 4). In both areas catches have remained consistently high. Age composition data suggests that the catch rates and catches observed are consistent with the recruitment of some relatively large year classes to both stocks.

10. CPUE analysis has also been undertaken previously for the ECHAT stock; however, it only used data between the 1998/99 and 2010/11 fishing years and has not been updated recently. While not current, the indices showed a slight upward trend for this period.

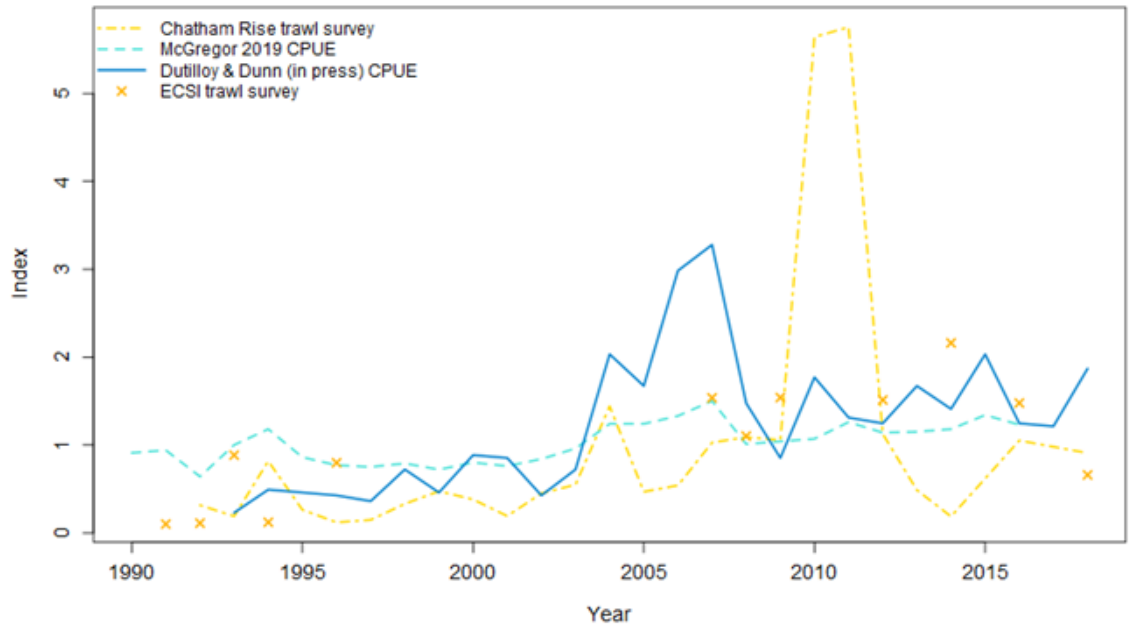


Figure 3: Standardised CPUE indices for the WCHAT stock (1990/91 – 2018/19) and biomass estimates from the Chatham Rise (deepwater) and East Coast South Island (inshore) trawl surveys.

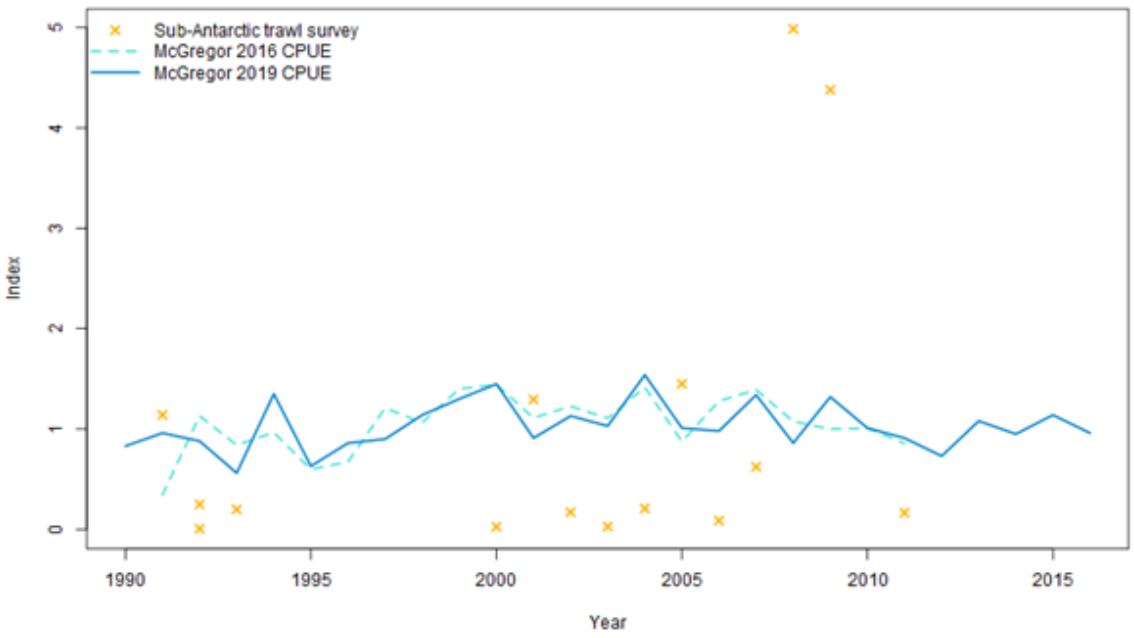


Figure 4: Standardised CPUE indices for the SOUT stock (1990/91 – 2015/16) and biomass estimates from Sub-Antarctic trawl surveys.

11. Based on the best available information for the three silver warehou stocks within SWA 3 and SWA 4, the abundance of silver warehou throughout both QMAs has potentially been increasing in recent years. However, the lack of an accepted index of abundance for any stock means that the extent to which abundance has increased has not been able to be determined.

1.3 Catch information

1.3.1 Commercial

12. Figure 5 shows reported catch of SWA 3 against the TACC between the 2001/02 and 2018/19 fishing years. The proposed TACC under Option 2 is also shown.

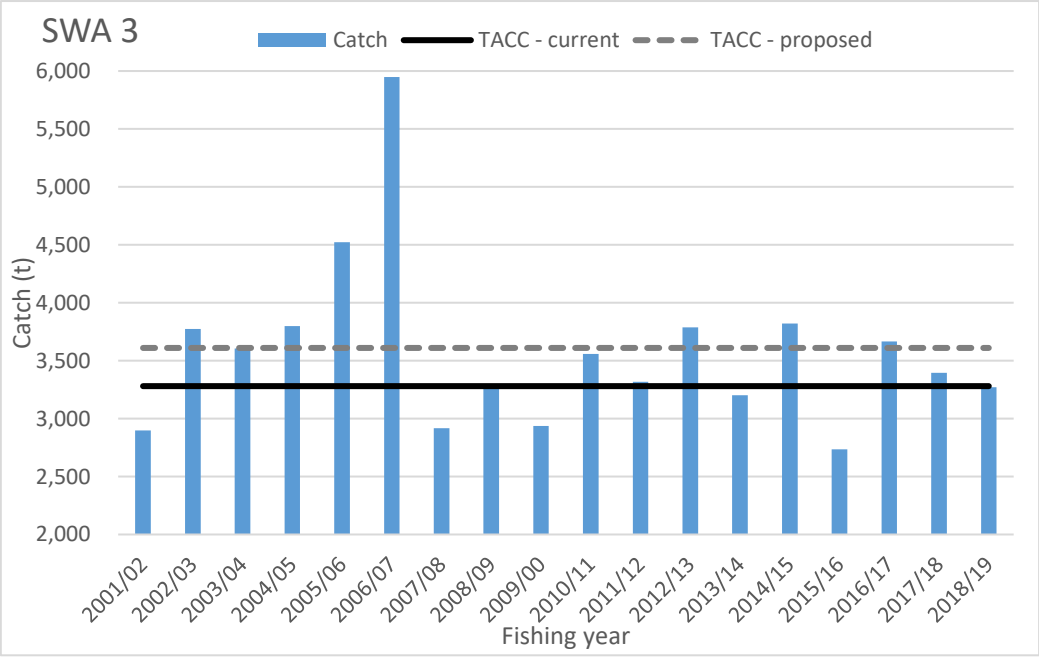


Figure 5. Graph showing catch, current TACC, and proposed TACC under Option 2 (all in tonnes) for SWA 3

13. Some of the reduction in catch after the 2006/07 fishing year may be able to be attributed to an increase in deemed value rates for silver warehou stocks that took effect during 2007/08. However, a strong year class or strong year classes that were present in the fishery in the early to mid- 2000s were not as evident in catches after 2006/07, suggesting that the higher catch in 2005/06 and 2006/07 may have reflected an increase in abundance. Since 2010/11, catch has exceeded the TACC six times and has exceeded available ACE four times.

14. Figure 6 shows reported catch of SWA 4 against the current TACC between the 2001/02 and 2018/19 fishing years. The proposed TACC under Option 2 is also shown.

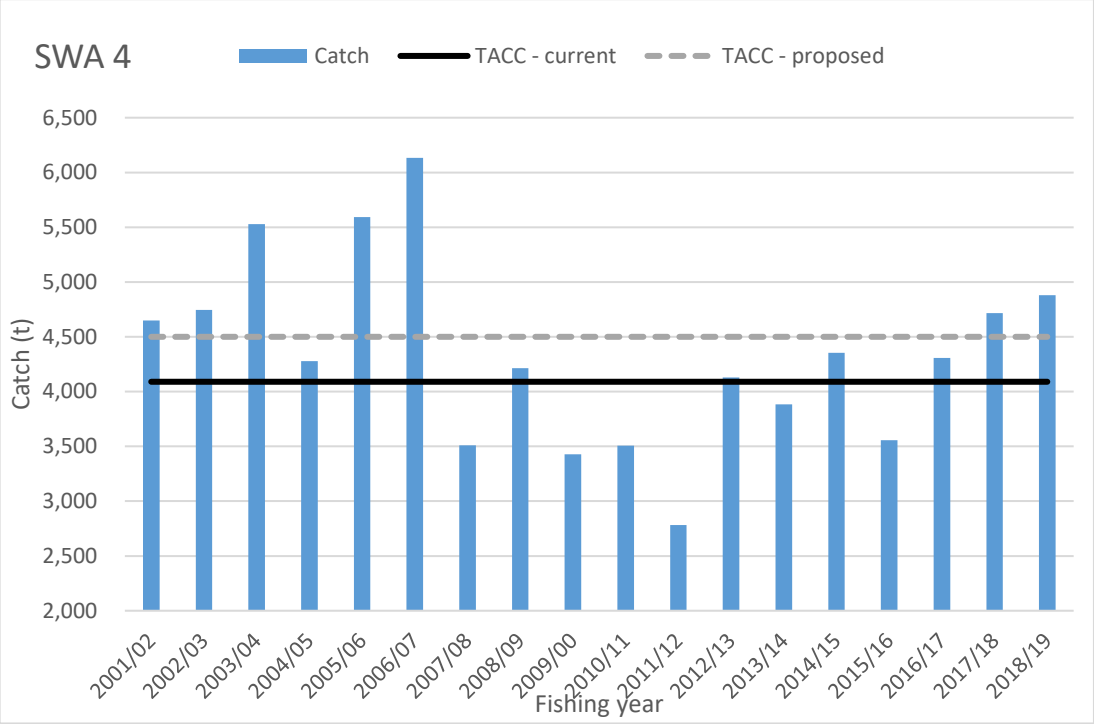


Figure 6. Graph showing catch, current TACC, and proposed TACC under Option 2 (all in tonnes) for SWA 4

15. Figure 6 shows that catch of SWA 4 has followed a similar pattern to that of SWA 3; catch was considerably higher than the TACC in the early to mid-2000s before reducing. Since 2010/11, catch has exceeded the TACC five times and has exceeded available ACE twice (the two most recent completed fishing years).

16. As noted, the QMAs are not consistent with the distribution of the biological stocks. The estimated catch from each of the areas (biological stocks) shown in Figure 2 is shown in Figure 7 below.

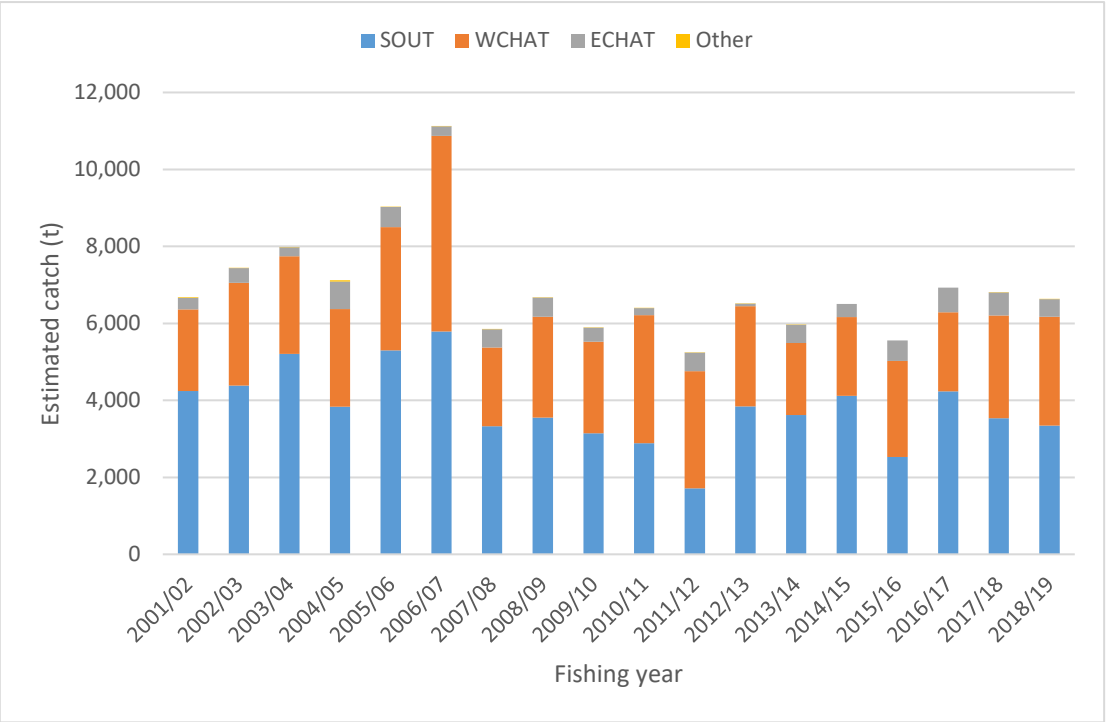


Figure 7. Estimated catch of silver warehou by region between the 2001/02 and 2018/19 fishing years (tonnes). The regions are those shown in Figure 2 and described in Table 2.

17. Figure 7 shows that most catch comes from the SOUT (Southland / sub-Antarctic) area, followed by the WCHAT (western Chatham Rise) area. Catch from ECHAT (eastern Chatham Rise) and other areas comprises a relatively small component of the catch.

18. Silver warehou is taken as both target species and non-target species in other fisheries, primarily squid and hoki. Figure 8 shows the proportion of silver warehou estimated catch from the SWA 3 and SWA 4 QMAs (combined) that was targeted.

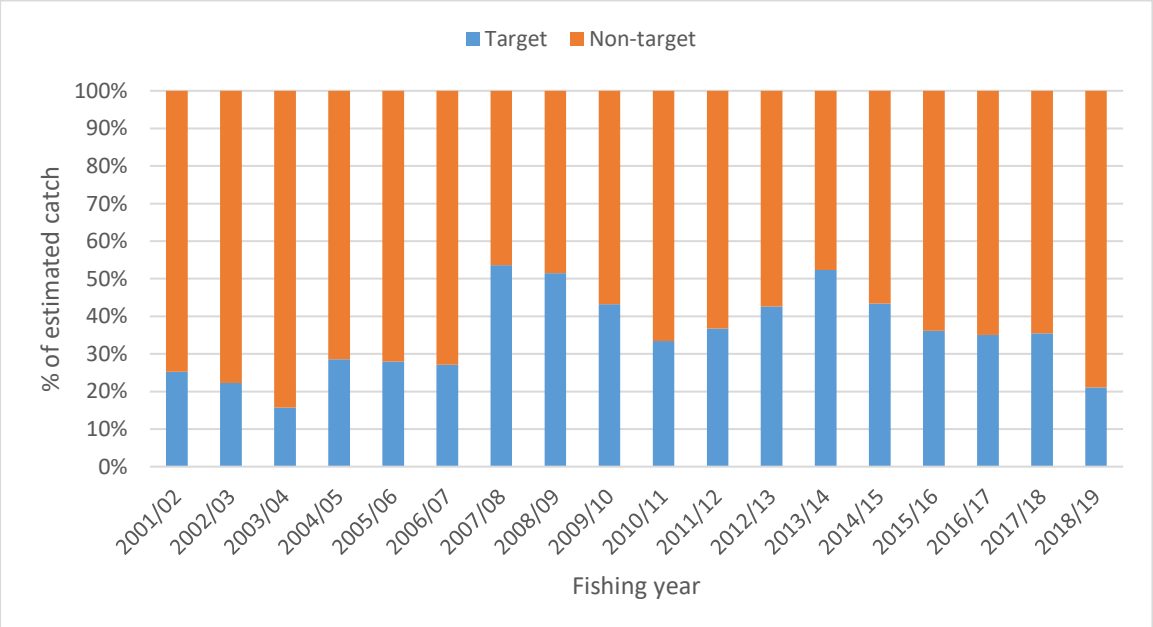


Figure 8. Percentage of estimated catch of silver warehou within SWA 3 and SWA 4 (combined) recorded as target species between 2001/02 and 2018/19 fishing years

19. Figure 8 shows that typically, less than 50% of silver warehou catch in SWA 3 and SWA 4 is targeted and that the percentage caught from targeted fishing has been declining since 2013/14.

1.3.2 Customary Māori

20. Silver warehou has not been recorded in the customary database, although it is possible some customary catch may have been recorded under the generic '*wetfish'* code.

1.3.3 Recreational

21. Silver warehou species was not recorded in National Panel Surveys of Marine Recreational Fishers undertaken in 2011/12 and 2017/18. Given the distance from shore and preferred depth range, recreational catch of this species is not expected.

2 Allowances within the TAC

22. Silver warehou stocks were introduced into the QMS in 1986 and allowances for customary and recreational fishing have never been set for SWA 3 or SWA 4.

2.1 Māori customary interests

23. As noted, silver warehou has not been recorded in the customary database. Fisheries New Zealand recommends you set a zero allowance for customary interests in SWA 3 and SWA 4 under both options. No information was received from respondents and submitters with alternatives to this proposal.

2.2 Recreational interests

24. As noted, silver warehou is not known to be taken by recreational fishers. Fisheries New Zealand recommends you set a zero allowance for recreational take in SWA 3 and SWA 4 under both options. No information was received from respondents and submitters with alternatives to this proposal.

2.3 All other mortality caused by fishing

25. 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.

26. To date, an allowance for other mortality caused by fishing has not been set for SWA 3 or SWA 4. Fisheries New Zealand acknowledges that setting this allowance based on an analysis of the available information is desirable. However, in the absence of that work having been undertaken for silver warehou, the recommended quantum of this allowance is consistent with how the allowance is set for similar stocks taken by the deepwater trawl fleet, such as hoki and hake. No information was received from respondents and submitters with alternatives for how to calculate this allowance.

3 Options, submissions, and analysis

3.1 Summary of options

27. Two options are proposed for the TAC, TACC and allowances for each of SWA 3 and SWA 4 (Table 3). As noted above, all silver warehou stocks were introduced into the QMS in 1986 and a TAC and allowances have never been set for SWA 3 and SWA 4.

28. No additional options have been incorporated following consultation.

Table 3: Summary of proposed management settings for SWA 3 and SWA 4 from 1 October 2020. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue. New' indicates values being set for the first time.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SWA 3	**Option 1** *(modified status quo)*	3,313.3 (new)	3,280.3	0 (new)	0 (new)	33 (new)
	Option 2	3,646 (new)	3,610 ↑ (10%)	0 (new)	0 (new)	36 (new)
SWA 4	**Option 1** *(modified status quo)*	4,130.901 (new)	4,089.901	0 (new)	0 (new)	41 (new)
	Option 2	4,545 (new)	4,500 ↑ (10%)	0 (new)	0 (new)	45 (new)

3.2 Submissions

29. Eight responses or submissions were received in relation to SWA 3 and SWA 4. FINZ did not make specific comments on these stocks but stated that they endorse DWG's response relating to these stocks.

Table 4: Responses and submissions received for SWA 3 and SWA 4 (in alphabetical order)

Submitter	Option Support			
	Modified status quo	2	Other	Details
Deepwater Group Limited (DWG)			✓	20% increase for both stocks
Fisheries Inshore New Zealand Ltd (FINZ)			✓	20% increase for both stocks
Iwi Collective Partnership (ICP)			✓	20% increase for both stocks
Mike Currie			✓	Ban catch of this species
Sealord Group Limited (Sealord)			✓	20% increase for both stocks
Te Arawa Fisheries		✓		
Te Kupenga o Maniapoto Ltd			✓	20% increase for both stocks
Te Ohu Kaimoana			✓	20% increase for both stocks

30. Aside from the one submission in support of the modified status quo, all but one of the other responses or submissions express a preference for an alternative option for both SWA 3 and SWA 4 to increase the existing TACCs by 20%. Broadly, respondents and submitters feel that the performance of the fisheries in recent years is such that the 10% increased proposed by Fisheries New Zealand is insufficient.

3.3 Analysis

3.3.1 Input and participation of tangata whenua

31. Input and participation into the sustainability decision-making process is provided through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum has developed an Iwi Fisheries Forum Plan that described how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management

of those fisheries. Particular regard should be given to kaitiakitanga when making sustainability decisions.

32. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

33. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. Prior to consultation, information on the proposal to review the catch limits of the two silver warehou stocks was provided to the following Iwi Fisheries Forums, and input sought: Te Hiku o te Ika, Mid-North, Ngāti Porou, Te Tau Ihu, and Te Waka a Māui me Ōna Toka. No specific input relating to the proposals for the SWA 3 and SWA 4 stocks has subsequently been received.

3.3.2 Kaitiakitanga

34. Silver warehou is listed as a taonga species in Te Waipounamu (all of South Island) Iwi Fisheries Plan as well as the Chatham Islands Fisheries Forum Plan. Te Waka a Māui me Ōna Toka Iwi Forum considers all fish species taonga. Te Waipounamu plan contains objectives to support and provide for the interests of South Island iwi, and contains two objectives that are relevant to the management options proposed for SWA 3 and SWA 4:

- **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.

35. The Chatham Islands Fisheries Forum Plan contains the following objective that is relevant to the management options proposed for SWA 4:

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

36. Fisheries New Zealand considers the proposals in this decision document support the above objectives.

37. There are no customary fisheries management tools such as mātaitai, taiāpure or Section 186B temporary closures relevant to this review.

3.3.3 Environmental principles (section 9 of the Act)

38. Silver warehou is predominantly taken by the deepwater trawl fleet. Typically, around 80-90% of catch is taken by the bottom trawl fleet, with 10-15% taken by the midwater trawl fleet. The recommended increase to the TAC for SWA 3 and SWA 4 is unlikely to result in any significant change to the total amount of fishing effort. While there may be a small increase in the number of target tows, silver warehou is predominantly taken as non-target catch in a number of other target fisheries (refer Figure 7). This means little change to the current level of environmental interactions associated with the silver warehou fishery i.e. marine mammal and seabird interactions, fish bycatch, and benthic impacts.

39. The following key environmental interactions within the silver warehou fishery on the Chatham Rise and in Southland, which must be taken into account when considering sustainability measures, are:

Marine mammals

40. The silver warehou target fishery rarely interacts with marine mammals. In the last five completed fishing years, observers have recorded one capture, a fur seal, which occurred in

SWA 4. Observer coverage has averaged 60% over that time period. Interactions with marine mammals are not expected to change in SWA 3 or SWA 4 under either option.

Fish bycatch

41. Silver warehou is a species that aggregates, and it is regularly taken in large quantities with little non-target catch. It also overlaps with the depth range of hoki, and hoki is often taken when silver warehou is targeted. Fisher-reported data from the last five completed fishing years for SWA 3 and SWA 4 combined indicates that when silver warehou was reported as a target species, it made up 40% of estimated catch while hoki made up 33% of estimated catch. Note that Fisheries New Zealand is aware that SWA may be reported as the target species when other species (e.g. hoki) are actually the primary target of the tow. Other species recorded include species managed under the QMS such as spiny dogfish, squid, barracouta and ling. No other species made up more than 10% of estimated catch. Non-target catch is not expected to change significantly if the TAC is set under Option 2 for SWA 3 or SWA 4.

Seabirds

42. Seabirds are sometimes taken in silver warehou target tows. Observers recorded 122 seabirds taken during silver warehou target tows during the last five completed fishing years, with observer coverage averaging 60% during this period. Around 90% of captures were recorded in Southland (SWA 4) and around half the seabirds were released alive.

43. The species caught include some species classed as High Risk (Salvin's albatross) or Medium Risk (white-capped albatross) in the most recent seabird risk assessment. Middle-depth trawl fisheries, including silver warehou, are estimated to contribute 11% of the risk for Salvin's albatross and 8% of the risk for white-capped albatross. If a small increase in fishing effort targeting silver warehou were to occur, it is unlikely to result in an increased risk to seabirds.

44. Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade to ensure all trawlers over 28 metres in length have, and follow, a Protected Species Risk Management Plan (PSRMP). A PSRMP specifies the measures that must be followed on board each vessel so as to reduce the risk of incidental seabird captures. Fisheries New Zealand observers monitor each vessel's performance against its PSRMP.

45. Fisheries New Zealand will continue to monitor seabird interactions by all vessels, including the deepwater trawl fleet.

Benthic impacts

46. Future silver warehou catch is most likely to occur in areas where fishing already takes place. For this reason there is any unlikely to be any significant change in the effects on the benthic environment or biological diversity within the areas in SWA 3 or SWA 4 where silver warehou is taken.

3.3.4 Sustainability measures (section 11 of the Act)

47. 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, the natural variability of the stocks concerned, and any relevant fisheries plan.

48. The natural variability of the stocks is considered in the proposed options, while the effects of fishing in the aquatic environment are set out above.

49. All silver warehou stocks are managed as Tier 2 stocks within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). Silver warehou is included within the hoki chapter of the National Deepwater Plan, completed in 2010.

50. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to these proposals being:

    - **Management Objective 1:** Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
    - **Management Objective 4:** Ensure deepwater and middle-depth fishstocks and key bycatch fishstocks are managed to an agreed harvest strategy or reference points.

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

52. There are no other plans, strategies or statements particularly relevant to this review.

3.4 SWA 3

3.4.1 Option 1 – modified status quo

53. A TAC and allowances have never been set for this stock. Option 1 is to set a TAC and allowances and retain the *status quo* TACC for SWA 3. The TAC would be set at 3,313.3 tonnes. This option carries the least sustainability risk but forgoes the utilisation opportunity that exists for this stock.

54. Based on the absence of information indicating ongoing customary Māori and recreational catches of silver warehou, Fisheries New Zealand initially proposed setting the customary Māori and recreational allowances at zero tonnes for SWA 3. In the consultation paper, Fisheries New Zealand invited iwi and stakeholders to provide information on alternatives to that proposal. Despite this, no information was received, and Fisheries New Zealand proposes that if you agree to Option 1, the customary Māori and recreational allowances for SWA 3 are set at zero tonnes.

55. Fisheries New Zealand also proposed setting the allowance for other sources of mortality caused by fishing at 33 tonnes. The submissions that commented on this allowance indicated support for the means by which this allowance is calculated.

56. The TACC for SWA 3 would remain unchanged at 3,280.3 tonnes. No submitters supported this option for SWA 3.

3.4.2 Option 2 (preferred)

57. Option 2 is based on research indicating a likely increase in abundance of silver warehou in SWA 3, and the associated utilisation opportunity. This option would set a TAC and allowances for the first time. The TAC would be set at 3,646 tonnes and, as with Option 1, the customary Māori and recreational allowances would be set at zero tonnes. The allowance for other sources of mortality caused by fishing would be set at 36 tonnes. Under Option 2, the TACC would increase by 10% (329.7 tonnes) from 3,280.3 to 3,610 tonnes. One submitter supports this option.

58. This option represents a relatively conservative approach to increasing the TAC. While recent research has demonstrated that the abundance of silver warehou in the western Chatham Rise biological stock (primarily the SWA 3 QMA but extending into SWA 4 – refer Figure 2) has likely increased, the quantum of the increase is uncertain. Fisheries New Zealand is considering additional research for this stock, including potentially undertaking a stock assessment. Further information on the status of this stock would be used as the basis for a future review of the TAC for SWA 3 (and SWA 4).

59. The average catch of SWA 3 over the last five completed fishing years has been 3,377 tonnes i.e. above the TACC of 3,280.3 tonnes. This means the TACC increase under Option 2 would only be 233 tonnes above the five-year average. Based on export value data from 2019, 233 tonnes of silver warehou would equate to increase in export revenue of around $NZ 780,000 per year.[26]

60. A consequence of this option is that the additional 329.7 tonnes of ACE generated would likely result in a decrease in the amount of deemed values incurred for this stock. This would complement any increase in export revenue.

3.4.3 Additional options from submitters

61. As noted, five of the seven responses or submissions received in relation to SWA 3 propose an alternative option to increase the TACC by 20%. Fisheries New Zealand acknowledges the support for a larger increase together with the widely held views of stakeholders that abundance has increased. However, the uncertainty associated with the information currently available on the abundance of silver warehou in SWA 3 is such that Fisheries New Zealand does not recommend the alternative option proposed by stakeholders for this stock. As outlined above, additional research may support a future review of settings for this stock.

3.5 SWA 4

3.5.1 Option 1 - modified status quo

62. As with SWA 3, a TAC and allowances have never been set in SWA 4. Option 1 is to set a TAC and allowances and retain the *status quo* TACC for SWA 4. The TAC would be set at 4,130.901 tonnes. This option carries the least sustainability risk but forgoes the utilisation opportunity that potentially exists for this stock.

63. As with SWA 3, Fisheries New Zealand proposes that if you agree to Option 1, the customary Māori and recreational allowances for SWA 4 are set at zero tonnes. Under Option 1, the allowance for other sources of mortality caused by fishing would be 41 tonnes for SWA 4.

64. The TACC for SWA 4 would remain unchanged at 4,089.901 tonnes. No submitters supported this option for SWA 4.

3.5.2 Option 2 (preferred)

65. Option 2 is based on the possible increase in abundance of silver warehou throughout SWA 4, and the associated utilisation opportunity. This option would also set the TAC and allowances for the first time. The TAC would be set at 4,545 tonnes and, as with Option 1, the customary Māori and recreational allowances would be set at zero tonnes. The allowance for other sources of mortality caused by fishing would be 45 tonnes. Under Option 2, the TACC would increase by 10% (410 tonnes) from 4,089.901 to 4,500 tonnes. One submitter supports this option.

66. As with Option 2 for SWA 3, this option represents a relatively conservative approach to increasing the TAC. The rationale for this is twofold. First, as noted, recent research focused on the western Chatham Rise biological stock, which encompasses a relatively small part of the SWA 4 QMA (refer Figure 2). Second, within the SWA 4 QMA, most catch comes from the Southland area (refer Figures 2 and 7), which is considered a separate biological stock. Indices from the most recent CPUE analysis for the Southland stock, using data to the end of the 2015/16 fishing year (refer Figure 4), were generally flat and in 2020, the Deepwater Working Group was unable to make any conclusions regarding the abundance of this stock. It appears likely, however, that abundance has not been decreasing under recent catches.

[26] Value is based on an average product weight value of dressed silver warehou of $5.56 per kg

67. In the absence of information regarding the status of both the western Chatham Rise (WCHAT) and Southland (SOUT) biological stocks within SWA 4, Fisheries New Zealand considers the proposed TAC reflects the uncertainty associated with the available information.

68. The average catch of SWA 4 over the last five completed fishing years has been 4,363 tonnes. This means the TACC increase under Option 2 would only be 137 tonnes above the five-year average. Based on export value data from 2019, 137 tonnes of silver warehou would equate to increase in revenue of around $460,000 per year.[27]

69. As with SWA 3, a consequence of this option is that the additional ACE generated (410.099 tonnes) would likely result in a decrease in the amount of deemed values incurred for this stock.

3.5.3 Additional options proposed by submitters

70. As with SWA 3, five of the seven responses or submissions received in relation to SWA 4 propose an alternative option to increase the TACC by 20%. Fisheries New Zealand does not recommend the alternative option proposed by stakeholders for this stock as there is less information for the main biological stock within SWA 4 (SOUT – refer Figure 2) than for SWA 3. As outlined above, there may be opportunities for additional research on this stock to be undertaken depending on the outcomes of ongoing work focusing on the SWA 3 stock.

3.6 Both stocks

71. In cases where the current level of a stock is not able to be reliably estimated, such as SWA 3 and SWA 4, 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.

72. The best available information suggests that setting TACs under Option 2 is unlikely to result in a biomass reduction for any of the stocks. The recommended option is not inconsistent with the objective of maintaining the stock at or above or moving the stocks towards or above, a level that can produce the maximum sustainable yield.

3.7 Other considerations

73. Fisheries New Zealand will continue to monitor and consider future research options for the SWA 3 and SWA 4 stocks.

74. Several submissions refer to the deemed values that fishers have incurred for both stocks in recent years; in the last five completed fishing years, fishers have been invoiced over $1.3M in deemed values for SWA 3 and over $2M for SWA 4. Deemed value rates for both stocks were reviewed for the 2019/20 fishing year. The current and previous rates are shown in Table 5 below.

Table 5: Current and previous deemed value rates for SWA 3 and SWA 4

Stock	Previous		Current	
	% catch >ACE	Rate ($/kg)	% catch >ACE	Rate ($/kg)
SWA 3	≤ 10%	1.74	≤ 10%	0.70 ↓
	>10% and ≤30%	2.00	>10% and ≤30%	1.00 ↓
	>30%	3.00	>30%	2.00 ↓
SWA 4	≤ 10%	1.22	≤ 10%	0.70 ↓
	>10% and ≤30%	1.74	>10% and ≤30%	1.00 ↓
	>30%	3.00	>30%	2.00 ↓

[27] This analysis uses the same information as that used for SWA 3

75. DWG's submission acknowledges the reduction in deemed value rates for the 2019/20 fishing year. As the current deemed value rates have not yet been in place for a complete fishing year, Fisheries New Zealand is not proposing that you amend them again. Together with the reduction in deemed value rates, a consequence of Option 2 is a likely decrease in the quantum of deemed values issued for both stocks.

4 Conclusions and Recommendations

76. Fisheries New Zealand recommends that you agree to Option 2 for both SWA 3 and SWA 4; set a TAC and allowances for both stocks for the first time and increase the TACCs by 10%. While fishing industry stakeholders feel this option is unnecessarily conservative, Fisheries New Zealand's view is that this represents a pragmatic decision based on the information currently available. Fisheries New Zealand's view is that, given the best available information on the status of the stocks, we are not in a position to recommend a greater increase as proposed by respondents or submitters.

5 Decisions for SWA 3 and SWA 4

SWA 3

Option 1 – modified *status quo*

Agree to set the SWA 3 TAC at 3,313.3 tonnes and within the TAC:

i. Set the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Set the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 33 tonnes;
iv. Retain the TACC at 3,280.3 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the SWA 3 TAC at 3,646 tonnes and within the TAC:

i. Set the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Set the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 36 tonnes;
iv. Increase the TACC from 3,280.3 to 3,610 tonnes.

Agreed / Agreed as Amended / Not Agreed

SWA 4

Option 1 – modified *status quo*

Agree to set the SWA 4 TAC at 4,130.901 tonnes and within the TAC:

i. Set the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Set the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 41 tonnes;
iv. Retain the TACC at 4,089.901 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the SWA 4 TAC at 4,545 tonnes and within the TAC:

i. Set the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Set the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 45 tonnes;
iv. Increase the TACC from 4,089.901 to 4,500 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 9 / 2020

Frostfish (FRO 3, 4, 7, 8, & 9) - Chatham Rise, South East Coast, West Coast

Lepidopus caudatus, para, taharangi, hikau

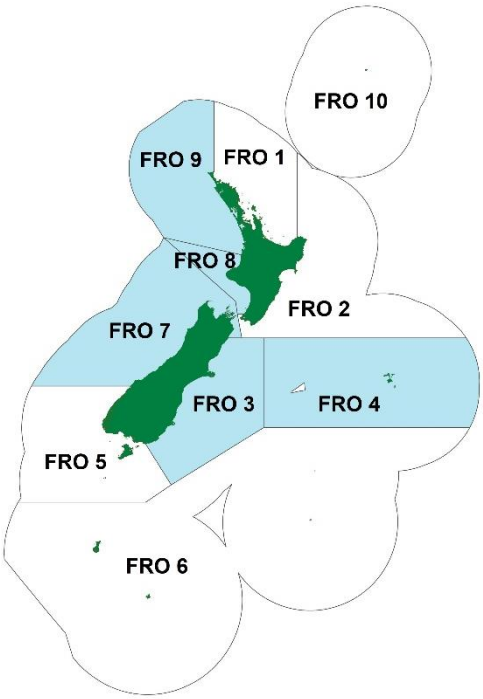


Figure 1: Quota management areas (QMAs) for frostfish (FRO), with the Chatham Rise (FRO 3 & FRO 4) and west coast stocks (FRO 7, FRO 8, & FRO 9) highlighted in blue. A frostfish is pictured on the left.

Table 1: Summary of options proposed for the five frostfish stocks from 1 October 2020 (figures are all in tonnes). Preferred options of Fisheries New Zealand are highlighted in blue. '*New*' indicates that the allowance for all other mortality to the stock caused by fishing is being set for the first time.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
FRO 3	*Modified status quo*	180 ↑ (2%)	176	0	0	4 (new)
	Option 1	82 ↓ (53%)	80 ↓ (55%)	0	0	2 (new)
FRO 4	*Modified status quo*	29 ↑ (4%)	28	0	0	1 (new)
	Option 1	126 ↑ (450%)	124 ↑ (443%)	0	0	2 (new)
FRO 7	*Modified status quo*	2,677 ↑ (2%)	2,623	1	1	52 (new)
	Option 1	2,154 ↓ (18%)	2,110 ↓ (20%)	1	1	42 (new)
FRO 8	*Modified status quo*	663 ↑ (2%)	649	1 ↑	0	13 (new)
	Option 1	919 ↑ (142%)	900 ↑ (139%)	1 ↑	0	18 (new)
FRO 9	*Modified status quo*	143 ↑ (2%)	138	1	1	3 (new)
	Option 1	410 ↑ (293%)	400 ↑ (290%)	1	1	8 (new)
New option incorporated following consultation			No – but the *status quo* has been modified for all stocks and Option 1 has been amended for FRO 8			
Total responses / submissions received			9			

Number of submissions received for each group of stocks

Chatham Rise stocks		West coast stocks	
Modified status quo	0	*Modified status quo*	0
Option 1 (all stocks)	1	Option 1 (all stocks)	1
Other	8	Other	8

1 Why are we proposing that you review the TAC and TACCs?

1. The objective of the proposal under Option 1 is to better align the TACs for two groups of frostfish stocks with the likely level of abundance of frostfish in each Quota Management Area (QMA) but to not increase fishing pressure on the biological stocks. The two groups of stocks (Chatham Rise (FRO 3 and FRO 4) and west coast North Island / South Island (FRO 7-9)) are thought to be separate biological stocks. While combined catches within both groups of stocks have, to date, been less than the sum of the TACCs, catch of some individual stocks is often higher than that stock's TACC.

2. Within each group of stocks, the proposal under Option 1 would result in a minor change to the combined TACs for each group due to the inclusion of an allowance for other mortality caused by fishing for the first time and, in the case of the west coast stocks, an increase in the customary allowance for FRO 8. The sum of the combined TACCs for each group would remain unchanged, while the TACCs of the individual stocks within each group would be altered based on the likely abundance in each QMA, as reflected by recent catch patterns.

1.1 About the species

1.1.1 Fishery characteristics

3. Frostfish is primarily a commercial species that is taken mostly as non-target catch by the deepwater trawl fleet. It is not one of the more commercially important species, comprising less than 1% of total nationwide catch during the 2018/19 fishing year. While most catch is taken in fisheries that operate on the west coast of the North and South Islands, some frostfish is also taken on the Chatham Rise as well as other areas.

4. The deepwater trawl fleet was responsible for more than 90% of total nationwide catch of frostfish during the last fishing year. In 2018/19, over 90% of frostfish catch came from fisheries operating on the west coast of the North and South Islands (FRO 7, FRO 8 and FRO 9, refer Figure 1). Most catch is taken as non-target catch in target jack mackerel, barracouta and hoki fisheries.

Chatham Rise stocks

5. For the Chatham Rise stocks, the initial TACs set when the stocks were introduced into the QMS in 1998 were based on average catch between the 1989/90 – 1996/97 fishing years (FRO 3) or 1983/84 – 1996/97 (FRO 4). The TACs for these stocks were reviewed for the 2006/07 fishing year, with the TAC for FRO 3 increased from 128 to 176 tonnes and the TAC for FRO 4 increased from 5 to 28 tonnes. The review used average catch for the preceding six fishing years (1998/99 to 2003/04).

West coast stocks

6. For this group of stocks, the initial TACs set in 1998 were based on average catch between 1986/87 – 1996/97 (FRO 7) or 1983/84 – 1996/97 (FRO 8 and FRO 9). They have not been reviewed since they were set.

7. The fisheries that take frostfish as non-target catch, including hoki and jack mackerel, have changed considerably since 1998. In the 10 years prior to 1998, catch of hoki from the West Coast fishery averaged over 100,000 tonnes. In the last 10 years, the average catch has been under 60,000 tonnes.

8. Prior to 1998, catch of jack mackerel from the west coast rarely exceeded 20,000 tonnes. Since the early 2000s however, catch has typically exceeded 30,000 tonnes. As well as the increase in catch, the distribution of effort has changed, with considerably more effort in the North and South Taranaki Bights (corresponding to the FRO 8 and FRO 9 QMAs) over the last two

decades.

9. A small number of fishing events target frostfish. In FRO 7, 71 trawl tows have targeted frostfish during the last 10 years, all but one of which was conducted by deepwater trawl vessels. The number of tows, while still small, has increased every year since 2014/15 (refer Figure 2).

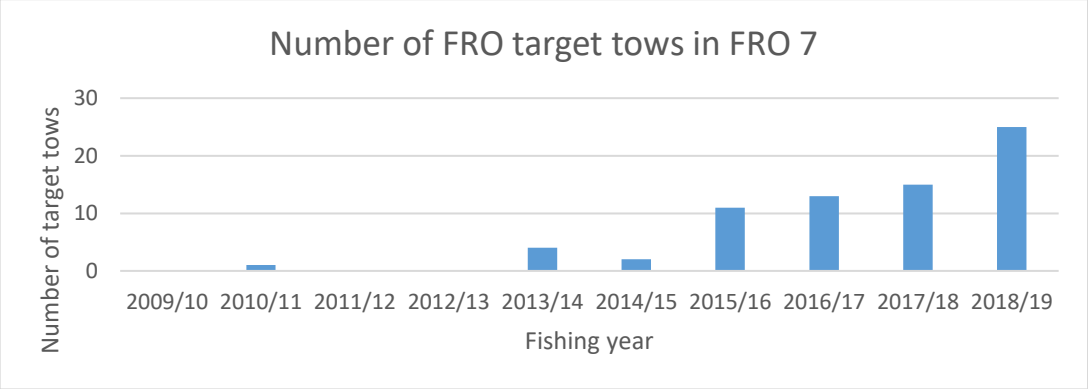


Figure 2. Number of tows targeting frostfish in FRO 7 between 2009/10 and 2018/19

1.1.2 Biology

10. Frostfish is a fast-growing and relatively short-lived species found in depths of 50-600m. Most fish reach a metre in length by the end of their third year and the maximum estimated age for both sexes is around 10 years of age. In New Zealand, frostfish can grow to 1.65m in length, but in other parts of the world they can grow to over 2m in length.

11. Prior to QMS introduction in 1998, it was recommended that four fishstocks were created for management purposes: FRO 1 (FMAs 1 and 2), FRO 3 (FMAs 3 and 4), FRO 5 (FMAs 5 and 6) and FRO 7 (FMAs 7-9). The proposed stock structure was based on observation of spawning occurring in three areas at similar times of the year as well as known distribution of juveniles and adults.

12. More recent research using data up to the 2009/10 fishing year confirmed the likelihood of a separate west coast biological stock (FMAs 7-9) based on the spatial separation of west coast catch from other areas where frostfish is taken.

13. The recommendation to create four fishstocks did not eventuate, however, and separate QMAs were created for each fishery management area.

1.2 State of the stocks

Chatham Rise stocks

14. There is no stock assessment information for the Chatham Rise frostfish stocks. While frostfish is taken during the biennial Chatham Rise trawl survey, no relative biomass estimates are published.

15. In the three years between 2001/02 and 2004/05, catch exceeded the TACC. While most of vessels responsible for this catch have since left New Zealand, overall effort in the QMA has been relatively constant. Despite this, catch of FRO 3 (refer Figure 3) has remained low for the last 15 years. This may indicate that abundance of frostfish in this QMA has decreased from the early 2000s.

West coast stocks

16. Catch per unit effort (CPUE) analyses were undertaken using estimated catch of frostfish taken in the West Coast North Island / South Island jack mackerel and the West Coast South Island hoki fishery for the period between 1989/90 and 2009/10.

17. The CPUE for frostfish catch in the jack mackerel target fishery showed a slightly increasing trend between 2001/02 and 2009/10, corresponding to the period when the jack mackerel fleet was stable.

18. The CPUE based on the hoki fishery showed a general decline over the time period.

19. Frostfish is taken in the inshore trawl survey that is conducted along the west coast of the South Island and within Tasman and Golden Bays i.e. within the area encompassed by the FRO 7 QMA (refer Figure 1). To date, 14 surveys have been undertaken between 1992 and 2019. The frostfish biomass estimates from these surveys indicate that biomass increased in the early 1990s and has remained relatively stable for the last 20 years.

1.3 Catch information

1.3.1 Commercial

20. Figure 3 shows catch compared to the TACC for the Chatham Rise stocks since 2001/02. The proposed TACC for each stock under Option 1 (refer Table 1) is also shown to indicate how it relates to catch over this time period.

Chatham Rise stocks

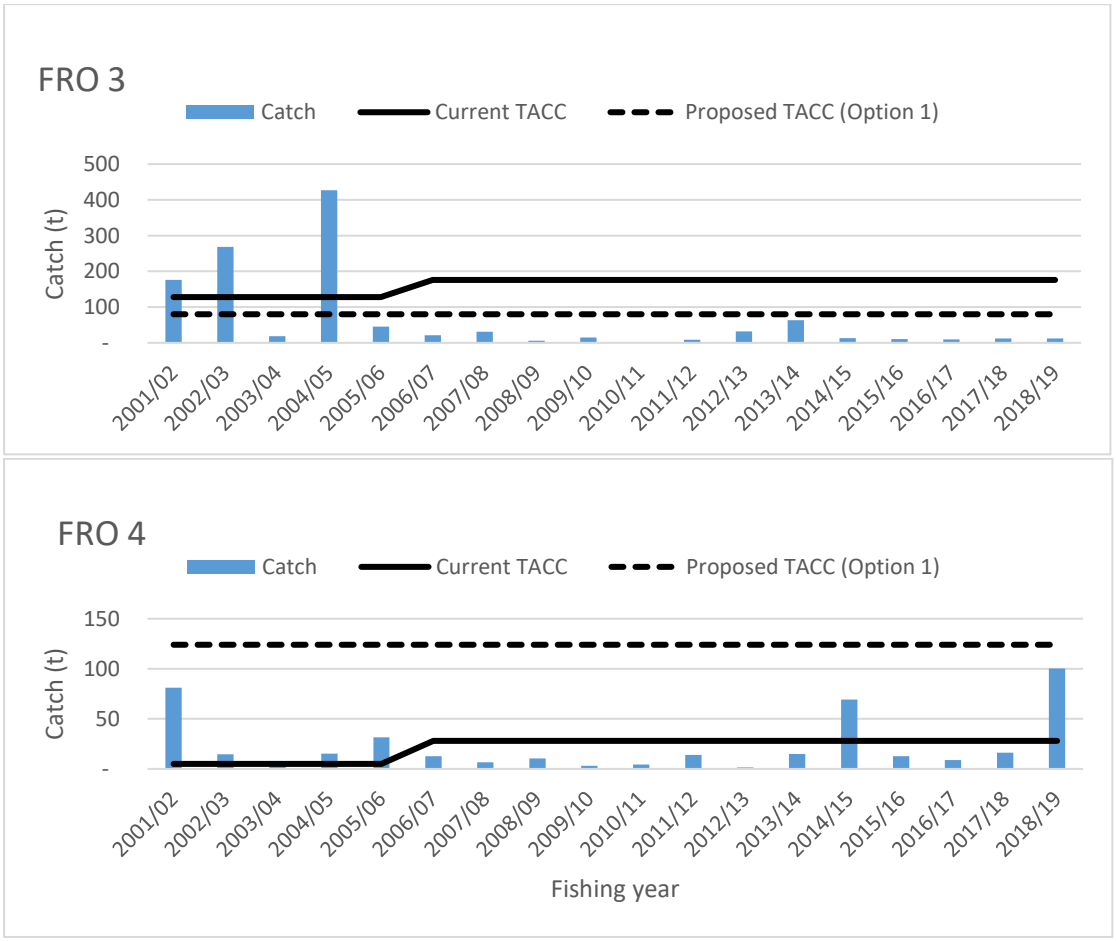


Figure 3. Catch vs TACC for FRO 3 (upper) and FRO 4 (lower) since 2001/02. The TACC proposed under Option 1 for each stock is also shown as a dashed line. All figures in tonnes.

21. Figure 3 shows that:
    - catch in FRO 3 has remained considerably below the TACC since it was increased in 2006/07
    - catch in FRO 4 has exceeded the TACC twice in the last five years, both times by more than double the TACC. This is likely due to increased effort in the barracouta and jack mackerel fishery around the Chatham Islands that takes frostfish as non-target catch.
    - the proposed TACC for FRO 3 (Option 1) is below the current TACC but higher than the highest catch reported since 2005/06
    - the proposed TACC for FRO 4 (Option 1) is above the current TACC and higher than the highest catch reported since 2001/02

West Coast stocks

22. Figure 4 shows catch compared to the TACC for the west coast North Island / South Island stocks since 2001/02. The proposed TACC for each stock under Option 1 (refer Table 1) is also shown to indicate how it relates to catch over this time period.

23. Figure 4 shows that:
    - catch in FRO 7 has been below the TACC every year since 2001/02
    - in the first half of the time period, the reduction in FRO 7 catch followed the reduction in catch of hoki in the West Coast South Island fishery, where it is taken as non-target catch
    - for the second half of the time period catch of FRO 7 lagged behind the increasing hoki catch
    - catch in FRO 8 and FRO 9 regularly exceeds the respective TACC
    - the proposed TACC for FRO 7 under Option 1 is below the current TACC but higher than the highest catch reported since 2002/03
    - the proposed TACCs for FRO 8 and FRO 9 under Option 1 are above the current TACC and higher than the highest catch reported since 2001/02

24. For comparison, Figure 5 shows combined catch of FRO 7-9 compared to the sum of the combined TACCs of the three stocks. This indicates that combined catch of the three stocks has been less than the combined TACCs for the entire time period.

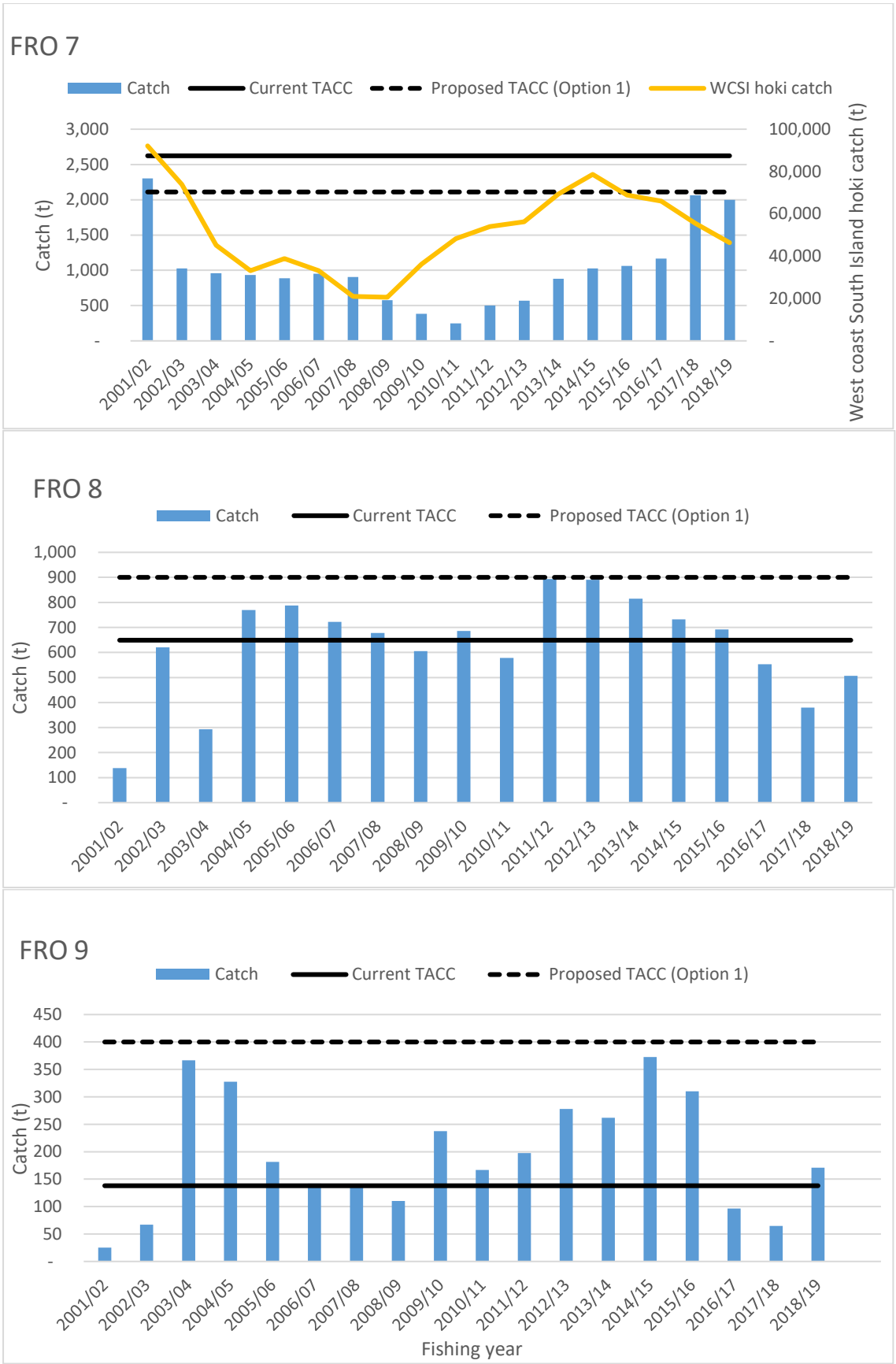


Figure 4. Catch vs TACC for FRO 7 (upper), FRO 8 (middle) and FRO 9 (lower) since 2001/02. The TACC proposed under Option 1 for each stock is also shown as a dashed line. Additionally, catch of hoki in the West Coast South Island fishery is also shown in the FRO 7 (upper) figure. All figures in tonnes.

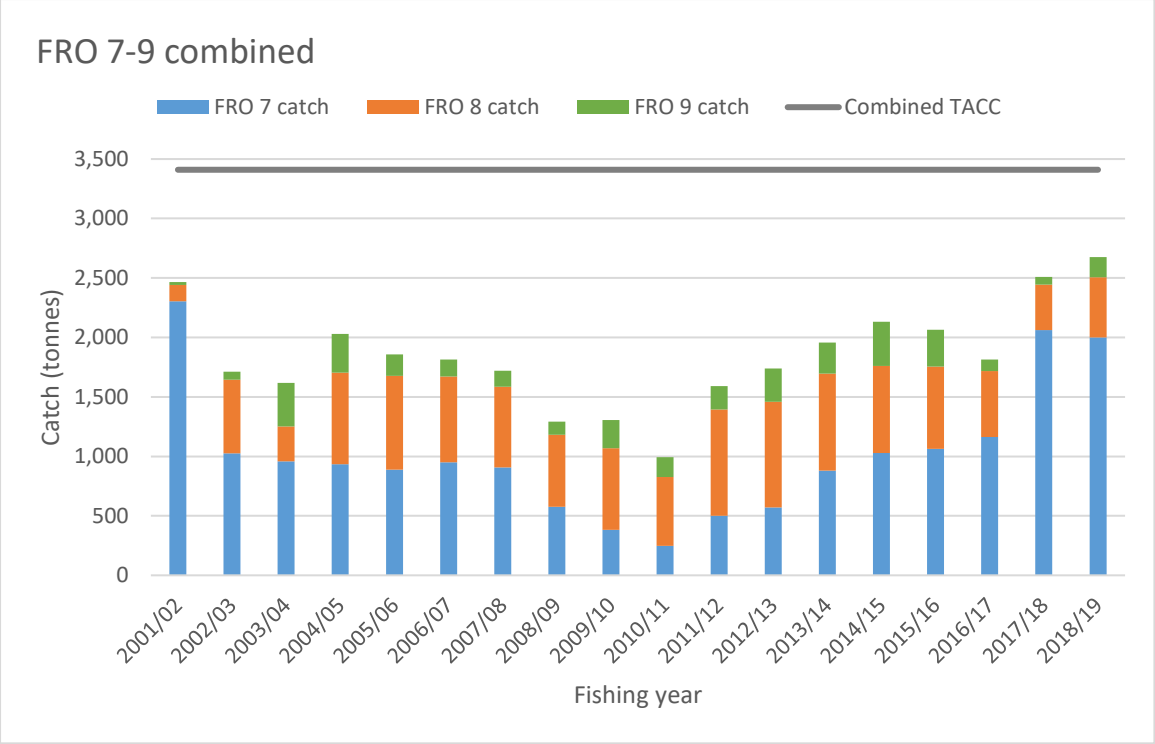


Figure 5. Catch of FRO 7, 8 and 9 combined. The sum of the current TACCs is also shown. All figures in tonnes.

1.3.2 Customary Māori

25. Frostfish has not been recorded in the customary database, although it is possible some customary catch may have been recorded under the generic '*wetfish*' code.

1.3.3 Recreational

26. Frostfish was not recorded in National Panel Surveys of Marine Recreational Fishers undertaken in 2011/2 and 2017/18. Given the depth range of the species, recreational catch is not expected.

2 Allowances within the TAC

2.1 Māori customary interests

27. Currently, FRO 7 and FRO 9 have a one tonne allowance for customary interests, while this allowance is zero for the other three stocks. Input received from the Te Tai Hauāuru Iwi Fisheries Forum suggested that the current customary allowance for FRO 8 should be increased from zero tonnes. No specific information was received from iwi and stakeholders on what the customary allowance for the FRO 8 stock should be.

28. To be consistent with the adjacent stocks (FRO 7 and FRO 9), Fisheries New Zealand recommends you increase this allowance to one tonne. Fisheries New Zealand also recommends you maintain the existing allowances for customary interests in all other FRO stocks.

2.2 Recreational interests

29. Currently, FRO 7 and FRO 9 have a one tonne allowance for recreational interests, while this allowance is zero for the other three stocks. Fisheries New Zealand recommends you maintain the existing allowances for recreational interests in all FRO stocks.

2.3 All other mortality caused by fishing

30. 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. To date, an allowance for other mortality caused by fishing has not been explicitly set for any of the five frostfish stocks.

31. A known issue with frostfish relates to how they are processed. Being a long fish, up to 1.5m in length, they do not fit well in the pans in which fish are packed and frozen. Cutting them to fit in pans has been known to result in some fish not being processed in accordance with the specifications of the relevant processed state, which effectively results in underreporting of catch.

32. The quantum of this allowance proposed for all stocks under both the modified *status quo* and Option 1, reflects the issue outlined above. The approach is consistent with that taken for other deepwater species that have a longer body shape such as barracouta and ling.

3 Options, submissions, and analysis

3.1 Summary of options

33. Two options are proposed for the TAC, TACC and allowances of each frostfish stock (Table 2). No additional options were added following consultation. However, the options have been amended to:

- Modify the *status quo* to incorporate an allowance for other mortality caused by fishing for the first time
- Increase the allowance for customary interests in FRO 8 from zero to one tonne.

Table 2: Summary of proposed management settings for frostfish stocks from 1 October 2020. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
FRO 3	*Modified status quo*	180 ↑ (2%)	176	0	0	4 (new)
	Option 1	82 ↓ (53%)	80 ↓ (55%)	0	0	2 (new)
FRO 4	*Modified status quo*	29 ↑ (4%)	28	0	0	1 (new)
	Option 1	126 ↑ (450%)	124 ↑ (443%)	0	0	2 (new)
FRO 7	*Modified status quo*	2,677 ↑ (2%)	2,623	1	1	52 (new)
	Option 1	2,154 ↓ (18%)	2,110 ↓ (20%)	1	1	42 (new)
FRO 8	*Modified status quo*	663 ↑ (2%)	649	1 ↑	0	13 (new)
	Option 1	919 ↑ (142%)	900 ↑ (139%)	1 ↑	0	18 (new)
FRO 9	*Modified status quo*	143 ↑ (2%)	138	1	1	3 (new)
	Option 1	410 ↑ (293%)	400 ↑ (290%)	1	1	8 (new)

3.2 Submissions

34. Ten responses or submissions were received in relation to the five frostfish stocks. FINZ did not make specific comments on these stocks but stated that they endorse DWG's response relating to these stocks.

35. Aside from one submission in support of Option 1 for all stocks, most of the other responses or submissions support the proposal to increase the TAC for FRO 4, FRO 8 and FRO 9 but did not support the proposed decreases to the TAC for FRO 3 and FRO 7 (they requested the *status quo* be maintained) (Table 3). Rationale for this position was that as there were no sustainability concerns for FRO 3 and FRO 7, the TACs should not be reduced.

Table 3: Responses and submissions received for the five frostfish stocks (FRO 3, 4, 7, 8 & 9) (in alphabetical order)

Submitter	Option Support			
	Modified Status quo	**1**	**Other**	**Details**
Deepwater Group Limited (DWG)			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7
Fisheries Inshore New Zealand Ltd (FINZ)			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7
Iwi Collective Partnership (ICP)			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7
Mike Currie			✓	Ban catch of this species
Our Seas Our Future (OSOF)		✓		
Sanford Limited			✓	Reconsider proposal
Sealord Group Limited (Sealord)			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7
Te Arawa Fisheries			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7
Te Kupenga o Maniapoto Ltd			✓	Amalgamate FRO 3 & 4 and FRO 7-9 to create new QMAs
Te Ohu Kaimoana			✓	Increase TAC for FRO 4, FRO 8 and FRO 9, maintain *status quo* for FRO 3 and FRO 7

3.3 Analysis

3.3.1 Input and participation of tangata whenua

36. Input and participation into the sustainability decision-making process is provided 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 these fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.

37. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

38. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. Prior to consultation, information on the proposal to review the catch limits for the two groups of frostfish stocks was provided to the following Iwi Fisheries Forums, and input sought: Te Hiku o te Ika, Mid-North, Nga Hapu o te Uru, Ngāti Porou, Te Tai Hauāuru, Te Tau Ihu, and Te Waka a Māui me Ōna Toka.

39. Input was received from Te Tai Hauāuru regarding FRO 8. While the proposal to adjust the TACCs was supported, a request was made to defer the timing of the change on the basis of the potential impact on ACE contracts.

40. Fisheries New Zealand acknowledges this suggestion but notes that for FRO 8, the proposal will generate additional ACE and provide an economic benefit for FRO 8 quota holders.

41. Input was also received that a customary allowance should be set for FRO 8 (the existing customary allowance is zero tonnes). Fisheries New Zealand is supportive of this and recommends you increase the customary allowance for this stock to one tonne.

42. Given the disruption to services, the opportunity for input from the Iwi Fisheries Forums was impacted. However input was received from Te Waka a Māui me Ōna Toka (TWAM) related to FRO 3 and FRO 7. TWAM states it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. It considers recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. TWAM concludes that only once all sectors are accurately reporting will the TACC and allowances be meaningful.

3.3.2 Kaitiakitanga

43. The geographical spread of the five frostfish stocks means that there are a number of relevant Iwi Forum Fisheries Plans; Te Hiku o Te Ika (far North), Nga Hapu o te Uru o Tainui (Waikato and west coast North Island), Te Tai Hauāuru (Taranaki and Manawatu), Te Waipounamu (South Island), and Chatham Islands.

44. The relevant Iwi Forum Fisheries Plans regard all species as taonga. Fisheries New Zealand considers the proposals presented in this decision document to be generally consistent with the management objectives of the relevant Iwi Forum Fisheries Plans as they relate to balancing use objectives with sustainability.

45. There are no customary fisheries management tools such as mātaitai, taiāpure or Section 186B temporary closures relevant to this review. While such areas exist within the frostfish QMAs, they are inshore and outside the depth range where frostfish is most commonly found.

3.3.3 Environmental principles (section 9 of the Act)

46. Aligning the TACs of the five frostfish stocks to reflect the likely distribution of abundance of this species is not expected to result in any increase in total catch. Effort in the fisheries where frostfish is taken, such as hoki and jack mackerel, is not expected to change as a result of changes to frostfish TACs and consequently, environmental interactions i.e. marine mammal and seabird bycatch, fish bycatch and benthic impacts, are not expected to change. A range of programmes are in place to monitor environmental interactions in the main fisheries where frostfish is taken as non-target catch.

3.3.4 Sustainability measures (section 11 of the Act)

47. 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, the natural variability of the stock concerned and any relevant fisheries plan. Matters relating to effects of fishing and variability have been taken into account in the sections above.

48. All frostfish stocks are managed as Tier 2 stocks within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 – Part 1A (National Deepwater Plan). Frostfish is not currently included within any species-specific chapter of the National Deepwater Plan.

49. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to the frostfish stocks being:

- **Management Objective 1**: Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
- **Management Objective 3**: Effective management of the deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information.

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

51. There are no other plans, strategies or statements particularly relevant to this review.

52. In cases where the current level of a stock is not able to be reliably estimated, such as the five frostfish stocks here, 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.

53. The best available information suggests that adjusting the catch limits for the five administrative frostfish stocks in a way that does not increase fishing pressure for the biological stock would be unlikely to result in a biomass reduction for the biological stock. Fisheries New Zealand's recommended options are therefore 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.

3.4 Options for FRO 3

3.4.1 Modified status quo

54. Under the modified *status quo*, the inclusion of an allowance for other sources of mortality caused by fishing for the first time would result in a minor change to the TAC for this stock. The existing TACC would remain at 176 tonnes.

55. As noted in section 1.1.1, the TAC for FRO 3 has not been reviewed since 2006/07. Recent catch information (refer Figure 3) indicates that abundance of frostfish on the western Chatham Rise has likely decreased compared to the period that the TAC is based on (1998/99 to 2003/04). Fisheries New Zealand's view is that the 15-year period of consistently low catch of this stock is more likely due to decreasing abundance than to changes in fishing effort over that time period.

56. Retaining the *status quo* for this stock means the TAC will be based on historic catch information that does not reflect the likely current abundance of frostfish in this area.

57. As indicated in Table 3, five respondents or submitters do not support reducing the TAC for this stock. They favour maintaining the *status quo* for FRO 3 on the basis that there is no sustainability issue for this stock. The responses and submissions from Te Ohu Kaimoana, DWG and Sealord comment that the reduction in catch of FRO 3 has been due to a change in effort rather than a reduction in biomass.

3.4.2 Option 1

58. Under Option 1, the TAC for FRO 3 would decrease from 176 to 82 tonnes. An allowance for other sources of mortality would be set for the first time at 2 tonnes, while the TACC would decrease from 176 to 80 tonnes. One submission supports Option 1 for FRO 3.

59. The decrease in catch of frostfish in FRO 3 since 2004/05 indicates a likely decrease in abundance of frostfish on the western Chatham Rise. As noted above, while some submitters feel the reduction in catch is due to a change in fishing effort, Fisheries New Zealand's view,

however, is that the reduction and ongoing low level of FRO 3 catch since 2004/05 is unlikely to be attributable solely to changes in effort.

60. While the group of vessels responsible for the high FRO 3 catch in three of the four years between 2001/02 and 2004/05 no longer operates in New Zealand, overall fishing effort in the FRO 3 QMA has remained relatively consistent. This includes the Chatham Rise hoki fishery, which has maintained consistent annual catch levels since 2001/02.

61. A consequence of Option 1 is a reduction in the quantity of FRO 3 ACE available. As the proposed TACC would remain higher than the highest catch reported during the last 15 years, the proposed decrease to the FRO 3 TAC under Option 1 is unlikely to constrain fishers' ability to balance catch of this stock with ACE.

3.5 Options for FRO 4

3.5.1 Modified status quo

62. Under the modified *status quo*, the inclusion of an allowance for other sources of mortality caused by fishing for the first time would result in a minor change to the TAC for this stock. The existing TACC would remain at 28 tonnes. There was no support for maintaining the *status quo* for this stock.

63. The recent catch information indicating that frostfish is more abundant around the Chatham Islands than was previously thought (refer Figure 3), means that retaining the *status quo* forgoes the utilisation opportunity that likely exists for this stock. It also means the TAC would continue to be based on historic catch information that does not reflect the likely current abundance of frostfish in this area.

3.5.2 Option 1

64. Under Option 1, the TAC for FRO 4 would increase to 126 tonnes. An allowance for other sources of mortality would be set for the first time at 2 tonnes, while the TACC would increase from 28 to 124 tonnes.

65. Since 2013/14, there has been a resumption of fishing effort around the Chatham Islands (the FRO 4 QMA) by the pelagic trawl fleet, which had not fished in the area since the early 2000s. The species targeted by the fleet in this area (primarily jack mackerel and barracouta) overlap with the depth range for frostfish. The amount of recent effort in the area has been greater than that from the earlier time period and has resulted in increased frostfish catch. The increased catch indicates frostfish is likely more abundant in the area than previously thought, and that there is a utilisation opportunity for this stock.

66. Six respondents or submitters supported the proposal to increase the TAC for FRO 4. Sealord's submission confirmed that, from its perspective, the increase in reported catch of FRO 4 was due to increased fishing effort for barracouta and jack mackerel around the Chatham Islands.

67. A consequence of Option 1 is an increase in the quantity of FRO 4 ACE available. This, in turn, will better provide for fishers to balance catch with ACE. In each of the last 10 completed fishing years, the combined catch of frostfish from the Chatham Rise stocks has been less than the sum of the TACCs. Despite this, fishers have been invoiced around $25,000 in deemed values for the FRO 4 stock.

68. No increase in effort in FRO 4 is expected under Option 1 as frostfish is taken entirely as non–target catch in this area.

3.6 Options for FRO 7

3.6.1 Modified status quo

69. Under the modified *status quo*, the inclusion of an allowance for other sources of mortality caused by fishing for the first time would result in a minor change to the TAC for this stock. The existing TACC would remain at 2,623 tonnes. Five respondents or submitters favour maintaining the *status quo* for FRO 7 on the basis that there is no sustainability issue for this stock and that the higher TACC will provide for future utilisation opportunities for this stock.

70. Retaining the *status quo* for the FRO 7 stock means the TAC will continue to be based on historic (25-35 year old) catch information. As outlined in section 1.1.1, changes in fishing patterns since 2000, primarily the decrease in effort in the west coast South Island hoki fishery, which takes frostfish as non-target catch, mean the basis for the current TAC is outdated and does not reflect more recent fishing effort.

3.6.2 Option 1

71. Under Option 1, the TAC for FRO 7 would decrease to 2,154 tonnes. An allowance for other sources of mortality would be set for the first time at 52 tonnes while the TACC would decrease from 2,623 tonnes to 2,110 tonnes. The submission from Our Seas Our Future supports decreasing the TAC for FRO 7.

72. As noted in the *status quo* section above, the distribution of effort in the fisheries that take frostfish as bycatch has changed since the 1980s and 1990s. In the case of FRO 7, effort in the west coast South Island hoki fishery has decreased significantly since 2001/02.

73. The corresponding reduction in FRO 7catch during most of that period (2002/03 to 2016/17) is likely, in part at least, due to decreased effort in the hoki fishery rather than being attributable to a decrease in abundance. While catch has increased during the last two completed fishing years, Fisheries New Zealand considers that adjusting the TAC to reflect catch and effort over the last 15 years is more appropriate than retaining the current TAC, which is based on fishing activity during the 1980s and 1990s.

74. This option updates the approach taken in 1998 of basing the TAC on recent catch information. Although it would result in a 20% decrease to the TAC, the consequential ability for fishers to balance catch of this stock with ACE is unlikely to be constrained as the proposed TACC remains higher than the highest catch reported since 2001/02.

75. As noted above, five respondents or submitters do not support Option 1 for FRO 7 on the basis that there is no sustainability issue for this stock. They also consider that retaining the higher TACC will to provide for future utilisation opportunities for this stock.

76. The alternative approach favoured by most respondents or submitters (increase the TACs for FRO 8 and 9 and maintain the *status quo* for FRO 7) would effectively add an additional 513 tonnes to the combined TACCs. While this may provide for additional utilisation within FRO 7, Fisheries New Zealand considers that this approach is inconsistent with the broader objective of not increasing fishing pressure on the biological stock.

77. Fisheries New Zealand notes that the number of frostfish target tows in FRO 7 has been increasing since 2015/16, indicating that fishers are finding ways to utilise this stock. Fisheries New Zealand will monitor this fishery and investigate options for research that may provide information on the status of the west coast biological stock. This includes a potential update of the CPUE analysis based on the jack mackerel target fishery up to the 2009/10 fishing year that showed promise as an index of biomass.

3.7 Options for FRO 8 and FRO 9

78. The FRO 8 and FRO 9 stocks are grouped together as the same rationale applies to both stocks, and submissions had the same views across both stocks.

3.7.1 Modified status quo

79. Under the modified *status quo*, the inclusion of an allowance for other sources of mortality caused by fishing for the first time would result in minor changes to the TACs for these stocks. The TACCs would remain at 649 tonnes (FRO 8) and 138 tonnes (FRO 9). There is no support for maintaining the *status quo* TAC for these two stocks.

80. As noted in section 1.1.1, the distribution of effort in the west coast jack mackerel fishery has changed since 2000, with increased effort off the west coast North Island (corresponding to the FRO 8 and FRO 9 QMAs). The resulting catch of frostfish in these two QMAs since 2000 indicates this species is likely more abundant in the area than previous catch may have indicated. Retaining the *status quo* means forgoing the utilisation opportunity that likely exists for these stocks.

3.7.2 Option 1

81. Under Option 1, the TAC for FRO 8 would increase from 649 to 919 tonnes. The customary Māori allowance would increase from zero to one tonne and an allowance for other sources of mortality would be set for the first time at 18 tonnes. The TACC would increase from 649 to 900 tonnes.

82. For FRO 9, the TAC would increase from to 140 to 410 tonnes. An allowance for other sources of mortality would be set for the first time at 8 tonnes, while the TACC would increase from 138 to 400 tonnes. The majority of respondents and submitters supported the proposal to increase the TACs for FRO 8 and FRO 9 to match recent catch.

83. The sustained level of frostfish catch in FRO 8 and FRO 9 since the early 2000s indicates this species is likely more abundant in the area than catch from the 1980s and 1990s may have indicated.

84. A consequence of the proposed increases to the TACs is that additional ACE will be available to balance against catch. In each of the last 10 completed fishing years, the combined catch of frostfish from the west coast stocks has been less than the sum of the TACCs. Despite this, fishers have been invoiced around $250,000 in deemed values for the FRO 8 and FRO 9 stocks.

85. No increase in fishing effort is expected as frostfish is taken entirely as non–target catch in this area. The proposal under Option 1 updates the approach taken when the stocks were introduced into the QMS in 1998 of using recent catch information as an indicator of likely abundance.

3.8 Other considerations

3.8.1 QMA amalgamation

86. Te Kupenga o Maniapoto Limited's preferred option is to amalgamate the two groups of stocks using the provisions of section 25 of the Act: one QMA would be created covering the Chatham Rise (the existing FRO 3 and 4 stocks) and another covering the west coast North Island / South Island (the existing FRO 7-9 stocks). Fisheries New Zealand agrees that there would be benefits to managing the stocks on this basis. With a single TACC covering each geographical area, fishers would be able to take frostfish anywhere within those areas and not be subject to localised ACE constraints. This has the potential to enhance utilisation opportunities.

87. Fisheries New Zealand would welcome any initiative by quota holders to amalgamate the existing QMAs. Section 25A of the Act sets out the requirements to alter QMAs with agreement of stakeholders. The key requirement of this section is that quota owners who collectively hold more than 75% of the quota shares for each stock must develop an agreement, the key components of which are the manner in which quota shares are to be apportioned after the alteration, and how the interests of aggrieved quota owners would be addressed.

3.8.2 Quota holder's rights

88. With respect to the proposal under Option 1 to adjust TACs within the two groups of stocks, several responses or submissions commented on the impact of this on quota holders' rights. These are summarised in Table 4 below.

Table 4: Summary of comments expressed regarding quota holders' rights

Respondent or submitter	Comment in respect of quota holders' rights
Te Ohu Kaimoana	Unprincipled reallocation of catch limits across QMAs unreasonably infringes on property rights
Deepwater Group Limited (DWG)	Reallocating catch across QMAs infringes on and undermines quota owners' property rights and can be seen as equivalent to changing QMA boundaries, which can only be done according to the due process provided under the Act.
Iwi Collective Partnership	Proposed reductions to FRO 3 and FRO 7 could potentially have detrimental impacts on iwi quota owners
Sanford Ltd	The proposition is a significant undermining of property rights. Stocks and owned and valued separately, not through some aggregation and averaging process.
Te Arawa Fisheries	Sustainability rounds are not the correct forum to debate quota property rights

89. Fisheries New Zealand acknowledges the sentiment expressed by respondents and submitters. However, the proposal is to adjust TACs to better reflect the distribution of the abundance of frostfish within the two biological stocks without increasing fishing pressure on the biological stock as a whole. While this would result in increases to three TACs and decreases to two, there would be no infringement on property rights as such. Owning quota shares confers a right on a quota holder to be allocated a defined proportion of the ACE generated for that stock every year. While the quantum of ACE may change depending on the TACC going up or down, the proposal under Option one does not amend the proportion of ACE generated for each stock.

4 Conclusion and recommendations

90. To date, the TACs for the five frostfish stocks have been based primarily on reported catch and have treated reported catch as a proxy for abundance. The catch information used as the basis for the current TACs, particularly for the west coast stocks, is now outdated and does not reflect recent fishing activity.

91. Fisheries New Zealand recommends you agree to Option 1 for both groups of frostfish stocks. This option continues the approach taken to date for setting the TACs for these stocks but uses updated catch information and likely better reflects the local abundance of the stocks across the management areas.

92. For FRO 8, Fisheries New Zealand recommends that you increase the allowance for customary interests from zero to one tonne, consistent with that for FRO 7 and FRO 9. For all other stocks, no changes to existing customary or recreational allowances is recommended. For all five frostfish stocks, Fisheries New Zealand recommends that under both the *status quo* and Option 1, you agree to explicitly include an allowance for other mortality caused by fishing for the first time.

93. While there was general support for the TACC increases, there was almost no support for the corresponding TACC decreases. The respondents or submitters who supported a TACC increase for FRO 4, FRO 8 and FRO 9 on the basis of recent catch information, did not support the same information being used as the basis for TACC decreases for FRO 3 and FRO 7. Fisheries New Zealand's view is that to be consistent, the TAC/TACCs for all five frostfish stocks should be set on the basis of recent catch information.

5 Decisions for frostfish stocks

Chatham Rise frostfish stocks

FRO 3

Modified *status quo*

Agree to set the FRO 3 TAC at 180 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes;
iv. Retain the FRO 3 TACC at 176 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the FRO 3 TAC at 82 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 2 tonnes;
iv. Reduce the FRO 3 TACC from 176 to 80 tonnes.

Agreed / Agreed as Amended / Not Agreed

FRO 4

Modified *status quo*

Agree to set the FRO 4 TAC at 29 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 1 tonne;
iv. Retain the FRO 4 TACC at 28 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the FRO 4 TAC at 126 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 2 tonnes;
iv. Increase the FRO 4 TACC from 28 to 124 tonnes.

Agreed / Agreed as Amended / Not Agreed

West Coast frostfish stocks

FRO 7

Modified *status quo*

Agree to set the FRO 7 TAC at 2,677 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonne;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 52 tonnes;
iv. Retain the FRO 7 TACC at 2,623 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the FRO 7 TAC at 2,154 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 42 tonnes;
iv. Reduce the FRO 7 TACC from 2,623 to 2,110 tonnes.

Agreed / Agreed as Amended / Not Agreed

FRO 8

Modified *status quo*

Agree to set the FRO 8 TAC at 663 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonne;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 13 tonnes;
iv. Retain the FRO 8 TACC at 649 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the FRO 8 TAC at 919 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonne;
ii. Retain the allowance for recreational fishing interests at 0 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 18 tonnes;
iv. Increase the FRO 8 TACC from 649 to 900 tonnes.

Agreed / Agreed as Amended / Not Agreed

FRO 9

Modified *status quo*

Agree to set the FRO 9 TAC at 143 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonne;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 3 tonnes;
iv. Retain the FRO 9 TACC at 138 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the FRO 9 TAC at 410 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonne;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 8 tonnes;
iv. Increase the FRO 9 TACC from 138 to 400 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Gemfish (SKI 1 and SKI 2) - Auckland and Central East

Rexea solandri, Gemfish, Maka-tiaki

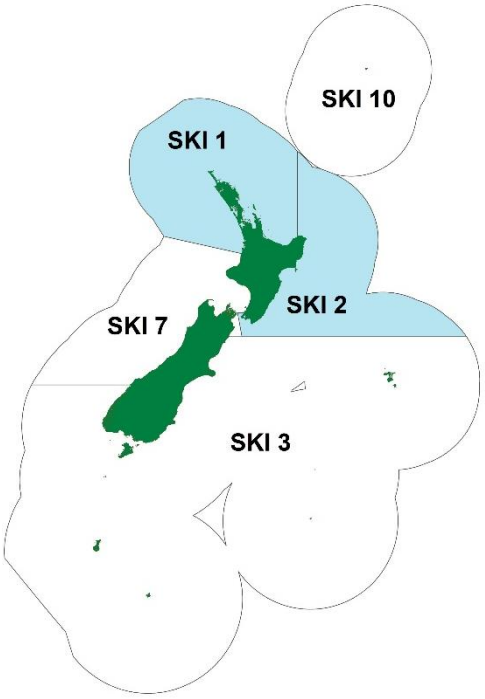


Figure 1: Quota management areas (QMAs) for gemfish (SKI 1 and SKI 2), with SKI 1 and SKI 2 highlighted in blue. A gemfish is pictured on the left.

Table 1: Summary of options proposed for SKI 1 and SKI 2 from 1 October 2020. Figures are in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SKI 1	**Option 1** *(Status quo)*	218	210	3	5	0
	Option 2	284↑ (30%)	231 ↑ (10%)	3	27 ↑	23 ↑
	Option 3	307 ↑ (41%)	252 ↑ (20%)	3	27 ↑	25 ↑
	Option 4 *(new)*	426 ↑ (95%)	360 ↑ (71%)	3	27 ↑	36 ↑
SKI 2	**Option 1** *(Status quo)*	248	240	3	5	0
	Option 2	298 ↑ (20%)	264 ↑ (10%)	3	5	26 ↑
	Option 3	325 ↑ (31%)	288 ↑ (20%)	3	5	29 ↑
	Option 4 *(new)*	371 ↑ (50%)	330 ↑ (38%)	3	5	33 ↑

New option incorporated following consultation	Yes, Option 4 for both SKI 1 and SKI 2
Total submissions received	9

Number of submissions received for each option	**SKI 1**	**SKI 2**
Option 1	1	1
Option 2	0	0
Option 3	0	0
Option 4	Not consulted on	Not consulted on
Other	8	7

Recreational bag limit options proposed for both stocks	Submissions received for each option
Option 1 – No change	0
Option 2 – Consider introducing a recreational bag limit	4

1 Why are we proposing that you review the TAC and TACC?

1. The Total Allowable Catch (TAC) for SKI 1 and SKI 2 has not been reviewed since 2001, when information from a quantitative stock assessment indicated abundance in these fisheries was low. At the time the TACs for SKI 1 and SKI 2 were reduced by 53.4% and 53.0% respectively and followed on from two previous reductions in years prior.

2. The reduced catch levels for these stocks since 2001 were intended to allow stock abundance to rebuild. Updated commercial catch per unit effort (CPUE) information is now indicating that these actions have been successful in improving abundance of gemfish and, as a result, there is potential for increased utilisation.

3. Fisheries New Zealand is also recommending that you consider introducing a recreational bag limit for SKI 1 and SKI 2 to manage recreational take.

1.1 About the stock

1.1.1 Fishery characteristics

4. Prior to 2014/15, the majority of gemfish in SKI 1 were taken as part of a target trawl fishery. However, in recent years almost all gemfish have been taken as bycatch by trawlers targeting species such as hoki or tarakihi. Gemfish in SKI 2 are both targeted and taken as bycatch in various inshore and middle-depth fisheries.

5. Gemfish are caught and valued by customary and recreational fishers using line methods, with SKI 1 in particular recording moderate volumes of recreational catch.

1.1.2 Biology

6. Gemfish are found in coastal waters around New Zealand with a wide depth range of between 50 and 550 metres. SKI 1 and SKI 2 are thought to comprise a single biological stock, particularly the eastern portion of SKI 1 (SKI 1 E) and SKI 2. Gemfish have a maximum age of 17+ years.

1.2 State of the stock

7. The most recent fully quantitative stock assessment for the combined SKI 1 and SKI 2 stock was conducted in 2008. The stock assessment presented three model results based on differing assumptions around year class strength. No single model was preferred and as a result, the biomass of the combined SKI 1 and SKI 2 stock was estimated in 2006 to be at 32% B_0 ($2006_{YCS2000}$) and 26% B_0 ($2006_{YCS2001}$), and in 2007 to be at 22% B_0 ($2007_{YCS2003}$) based on the three models used.

8. Trends in stock abundance subsequent to the 2008 stock assessment have been monitored through combined Catch per Unit Effort (CPUE) indices for SKI 1 and SKI 2 with the most recent update in 2020.

9. The 2020 CPUE analysis of mixed sub-adult/adult gemfish taken by the tarakihi target trawl fishery indicates that relative abundance of young gemfish has increased at least threefold since 2007. This index was accepted by the scientific working group. The increased abundance is reflected in increases in catch seen in both commercial and recreational fisheries.

10. Recent large increases in the CPUE for sub-adult/adult gemfish taken in the tarakihi target trawl fishery also indicate that the spawning stock will continue to increase over the next few years. Figure 2 below indicates that CPUE has increased steeply since 2015.

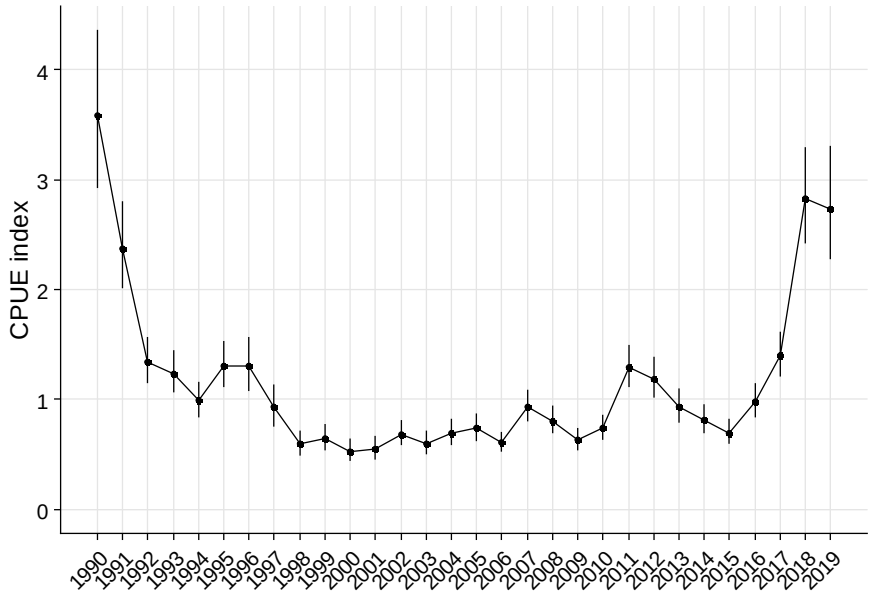


Figure 2: Standardised catch per unit effort (CPUE) index for mixed sub-adult/adult SKI 1 and SKI 2 from bottom trawling targeting tarakihi (BT-TAR trip index)

11. The Harvest Strategy Standard suggests a target biomass for gemfish to be 40% B_0. The index of abundance established by the CPUE does not provide a reference point for the target (or any other proxy such as the soft and hard limit). It is therefore unknown whether the stock has reached or exceeded the target and it is not possible to compare this data against the 2008 stock assessment. Overall, the 2020 CPUE analysis found SKI 1 and SKI 2 unlikely to be below the soft limit (20% B_0) and concluded that biomass is increasing.

12. The associated uncertainties with the 2020 CPUE analysis that you should be aware of are as follows:

- Avoidance of gemfish in the tarakihi target trawl fishery may bias the tarakihi bottom trawl CPUE index downwards.
- The tarakihi target fishery does not sample the full depth distribution of gemfish and, based on limited data, appears to catch mostly sub-adult fish.
- The target gemfish fishery is small and CPUE from this fishery does not currently provide an index of adult biomass after 2005.

13. A TAC review was undertaken for the gemfish stocks SKI 3 and SKI 7 in 2019, to which you agreed to increase the TAC of each stock by 102% from 300 tonnes to 606 tonnes. While this is a separate biological stock, it may indicate that environmental conditions have favoured good recruitment for gemfish around the country.

1.3 Catch information

14. Catch in SKI 1 and SKI 2 has been constrained by the TAC since the late 1990s when there were sustainability concerns for the stocks. From 1997 to 2001, the TAC was reduced from 1,151.8 tonnes to 218 tonnes in SKI 1 and from 1,300.4 tonnes to 248 tonnes in SKI 2. This occurred through three TAC reviews as indicated by Table 2 below.

Table 2: Changes to TAC in SKI 1 and SKI 2 (tonnes)

Year	SKI 1	SKI 2
1986	1,151.8	1,300.4
1997	753 ↓ (-35%)	850 ↓ (-35%)
1998	468 ↓ (-38%)	528 ↓ (-38%)
2001	218 ↓ (-53%)	248 ↓ (-53%)

1.3.1 Commercial

15. Since 2001, commercial catch for both stocks has been near or above the Total Allowable Commercial Catch (TACC) in most years, as shown in Figures 3 and 4. Since 2014, catch has been increasing steadily and has exceeded the TACC consistently since 2016 in SKI 1 and 2017 in SKI 2.

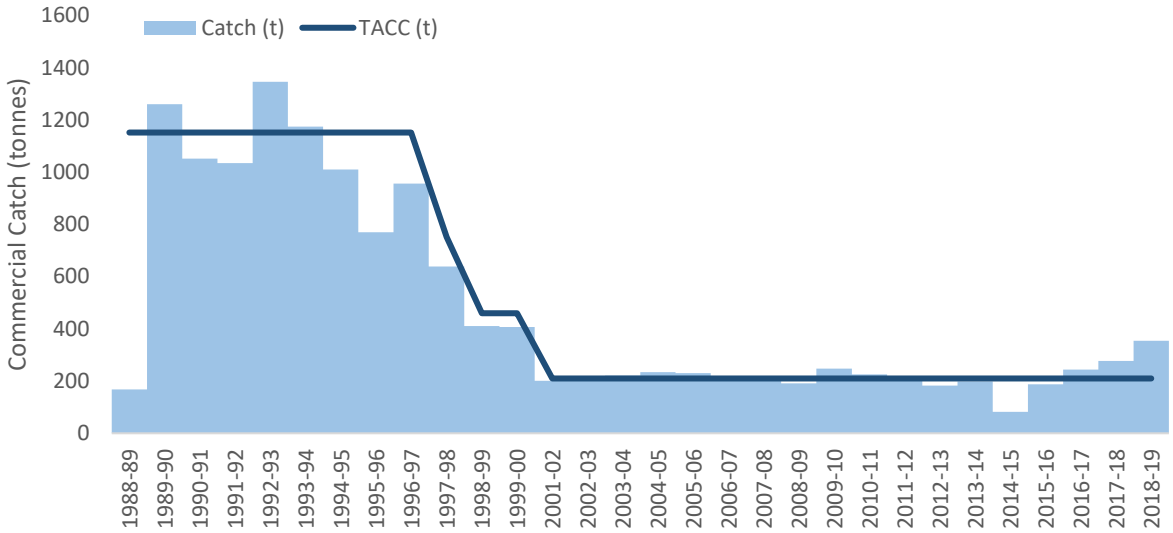


Figure 3: Landings for SKI 1 compared against TACC (tonnes)

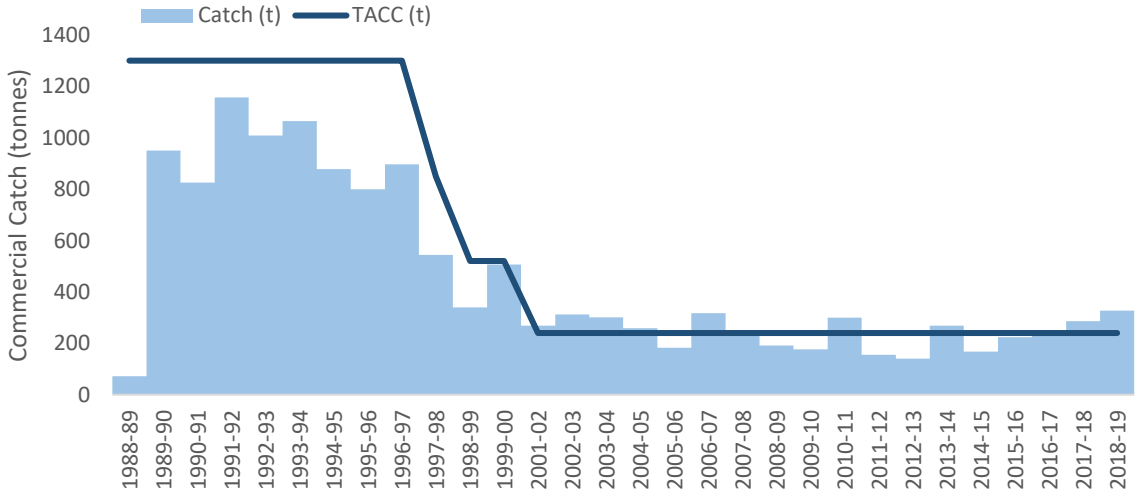


Figure 4: Landings for SKI 2 compared against TACC (tonnes)

16. Minimal gemfish targeting in SKI 1 and a decrease of targeting in SKI 2 has occurred since 2016 with the increase in landings in SKI 1 driven by increased bycatch from the western Bay of Plenty hoki fishery, and in SKI 2 driven by increased bycatch from the tarakihi trawl fishery.

17. When targeting hoki in the western Bay of Plenty, gemfish in SKI 1 regularly comprise a substantial (>30%) proportion of the total catch, particularly over the winter months. The amount of effort targeting hoki in the western Bay of Plenty during the winter months has increased over recent years, despite the increased catches of SKI 1 (and consequent deemed value invoices).

18. Commercial fishers have noted that SKI bycatch is constraining catch of other target species

19. When targeting tarakihi, gemfish in SKI 2 are taken as bycatch during all months of the year, with gemfish typically comprising a relatively low proportion of the catch[28]. However, catches can sporadically occur in large quantities; 30% of the gemfish catch from tarakihi target tows over the last three years were taken during 30 fishing events (0.3% of total tarakihi effort during this time).

1.3.2 Customary Māori

20. Customary catch in SKI 1 and SKI 2 is highly uncertain. Fisheries New Zealand does not hold any reports of customary permits issued for gemfish in the last 10 years. However, we recognise that this information is incomplete and unlikely to reflect current customary use. One of the reasons for this is because parts of the North Island are not gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998. Therefore, customary catch may be occurring under the Amateur Regulations, for which there is no requirement to report catch.

1.3.3 Recreational

21. The most reliable estimate of recreational harvest comes from the National Panel Survey of Marine Recreational Fishers 2017/18 (NPS), which estimates that 7,023 gemfish were taken from SKI 1 and 1,299 from SKI 2 between 1 October 2017 and 30 September 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 gemfish.

22. The same survey methods were also undertaken in 2011/12, but the result in that year (an estimate of 2,539 gemfish taken in SKI 1 and none in SKI 2) was considered highly uncertain. Although uncertain, this data suggests that an increase in recreational catch has occurred in both SKI 1 and SKI 2. This may be explained by an at least threefold increase in abundance of SKI 1 and SKI 2 between the two surveys, as shown in the 2020 CPUE update.

23. A weight estimate is available for gemfish using fishery observer data. Using this data, the average weight is approximately 3.78 kilograms in SKI 1 and 3.54 kilograms in SKI 2. Assuming the gemfish taken by recreational fishers are approximate to these average weights, the 2017/18 estimate translates to approximately 26.547 tonnes of recreational catch from SKI 1, and 4.598 tonnes of recreational catch from SKI 2.

24. There is no recreational minimum legal size limit or daily bag limit for gemfish in areas covered by SKI 1 and SKI 2.

2 Allowances within the TAC

2.1 Māori customary interests

25. Customary non-commercial catch in the gemfish fishery is expected to make up only a small amount of total removals as there are no reports of authorisation for customary catch of gemfish in SKI 1 or SKI 2 in the last 10 years. Based on the best available information, the current settings are considered to meet the needs of tangata whenua and there are no proposals to change the Customary Māori allowances for SKI 1 and SKI 2.

26. Mātaitai reserves, Taiāpure and temporary closures are customary management tools that provide for kaitiakitanga. You are required to take these into account when making allowances for customary non-commercial fishing interests. These are identified in Table 3 below.

- Commercial fishing is not permitted within mātaitai reserves, but recreational and customary fishing is allowed.

28 On average, gemfish comprised 2% of the total catch when targeting tarakihi off the east coast of the North Island between 2016/17 and 2018/19.

- Section 186A temporary closures generally prevent recreational and commercial fishing for either all or certain species.
- All types of fishing are allowed in a taiāpure unless its management committee recommends changes to the fishing rules and the Minister of Fisheries approves them. At this point in time no taiāpure in the two fishery management areas prohibits the harvest of gemfish.

Table 3: SKI 1 and SKI 2 customary fisheries

SKI 1	Management type
Aotea Harbour Mātaitai	Mātaitai Reserve
Marokopa Mātaitai	Mātaitai Reserve
Raukokere Mātaitai	Mātaitai Reserve
Te Maunga o Mauao Mātaitai	Mātaitai Reserve
Te Puna Mātaitai	Mātaitai Reserve
Te Rae o Kohi Mātaitai	Mātaitai Reserve
Maunganui Bay Temporary Closure – all species except kina	S186 Temporary Closure
Marsden Bank and Mair Bank Temporary Closure – shellfish only	S186 Temporary Closure
Te Mata and Waipatukahu Temporary Closure – pipi, cockles, and mussels only	S186 Temporary Closure
Umupuia Beach Temporary Closure – cockles only	S186 Temporary Closure
Kawhia Aotea Taiāpure	Taiāpure
Maketu Taiāpure	Taiāpure
Waikare Inlet Taiāpure	Taiāpure
SKI 2	**Management type**
Hakihea Mātaitai	Mātaitai Reserve
Horokaka Mātaitai	Mātaitai Reserve
Toka Tamure Mātaitai	Mātaitai Reserve
Te Hoe Mātaitai	Mātaitai Reserve
Moremore Mātaitai(a)	Mātaitai Reserve
Moremore Mātaitai(b)	Mātaitai Reserve
Porangahau Taiāpure	Taiāpure
Palliser Bay Taiāpure	Taiāpure

27. Fisheries New Zealand considers that the proposed changes to the TAC of SKI 1 and SKI 2 will have a negligible effect on these customary fishery management areas, as gemfish tends to be caught mainly in middle depth to deeper waters outside of where these customary management areas are located.

2.2 Recreational interests

28. 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 in SKI 1 to match the reported recreational catch as estimated in the 2017/18 NPS.

2.3 All other mortality caused by fishing

29. 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.

30. The current allowance for other sources of mortality caused by fishing is zero for both SKI 1 and SKI 2 and is likely to underestimate this allowance even at current levels of fishing pressure. As

part of your decisions for the 1 October 2018 Sustainability Round Review you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fishstocks at an amount that would equate to around 10% of the TACC, unless there is evidence to suggest otherwise[29]. Increases to the allowance for other sources of mortality caused by fishing are therefore proposed under Options 2, 3 and 4 for both stocks in accordance with this approach.

3 Options, submissions, and analysis

3.1 Summary of options

31. Four options are proposed for the TAC, TACC and allowances for each of SKI 1 and SKI 2 (Table 4). Option 4 for both stocks was not consulted on and has been added following the consultation period.

Table 4: Summary of proposed management settings for SKI 1 and SKI 2 from 1 October 2020. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SKI 1	**Option 1** *(Status quo)*	218	210	3	5	0
	Option 2	284↑ (30%)	231 ↑ (10%)	3	27 ↑	23 ↑
	Option 3	307 ↑ (41%)	252 ↑ (20%)	3	27 ↑	25 ↑
	Option 4 *(new)*	426 ↑ (95%)	360 ↑ (71%)	3	27 ↑	36 ↑
SKI 2	**Option 1** *(Status quo)*	248	240	3	5	0
	Option 2	298 ↑ (20%)	264 ↑ (10%)	3	5	26 ↑
	Option 3	325 ↑ (31%)	288 ↑ (20%)	3	5	29 ↑
	Option 4 *(new)*	371 ↑ (50%)	330 ↑ (37.5%)	3	5	33 ↑
Recreational bag limit options						
Both	**Option 1** *(status quo)*		No change			
	Option 2		Consider introducing a recreational bag limit			

3.2 Submissions

32. A summary of submissions and responses received for SKI 1 and SKI 2 is shown in Table 5.

Table 5: Submissions and responses received for SKI 1 and/or SKI 2 (in alphabetical order)

Submitter	Option Supported												
	SKI 1					SKI 2					Bag limit		
	1	2	3	4	Other	1	2	3	4	Other	1	2	No comment
Fisheries Inshore New Zealand Ltd (FINZ)					✓					✓		✓	
Greg Fisher					✓					✓			✓
Iwi Collective Partnership					✓					✓			✓
Mike Currie					✓					✓		✓	
Our Seas Our Future	✓					✓						✓	
Sealord					✓					✓			✓
Te Arawa Fisheries					✓								✓

[29] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

Te Kupenga o Maniapoto Limited					✓					✓			✓
Te Ohu Kaimoana					✓					✓		✓	

33. Aside from one submission from Our Seas Our Future in support of Option 1 for both stocks, the majority of submissions (from Sealord, Te Ohu Kaimoana, Te Kupenga o Maniapoto Limited, FINZ, and Iwi Collective Partnership) support an increase in the TAC for both stocks. However, these submissions suggested that the TAC be increased greater than Fisheries New Zealand's proposed options. Rationale for this position was that there is an increase in gemfish biomass shown in the latest CPUE assessment, and therefore the TACs should be increased greater than proposed to allow for greater utilisation.

34. Submissions from Te Ohu Kaimoana, FINZ, Mike Currie, and Our Seas Our Future supported the proposal to consider setting a recreational bag limit for SKI 1 and SKI 2.

3.3 Analysis

3.3.1 Input and participation of tangata whenua

35. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

36. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, a two-page document with information on the proposed changes for SKI 1 and SKI 2 was provided to Iwi Fisheries Forums, and input sought. Table 6 identifies the Iwi Fisheries Forums that were provided with this document and summarises the input received.

Table 6: Iwi Fisheries Forums provided with SKI 1 and SKI 2 input and participation document.

Iwi Fisheries Forum	Rohe (Area represented)	Input received
Te Hiku o Te Ika	Far North (Muriwhenua)	• Input relevant to SKI 1 and SKI 2 not provided
Mid-North	Mid-North	• Prefer a precautionary approach in management of stocks with low information
Nga Hapu o Te Uru o Tainui	Waikato, particularly coastal	• Prefer a precautionary approach in management of stocks with low information • Concern for TACC increases due to their role as kaitiaki, concern over large amounts of fish being taken
Mai i ngā Kuri a Whārei ki Tihirau	Bay of Plenty	• Some members stated that they did not yet have a position on proposals
Ngāti Porou	East Cape	• One member considers that due to the lack of a stronger Fish Plan they are at a disadvantage around proposals • Require more in-depth knowledge before making a judgement • Prefer to take a cautious approach
Mai Paritu tae atu ki Turikirae	East Coast from Paritu (immediately north of Mahia) to Turakirae (just north of Wellington)	• Input relevant to SKI 1 and SKI 2 not provided

37. The relevant Iwi Fisheries Forums did not comment on whether or not they supported potential increases to the TAC for either SKI 1 or SKI 2, but the Mid-North forum, Nga Hapu o Te Uru o Tainui, and Ngāti Porou all prefer to take a cautious approach to management of gemfish.

38. Option 1, the status quo, is the most cautious approach to the management of SKI 1 and SKI 2, while Options 2 and 3 offer incremental levels of risk. Option 4 holds the greatest sustainability risk and is therefore the least cautious.

3.3.2 Kaitiakitanga

39. Gemfish is identified as a taonga species by the Te Hiku o te Ika Fisheries Forum (Far North), Nga Hapu o Te Uru o Tainui Forum (West coast of Waikato Tainui), and Mai i Nga Kuri a Wharei ki Tihirau Fisheries Forum (Bay of Plenty). Each of these forums have Iwi Fisheries Forum Plans that contain management objectives relevant to the proposal to review the SKI 1 stock. These are summarised in Table 7 below[30].

Table 7: SKI 1 and relevant Iwi Fisheries Forum Plan management objectives.

Iwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan
Te Hiku o te Ika Fisheries Forum	• Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and hapū
Nga Hapu o Te Uru o Tainui Forum	• Nga Hapu o Te Uru kaitiaki are able to participate in and influence fisheries decision-making. • Relationships and partnerships with key stakeholders, managers and agencies are established and maintained.
Mai i Nga Kuri a Wharei ki Tihirau Fisheries Forum	• Iwi are actively engaged with others to increase their fisheries potential within environmental limits. • The fisheries environment is healthy and supports a sustainable fishery.

40. In SKI 2, the Mai Paritu tae atu ki Turakirae Fisheries Forum (Mahia to Wairarapa) is a newly established forum who are in the process of developing an Iwi Fisheries Forum Fisheries Plan. Likewise, Ngāti Porou (East Coast) are in the process of establishing an Iwi Fisheries Forum.

41. Some iwi in the Te Tai Hauāuru fisheries forum have interests in the SKI 2 fishery, and the associated forum Plan contains management objectives relevant to the proposal to review the SKI 2 stock. Rangitaane (North Island) iwi have an Iwi Fishery Plan for FMA 2 that also contains relevant management objectives. These management objectives are summarised in Table 8 below.

Table 8: SKI 2 and relevant Iwi Fisheries Forum Plan management objectives.

Iwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan
Te Tai Hauāuru	• Our customary non-commercial fisheries are healthy, sustainable and supports the cultural wellbeing of Te Tai Hauāuru Iwi. • Our commercial fisheries are sustainable and support the economic wellbeing of Te Tai Hauāuru Iwi. • Mana and rangatiranga over our fisheries is restored, preserved and protected for future generations. • Iwi collaborate in fisheries and environmental resource management to achieve iwi driven objectives.
Iwi	**Relevant Management Objectives contained in Iwi Fisheries Plan**
Rangitaane (North Island)	• Mana and rangatiratanga over Rangitaane (North Island) Fisheries is restored, preserved and protected for future generations • Collaborative iwi partnerships in fisheries and environmental resource management are realised • Rangitaane (North Island) have sufficient capacity to meet their individual and collective responsibilities as tiaki tangata/kaitiaki in partnership with others • Our customary non-commercial fisheries are healthy, sustainable and support the cultural wellbeing of nga iwi o Rangitaane (North Island)

[30] There are two other Forums in the area of SKI 1, the Mid-North Forum and the Hauraki Iwi Fisheries Forum. These Forums have not yet developed an Iwi Forum Fisheries Plan.

	• Our commercial fisheries are sustainable and support the economic wellbeing of Rangitaane (North Island) hapū and whanau

3.3.3 Environmental principles (section 9 of the Act)

42. Although all environmental principles must be taken into account when considering sustainability measures, the key environmental interactions within SKI 1 and SKI 2 are outlined in the sections below.

43. One submitter, Mike Currie, made comments in relation to the impact of bottom trawling, fur seal bycatch, and seabird bycatch in this fishery.

Marine mammals

44. The SKI 1 fishery rarely interacts with marine mammals and has no reported captures of marine mammals in the last 5 fishing years (2014/15-2019/20). In SKI 2 interactions with New Zealand fur seals do occur, based on reported interactions in the last five fishing years it is estimated that a mean of 4.8 New Zealand fur seals were caught annually, as well as an additional unspecified seal or sea lion in 2019. New Zealand fur seals have a New Zealand Threat Classification of *'Least Concerned'*.

45. Marine mammal interactions in these fisheries are not expected to change as the proposed increases are unlikely to see an increase in overall trawl effort, but rather more targeted effort of fisheries that take gemfish as bycatch.

Fish bycatch

46. The main QMS bycatch species of the target SKI 1 fishery include hoki, tarakihi, and rubyfish. Consideration of fish bycatch interactions is particularly important for East Coast tarakihi, as it is currently undergoing a rebuild due to low abundance.

47. Fisheries New Zealand actively monitors catch in the East Coast tarakihi fishery to ensure that commercial catch is within the TACC and agreed catch splitting arrangements with industry. This information is reported quarterly and shared on our website. Fisheries New Zealand considers it unlikely that the proposed increases to the TACC for SKI 1 and SKI 2 will result in additional pressure on the East Coast tarakihi stock. We will continue to monitor the fishery and will respond should indicators suggest otherwise.

Seabirds

48. Seabirds have been caught where SKI 1 and SKI 2 have been reported as taken. The majority of seabirds caught include unspecified petrels, prions and shearwaters, Black (Parkinson's) petrel, sooty shearwater, unspecified albatrosses, and flesh footed shearwater.

49. The two seabird species that are of most concern are black petrels and flesh footed shearwaters. Both seabirds' at-sea distribution overlaps with the SKI 1 QMA and both have a New Zealand Threat Classification of *'Vulnerable'*. Where gemfish in SKI 1 has been reported as taken over the last five fishing years, it is estimated that a mean of 6.8 black petrels and flesh footed shearwaters were caught annually.

50. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (NPOA-Seabirds). The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds. The most recent update to the seabird risk assessment that underpins the NPOA-Seabirds identified black petrels in the 'Very High Risk' category from fishing and flesh footed shearwaters as 'High Risk.' The updated NPOA-Seabirds

targets management actions at the species most at risk as a priority. Fisheries New Zealand will continue to monitor the SKI 1 and SKI 2 fishery and any interactions with seabirds.

51. As with marine mammals, seabird interactions in these fisheries are not expected to change as the proposed increases are unlikely to see an increase in overall trawl effort.

Benthic impacts

52. Research has characterised both New Zealand's benthic environment and the level of benthic impact from fisheries activity (Aquatic Environment and Biodiversity Annual Review 2018). The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

53. Bottom trawling can directly impact on the benthic habitats and biodiversity; however modest increases to the TACC are not likely to significantly increase bottom 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).

Habitats of significance

54. Habitats of particular significance for fisheries management have not been identified in the area covering SKI 1 and SKI 2 fisheries.

3.3.4 Sustainability measures (section 11 of the Act)

55. 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, the natural variability of the stock concerned, and any relevant fisheries plan.

National Inshore Finfish Fisheries Plan

56. The Draft National Inshore Finfish Fisheries Plan (2019) provides guidance on management objectives, strategies, and the operational management of inshore finfish fisheries for the next five years. Public consultation on the draft plan took place earlier this year and Fisheries New Zealand is currently finalising the Plan in light of submissions received. Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

Hauraki Gulf Marine Park Act 2000

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

58. The Hauraki Gulf Marine Park resides within the SKI 1 stock boundary. One submitter expressed concern with commercial fishing within the Hauraki Gulf. Based on available information it is likely that very little fishing for SKI 1 currently occurs within the Hauraki Gulf Marine Park. Ensuring sustainability of gemfish is consistent with objectives of the HGMPA.

Regional Plans

59. There are eight Regional Councils that have coastline within the SKI 1 and SKI 2 boundaries. Each of these regions has a coastal plan which manages coastal activities and the allocation and use of coastal resources[31]. Additionally, the Hauraki Gulf has a marine spatial plan called Sea Change – Tai Timu Tai Pari.

[31] The eight relevant regional plans include: Northland Regional Coastal Plan, Auckland Council Regional Plan: Coastal, Waikato Regional Coastal Plan, Bay of Plenty Regional Coastal Environment Plan, Gisborne Coastal Environment Plan, Hawke's Bay Marine and Coastal Group Roadmap, Horizons (Manawatu-Wanganui Region) One Plan and the Greater Wellington Regional Coastal Plan.

60. Fisheries New Zealand considers that the proposed changes to the TAC of SKI 1 and SKI 2 will have a negligible effect on the coastal areas covered by these regional plans as although gemfish can be found in shallower waters, it tends to be caught mainly in middle depth to deeper waters outside of where these Regional Council areas are located.

3.4 Option 1 – status quo

61. Option 1 is the status quo, retaining the current SKI 1 TAC at 218 tonnes and SKI 2 TAC at 248 tonnes, with no change to the TACC or allowances. This is the most conservative option.

62. It carries the least sustainability risk by putting the most weight on uncertainty regarding the stock status of SKI 1 and SKI 2, as while the 2020 CPUE assessment found the stocks unlikely to be below the soft limit, it is not known if the current biomass is at or above the target.

63. Option 1 was supported by one submitter, Our Seas Our Future, who consider this option most appropriate as there has not been a fully quantitative stock assessment for SKI 1 or SKI 2 since 2008.

64. In response to Our Seas Our Future, Fisheries New Zealand notes that the Fisheries Act 1996 states in s 13 (2A) (a) and s 13 (2A) (c) that you must not use the absence of, or any uncertainty in, available information as a reason for failing to set a TAC, and must set a TAC, using the best available information, that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards, a level that can produce the MSY.

3.5 Option 2

65. Option 2 for both stocks can be described as follows:
    - For SKI 1, Option 2 proposes a 30% increase to the TAC from 218 tonnes to 284 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be increased from 5 to 27 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 23 tonnes. This option increases the TACC from 210 to 231 tonnes.
    - For SKI 2, Option 2 proposes a 20% increase to the TAC from 248 tonnes to 298 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be retained at 5 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 26 tonnes. This option increases the TACC from 240 to 264 tonnes.

66. Option 2 takes into account that the biomass of both stocks has increased at least threefold since 2007, and is expected to continue to increase over the next few years. This suggests that there exists potential for greater utilisation of gemfish in SKI 1 and SKI 2.

67. Information from the NPS indicates that recreational catch in SKI 1 exceeds the current recreational allowance. This option proposes increasing the recreational allowance in SKI 1 from 5 to 27 tonnes, making it consistent with the results of the NPS and the expectation that recreational catch increases with abundance. The SKI 2 recreational allowance is already consistent with estimates from the NPS and therefore Option 2 for SKI 2 proposes no change to the recreational allowance.

68. Our Seas Our Future opposed this option for the reasons outlined in the section above relating to the lack of an updated stock assessment for SKI 1 and SKI 2.

69. Te Ohu Kaimoana and FINZ consider the increase to the allowance for all other sources of mortality to the stock caused by fishing to approximately 10% of the TACC to be inappropriate as there is no minimum legal size for commercially caught gemfish and therefore all catch must be landed. They propose this allowance to be set at approximately 5% of the TACC.

70. Fisheries New Zealand recognises that there is no reliable information for estimating the other sources allowance for SKI 1 and SKI 2. Setting this allowance at a level that would equate to

10% of the TACC would be in line with your 2018 decisions for inshore trawl stocks and best reflects the overall level of uncertainty in this information.

71. Te Ohu Kaimoana, the Iwi Collective Partnership, Sealord and Te Arawa Fisheries opposed changes to the TACC in SKI 2 that would trigger the 46.8 tonnes of preferential allocation ('28N') rights associated with the stock. There is concern that increasing the TACC will cause a breach to the Fisheries Settlement through the reallocation of quota shares. FINZ also submitted that a resolution to 28N rights issues is urgently needed. See section 3.10 for further information on 28N rights.

3.6 Option 3

72. Option 3 for both stocks can be described as follows:
    - For SKI 1, Option 3 proposes a 41% increase to the TAC from 218 tonnes to 307 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be increased from 5 to 27 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 25 tonnes. This option increases the TACC from 210 to 252 tonnes.
    - For SKI 2, Option 3 proposes a 31% increase to the TAC from 248 tonnes to 325 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be retained at 5 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 29 tonnes. This option increases the TACC from 240 to 288 tonnes.

73. Option 3 proposes the same approach to the setting of the recreational allowance as Option 2. The primary difference between Options 2 and 3 for both stocks is that the TACC increase is greater in Option 3, while noting that other sources of fishing mortality has also been adjusted to account for higher proposed catch levels.

74. As with Option 2, Option 3 takes into account that the biomass of SKI 1 and SKI 2 has increased at least threefold since 2007, and is expected to continue to increase over the next few years. This suggests that there exists potential for greater utilisation of gemfish in SKI 1 and SKI 2. However, due to the greater increase in potential utilisation under this option carries a higher sustainability risk.

75. This is Fisheries New Zealand's preferred option as it is considered that this option takes into account the uncertainty associated with the scientific and other available information on these stocks, while allowing for the increased utilisation opportunity shown by the latest CPUE assessment.

76. Five submissions, from Sealord, Te Ohu Kaimoana, Te Kupenga o Maniapoto Limited, FINZ, and Iwi Collective Partnership considered the proposed increases to be too low, and proposed higher increases. This is presented as Option 4.

77. More generally, submitter comments on Option 3 were consistent with those made on Option 2:
    - Our Seas Our Future cited concerns with respect to a fully quantitative stock assessment for SKI 1 and SKI 2 not being undertaken since 2008.
    - Te Ohu Kaimoana and FINZ opposed the scale of the allowance for all other mortality to the stock caused by fishing, suggesting that this should be lowered.
    - Te Ohu Kaimoana, the Iwi Collective Partnership, Sealord, Te Arawa Fisheries and FINZ issued concerns with respect to the presence of 28N rights in SKI 2.

3.7 Option 4

78. Option 4 has been incorporated into the paper following consultation as a response to submissions from five submitters requesting that the TACC in both SKI 1 and SKI 2 be set at the current catch levels. Commercial catch for the 2018/19 fishing year in SKI 1 was 353.99 tonnes, and in SKI 2 was 327.622 tonnes. Option 4 takes this catch into account and proposes to set the TACC for both stocks slightly above 2018/19 commercial catch levels.

79. Option 4 for both stocks can be described as follows:
    - For SKI 1, option 4 proposes a 95% increase to the TAC from 218 tonnes to 426 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be increased from 5 to 27 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 36 tonnes. This option increases the TACC from 210 to 360 tonnes.
    - For SKI 2, option 4 proposes a 50% increase to the TAC from 248 tonnes to 371 tonnes. It proposes that the customary allowance be retained at 3 tonnes, the recreational allowance be retained at 5 tonnes, and the allowance for all other mortality to the stock caused by fishing be set at 33 tonnes. This option increases the TACC from 240 to 330 tonnes.

80. Submissions from Sealord, Te Ohu Kaimoana, Te Kupenga o Maniapoto Limited, FINZ, and Iwi Collective Partnership supported TACC limits above what was proposed by Option 3. However, as discussed further in section 3.10, some of these submitters opposed increases to the TACC if it would result in the triggering of 28N rights.

81. These submissions all proposed a TACC in SKI 1 of 360 tonnes and in SKI 2 of 330 tonnes (with the exception of Sealord who proposed a TACC in SKI 1 of 369 tonnes). Rationale given was that the other options propose TACCs that are less than current catch, they do not account for increasing abundance, and do not allow for utilisation. Additionally, FINZ proposed that the allowance for all other mortality to the stock caused by fishing should be lowered to equate to 5% of the TACC.

82. This option takes into account the apparent increase in abundance. However, as the increase in abundance appears to have occurred relatively recently, we do not know how long it is likely to persist. This option contains greater risk to sustainability than the previous options. If chosen, this option will require that frequent monitoring is undertaken in a timely manner to ensure that SKI 1 and SKI 2 abundance is continuing to increase.

83. Fisheries New Zealand consider that the Options 2, 3 and 4 all enable increased utilisation of the stocks, to varying degrees. However, with the increase in TACC comes the increase in sustainability risk. We suggest taking a precautionary approach to raising the TAC for these stocks, while allowing for increased utilisation, with the acknowledgement that the TAC can be re-evaluated if future monitoring shows further increases in biomass.

84. In addition, the alternative proposal to TAC proposed by submitters (Option 4) was not within the bounds of consultation. While this does not preclude you from making a decision to this effect, it does create risk as it was not consulted on.

3.8 Other options proposed by submitters

85. Mike Currie submitted a proposal to ban all gemfish fishing and Greg Fisher expressed concern about commercial fishing in the Hauraki Gulf. Fisheries New Zealand considers that the banning of gemfish fishing does not provide for utilisation as required by the Fisheries Act 1996.

86. Te Arawa Fisheries did not accept any proposals or propose additional ideas, stating concern that the proposed options would not guarantee the retention of proportionality of iwi quota in the event of 28N rights being discharged.

3.9 Economic analysis

87. Options 2, 3 and 4 provide for increased use opportunities for commercial fishers. The approximate increase in revenue from each of the options, based on the reported port price (which does not reflect the total economic benefit), is provided in Table 9.

Table 9: Predicted changes to commercial revenue for the proposed options, based on recommended port prices of $1.98/kg for SKI 1, and $ 2.10/kg for SKI 2 in the 2019/20 fishing year.

Stock	Option	Change from current setting (tonnes)	Predicted revenue changes ($p.a.)
SKI 1	Option 1 (status quo)	NA	NA
	Option 2	21↑	$41,580↑
	Option 3	42↑	$83,160↑
	Option 4	150↑	$297,000↑
SKI 2	Option 1 (status quo)	NA	NA
	Option 2	24↑	$50,400↑
	Option 3	48↑	$100,900↑
	Option 4	90↑	$189,000↑

3.10 Preferential allocation rights (28N rights)

88. There are 46.8 tonnes of preferential allocation ('28N') rights associated with the SKI 2 stock. There are no 28 N rights in SKI 1. When 28N rights are triggered in a fishery through an increase to the TACC, they are honoured by reallocating quota shares from other quota holders in the fishery to 28N rights holders.

89. Te Ohu Kaimoana, the Iwi Collective Partnership, Sealord and Te Arawa Fisheries oppose an increase to the SKI 2 TACC acknowledging that this would trigger 28N rights, thereby reducing the proportional iwi ownership of quota in SKI 2 which they argue is a breach to the Fisheries Settlement through the reallocation of quota shares. FINZ also submitted on 28N rights in SKI 2, noting that a resolution is urgently needed to prevent TACC decisions being held up by court processes.

90. These issues are discussed under Section 5.1 in the covering introduction to these stock chapters (p. 8)

3.11 Deemed Values

91. Fisheries New Zealand is also proposing the deemed value rates for SKI 1 and SKI 2 be changed:
    - For SKI 1 we recommend increasing the deemed value rates to better reflect the increase in landed price.
    - For SKI 2 we recommend adjusting the differential schedule of SKI 2 to the standard schedule applicable to most stocks.

92. A review of deemed values is required to reflect changes in pricing and sustainability information for gemfish and is relevant regardless of the option that you choose for varying the TAC. Fisheries New Zealand will continue to monitor commercial catch and deemed values to ensure the right incentives are occurring in these fisheries in light of the decisions you make for 1 October 2020. The deemed value proposals are discussed in more detail in the chapter titled *Review of Deemed Value Rates for Selected Stocks for 2020/21.*

3.12 Proposed recreational bag limit

93. In addition to varying the TAC, Fisheries New Zealand is proposing that you consider the introduction of a recreational bag limit for SKI 1 and SKI 2.

94. Information on recreational catch of gemfish in the area suggests that it may be increasing. This is likely to be a reflection of increased availability of the species due to higher abundance. In relation to the recreational allowance we consider it appropriate to provide for current increases in catch and are proposing options that are consistent with the results of the 2017/18 NPS.

95. The proposed introduction of a recreational bag limit is not intended to reduce current recreational catch, but rather to allow for it and maintain it at these levels. This approach will ensure the species continues to be readily accessed by the recreational sector in future years. Further utilisation opportunities can be allowed for if biomass increases in the future. .

96. There were no submissions made in opposition to this proposal and four submitters (Te Ohu Kaimoana, FINZ, Mike Currie, and Our Seas Our Future) explicitly supported it. While these did not contain specific suggestions as to what this bag limit could be, they did support the introduction of a bag limit. It is notable however, that no submissions were received from recreational fishers or recreational representative bodies.

97. The introduction of a recreational bag limit requires additional consultation to canvas options with respect to an appropriate bag limit for gemfish and an amendment to the regulations. Subsequent to consultation, final advice will be provided to you for your decision. Agreement to progress this work is all that is being sought at this time.

4 Conclusion and recommendations

98. Fisheries New Zealand recommends that you increase the TAC for SKI 1 and SKI 2, with our preferred option for both stocks being Option 3.

99. The best available information suggests that gemfish abundance in SKI 1 and SKI 2 has increased at least threefold since 2007 and that an opportunity for increased utilisation exits. Submitters from the commercial sector, however, who formed the majority of submissions, favoured a higher increase to the TACC, which is reflected in Option 4.

100. Fisheries New Zealand considers that Option 3 takes into account the uncertainty associated with the scientific and other available information on these stocks, while allowing for increased utilisation. In future years there may be opportunities to further increase the TAC/TACC should science information indicate that this is warranted. Ongoing monitoring will allow management measures to respond appropriately if biomass is seen to decline.

101. Fisheries New Zealand also proposes that you agree to consider the introduction of a recreational bag limit for SKI 1 and SKI 2. This will require additional consultation to canvas options before final advice will be provided to you for your decision.

5 Decisions for SKI 1 and SKI 2

SKI 1

Option 1

Agree to retain the SKI 1 TAC at 218 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 5 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;
iv. Retain the SKI 1 TACC at 210 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SKI 1 TAC at 284 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Increase the allowance for recreational fishing interests from 5 to 27 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 23 tonnes;
iv. Increase the SKI 1 TACC from 210 to 231 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SKI 1 TAC at 307 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Increase the allowance for recreational fishing interests from 5 to 27 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
iv. Increase the SKI 1 TACC from 210 to 252 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 4

Agree to set the SKI 1 TAC at 426 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Increase the allowance for recreational fishing interests from 5 to 27 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 36 tonnes;
iv. Increase the SKI 1 TACC from 210 to 360 tonnes.

Agreed / Agreed as Amended / Not Agreed

SKI 2

Option 1

Agree to retain the SKI 2 TAC at 248 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 5 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;
iv. Retain the SKI 1 TACC at 240 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SKI 2 TAC at 298 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 5 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 26 tonnes;
iv. Increase the SKI 2 TACC from 240 to 264 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SKI 2 TAC at 325 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 5 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 29 tonnes;
iv. Increase the SKI 1 TACC from 240 to 288 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 4

Agree to set the SKI 2 TAC at 371 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 5 tonnes;
iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 33 tonnes;
iv. Increase the SKI 2 TACC from 240 to 330 tonnes.

Agreed / Agreed as Amended / Not Agreed

SKI 1 and SKI 2 bag limit

Option 1

Agree to continue with no recreational bag limit for SKI 1 and SKI 2.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to consider the introduction of a recreational bag limit for SKI 1 and SKI 2.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 9 / 2020

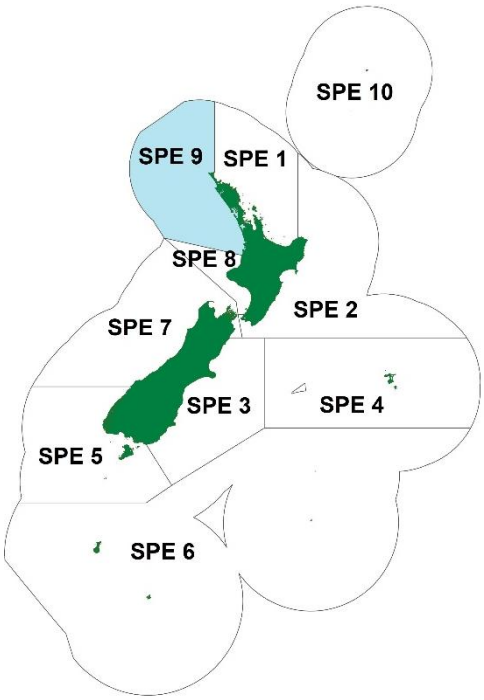


Figure 1: Quota management areas for sea perch (SPE), with SPE 9 highlighted in blue. A sea perch is pictured on the left.

Table 1: Summary of options proposed for SPE 9 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	8	6	1	1	0
Option 2	14 ↑ (75%)	10 ↑ (67%)	1	2 ↑	1 ↑
Option 3 *(new)*	13 ↑ (63%)	10 ↑ (67%)	1	1	1 ↑

New option incorporated following consultation	Yes (Option 3)	
Total submissions received	8	
Number of submissions received for each option	Option 1 (*Status quo*)	1
	Option 2	2
	Other	5

1 Why are we proposing that you review the TAC and TACC?

1. Sea perch is caught as a bycatch species across all sectors, with the most catch coming from commercial bottom long line and trawl fisheries.

2. Reported commercial landings have generally increased since 2010-11 and, for the last 5 years, have consistently exceeded the current total allowable commercial catch (TACC). Increasing reported commercial catch of SPE 9 suggests that there may be an increase in abundance of SPE 9 and an opportunity to provide for increased utilisation. However, the current status of the

stock, with respect to the biomass that can produce the maximum sustainable yield (MSY), is unknown.

3. The total allowable catch (TAC), TACC limit and allowances for SPE 9 have not been reviewed since being introduced into the Quota Management System (QMS) in 1998. The recent increasing trend in SPE 9 catch has prompted Fisheries New Zealand to review the current management settings.

1.1 About the stock

1.1.1 Fishery characteristics

4. Sea perch are widely distributed around the coasts of New Zealand, inhabiting waters from the shoreline to 1,500 metres.

5. Sea perch is predominantly caught by two commercial fishing methods; bottom longlining and trawling. In SPE 9, sea perch is taken as a bycatch of bottom longline vessels targeting hāpuku/bass, tarakihi and bluenose. In the commercial trawl fishery, SPE 9 is taken as bycatch most often when vessels are targeting tarakihi.

1.1.2 Biology

6. Sea perch is a slow-growing species which reaches sexual maturity around 5 years of age. Males mature around 19-25 centimetres while females mature around 15-20 centimetres in length. While there are no ageing studies on sea perch, a similar Australian species has been recorded to be 40 years old and to reach a maximum size of 56 centimetres. The slow growth rate of sea perch suggests that there is a possibility of the species being relatively less resilient to fishing pressures than species that are considered to be highly productive.

7. There are two recognised species of sea perch: *Helicolenus percoides* and *Helicolenus barathri*. There is also some information that a third sea perch species is present in New Zealand waters, however, the existing management settings under the QMS combine all *Helicolenus* species.

8. There is limited information on biological stock boundaries for sea perch in New Zealand.

1.2 State of the stock

9. The current status of the stock in relation to the biomass level that can support the MSY is unknown. The best available information on the current state of SPE 9 is from trends in reported commercial catch. Fisheries New Zealand recognises the limitations in using catch as an indicator of stock status, given the variety of factors that can influence catch levels.

1.3 Catch information

1.3.1 Commercial

10. Commercial catch reporting provides catch levels and trends for SPE 9, which is the best available information for the stock. An increasing trend in catch was seen between 2010-2011 and 2017-18. This was followed by a slight decrease in 2018-19, however, the catch has still exceeded the TACC in the last 5 years (Figure 2). Over the last 5 years, the average catch has been 7.8 tonnes, 1.8 tonnes above the TACC.

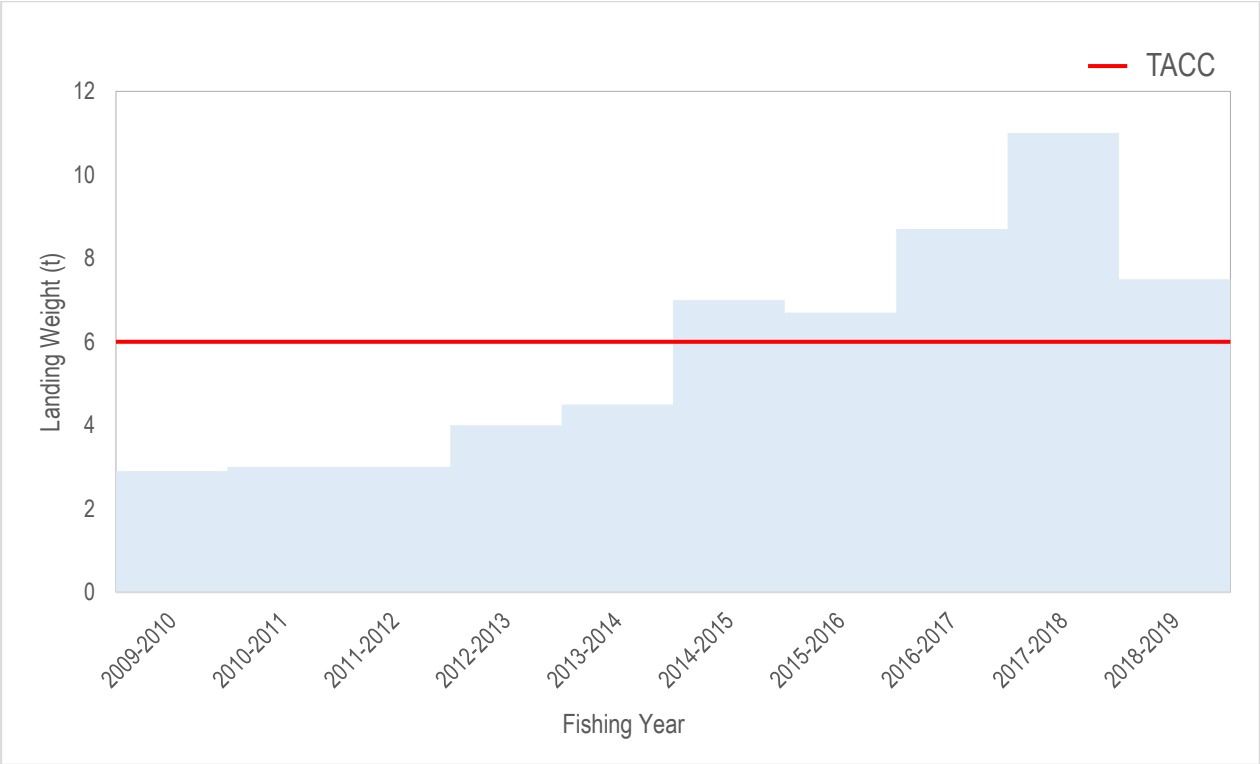


Figure 2: Commercial landings for SPE 9 (in tonnes) from 10 most recent complete fishing years.

11. Sea perch in SPE 9 is commonly caught by bottom longline and trawl fishing methods (Figure 3) in target fisheries such as tarakihi, hāpuku and bass.

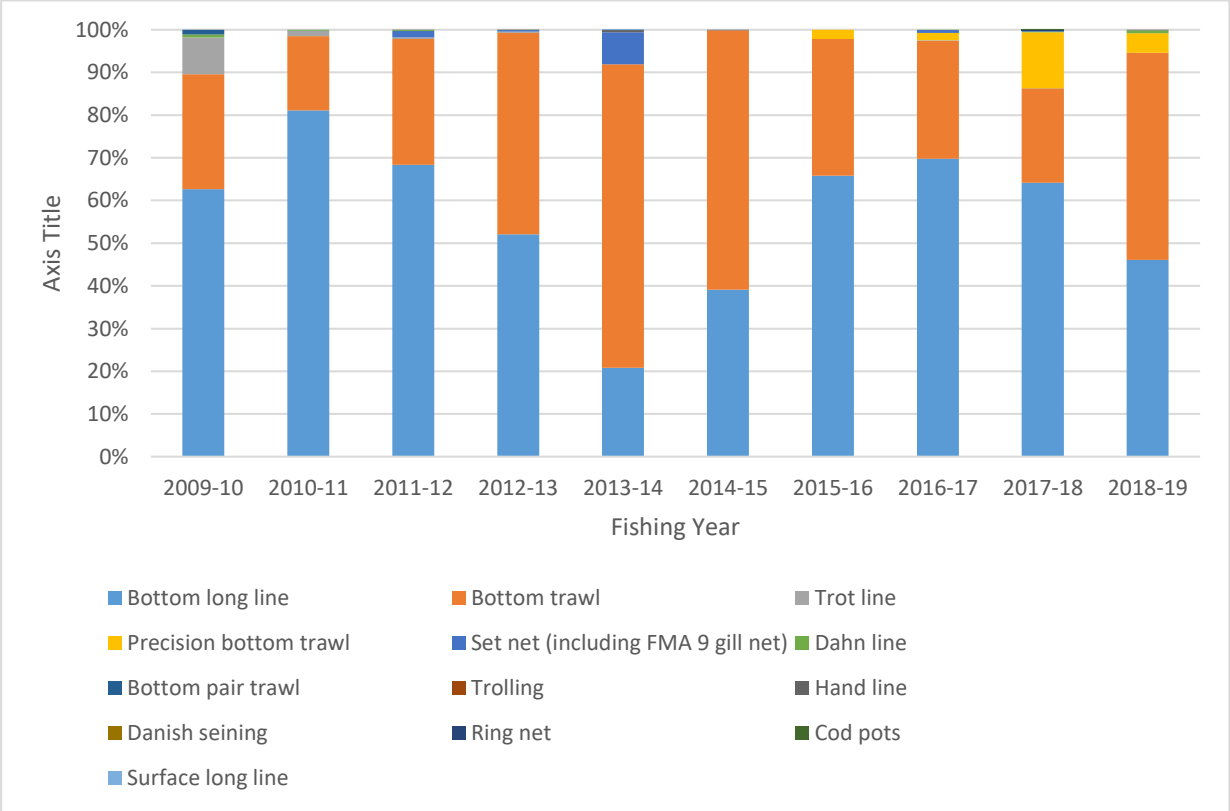


Figure 3: Reported catch for SPE 9 by fishing method from 10 most recent complete fishing years.

1.3.2 Customary Māori

12. It is likely that Māori customary fishers utilise the provisions under recreational fishing regulations when taking sea perch. The information on Māori customary harvest under the provisions made for customary fishing is limited. This may be due to some parts of the QMA not being gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998. Customary fishing authorisations in many parts of the SPE 9 QMA, if issued, would be under the Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on authorisations.

13. Table 2 lists the customary fisheries areas that fall within SPE 9.

Table 2: Customary areas in SPE 9

	Management type
Aotea Harbour Mātaitai	Mātaitai Reserve
Marokopa Mātaitai	Mātaitai Reserve
Kawhia Aotea Taiāpure	Taiāpure

14. It is not expected that the proposals will impact the abundance or availability of sea perch within these customary areas as the Mātaitai and Taiāpure do not overlap with preferred sea perch habitat and targeting of sea perch in or around these areas is not known to occur.

1.3.3 Recreational

15. The National Panel Survey of Marine Recreational Fishers (NPS) 2011/12 estimated 78.5 tonnes of sea perch was harvested in total around New Zealand, with only 57 fish reported as taken from Fisheries Management Area (FMA) 9. According to the NPS in 2017/18, in a number of areas around New Zealand where sea perch are relatively common, the species is often caught by recreational fishers. It was estimated that a total harvest of 62.7 tonnes of sea perch was taken around New Zealand. However, SPE 9 was not reported and, therefore, there is no current estimate of recreational catch for SPE 9. In areas where sea perch is taken by recreational fishers, all of the catch was reported to be taken by boat and rod and line. It is likely that there is a small level of recreational bycatch of sea perch in SPE 9 that is not picked up by the NPS.

2 Allowances within the TAC

2.1 Māori customary interests

16. SPE 9 has been identified as a taonga species by Te Hiku o te Ika (Far North) Iwi Fisheries Forum. Based on the best available information, the current management setting for customary harvesting of sea perch is considered sufficient to fulfil the need of tangata whenua. There are no proposals to change the customary non-commercial allowance.

2.2 Recreational interests

17. The allowance for recreational fishers provides for the cumulative catch taken over a fishing year. There is no daily bag limit or minimum legal size for recreational harvesting of sea perch in SPE 9. The proposal to increase the allowance (Option 2) relies on the increasing commercial catch trends as an indication that abundance and therefore availability of sea perch to recreational fishers may have increased.

2.3 All other mortality caused by fishing

18. The allowance for all other mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing activity, including incidental mortality from fishing methods, or illegal fishing.

19. There is currently no allowance for all other mortality caused by fishing set for SPE 9. In 2019 you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fishstocks at an amount that would equate to 10% of the TACC, unless there is evidence to suggest otherwise[32]. The proposed allowance reflects the overall uncertainty in estimating all other mortality to the stock, including mortality of SPE 9 caused by commercial and non-commercial fishing.

3 Options, submissions, and analysis

3.1 Summary of options

20. Three options are proposed for the TAC, TACC and allowances of SPE 9 (Table 3). Option 3 was not consulted on and was introduced following the consultation period, based on the stakeholder feedback received.

Table 3: Summary of proposed management settings for SPE 9 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	8	6	1	1	0
Option 2	14 ↑ (75%)	10 ↑ (67%)	1	2 ↑	1 ↑
Option 3 *(new)*	13 ↑ (62.5%)	10 ↑ (67%)	1	1	1 ↑

3.2 Submissions

21. A total of 8 submissions or responses were received during the consultation period. A list of submitters and the options they support are indicated in Table 4 below.

Table 4: Submissions and responses received for SPE 9 (in alphabetical order)

Submitter	Option Support		
	1	2	Other
Fisheries Inshore New Zealand Ltd (FINZ)		✓	
Iwi Collective Partnership (ICP)			✓
Mike Currie	✓		
Our Seas Our Future (OSOF)			✓
Sealord Group Limited (Sealord)			✓
Te Arawa Fisheries		✓	
Te Kupenga o Maniapoto Limited			✓
Te Ohu Kaimoana			✓

22. One submitter supports Option 1, which proposes to retain the current management settings. Mr. Currie highlighted concerns around the associated environmental risks with bottom trawling and longline fisheries. Based on these concerns, Option 1 was favoured, although the suggestion that bottom trawling fisheries should be banned was made. It was also suggested that the allowance for longline fisheries should only continue if the fishery can prove that seabird

[32] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

bycatch has reduced.

23. Two submitters support Option 2, which proposes an increase to the TAC, TACC, recreational and all other mortality allowances. Both submitters agreed that the information on recent catch trends provide enough to conservatively increase the allowances to allow for suitable utilisation of SPE 9. FINZ highlighted that SPE 9 is symptomatic of a lack of management and, at a minimum, should be included in mixed species daily bag limits for recreational fishers. In support of this option, Te Arawa Fisheries mention that fishers have been reported to harvest in deeper waters to avoid Maui dolphin restrictions, and sea perch is plentiful in these depths.

24. Five submitters opted for other options as there was only partial agreement with the proposed changes to the current management settings in Option 2.

25. Tu Kupenga o Maniapoto Limited, Te Ohu Kaimoana, and the Iwi Collective Partnership all supported the proposed increases in Option 2, with the exception of the recreational allowance. Te Ohu Kaimoana believes that until a cross-sector agreement can be reached, which will require the recreational sector to establish a mandated voice and engage with the other sectors, the recreational catch limit should be retained. It was also communicated that the limits to recreational harvesting, set during the introduction of SPE 9 to the QMS, protected the Māori Settlement Rights and to change these limits would undermine those rights.

26. Sealord submitted that the catch levels from the last 5 years are sustainable whilst exceeding the TACC and suggested increasing the TACC to the highest level of recent catch – 11 tonnes – as opposed to the proposed 10 tonnes.

27. Our Future Our Seas supports the option to retain the current management settings with the exception of the proposal to increase the allowance for all other mortality. This was supported as Option 1 carries the least sustainability risk and is a cautious management approach.

3.3 Analysis

3.3.1 Input and participation of tangata whenua

28. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

29. Members of the ‘Mid North’, Nga Hapu o te Uru and Te Tai Hauāuru forums were involved in discussions about the review of SPE 9 prior to consultation. Feedback received from Nga Hapu o te Uru and the Mid North Forums urged caution in managing SPE 9 given the low level of available information.

3.3.2 Kaitiakitanga

30. Te Hiku o te Ika (Far North) Iwi Fisheries Forum has identified SPE 9 as a taonga species and of importance to tangata whenua.

31. Fisheries New Zealand considers the proposed management options are in line with the objectives of the iwi fisheries plan. The objectives generally relate to:
    - Active engagement with iwi, and;
    - The maintenance of healthy and sustainable fisheries

32. The proposed options have been developed with the consideration of feedback and input from iwi through Iwi Fisheries Forums and submissions made during the consultation period. The options have accounted for the best available information on the SPE 9 fishery.

3.3.3 Environmental principles (section 9 of the Act)

33. SPE 9 is predominantly taken as bycatch in bottom longline and trawl fisheries. Because of the non-target nature of the SPE 9 fishery, it is not expected that the proposed options will result in changes to fishing behaviour. However, these methods are not selective and may catch unwanted species of fish or other marine life. There may also be impacts to benthic habitats.

34. The key environmental interactions with the SPE 9 fishery which must be taken into account when considering sustainability measures are:

Marine mammals

35. Trawling poses risks to native fur seals and a variety of dolphins which are present in SPE 9. The trawl nets used by vessels can result in captures and potentially fatalities as a result of drowning when caught. SPE 9 overlaps with Māui and Hector's dolphin habitats, with both species recognised as threatened.

36. Fisheries-related risks to Hector's and Māui dolphins are managed under the Hector's and Maui Dolphin Threat Management Plan, which was recently reviewed. New rules that are expected to take effect from 1 October 2020 will include extending the trawl fishing closure within Māui dolphin habitat in SPE 9.

37. These measures will significantly reduce the risk of Hector's and Māui dolphin fishing-related mortality from trawling.

Fish bycatch

38. Sea perch is predominantly taken as a bycatch species in other target fisheries by bottom longline and trawl. It is not expected that fishing behaviour or overall fishing effort will change as a result of the proposed options and it is, therefore, unlikely there will be effects on interactions with other fish bycatch.

Seabirds

39. Based on current information, many seabird populations, some of which are considered to be endangered or threatened species, are thought to be at risk of inshore trawling and bottom long lining. Small, inshore vessels can attract birds which exposes the birds to the risk of colliding with or being hit by trawl warps, or being caught on long line hooks. Another risk to sea birds is also being caught in trawl nets while the net is at the surface.

40. Fishing-related risks to all New Zealand seabirds are managed under the National Plan of Action for seabirds (NPOA). The recent review of the NPOA has set out an implementation plan to support reducing seabird captures in all New Zealand fisheries.

Benthic impacts

41. Bottom trawling occurs in both inshore and offshore waters and can cause damage to benthic and biogenic habitats.

42. Corals are susceptible to damage from bottom trawling as they are delicate and may take significant time to recover. Inshore biogenic habitats are recognised as important nursery areas for some commercial species which seek food and shelter in these areas.

43. Within SPE 9, closed seamount areas (CSAs) and benthic protection areas (BPAs) have been established through collaborative efforts between Government and the industry, in order to prohibit bottom trawling and dredging and allow protection and restoration of benthic habitats.

Habitats of significance

44. There are no habitats of significance currently identified within SPE 9.

45. The proposed increases to the TACC for SPE 9 are unlikely to result in any change in fishing behaviour or the total amount of fishing effort. As a result, Fisheries New Zealand does not

foresee any significant changes in fishing interactions with marine animals, fish bycatch, sea birds, or the benthic environment.

3.3.4 Sustainability measures (section 11 of the Act)

46. Section 11 of the Fisheries Act 1996 (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, the natural variability of the stock concerned, and any relevant fisheries plans.

National Inshore Finfish Fisheries Plan

47. The Draft National Inshore Finfish Fisheries Plan guides the operational management of inshore finfish fisheries for the next five years and provides guidance through management objectives and strategies tailored to the different groups that stocks are categorised into.

48. Fisheries New Zealand notes that the Finfish Plan (within which all sea perch stocks will be managed) is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

3.4 Option 1 – *status quo*

49. Option 1 maintains the status quo, with no changes to the current settings.

50. This option carries the least sustainability risk by putting the most weight on the uncertainty regarding the stock status of SPE 9.

3.5 Option 2

51. Option 2 is a 6 tonne (75%) increase to the TAC, made up of a 4 tonne (67%) increase to the TACC and 1 tonne increases to the recreational allowance (100%) and all other mortality as a result of fishing.

52. While the current state of the stock is unknown, which causes uncertainty in the sustainability risk to the stock, the available information must be balanced against this level of risk. Sea perch is widely distributed, commercial fishing is spatially excluded from multiple areas within the Quota Management Area (QMA), and the increasing trend in catch suggests that abundance may have increased and provide for a utilisation opportunity. Therefore, moderate increases to the current management settings are not thought to pose any significant risks to the sustainability of SPE 9. Further, improved information being provided by electronic reporting in commercial fisheries should allow improved monitoring and assist in identifying signals that a sustainability concern may be emerging.

53. Option 2 is not expected to cause any significant changes to any environmental interactions with other organisms or the benthic environment as fishing behaviour and overall fishing effort is not expected to significantly change.

3.6 Option 3 - preferred

54. Option 3 is a 5 tonne (62.5%) increase to the TAC, made up of a 4 tonne (67%) increase to the TACC and a 1 tonne increase to the allowance for all other sources of mortality as a result of fishing.

55. The Alternative Option (Option 3) is included by Fisheries New Zealand in response to submissions by Tu Kupenga o Maniapoto Limited, Te Ohu Kaimoana, and the Iwi Collective Partnership, who supported Option 2 with exception of the recreational allowance. Fisheries New Zealand did not receive submissions in support of an increase to the recreational allowance.

56. While the current state of the stock is unknown, which causes uncertainty in the sustainability risk to the stock, the available information must be balanced against this level of risk. Sea perch is widely distributed, commercial fishing is spatially excluded from multiple areas within the Quota Management Area (QMA), and the increasing trend in catch suggests that abundance may have increased and provide for a utilisation opportunity. Therefore, moderate increases to the current management settings are not thought to pose any significant risks to the sustainability of SPE 9. Further, improved information being provided by electronic reporting in commercial fisheries should allow improved monitoring and assist in identifying signals that a sustainability concern may be emerging.

57. Option 3 is not expected to cause any significant changes to any environmental interactions with other organisms or the benthic environment as fishing behaviour and overall fishing effort is not expected to significantly change.

3.7 Economic analysis

58. Under Option 1, there would be no increase to the TACC. Current availability of SPE 9 Annual Catch Entitlement (ACE) has reportedly constrained the commercial catches of other target fisheries. This constraint could potentially inhibit the development of the sea perch or other target fisheries in which sea perch are caught as bycatch.

59. The increase in the TACC under Options 1 and 2 may support an approximate increase in revenue of $4,300 annually (Table 5), based on the reported port price (which does not reflect the total economic benefit) without the requirements of commercial fishers to pay deemed values for any fish caught in excess of their ACE.

60. SPE 9 is considered an unavoidable bycatch species and it is likely that the real value to commercial fishers, from an increase in TACC, will be related to the operation of vessels targeting other stocks and not being unnecessarily constrained by limited ACE for SPE 9.

Table 5: Predicted changes to commercial revenue for the proposed options, based on recommended port prices of $1.08/kg for SPE 9 in the 2019/20 fishing year.

Option	Changes from current setting (tonnes)	Predicted revenue changes ($p.a.)
Option 1 (status quo)	NA	NA
Option 2	4 ↑	$4,320.00 ↑
Option 3	4 ↑	$4,320.00 ↑

3.8 Other considerations

61. The introduction of digital monitoring tools (such as electronic catch reporting), will provide better and more timely information to support the management of SPE 9 and address any sustainability risks identified.

62. The submission made by FINZ highlights the concern around the management of SPE 9. It is believed that the management of recreational catch is ineffective in the Auckland West area and that, at a minimum, SPE 9 should be included in the combined daily bag limit. Fisheries New Zealand recognises that the current information on the recreational catch of SPE 9 indicates that recreational catch does not exceed the current allowance.

63. Te Ohu Kaimoana's submission acknowledges that, for the last 5 years, SPE 9 has been over caught resulting in the payment of deemed values and believes that there is an opportunity for sustainable and increased utilisation. However, it is made clear that the increase to the recreational allowance will not be supported until a cross-sector agreement can be reached. This will require the recreational sector to establish a mandated voice and engage with the

commercial and customary entities.

64. All the submissions made by Tu Kupenga o Maniapoto Limited, Te Ohu Kaimoana, and the Iwi Collective Partnership agreed that changing the limits to recreational harvesting, which were set when SPE 9 was introduced to the QMS, would undermine the Māori Settlement Rights.

4 Conclusion and recommendations

65. Section 13 of the Act requires you to set a TAC for SPE 9 that enables the stock to be maintained at, or move towards, a level at or above that which can produce the MSY.

66. The best available information on SPE 9 is insufficient to enable reliable estimates of MSY or the biomass that will produce it. Where reliable estimates of MSY are not available, section 13(2A) of the Act requires 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 MSY.

67. Fisheries New Zealand prefers Option 3 - a 5 tonne (62.5%) increase to the TAC, made up of a 4 tonne (67%) increase to the TACC and a 1 tonne increase to the allowance for all other sources of mortality as a result of fishing. Option 3 retains current allowances for recreational and customary. Option 3 is less cautious than Option 1 and places the most weight on information from recent catch trends in SPE 9.

68. The best available information on SPE 9 is catch, however Fisheries New Zealand acknowledges that catch is not a good indicator of stock status. The proposed increases are considered to be moderate and risks to the stock are reduced by the wide distribution of the species, large areas closed to trawling, and the lack of any fisheries targeting SPE 9. Additionally, the current management settings were set cautiously when SPE 9 was introduced to the QMS, as there was little to no information on the status of the stock. SPE 9 will be reviewed again if monitoring suggests that future adjustments are required.

5 Decision for SPE 9

Option 1

Agree to retain the SPE 9 TAC at 8 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonne;
iii. Retain the allowance for all other mortality to the stock caused by fishing at 0 tonne;
iv. Retain the SPE 9 TACC at 6 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SPE 9 TAC at 14 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Increase the allowance for recreational fishing interests from 1 to 2 tonnes;
iii. Increase the allowance for all other mortality to the stock caused by fishing from 0 to 1 tonne;
iv. Increase the SPE 9 TACC from 6 to 10 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SPE 9 TAC at 13 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 1 tonne;
iii. Increase the allowance for all other mortality to the stock caused by fishing from 0 to 1 tonne;
iv. Increase the SPE 9 TACC from 6 to 10 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Pōrae (POR 1) - Auckland East

Nemadactylus douglasii

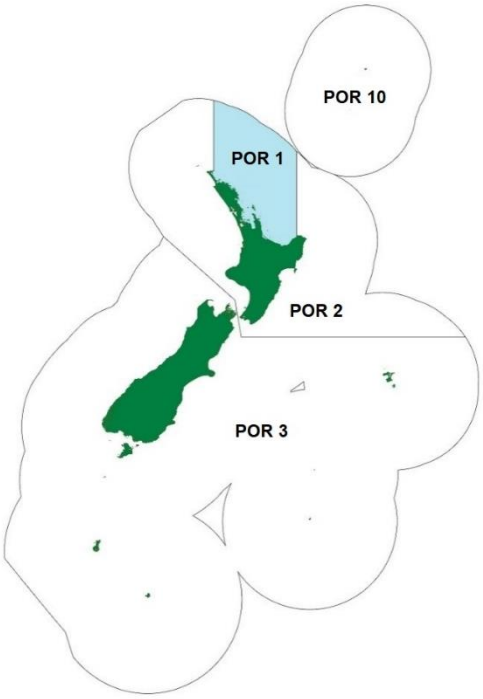


Figure 1: Quota management areas (QMAs) for pōrae (POR), with POR 1 highlighted in blue. A pōrae is pictured on the left.

Table 1: Summary of options for POR 1 proposed from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (status quo)	75	62	3	6	4
Option 2	88 ↑ (17%)	70 ↑ (13%)	3	8 ↑	7 ↑
Option 3 *(new)*	85↑ (13%)	68↑ (10%)	3	6	8↑
New option incorporated following consultation		Yes (Option 3)			
Total submissions received		7			
Number of submissions received supporting each option		Option 1 (*Status quo*)		2	
		Option 2		3 (but none support rec increase)	
		Option 3		2	

1 Why are we proposing that you review the TAC and TACC?

1. POR 1 has not been reviewed since it was introduced into the quota management system in 2004. The TAC and TACC were set based on limited information as no assessment of biomass and sustainable yield was available.

2. Commercial catch in POR 1 has exceeded the TACC three times since 2004, with catch fluctuating below the TACC in years when the limit was not exceeded. Catch exceeded the TACC in the 2016/17 fishing year and then declined well below the TACC in 2017/18 and 2018/19.

3. Industry requested a review of the management settings for both POR 1 and POR 2, including considering adjustments to the TACC and changing stock boundaries. This request was prompted by the pōrae catch in both QMAs in the 2016/17 fishing year, when concern arose that pōrae would become a “choke species” (i.e. constrain the catch of more valuable target species like snapper and trevally that take pōrae as bycatch).

4. The TACC in POR 2 was raised from six to eighteen tonnes in the 2012/13 fishing year, and 2016/17 was the first occurrence of catch exceeding the higher TACC. Based on this, Fisheries New Zealand only considered adjustments to POR 1 for this review.

1.1 About the stock

1.1.1 Fishery characteristics

5. Pōrae is primarily a commercial bycatch species that is taken by inshore trawl, bottom long line and set net fleets, particularly in the northern North Island. The majority of commercial catch is taken from east Northland in POR 1, with the fishery extending into POR 2 to the west of the northern stock boundary at the top of the North Island. Pōrae is considered a shared fishery. However, its importance to recreational fishers is usually as a welcome bycatch rather than a target species, although it is especially popular with recreational spear fishers.

1.1.2 Biology

6. It is unknown whether pōrae is a single biological stock or whether there are multiple stocks around New Zealand. Pōrae has a predominantly northern distribution, and it is likely that stocks on either side of the northern boundary between POR 1 and POR 2, where the bulk of the commercial catch is taken, are linked.

7. Juvenile pōrae are thought to grow quickly while adult growth is much slower, with individuals likely living for at least 30 years. Adults are thought to occupy distinctive home ranges, with individuals known to reside in the same area for many years. Given it is a fairly long-lived species, it is thought to have a relatively low productivity. These attributes, combined with evidence of residential behaviour, suggest that pōrae may be susceptible to the effects of concentrated fishing and habitat disturbance, possibly leading to slower rates of recovery from localised depletion.

8. As a bycatch species in fisheries targeting larger stocks of more mobile species such as snapper and trevally, pōrae may be especially vulnerable as the wide-ranging effort associated with these fisheries may lead to greater interactions with resident pōrae populations. However, the resident behaviour could also help to protect pōrae that reside in areas that are protected from set netting and are unlikely to be trawled, such as reefs.

1.2 State of the stock

9. There has been no stock assessment of pōrae in POR 1 to determine the status of the stock in relation to the biomass that can produce the maximum sustainable yield. The best available information on the POR 1 stock comes from commercial reporting, which includes catch estimates, fishing effort data and landing information. However, commercial catch alone is not a reliable indicator of stock abundance.

10. The available information shows that commercial catch has generally been below the TACC, and that considerably greater catches were taken prior to QMS entry, suggesting that the TAC and TACC were set at a cautious level (see Figure 2). In addition, POR 1 is largely a bycatch species and hence not subjected to targeted fishing. Figure 3 shows that set netting was historically responsible for the bulk of the catch, but the proportion now taken by set net has declined markedly, possibly as a result of set net area closures. In combination, these factors could indicate that the POR 1 stock has been relatively lightly exploited and that an opportunity for greater utilisation exists.

1.3 Catch information

1.3.1 Commercial

11. POR 1 has historically been the area in which the greatest landings have been recorded. Figure 12 below shows that catch peaked in the early 1990's at about 120 tonnes, then declined and has been relatively stable at a level generally below the current TACC. This suggests that the TAC and TACC were set at a cautious level when pōrae was introduced into the QMS in 2004. It is unknown what caused this decline; however, possible causes include: changes in fishing patterns in snapper and trevally target fisheries (responsible for the bycatch of pōrae); a general decline in the proportion of the catch taken by set net, with a key factor being the set net area closures (see Figure 3); and the 1993 introduction of a prohibition on the sale of a number of reef species in the Auckland Fishery Management Areas (Fisheries Management Areas 1 and 9). While pōrae was not listed as a prohibited reef species, this and other set net controls introduced at that time saw a shift away from targeted set netting activity around reef systems where pōrae are typically found.

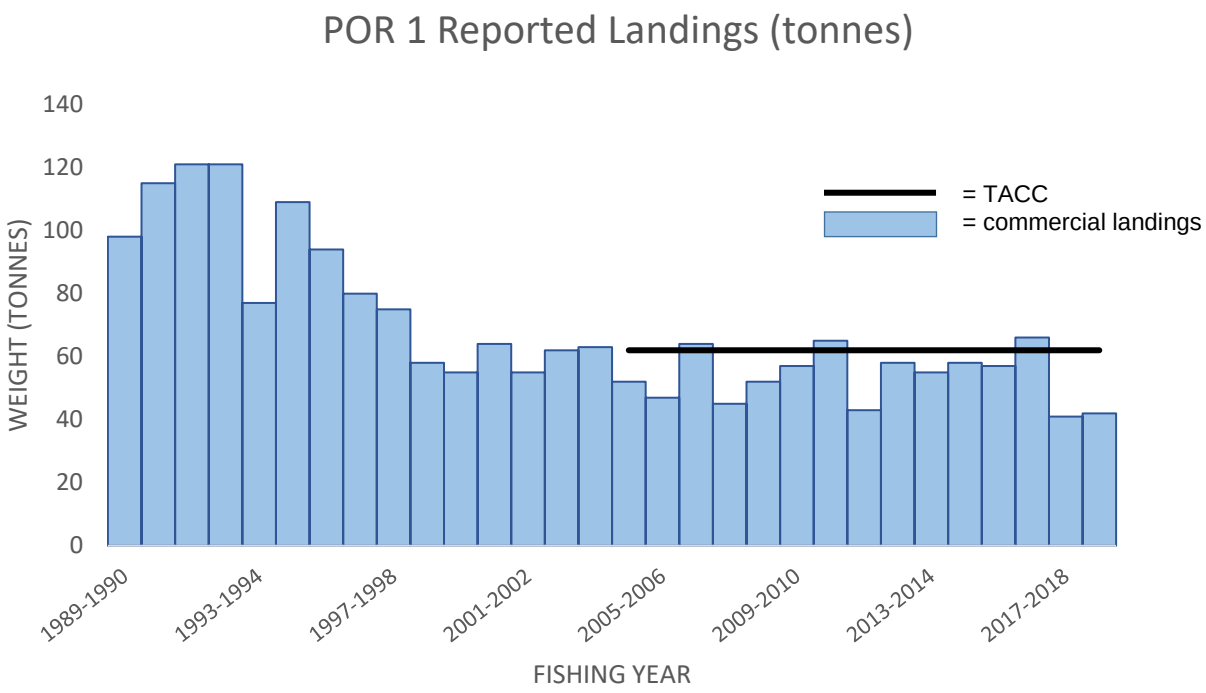


Figure 2: Commercial landings and TACC for POR 1

12. Since the 2016/17 fishing year, there has been a reduction in landed commercial catch of POR 1 to a level well below the TACC. This reduction does not support the anecdotal information provided by industry that pōrae is becoming a choke species. The cause of this reduction is unknown; however, it is suggested that a change in fisher behaviour and spatial restrictions on fishing gears may have led to a reduction in the overlap between fishing activity and pōrae habitat.

13. Figure 3 below illustrates the shift in fishing methods catching pōrae in POR 1 since the 2003/04 fishing year. Historically, the most dominant fishing method catching pōrae has been set net, but in recent years there has been a shift and now it is taken predominantly by bottom longline and trawlers.

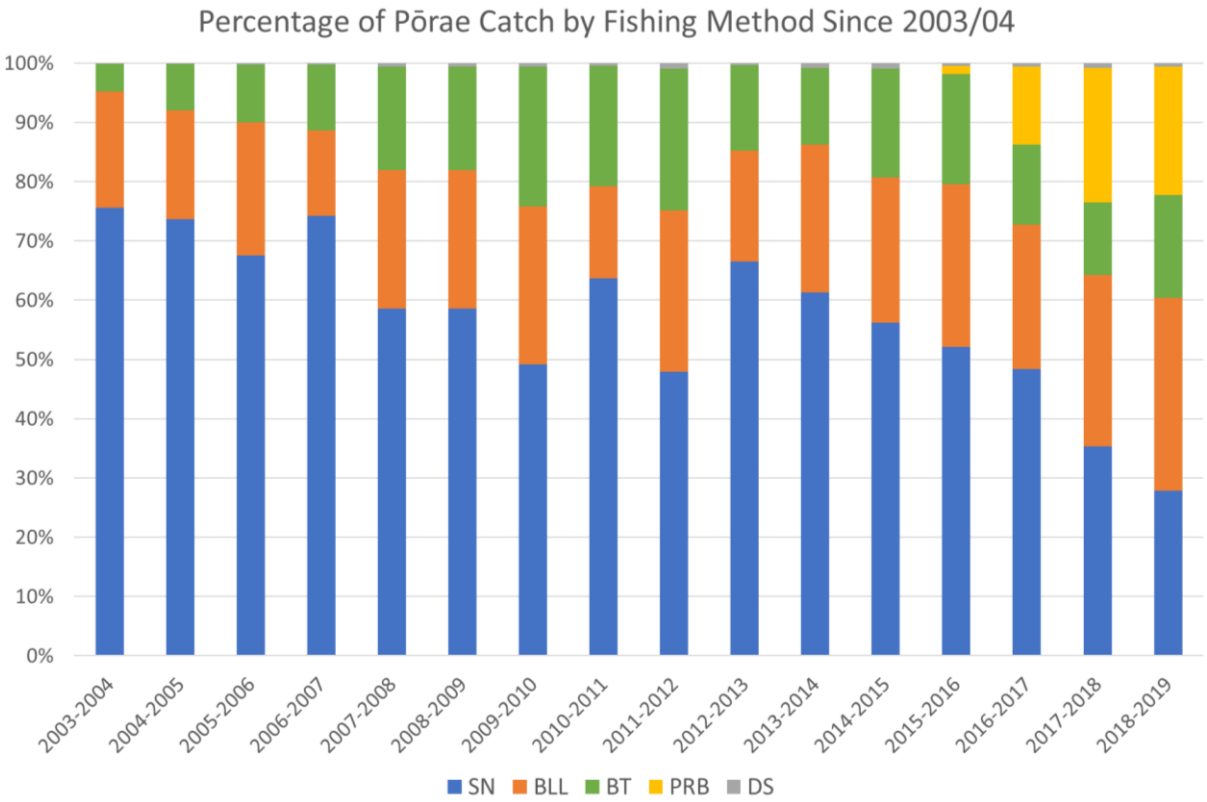


Figure 3: Reported pōrae catch in POR 1 by fishing method since fishing year 2003/04. (SN = set net, BLL = bottom long line, BT = bottom trawl, PRB = precision bottom trawl, DS = Danish seine)

1.3.2 Customary Māori

14. While pōrae is believed to be caught by customary fishers, the amount of catch is uncertain and believed to be small. Customary non-commercial fishers are likely to catch small quantities of pōrae when targeting other species such as snapper, tarakihi and trevally, and may be using recreational bag limits to meet their customary needs. Information held by Fisheries New Zealand on Māori customary fishing shows no customary authorisations issued or catch for pōrae reported in POR 1.

1.3.3 Recreational

15. Recreational catch is estimated based on the National Panel Survey of Marine Recreational Fishers (NPS), undertaken every 4-6 years. Recreational catch estimates from the most recent NPS reports (2011/12 and 2017/18) are given in Table 2. According to the survey, recreational catch in POR 1 more than halved between 2011/2012 and 2017/18. It is unknown what caused the change in estimated recreational catch but it is notable that the number of fishing trips was 20% lower in 2017/18 as compared to 2011/12. This was thought to be partly due to a series of weather events, especially those which overlapped with holiday weekends where recreational fishing typically spikes.

16. Pōrae is generally taken in small quantities by recreational fishers in POR 1 and is typically caught when targeting other species. It is considered by many to be a welcome addition to the catch. It is also often taken when encountered by spear fishers.

Table 2: Recreational catch for POR 1

Recreational harvest estimates for pōrae stocks (Wynne-Jones et al 2014, 2019). Mean fish weights were obtained from boat ramp surveys (Hartill & Davey 2015, Davey et al 2019).

Stock	Year	Method	Number of fish	Total weight (t)	CV
POR 1	2011/12	Panel survey	12 371	15.4	0.25
	2017/18	Panel survey	5 397	6.7	0.36

2 Allowances within the TAC

2.1 Māori customary interests

17. Pōrae is listed as a taonga species in the Iwi fisheries plans of Te Hiku o te Ika (far North) and Mai I Nga Kuri a Wharei ki Tihirau Iwi (Bay of Plenty) Iwi Fisheries Forums.

18. There are four mātaitai reserves within POR 1. There are also two taiāpure and four temporary closures implemented under section 186A of the Act. Outside of the broad prohibition of commercial fishing activity within mātaitai reserves, none of these customary management areas have any restrictions on the taking of pōrae.

19. It is not anticipated that the options would impact on availability of pōrae within these areas as the proposed increases are relatively small and because of the resident behaviour of pōrae (i.e. fish living in areas closed to fishing generally will not travel outside of these areas and vice versa).

20. Based on the best available information, the existing settings are considered to provide for the current customary utilisation. There are no proposals to change the current allowances for customary non-commercial catch.

2.2 Recreational interests

21. Pōrae are part of the combined daily recreational bag limit of 20 finfish for the Auckland and Kermadec area, which includes POR 1. There is no recreational minimum legal size for pōrae; however, the minimum net mesh size for both commercial and recreational fishers is 100 mm.

22. Recreational catch of a non-target species like pōrae is largely opportunistic, and therefore is likely to vary considerably depending on factors including weather and the availability of other more coveted species. This variability is reflected in reported catch between the two most recent NPS reports (a difference of 56%).

23. An increase to the recreational allowance is proposed for POR 1 in order to better accommodate the variability reflected in the NPS. The initial proposal that was consulted on suggested an increase of two tonnes (33%); however, submissions received during consultation, including from the New Zealand Sport Fishing Council /LegaSea, did not support this increase.

2.3 All other mortality caused by fishing

24. An allowance for all other mortality caused by fishing is set in order to provide for unrecorded mortality of fish associated with fishing activity, including incidental mortality from fishing methods or illegal fishing. It includes mortality associated with the requirement to return fish below the minimum legal size and other mortality from fish escaping fishing gear or illegal fishing activity.

25. As part of your decisions for the 1 October 2018 Sustainability Round Review you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fishstocks at an amount that would equate to around 10% of the TACC, unless there is evidence to suggest otherwise[33]. The proposed allowances reflects the overall uncertainty in estimating all other mortality to the stock, including mortality of SPE 9 caused by commercial and non-commercial fishing.

3 Options, submissions, and analysis

[33] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

3.1 Summary of options

26. Three options are proposed for the TAC, TACC and allowances of POR 1 (Table 3). Option 3 was not consulted on and was added following the consultation period.

Table 3: Summary of proposed management settings for POR 1 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

			Allowances		
Option	**TAC**	**TACC**	**Customary Māori**	**Recreational**	**All other mortality caused by fishing**
Option 1 (status quo)	75	62	3	6	4
Option 2	88 ↑ (17%)	70 ↑ (13%)	3	8 ↑	7 ↑
Option 3 *(new)*	85↑ (13%)	68↑ (10%)	3	6	8↑

3.2 Submissions

27. A total of seven submissions or responses were received for POR 1 during the October 2020 sustainability round. These submissions and their supported options are below in Table 4.

Table 4: Submissions and responses received for POR 1 (in alphabetical order)

Submitter	Option Support			Details
	1	2	Other	
Fisheries Inshore New Zealand Ltd (FINZ)		✓		Support "recreational catch to be set appropriately" and encourage recreational fishers to be actively managed to that allocation
Iwi Collective Partnership (ICP)			✓	Proposed to increase TACC by 10 tonnes and no increase to recreational allowance
Our Seas Our Future (OSOF)	✓			Concern over low level of information available for POR 1
New Zealand Sport Fishing Council (NZSFC) and LegaSea Joint Submission	✓			Calls for detailed characterisation of all pōrae fisheries
Te Arawa Fisheries			✓	Proposed additional increase in TACC, no increase in recreational allowance, increase customary allowance Submits that pōrae is beginning to choke catch of other species
Te Kupenga o Maniapoto Limited		✓		Does not support increase in recreational allowance
Te Ohu Kaimoana		✓		Supports review of management approach for POR 1 and POR 2 (but does not support amalgamation of QMAs) Does not support increase in recreational allowance

3.3 Analysis

3.3.1 Input and participation of tangata whenua

28. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making

sustainability decisions. Iwi Fisheries Forums may also be used as avenues to consult with iwi with an interest in fisheries.

29. Prior to consultation, the review of POR 1 was discussed with the following northern iwi fisheries forums: Mai I Nga Kuri a Wharei Ki Tihirau in the Bay of Plenty, Nga Hapu o te Uru in the Waikato/West Coast North Island, the Mid North Forum, and the Te Hiku o Te Ika Far North Forum.

30. Feedback received from Nga Hapu o te Uru and the Mid North Forums urged caution in managing fisheries with a low level of information available to support decision making.

31. The Te Hiku o te Ika (Far North) Forum provided written feedback expressing concern over the recent drop in POR 1 catch (2016/17 – current). It was suggested a precautionary reduction in the TACC would be more appropriate and that better information was needed before an increase should be considered.

32. No feedback was received by the forums on the proposed customary allowances.

3.3.2 Kaitiakitanga

33. Pōrae is identified as a taonga species in the Te Hiku o te Ika (Far North) and Mai I Nga Kuri a Wharei ki Tihirau Iwi (Bay of Plenty) Fisheries Forum Fisheries Plans. The objectives of the iwi fisheries plans generally relate to the maintenance of healthy and sustainable fisheries. Some objectives that are specifically relevant to the proposals of the POR 1 review include:

Te Hiku o te Ika

- Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and hapū.
- The fisheries environment supports a healthy fishery.

Mai I Nga Kuri a Wharei hi Tihirau

- Iwi fisheries management activities support the growth and wellbeing of our people.
- The fisheries environment is healthy and supports a sustainable fishery.

34. Given the unknown status of the pōrae stock, it is unknown whether the proposed options are consistent with these objectives.

3.3.3 Environmental principles (section 9 of the Act)

35. Pōrae are primarily taken as a bycatch species in other target fisheries, predominantly bottom longline, trawl and set net targeting snapper, trevally, and tarakihi. Because it is mostly taken as a bycatch, it is not expected that the proposed options will result in large changes to environmental interactions.

36. The key environmental interactions with the pōrae fishery which must be taken into account when considering sustainability measures are:

Marine mammals

37. The snapper, tarakihi, and trevally bottom trawl and bottom long line fisheries sometimes interact with marine mammals (common dolphins and fur seals). These interactions are not frequent and an increase in the TAC at the level proposed is unlikely to lead to a greater risk of marine mammals being caught.

Fish bycatch

38. Pōrae is predominantly taken as a bycatch species in other target fisheries, so it is unlikely there will be effects on interactions in fish bycatch.

39. Tarakihi catch is currently restrained by the Eastern Tarakihi Management Strategy and Rebuild Plan which lays out a 20-year rebuild plan for tarakihi on the east coast of the North and South Islands. A marginal increase in TAC for POR 1 is unlikely to cause any changes in the tarakihi fisheries, given that they are already constrained by the rebuild plan.

Seabirds

40. Management of seabird interactions with New Zealand's commercial fisheries occurs under the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (NPOA-Seabirds). The NPOA Seabirds reflects New Zealand's obligations under international law to take into account the effects of fishing on associated species of seabirds. The NPOA Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority, but also aiming to minimise captures of all species to the extent practicable.

41. In addition to the NPOA-Seabirds plan, Fisheries New Zealand regularly publishes updates of its Aquatic Environment and Biodiversity Annual Review. The most recent release (2019/20) included a fully updated seabird section which focuses on estimates of capture and risk assessments conducted for seabirds that breed in New Zealand waters.

42. Seabird interactions occur in the fisheries that take pōrae as bycatch. Encounters are most common in the bottom long line and bottom trawl fisheries targeting snapper, with petrels, shearwaters, and albatrosses making up the majority of the seabird interactions. Black petrels and flesh-footed shearwaters are examples of threatened seabirds that interact with commercial fishing in POR 1. It is unlikely that an increase in TACC for POR 1 could lead to an increase in fishing effort in target fisheries that pose a risk to seabirds.

Benthic impacts

43. If an increased TACC caused more target fisheries to be developed which sought out assemblages of fish around reef structures, there may be implications in terms of the effects of fishing on biological diversity and benthic habitats in these areas. It is not expected that the proposed options would result in an increased pōrae target fishery.

Habitats of significance

44. There are no identified habitats of significance within the POR 1 area.

3.3.4 Sustainability measures (section 11 of the Act)

45. 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 TAC). These include any effects of fishing on the stock and the aquatic environment, the natural variability of the stock, and any relevant fisheries plans.

National Inshore Finfish Fisheries Plan

46. Pōrae are managed under the National Inshore Finfish Fisheries Plan (the Finfish Plan) which provides guidance on management objectives and strategies for finfish. The Finfish Plan is aimed at progressing New Zealand towards more ecosystem-based fisheries management. Fisheries New Zealand notes that the National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper are consistent with the management objectives of the draft plan.

Hauraki Gulf Marine Park Act

47. 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 (HGMP) falls within the

quota management area of POR 1. Negligible amounts of POR 1 are taken from within the HGMP and it is not anticipated this would change under the proposed options.

3.4 Option 1 – *status quo*

48. Option 1 is to retain the status quo TAC of 75 tonnes for POR 1 which has applied since the introduction of pōrae into the QMS in 2004. There would be no change to allowances or to the TACC, which industry noted has constrained commercial catches of other target species because fishers have experienced greater difficulty in avoiding pōrae in their catch. However, the catch of POR 1 has been well below the current TACC in the most recent two fishing years and there is no clear evidence of a constraint on other target species.

49. This option is supported by the joint submission of the New Zealand Sport Fishing Council (NZSFC) and LegaSea, as well as the submission by Our Seas Our Future. Both submissions point to the lack of information on the pōrae fishery. It is also supported by tangata whenua whose feedback stressed the need for caution when managing species for which there is a low level of information available. Pōrae is identified as a taonga species by the Te Hiku o te Ika (Far North) forum whose feedback suggested a precautionary reduction in TACC would be more appropriate, given the recent declines in catch and the lack of available information.

50. This option would not provide for development of the pōrae fishery or other fisheries that take pōrae as a bycatch species and could create incentives to illegally discard catch. However, it should be noted that commercial catch of pōrae has declined in the two most recent fishing years, with the TACC being well under caught.

51. The submission by the NZSFC/LegaSea states:

> *The submitters do not support the use of maximum commercial catch as the benchmark for TACC increases in any stocks. The quota management system is failing if there is little incentive to limit commercial catch to the TACC, but a strong incentive to over catch and ask the Minister for more quota.*

52. Additionally, the submission from the NZSFP/LegaSea sees no justification to raise the customary allowance and suggests the status quo is maintained.

53. Submissions from Te Ohu Kaimoana, FINZ, Te Arawa Fisheries, Te Kupenga o Maniapoto Limited, the Iwi Collective Partnership, and the NZSFC/LegaSea support retaining the status quo for recreational fishing.

54. Option 1 is the most cautious option and carries the least sustainability risk. This option puts the most weight on the uncertainty and lack of scientific information regarding the stock status of POR 1.

3.5 Option 2

55. Option 2 is to increase the TAC from 75 tonnes to 88 tonnes, which is an approximately 17% increase. This option takes into account that commercial catch of pōrae has remained relatively stable over the past 20 years and generally below the TACC, but has exceeded the catch limit three times since introduction to the QMS in 2004.

56. This option is based on the existing TACC being set at a cautious level given limited information, minimal targeting of the stock, and the imposition of a range of management measures over time which may have served to reduce catches (e.g. set net area closures and other controls). It is possible that the reduced catches could have supported stock growth and that biomass could be above B_{MSY}, which would provide an opportunity for increased utilisation. If biomass is above B_{MSY}, then this option would not be inconsistent with setting a TAC that would move the stock towards a level at or above the B_{MSY} per s13 (2A) of the Act.

57. While this option provides for a relatively modest increase in catch, it would be associated with a greater sustainability risk than option 1. That risk can be managed by the improved monitoring of catch and effort that is now available via the electronic reporting system, and indications of sustainability concerns could be addressed in future management reviews.

58. An increase to the recreational allowance of two tonnes (33%) is proposed under Option 2. The available data on recreational take of pōrae is erratic, with estimated take varying by more than 50% between survey years. The estimated take of 15.4 tonnes in the 2011/12 survey year indicates that this level of catch is possible, and a recreational allowance of six tonnes may not be sufficient to accommodate those "boom" recreational fishing years. The markedly lower recreational catch estimated at 6.7 tonnes in 2017/18 could indicate that pōrae were less available in POR 1, but there is no evidence to support that conclusion. Additionally, we know that recreational fishers reported approximately 20% fewer trips in 2017/18. The proposed increase of two tonnes attempts to better account for the expected variability between fishing years.

59. The customary allowance would remain the same (three tonnes) under Option 2. The best available information held by FNZ shows no record of any authorisations being issued for customary take of pōrae. Based on this information, no increase is proposed for the customary allowance.

60. Option 2 sets the allowance for all other sources of mortality from fishing at seven tonnes. This is considered appropriate and in line with previous decisions, the biological characteristics of the stock, and expected mortality caused by trawling, set net, and non-commercial methods. Te Ohu Kaimoana's submission specifically expressed support for increasing the allowance for other mortality caused by fishing to align with your decisions in 2018.

61. Submissions from Te Ohu Kaimoana and FINZ support the proposed increase to the TACC proposed in Option 2. Te Arawa Fisheries and the Iwi Collective Partnership both support a further increase to the TACC. It should be noted that both Te Ohu Kaimoana and FINZ also support a review of management settings for pōrae, although Te Ohu Kaimoana does not support the idea of amalgamating QMAs.

62. Option 2 carries the greatest sustainability risk due to the increase in potential utilisation that it would accommodate.

3.6 Option 3 - Preferred

63. The changes put forth in the Option 3 reflect the submissions received during consultation. The TAC proposed for Option 3 is a 13% increase (from 75 to 85 tonnes), down from a 17% increase (75 to 88 tonnes) proposed in Option 2. This option would align with s13 (2A) of the Act as set out for Option 2.

64. No submissions received, including those from the recreational sector, supported an increase to the recreational allowance, so this option proposes no change to this allowance.

65. Option 3 also retains the current allowance for customary take in response to the majority of submissions received.

66. The TACC proposed in the Option 3 is an increase of 10% (from 62 to 68 tonnes) to better reflect the caution suggested in various submissions, while still allowing some growth in the fishery. As noted in the NZSFC/LegaSea submission, the highest catch reported in POR 1 since its introduction into the QMS was 65.9 tonnes in the 2016/17 fishing year, a figure which would be accommodated by a 10% increase to TACC. It would also allow for some growth to occur in the fishery so it is not constraining those fisheries that take pōrae as bycatch, such as snapper and trevally (although the only evidence provided to support this assertion is anecdotal).

67. Option 3 carries a more moderate risk to sustainability than Option 2 because of the lower numbers proposed for the TACC and allowances.

3.7 Economic analysis

68. Under Option 1 there would be no increase to the TACC, which has purportedly constrained commercial catches of other target species. This option could potentially constrain the development of the pōrae fishery or other fisheries that take pōrae as a bycatch species.

69. Option 2 and the Alternative Option propose increases of 13% and 10%, which translates to potential increases of $32,000 and $24,000 in landed POR 1 catch respectively.

70. This method of determining short-term financial implications is simplified and, in reality, the actual potential economic gain would likely be more dependent on growth in other, more valuable fisheries that take pōrae as bycatch and would be less constrained by an increased TACC for pōrae.

Table 5: Predicted changes to commercial revenue for the proposed options, based on a port price of $4/kg for POR 1 in the 2020/2021 fishing year.

Stock	Option	Change from current setting (t)	Predicted revenue changes ($p.a.)
	Option 1 (status quo)	NA	NA
POR 1	Option 2	8↑ (13%)	$32,000↑
	Option 3	6↑ (10%)	$24,000↑

3.8 Other considerations

71. The recent introduction of electronic reporting and geospatial position reporting (ER/GPR) should allow for more agile and proactive management of low knowledge stocks such as pōrae by providing more accurate and up to date catch and effort data. In addition to better informing decision makers, this data allows FNZ to better verify reported information and encourage compliance. The submission by Te Ohu Kaimoana notes that this new ability could help mitigate the sustainability risk associated with a larger increase to the TACC, as it enables more rapid responses to changes in catch.

72. Submissions by Te Ohu Kaimoana and the NZSFC/LegaSea both identify that they believe the deemed value of pōrae should also be reviewed. The current annual deemed value rate starts at $1.50 per kilo while the average port price in 2018-19 increased to $3.95 in POR 1. In fact, the port price per kilo in POR 1 has almost doubled since the 2008-09 fishing year. The submission by Te Ohu Kaimoana notes “stocks undergoing review of management settings should also have deemed values reviewed.” Te Ohu also submits that because “there is no sustainability concern in this fishery, an appropriate setting for deemed values would be closer to the ACE price than to the market price” (the ACE transfer price for POR 1 ranges from $0.45 - $1.00 with an average price of $0.98). Changes to the deemed value settings for pōrae were not consulted on as part of this sustainability review.

73. Various submissions speak to the fact that pōrae is a low knowledge species and the NZSFC/LegaSea calls for a “detailed characterisation” of the fishery, while denouncing the current cost recovery model as a “disaster for the majority of species currently deemed to be ‘low knowledge stocks.’” Te Ohu Kaimoana supports more “responsive and agile management” with the introduction of ER/GPR. That feedback received from the iwi fisheries forums urged caution because of the low level of information on this fishery.

74. The submissions by FINZ and Te Ohu Kaimoana both assert that there is a need to examine the management strategy for pōrae. FINZ states their desire to have the QMAs reviewed further, as they have concerns that they have been set incorrectly. However, Te Ohu Kaimoana opposes any amalgamation of the QMAs, instead suggesting that management for both POR 1 and 2 “should be approached with both stocks in mind,” and “is addressed by fine-tuning each TAC/TACC in the context of a management strategy.”

4 Conclusion and recommendations

75. Maintaining the status quo (Option 1) for POR 1 would reflect the uncertainty in assessing the status of the stock. The increase proposed under Option 2 and new Option 3 are modest and unlikely to result in adverse environmental impacts given that pōrae is a bycatch species of other target fisheries. The TACs proposed under Option 2 and Option 3 are not considered to be inconsistent with the objective of maintaining the stock at or above a level that can produce MSY. d

76. Fisheries New Zealand's preferred approach is Option 3 which is an intermediate between the status quo (Option 1) and Option 2. This option increases the TAC by 10 tonne (13%), the TACC by 6 tonne (10%), and the allowance for other mortality caused by fishing by 4 tonnes (100%). It balances the submissions received during consultation with a cautionary approach because of the low knowledge available for the stock. Fisheries New Zealand notes the improved monitoring and adaptability afforded by electronic reporting with respect to mitigating any sustainability risk associated with an increase in TAC/TACC for the POR 1 stock.

5 Decision for POR 1

Option 1

Agree to retain the POR 1 TAC at 75 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 6 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes;
iv. Retain the POR 1 TACC at 62 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the POR 1 TAC at 88 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Increase the allowance for recreational fishing interests from 6 to 8 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 4 to 7 tonnes;
iv. Increase the POR 1 TACC from 62 to 70 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the POR 1 TAC at 85 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 6 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 4 to 8 tonnes;
iv. Increase the POR 1 TACC from 62 to 68 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

/ / 2020

Blue Cod (BCO 5) - Southland and Sub Antarctic

Parapercis Colias, blue cod, Rāwaru

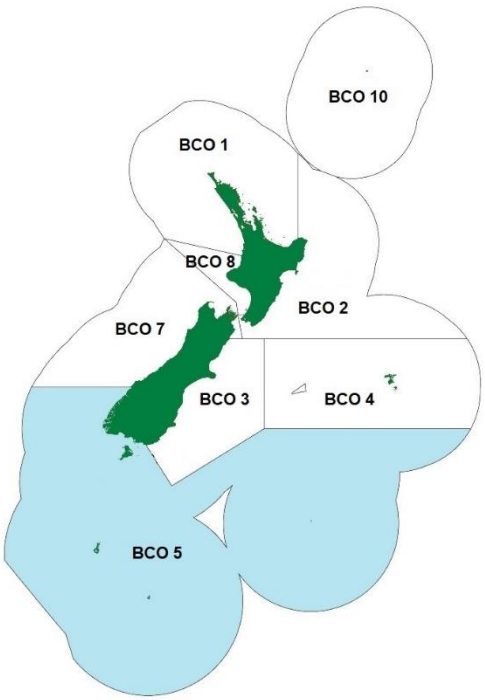


Figure 1: Quota management areas (QMAs) for blue cod (BCO), with BCO 5 highlighted in blue. A blue cod is pictured on the left.

Table 1: Summary of options proposed for BCO 5 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (*Status quo*)	1 452	1 239	2	191	20
Option 2	999 ↓ (31%)	874 ↓ (29%)	20 ↑	85 ↓	20
Option 3	825 ↓ (43%)	700 ↓ (44%)	20 ↑	85 ↓	20
Option 4 (*new*)	925 ↓ (36%)	800 ↓ (35%)	20 ↑	85 ↓	20
Total submissions received	17 (Five of these were considered out of scope)				
Number of submissions received for each option	Option 1 (*Status quo*)	2			
	Option 2	4			
	Option 3	3			
	Option 4	Not consulted on			
	Other	3			

1 Why are we proposing that you review the TAC and TACC?

1. A new stock assessment, undertaken in 2019-20, concluded that BCO 5 in 2019 was unlikely (<40%) to be at or above the management target of 40% B_0 and that overfishing is likely (>60%) to be occurring. While the stock is very unlikely to currently be below the soft or hard limit, a biomass projection derived from the stock assessment concluded that at the current catch[34]

[34] The 'Current Catch" as used in the stock assessment is the average landings for the three fishing years 2015/16, 2016/17, 2017/18 being 1,092,563 kg which is 146,437 kg less than the current TACC.

(which is lower than the current TACC) the biomass would continue to decline. This mirrors ongoing concerns from fishers about the current state of the fishery.

2. The TAC was last reviewed in 2011 with both the TACC and the recreational daily limit being reduced. Despite this, continued concern resulted in voluntary shelving of ACE being introduced by quota holders and an increase to the regulated mesh size used on commercial cod pots.

1.1 About the stock

1.1.1 Fishery characteristics

3. Blue cod is an iconic species, important to all sectors in southern New Zealand. The main method used by the BCO commercial fishery is potting, while line fishing is mostly used by the recreational sector. Management objectives for the fishery are set out in the National Blue Cod Strategy, which prioritises research and assessment of BCO 5, New Zealand's largest blue cod fishery.

4. BCO 5 was put into the quota management system in 1986, with a 1 October to 30 September fishing year. Only a TACC was set at that time, being 1,190 tonnes. Following appeals to the Quota Appeals Authority and through section 329 of the Act the TACC was progressively increased to 1,548.471 tonnes by 2001. In 2011 a TAC of 1,452 tonnes was set for the first time, and the TACC was reduced by 20% to 1,239 tonnes. At the same time the recreational daily bag limit was reduced from 30 per person to 20 per person.

5. There are commercial fishing area closures for Paterson Inlet and the internal waters of Fiordland. Commercial fishing is also prohibited within the mātaitai and marine reserves located in BCO 5 (see Table 3 in Section 2.1).

1.1.2 Biology

6. Blue cod are susceptible to the effects of fishing, including localised depletion. Local populations may take a long time to recover once depleted. This is because blue cod:
   - are relatively slow growing and long lived, reaching a maximum age in excess of 30 years;
   - tend to have a limited home range as they generally move less than 1 km;
   - populations can be isolated from each other and there may be several distinct sub-populations within a management area; and
   - are protogynous hermaphrodites with some (but not all) females changing into males as they grow.

1.2 State of the stock

7. The best available information on the BCO 5 stock is the November 2019 stock assessment, the updated Plenary Document of May 2020, and updated Catch per Unit Effort (CPUE) assessments. In the most recent stock assessment update (Doonan I, 2020), BCO 5 was assessed to be below the default target biomass. The stock status is assessed relative to a default target biomass level of 40% B_0, an associated soft limit of 20% and a hard limit of 10%.

8. The Plenary concluded that the 2019 biomass was estimated to be 36% B_0; and was unlikely (< 40%) to be at or above the default management target. Overfishing is likely (> 60%) to be occurring with the exploitation rate now considered to have been too high since 1990. The current catch, which is less than the current TACC, is likely (>60%) to cause overfishing to continue.

9. The CPUE for statistical areas 025, 027 and 030 shows a declining trend from the early to middle 2000s. The CPUE for statistical area 025 (which traditionally accounts for 50 to 60% of the fishery) shows a decline. Randomised potting surveys for statistical area 025, undertaken in 2010, 2014 and 2018, show no clear trend in catch rates over the time series.

10. Ten-year stock projections have been conducted for the three Statistical Areas (025, 027, 030) at constant catch levels, with summary statistics calculated at the end of five and 10 years. The

projections indicate that under the assumptions of commercial catch at current levels and recruitment at recent levels, the BCO 5 biomass is likely to decline gradually over the next 10 years (Figure 2). This "current catch" projection, is comparable to the *status quo* - Option 1 in this paper.

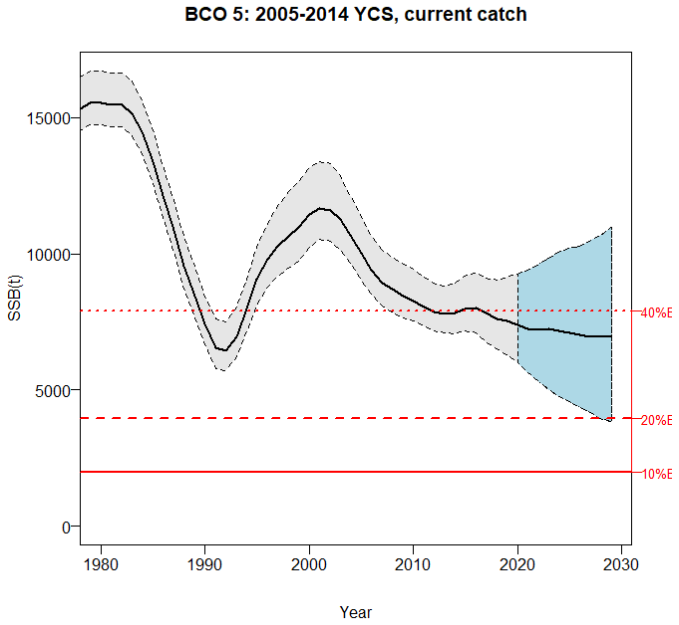


Figure 2: Projected BCO 5 spawning biomass (%B_0) assuming recent recruitment and catch at current levels. Median estimates are shown as solid lines and 95% confidence intervals as shaded polygons. The red lines represent the management target 40% B_0, Soft Limit 20% B_0, and Hard Limit 10% B_0,

11. A projection assuming catch at 80% of current catch (874 tonnes) showed a 50% chance that the spawning biomass would be at or above the target (40% B_0) within five years (see Figure 3). Eighty percent of the "current catch" is comparable to Option 2 in this paper.

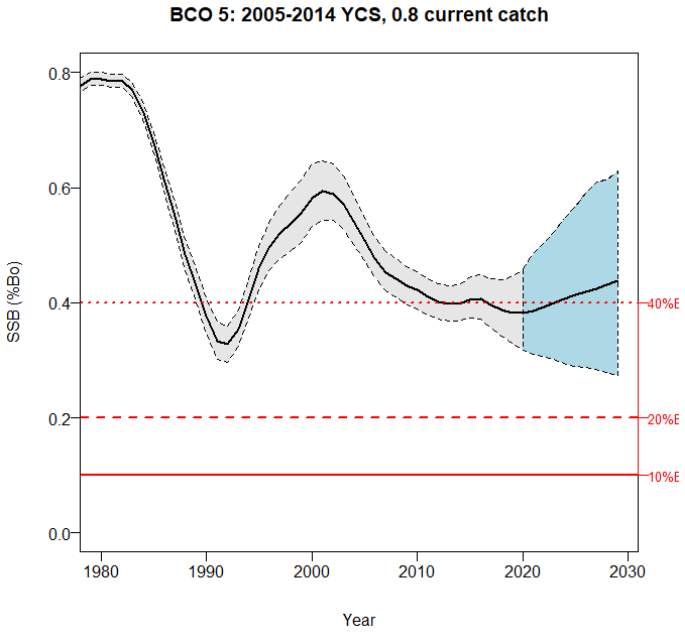


Figure 3: Projected BCO 5 spawning biomass (%B_0) assuming recent recruitment and at 80% of current catch level (comparable to 'Option 2' in this paper). Median estimates are shown as solid lines and 95% confidence intervals as shaded polygons. The red lines represent the management target 40% B_0, Soft Limit 20% B_0, and Hard Limit 10% B_0,

1.2.1 Uncertainties and risks

Change of pot mesh dimensions

12. From 1 October 2017 the minimum inner mesh size for blue cod pots in BCO 5 was increased from 48 mm to 54 mm (some of the fleet had begun transitioning their pots from 1 October 2016). This change was shown to reduce the proportion of undersize blue cod (< 33mm) caught from 11% to 2% while causing minimal change to the legal catch proportions. It is expected to promote productivity and an anticipated recruitment pulse after two years[35].

Changes in fishing behaviour

13. There have been changes in fisher behaviour that are not captured in the assessment; for example, changes in the number of pots being fished, changes in areas fished (local versus long-distance), and changes in fishing patterns. It is not known to what degree these behaviours have been adopted, but these practices are not able to be standardised and may have biased recent CPUE estimates by masking declines in abundance.

CPUE

14. While long term trends in CPUE in statistical areas fluctuate around the mean, since the 2003/04 fishing year there is a consistent downward trend. In the most recent fishing year the CPUE for statistical area 025 has sharply declined.

1.3 Catch information

1.3.1 Commercial

15. BCO 5 commercial catch is almost exclusively taken by the target cod pot fishery operating within Foveaux Strait and around Stewart Island (Statistical Areas 025, 027, 029 and 030). There is also some commercial effort in Fiordland, but to a much lesser extent.

16. Since 2016/17 commercial fishers have shelved ACE in the following proportions by year (Table 2):

Table 2: Percentage ACE shelving by fishing year for BCO 5

FISHING YEAR	Percentage ACE Shelving
2016/17	8.5%
2017/18	7.6%
2018/19	6.7%
2019/20	14%

17. Up to 10% of uncaught ACE generates ACE for the next fishing year. How this ACE has been accounted for is uncertain.

18. Figure 14 below shows that the commercial catch in BCO 5 has been declining since 2003/04 when a high of 1,557 tonnes was taken. Catch has been below the TACC in recent years, over and above the amount of ACE shelved. Catch in the 2018/19 fishing year was very low, 827 tonnes, which is 33% below the current TACC.

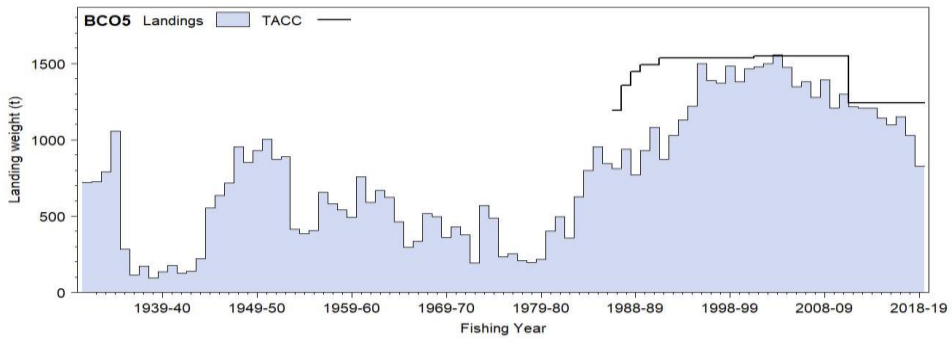


Figure 4: Annual Commercial Landings for BCO 5 (in tonnes)

[35] Review of Blue Cod (BCO 5) pot mesh size. June 2017. MPI Decision Paper 2017/18.

1.3.2 Customary Māori

19. Customary reporting within BCO 5 is under the Fisheries (South Island Customary Fishing) Regulations 1999. The current allowances for customary fishing were set based on best available information of customary catch, however, the reported customary catch is intermittent and depends on when significant occasions are held in the area. Customary authorisations of up to 14 tonnes are recorded at times of important hākari (feast or celebration).

1.3.3 Recreational

20. The National Panel Survey of Marine Recreational Fishers (NPS) 2017/18 provides the best information on BCO 5 recreational catch. The 2017/18 NPS estimated approximately 67 tonnes of recreational catch across BCO 5 (Table 3). This is 33% more than the 2011/12 NPS estimate, suggesting that recreational effort could be increasing. In addition, approximately 18 tonnes of section 111[36] recreational catch is taken annually. An early (2001/02) estimate of recreational catch of 229 tonnes (on which the current recreational allowance is based) used telephone diary methodology and is now thought to be implausibly high and unreliable.

Table 3: Summary of the National Panel Survey of Marine Recreational Fishers results from BCO 5.

Fish stock	2011/12 Estimated harvest (tonnes)	2017/18 Estimated harvest (tonnes)
BCO 5	44	67

21. The recreational fishery and commercial fishery are largely geographically separated. Most recreational fishing occurs within Fiordland and Paterson Inlet or close to shore, while commercial fishing tends to be in the middle of Foveaux Strait and offshore areas and reefs.

22. The recreational daily limit for BCO 5 was reduced from 30 to 20 in 2011, and from 20 to 15 from 1 July 2020 as part of the National Blue Cod Strategy.

2 Allowances within the TAC

2.1 Māori customary interests

23. Rawaru (blue cod) is identified as a taonga species in the Te Waipounamu Iwi Forum Fisheries Plan. Only two tonnes are currently allowed for Māori customary non-commercial fishing interests. Data indicates that catch varies significantly from year to year, but catches for hākari, associated with manaakitanga for significant events, have considerably exceeded the two tonnes allowance. Fisheries New Zealand is proposing the allowance for customary catch be increased to 20 tonnes to more accurately reflect actual catch.

24. Table 4 lists the customary fisheries areas that fall within BCO 5.

Table 4: Customary fisheries areas within BCO 5

	Management type
Te Waka a Te Wera Mātaitai	Mātaitai Reserve
Pikomamaku Mātaitai	Mātaitai Reserve
Kaikuka Mātaitai	Mātaitai Reserve
Horomamae Mātaitai	Mātaitai Reserve
Waitutu Mātaitai	Mātaitai Reserve
Oreti Mātaitai	Mātaitai Reserve
Motupōhue Mātaitai	Mātaitai Reserve

[36] Section 111 of the Fisheries Act 1996 enables commercial fishers to take recreational catch for their own consumption.

25. Commercial fishing is not permitted within mātaitai reserves, but recreational and customary fishing is allowed. The proposals in this paper, which aim to generally increase blue cod biomass, are likely to also increase the health of blue cod stocks in these customary fisheries areas.

2.2 Recreational interests

26. The allowance for recreational fishers provides for the cumulative catch taken by recreational fishers over a fishing year. The most reliable estimate of recreational harvest comes from the National Panel Survey of Marine Recreational Fishers 2017/18, which estimated that 67 tonnes were taken across BCO 5 in 2017/18. However, the amount of recreational fishing effort is likely to vary from year to year depending on factors such as weather. The same survey methods were also employed in 2011/12; however, the result in that year (an estimate of 44 tonnes taken) was considered uncertain.

27. While the recreational panel surveys suggest recreational catch may be increasing, the recreational daily limit for blue cod in BCO 5 was reduced from 20 to 15 on 1 July 2020 as part of the National Blue Cod Strategy. This is likely to stabilise or reduce recreational catch over time.

28. After combining the 2017/18 Panel Survey estimate of 67 tonnes and reported section111 landings (around 18 tonnes each year), the total estimated catch is 85 tonnes. This estimate is significantly lower that the recreational allowance set in 2012 of 191 tonnes. Panel Survey estimates were not available at that time for the Minister to take into account. Thus, the 2012 allowance was based on a 2001/02 telephone diary estimate of 229 tonnes, scaled down to allow for a reduction in the daily bag limit that was implemented at that time. This survey estimate is now thought to be implausibly high and the methodology is no longer considered reliable for a number of reasons.

29. Based on this information it is proposed to decrease the tonnage allowed for recreational catch from 191 to 85 tonnes under all options except Option 1 (the status quo).

2.3 All other mortality caused by fishing

30. 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.

31. Twenty tonnes is the current allowance for mortality caused by fishing, and is retained under all options. The Plenary document and stock assessment for BCO 5 assumes there is mortality of undersized fish that are not quickly returned to the water and/ or predated, especially by mollymawks. However, the recent increase in mesh size (48 mm to 54 mm) is expected to have reduced catches of undersized blue cod.

3 Options, submissions, and analysis

3.1 Summary of options

32. Four options are proposed for the TAC, TACC and allowances for BCO 5 (Table 5). Option 4 was not consulted on and was been added following the consultation period.

Table 5: Summary of proposed management settings for BCO 5 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (*Status quo*)	1 452	1 239	2	191	20
Option 2	999 ↓ (31%)	874 ↓ (29%)	20 ↑	85 ↓	20
Option 3	825 ↓ (43%)	700 ↓ (44%)	20 ↑	85 ↓	20
Option 4 *(new)*	925 ↓ (36%)	800 ↓ (35%)	20 ↑	85 ↓	20

3.2 Submissions

33. A total of seventeen submissions or responses were received for BCO 5 during the consultation period. However, five of these submissions were considered out of scope as they did not comment on the options proposed but submitted on the recreational bag limit for BCO 5, which is not covered within this paper. The twelve submissions that did comment on proposed options are summarised in Table 6 below.

Table 6: Submissions and responses received on the options for the BCO 5 (in alphabetical order)

Submitter	Option Support			
	1	2	3	Other
BCO 5 Association Inc.		✓		
Carey McIvor	✓			
Fiordland Marine Guardians			✓	
Fish Mainland			✓	
Jeremy Turner	✓			
New Zealand Sport Fishing Council (NZSFC) and LegaSea Joint Submission			✓	
Mike Currie				✓
Mike Saunders				✓
Paul Egerton				✓
Te Kupenga o Maniapoto Limited		✓		
Te Ohu Kaimoana		✓		
Te Runanga o Ngāi Tahu		✓		

34. Two commercial ACE fishers submitted in favour of Option 1, the *status quo*. The BCO 5 Association Inc., Te Ohu Kaimoana, Te Runanga o Ngāi Tahu and Te Kupenga o Maniapoto Limited submitted in favour of Option 2. The Fiordland Marine Guardians, LegaSea and Fish Mainland submitted in favour of Option 3. Paul Egerton proposes a TACC of 600 tonnes and Mike Currie wants to prevent the impacts of bottom contacting fishing methods.

3.3 Analysis

3.3.1 Input and participation of tangata whenua

35. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

36. Te Waka a Māui me Ōna Toka Iwi Forum (the forum) is the South Island iwi fisheries forum — it includes all nine tangata whenua Iwi of Te Wai Pounamu.

37. At the 12 November 2019 hui, Fisheries New Zealand sought the forum's input into the BCO 5 review. The forum advised a preference for input through the forum process. Ngai Tahu is the iwi with mana moana over BCO 5 and stated that they considered this review of BCO 5 to be a high priority.

38. Prior to a proposed March 2020 forum hui on 18 March 2020, Fisheries New Zealand provided forum members with fisheries management material for discussion at the hui, including the proposal in this paper to review the BCO 5 TAC. Information was sought on whether customary limits remained appropriate. Due to travel restrictions the intended hui was cancelled.

39. Further input from the forum was received at a hui on 14 July 2020. The forum concluded action needs to be taken to address sustainability concerns. It supports a decrease in the TAC and Ngai Tahu's preferred option, which was confirmed as Option 2, as well as the use of a harvest control rule.

40. The forum also stated it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. It considers recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. The forum concluded that only once all sectors are accurately reporting will the TAC and allowances be meaningful.

3.3.2 Kaitiakitanga

41. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are the way that tangata whenua exercise kaitiakitanga in respect to fish stocks.

42. Rawaru (blue cod) is identified as a taonga species in the Te Waipounamu Iwi Forum Fisheries Plan. The Forum Fisheries Pla**n** 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.

43. Fisheries New Zealand considers that this review contributes to all these Management objectives.

3.3.3 Environmental principles (section 9 of the Act)

44. The use of cod pots means the target fishery has little bycatch and few environmental impacts. The method is highly selective and there is very limited contact with any associated or dependant species. Any decrease in the TAC for BCO 5 would result in a reduction to those few impacts that might occur.

3.3.4 Sustainability measures (section 11 of the Act)

45. 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, natural variability of the stock concerned, and any relevant fisheries plan.

46. Management objectives for the fishery are set out in the National Blue Cod Strategy, which prioritises research and assessment of BCO 5, New Zealand's largest blue cod fishery. The TAC options (particularly Options 2, 3 and 4) proposed in this paper are consistent with these objectives.

47. There are also a number of Acts and regional plans that are relevant to BCO 5, including Regional Coastal Plans to address the cumulative effects of activities in the coastal marine area and the adverse impacts from land-based activities on the marine environment, and those associated with the Fiordland Marine Area.

Fiordland Marine Management Act

48. The Fiordland Marine Area was established under the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 which requires that all persons (including management agencies) exercising powers or carrying out functions in the Fiordland (Te Moana o Atawhenua) Marine Area take into account any advice or recommendations provided by the Fiordland Marine Guardians.

49. The Fiordland Marine Guardians are strongly of the opinion that the TAC/TACC must be set at a level that constrains the catch of blue cod throughout BCO 5 to allow for an effective biomass rebuild of this important and iconic fishery. The Fiordland Marine Guardians support Option 3 and, in principle, the use of a Harvest Control Rule in BCO 5 as proposed by the BCO 5 Association Inc.

National Inshore Finfish Fisheries Plan

50. The National Inshore Finfish Fisheries Plan (2019) provides guidance on management objectives and strategies for inshore finfish fisheries including blue cod. Fisheries New Zealand notes that the National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

3.4 Option 1 – *status quo*

51. Option 1 is the *status quo* TAC of 1,452 tonnes.

52. C. McIvor and J. Turner submit in favour of Option 1 on the basis that the potential beneficial effects of increasing the size of the pot mesh has yet to flow through. J. Turner is also concerned that a reduction in the TACC will result in lost income for small fishing operations.

53. Fisheries New Zealand notes, however, that this option carries the most sustainability risk of further decline in the BCO 5 stock. The 2019 Plenary concluded that B_{2019} was estimated to be 36% B_0 and is unlikely (< 40%) to be at or above the default management target, and that overfishing is likely (> 60%) to be occurring with ongoing decline under current catch levels. The Plenary notes that the exploitation rate, a form of fishing intensity, has been above the target since 1990, and that biomass has been decreasing since about 2000.

54. If the stock continues to decline, it will become harder and more expensive to catch blue cod and this situation will continue to worsen. Several submitters have commented that the actions taken to date, including shelving, pot mesh size increase and the previous TAC review, have not reversed the decline in the fishery.

3.5 Option 2

55. Option 2 would decrease the TAC from 1,452 tonnes to 999 tonnes with a TACC of 874. This is based on the projections from the stock assessment which concluded that at 80% of current catch, after five years there is a 50% chance the fishery would be at, or above, target (40% B_o).

56. The BCO 5 Association Inc. (the representative body for the majority of quota holders), TWAM and also Te Ohu Kaimoana support Option 2 because lowering the TAC will rebuild the stock. They also recommend that the TAC change is accompanied by implementation of a harvest control rule (outlined in more detail in the Discussion Document and under "Other Considerations" in this paper). BCO 5 Association Inc. support Option 2 as they conclude that the starting reference point for harvest control rule should be 874 tonnes. Te Kupenga o Maniapoto Limited also support Option 2 but do not say why.

57. Option 2 would increase the allowance for Māori customary non-commercial from two to 20 tonnes. All submitters who submitted on the proposed increase to the allowance for Māori customary non-commercial catch, including Ngai Tahu, supported the increase to 20 tonnes.

58. Based on the data from the National Panel Survey 2018, the option would decrease the allowance for recreational fishing from 191 to 85 tonne. LegaSea, Fiordland Marine Guardians Inc. and Fish Mainland support an allowance of 85 tonnes for recreational fishing. M. Saunders and P. Egerton are concerned at the reduction in the allowance for recreational interests when they note that recreational fishers take a small portion of the TAC. They consider commercial interests should take more responsibility for the fishery rebuild.

59. The option would retain the allowance for other mortality caused by fishing at 20 tonnes. LegaSea submitted that an estimate for other sources of mortality of less than 3% of the TAC was inadequate, citing the stock assessment used figures of 13% mortality of returned fish for line fisheries and 100% mortality of returned fish for pot fisheries. LegaSea submit the other mortality caused by fishing estimate should be 10% of the TAC; that is 89 tonnes. All other submissions either supported an allocation of 20 tonne or did not comment on other mortality caused by fishing.

60. Fisheries New Zealand agrees the allowance for other sources of mortality is low relative to other fisheries but notes it would increase in proportion to the TAC under all options proposed apart from the status quo. A low allowance is also appropriate given the recent increase in mesh size (48 mm to 54 mm) is expected to reduce catches of undersized blue cod.

3.6 Option 3

61. Option 3 would reduce the TAC to 825 tonnes with a TACC of 700 tonnes. The allowances and rationale for Māori customary, recreational and other mortality from fishing for Option 3 are the same as for Option 2.

62. This option takes into account uncertainty in the information used to undertake the stock assessment and, in relation to the stock assessment projection, is more likely to reverse the 20 year declining trend in the fishery over a shorter timeframe. It also takes into account that the TACC proposed under Option 2 would be 47 tonnes higher than actual landings for the most recent fishing year (2018/19). However, given the TACC will be below the last year's actual catch, it will also have an actual impact on incomes in the short term, especially of the smaller ACE fishers.

63. Uncertainties in information include the impact of the increase in pot mesh size, and changes in fisher behaviour that are not captured in the assessment. Changes in fishing behaviour to declining catches include increasing the number of pots being fished, fishing in more remotes areas and moving pots after each lift instead of re-setting them in the same area. Depending on the extent, these issues may have biased recent CPUE, masking the extent of the decline in abundance.

64. Fisheries New Zealand requested submissions on fishing behaviour, however, despite many fishers reporting anecdotally in pre-consultation, no written submissions clarifying the issue were received. Fisheries New Zealand remains concerned that the above issues may be masking declines in abundance, and notes that 20 years ago the average number of pots used was seven (Warren *et al* 1997) whereas most fishers now use 20 or more pots (indicating that the number of pots needed for successful fishing is increasing). Given blue cod is a very high value fish (fillets sell for more than $50 in some fish markets and supermarkets), the incentive to catch blue cod is high, even in a depleted stock.

65. The Fiordland Marine Guardians, LegaSea and Fish Mainland all support this option. They submit the more cautious option is appropriate given the recent history of the fishery and the uncertainties with the stock assessment.

66. The Fiordland Marine Guardians acknowledge the efforts by BCO 5 quota holders and operators to improve the fishery including shelving of ACE since 2016/17 and increased mesh size of commercial cod pots. They note in 2011 the TACC was reduced by 20% and bag reductions applied to recreational; fishers, but that unfortunately it appears that these measures have not been enough to reverse the decline of the fishery.

3.7 Option 4 - Preferred

67. There is agreement from almost all the feedback received during consultation that a reduction to the BCO 5 TAC is required to address sustainability concerns. Quota holders, Te Ohu Kaimoana and Ngai Tahu support the lesser reduction of 31% proposed under Option 2, along with concurrent approval of a harvest control rule to inform future TACs. The Fiordland Marine Guardians and recreational submitters support Option 3 with a 43% cut to the TAC.

68. While Option 2 is projected to reverse the decline in the fishery, there is uncertainty associated with the assumptions on which the stock assessment and projections are based. The TACC that would be set under Option 2 is also 47 tonnes more than the actual landings from the last (2018/19) fishing year.

69. On the other hand, the reduction under Option 3 would have a significant economic impact while the fishery rebuilds. Given the status of the stock (below target, but above the soft limit), and that the other measures taken under the National Blue Cod Strategy to improve fishery productivity (such as the increased pot mesh size) have not yet had time to become evident, a reduction at this level may not be required at this time.

70. Overall, based on the feedback received, Fisheries New Zealand's preferred approach is a new intermediate option between Options 2 and 3 (Option 4) that would reduce the TAC by 36% and reduce the TACC by 35%. This would set a TACC that is below last year's commercial landings and takes into account the uncertainty around the assessment projections (i.e. that the reduction under Option 2 will move the stock towards the management target). Completion and approval of a harvest control rule (see following section) would support continued monitoring and assessment to ensure the TAC supports a rebuild of the fishery.

71. Under the Option 4, as for Options 2 and 3, the recreational allowance would be reduced and customary allowance increased to reflect updated recreational estimates and customary catch reports.

3.8 Economic analysis

72. Reductions in the TACC will impact fishers' ability to obtain ACE, and hence, reduce earnings. However, many fishers already report they are increasingly unable to catch economic quantities (suggested as 12 kg /pot lift) such that not all trips are profitable. Under Option 1 there would be no change to the TACC, however, continuing to over-fish the stock is likely to result in a decline in the fishery and socio-economic losses.

Table 7: Predicted changes to commercial revenue for the proposed options, based on port price of $5.05/kg for BCO 5 in the 2019/20 fishing year.

Option	Change from current TACC (tonnes)	Predicted revenue changes ($p.a.)
Option 1 (*status quo*)	NA	NA
Option 2	365 t↓	$1,843,250↓
Option 3	539 t↓	$2,721,950↓
Option 4	439 t↓	$2,216,950↓

73. Under Option 2, the TACC would decrease from 1,239 tonnes to 874 tonnes. Based on the current TACC and reported port price ($5.05/kg), this represents a decrease in revenue of $1.84 million per year. However, the TACC under Option 2 is 47 tonnes higher than the total landings for last season's catch. A more appropriate comparison of actual loss in revenue is against the average landings of the last five years. This implies a reduction in value of $0.89 million per year. However, this is offset over the medium term by the benefits from a rebuilt stock, which will have a higher stock size, higher average size of fish, higher CPUE and improved efficiency.

74. Under Option 3, the TACC would decrease from 1,239 tonnes to 700 tonnes. Based on the current TACC and reported port price, this represents a decrease in revenue of $2.72 million per year. Based on the comparison of the average of the last five years landings, this is a reduction of revenue of $1.8 million per year.

75. Option 4, a new option included following consultation, would have an intermediate impact between Option 2 and Option 3 of $2.2 million per year (based on the current TACC and port price). Using a comparison of the average of the last five years landings this gives a reduction of revenue of $1.26 million per year.

3.9 Other considerations

3.9.1 Proposal for a Harvest Control Rule

76. Beyond this year's TAC review, BCO 5 quota holders have requested the development and approval of a harvest control rule (HCR). Under such a rule, future TACs would change according to agreed steps as the BCO 5 biomass increases (or decreases) to ensure it reaches the target biomass.

77. The rule is intended to provide more certainty and a more responsive path to ensure sustainable utilisation. With the introduction of electronic reporting and position reporting, fine scale information is now becoming available, which can be updated automatically every month. The rule would involve an industry sponsored CPUE analysis (as a proxy for biomass) with built in increases (or decreases) according to the results of the analysis.

78. Six submissions support the concept of an HCR, while LegaSea submit that developing a management procedure at this time is putting unjustified faith in the current stock assessment model and the reliability of previous commercial potting CPUE.

79. Proponents of the rule will be seeking your consent to using an HCR as a major component in the management of the fishery. While the development of such a rule has been agreed to in principle by Fisheries New Zealand's Science Working Group, development and testing is still to be undertaken prior to seeking your consideration of the HCR. Fisheries New Zealand will continue to work with BCO 5 quota holders to support development and testing of the HCR.

4 Conclusion and recommendations

80. The stock assessment for BCO 5 suggests the stock is below target and projected to decline further. Some steps have already been taken to address this through the National Blue Cod Strategy (gear changes and changes to recreational fishing rules). Scientific modelling suggests a 31% reduction to the TAC (Option 2 in this paper) should move the stock back towards target, however, there is uncertainty in the model assumptions and the resulting TACC would still be above last year's commercial landings. Therefore, a 43% TAC reduction option was also proposed for consultation (Option 3). Under both options the recreational allowance would be reduced and customary allowance increased to reflect updated recreational estimates and customary catch reports.

81. There was agreement from almost all submitters that a reduction to the TAC is required to address sustainability concerns. Quota holders, Te Ohu Kaimoana and Ngai Tahu support Option 2, along with concurrent approval of a harvest control rule to change future TACs according to agreed steps as the BCO 5 biomass increases (or decreases). The rule is being developed by quota holders and has not yet been completed. Recreational submitters and the Fiordland Marine Guardians support Option 3.

82. Based on the feedback received during consultation, Fisheries New Zealand's preferred approach is an intermediate option between Options 2 and 3 that would reduce the TAC by 36%. This new option (Option 4) would reduce the TACC below last year's commercial landings and takes into account the uncertainty around the assessment projections, while also reducing the economic impacts, relative to Option 3.

83. Fisheries New Zealand notes that you have broad discretion in exercising your powers of decision making and may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the options recommended by Fisheries New Zealand.

5 Decision for BCO 5

Option 1

Agree to retain the BCO 5 TAC at 1,452 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 2 tonnes;
ii. Retain the allowance for recreational fishing interests at 191 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 20 tonnes;
iv. Retain the BCO 5 TACC at 1,239 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the BCO 5 TAC at 999 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 20 tonnes;
ii. Reduce the allowance for recreational fishing interests from 191 to 85 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing from at 20 tonnes;
iv. Reduce the BCO 5 TACC from 1,239 to 874 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the BCO 5 TAC at 825 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 20 tonnes;
ii. Reduce the allowance for recreational fishing interests from 191 to 85 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 20 tonnes;
iv. Reduce the BCO 5 TACC from 1,239 to 700 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 4 *(Fisheries New Zealand preferred option)*

Agree to set the BCO 5 TAC at 925 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 20 tonnes;
ii. Reduce the allowance for recreational fishing interests from 191 to 85 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 20 tonnes;
iv. Reduce the BCO 5 TACC from 1,239 to 800 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Rig (SPO 2) Central East

Mustelus lenticulatus, rig, pioke, makō

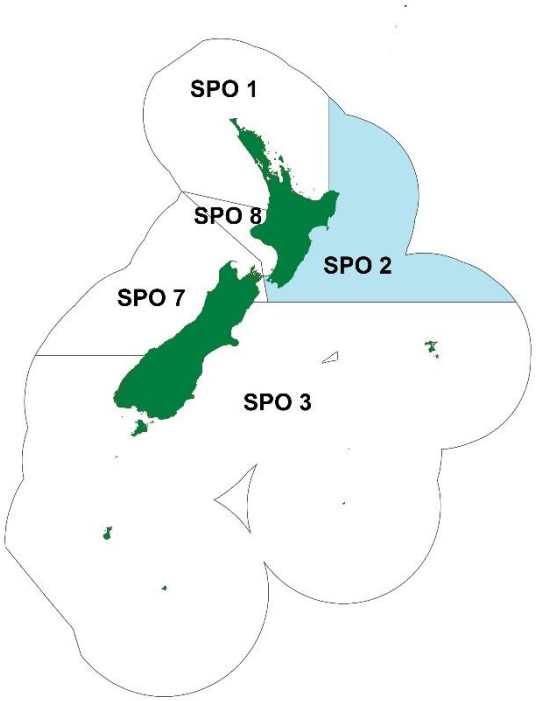


Figure 1: Quota management areas (QMAs) for rig, with SPO 2 highlighted in blue. A rig is pictured on the left.

Table 1: Summary of options proposed for SPO 2 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	130	108	5	10	7
Option 2	139 ↑ (7%)	113 ↑ (5%)	5	10	11 ↑
Option 3	146 ↑ (12%)	119 ↑ (10%)	5	10	12 ↑

New option incorporated following consultation	No	
Total submissions received	5	
Number of submissions received for each option	Option 1 (*Status quo*)	0
	Option 2	0
	Option 3	4
	Other	1

1 Why are we proposing that you review the TAC and TACC?

1. The best available information indicates that SPO 2 has been above the management target since 2012. Relative fishing pressure over the same time period has also decreased.

2. The SPO 2 Total Allowable Catch (TAC) was last reviewed in 2015, at which time the TAC was kept at 130 tonnes. This was due to perceived sustainability issues surrounding increasing fishing pressure for stocks which catch rig as bycatch, such as East Coast tarakihi.

3. Considering the sustainability measures and plans that have been put in place for these stocks since the review in 2015 and the increase in abundance of rig in SPO 2 since 2012, Fisheries

New Zealand considers it appropriate to review the TAC of SPO 2 at this time to provide for utilisation opportunities in the fishery.

1.1 About the stock

1.1.1 Fishery characteristics

4. Rig in SPO 2 are principally taken as bycatch in bottom trawl fisheries targeting flatfish, tarakihi and gurnard, or in set-net fisheries targeting rig, school shark, flatfish, blue warehou and blue moki.

5. Rig in SPO 2 have been increasingly caught through set-netting in recent years. From 2016/17 to 2018/19, the percentage of rig in SPO 2 caught by bottom trawling has decreased from approximately 83% to 69% of total catch, whereas set-net prevalence has doubled from approximately 15% to 30%.

6. Rig are an important species to customary and recreational fishers also. Most recreational catch is taken using rod and line methods, but rig is also taken through recreational set-netting. Customary take of rig in SPO 2 has recently enabled local iwi to mitigate the economic and social effects of COVID-19 through consolidated efforts.

1.1.2 Biology

7. Rig are caught in coastal waters throughout New Zealand and mostly in waters less than 50m deep when they aggregate inshore during the spring and summer seasons. Rig mature late and are long-lived. Female rig reach maturity at five to six years, and rig can live for 20 years or longer.

1.2 State of the stock

8. The abundance of rig in SPO 2 is assessed based on analysis of commercial catch-per-unit-effort (CPUE) information, which gives an index of relative abundance for the stock. A standardised CPUE series has been operating since the early 2000s based on commercial set-net and bottom trawl (BT) activity. An updated SPO 2 BT analysis was conducted in 2019[37]. An agreed proxy for B_{MSY} has also been established for SPO 2 based on the average CPUE between 2005 and 2015.

9. Figure 2 shows the relative index of abundance for SPO 2 (the black line) against the B_{MSY} proxy or target (the green dotted line), the soft limit (the purple line), and the hard limit (the grey line).

10. SPO 2 CPUE fluctuated around the target from the early 2000s to around 2012. Since then it has increased above the target. From 2017, CPUE has taken a slight dip, but remains above the target.

[37] Defined within the data set by selecting trips which fished exclusively in the Areas 011–015 and targeted flatfish, gurnard or tarakihi.

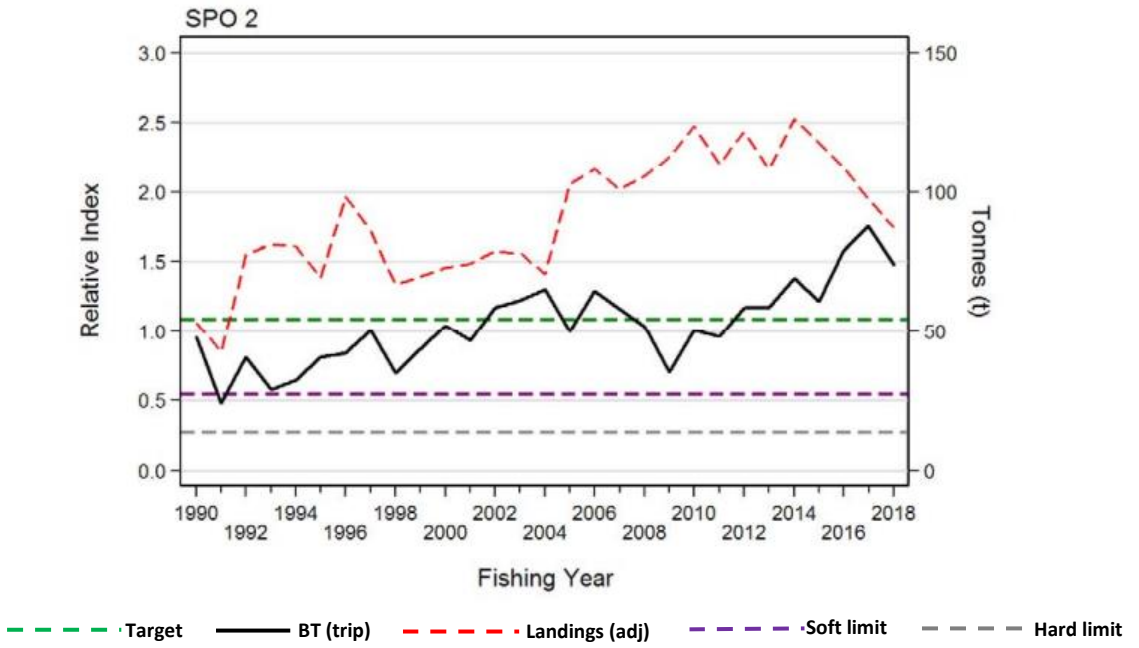


Figure 2: CPUE index [BT] (black line) and estimated landings (dashed red line) for SPO 2 from 1990/91 to 2018/19. The dashed green line is the management target, the dashed purple line is the soft limit, and the dashed grey line is the hard limit.

11. In Figure 2, the increase in relative abundance (black line) coupled with the decrease in estimated landings (red dotted line) indicates an overall reduction in relative fishing pressure for rig in SPO 2. The relationship between these two factors is also shown in Figure 3, which shows that the relative exploitation rate for SPO 2 is currently below the overfishing threshold and has been since 2012.

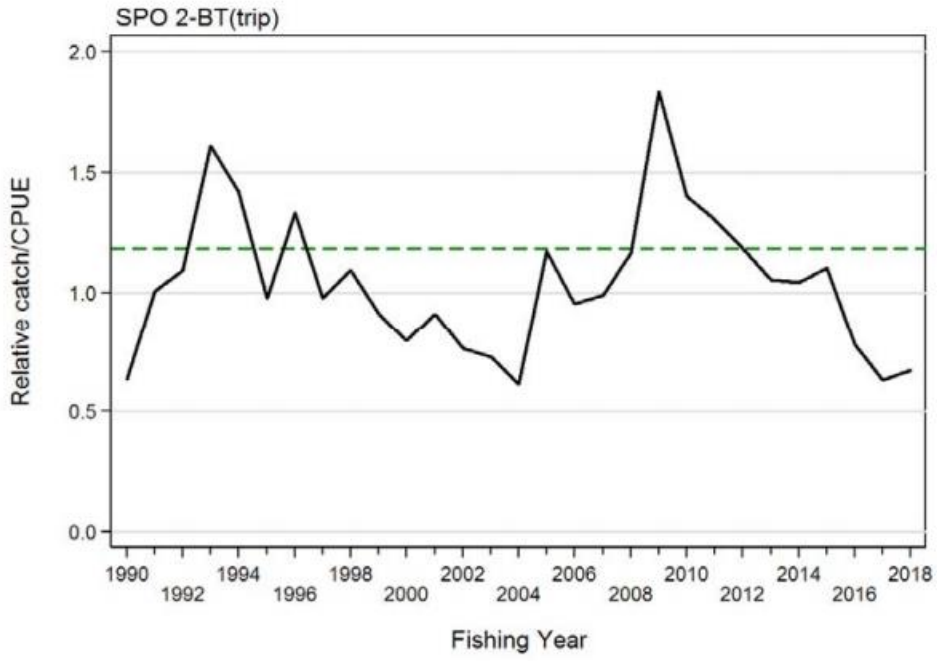


Figure 3: Relative fishing pressure for SPO 2 from 1990/91 to 2018/19. The black line is the relative exploitation rate, and the dashed green line is the overfishing threshold.

12. Fisheries New Zealand's Fisheries Assessment Plenary[38] has assessed that SPO 2 is likely[39] to be at or above the target. It also considers that the TACC and current catch are unlikely[40] to cause the stock to decline below the soft and hard limits or to cause overfishing to occur.

13. There is a lack of historical information relating to stock abundance of SPO 2 during the 1970s–1980s when the stock was believed to have been heavily fished, which means that the current relative stock status is difficult to determine. While the SPO 2 BT CPUE series is considered to be high quality, Fisheries New Zealand notes that large female rig are not well-captured in the series.

1.3 Catch information

1.3.1 Commercial

14. Figure 4 below shows that commercial catch in SPO 2 has historically been over-caught, whereas in more recent years' catches have been below the TACC. Annual catches have been below the TACC by an average of 13% over the last four fishing years. This can largely be explained by the decrease in fishing effort on target species caught in association with SPO 2.

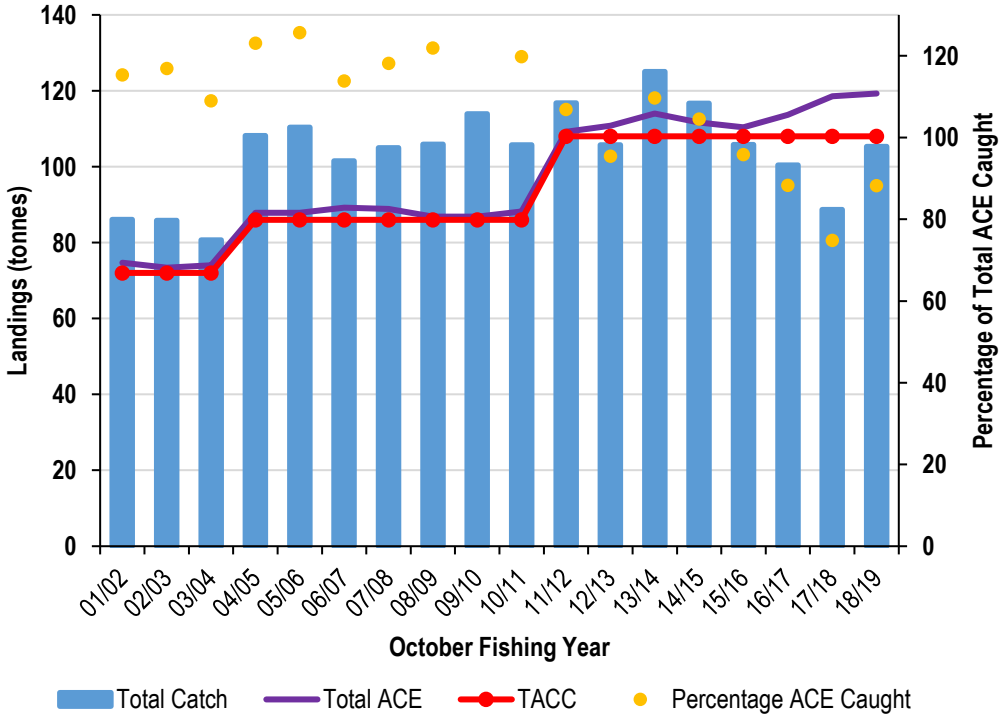


Figure 4: Commercial landings, TACC, and total Annual Catch Entitlement (ACE) in tonnes (left axis) and percentage of total ACE caught (right axis) for SPO 2 from 2001/02 to 2018/19.

15. Commercial catch effort data indicates an increase in the amount of rig being targeted in SPO 2 over the last three fishing years (10% in 2016/17 vs 21% in 2018/19 of total rig catch reported) as shown in Figure 5. Whereas the proportion of rig taken as bycatch while targeting tarakihi and flatfish has decreased over this period. This signals an increase in the potential for rig as a target species, which is likely to be able to sustain greater utilisation.

16. The increase in targeting effort of rig in SPO 2 utilises set-netting as the primary method. Set-netting effort targeting rig has approximately doubled (increased by 98%) over the 2016/2017 to 2018/2019 fishing years.

[38] Fisheries Assessment Plenary May 2020, available at: https://www.mpi.govt.nz/dmsdocument/34953-plenary-may-2019-stock-assessments-and-stock-status-volume-3-pipi-to-yellow-eyed-mullet
[39] (>60%)
[40] (<40%)

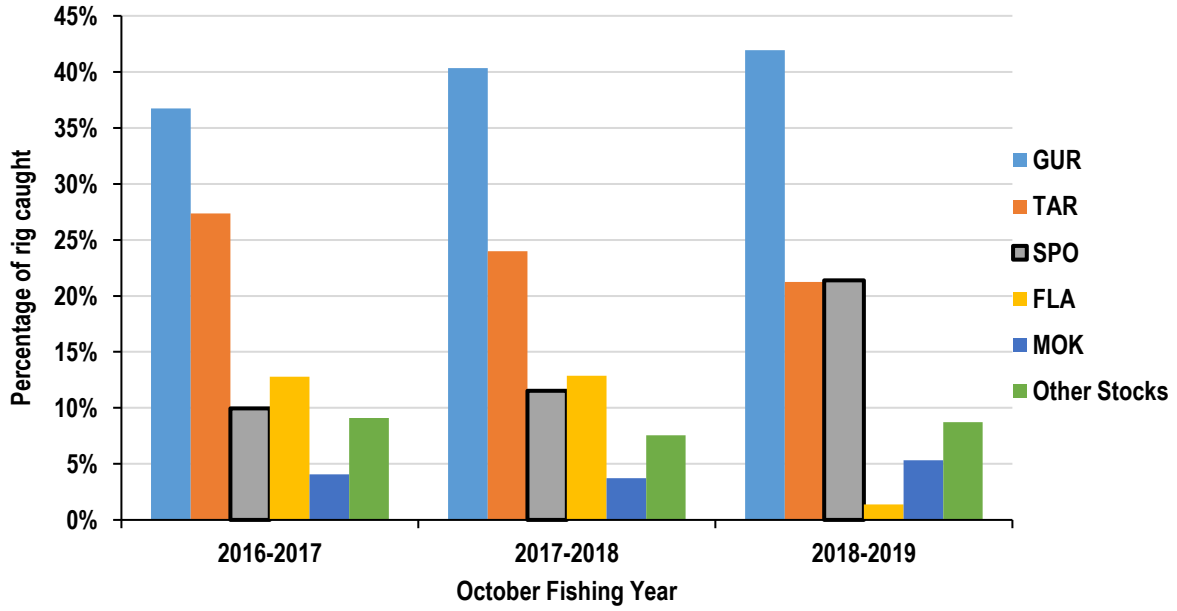


Figure 5: The proportion of reported rig catch in SPO 2 by target species for the last three fishing years.

17. Fisheries New Zealand notes that SPO 2 are listed in Schedule 6 of the Act, which permits commercial fishers to return rig to the sea provided they are likely to survive, and the return takes place as soon as practicable after the rig is taken.

18. Additionally, rig catch is covered under the Fisheries (Commercial Fishing) Regulations 2001 regarding the prohibition of shark finning in New Zealand waters and rig must be landed with fins attached.

1.3.2 Customary Māori

19. Current customary reporting for rig in SPO 2 is incomplete, with no customary take of rig reported in the last five completed fishing years. Recently, there have been 16 bins of rig taken as customary harvest reported in the Kahungunu ki Te Matau a Maui area, which is likely related to the efforts of local iwi in the area supporting whānau through the COVID-19 pandemic.

20. The incompleteness of customary reporting information is influenced by the fact that the customary regulations have not yet been implemented in northern parts of SPO 2. In these areas, customary catch is taken under regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013, which does not have a reporting requirement.

1.3.3 Recreational

21. The National Panel Survey of Marine Recreational Fishers 2017-18 (NPS) provides the best available information on recreational harvest of rig in SPO 2. This survey estimated 4.8 tonnes of rig were caught in SPO 2 in the 2017/18 fishing year. Fisheries New Zealand acknowledges that this estimate is uncertain because of the relatively small numbers of events and fishers it was derived from. Recreational harvest can also fluctuate from year to year due to weather and other factors.

2 Allowances within the TAC

2.1 Māori customary interests

22. The customary Māori allowance for SPO 2 is currently set at five tonnes. When making allowances for customary non-commercial fishing interests you are also required to take into

account mātaitai reserves, taiāpure and temporary closures within the area relevant to the SPO 2. The current management tools in place are identified in Table 2 below[41].

Table 2: Customary management areas in SPO 2

Name	Management type
Hakihea Mātaitai	Mātaitai reserve[42]
Horokaka Mātaitai	Mātaitai reserve
Toka Tamure Mātaitai	Mātaitai reserve
Te Hoe Mātaitai	Mātaitai reserve
Moremore Mātaitai(a)	Mātaitai reserve
Moremore Mātaitai(b)	Mātaitai reserve
Porangahau Taiāpure	Taiāpure[43]
Palliser Bay Taiāpure	Taiāpure

23. Rig's distribution in easily accessible coastal waters make it an important customary fishery. Rig in SPO 2 is determined to be above the management target and the proposed increases in the TAC aim to provide for moderate increases in utilisation. Therefore, it is expected that the proposed changes to the TAC of SPO 2 will have a negligible effect on these customary fishery management areas.

2.2 Recreational interests

24. The allowance for recreational fishers provides for the cumulative catch taken by them over a fishing year and is set at 10 tonnes.

25. Rig is an important recreational species across New Zealand. The main recreational fishing method is rod and line, and the recreational daily bag limit for rig caught in FMA 2 is 20 per person per day as part of a mixed species daily bag limit. Commercial and recreational catch are restricted to a minimum net mesh size of 150mm for rig, but have no minimum legal size (MLS).

2.3 All other mortality caused by fishing

26. The allowance for all other mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing, including incidental mortality from fishing methods, or illegal fishing.

27. For SPO 2, the current allowance for other sources of mortality caused by fishing is set at seven tonnes; this equates to 6% to 8% of commercial catch in the last five years. As part of your decisions for the 1 October 2018 Sustainability Round Review you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fish stocks at an amount that would equate to around 10% of the TACC, unless there is evidence to suggest otherwise[44].

3 Options, submissions, and analysis

3.1 Summary of options

28. Three options are proposed for the TAC, TACC and allowances for SPO 2. No additional options were added following consultation.

[41] There are currently no Section 186A temporary closures in Fisheries Management Area (FMA) 2, which encompasses SPO 2.
[42] Commercial fishing is not permitted within mātaitai reserves, but recreational and customary fishing is allowed.
[43] All types of fishing are allowed in a taiāpure unless its management committee recommends changes to the fishing rules and you approve them.
[44] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

Table 3: Summary of proposed management settings for SPO 2 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	130	108	5	10	7
Option 2	139 ↑ (7%)	113 ↑ (5%)	5	10	11 ↑
Option 3	146 ↑ (12%)	119 ↑ (10%)	5	10	12 ↑

3.2 Submissions

29. Fisheries New Zealand received five submissions or responses for SPO 2 during the consultation period. Four of the five submitters support Option 3, either in whole or in part. One submitter opposed all of the proposed Options. Table 4 below lists the submitters and their stance on the proposed Options.

Table 4: Submissions and responses received for SPO 2 (in alphabetical order)

Submitter	Option Support			
	1	2	3	Other
Fisheries Inshore New Zealand (FINZ)			✓	
Iwi Collective Partnership (ICP)			✓	✓
Mike Currie				✓
Te Kupenga o Maniapoto Limited			✓	
Te Ohu Kaimoana			✓	

3.3 Analysis

3.3.1 Input and participation of tangata whenua

30. Input and participation into the sustainability decision-making process is provided 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. Particular regard should be given to kaitiakitanga when making sustainability decisions.

31. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through virtual mechanisms. In late April 2020, a two-page document with information on the proposal to review the SPO 2 stock was provided to the relevant Iwi Fisheries Forums, and input was sought. Given the disruption to services, input from Iwi Fisheries Forums has been limited.
32. The proposal to review SPO 2 has been discussed with the Mai Paritu tai atu ki Turakirae Fisheries Forum (Mahia to Wairarapa) and Ngāti Porou (on the East Coast) who do not currently operate a forum.

33. The Mai Paritu tai atu ki Turakirae Fisheries Forum provided feedback that customary harvest of fish in nearshore areas were poor. They were supportive of the status quo, with the hopes of establishing pātaka within the area, utilising abundance and potential increases in fishing effort.

34. The Te Tai Hauāuru forum which covers FMA 8, but includes iwi with interests that cross over into FMA 2, supported the increase in the TACC. Te Tai Hauāuru also expressed an interest in increasing the customary allowance to reflect recent and future increases in catch to support whānau through the COVID-19 recovery period and economic downturn.

3.3.2 Kaitiakitanga

35. Rig is identified as an important customary fish species, due to its distribution in shallow, easily accessible coastal waters. Māori fishers traditionally caught large numbers of "dogfish" during the last century and early this century, and rig was probably an important species alongside spiny dogfish and school shark. Rig are taken by customary fishers using nets or lines and traditionally were sun-dried on wooden frames.

36. Iwi Fisheries Forum Plans are yet to be developed for the area that makes up SPO 2. The Mai Paritu tai atu ki Turakirae Fisheries Forum is a newly established forum that is in the process of developing an Iwi Fisheries Forum Fisheries Plan. Likewise, Ngāti Porou are in the process of establishing an Iwi Fisheries Forum. Views on kaitiakitanga and feedback specific to rig has been captured in the input and participation section above.

37. Other Iwi Fisheries Plans that are relevant to SPO 2 are listed in the Table 5 below with relevant management objectives highlighted.

Table 5: SPO 2 and relevant Iwi Fisheries Forum Plan management objectives.

Iwi Fisheries Forum	**Relevant Management Objectives contained in Iwi Fisheries Forum Plan**
Te Tai Hauāuru	• Our customary non-commercial fisheries are healthy, sustainable and supports the cultural wellbeing of Te Tai Hauāuru Iwi. • Our commercial fisheries are sustainable and support the economic wellbeing of Te Tai Hauāuru Iwi. • Mana and rangatiranga over our fisheries is restored, preserved and protected for future generations. • Iwi collaborate in fisheries and environmental resource management to achieve iwi driven objectives.
Iwi	**Relevant Management Objectives contained in Iwi Fisheries Plan**
Rangitaane (North Island)	• Mana and rangatiratanga over Rangitaane (North Island) Fisheries is restored, preserved and protected for future generations • Collaborative iwi partnerships in fisheries and environmental resource management are realised • Rangitaane (North Island) have sufficient capacity to meet their individual and collective responsibilities as tiaki tangata/kaitiaki in partnership with others • Our customary non-commercial fisheries are healthy, sustainable and support the cultural wellbeing of nga iwi o Rangitaane (North Island) • Our commercial fisheries are sustainable and support the economic wellbeing of Rangitaane (North Island) hapū and whanau

3.3.3 Environmental principles (section 9 of the Act)

38. The increases in targeting of rig in SPO 2 potentially raises the level of risk to protected species. Set-netting has the potential to affect some protected species groups, such as marine mammals, seabirds and some shark species, through incidental capture, with the risk of this different in each area. In some areas there is inadequate information to know whether there is a significant risk of interaction.

39. Commercial set-net interactions with protected species (both reported and observed) tend to occur in clusters around New Zealand. Within the SPO 2 area there are very few reported protected species interactions with set-nets and observer coverage is low.

40. For seabirds individually, the inshore trawl and shark set-net fisheries in FMA 2 do not attribute any disproportionate levels of risk to seabird species relative to fisheries in other areas.[45]

[45] https://www.fisheries.govt.nz/dmsdocument/39407/direct

41. Fisheries New Zealand does not expect an increase in the overall amount of set-net effort, due to the recommended increase(s) in the TAC/TACC. Rather, it is expected that fishers will shift their target effort from other species to rig. As a result, Fisheries New Zealand does not foresee significant changes in fishing interactions with marine mammals, fish bycatch, seabirds and the benthic environment.

42. One submitter (M. Currie) raised concerns with respect to the use of set-nets to take rig and the impact of this method on Māui and Hector's dolphins, along with seabirds and other marine mammals.

43. There is no evidence of a resident Hector's or Māui dolphin population within the SPO 2 region. However, there have been recent verified sightings throughout the QMA, and historical evidence of a resident population in the Kapiti/Wellington region.[46] Fisheries-related risks to Hector's and Māui dolphins are managed under the Hector's and Maui Dolphin Threat Management Plan, which was recently reviewed. A commercial and recreational set-netting prohibition out to four nautical miles from shore in the Kapiti/Wellington area is proposed to take effect on 1 October 2020. The best available science indicates that for Hector's and/or Māui dolphin that may be present in the remainder of the SPO 2 area the level of risk from commercial set-net is low.

3.3.4 Sustainability measures (section 11 of the Act)

44. 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, the natural variability of the stock concerned, and any relevant fisheries plan.

NPOA Sharks

45. This review and updates to science information for SPO 2 supports several objectives of the National Plan of Action for Sharks (NPOA Sharks).

46. As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), rig is included in the NPOA Sharks, which takes into account the biological characteristics of rig in terms of its vulnerability to fishing pressure and the connectivity of rig stocks.

47. 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. The risk assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. Objectives of this goal that are met by the current review of rig are:

    b. For shark species managed under the quota management system (QMS), undertake an assessment to determine the stock size in relation to the biomass (total weight of fish) that can support harvest of the maximum sustainable yield (B_{MSY}) or other accepted management targets and on that basis review catch limits to maintain the stock at or above these targets;

    c. Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high risk species; and

    d. Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

[46] https://www.mpi.govt.nz/dmsdocument/35007-aebr-2019214-spatial-risk-assessment-of-threats-to-hectorsmaui-dolphins-cephalorhynchus-hectori

National Inshore Finfish Fisheries Plan

48. The National Inshore Finfish Fisheries Plan (2019) provides guidance on management objectives and strategies for inshore finfish fisheries including rig. Fisheries New Zealand notes that the National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

3.4 Option 1 – status quo

49. Option 1 maintains the TAC of 130 tonnes for SPO 2 and is the status quo.

50. This option recognises that the CPUE analysis has shown a decline in relative abundance over the last 2 years, however, the overall trend has been increasing since 2012 and remains above the target. As a result, Option 1 reflects a cautious approach for SPO 2 to ensure that the recent decline does not carry through to future years and drop below the target. The Mai Paritu tai atu ki Turakirae Fisheries Forum supports Option 1.

51. One submitter (M. Currie) submitted in opposition of all of the proposed options, stating that the TAC of rig should not be increased, but rather the fishing of rig banned. This is due to rig being a relatively long-lived species which are slow growing and late to mature. Given current abundance in SPO 2, Fisheries New Zealand does not consider banning fishing for rig appropriate.

3.5 Option 2

52. Option 2 proposes to increase the TAC from 130 tonnes to 139 tonnes. This includes increasing the TACC by 5% to 113 tonnes and aligning the “all other mortality” allowance in-line with an amount that would equate to around 10% of the TACC (to 11 tonnes). No change is proposed for the customary or recreational allowances.

53. This option allows for greater utilisation, but takes a cautious approach, taking into account factors such as rig being a bycatch species and the drop in abundance in the last couple of years, amongst the overall increasing trend of abundance since 2012. There was no support for this option by submitters.

3.6 Option 3 – Preferred

54. Option 3 proposes to increase the TAC from 130 tonnes to 146 tonnes. This includes increasing the TACC by 10% to 119 tonnes and aligning the “all other mortality” allowance in-line with an amount that would equate to around 10% of the TACC (to 12 tonnes). No change is proposed for the customary or recreational allowances.

55. This option allows for the highest level of utilisation of all the options. It provides weight to the fact that the SPO 2 biomass has increased strongly since 2009 and is estimated to have more than doubled over the period from 2009 to 2017. It also considers that relative fishing pressure has been low in recent years (the TACC has been under-caught by an average of 13% over the last 4 fishing years), and acknowledges that there exists potential for greater utilisation of rig in SPO 2.

56. The main difference between Options 2 and 3 is the level of risk associated with each increase. The greater the increase and utilisation of the stock, the greater the potential for sustainability risk in the future.

57. Te Ohu Kaimoana, FINZ and Te Kupenga o Maniapoto Limited submitted in support of Option 3. Their submissions cited the increase in biomass in recent years and the decreases in the TAC of the other target fisheries. In addition, where rig has historically been a bycatch species, there exists a potential for rig to be taken more as a target species going forward.

58. The Iwi Collective Partnership also stated the above rationale in support of Option 3, but suggested that the customary Māori allowance be set at 7 tonnes (up from 5 tonnes currently). This is to account for aspirational use and enabling whānau, hapū and iwi greater utilisation through Pātaka and customary harvest methods. The Te Tai Hauāuru Iwi Fisheries Forum has also requested that the customary Māori allowance be increased.

59. Fisheries New Zealand does not perceive a need to increase the customary Māori allowance at this time, however this remains available to you as an amendment to Option 3. Current estimates of customary harvest of rig in SPO 2 indicates that there already exists headroom for aspirational use and the customary harvest of rig is not bound by the customary Māori allowance. Rather, the customary Māori allowance is set to the level at which customary harvests occur.

3.7 Economic analysis

60. Options 2 and 3 provide for increased use opportunities for commercial fishers. Based on the reported port price (which does not reflect the total economic benefit), this increase may support an approximate increase in revenue of $17,700 or $38,940 respectively per year.

Table 6: Predicted changes to commercial revenue for the proposed options, based on recommended port prices of $3.54/kg for SPO 2 in the 2019/20 fishing year.

Option	Change from current setting (tonnes)	Predicted revenue changes ($p.a.)
Option 1 (status quo)	NA	NA
Option 2	5 ↑	$17,700 ↑
Option 3 (Recommended)	11 ↑	$38,940 ↑

4 Conclusion and recommendations

61. Fisheries New Zealand recommends Option 3, which will result in the TAC increasing to 146 tonnes, constituting a 10% increase to the TACC, and setting the allowance for all other sources of mortality at an amount that would equate to around 10% of the TACC.

62. Rig in SPO 2 has historically been a bycatch species and, as a result, has been over-caught. However, as those other target species have had more stringent management measures put in place, the catch of rig relative to the TACC has fallen. This has left space for rig to be targeted as fishers aim to fully utilise their resources. The overall decrease in fishing pressure on rig in SPO 2 has meant that the relative abundance of rig has been above the management target and estimated to be on an increasing trend since 2012.

63. The relative abundance of rig in SPO 2 and the increase in targeting of rig is evidence of a greater opportunity for utilisation within the fishery going forward.

64. This option has the greatest level of support, with four out of the five submitters writing in support. One of the four supporting submissions also proposed an increase in the customary Māori allowance to 7 tonnes to account for aspirational use

5 Decision for SPO 2

Option 1 – Status quo

Agree to retain the SPO 2 TAC at 130 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 5 tonnes;
ii. Retain the allowance for recreational fishing interests 10 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 7 tonnes;
iv. Retain the SPO 2 TACC at 108 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SPO 2 TAC at 139 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 5 tonnes;
ii. Retain the allowance for recreational fishing interests 10 tonnes;
iii. Increase the allowance for all other sources of mortality from 7 to 11 tonnes;
iv. Increase the SPO 2 TACC from 108 to 113 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SPO 2 TAC at 146 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 5 tonnes;
ii. Retain the allowance for recreational fishing interests 10 tonnes;
iii. Increase the allowance for all other sources of mortality from 7 to 12 tonnes;
iv. Increase the SPO 2 TACC from 108 to 119 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 9 / 2020

Stargazer (STA 7) – Challenger

Kathetostoma giganteum, giant stargazer, monkfish, puwhara

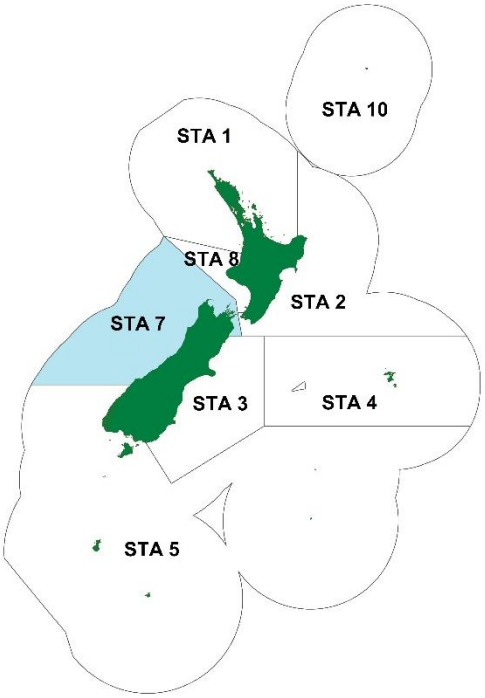


Figure 1: Quota Management Areas (QMAs) for stargazer (STA) with STA 7 highlighted in blue. A stargazer is pictured on the left.

Table 1: Summary of options proposed for STA 7 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	1,181	1,122	1	4	54
Option 2	1,271 ↑ (8%)	1,178 ↑ (5%)	1	4	88 ↑
Option 3 (new)	1,271 ↑ (8%)	1,208 ↑ (8%)	1	4	58 ↑

New option incorporated following consultation	Yes (Option 3)	
Total submissions received	5	
Number of submissions received for each option	Option 1 (*Status quo*)	0
	Option 2	2
	Option 3	Not consulted on
	Other	3

1 Why are we proposing that you review the TAC and TACC?

1. The stock status for STA 7 is about as likely as not (40-60% probability) to be at or above target, and projections suggest it is about as likely as not to remain at or above the target at current levels of catch. Biomass has remained stable since 2005 and the most recent (2019) estimate of biomass appears to be high (although with some uncertainty). This information, and anecdotal information from fishers, suggests there is an opportunity to consider whether a modest increase in the TAC could be provided.

1.1 About the stock

1.1.1 Fishery characteristics

2. Stargazer is primarily a commercial bycatch species of importance to inshore trawlers. Some target fishing of stargazer occurs in STA 7 on the West Coast of the South Island (where most of the biomass occurs), but it is predominantly caught as bycatch in bottom trawls targeting tarakihi, barracouta, flatfish, red cod and blue warehou.

3. There is no recent recorded customary catch for stargazer in STA 7, and it is not an important target species for recreational fishers. Giant stargazer is distributed widely in New Zealand waters typically around 50-300 m depth but is most common on the continental shelf around the South Island.

4. The Challenger stock (STA 7) comprises a sizeable portion (approximately one fifth) of the overall stargazer TACC (5536 tonnes). The environmental impacts and footprint of bottom trawl fisheries, including those that catch stargazer, are monitored and summarised annually.

1.1.2 Biology

5. Stargazer has a maximum lifespan of 25 years, and on average they reach sexual maturity at six years of age and around 40-55cm in total length. The biological characteristics of stargazer indicate that it is a medium productivity species (according to the Harvest Strategy Standard), meaning that it is less resilient to high levels of fishing pressure than high productivity species, but more resilient to high levels of fishing pressure than low productivity species.

6. So far there has been limited research on the biology and ecology of this species, and it is unknown to what extent non-fishing pressures may affect the abundance and distribution of the stock.

1.2 State of the stock

7. Target reference biomass, B_{MSY}, for STA 7 is assumed to be 40% of the virgin biomass (B_0). Under the Harvest Strategy Standard Guidelines, 40% B_0 is the recommended target reference point for stocks with productivity characteristics such as STA 7, in the absence of any other information.

8. In the most recent stock status assessment update (2020), STA 7 was assessed to be about as likely as not (40-60% probability) to be at or above target biomass and is predicted about as likely as not to remain at or above target at the current catch levels. The stock status (see figure 2) is also referenced against the associated soft limit of 20% (which triggers a requirement for a formal time-constrained rebuilding plan) and hard limit of 10% (where a closure of the fishery should be considered). The 2020 assessment determined that overfishing is about as likely as not (40-60% probability) to be occurring.

9. The 2019 West Coast South Island (WCSI) trawl survey biomass estimate is the second highest biomass estimate in the trawl survey time series; at a similar level to the series high in 2013. However, the confidence interval for this estimate shows there is high uncertainty around this estimate, as well as for all biomass estimates since 2005. Overall, the series suggests that biomass has at least remained stable since 2005.

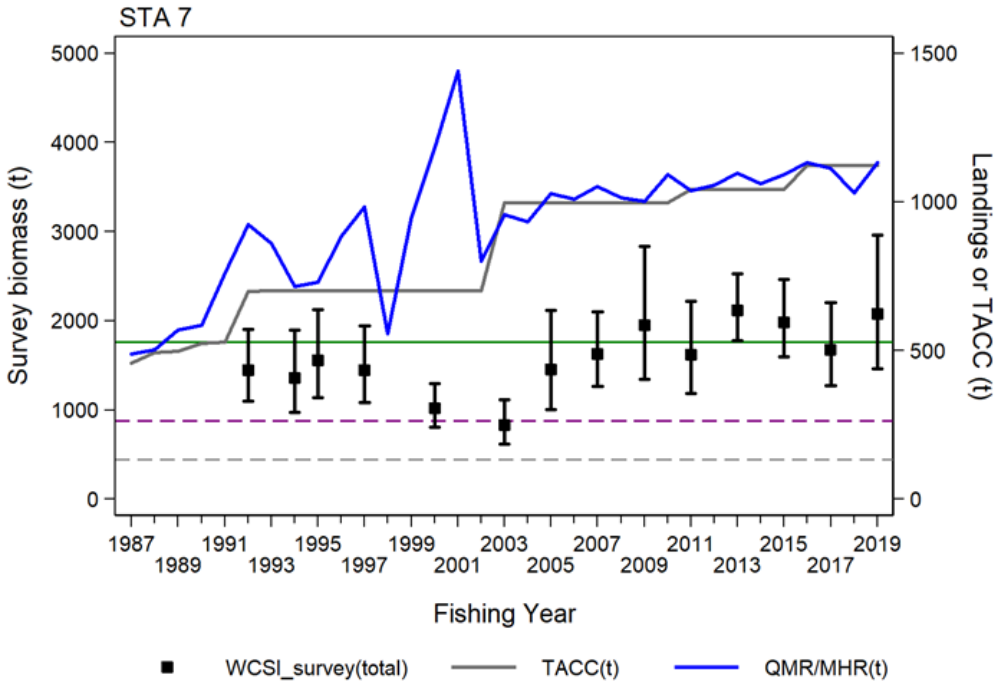


Figure 2: Comparison of West Coast South Island (WCSI) trawl survey indices with the commercial landings and the TACC (in tonnes) for STA 7. The agreed B_{MSY} proxy (the geometric average of the 2005-2017 WCSI survey biomass estimates = 1777 t) is shown as a green line; the calculated Soft Limit (=50% B_{MSY} proxy) is shown as the purple line and the Hard Limit (=25% B_{MSY} proxy) is shown as a grey line.

1.3 Catch information

1.3.1 Commercial

10. The vast majority of the TAC of STA 7 is taken by commercial fisheries. Figure 3 below shows that commercial catch of STA 7 has been at or above the TACC since its introduction to the QMS, and has steadily increased.

11. In the West Coast South Island trawl survey, stargazer biomass was mostly found in strata 100-200m in depth and south of Cape Foulwind. However, West Coast fishers are also reporting that abundance is at a 25 year high with increased catches in shallower waters (20-25m), particularly when targeting flatfish.

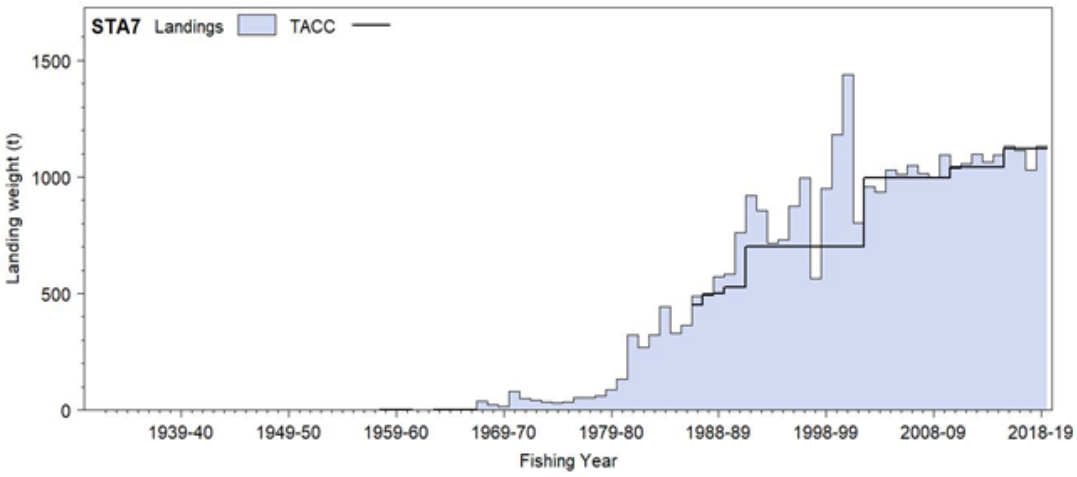


Figure 3: Reported commercial landings and TACC (in tonnes) for STA 7.

1.3.2 Customary Māori

12. The current level of Māori customary catch for finfish in QMA 7 is uncertain. Stargazer (Puwhara) have been reported under the Fisheries (South Island Customary Fishing) Regulations 1999 in past years, however, there is no recent recorded customary catch for stargazer in STA 7.

13. 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 do not require that customary catches be reported. The absence of customary reporting may also reflect that tangata whenua are using recreational fishing regulations for their harvest.

1.3.3 Recreational

14. Stargazer is not an important target species for recreational fishers. The results of the most recent National Panel Surveys of Marine Recreational Fishers (NPS) suggest recreational catch of stargazer in QMA 7 is small, with the estimated harvest of STA 7 being around 399 fish in the most recent survey (Table 2). This equates to approximately 891 kgs, based on the average weight of stargazer caught in this area (estimated from trawl survey data over the past decade).

Table 2: Summary of the NPS results for STA 7 in 2011/12 and 2017/18. CV: Co-efficient of variation.

Fish stock	2011/12 Estimated harvest (fish)	CV (%)	2017/18 Estimated harvest (fish)	CV (%)
STA 7	481	71	399	100

2 Allowances within the TAC

2.1 Māori customary interests

15. Stargazer is not identified as taonga species in the Te Waipounamu Iwi Forum Fisheries Plan, however, the Te Waka a Maui me Ona Toka Iwi Forum considers all fish species taonga. As mentioned above, there is no recent recorded customary catch for stargazer in STA 7.

16. Customary non-commercial catch of STA 7 is considered to be very low, and the current customary allowance is only one tonne.

17. The following customary management areas are located within STA 7 (Table 3). Commercial fishing is prohibited in the mātaitai reserves and Whakapuaka Taiāpure has no regulations restricting the harvest of stargazer.

Table 3: Customary fisheries areas within QMA 7

	Management type
Whakapuaka (Delaware Bay)	Taiāpure
Okuru/Mussel Point	Mātaitai Reserve
Tauperikaka	Mātaitai Reserve
Mahitahi/Bruce Bay	Mātaitai Reserve
Manakaiaua/Hunts Beach	Mātaitai Reserve
Okarito Lagoon	Mātaitai Reserve
Te Tai Tapu (Anatori)	Mātaitai Reserve
Te Tai Tapu (Kaihoka)	Mātaitai Reserve

2.2 Recreational interests

18. Recreational catch of stargazer in STA 7 appears to be minimal and the risk of exceeding the current four tonne recreational allowance is very low. There are currently no bag limits or other controls on recreational catch.

2.3 All other mortality caused by fishing

19. The allowance for all other mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing, including incidental mortality from fishing methods, or illegal fishing. For STA 7, the current allowance for other sources of mortality caused by fishing is set at 54 tonnes; which equates to approximately 5% of the TACC.

20. In 2018 you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fish stocks at an amount that equates to 10% of the TACC, unless there is evidence to suggest otherwise[47].

3 Options, submissions, and analysis

3.1 Summary of options

21. Three options are proposed for the TAC, TACC and allowances of STA 7 (Table 4). Option 3 was not consulted on and was introduced following the consultation period.

Table 4: Summary of proposed management settings for STA 7 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	1,181	1,122	1	4	54
Option 2	1,271 ↑ (8%)	1,178 ↑ (5%)	1	4	88 ↑
Option 3 (new)	1,271 ↑ (8%)	1,208 ↑ (8%)	1	4	58 ↑

3.2 Submissions

22. A total of five submissions or responses were received for STA 7 during the consultation period (Table 5). FINZ did not make specific comments on STA 7 but stated that they endorse Southern Inshore Fisheries' response relating to the stock.

Table 5: Submissions and responses received for STA 7 (in alphabetical order)

Submitter	Option Support		
	1	2	Other
Mike Currie			✓
Sealord Group Limited (Sealord)		✓	
Southern Inshore Fisheries Management Co. (Southern Inshore)			✓
Te Kupenga o Maniapoto Limited		✓	
Te Ohu Kaimoana			✓

3.3 Analysis

3.3.1 Input and participation of tangata whenua

23. Input and participation into the sustainability decision-making process is provided 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

[47] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

of their interests in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions. Te Waka a Māui me Ōna Toka Iwi (TWAM) Forum is the Te Wai Pounamu (South Island) iwi fisheries forum and covers STA 7 — it includes all nine tangata whenua Iwi of Te Wai Pounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu.

24. In March 2020, Fisheries New Zealand provided forum members with fisheries management material for discussion at a hui scheduled for 18 March 2020. This material included possible stocks for review in the 2020 sustainability round (including STA 7) for forum members to input into the proposed management settings. Due to COVID-related travel restrictions, the intended hui on 18 March 2020 was cancelled and input from the forum was requested electronically.

25. TWAM was provided information on the stocks before the 14 July 2020 hui but no specific feedback was received on STA 7. TWAM stated it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. It considers recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. TWAM concludes that only once all sectors are accurately reporting will the TAC and allowances be meaningful.

3.3.2 Kaitiakitanga

26. Information provided by Iwi Fisheries Forums and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are the way that tangata whenua exercise kaitiakitanga in respect to fish stocks.

27. While stargazer is not identified as taonga species in Te Waipounamu Iwi Forum Fisheries Plan, 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.

28. This proposal is especially relevant to Management 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.

3.3.3 Environmental principles (section 9 of the Act)

29. Because stargazer is predominantly taken as bycatch in a number of other target fisheries (tarakihi, flatfish, barracouta and red cod), a modest increase to the TACC of STA 7 is not likely to increase targeting or fishing effort for STA 7 and any changes in environmental effects associated with the fishery are therefore expected to be minimal.

30. Species more closely associated with STA 7 would be at higher risk from these changes. Fish commonly caught alongside stargazer in FMA 7, particularly tarakihi, flatfish and smooth skates could be at greater sustainability risks if fishing pressure increases in FMA 7 as the result of increasing the TACC of STA 7. Benthic impacts in parts of FMA 7 also have the potential to increase if the bottom trawl fisheries associated with STA 7 expand to areas where they were previously constrained from fishing due to high stargazer abundance.

31. Overall these potential risks are low because a modest increase to the TACC of STA 7 is unlikely to intensify fishing effort associated with trawl fisheries in FMA 7. While stargazer catch is a component of these fisheries it generally does not determine overall fishing activity or practices. Consequently, the proposed changes for STA 7 are unlikely to increase risks relating to marine mammals, seabirds, fish bycatch or the benthic environment.

3.3.4 Sustainability measures (section 11 of the Act)

32. 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, the natural viability of the stock concerned and any relevant fisheries plan.

33. As noted above, the effects of fishing on the stock and the aquatic environment from the proposed changes are likely to be small, given the small TACC increase proposed, that the TACC for stargazer has been fully/ over-caught, is a relatively minor component of other target fisheries in QMA 7 and generally does not determine overall activity or practices of these fisheries. Fishers report that they are having to avoid catching stargazer when targeting other species to mitigate deemed values penalties.

The Marlborough Environment Plan

34. There are no specific fisheries plans for STA 7, but there are some generic fisheries plans relevant to the stock, including regional plans within QMA 7. The Marlborough Environment Plan (MEP) sets out provisions relating to the disturbance of the seabed in Ecologically Significant Marine Sites. The proposed MEP contains a rule stating 'Disturbance of the seabed must not occur within a Category A Ecologically Significant Marine Site'. It prohibits dredging and bottom trawling within any Category A or B Ecologically Significant Marine Site but allows for these fishing methods to be discretionary activities within the buffer zone of these sites. There is very little catch of STA 7 around the Marlborough region (most catch of STA 7 occurs along the west coast in QMA 7) and the rules of the MEP do not stop fishers taking their annual catch entitlement (ACE) from other areas within this QMA.

National Inshore Finfish Fisheries Plan

35. The National Inshore Finfish Fisheries Plan (2019) provides guidance on management objectives and strategies for inshore finfish fisheries including stargazer. Fisheries New Zealand notes that the National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

3.4 Option 1 – *status quo*

36. Option 1 retains the current TAC and other settings for STA 7. This option takes into account that the STA 7 stock is estimated about as likely as not (40-60% probability) to be at or above the target biomass and is predicted about as likely as not to remain at or above target at the current catch levels. It also recognises that the 2020 stock assessment indicated the overfishing is about as likely as not to be occurring.

37. Option 1 carries the least risk in terms of environment and sustainability impacts of the options proposed. Noting that STA 7 biomass has been at least stable since 2007, this would not allow for increased utilisation of the stock.

38. None of the submissions received during consultation were specifically in support of this option.

3.5 Option 2

39. Option 2 proposes a modest increase to the TAC of STA 7 (90 tonnes, 8%). Within this TAC there would be a 5% increase to the TACC (56 tonnes) and a 63% increase to the other mortality fishing allowance (34 tonnes). This option takes into account that the West Coast South Island (WCSI) trawl survey has shown STA 7 biomass to be stable over the past decade,

with the most recent estimate (2019) being close to the highest in the time series, and that West Coast fishers are reporting abundance of stargazer is at a 25 year high.

40. This option would allow additional utilisation and value from the fishery and move the other mortality fishing allowance towards the standardised 10% of commercial catch for inshore stocks caught predominantly by trawling.

41. The current customary and recreational allowances of 1 and 4 tonnes (respectively) are considered to be appropriate and would remain unchanged under this option, given best available information suggests customary and recreational catch of stargazer catch remains low.

42. Increasing the TAC, TACC and other sources of fishing related mortality is unlikely to impact on, or be impacted by, the taiāpure of Whakapuaka (Delaware Bay), or the mātaitai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), and Te Tai Tapu (Kaihoka). Commercial fishing is prohibited in the mātaitai reserves and the taiāpure has no regulations restricting the harvest of stargazer.

43. Option 2 would contribute to the achievement of 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).

44. Te Kupenga o Maniapoto and Sealord submitted in support of Option 2. Te Ohu Kaimoana also supported the TACC increase under Option 2 but noted they do not support the proposed increase in other mortality allowance, citing that stargazer are more robust compared with other inshore stocks. Te Ohu Kaimoana noted that other stocks in this area (SNA 7 and GUR 7) have proposals for setting this allowance lower than 10% of the commercial catch based on evidence for a reduction in this type of mortality. Given the robust physiological nature of stargazer, Te Ohu Kaimoana believe the other mortality allowance for stargazer should also be set lower (they propose to retain the allowance at its current level). Along similar lines, Southern Inshore Fisheries Management Co. stated that an increase to other mortality caused by fishing should not be made arbitrarily, since the allowance can vary significantly depending on the fishery, type of fishing gear, and participants involved.

45. We acknowledge that some features of stargazer (hard body, lack of scales) may help stargazer to be more resilient against unintended fishing mortality. However, the extent to which these features impacts their level of fishing mortality is unknown. Tagging trials conducted on stargazer from 2005 to 2008 around East Coast South Island and Chatham Rise have shown few tag returns, with only two tags returned from a total of 986 stargazers[48]. This indicates that other fishing mortality could be higher than expected. The proposed increase of 34 tonnes to this allowance under Option 2 better reflects this information and uncertainty

46. Fishers on the West Coast have expressed that they support an increase in TACC as the current TACC is constraining their ability to catch other target species (because fishers are having to avoid catching stargazer to mitigate deemed values penalties).

47. Overall, Fisheries New Zealand accepts the sustainability and environmental risks under this option are greater than for Option 1, but considers that these risks are low.

48. The estimated economic value of the proposed Option 2, based on STA 7 2019/20 port prices, suggests an additional $63,586 value (primarily in the domestic market) compared with Option 1 (status quo). Port price is what the commercial fisher receives, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.

[48] Data derived from FNZ/MPI Tag Database

3.6 Option 3

49. Two submitters proposed a different approach that would see a lesser increase to the allowance for sources of fishing related mortality. As this is different to the two options consulted on for STA 7, a third option has been included for consideration.

50. Option 3 proposes the same modest increase to the TAC of STA 7 as Option 2 (90 tonnes, 8%), but within this would be smaller increase to the other mortality allowance (4 tonnes), and a larger increase to the TACC (86 tonnes, 8%). Current customary and recreational allowances would both be retained under this option.

51. These changes would allow the greatest utilisation and value from the fishery of proposed options, but sustainability and environmental risks under this option would be higher compared with both other options since there would be a greater increase to the TACC, and therefore a greater potential for fishery impacts in the area.

52. As discussed under Option 2 above, Te Ohu Kaimoana and Southern Inshore Fisheries generally disagree with increasing the other mortality caused by fishing allowance. This option better aligns with the views of Te Ohu Kaimoana and Southern Inshore Fisheries, as it proposes to implement a smaller increase in the other mortality allowance alongside the increase in TACC.

53. Te Kupenga o Maniapoto Limited have stated that they support the views of Te Ohu Kaimoana and would therefore also support this option.

54. As with Option 2, Option 3 would contribute towards the achievement of the Te Waipounamu Iwi Forum Fisheries Plan management objectives and would not impact on, or be impacted by, taiāpure or mātaitai reserves within the area. It would provide a greater economic benefit with, based on STA 7 2019/20 port prices, an additional $97,649 value (primarily in the domestic market) compared with Option 1 (status quo).

3.7 Other options proposed by submitters

55. Mike Currie made a submission in favour of a more conservative approach to managing the stock, indicating opposition to all options presented and stating that the catch should be banned rather than increased due to the endemic status of giant stargazer as well as what Mr Currie perceives to be a general lack of information surrounding the stocks.

56. Fisheries New Zealand considers that current information on STA 7 is generally good, and the latest assessment for the stock and data inputs were both regarded as high quality.

57. There were no suggestions raised during consultation for other controls or additional monitoring for STA 7.

4 Conclusion and recommendations

58. Fisheries New Zealand considers that a small increase to the TAC of STA 7 would provide utilisation benefits without significantly impacting on the sustainability of the fishery. The stock biomass appears to be at or above target and trawl survey indices suggest the biomass has at least remained relatively stable following two increases to the TACC of the stock. Options 2 and 3 of this paper are generally favoured over Option 1 (status quo) as they would provide greater utilisation and value from the fishery, and contribute towards the achievement of the Te Waipounamu Iwi Forum Fisheries Plan management objectives.

59. Under Option 3 there would be a smaller allowance set for other sources of fishing related mortality compared to Option 2, and a correspondingly larger increase to the TACC (8% compared with 5% under Option 2). Overall, however, Fisheries New Zealand's preferred option is Option 2. The more modest increase in the TACC under Option 2 is appropriate given

the uncertainty regarding stock biomass and any environmental and sustainability impacts for STA 7 and its associated fisheries. The other mortality allowance proposed under Option 2 is higher compared with the other options and moves the allowance towards the standardised 10% level for inshore stocks caught mainly by trawl, while still taking into account the robust nature of stargazer.

60. On this basis, we recommend Option 2; an 8% increase to the TAC of STA 7, a 5% increase to the TACC and a 63% increase to the other mortality allowance.

5 Decision for STA 7

Option 1

Agree to retain the STA 7 TAC at 1,181 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at one tonne;
ii. Retain the allowance for recreational fishing interests at four tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 54 tonnes
iv. Retain the STA 7 TACC from at 1,122 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the STA 7 TAC at 1,271 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at one tonne;
ii. Retain the allowance for recreational fishing interests at four tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 54 to 88 tonnes;
iv. Increase the STA 7 TACC from 1,122 tonnes to 1,178 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the STA 7 TAC at 1,271 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at one tonne;
ii. Retain the allowance for recreational fishing interests at four tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 54 to 58 tonnes;
iv. Increase the STA 7 TACC from 1,122 tonnes to 1,208 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

7 / 8 / 2020

Snapper (SNA 7)

Pagrus auratus, Snapper, Tamure, Kouarea

Red gurnard (GUR 7)

Chelidonichthys kumu, Red gurnard, Kumukumu

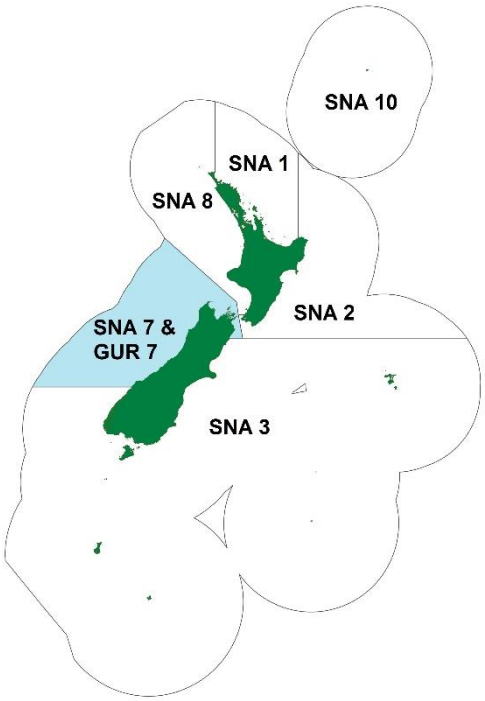


Figure 1: Quota management area (QMA) 7 (Challenger/Central (Plateau) for snapper (SNA 7) and red gurnard (GUR 7), highlighted in blue. A snapper and red gurnard are pictured on the left.

Table 1: Summary of options proposed for SNA 7 and GUR 7 from 1 October 2020. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SNA 7	**Option 1** *(Status quo)*	545	250	20	250	25
	Option 2	545	300 ↑ (20%)	20	200 ↓	25
	Option 3	645 ↑ (18%)	350 ↑ (40%)	20	250	25
	Option 4 (new)	545	410 ↑ (64%)	20	90 ↓	25
GUR 7	**Option 1** *(Status quo)*	1,176	1,073	15	38	50
	Option 2	1,283 ↑ (9%)	1,180 ↑ (10%)	15	38	50

New option incorporated following consultation	Yes (Option 4 for SNA 7)
Total submissions received	39

Number of submissions received for each option

SNA 7		**GUR 7**	
Option 1 (*Status quo*)	23	Option 1 (*Status quo*)	26
Option 2	0	Option 2	6
Option 3	10	Other	**10**
Option 4 (new)	Not consulted on		
Other	10		

1 Why are we proposing that you review the TAC and TACC?

1. Last year a review of the majority of stocks in the top of the south multispecies trawl fishery was completed, and a commitment made to review SNA 7 once an updated stock assessment had been completed. The updated stock assessment has since been completed. It suggests the stock is about as likely as not to be at or above the target biomass, with forward projections suggesting biomass will continue to increase. There is the potential for more snapper to be taken, while still maintaining the stock at or above the target. However, there is uncertainty associated with the magnitude of a potentially-strong 2017 year class and these forward projections.

2. As a continuation of the multispecies review catch trends across top of the south trawl species have also been analysed, and suggest an upward trend in GUR 7. This stock is assessed to be very likely at or above the target biomass, overfishing is unlikely to be occurring and the three most recent trawl survey indices are the highest in the series. The interdependencies between snapper and red gurnard suggest any increase in the snapper TAC and TACC could result in more red gurnard being taken. This review considers whether a modest increase in GUR 7 could be provided given the fishery continues to perform well.

1.1 About the stocks

1.1.1 Fisheries characteristics

3. Both snapper and red gurnard are important to customary, recreational and commercial fishers. Snapper fisheries are one of the largest and most valuable coastal fisheries in New Zealand. Since 2013/14, over 80% of snapper catch in SNA 7 has been taken as bycatch from inshore trawl fisheries operating within FMA 7, particularly within Tasman and Golden Bays. Red gurnard is also primarily a bycatch species of target fisheries for different species including flatfish as well as snapper. However, some target fishing for red gurnard also occurs.

1.1.2 Biology

4. Snapper stocks are characterised by highly variable recruitment with strong recruitment periods every 7-10 years. Red gurnard have a fast growth rate and relatively short lifespan, and fluctuations in recruitment tend to result in large fluctuations in stock biomass.

5. 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. Red gurnard is a higher productivity stock than snapper as they are shorter lived and have relatively high natural mortality. An appropriate management strategy for such species 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 is to keep catches low during periods of low recruitment, and to gradually raise them when strong year-classes occur, to manage for high economic benefits in the medium-term.

1.2 SNA 7 workshops

6. Given the importance of the SNA 7 fishery to customary, recreational and commercial fishers, Fisheries New Zealand convened a series of workshops between October 2019 and March 2020 inviting all sectors to participate and contribute to the development of management options for snapper as part of this review. Invitees consisted of representatives or individuals with associated expertise from iwi, commercial, recreational and environmental sectors.

7. Option 3 presented in this paper was developed as a result of these workshops, and was the option that most participants supported, with the following caveats:

    - It is 'in principle', with each sector and/or individual being entitled to submit, or respond, to the consultation document after further discussions within their sector or networks.

- There would be an ongoing commitment to hold another workshop(s) to monitor the fishery. Monitoring could include accessing geospatial positioning data to monitor changes in commercial fishing behaviour, new trawl survey information, and compliance reports (recreational and commercial). Participants also expressed an interest in continuing to work together to explore innovative management opportunities for a rebuilt fishery.
- Participants would continue to test if the recreational fishing regulations are appropriate to support responsible fishing practices (e.g., the group was supportive of "fishing for the fridge" not "fishing for the freezer").

8. Option 3 was preferred by most participants because they considered the stock has rebuilt from the historically low levels of biomass in the early 2000s, and that an increase in the TAC and TACC would be sustainable and provide benefits in terms of the overall value of the fishery. The final scientific projections for SNA 7 were not available to participants in time for the final workshop but were subsequently presented in the consultation paper.

9. Participants also discussed that the 2016 decision for recreational allowances was based on preliminary estimates of recreational catch (of 306 tonnes) from a survey that was underway at the time but not complete. When the survey was completed and analysed, the final estimate of recreational catch was much lower than the preliminary estimate. Noting that the various estimates of recreational catch show a steep increasing trajectory, many participants considered that retaining the current recreational allowance of 250 tonnes (as per Option 3) reflects the increased availability of snapper and likely catches over the next few years.

10. Te Ohu Kaimoana participated in the workshops but did not support the option ultimately developed (Option 3). Te Ohu Kaimoana's preferred approach is to address the error made in setting the TAC in 2016 and reduce the recreational allowance to 90 tonnes (the allowance prior to the 2016 review), with the additional tonnage allocated to customary (if needed) and to the TACC.

1.3 State of the stocks

1.3.1 SNA 7

11. The most recent stock assessment update assesses the stock status of SNA 7 as about as likely as not to be at or above the target biomass of 40% SB_0 (40-60% probability). The stock status is also referenced against the associated soft limit of 20% (which triggers a formal time-constrained rebuilding plan) and hard limit of 10% (where a closure of the fishery should be considered). Biomass has increased considerably since 2010 and has a high probability of being above the soft limit (Figure 2).

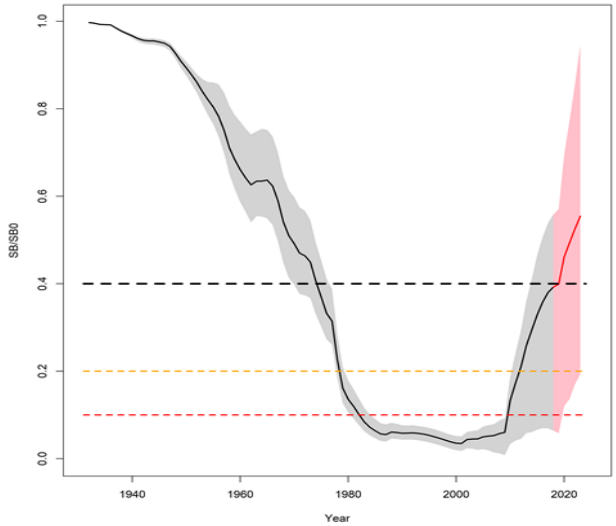


Figure 2: Annual trend in spawning biomass relative to the interim target biomass (40% SB_0) for the base model, including the estimation of recruitment for the 2017-year class. The solid black line represents the median and the shaded area represents the 95% confidence interval. The projection period (2019-2024), based on current catch, is the solid red line. The black dashed line is the interim target, orange dashed line is the soft limit and the red dashed line is the hard limit.

12. The stock assessment provides estimates of current and equilibrium yield, based on the fishing mortality rate that would maintain the target biomass level (40% SB_0). These are estimated to be about 550-700 tonnes per year, but are uncertain because this stock is still rebuilding and is far from an equilibrium state.[49] The stock status and yield estimates are also subject to uncertainties associated with the strength of recent recruitment, including a potentially-exceptionally strong year class in 2017 that was observed in the 2019 trawl survey (Figure 3).

13. The updated stock assessment was unable to reconcile a conflict in the CPUE and age composition data. The West Coast South Island (WCSI) trawl survey biomass estimates of recruited snapper reveal a larger increase (over 10-fold) in relative abundance compared to the CPUE indices. A full stock assessment scheduled for 2021-22 will investigate splitting the fishery into two: snapper target and FLA target to try and resolve this.

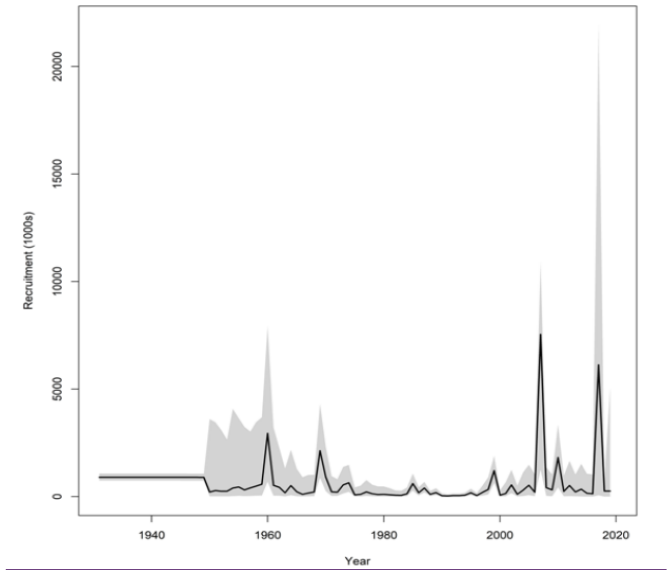


Figure 3: Estimates of annual recruitment (numbers of fish) from the base assessment model. The line represents the median of the Markov chain Monte Carlo (McMC) samples and the shaded area represents the 95% confidence interval.

[49] All TAC options presented in this paper are within the current and equilibrium yield estimates of 550 – 700 tonnes per year.

14. Given the uncertainties associated with the strength of recent recruitment, additional model sensitivities were conducted to investigate the influence of key assumptions in the estimation of stock status. The “Recruit2016” model was run, which assumes the 2017-year class is of average size (Figure 3) rather than the exceptionally strong year class (2017) observed in the 2019 trawl survey (core + SNA). The Recruit2016 model results in a lower estimate of future stock status (Figure 4).

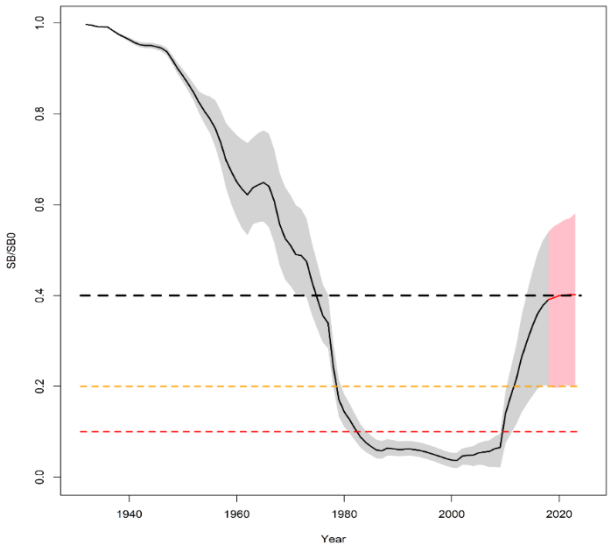


Figure 4: Annual trend in spawning biomass relative to the interim target biomass (40% SB_0) for the Recruit2016 model, assuming average recruitment for the 2017-year class. The solid black line represents the median and the shaded area represents the 95% confidence interval. The projection period (2019-2024), based on current catch, is the solid red line. The black dashed line is the interim target, orange dashed line is the soft limit and the red dashed line is the hard limit.

15. To provide probabilities for future projections two recruitment scenarios were run for the base case and the Recruit2016 model; one equivalent to the current TACC of 250 tonnes, and the other equivalent to the Option 3 TACC of 350 tonnes. The base case suggests the probability of SNA 7 remaining at or above the target in 2024 is 91% at the current TACC, and 90% under the Option 3 TACC. If, however, the 2017-year class is of average size the probabilities significantly reduce to 51% at the current TACC and 45% under Option 3 TACC.

16. Snapper stocks are characterised by variable recruitment with strong recruitment periods every 7-10 years. As snapper recruitment is known to be associated with warm water temperatures, it is possible that the number of years between strong recruitment could be reducing with increasing sea temperatures. If this is the case, then B_0 will have increased and stock status would be lower than predicted by the model.

17. Fisheries scientists have identified that further work is required, generally, to determine whether warmer conditions, better recruitment and possibly better growth in New Zealand’s snapper fisheries (although there is no indication of a change in growth rates in SNA 7) indicates a regime shift or a period of greater productivity for this species. If this is the case, the stock status may need to be reviewed to account for any productivity change in the future.

1.3.2 GUR 7

18. The stock status of red gurnard is estimated to be very likely (>90% probability) to be at or above target, based on the 2019 biomass indices (Figure 5). Overfishing is also unlikely to be occurring. The proxy B_{MSY} target (relative biomass) for this fishery is 460 tonnes with a soft limit of 50% of the target and a hard limit of 25% of the target.

19. GUR 7 appears to be experiencing a recruitment pulse (consecutive years of good recruitment) as the 2015, 2017 and 2019 WCSI trawl survey relative biomass indices have been the highest in the series. The Plenary regards the series as a reliable index of abundance. The 2019 index

is lower than the 2015 and 2017 indices and may indicate a slight decline, however it is still above the long-term mean.

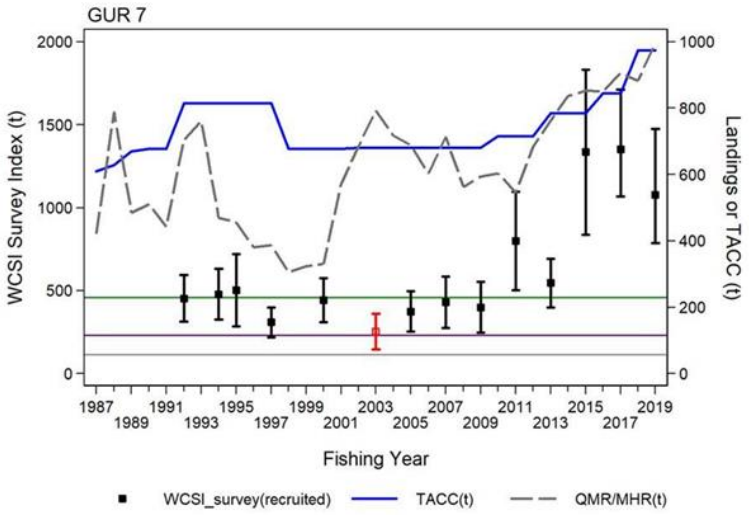


Figure 5: Comparison of GUR WCSI trawl survey indices with commercial landings (grey dashed line) and TACC (blue line) for GUR 7. The management target B_{MSY} proxy of 460 t (green line); the soft limit (purple line); the hard limit (grey line).

1.4 Catch information

1.4.1 Commercial

20. Snapper and red gurnard, along with flatfish, are key fish stocks in the Top of the South mixed trawl fishery. Reports from commercial fishers for the last few years have been that due to its abundance it is difficult for fishers to avoid snapper. To avoid snapper commercial fishers have modified headline heights, changed target species and fishing depths, and increased net mesh size over the last few years. The changes in fishing practices to avoid snapper are resulting in fishing effort being shifted to other fish stocks, and potentially constraining the catch of other target species.

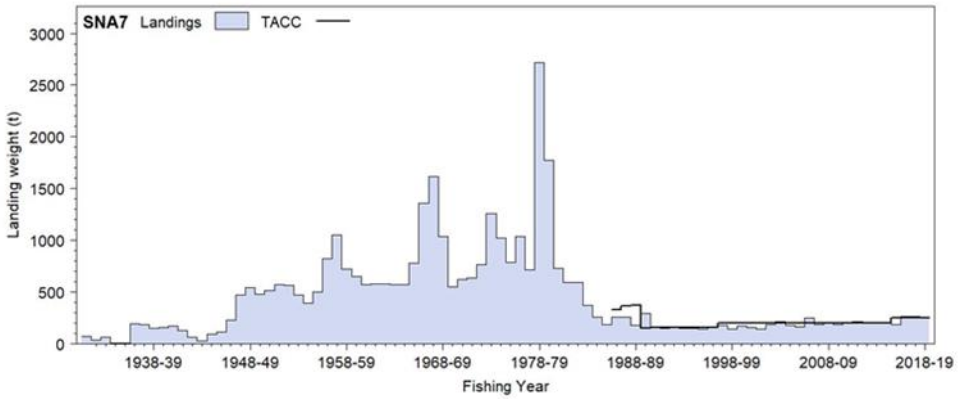


Figure 6: Total reported landings and TACC for SNA 7.

21. Approximately 80% of the snapper catch in SNA 7 (Figure 6) is harvested in Tasman and Golden Bays by about nine vessels. Snapper distribution is now extending further down the West Coast of the South Island resulting in a wider spread of catch across the whole of SNA 7.

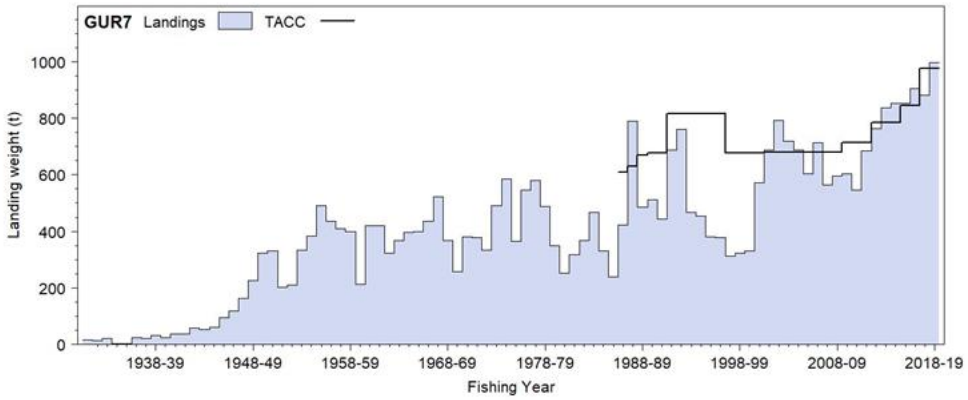


Figure 7: Total reported landings and TACC for GUR 7.

22. Red gurnard catch is evenly spread over Golden and Tasman Bay and down the West Coast of the South Island. Catch has been steadily increasing over the last few years (Figure 7).

Interdependencies in the Top of the South mixed trawl fishery

23. Analysis of the impact of changes to TACC's for the various species in the Top of the South mixed trawl fishery highlighted the interdependencies between snapper, red gurnard and flatfish, in particular that:

- When targeting snapper, the typical bycatch mix (greatest to lowest proportion) is red gurnard, flatfish and rig
- When targeting flatfish, the typical bycatch mix (greatest to lowest proportion) is red gurnard, snapper and John dory
- When targeting red gurnard, the typical bycatch mix (greatest to lowest proportion) is snapper, John dory and rig.

24. An increase in snapper TAC and TACC is therefore likely to increase the catch of red gurnard and flatfish given the interdependencies between these three fish stocks. Flatfish has adequate headroom in its TACC to address any increase in catch as a result of an increase in snapper TACC. Analysis of the catch of red gurnard, rig and John dory for this fishing year to-date indicates that only red gurnard catch continues to track above previous catch trends. The 10% increase in TACC to rig and John dory last year are considered adequate to cover any potential increase in catch associated with an increase in the SNA 7 TACC.

1.4.2 Customary Māori

25. The current level of Māori customary catch for finfish in QMA 7 is uncertain. Snapper (*Tamure*, *Kouarea*) and red gurnard (*Kumukumu*) have been reported under the Fisheries (South Island Customary Fishing) Regulations 1999 in past years. However, there is no recent recorded customary catch for these species.

26. The absence of customary reporting may reflect that tangata whenua are using recreational fishing regulations for their harvest. 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 do not require that customary permits or catches be reported.

1.4.3 Recreational

27. Recreational fishers advise the improved likelihood of catching snapper has seen greater participation in the Tasman and Golden Bay recreational fishery, resulting in increases in catch of other important recreational species such as red gurnard. The latest National Panel Survey of Marine Recreational Fishers (NPS) (2017/18) results are consistent with this feedback (Table 2).

Table 2: Summary of the NPS results from QMA 7 for snapper and red gurnard in 2011/12 and 2017/18

Fish stock	2011/12 Estimated harvest (tonnes)	2017/18 Estimated harvest (tonnes)
SNA 7	89	147.4
GUR 7	12.5	37.6

28. The results of the most recent (2017) National Panel Survey of Marine Recreational Fishers estimated that recreational SNA 7 catch had increased to approximately 147 tonnes (noting that the National Panel Survey of Marine Recreational Fishers is a snapshot of fishing activity over a fishing year and there may be some variability between years). Additionally, results from a Fisheries New Zealand research project (MAF2014/04) indicate that recreational fishing effort for snapper in SNA 7 has increased between 2017 and 2019 and the mean weight of individual fish caught increased by 12% between 2015 and 2018.

29. The stock assessment model for SNA 7 includes non-commercial catch and assumes continued growth based on a range of parameters including recreational catch estimates from the 1987 tagging programme, and aerial and panel surveys, combined with the model's estimates of exploitation rates, and the snapper biomass each year (see Figure 8).

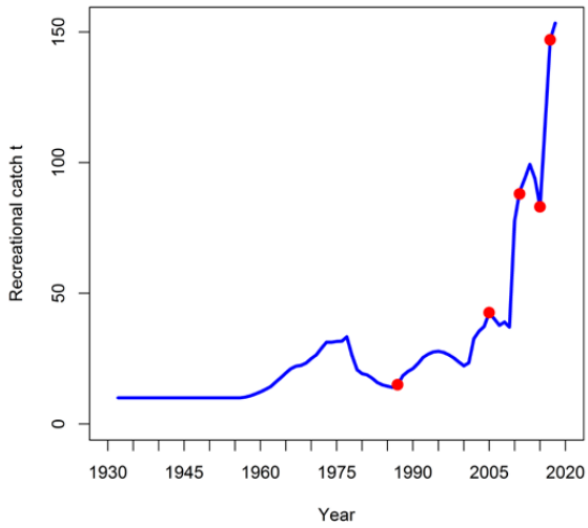


Figure 8: Annual recreational catch from SNA 7 included in the stock assessment model. The red points represent individual estimates of recreational catch for SNA 7 (Langley, 2020)

30. Landings under section 111 (recreational catch taken by commercial fishers) for SNA 7 for the 2018/19 fishing year were approximately 14.5 tonnes, but negligible for GUR 7.

31. Based on the above information it is likely that recreational catch for snapper has increased significantly since the 2017 National Panel Survey estimated it at 147 tonnes. All options consulted on for SNA 7 took this into account to varying degrees.

2 Allowances within the TAC

2.1 Māori customary interests

32. The customary allowance for SNA 7 was last increased in 2016 from 16 tonnes to 20 tonnes. GUR 7 customary allowance was increased in 2017 from 10 tonnes to 15 tonnes. Noting the absence of customary reporting in much of SNA 7 and GUR 7 both increases reflected the likelihood of increased customary catch as abundance of snapper and gurnard increases.

During consultation, Fisheries New Zealand advised that we consider these allowances remain appropriate.

33. There are a number of customary management areas in QMA 7 (Table 3) that provide for tangata whenua to manage their fisheries under customary fishing regulations and the Act. Commercial fishing is prohibited in mātaitai, and there are no regulations relating to snapper and red gurnard in the Whakapuaka Taiāpure.

Table 3: Customary fisheries areas within QMA 7

Name	Management type
Whakapuaka (Delaware Bay)	Taiāpure
Okuru/Mussel Point	Mātaitai Reserve
Tauperikaka	Mātaitai Reserve
Mahitahi/Bruce Bay	Mātaitai Reserve
Manakaiaua/Hunts Beach	Mātaitai Reserve
Okarito Lagoon	Mātaitai Reserve
Te Tai Tapu (Anatori)	Mātaitai Reserve
Te Tai Tapu (Kaihoka)	Mātaitai Reserve

2.2 Recreational interests

34. In 2016 the recreational allowance for snapper was increased from 90 tonnes to 250 tonnes. This was based on preliminary estimates of recreational catch (of 306 tonnes) from a survey that was underway at the time but not complete. When the survey was completed and analysed, the final estimate of recreational catch was much lower than the preliminary estimate. As noted, however, the various estimates of recreational catch show a steep increasing trajectory for recreational snapper catch in SNA 7. On this basis Fisheries New Zealand proposed options for consultation ranging from 200 to 250 tonnes.

35. The recreational allowance for red gurnard was increased by 50% in 2019 in Part 1 of the multi-species review. During consultation, Fisheries New Zealand advised we consider this allowance is an accurate reflection of recreational take and did not propose any changes to the recreational allowance for red gurnard this year.

2.3 All other mortality caused by fishing

36. 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 current settings for other sources of morality are equivalent to 10% of the commercial catch for snapper and 5% of the commercial catch for red gurnard.

37. As part of your decisions for the 1 October 2018 Sustainability Round Review you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fish stocks at an amount that would equate to around 10% of the TACC, unless there is evidence to suggest otherwise[50].

38. Fisheries New Zealand is not proposing to change the other mortality allowance for snapper and red gurnard. If the TACC is increased this would reduce the allowance relative to the TACC, which takes into account that there have been significant improvements in commercial fishing practices in QMA 7. The recent SNA 7 stock assessment notes there is evidence that other mortality in SNA 7 has declined steadily since 2006. Given the interdependencies between snapper and red gurnard in the Top of the South mixed trawl fishery, it is reasonable to consider that other mortality in GUR 7 could also be declining.

3 Options, submissions, and analysis

[50] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

3.1 Summary of options

39. Four options are proposed for the TAC, TACC and allowances of SNA 7, and two options are proposed for the TAC, TACC and allowances of GUR 7 (Table 4). Option 4 for SNA 7 was not consulted on and was introduced following the consultation period.

Table 4: Summary of proposed management settings for SNA 7 and GUR 7 from 1 October 2020. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
SNA 7	**Option 1** *(Status quo)*	545	250	20	250	25
	Option 2	545	300 ↑ (20%)	20	200 ↓	25
	Option 3	645 ↑(18%)	350 ↑ (40%)	20	250	25
	Option 4 (new)	545	410 ↑ (64%)	20	90 ↓	25
GUR 7	**Option 1** *(Status quo)*	1,176	1,073	15	38	50
	Option 2	1,283 ↑ (9%)	1,180 ↑ (10%)	15	38	50

3.2 Submissions

40. Table 5 below gives an overview of submissions and responses received on SNA 7 and GUR 7 during the consultation period. For a more representative view of submitters/responders and their preferred option(s) see the full submissions in the separate document titled *"Public Submissions Received for 1 October 2020 Review of Sustainability Measures"*.

Table 5: Summary of submissions and responses for each option proposed for SNA 7 and GUR 7. Note that some submitters supported a proposed option but noted other preferences too.

Submitter	Options Supported						
	SNA 7				GUR 7		
	1	2	3	Other	1	2	Other
Andy Brannen	✓				✓		
Armin Auerhammer	✓				✓		
Mohua (Golden Bay) Blue Penguin Trust				✓			✓
Chris Meek	✓				✓		
Chris Parris			✓				
Dawnbreakers Fishing Club Nelson	✓			✓	✓		✓
Duan Evans	✓				✓		
Edwin Pollard	✓						
Erin Hawke	✓				✓		
Environmental Defence Society Incorporated	✓				✓		
Fisheries Inshore New Zealand Ltd (FINZ)			✓			✓	
Fish Mainland			✓		✓		
Forest and Bird Golden Bay Branch	✓			✓	✓		✓
Friends of Golden Bay Inc (FoGB)	✓				✓		
Gene Klein	✓				✓		
Gwen Struik				✓			✓
John Davis	✓				✓		
John Leather	✓				✓		

John McKie	✓				✓		
Lester Brewer	✓				✓		
Liam Meek	✓				✓		
Love Our Little Blues	✓				✓		
Marlborough Recreational Fishers Association				✓			✓
Mapua Boat Club			✓		✓		
Mike Currie				✓			✓
New Zealand Sport Fishing Council (NZSFC) and LegaSea Joint Submission			✓	✓			✓
Oliver Meek	✓				✓		
Pacific Networks Limited			✓			✓	
Rick Cosslet	✓			✓	✓		✓
Rod Barker	✓				✓		
Sealord Group Limited (Sealord)			✓			✓	
Shane Mills				✓			✓
Southern Inshore Fisheries Management Co. (Southern Inshore)			✓				✓
Tasman and Sound Recreational Fishers' Association Inc. (TASFISH)			✓		✓		
Tasman Bay Guardians - Lisa Savage	✓				✓		
Tasman Bay Guardians - Stew Robinson	✓				✓		
Te Kupenga o Maniapoto Limited			✓			✓	
Te Ohu Kaimoana				✓		✓	
Tracey Meek	✓				✓		
TOTAL: 39	**23**	**0**	**10**	**10**	**25**	**6**	**10**

41. The input and participation, responses and submissions received for snapper and red gurnard were wide ranging but generally followed five common themes as set out below:

Sustainable utilisation

42. The majority of recreational fishing organisations, industry and Te Ohu Kaimoana noted the increase in abundance of these fish stocks, that this was supported by scientific assessment, and that there is an opportunity for further utilisation of these stocks. Te Ohu Kaimoana, industry and a few others reflected on the impacts of COVID-19 and the importance of food supply.

A precautionary approach

43. Some recreational and most environmental individuals or organisations submitted on the status quo and advocated for a precautionary approach, noting the uncertainty in the 2017-year class, and that they are not experiencing the level of fish abundance suggested.

Wider fisheries management measures and policies

44. Most environmental and recreational groups sought a management plan and/or spatial separation and method prohibitions, while commercial organisations noted fisheries policies generally (28N rights, deemed values, other sources of mortality).

Ecosystem based fisheries management

45. Some submissions focused on sustainable food harvest for everyone, the impacts of fishing on the environment and declining marine mammals, and the importance of ecosystem services to ensure thriving fish stocks.

Apportioning of the TAC between recreational and commercial sectors

46. There were polarised views on how the TAC should be apportioned between the recreational and commercial sectors, and also on impacts on the Deed of Settlement. This was particularly in light of the 2016 decision which was based on preliminary estimates of recreational catch that proved to be higher than the final estimates. Te Waka a Maui consider the SNA 7 review is compromised by the inaccuracy of recreational catch estimates.

3.3 Analysis

3.3.1 Input and participation of tangata whenua

47. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

48. Te Waka a Māui me Ōna Toka Iwi Forum (TWAM) is the Te Wai Pounamu (South Island) iwi fisheries forum — it includes all nine tangata whenua Iwi of Te Wai Pounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu.

49. At the 14 July 2020 hui, TWAM stated it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. It considers recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. The forum concluded that only once all sectors are accurately reporting will the TAC, TACC and allowances be meaningful.

50. Overall TWAM agrees there is an increase in abundance of snapper in SNA 7 but given that recreational catch is poorly estimated in SNA 7 the review and its outputs are, however, flawed. TWAM also has concerns about unconstrained recreational catch, as raised in Te Ohu Kaimoana's response. Some iwi within TWAM indicated support for Te Ohu Kaimoana's response and the new Option 4. Overall, however, TWAM did not conclude with a preferred option.

3.3.2 Kaitiakitanga

51. Snapper and red gurnard are identified as taonga species in Te Waipounamu Iwi Forum Fisheries Plan. 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.

52. Options 2, 3 and new Option 4, for snapper and Option 2 for red gurnard would provide benefits in terms of the overall value of these fisheries and are consistent with the Te Waipounamu Iwi Forum Fisheries Plan management objectives, particularly Objective 3.

53. Fisheries New Zealand considers the proposals in this paper will not impact or be impacted by the customary management areas established in QMA 7 (refer Table 3). Commercial fishing is

prohibited in the mātaitai reserves and the taiāpure has no regulations restricting the harvest of snapper or red gurnard. Furthermore, the large area of QMAs means that any TAC increase could be taken from other areas within QMA 7 and outside of these customary management areas.

3.3.3 Environmental principles (section 9 of the Act)

54. All environmental principles under section 9 of the Act must be taken into account. The key environmental interactions within the SNA 7 and GUR 7 fisheries are:

Marine mammals

55. The proposed TACC increases for snapper and red gurnard could result in additional targeted fishing effort in these fisheries. However, the risk of the presented options increasing the adverse effects on marine mammals is considered low. There have only been two observed captures of New Zealand fur seals in trawls targeting snapper (nationwide) between 2002/03 and 2016/17 (noting there is low observer coverage of inshore trawlers).

56. In addition, the Hector's and Māui Dolphin Threat Management Plan (the plan) guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins. The risk from trawl in SNA 7 and GUR 7 is considered low and the risk to the dolphins from trawling around the South Island is largely managed under the current trawl restrictions. However, you have asked for a further review on how residual fisheries risk to Hector's dolphins in the South Island are managed. This review will consider:

- The existing trawl restrictions to ensure they are effective, enforceable and avoid the possibility of trawl-related mortality. This may include the expanded use of trawl restrictions including low tow speed and low height of trawl nets.
- A new management approach to respond to the event of a capture in areas not closed to trawl fishing, which would be supported by a significant expansion of the Crown-funded on-board camera programme on inshore set-net and trawl vessels within Hector's dolphin habitat in the South Island.

57. Public consultation on this additional review is expected towards the end of the year.

Fish bycatch

58. Fish and invertebrate bycatch information in snapper target fisheries is primarily from trawl surveys. Trawl surveys targeting juvenile snapper in Tasman and Golden Bays have captured more than 50 finfish species including spiny dogfish, red cod, barracouta, tarakihi, hake and jack mackerel. Invertebrates included sponges, mussels, octopus and arrow squid. An increase in trawl effort could result in more of these species being caught; however, trawl research surveys use a much smaller mesh than commercial vessels and cover a wider area. Fisheries reporting regulations require such catch to be reported.

59. A recent analysis (2020) of flatfish in FMA 7 indicates that one of the eight flatfish species (English sole) is declining. Given the strong interdependency between flatfish, snapper and red gurnard an increase in the TACC of snapper and red gurnard will likely increase the take of flatfish in the Top of the South mixed trawl fishery. Sand flounder dominates the Tasman and Golden Bays flatfish fishery and this species is about as likely as not to be at or above the target and overfishing is about as likely as not to be occurring. Given most of the SNA 7 catch comes from Tasman/Golden Bay, and that the TACC is higher than actual catch in the FLA 7 fishery, increased targeting of snapper could result in overfishing of the sand flounder population. Increased targeting of sand flounder could also occur with an increased SNA 7 TACC, as snapper will no longer be a 'choke' species (i.e. one that's management settings constrains the harvest of other species). With the spatial distribution of snapper extending further down the West Coast of the South Island and that red gurnard target and/or bycatch also occurs on the West Coast, there is also a risk of an increase in the bycatch of English sole with an increase in snapper and red gurnard TACC. Fisheries New Zealand will monitor the impact of a change in TACC on flatfish harvest and review management settings where appropriate.

Seabirds

60. 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. Therefore, the risk of the proposed options increasing seabird interactions is considered low. The number of observed captures of seabird (7) and observed deck strikes (11) in trawls targeting snapper (nationwide) between 2002/03 and 2016/17 is considered relatively low (while noting there is low observer coverage of inshore trawlers). Of the four threat classified seabird species, one black petrel was captured during this period.

61. Seabird interactions with New Zealand's commercial fisheries are managed under the National Plan of Action - Seabirds 2020. The revised NPOA Seabirds, with its focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact on the health of our seabird populations.

62. Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade to ensure the vessels have, and follow, a Protected Species Risk Management Plan (PSRMP). A PSRMP specifies the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures. Approximately 90% of full-time fishing vessels in FMA 7 (which includes the Top of the South and West Coast) have a PSRMP.

63. Love Our Little Blues and The Mohua (Golden Bay) Blue Penguin Trust both oppose any increase in TACC for SNA 7 and GUR 7 as they consider this would pose a risk to Little Blue Penguins (a "threatened and declining species"). The Trust also advocates for a ban on trawling within Tasman Bay.

64. Fisheries New Zealand notes the Little Blue Penguin's conservation status is "at risk" (rather than threatened). This species is not assessed in Fisheries New Zealand's latest seabird risk assessment, which limits our ability to determine any impact of the overlap with trawl fisheries within Tasman Bay. Using qualitative information from a literature review, fisheries bycatch from set nets is rated as a major threat to Little Blue Penguins and they are a known bycatch in set nets in New Zealand. However, to-date there have been no observed captures in inshore trawl in New Zealand. Snapper and gurnard are not targeted by set nets and are taken primarily by trawl and bottom longline, so any increase in the TAC is unlikely to increase effort in the fishery that Little Blue Penguins are most at risk from.

Benthic impacts

65. The proposed TACC increases for snapper and red gurnard could result in additional targeted fishing effort in these fisheries. Most environmental and some recreational fishers have raised concerns about biodiversity and benthic impacts in the Bays and seek either spatial separation, a management plan, a prohibition on trawling methods and consideration of land-based effects on the marine environment.

66. Fisheries New Zealand's Draft National Inshore Finfish Fisheries Plan (2019) has identified a pathway to progress further towards ecosystem-based fisheries management over a five-year timeframe. Tasman and Golden Bays have historically been intensively fished and are modified habitats, this combined with the loss of biodiversity, benthic productivity and modification of important breeding or juvenile fish habitat can lead a reduction in fish recruitment. Fisheries New Zealand currently has six research projects investigating the impacts of bottom trawling on benthic habitats. The level of benthic impact from fishing activity and the environmental impacts of fishing are summarised annually by Fisheries New Zealand and is characterised in the Aquatic Environment and Biodiversity Annual Review.

67. Industry's submission advises that an increase in the TACC for snapper and red gurnard would mean that commercial fishers would not have to move on from good fishing grounds to avoid snapper and displace effort elsewhere. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

Habitats of significance

68. There are regulatory and voluntary closures in place to reduce the impact of trawling on certain areas within QMA 7, such as the Separation Point bryozoan beds and juvenile fish habitat. Commercial fishers in these fisheries are using lighter gear, fishing further offshore, and the size of the fishing fleet has also reduced significantly over the last twenty years. Fisheries New Zealand's notes these closures and changes to fishing practices are likely to mitigate some of the impacts of additional fishing effort on the environment.

69. Fisheries New Zealand and the SNA 7 workshop participants have identified future research should focus on developing a criteria for both identifying and managing habitats of significance in the region.

Climate change

70. As mentioned above, warmer conditions and better recruitment of snapper may be resulting in a regime shift or a period of greater productivity for snapper in New Zealand. A recent study undertaken by NIWA on climate change and the seafood sector has identified that snapper will be more vulnerable to parasites, diseases and predatory species along with changes to larval development and growth rates from increasing ocean temperatures. Increases in storm frequency and shifts in wind patterns are expected to result in increased coastal sedimentation and turbidity; these environmental factors are likely to reduce foraging success and recruitment through impacts on nursery areas.

71. Red gurnard are also vulnerable to the impacts from the environmental factors and climate change is likely impacting on this species biologically, however, there is no evidence of this yet like there is for snapper.

72. The snapper stock assessment model currently incorporates the impact of climate change on snapper productivity when estimating current biomass. If there has been a regime shift and a permanent change to productivity, then the status of the stock will be reviewed and will become lower.

3.3.4 Sustainability measures (section 11 of the Act)

73. 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, the natural variability of the stock concerned, and any relevant fisheries plan.

74. There are a number of regional plans in place within QMA 7, including regional coastal plans to address the cumulative effects of activities in the coastal marine area, and the adverse impacts from land-based activities on the marine environment.

75. Fishers are subject to the rules in the plans (for example, small scale restrictions on fishing methods), however, the large area of QMA 7 means these rules do not, in general, stop fishers taking their annual catch entitlement (ACE) from other areas within this QMA.

The Marlborough Environment Plan

76. The Marlborough Environment Plan (MEP) sets out provisions relating to the disturbance of the seabed in Ecologically Significant Marine Sites. The proposed MEP contains a rule stating 'Disturbance of the seabed must not occur within a Category A Ecologically Significant Marine Site'. It prohibits dredging and bottom trawling within any Category A or B Ecologically Significant Marine Site but allows for these fishing methods to be discretionary activities within the buffer zone of these sites. On 21 February 2020, the MEP Hearing Panel announced its decisions on the MEP. These decisions are now subject to appeals to the Environment Court.

National Inshore Finfish Fisheries Plan

77. The National Inshore Finfish Fisheries Plan (2019) provides guidance on management objectives and strategies for inshore finfish fisheries including snapper and red gurnard. The plan will guide the operational management of inshore finfish fisheries for the next five years and aims to progress New Zealand towards ecosystem-based fisheries management. Aspects of the plan have been taken into account for this review including the collaborative approach to developing an option for the management of SNA 7.

78. Fisheries New Zealand also notes that the National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

3.4 Option 1 – *status quo* (both stocks)

79. Option one for SNA 7 and GUR 7 would see no change to the TACs or allowances for these stocks. This was the preferred option for 22 submitters that favoured a precautionary approach to fisheries management of both snapper and red gurnard. Submitters were concerned about increased trawl effort from any TACC increase (particularly in the near shore areas) and were cautious about the uncertainty in the magnitude of the snapper 2017-year class. Dawnbreakers Fishing Club would like to see at least one more recruitment cycle for SNA 7, and a new survey index for GUR 7, before any TAC decisions are made.

80. Well-managed fisheries are those that fluctuate around their appropriate targets and remain well above soft and hard limits. The Fisheries New Zealand Harvest Strategy Standard provides the basis for setting targets and limits that conform with section 13 of the Fisheries Act 1996. Currently the interim target biomass of 40% for snapper and the proxy B_{MSY} target (relative biomass) for red gurnard of 460 tonnes are consistent with what Fisheries New Zealand considers are healthy, abundant fisheries.

81. Best available information suggests that SNA 7 is about as likely as not to be at or above the target biomass, while GUR 7 is very likely to be at or above the target biomass. A number of submitters expressed an interest in managing snapper to a higher biomass. The status quo option provides the greatest likelihood of this occurring, as it would potentially allow more red gurnard and the 2017 snapper cohort to continue to recruit into the fishery and reach optimal economic size. Given the low natural mortality of snapper, this could potentially result in higher long-term yield of snapper (if the 2017 year class turn out to be strong). It also allows time for the results of an updated stock assessment of SNA 7 in 2022 to provide greater certainty about biomass trends and forward projections and to confirm that the large 2017 cohort is appearing in the fishery.

82. Commercial fishers' submissions highlight, however, that they are already experiencing difficulties in avoiding snapper and gurnard in the mixed trawl fishery given their relatively high abundance, and this will be exacerbated as SNA 7 biomass continues to increase over the next few years. The status quo does not provide for additional utilisation of this biomass and does not address these difficulties.

3.5 Option 2

3.5.1 SNA 7

83. No submissions were received in support of this option.

84. This option would retain the current TAC but provide a 50 tonnes increase in TACC. It retains the current allowance for customary fishing and other mortality but decreases the recreational allowance by 50 tonnes. This option was developed following the workshops on the basis of new probability information from the plenary that highlighted the reliance of future projections on the 2017-year class. It is an intermediate option between the status quo and the option developed from the workshop (Option 3) and provides similar benefits as Option 1, but also some interim relief to commercial fishers pending a further review (potentially in 2020 on the back of the 2021 stock assessment).

85. Industry submitters express concern, however, that the small increase under this option does little to address the difficulties they are facing avoiding snapper in the mixed trawl fishery given its high abundance, which is expected to increase over the next few years.

86. This option sets the SNA 7 recreational allowance at a lower level than the current allowance (200 tonnes rather than 250 tonnes), which is within the reasonable range of recreational estimates (i.e. noting the 2017 recreational survey estimate of 147 tonnes, that recreational catch is believed to have increased since then, and the 14.5 tonnes of additional recreational catch reported from commercial vessels in 2018-19).

87. Recreational fishing groups (TASFish, Marlborough Recreational Fishers Association, Fish Mainland, Mapua Boating Club and an individual fisher) oppose this option. They consider that the recreational sector's participation in the SNA 7 fishery was significantly reduced due to the demise of the fishery in the late 1970s from commercial fishing. They also consider that the increased level of abundance in snapper has allowed for greater participation in the fishery in recent years, as demonstrated in the last recreational survey results, and given the increase in regional population they expect it to continue to grow.

88. The customary allowance remains unchanged based on available information suggesting this is an accurate estimate of customary catch, noting that it was increased in 2016 from 16 to 20 tonnes.

89. No change to the other mortality allowance for SNA 7 is proposed (which in effect reduces it from 10% to 8% of the TACC. This is supported by evidence that such mortality in SNA 7 has declined steadily since 2006. New Zealand Sports Fishing Council submits it supports a precautionary approach of 10% of the TACC for other mortality allowances.

90. Based on the 2019/20 port price, the projected economic benefit of this option would be $206,000. Port price is what the commercial fisher receives, not what the fish is worth at market (which is higher), nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.

3.5.2 GUR 7

91. Option 2 for red gurnard was supported by Industry and Te Ohu Kaimoana.

92. This option increases the TACC by 107 tonnes and retains all current allowances for customary, recreation and other mortality. It provides for greater economic benefits and takes into account the trawl survey information and fisher information that suggests abundance for this stock is high. On the other hand, it carries greater risk of the stock moving below target.

93. TASFish, Marlborough Recreational Fishers Association, Fish Mainland, and Mapua Boating Club do not support an increase to the TACC unless the recreational importance of red gurnard is recognised with an increase in the recreational allowance. TASFish and Mapua Boating Club note that the current allowance equates to 0.67 of a fish based on its estimate of 59,200 recreational fishers in the region (40% of the population).

94. The recreational allowance for red gurnard was increased by 50% in 2019 in Part 1 of the multi-species review. Fisheries New Zealand considers this allowance is an accurate estimate of recreational take and is not proposing a change to the recreational allowance for red gurnard this year.

95. The customary allowance remains unchanged based on available information suggesting this is an accurate estimate of customary catch. Noting that it was increased in 2017 from 10 to 15 tonnes.

96. New Zealand Sports Fishing Council has advocated for a precautionary approach of 10% of the TACC for other mortality allowances. No change is proposed under this option to the other mortality allowance for GUR 7, which in effect reduces it from 5% to 4.2% of the TACC. This is

because there is evidence that other mortality in this mixed trawl fishery has declined steadily since 2016, and it is reasonable to consider that this includes GUR 7 mortality.

97. Southern Inshore Fisheries Management Company's preferred TACC setting is 1,200 tonnes (127 tonnes increase) noting that such an increase is supported by the results of the biennially WCSI trawl survey and recent catch trends. However, Fisheries New Zealand considers the lesser increase is appropriate given the available information (i.e. that red gurnard is very likely to be at or above the target and that, while the biomass remains high for the trawl survey time series the 2019 indices was lower than in 2015 and 2017).

98. Based on the 2019/20 port price, the projected economic benefit of this option would be $233,000.

3.6 Option 3 (SNA 7)

99. This option was developed as a result of multi-sector workshops, on the basis that it would assist commercial fishers to obtain greater value across the Top of the South trawl fishery, while also setting an allowance for recreational fishing that reflects the growing level of participation and catch success associated with the increased levels of snapper in the fishery.

100. Submitters supporting this option during consultation note it was developed through the collaborative workshop process, that abundance has increased, and the TAC/TACC increase is within the equilibrium yield estimates of 550 - 700 tonnes (where the stock is expected to remain at or above the target biomass depending on the strength of the 2017 year class).

101. The probabilities of SNA 7 remaining at the target under Option 3 are assessed by the model as 90% if the 2017 cohort is as strong as suggested, or 45% if it is of only average size. In comparison, the respective probabilities under the status quo (Option 1) catch levels are 91% and 51%. This highlights that the risks of moving the stock below the target are largely driven by the recruitment into the fishery of the 2017 cohort.

102. Fisheries New Zealand notes that if the 2017-year class is not as strong as initially indicated, and the stock is consequently over-fished, its recovery will depend on the future recruitment of strong year classes. SNA 7 has previously remained at a low level for a long time as a result of an extended period of poor recruitment. If this option is approved, the risks associated with the 2017 cohort being of average size would be managed by the following:

    - The results of the next biennial WCSI trawl survey and a recent catch-at-age project will be available next year to provide another data point of the 2017-year class and further information on the age structure of the fishery;
    - The stock assessment scheduled for 2021-22, will provide more certainty for the forward projections; and
    - If new information indicates the strength of the 2017-year class proves to be smaller than expected the stock can be adjusted accordingly through the 2022 sustainability round process.

103. As for the other options, the customary and other mortality allowances remain unchanged based on available information which suggests this is an accurate estimate of customary catch and that there is evidence that other mortality in SNA 7 has declined steadily since 2006.

104. Te Ohu Kaimoana does not support this option (or any of the options that were presented for consultation), and considers it is inappropriate to contemplate an allowance for the recreational sector that goes beyond estimates of catch. TWAM has also raised strong concerns that the review is compromised by the uncertainty regarding recreational snapper catch, and advocates for better estimation through recreational reporting.

105. Fisheries New Zealand acknowledges there is uncertainty in estimating recreational catch in the SNA 7 fishery in the context of rapidly increasing snapper abundance, recreational fishing

participation and success. In the context of this uncertainty, the proposed 250 tonnes recreational allowance (or the 200 tonnes allowance proposed under Option 2) is within a reasonable range of catch estimates. Based on the steeply increasing trajectory from the last two recreational surveys (e.g. Figure 8), the number of recreational fishing vessels operating in the area, and information from recreational fishers on catch success and snapper weight, catch is likely to have increased considerably since the estimate of 147 tonnes in 2017. In addition, section 111 catch (recreational catch taken on commercial vessels) appears to be increasing (it was 14.5 tonnes in 2018-19). Given that the region's population continues to grow, it is reasonable to expect recreational participation and catch will continue to increase over the coming fishing year with higher levels of snapper abundance.

106. TWAM has raised concerns about unconstrained recreational catch in this and other fisheries. This is consistent with Te Ohu Kaimoana's response, which is that continuous provisions for the recreational sector based on increasing catch undermines the Deed of Settlement.

107. Fisheries New Zealand notes that the Act provides that when setting a TAC, you must first consider recreational and customary catch before setting an appropriate TACC. We consider all the above options do this to varying degrees depending on the weight you place on uncertainty of information. It is important to note, however, section 21 of the Act does not require you to give non-commercial interests any priority over commercial interests. Rather, the allowances for recreational interests is to be made keeping commercial interests in mind.

108. Based on the 2019/20 port price, the projected economic benefit of this option would be $412,000.

3.7 Option 4 (SNA 7)

109. Te Ohu Kaimoana has strongly advocated that the allocation of the SNA 7 TAC be revisited in light of the overestimated recreational catch that was used as the basis for the 2016 decision. Consistent with their position on allocating the TAC generally, they are also concerned that continuous provisions for the recreational sector based on increasing catch undermines the Deed of Settlement. In the absence of an agreement between mandated bodies, they consider that a recreational allowance should not be increased above the level it was first set at by the Minister when its TAC was originally set.

110. Specifically, Te Ohu Kaimoana proposes an alternative option (Option 4) for SNA 7, which would; retain the current TAC until there is more confidence in the 2017 cohort, reduce the recreational allowance from 250 tonnes to 90 tonnes, and allocate the additional tonnage to customary and commercial sectors. This would correct the error made in 2016 by re-setting the recreational allowance to the level in place prior to 2016 and result in an increase in the TACC of 160 tonnes to 410 tonnes. Te Ohu Kaimoana note that it is likely snapper will continue to increase and that a collaborative group could be established to capitalise on the benefits of the rebuild and agree on novel approaches to sharing those benefits.

111. Based on available information Fisheries New Zealand considers it is likely that recreational catch is, and will continue to be, significantly higher than the 90 tonnes proposed under this option (potentially up to 250 tonnes; although Te Ohu Kaimoana rejects this estimate). As noted by Te Ohu Kaimoana, to reduce recreational catch to 90 tonnes would require management measures, such as a significantly lower daily recreational limit for snapper, to be implemented. Typical timeframes for implementing regulatory changes, such as recreational limits, are one to two years given consultative and regulatory processes.

112. In the interim, allocating an additional 160 tonnes to the TACC, without a corresponding reduction in recreational catch, would result in the TAC set under this option being exceeded and a greater risk (than the other options) of SNA 7 being fished below the target biomass. To successfully implement this option would, therefore, require a staged approach involving consultation on a reduced daily limit for snapper, concurrent with a further review of the TAC and allowances. Decisions from the review would be timed to coincide with the start of the same fishing year.

113. Noting that the 90 tonnes recreational allowance for SNA 7 was originally set at a time when the fishery was considered by many stakeholders to have been commercially overfished, we anticipate there would be significant public and stakeholder interest in a proposal to reduce the daily limit and constrain recreational catch to 90 tonnes. Under these circumstances the collaborative group proposed by Te Ohu Kaimoana would be beneficial to support the consultative process.

114. Based on the 2019/20 port price, the projected economic benefit of this option would be $659,000.

3.8 Other considerations

115. Some submitters raised concerns about activities that contributed to the demise of snapper in the 1970/80s. Fisheries New Zealand notes that fishing practices have changed considerably since that time: the fishing fleet has consolidated, industry is exploring innovative gear, and the introduction of electronic and geospatial reporting provides a strong platform (in conjunction with a stock assessment or reliable biomass index) for ongoing monitoring of the fishery and changes in fishing behaviour.

116. There is a strong interest amongst all sectors, Te Ohu Kaimoana and tangata whenua to work collaboratively on future management of the snapper fishery. Fisheries New Zealand is supportive of a collaborative approach and notes it is consistent with the workshop approach taken in the lead up to this review, and the focus areas of the draft National Inshore Finfish Fisheries Plan. Fisheries New Zealand will continue discussion with all sectors, Te Ohu Kaimoana and tangata whenua on options for an ongoing collaborative approach for this fishery.

4 Conclusion and recommendations

117. The updated stock assessment shows SNA 7 is about as likely as not to be at or above the management target and projects that the stock will continue to increase under the current harvest levels. The options proposed for consultation have varying probabilities of maintaining the stock at or above the target. A confounding factor for this review is uncertainty in estimating current recreational catch in the context of rapidly increasing participation and success. In addition, the current recreational allowance was set in 2016 based on recreational survey estimates that were subsequently found to be incorrect (too high).

118. Given the importance of the fishery, Fisheries New Zealand invited all sectors to participate and contribute to the development of management options for the review through a series of workshops. Option 3 was developed from these workshops. It would set a higher TAC than other options of 645 tonnes (which is towards the upper end of the equilibrium yield estimates), increase the TACC by 40% (100 tonnes), and retain all other settings.

119. Option 2 would set the TAC at 545 tonnes, increase the TACC by 20% (50 tonnes) and reduce the recreational allowance by 50 tonnes to 200 tonnes. It was developed after the workshops on the basis of new probability information received from the Plenary highlighting the reliance of future projections on the 2017-year class.

120. Option 4 was put forward by Te Ohu Kaimoana during consultation. It would see the recreational allowance reduced to its pre 2016 level of 90 tonnes, and the TACC increased by 64% to 410 tonnes. Noting the recreational allowance is substantially below likely recreational catch, this option would require regulatory changes to recreational rules to reduce recreational catch to this allowance.

121. The choice of proposed options differs in terms of the weight placed on the uncertainty associated with the size of the 2017-year class, and corresponding allowances set for each sector.

122. Option 3 remains the preferred option for the majority of submitters who participated in the workshops, including quota holders, and most recreational submitters. It presents greater risk than Option 1 or 2 (but not Option 4) of SNA 7 moving below target, however, the fishery will continue to be monitored and there will be a new stock assessment in 2021 with an opportunity to review the stock again in 2022, if required.

123. The stock status for red gurnard (based on the 2019 biomass indices) is very likely to be at or above the target. Option 2 for GUR 7 takes into account that; red gurnard appears to be experiencing a recruitment pulse, there are interdependencies between snapper and red gurnard in the Top of the South mixed trawl fishery suggesting more red gurnard will be taken with an increase in snapper TAC, and that an appropriate management strategy for red gurnard is to be responsive to fluctuations of stock biomass.

124. Fisheries New Zealand, therefore, recommends that you agree to:

- Increase the SNA 7 TAC to 645 tonnes with a 20 tonnes customary allowance, a 250 tonnes recreational allowance, a 25 tonnes allowance for other sources of fishing related mortality, and a 350 tonnes TACC (Option 3);
- Increase the GUR 7 TAC to 1,283 tonnes with a 15 tonnes customary allowance, a 38 tonnes recreational allowance, a 50 tonnes allowance for other sources of fishing related mortality, and a 1,180 tonnes TACC (Option 2).

125. Fisheries New Zealand considers the above options meet the purpose and principles of the Fisheries Act 1996 (the Act). And, takes into account section 11 – sustainability measures of the Act.

126. Fisheries New Zealand notes that you have broad discretion in exercising your powers of decision making and may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the options recommended by Fisheries New Zealand.

5 Decisions for SNA 7 and GUR 7

SNA 7

Option 1 (*Status quo*)

Agree to retain the SNA 7 TAC at 545 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Retain the allowance for recreational fishing interests at 250 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
iv. Retain the SNA 7 TACC at 250 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SNA 7 TAC at 545 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Reduce the allowance for recreational fishing interests from 250 to 200 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
iv. Increase the SNA 7 TACC from 250 to 300 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SNA 7 TAC at 645 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Retain the allowance for recreational fishing interests at 250 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
iv. Increase the SNA 7 TACC from 250 to 350 tonnes.

Agreed / Agreed as Amended / Not Agreed

Option 4

Agree to set the SNA 7 TAC at 545 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Reduce the allowance for recreational fishing interests from 250 to 90 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
iv. Increase the SNA 7 TACC from 250 to 410 tonnes.

Agreed / Agreed as Amended / Not Agreed

GUR 7

Option 1 (*Status quo*)

Agree to retain the GUR 7 TAC at 1,176 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 15 tonnes;
ii. Retain the allowance for recreational fishing interests at 38 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 50 tonnes;
iv. Retain the GUR 7 TACC at 1,073 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the GUR 7 TAC at ~~1,283~~ 1294 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 15 tonnes;
ii. Retain the allowance for recreational fishing interests at 38 tonnes;
iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at ~~50~~ 61.65 mt tonnes;
iv. Increase the GUR 7 TACC from 1,073 to 1,180 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash.

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Deepwater king clam (PZL 7) - Challenger

Panopea zelandica, geoduck, Pupu/Hohehohe

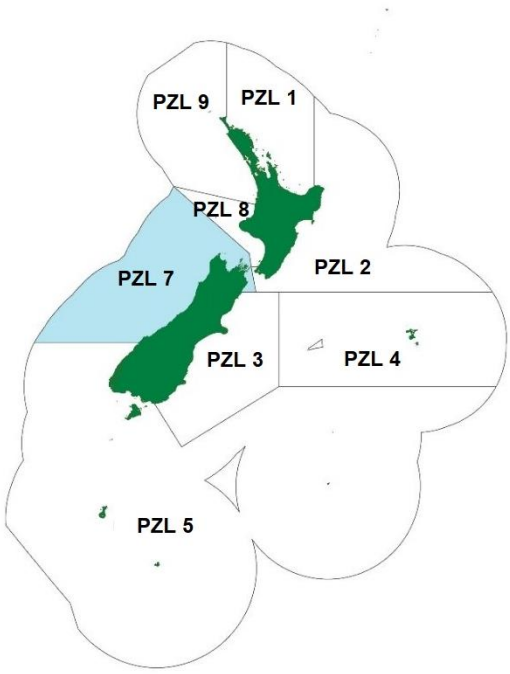


Figure 1: Quota management areas (QMAs) for deepwater (king) clam (geoduck) (PZL 7), with PZL 7 highlighted in blue. A geoduck is pictured on the left.

Table 1: Summary of options proposed for PZL 7 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (*Status quo*)	30	23.1	-	-	6.9
Option 2	65 ↑ (117%)	48 ↑ (108%)	1	1	15 ↑
Option 3	130 ↑ (333%)	99 ↑ (329%)	1	1	29 ↑
Total submissions received		7			
Number of submissions received for each option		Option 1 (*Status quo*)	1		
		Option 2	0		
		Option 3	6		
		Other	0		

1 Why are we proposing that you review the TAC and TACC?

1. A scientific survey of an area within the PZL 7 fishery suggests that the TAC could be increased. The survey, which covered a small area within Golden Bay, estimated 4331 tonnes of geoduck in that area alone. Geoduck are also known to occur throughout PZL 7, therefore, this is considered to be a conservative estimate of biomass.

2. The geoduck fishery is recognised as having significant potential for further development, given its high export value and the potentially large biomass of geoduck in some parts of New Zealand.

1.1 About the stock

3. Geoduck occur at various depths in discrete areas of sandy sediment around New Zealand, including Golden Bay. They are hand harvested by divers. Geoduck are extracted from the sediment using a hand-held water probe to liquefy the substrate, freeing the geoduck to be gathered.

4. The life cycle of geoduck is well known and has been reproduced *in vitro*, however, little is understood about recruitment or the development of juveniles within natural populations. Geoducks may begin life as a male and later transition into a female. This may result in heavier fishing of females. The extent to which this interferes with successful reproduction is unknown.

5. The larvae of geoduck may travel some distance and it is likely there is some genetic connectivity between populations. The length of the larval phase may also result in unpredictable recruitment for populations if currents are inconsistent. Accordingly, there is some uncertainty around how geoduck populations might respond to fishing.

1.2 State of the stock

6. Because of the relatively low levels of exploitation of *P. zelandica*, it is likely that this stock is still effectively in an unfished state. The best available information on the PZL 7 stock is a biomass assessment of geoduck, carried out in Golden Bay between September 2014 and August 2015 as part of a special permit. The study gave a biomass estimate of 4331 tonnes for the "Collingwood area" (see Figure 2).

7. The approach used to estimate biomass and the sustainable harvest is consistent with the methodology used for other developing fisheries such as surf clams and sea cucumber. It has been reviewed and accepted by Fisheries New Zealand Shellfish Science Working Group. A 3% fishing rate is applied to the conservative biomass estimate, giving an estimate of sustainable annual yield of 130 tonnes.

8. There are uncertainties in these estimates and how geoduck will respond to fishing in PZL 7, specifically:

    - The only available biomass information is the one-year study. Given geoduck are long lived it is likely populations are stable however, there is a risk the results do not account for annual variability in stock and may not represent the current state of the population;
    - It is unknown whether there has been any impact on geoduck from the "heat waves" or temperature increases that have been experienced in recent years.
    - It is unclear how the stock will respond to a higher level of fishing given the low levels of exploitation to-date;
    - There is uncertainty in the extent and nature of environmental impacts of the fishing method used to extract geoducks (liquefying the substrate using hydraulic injection); and
    - Larger (older) geoducks are mostly females. Therefore, it is possible that fishers may inadvertently target more females than males, which may potentially reduce reproduction within localised populations.

Figure 2: Map displaying the Collingwood area surveyed by Slater et al. (2017) in light grey, where any additional catch would be taken.

9. Fisheries New Zealand notes there have been no reports of significant mortality in the vicinity of the beds, such as shells on the beach and, given the low intensity of fishing it is likely that biomass has not changed significantly since the survey.

10. While unfished, other beds of geoduck are known within Golden Bay and throughout PZL 7, especially across the top of the South Island and including within the Marlborough Sounds. Quota holders have agreed not to fish within the Marlborough Sounds, and any additional commercial catch would only be taken from the area in Golden Bay that was assessed by the survey and is subject to growing water certification for shellfish. This will be monitored by the position data from the on-board digital monitoring.

11. The management target has not been defined, but biological reference points for the fishery have been set at 20% B_0 (soft limit) and at 10% B_0 (hard limit) in accordance with the Harvest Strategy Standard.

1.3 Catch information

1.3.1 Commercial

12. Information on commercial fishing of geoduck in PZL 7 includes catch estimates, effort data and landing information. Prior to entering the QMS in 2006, catches of 95, 29 and 31 tonnes where taken under special permit from 1989/90 to 1991/92. Figure **3**3 below shows annual commercial catch since QMS entry has been relatively consistent through time and has not approached the TACC (23.1 tonnes).

13. Commercial shellfish harvest for human consumption may only occur in certified growing waters under the Animal Products (Regulated Control Scheme – Bivalve Molluscan Shellfish) Regulations 2006. Establishing an area certified for shellfish harvest is an expensive process and fishers also state that the current, relatively low, TACC is constraining development of the fishery by not providing sufficient volume to establish and maintain markets. The international geoduck market is highly competitive with wild caught and farmed/enhanced geoduck exported to China and other Asian markets from western Canada and the US, and additional production from Mexico and Argentina. Secure, regular supply of reasonable volumes is necessary to access opportunities in the Asian markets. Quota holders and fishers advise that a fishery of a minimum of 100 tonnes is required for an economically sustainable fishery in PZL 7.

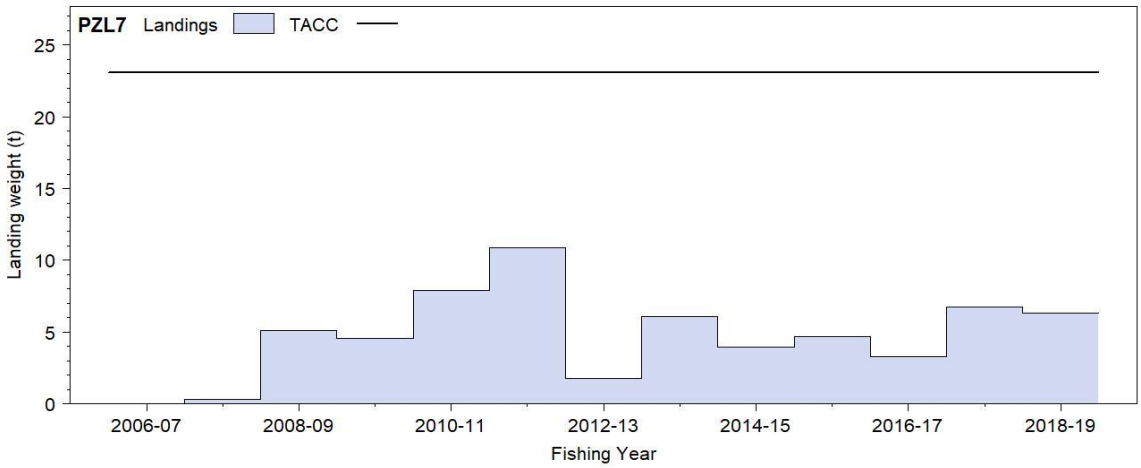


Figure 3. Reported commercial landings and TACCs for the PZL 7.

14. All commercial operators are now required to use electronic reporting and geospatial position reporting on their vessels. This provides improved information about the location and extent of fishing and a fine scale information and will improve monitoring of fishing and commercial catch per unit of effort for geoduck.

1.3.2 Customary Māori

15. Because of the specialised equipment required, geoduck is almost completely a commercial fishery. Māori customary take is thought to be negligible. No customary catch of geoducks in PZL 7 has been reported to Fisheries New Zealand. However, there is potential for Māori customary catch to be taken using commercial fishing gear under a customary permit in the future.

1.3.3 Recreational

16. Commercial fishers have landed low numbers (< 1 tonne) of catch as recreational catch (under section 111 of the Act) over the last 5 years. The specialised harvest method (hydraulic water probe) is likely to restrict the number of recreational fishers targeting and accessing geoduck.

2 Allowances within the TAC

2.1 Māori customary interests

17. Pupu or Hohehohe (geoduck) is identified in the Te Waipounamu Iwi Forum Fisheries Plan as a taonga species. The Te Waka a Māui me Ōna Toka Iwi Forum considers all fish species taonga.

18. No provision has been made for Māori customary harvest within the current TAC. Given customary catch may potentially be taken using commercial equipment, customary fishing should be provided for within the TAC.

19. The following customary management areas are located within QMA 7:

- The taiāpure of Whakapuaka (Delaware Bay)
- The mātaitai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), Te Tai Tapu (Kaihoka).

20. Commercial fishing is not permitted within mātaitai reserves, but recreational and customary fishing is allowed. No regulations are in place for the Whakapuaka taiāpure relating to geoduck, although the area has potentially suitable habitat for geoduck).

2.2 Recreational interests

21. The allowance for recreational fishers provides for catch taken by recreational fishers over a fishing year. No provision is made for recreational harvest of geoduck within the current TAC. There are no historic records of recreational fishing for geoduck and they are not reported in the National Panel Survey of Marine Recreational Fishers. Recently, commercial fishers have been landing recreational catch under section 111 of the Fisheries Act 1996. Therefore, recreational take should be provided for within the TAC.

2.3 All other mortality caused by fishing

22. 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 available research suggests that mortality caused by fishing when harvesting geoduck could, in certain circumstances, be up to 50% of the exploited fishery (Breen 1994). This has been taken into consideration by proposing relatively high allowances for other mortality from fishing.

23. Options 2 and 3 both propose to set the allowance for other mortality caused by fishing at a rate that would equate to approximately 30% of the TACC, which is consistent with how the estimate was set when geoduck was brought into the QMS. There is no new information to suggest an alternative approach is more appropriate and this is a cautious approach that can be reviewed as more information becomes available in the future.

3 Options, submissions, and analysis

3.1 Summary of options

24. Three options are proposed for the TAC, TACC and allowances of PZL 7 (Table 2). No additional options were added following consultation.

Table 2: Summary of proposed management settings for PZL 7 from 1 October 2020. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 *(Status quo)*	30	23.1	-	-	6.9
Option 2	65 ↑ (117%)	48 ↑ (108%)	1	1	15 ↑
Option 3	130 ↑ (333%)	99 ↑ (329%)	1	1	29 ↑

3.2 Submissions

25. Seven submissions or responses were received for PZL 7 (Table 3).

Table 3: Submissions and responses received for PZL 7 (in alphabetical order)

Submitter	Option Support			
	1	2	3	Other
DEMZ Limited (DL)			✓	
G & K Pacey			✓	
J Buchanan			✓	
Pāua Industry Council (PIC)			✓	
PZL Harvesters Limited (PZLH)			✓	
Te Kupenga o Maniapoto Limited			✓	
Te Ohu Kaimoana	✓			

3.3 Analysis

3.3.1 Input and participation of tangata whenua

26. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

27. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries. The proposal to review PZL 7 was discussed in 2019 with Te Waka a Māui me Ōna Toka Iwi Forum (TWAM): the South Island iwi fisheries forum. The forum includes all nine tangata whenua Iwi of Te Wai Pounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu. The results of the biomass survey (Slater et al., 2017) were circulated to forum members. Iwi noted that market certainty is an issue with geoduck, and that the TACC has not been fully caught.

28. At its hui on 14 July 2020 TWAM concluded it supported development of the fishery to a level where it provided opportunities for iwi (potentially to a TAC that is higher than the proposals consulted on). The forum noted this would mean a structured development plan with a strong research and monitoring focus, and that it would be looking to see this developed. The forum discussed the preferred approach at length, concluding that in the interim, in the absence of this plan, it supported Option 3.

3.3.2 Kaitiakitanga

29. Pupu/Hohehohe (geoduck) is identified in the Te Waipounamu Iwi Forum Fisheries Plan as a taonga species. 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.

30. Fisheries New Zealand considers that this proposal meets these Management Objectives, particularly if supported by a management and development plan involving TWAM and quota holders.

3.3.3 Environmental principles (section 9 of the Act)

31. Geoduck is hand gathered using UBA and water-jets to liquefy the substrate and locate and extract individuals within the top 30-50 cm of the substrate. This method disturbs the substrate within a 0.5-1 m radius of each geoduck, and results in the disturbance of associated infauna species within the disturbed area.

32. In advance of this review of sustainability measures, commercial fishers in PZL 7 commissioned a literature review of the environmental impacts of this fishing method. This concluded the effects of geoduck harvesting appear to be localised and relatively short-lived. The compare the impacts from geoduck harvesting as of similar magnitude to those generated by the effects of a storm (Gribben and Heasman, 2015).

33. Nevertheless, continued monitoring of environmental impacts will be an important component of any increase in the TAC. If a TAC increase is approved, a research plan will be developed to monitor impacts on the geoduck stock and its environment, including a resurvey of the study area in three years' time.

34. The main area of focus for the development of the commercial fishery is in Golden Bay. This area is likely to have been already modified by historical commercial dredging for scallops but has been closed to scallop dredging since 2016 due to low scallop abundance.

35. Research has characterised both New Zealand's benthic environment and the level of benthic impact from fisheries activity (Aquatic Environment and Biodiversity Annual Review 2019). The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the impacts of fishing on the marine environment.

36. New fine scale fishing data through electronic reporting and position reporting will allow close monitoring of where fishing is occurring to ensure any habitats of significance for fisheries management are protected.

3.3.4 Sustainability measures (section 11 of the Act)

37. 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, natural variability of the stock concerned, and any relevant fisheries plan.

38. There are a number of regional plans in place within PZL 7, including:

- Regional coastal plans to address the cumulative effects of activities in the coastal marine area, and the adverse impacts from land-based activities on the marine environment
- The Marlborough Environment Plan (MEP) that has identified several Ecologically Significant Marine Sites (ESMS) in the Marlborough Sounds Area. The MEP states 'Disturbance of the seabed must not occur within a Category A Ecologically Significant Marine Site'. It prohibits dredging and bottom trawling within any Category A or B Ecologically Significant Marine Site but allows for these fishing methods to be discretionary activities within the buffer zone of these sites.

39. Fishers are subject to the rules in the plans (for example, small scale restrictions on fishing methods), however, there are no such restrictions in the area near the Collingwood study area, and the large area of PZL 7 means these rules do not, in general, stop fishers taking their annual catch entitlement (ACE) from other areas within PZL 7.

3.4 Option 1 – *status quo*

40. Under Option 1 there would be no change to the TAC. This option takes into account that the current TACC (23.1 tonnes) has not been caught. It has the least sustainability risk of the options and recognises the potential for localised overfishing of geoduck, impacts from the commercial harvesting method, and underlying concerns regarding the health of the benthic ecosystem in Golden Bay and Tasman Bay.

41. Option 1 makes no provision for Māori customary or recreational fishing within the TAC.

42. Option 1 is supported by Te Ohu Kaimoana. Te Ohu Kaimoana wish to see a management plan developed with iwi and other stakeholders prior to a TAC increase.

3.5 Option 2

43. Option 2 would increase the TAC to 65 tonnes and the TACC to 48 tonnes. It would set customary and recreational allowances at one tonne each. The allowance for other sources of mortality would be set at 15 tonnes.

44. This option would provide a modest increase in utilisation, and an opportunity to understand how the fishery may respond to a sustained increase in exploitation.

45. No submitters supported Option 2. Three submitters oppose it on the basis it would not allow the fishery to develop because the tonnage is insufficient to establish export markets.

3.6 Option 3 - Preferred

46. Option 3 proposes an increase to the TAC from 30 tonnes to 130 tonnes, including a TACC of 99 tonnes. This increase is based on the biomass survey estimates given by Slater et al (2017), which applied a 3% fishing rate to a conservative biomass estimate within a very small area of PZL 7. The survey methodology is consistent with that applied to other developing fisheries and has been reviewed by Fisheries New Zealand's Shellfish Science Working Group.

47. Given the conservative approach used to estimate yield, this increase is cautious, particularly given geoduck are found in many other areas within PZL 7. However, there are risks with using biomass estimates from a single-year study, which would need to be managed by monitoring the commercial fishery at a fine scale and reviewing the TAC again, if appropriate. To better assess the effects of fishing on both the sustainability of geoduck and the environment, it is also proposed that the additional catch approved under this option would be taken only from within the surveyed area (shellfish sanitation area 1522).

48. Six of the seven submitters support this option, including the quota holders that financed the special permit and biomass survey to support the TAC review.

49. TWAM supports development of the fishery to a level that is higher than the proposals consulted on, noting this requires a structured development plan with a strong research and monitoring focus. In the interim, TWAM supports Option 3.

3.7 Economic analysis

50. PZL 7 has a high potential value as seen in Table 4 below, which would provide additional economic benefits for the Nelson/Tasman region.

Table 4: Predicted changes to commercial revenue for the proposed options, based on recommended port prices of $19.12/kg for PZL 7 in the 2019/20 fishing year.

Option	Change from current setting (t)	Predicted revenue changes ($p.a.)
Option 1 (*status quo*)	NA	NA
Option 2	24.9↑	$480,000↑
Option 3	75.9↑	$1,500,000↑

51. PZL Harvesters Ltd and DEMZ Ltd submit that development of PZL 7 is the first step in facilitating the development of a national geoduck fishery with a potential export value in excess of $NZ60 million.

3.8 Other considerations

52. Te Ohu Kaimoana have requested the development of a fisheries management plan prior to any TAC increase. TWAM also request development of such a plan but, in the interim, support the TAC increase proposed under Option 3. Quota holders (PZL Harvesters) have stated they recognise that geoduck is a taonga and that iwi have a strong customary and commercial interest in the management and development of the fishery. They would welcome the opportunity to work co-operatively with TWAM and Te Ohu Kaimoana in the development of a management plan.

4 Conclusion and recommendations

53. Based on a biomass survey of geoduck undertaken over a small area within Golden Bay, there is sufficient geoduck in the area to support an increase in the TAC for PZL 7.

54. Fisheries New Zealand's preferred option is Option 3. Under this option a TAC of 130 tonnes would be set. This takes into account that this is a developing fishery and that there is a large biomass of geoduck. However, it is not certain how the stock, or the habitat, will respond to fishing in the long term and monitoring plus a further survey are needed to mitigate fishing risks.

55. Fishers have agreed that the additional catch under this option would be taken from within the surveyed area to enable monitoring of the effects (if any) on sustainability and the environment. In addition, a significant allowance is proposed for other mortality from fishing.

56. An allowance for Māori customary and recreational harvest of 1 tonne each is consistent with the low levels of non-commercial catch in this fishery, while the proposed TACC of 99 tonnes would provide sufficient geoduck product to allow fishers to develop an export market.

57. Fisheries New Zealand recommends this option, noting that quota holders have committed to work with TWAM and Te Ohu Kaimoana to develop a suitable research and management plan.

5 Decision for PZL 7

Option 1

Agree to set the PZL 7 TAC at 30 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;

ii. Retain the allowance for recreational fishing interests at 0 tonnes;

iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 6.9 tonnes;

iv. Retain the PZL 7 TACC at 23.1 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the PZL 7 TAC at 65 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonne;

ii. Increase the allowance for recreational fishing interests from 0 to 1 tonne;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 6.9 to 15 tonnes;

iv. Increase the PZL 7 TACC from 23.1 to 48 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the PZL 7 TAC at ~~130~~ tonnes and within the TAC: 114

i. Increase the allowance for Māori customary non-commercial fishing interests from 0 to 1 tonne;

ii. Increase the allowance for recreational fishing interests from 0 to 1 tonne;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 6.9 to ~~29~~ tonnes; 32mt

iv. Increase the PZL 7 TACC from 23.1 to ~~99~~ tonnes. 80mt

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

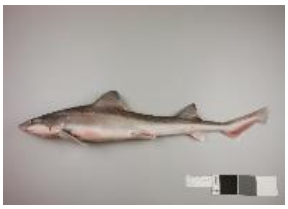
ECSI multi-species fishery (MOK 3, LEA 3, GUR 3, SPO 3) - East Coast South Island

Blue moki (MOK 3)
Latridopsis ciliaris,
blue moki, moki

Leatherjacket (LEA 3)
Meuschenia scaber,
leatherjacket, kokiri

Red gurnard (GUR 3)
Chelidonichthys kumu,
red gurnard, kumukumu

Rig (SPO 3)
Mustelus lenticulatus,
rig, makō



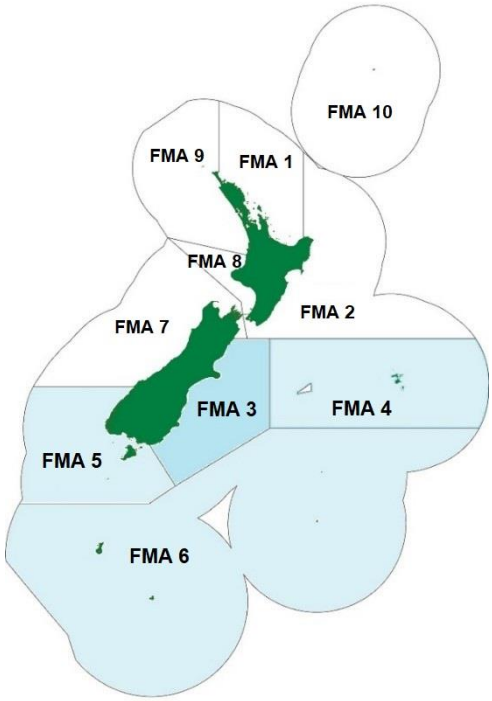


Figure 1: Fisheries management areas (FMA) for blue moki (MOK 3), leatherjacket (LEA 3), red gurnard (GUR 3) and rig (SPO 3), highlighted in blue. LEA 3 extends to FMAs 5 & 6, GUR 3 and SPO 3 extend to FMAs 4, 5 & 6.

Table 1: Summary of options proposed for MOK 3, LEA 3, GUR 3 and SPO 3 from 1 October 2020. Figures are all in tonnes. Fisheries New Zealand preferred options for each stock are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
MOK 3	**Option 1** *(Status quo)*	197	160	1	20	16
	Option 2	217 ↑	176 ↑ (10%)	1	22 ↑	18 ↑
	Option 3	234 ↑	192 ↑ (20%)	1	22 ↑	19 ↑
LEA 3	**Option 1** *(Status quo)*	140	130	1	2	7
	Option 2	160 ↑	143 ↑ (10%)	1	2	14 ↑
GUR 3	**Option 1** *(Status quo)*	1,593	1,320	3	6	264
	Option 2	1,606 ↑	1,452 ↑ (10%)	3	6	145 ↓
SPO 3	**Option 1** *(Status quo)*	710	600	20	60	30
	Option 2	806 ↑	660 ↑ (10%)	20	60	66 ↑
	Option 3 (new)	766 ↑	660 ↑ (10%)	20	20 ↓	66 ↑

New option incorporated following consultation	Yes (SPO 3 Option 3)
Total submissions received for all stocks	7

Number of submissions received for each option	**MOK 3**	**LEA 3**	**GUR 3**	**SPO 3**
Option 1	1	1	1	1
Option 2	2	3	3	2
Option 3	1	N/A	N/A	1
Other	3	3	3	3

1 Why are we proposing that you review the TACs and TACCs?

1. Blue moki, leatherjacket, red gurnard and rig fish stocks in the East Coast South Island (ECSI) trawl fishery appear to be performing well based on ECSI trawl survey data, catch per unit effort (CPUE) information and commercial catch trends. Recent increases in CPUE for MOK 3 suggest that biomass has increased and that fishing mortality remains below the target level. CPUE and trawl survey data suggest LEA 3 may have increased in abundance since the early 2000s, and GUR 3 is likely to be above the target biomass level. There has been a strong increasing trend in the bottom trawl CPUE series for SPO 3 dating from the late 2000s.

2. This information suggests that, while the current TACs for these stocks are appropriate, there is also an opportunity to consider modest increases. In addition, the review is an opportunity to confirm that allowances within the TAC remain appropriate, given some of these stocks have not been reviewed for a number of years.

1.1 About the stocks

1.1.1 Fishery characteristics

3. Most blue moki landings are taken by set net or trawl. Leatherjacket are mostly caught in flatfish, red gurnard and elephant fish target bottom trawl sets. Red gurnard is a major bycatch species of inshore trawl fisheries. Rig are mostly landed in the shark set net and bottom trawl fisheries directed at a range of species, with additional small amounts landed by Danish seine vessels. The inshore trawl ECSI fishery mainly targets demersal species such as red cod and flatfish. Being a mixed-species fishery there is inevitable bycatch of co-habiting species such as blue moki, leatherjacket, red gurnard and rig.

1.1.2 Biology

4. Blue moki grow rapidly at first and then slows, and fish of 60 cm are 10-20 years old with a maximum age of around 50 years. Blue moki are low productivity fish because of their low growth rate and longevity.

5. Leatherjacket display rapid initial growth, where both males and females reach maturity in 1–2 years. Maximum age differs substantially between the sexes, at 9.8 years for males and 17.1 years for females.

6. Red gurnard is a fast growing, moderately short-lived species, with a maximum age of 16 years, and reaching sexual maturity at 2-3 years old. Rig live for 20 years or longer and mature late, with female rig reaching maturity at 5-6 years.

7. Overall, leatherjacket and red gurnard are higher productivity stocks as they are shorter-lived and have relatively high natural mortality.

1.1.3 Management Strategy

8. Fisheries New Zealand is moving towards more explicit consideration of interactions within a fisheries complex and a multi-stock management approach. This allows consideration of the linkages and interdependencies between the stocks, the biological factors (such as stock productivity and abundance) and target and bycatch interactions.

9. High productivity species are more resilient to fishing pressure and generally 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 leatherjacket is to respond quickly to fluctuations in stock biomass (for example, to increase catches at times of high stock biomass and reduce catches at times of low biomass). For longer-lived, less-productive species, the optimum management procedure is to be more cautious about increasing catches too quickly and depleting the stock for long periods of time.

1.2 Status of the stocks

1.2.1 MOK 3

10. The most recent scientific assessment of blue moki was in 2017. Fisheries New Zealand considered MOK 3 to be very likely (>90% probability) to be at or below its fishing mortality target. Overfishing (a threshold fishing pressure that if exceeded may lead to reducing biomass) was at the time very unlikely (<10%) to be occurring for MOK 3. However, the impact of an increase to the TACC in 2014/15 and fishing mortality was not included in the scientific assessment, which was based on data to 2015/16, consequently the stock status is unknown.

11. Since the mid-2000s there has been a general increase in stock abundance of the migrating adult component of the stock (as indicated by the CPUE trends[51]).

1.2.2 LEA 3

12. The most recent stock assessment for LEA 3 was 2013. A characterisation and CPUE analysis for the LEA 3 fishery was carried out, which indicated that CPUE from the Canterbury Bight fishery had increased since the early 2000s. However, the characterisation noted the low number of vessels in the analysis, and that the development of new markets for this species may have increased targeting or retention of this species over this period. Consequently, its reliability as an index of relative abundance or stock status is uncertain.

13. The results from the ECSI trawl survey indicate stable/ increasing abundance (Figure 2), with the biomass index from 30-400 m strata increasing since 2008. However, the total trawl survey biomass estimates for the entire survey area (10-400 m) have large confidence intervals.

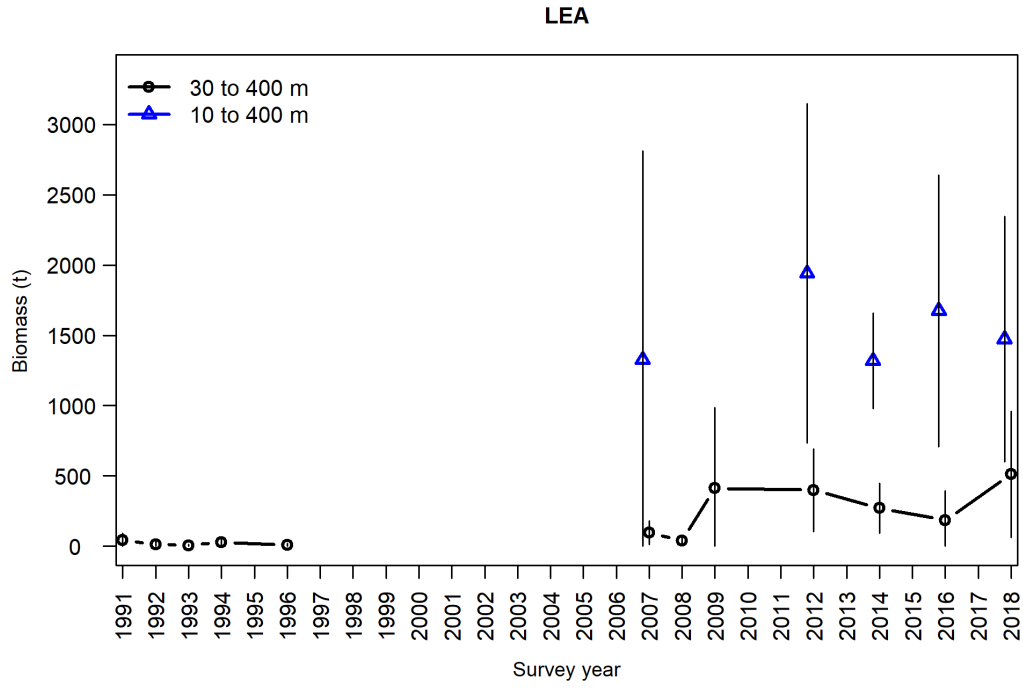


Figure 2: Leatherjacket total biomass for the ECSI trawl surveys in core strata (30-400 m), and core plus shallow strata (10-400 m) in 2007, 2012, 2014, 2016, and 2018. Error bars are 2 Standard Deviations.

1.2.3 GUR 3

14. The most recent stock assessment for GUR 3 was 2015. GUR 3 was, at the time, likely (>60%) to be above the target level and very unlikely (<10%) to be below the soft and hard limits.

15. GUR 3 currently falls within a group of stocks where a relative abundance monitoring approach is being used. Key indicators used to monitor and inform management of GUR 3 include CPUE from the commercial fishery, and a fishery-independent estimate of relative biomass from the

[51] CPUE indices are not considered to be sufficiently reliable to represent abundance indices for blue moki stock. Rather, the indices are considered to be indicative of general trends in abundance for components of the stock.

ECSI trawl survey time series up to 2018. These estimate changes in stock status in relation to the target level, which is a proxy for B_{MSY}. While the last stock assessment was done in 2015, the survey results indicate that the biomass has remained high since then.

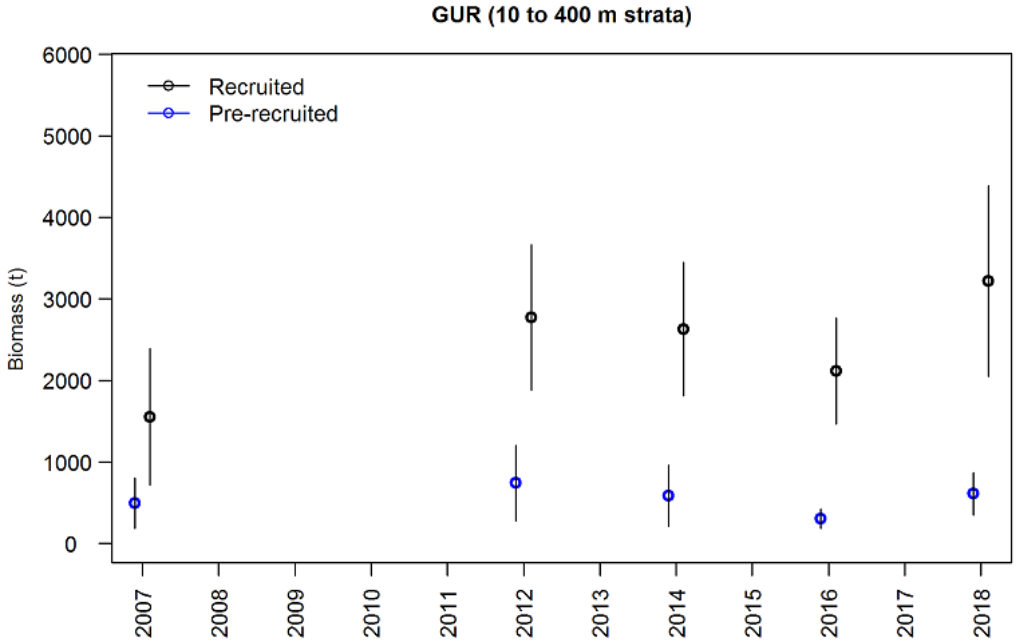


Figure 3: GUR 3 total biomass for all ECSI winter surveys (10–400 m) from 2007 to 2018.

1.2.4 SPO 3

16. The most recent assessment of SPO 3 was in 2019, when SPO 3 was assessed to be about as likely as not (40-60%) to be at or above target levels. SPO 3 is considered very unlikely (<10%) to be below the soft limit, and very unlikely (<10%) to be below the hard limit.

17. The ECSI trawl survey suggests that SPO 3 is at the target reference level (Figure 4) and that overfishing is about as likely as not to be occurring. The set net (SN) CPUE index, which is the preferred CPUE index because it captures a larger component of the population, agrees with the ECSI index. The bottom trawl (BT) CPUE index was not accepted as an index of abundance for SPO 3 by the Working Group, so it cannot be used to provide management advice.

18. There has been a modest increasing trend in the bottom trawl CPUE series dating from the late 2000s[52], and biomass estimates in the ECSI winter trawl surveys are generally higher in recent years compared with the 1990s. Note, in some years the ECSI trawl survey indices have high confidence intervals.

[52] Trends in CPUE for rig may be a result of changes in reporting and retention due to increased targeting in recent years, rather than abundance.

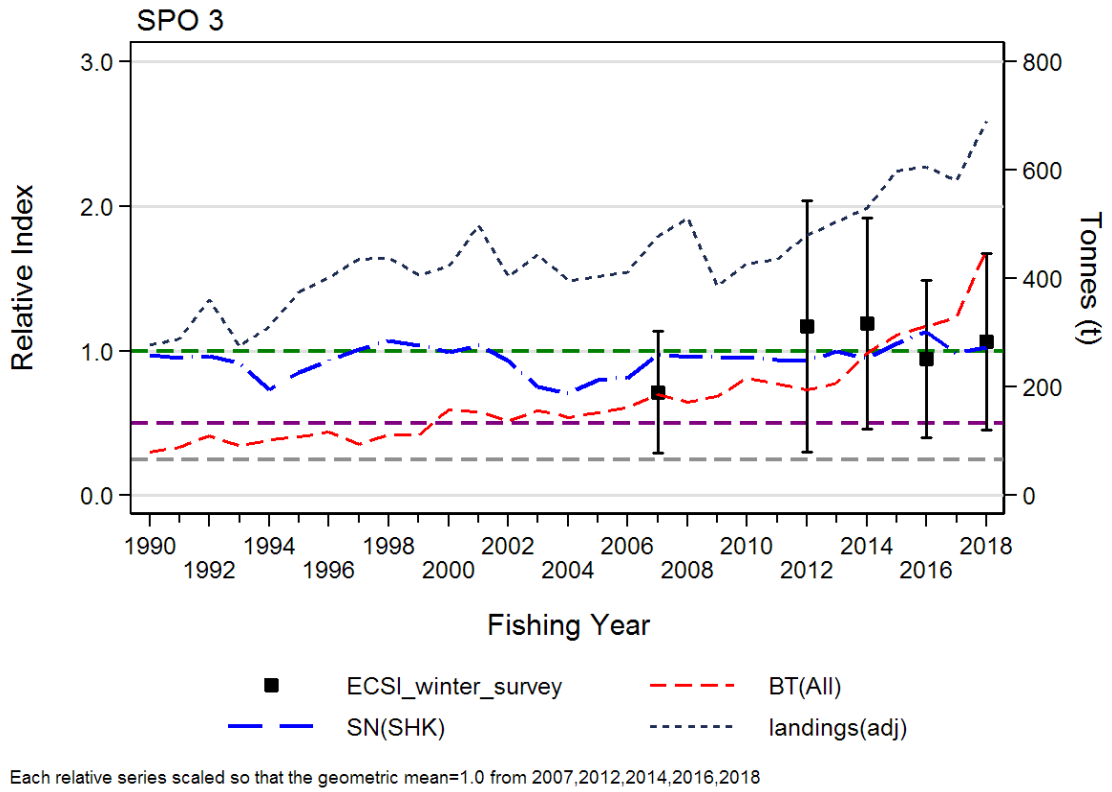


Figure 4: SPO 3 ECSI trawl survey biomass estimates from the extended ECSI trawl survey series. The agreed B_{MSY} proxy is shown as a green line, the calculated Soft Limit (=0.5 x B_{MSY} proxy) is shown as a purple line and the calculated Hard Limit (=0.25 x B_{MSY}) is shown as a grey line.

1.3 Catch information

1.3.1 Commercial

MOK 3

19. Most blue moki landings are taken by trawl or set net on the east coast between the Bay of Plenty and Kaikōura, although smaller quantities are taken in most New Zealand coastal waters, including MOK 3. MOK 3 landings have exceeded the TACC three years out of the last four.

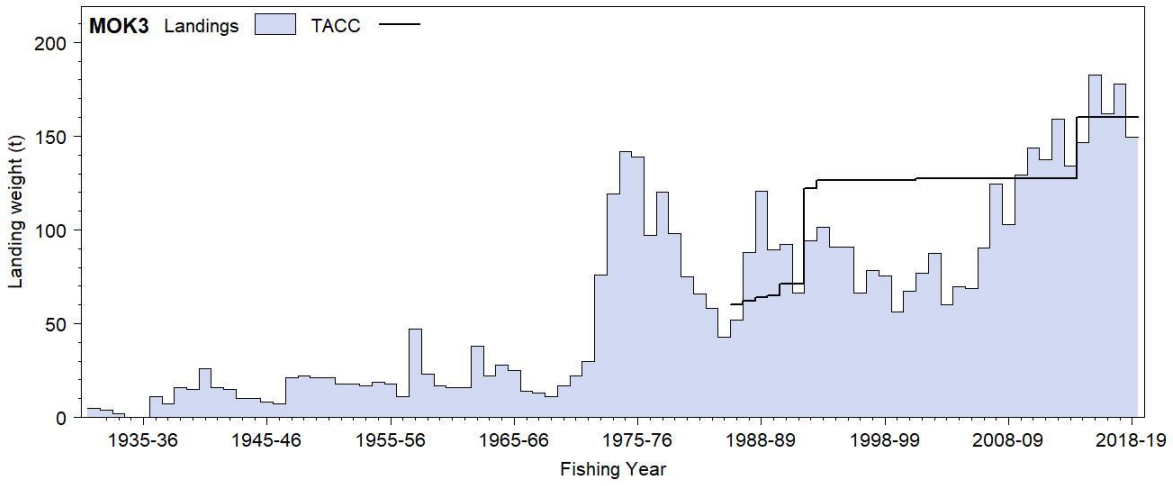


Figure 5: Reported commercial landings and TACC for MOK 3

LEA 3

20. Despite LEA 3 covering a large area (FMAs 3, 5 and 6 combined), there have been only low volumes of catch taken. Leatherjacket are a bycatch in fisheries targeting red cod, barracouta, flatfish, elephant fish, tarakihi, blue warehou and gurnard, but are most commonly caught in flatfish, red gurnard and elephant fish target bottom trawl sets. The LEA 3 TACC has been consistently fully caught five out of six years since a 2013 TACC increase.

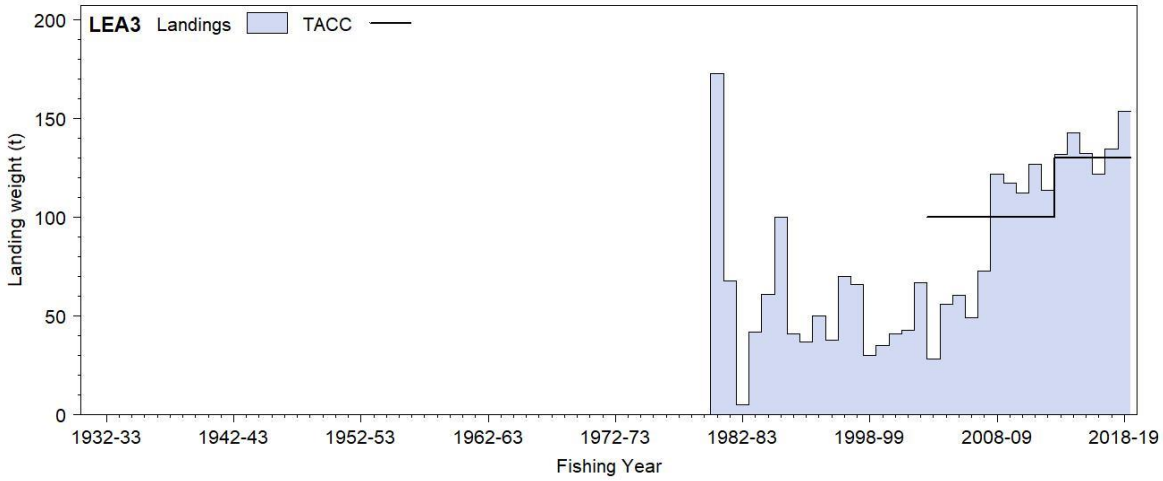


Figure 6: Reported commercial landings and TACC for LEA 3

GUR 3

21. Gurnard is an important component of the ECSI trawl fishery. Despite regular adjustments to the TACC since 2004 in response to available information on abundance, GUR 3 continues to be overcaught with fishers reporting increased abundance. Ageing of fish collected during the ECSI trawl surveys suggests that increases in abundance may be driven by strong year classes moving through the fishery.

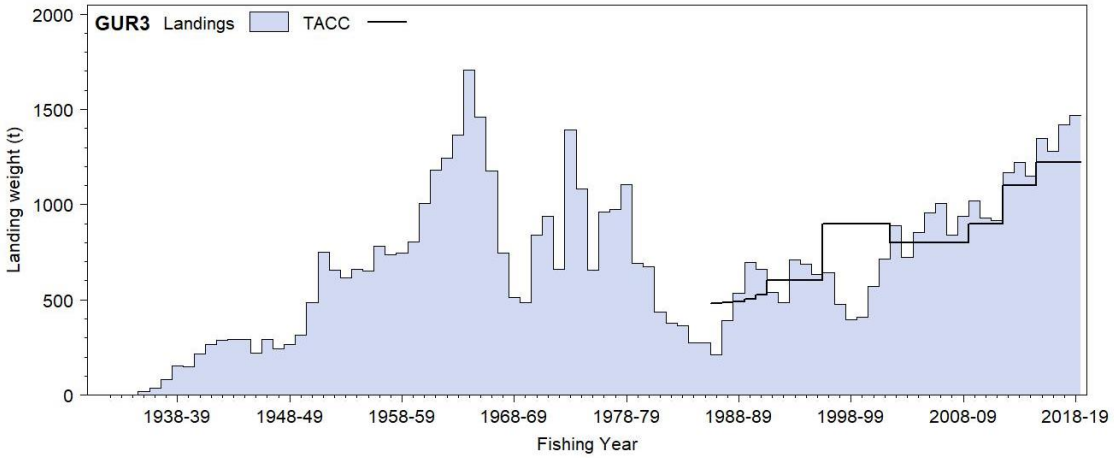


Figure 7: Reported commercial landings and TACC for GUR 3

SPO 3

22. Catches of rig (SPO 3) have exceeded the TACC in the last two years. Before the introduction of the QMS in 1986, 80% of the commercial catch was taken by bottom set net and most of the remainder by trawl. Since then, a larger proportion has been taken by trawlers as bycatch, though most is still taken by set net. Important set net fisheries in the ECSI fishery are located in Canterbury Bight and Kaikōura.

23. When rig was introduced to the QMS it was considered to be seriously depleted, which is supported by increases in abundance in the ECSI trawl survey. Declining catches and catch rates, and high exploitation rates, indicated that rig stocks were overfished. When the QMS was introduced, the TACC was set conservatively to promote stock rebuilding.

24. As noted, most of the rig catch in SPO 3 is taken by set net but a substantial targeting of rig is also taken by bottom trawl. Overall about a third of the bottom trawl catch and three quarters of the set net catch is targeted. Increased levels of catch for SPO 3 are noted from Pegasus Bay and Canterbury Bight and an increase in the Southland statistical areas, which could be attributed to a slight increase in SPO 3 catch with FLA target.

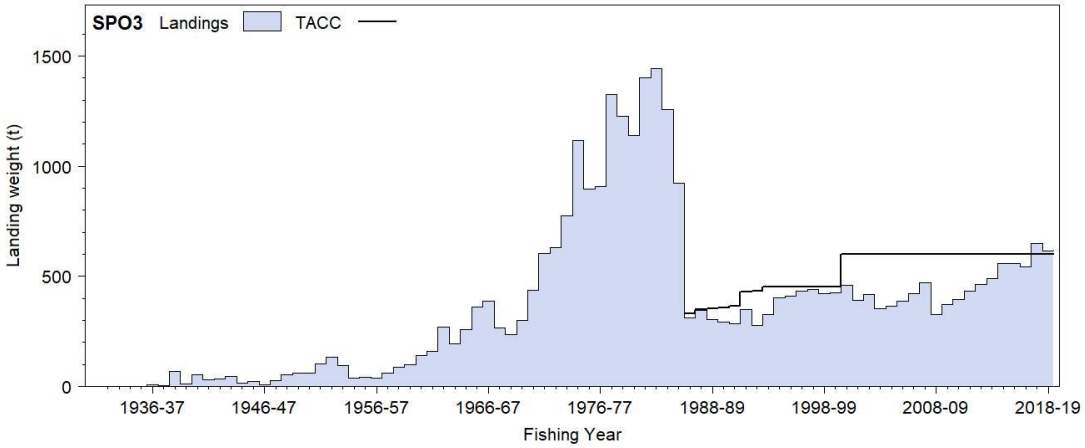


Figure 8: Reported commercial landings and TACC for SPO 3

1.3.2 Customary Māori

25. The reported level of Māori customary catch for finfish in the ECSI fishery is low. Reported customary catches are presented in Table 2 for 2014-2018 (data is incomplete for 2019).

Table 2: Reported customary catch for MOK 3, LEA 3, GUR 3 and SPO 3 from 2014-2018. Figures are all in kilograms. X = no reported catch.

Stock	2014	2015	2016	2017	2018
MOK 3	X	X	118	20	100
LEA 3	X	X	X	X	X
GUR 3	X	X	301	X	200
SPO 3	X	X	358	64	100

1.3.3 Recreational

MOK 3

26. Blue moki are popular with recreational fishers and taken by beach anglers, set netting and spearfishing. Recreational catch of blue moki in MOK 3 (estimated at 16.3 tonnes; see Table 3 below) increased by 41% over the period from 2011/12 to 2017/18 according to the National Panel Surveys of Marine Recreational Fishers.

LEA 3

27. Leatherjacket are seldom caught by recreational fishers. Results from the panel surveys indicated a drop in the number of fish caught by recreational fishers over the past two surveys.

GUR 3

28. Red gurnard are an important recreational species. They are often taken by fishers targeting snapper and tarakihi. Recreational catch in GUR 3 increased by 24% over the past two panel surveys.

SPO 3

29. Rig are the most commonly recreationally caught shark in New Zealand. Recreational catch estimates from the last two panel surveys indicate a 67% increase of the recreational catch of SPO 3.

Table 3: Summary of the National Panel Survey of Marine Recreational Fishers results from FMA 3 for blue moki, leatherjacket, red gurnard and rig. Figures are in tonnes, except for LEA 3.

Stock	2011/12 Estimated harvest	2017/18 Estimated harvest	(% change)
MOK 3	11.6	16.3	41%
LEA 3	506 (number of fish)	133 (number of fish)	74% decrease
GUR 3	2.01	2.49	24%
SPO 3	8.9	14.9	67%

30. In addition to these estimates of recreational catch, landings under section 111[53] (recreational catch taken by commercial fishers) are presented in Table 4. Section 111 landings of these species are relatively low.

Table 4: Section 111 landings MOK 3, LEA 3, GUR 3 and SPO 3 from 2014/15-2018/19. Figures are all in tonnes.

Stock	2014/15	2015/16	2016/17	2017/18	2018/19
MOK 3	0.011	0.078	0.040	0.113	0.092
LEA 3	0.024	0.002	0.146	0.088	0.258
GUR 3	0.474	0.571	0.360	0.803	0.341
SPO 3	0.290	0.236	0.203	0.214	0.084

2 Allowances within the TAC

2.1 Māori customary interests

31. Customary allowances and reported catch are presented in Table 5. They reflect that reported customary non-commercial catch of MOK 3, LEA 3, GUR 3 and SPO 3 is very low and makes up only a small amount of total removals (<1%).

Table 5: Customary catch allowances and reported catch. All figures are in tonnes.

Stock	Customary Māori allowance	Reported customary catch
MOK 3	1	<1
LEA 3	1	<1
GUR 3	3	<1
SPO 3	20	<1

32. There are a large number of customary management areas in the ECSI fishery (Table 6). There is also a temporary closure in place under section 186B of the Fisheries Act 1996 – at Kaikōura-Wakatu Quay (Kaikōura). Commercial fishing is prohibited in the mātaitai reserves. The East Otago taiāpure has a maximum recreational catch limit of 10 finfish.

[53] Section 111 of the Fisheries Act 1996 enables commercial fishers to take a recreational catch for their own consumption.

Table 6: Customary management areas in the ECSI fishery

Region	Name	Management type
Kaikōura	Te Waha o te Marangai	Mātaitai Reserve
Kaikōura	Mangamaunu	Mātaitai Reserve
Kaikōura	Kahutara	Mātaitai Reserve
Kaikōura	Oaro	Mātaitai Reserve
Kaikōura	Tūtaeputaputa	Mātaitai Reserve
Banks Peninsula	Lyttelton Harbour/Whakaraupo	Mātaitai Reserve
Banks Peninsula	Rapaki Bay	Mātaitai Reserve
Banks Peninsula	Koukourārata	Mātaitai Reserve
Banks Peninsula	Wairewa	Mātaitai Reserve
Banks Peninsula	Te Kaio	Mātaitai Reserve
South Canterbury	Opihi	Mātaitai Reserve
South Canterbury	Waitarakao	Mātaitai Reserve
South Canterbury	Te Ahi Tarakihi	Mātaitai Reserve
South Canterbury	Tuhawaiki	Mātaitai Reserve
South Canterbury	Waihao	Mātaitai Reserve
North Otago	Moeraki	Mātaitai Reserve
Otago	Waikouaiti	Mātaitai Reserve
Otago Harbour	Otakou	Mātaitai Reserve
South Otago	Puna-wai.Toriki	Mātaitai Reserve
Catlins Coast	Waikawa Harbour/Tuma Toka	Mātaitai Reserve
Kaikōura	Te Taumanu o Te Waka a Māui	Taiāpure
Kaikōura	Oaro-Haumuri	Taiāpure
Canterbury	Akaroa Harbour	Taiāpure
East Otago	East Otago	Taiāpure

2.2 Recreational interests

33. Recreational allowances and estimated catch are presented in Table 7. The recent National Panel Survey of Marine Recreational Fishers (NPS) suggests that recreational catch of MOK 3, LEA 3, GUR 3 and SPO 3 is moderate for some species (such as blue moki and rig) and low for leatherjacket and red gurnard. Estimated catch is lower (and in the case of SPO 3 considerably lower) than the current allowances set for recreational catch within the TAC.

Table 7: Recreational catch allowances and estimated catch from the NPS 2017/18 report. All figures are in tonnes.

Stock	Recreational allowance	Estimated recreational catch
MOK 3	20	16.3
LEA 3	2	<1
GUR 3	6	2.5
SPO 3	60	14.9

2.3 Other sources of mortality caused by fishing

34. The allowance for other sources of mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing, including incidental mortality from fishing

methods, or illegal fishing. It includes mortality associated with the requirement to return fish below the minimum legal size to sea and other mortality from fish escaping fishing gear, or illegal discarding.

35. In 2018 you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fish stocks at an amount that would equate to around 10% of the TACC, unless there is evidence to suggest otherwise[54]. Under the recommended options in this paper the allowance would move towards this suggested standard.

36. There have been significant changes in commercial fishing practices in the ECSI fishery that are likely to have contributed to a reduction in the level of mortality for some species, particularly gurnard, including mesh sizes and changes in market preferences through increased domestic demand. There is anecdotal information to suggest leatherjacket are sometimes (illegally) returned to the sea due to this species being unmarketable or unwanted at certain times.

3 Options, submissions, and analysis

3.1 Summary of options

37. The options proposed for each of the ECSI stocks for review are presented in Table 8 below. Option 3 for SPO 3 was added following consultation in response to feedback received and further consideration of recreational catch information. No additional options were added for other species following the consultation period.

Table 8: Proposed management settings for MOK 3, LEA 3, GUR 3, SPO 3 from 1 October 2020, with the percentage change relative to the *status quo* in brackets. Figures are all in tonnes.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
MOK 3	**Option 1** *(Status quo)*	197	160	1	20	16
	Option 2	217 ↑	176 ↑ (10%)	1	22 ↑	18 ↑
	Option 3	234 ↑	192 ↑ (20%)	1	22 ↑	19 ↑
LEA 3	**Option 1** *(Status quo)*	140	130	1	2	7
	Option 2	160 ↑	143 ↑ (10%)	1	2	14 ↑
GUR 3	**Option 1** *(Status quo)*	1,593	1,320	3	6	264
	Option 2	1,606 ↑	1,452 ↑ (10%)	3	6	145 ↓
SPO 3	**Option 1** *(Status quo)*	710	600	20	60	30
	Option 2	806 ↑	660 ↑ (10%)	20	60	66 ↑
	Option 3 (new)	766 ↑	660 ↑ (10%)	20	20 ↓	66 ↑

3.2 Submissions

38. The submissions and responses received for each of the stocks are presented in Table 9 below. FINZ did not make specific comments on these stocks but stated that they endorse DWG's response for them.

[54] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

Table 9: Submissions and responses received for MOK 3, LEA 3, GUR 3, SPO 3 (in alphabetical order)

Submitter	Option Supported												
	MOK 3				LEA 3			GUR 3			SPO 3		
	1	2	3	Other	1	2	Other	1	2	Other	1	2	Other
Harbour Fish Limited				✓			✓			✓			✓
Fisheries Inshore New Zealand Ltd (FINZ)			✓				✓			✓			✓
Mike Currie				✓			✓			✓			✓
New Zealand Sport Fishing Council (NZSFC) and LegaSea Joint Submission	✓				✓			✓			✓		
Sealord Group Limited (Sealord)		✓				✓			✓			✓	
Southern Inshore Fisheries Management Co. (Southern Inshore)			✓				✓			✓			✓
Te Kupenga o Maniapoto Limited		✓				✓			✓			✓	
Te Ohu Kaimoana				✓		✓			✓				✓

3.3 Analysis

3.3.1 Input and participation of tangata whenua

39. Input and participation into the sustainability decision-making process is provided 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. Particular regard must be given to kaitiakitanga when making sustainability decisions.

40. Te Waka a Māui me Ōna Toka Iwi Forum (TWAM) is Te Wai Pounamu (South Island) Iwi Fisheries Forum — it includes all nine tangata whenua Iwi of Te Wai Pounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu.

41. Due to COVID-19 travel restrictions, initial input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In March and April 2020, information on the proposed changes for MOK 3, LEA 3, GUR 3, and SPO 3 was provided to TWAM, and input sought. TWAM also met at a hui on 14 July 2020, but no specific feedback was received on MOK 3, LEA 3, GUR 3 and SPO 3.

42. TWAM stated it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. It considers recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. TWAM concludes that only once all sectors are accurately reporting will the TAC and allowances be meaningful.

3.3.2 Kaitiakitanga

43. Blue moki, red gurnard, and rig are identified as taonga species in Te Waipounamu Iwi Forum Fisheries Plan; in addition, TWAM considers all fish species taonga.

44. 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 2: South Island iwi are able to exercise kaitiakitanga;

- 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.

45. In Fisheries New Zealand's view the proposed TAC/TACC increases contribute towards Te Waipounamu Iwi Forum Fisheries Plan objectives described above. This is based on the potential to increase commercial activity and therefore economic development opportunities for South Island iwi quota holders. At the same time, the mauri and wairua of fisheries is maintained or enhanced because of more efficient, targeted fishing, whilst environmental impacts are avoided or mitigated by existing regulatory and non-regulatory arrangements.

46. Fisheries New Zealand considers that the proposed changes to the TACs of MOK 3, LEA 3, GUR 3 and SPO 3 will have a negligible effect on customary fishery management areas.

3.3.3 28N rights

47. There are 28N rights associated with the SPO 3 fishery. Any change to the TACC as part of the October 2020 Sustainability Round will have an impact on those rights. When 28N rights are triggered in a fishery through an increase to the TACC, they are honoured by reallocating quota shares from other quota holders in the fishery to the rights holders – in this case the tonnage held may increase but the percentage share of other quota holders in the fishery decreases.

48. Reallocation of quota shares not only increases the catch entitlement of the 28N rights holder, but also alters the proportionate shares of all quota owners in the stock, including decreasing the Fisheries Settlement proportion.

3.3.4 Environmental principles (section 9 of the Act)

49. All environmental principles under section 9 of the Act must be taken into account. The key environmental interactions within the ECSI fishery are the impacts of fishing on Hector's dolphins, fish bycatch, the incidental captures of seabirds and the damage by bottom trawling to benthic environments.

Marine mammals

50. Hector's dolphins are at risk of fishing-related mortality. The east coast of the South Island, along the Kaikōura coast, immediately to the north of Banks Peninsula and in the Southern Canterbury Bight, is identified as an area of elevated risk. It is estimated that commercial fishing is currently responsible for on average around 51 (22-105)[55] Hector's dolphin deaths per year along the east coast from a subpopulation of roughly 9,782 tonnes. However, the estimated population size and spatial distribution that underlie this estimate are both uncertain.

51. Fisheries New Zealand considers the increases to catch limits proposed in this paper reflect the increases in fish abundance and CPUE. Therefore, the risk of the proposed options increasing the adverse effects on marine mammals is considered low.

Fish bycatch

52. Most blue moki landings are taken by set net or trawl. Most of the current leatherjacket catch is taken as bycatch. Red gurnard are a major bycatch of inshore trawl fisheries in most areas of New Zealand. Most of the rig catch is taken by set net, with an increasing proportion taken by trawlers as bycatch.

53. Tarakihi catch is currently constrained by the Eastern Tarakihi Management Strategy and Rebuild Plan which lays out a 20-year plan for tarakihi on the east coast of the North and South Islands. Fisheries New Zealand has commissioned a characterisation to determine the overlap of blue moki, leatherjacket, red gurnard and rig with tarakihi, which is fully described in the consultation document. It shows that these species are taken inshore of the main juvenile and adult tarakihi distributions with only minor overlap.

[55] Estimate of current annual commercial fisheries deaths – mean (and 5th-95th percentiles).

Seabirds

54. Seabird species potentially at risk in the ECSI trawl fishery include black petrel (Vulnerable), Salvin's albatross (Critical), Southern Buller's albatross (Uncommon), New Zealand white-capped albatross (AR Declining) and Sooty shearwater (Declining)[56].

55. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (NPOA-Seabirds) with a 2020 update released earlier this year.

56. The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds. The most recent update to the risk assessment identified black petrels in the 'Very High Risk' category from fishing, and Salvin's albatross, Southern Buller's albatross as 'High' risk from commercial fishing. The updated NPOA-Seabirds is targeting management actions at the species most at risk as a priority.

57. Fisheries New Zealand and the fishing industry have worked collaboratively to implement a Protected Species Risk Management Plan (PSRMP) for each vessel in the ECSI (and other) fisheries. A PSRMP specifies the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures. As of September 2019, approximately 65% of inshore trawl vessels less than 28 m long had PSRMPs.

58. Fisheries New Zealand will continue to monitor the ECSI fishery and any interactions with seabirds; however, the number of incidental seabird captures is unlikely to increase under the options in this paper given the modest TAC increases are not expected to result in a significant increase in the amount of trawling.

Benthic impacts

59. Bottom trawling interacts with the seabed and benthic environment. However, 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.

60. Concerns have been raised about the potential for "hay paddocks" (polychaete worm habitat forming areas), to be diminished in extent as a consequence of disturbance from bottom trawling. Such habitats on the east Canterbury continental shelf support a range of associated species, especially invertebrates and appear to be relatively rare.

61. Biogenic habitats on the continental shelf from about 5 to 150 m depths are currently being characterised and mapped through the biodiversity project ZBD2008/01, and this will provide new information on fisheries species utilisation of these habitats.

62. Fisheries New Zealand will monitor fishing activity and location but does not expect the proposed modest increases to the TAC and TACC to increase the trawl footprint impact on the benthic habitat significantly.

3.3.5 Sustainability measures (section 11 of the Act)

63. 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 stocks and the aquatic environment, the natural variability of the stock concerned, and any relevant fisheries plan. Key matters in this fishery are set out below.

Kaikōura Marine Strategy

64. The Kaikōura Marine Strategy integrates a number of marine protection and fisheries mechanisms to manage coastal and marine resources. The Kaikōura (Te Tai ō Marokura) Marine Management Act 2014 establishes a number of marine protection and sustainable fisheries measures in the Kaikōura marine environment. Additionally, the Act established the Kaikōura Marine Guardians, an advisory committee that provides advice regarding biosecurity,

[56] The NZ threat statuses are T (threatened); AR (at risk); and NT (not threatened).Retrieved from https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs19entire.pdf

conservation, and fisheries matters within Te Whata Kai o Rakihouia i Te Tai o Marokura—Kaikōura Marine Area.

Regional plans

65. Fishers are subject to the rules in regional coastal plans (for example, small scale restrictions on fishing methods), however, the large area of ECSI means these rules do not, in general, stop fishers taking their annual catch entitlement (ACE) from other areas within the ECSI fishery.

NPOA Sharks

66. The National Plan of Action – Sharks' (NPOA-Sharks) main objectives are ensuring long-term viable populations, reducing wastage from fishing activity and stopping shark finning. As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), rig is included in the Plan. This takes into account the biological characteristics of rig in terms of its vulnerability to fishing pressure and the connectivity of rig stocks.

67. 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. The risk assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. Objectives of this goal that are met by the current review of rig in the ECSI fishery:

- For shark species managed under the QMS, undertake an assessment to determine the stock size in relation to the biomass (total weight of fish) that can support harvest of the maximum sustainable yield (B_{MSY}) or other accepted management targets and on that basis review catch limits to maintain the stock at or above these targets;
- Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high-risk species; and
- Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

National Inshore Finfish Fisheries Plan

68. The National Inshore Finfish Fisheries Plan (Plan) will guide the operational management of inshore finfish fisheries for the next five years and aims to move towards ecosystem-based fisheries management. The multi-species approach adopted in this paper reflects a step in this direction.

69. The National Inshore Finfish Fisheries Plan is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers the options in this paper consistent with the management objectives of the draft plan.

3.3.6 Multi-species effects

70. To test the wider impacts of the proposed TAC and TACC options across the multiple stocks in the ECSI trawl fishery, Fisheries New Zealand analysed catch proportions across the four stocks and the target and bycatch relationship between the four stocks over the last four years. This analysis suggests that:

- When targeting blue moki, the typical bycatch mix (greatest to lowest proportion) is red gurnard, leatherjacket, rig.
- When targeting leatherjacket, the typical bycatch mix (greatest to lowest proportion) is red gurnard, rig, blue moki.
- When targeting red gurnard, the typical bycatch mix (greatest to lowest proportion) is leatherjacket, rig, blue moki.
- When targeting rig, the typical bycatch mix (greatest to lowest proportion) is red gurnard, leatherjacket, blue moki.

71. An increase in the TACC for blue moki and leatherjacket may result in an increase in bycatch of red gurnard. An increase in the TACC of rig is likely to result in an increase in the catch of leatherjacket, which in turn could influence the bycatch of red gurnard. Leatherjacket is mostly bycatch of the ECSI bottom trawl fisheries, which primarily target flatfish or red cod.

72. From 2014-19 approximately 73% of MOK 3 catch was taken by set net and 27% by bottom trawl. The proportion of MOK 3 targeted catch over this time period was approximately 10%. In the MOK 3 set net fishery approximately 14% of catch was targeted and in the trawl fishery 2% was targeted from 2014-19. This is firm evidence of the role of MOK 3 as a bycatch species in the ECSI fishery.

73. Species with high productivities are more resilient to fishing pressure and generally take less time to rebuild from a depleted state than those with low productivity. An appropriate management strategy for species such as red gurnard in GUR 3 is to be responsive to fluctuations in stock biomass (for example, to increase catches at times of high stock biomass and quickly reduce catches at times of low biomass).

74. Based on the analysis 64-75% of the SPO 3 trawl catch is targeted. Noting that approximately two thirds of the SPO 3 catch is taken in set net, and around 75% of the set net catch is targeted, suggesting that >70% of the SPO 3 total catch is targeted. Targeted catch can be avoided, and SPO 3 should not be considered a largely bycatch fishery.

75. A recent (2020) fishery characterisation and CPUE analysis for SPO 3 indicated that both the set net and bottom trawl method of capture have increased targeting of SPO in recent years, which explains increases in catch.

76. Overall, there is a utilisation opportunity for these species that can support increased efficiency for fishers by minimising the impact of a particular stock being a "choke species[57]" limiting the catch of other stocks by-caught with that species.

3.4 Options

3.4.1 MOK 3

Option 1 – status quo

77. Option 1 is the *status quo*. This option carries the least risk and places the most weight on the reducing the risk to the stock and waiting until new and more recent stock assessment information is available. It retains the TAC at 197 tonnes, the TACC at 160 tonnes and all allowances as currently set.

78. The submission from NZ Sport Fishing Council supports Option 1, on the basis that there is no new information to support a TACC increase other than a 2% over-catch of the TACC in the last four years. The submission also considers that spawning migrations of blue moki from the south to the north could be affected by increased catch in MOK 3, thus affecting abundance in MOK 1.

79. Fisheries New Zealand agrees there is uncertainty around population interchange and the nature of the stock structure within MOK 3 and MOK 1. The 2019 Fisheries Assessment Plenary describes one biological stock around the North Island and the South Island north of Banks Peninsula. If only one stock exists, then blue moki from the southern waters may be moving north and increased fishing effort in the southern population could affect the northern population.

Option 2

80. Under Option 2, the TACC would increase by 10% from 160 tonnes to 176 tonnes. The recreational allowance would increase by two tonnes and the allowance for other sources of mortality from fishing would increase by 1.6 tonnes.

81. Fisheries New Zealand has no new information to support changing customary allowances for blue moki. Blue moki customary harvests in 2018 was reported as 100 kg, 10% of the current

[57] Ensuring there is ACE to cover bycatch can be problematic in a multi-species fishery. ACE that might have been used to cover bycatch is also used to target species

customary allowance. In 2017 20 kg of MOK 3 customary catch was reported and 118 kg was reported in 2016.

82. Recreational catch of blue moki (estimated at 16.3 tonnes) has increased by 41% over the period from 2011/12 to 2017/18 according to the National Panel Survey of Marine Recreational Fishers. Under Option 2 Fisheries New Zealand proposes a 10% increase in the recreational allowance from 20 tonnes to 22 tonnes.

83. The submissions from Southern Inshore Fisheries and response from Te Ohu consider there is no justification for the increase to the recreational allowance.

84. Fisheries New Zealand is proposing a more standardised allowance for other mortality caused by fishing for inshore trawl fish stocks representing 10% of commercial catch, unless we have evidence that a different allowance is appropriate. Under this option the allowance would increase by 1.6 tonnes to 17.6 tonnes.

85. Southern Inshore Fisheries disagrees with what they feel is the 'arbitrary application of 10% other sources of mortality caused by fishing". They note in their submission that the other sources of mortality caused by fishing should depend on the fishery, the type of fishing gear, the participants involved, and vary accordingly.

86. Two submissions support Option 2: Sealord and Te Kupenga o Maniapoto Limited (an asset holding company for Maniapoto iwi). The submissions were in support of a modest increase based on recent catch levels and a TACC that is fully caught.

87. Te Ohu also supports Option 2 (but not the proposed increase to the recreational allowance). Te Ohu agrees with our assessment that stocks specifically targeted can also be caught when other stocks are targeted. For example, an increase in the TACC for MOK 3 may result in an increase in catch of GUR 3. For species with low productivity, Te Ohu considers that an appropriate TAC is one that reflects longer term stability.

88. Overall, Fisheries New Zealand considers the best available information suggests MOK 3 is below the target fishing mortality and that there has been a general increase in abundance since 2005-06. The most recent assessment in 2017 indicated that fishing mortality on the adult population was below the natural mortality rate, suggesting the stock is lightly exploited and an opportunity exists to increase catch. The choice of TAC options differs in terms of the weight placed on the uncertainty in the estimate of the natural mortality rate, and the reliability of CPUE indices as indices of stock abundance.

89. Noting that blue moki has a low growth rate and longevity and is a low-medium productivity fish, as well as the uncertainty raised by the Sports Fishing Council regarding stock boundaries and spawning migrations, Fisheries New Zealand preference is for the more modest TAC increase under Option 2 (relative to Option 3).

90. Stocks specifically targeted can also be caught when other stocks are targeted. This a function of an interdependent, multi-species fishery such as the ECSI mixed-trawl fishery. Noting these interdependences, an increase in the TACC for blue moki may result in an increase in bycatch of red gurnard.

91. This option provides for increased utilisation opportunities for commercial fishers. Based on the 2019/20 reported port price this increase may support an approximate increase in revenue of $22,870 per year if the entire TACC is caught. It is important to note that port price is what the commercial fisher receives, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers[58].

Option 3

92. Under Option 3, the TACC would increase by 20% from 160 tonnes to 192 tonnes and the allowance for other sources of mortality from fishing would increase by 3.2 tonnes (representing

[58] The surveyed average price paid by licensed fish receivers to independent fishers for fish landed to those licensed fish receivers.

10% of commercial catch). The customary and recreational allowance would be set as for Option 2.

93. This option would provide the greatest economic benefits, while also potentially presenting a greater sustainability risk. Based on the 2019/20 reported port price (which does not reflect the total economic benefit), this increase may support an approximate increase in revenue of $45,740 per year.

94. The submission from Southern Inshore Fisheries is in favour of the TACC increase proposed under Option 3. The submission references CPUE indices from the set-net fishery around Kaikōura that indicate there has been a general increase the abundance of adult blue moki within MOK 3, and anecdotal information from fishers in the region, and from further south near Timaru acknowledging increased abundance.

95. Commercial entity Harbour Fish supports increasing the TACC beyond the limit in Option 3 (192 tonnes). They advocate for a less-restrictive management approach that mitigates economic impacts on fishers. The submission notes the deemed values impact on fishers from landings in which there is insufficient ACE to cover catch.

96. Fisheries New Zealand notes the uncertainty associated with MOK 3 stock status and the need to take a cautious approach, particularly for species like blue moki where their lower productivity and biological characteristics make them vulnerable to the effects of overfishing.

3.4.2 LEA 3

Option 1 – status quo

97. Option 1 is the *status quo*. This option carries the least risk and places the most weight on the uncertainty associated with the lack of a scientific assessment of the maximum sustainable yield, reference or current biomass for leatherjacket stocks. It retains the TAC at 140 tonnes pending further research to assess the degree to which changes in fishing practices and economic drivers may have influenced CPUE trends.

98. One submission from the NZ Sport Fishing Council supports Option 1. They reject any increase to the TAC and TACC on the basis a precautionary approach is required and consider that proposed increases are unnecessary.

Option 2

99. Under Option 2, the TACC would increase by 10% from 130 tonnes to 143 tonnes. The allowance for all other sources of mortality from fishing would increase by 7.3 tonnes.

100. This option takes into account that the biomass index from the ECSI trawl survey 30-400 m strata has increased since 2008, suggesting an increase in abundance. LEA 3 catch has been in excess of the TACC five out of the last six years. The uncertainty regarding trends in CPUE as a result of changes in reporting and retention is reflected in the conservative increase to the TACC that is proposed under this option.

101. Fisheries New Zealand has no new information to support changing customary allowances for leatherjacket. There was no reported customary harvest reported for LEA 3 from 2015-2018.

102. Based on the results of the 2017/18 National Panel Survey of Marine Recreational Fishers leatherjacket is seldom caught by recreational fishers. The recreational harvest in 2012 for LEA 3 was 506 (number of fish) decreasing to 133 (number of fish) in 2017/18; both figures equate to less than 1 tonne.

103. Fisheries New Zealand proposes to standardise the other sources of mortality allowance caused by fishing for inshore trawl fish stocks to at least 10% of commercial catch, unless we have evidence that a different allowance is appropriate. Therefore, the other sources of mortality caused by fishing allowance would increase to 14.3 tonnes.

104. Southern Inshore Fisheries disagrees with what they feel is the ‘arbitrary application of 10% other sources of mortality caused by fishing”. They note in their submission that the other

sources of mortality caused by fishing should depend on the fishery, the type of fishing gear, the participants involved, and vary accordingly.

105. Based on the 2019/20 reported port price, this option would support an approximate increase in revenue of $8,422 per year if the entire TACC is caught.

106. This option was supported by three submissions. Sealord, Te Kupenga o Maniapoto Limited and Te Ohu Kaimoana. Sealord supports an increase that is in-line with recent catch and trawl survey information. Te Kupenga o Maniapoto Limited supports a moderate increase in a bycatch fishery. Te Ohu supports Option 2, noting higher productivity stocks such as LEA 3 take less time to rebuild than those with low productivity, and management approaches can be responsive to fluctuations in biomass.

107. Commercial entity Harbour Fish supports increasing the TACC beyond the limit in Option 2 (143 tonnes). They advocate for a less-restrictive management approach that could mitigate economic impacts on fishers. The submission notes the deemed values impact from landings in which there is insufficient ACE to cover catch.

108. Southern Inshore Fisheries supports increasing the TACC to 170 tonnes, not 143 tonnes as per Option 2. They note the economic effect of $11,238 of deemed values paid last year by fishers and that the best available information suggests increased abundance and a utilisation opportunity. Additionally, a modest increase would provide an opportunity for greater visibility and diversity in the marketplace, which would taking pressure off more popular, targeted fish such as blue cod and snapper.

109. Southern Inshore also notes that with trawl fishers have increased their cod-end mesh size to minimise the capture of smaller sized fish, and they do not see any impact on the fishery or any related increase in the capture of GUR 3 or LEA 3.

110. Fisheries New Zealand considers a cautious approach, with a lesser increase than that proposed by these submitters is appropriate. This would allow for an adaptive approach and further research into this species, as well as further research about any benthic impacts.

111. As a function of an interdependent, multi-species fishery such as the ECSI mixed-trawl fishery, an increase in the TACC for leatherjacket may result in an increase in bycatch of red gurnard.

3.4.3 GUR 3

Option 1 – status quo

112. Option 1 is the *status quo*. This option carries the least risk and places the most weight on the uncertainty associated with the scientific assessment.

113. Best available scientific information suggests GUR 3 is above the Harvest Strategy Standard default target biomass of 40% SB_0. The choice of proposed options differs in terms of the weight placed on the uncertainty associated with the ECSI trawl survey (catchability varies between years in the core survey area). The status quo takes into account that further trawl surveys and an updated stock assessment of GUR 3 is scheduled for 2021 which will provide greater certainty about biomass trends and potentially a further opportunity to review the fishery.

114. One submission from the NZ Sport Fishing Council supports Option 1. They reject any increase to the TAC and TACC on the basis a precautionary approach is required, and the increases are unnecessary.

Option 2

115. Under Option 2, the TACC would increase by 10% from 1,320 tonnes to 1,452 tonnes. The allowance for other sources of mortality from fishing would decrease by 118.8 tonnes.

116. This option takes into account that GUR 3 is above the Harvest Strategy Standard default target biomass, and that the TACC has been consistently over caught for the past 12 years, despite being largely a bycatch of other target fisheries.

117. Fisheries New Zealand has no new information to support changing customary allowances for red gurnard. GUR 3 customary harvests in 2018 was reported as 301 kg, 10% of the current

customary allowance. No customary catch for GUR 3 was reported in 2017 and 200 kg was reported in 2016.

118. Estimates from the 2011/12 and 2017/18 National Panel Survey of Marine Recreational Fishers indicates a 24% increase in red gurnard catch. The recreational catch estimate remains, however, lower than the current recreational allowance and no increase is proposed.

119. Fisheries New Zealand proposes to standardise the allowance for other sources of mortality caused by fishing for inshore trawl fish stocks at or above 10% of commercial catch unless we have evidence that a different allowance is appropriate. Noting improvements in the gear and practises used in this fishery the other sources of mortality caused by fishing allowance would be decreased to 145.2 tonnes.

120. Based on the 2019/20 reported port price (which does not reflect the total economic benefit), the proposed TACC increase would support an approximate increase in revenue of $325,631 per year if the entire TACC is caught and can continue to be caught sustainably in future years.

121. This option was supported by three submissions. Sealord, Te Kupenga o Maniapoto Limited and Te Ohu Kaimoana. Sealord supports an increase that is in-line with recent catch and trawl survey information. Te Kupenga o Maniapoto Limited supports a moderate increase in a bycatch fishery. Te Ohu notes highly productive stocks like GUR 3 take less time to rebuild than those with low productivity, and management approaches can be responsive to fluctuations in biomass. Te Ohu also supports stocks that are fished together being managed together.

122. Commercial entity Harbour Fish supports increasing the TACC beyond what is proposed in Option 2 (1,452 tonnes). They advocate for a less-restrictive management approach that could mitigate economic impacts on fishers. The submission notes the deemed values impact from landings in which there is insufficient ACE to cover catch.

123. Southern Inshore Fisheries supports an alternative option to increase the TACC to 1500 tonnes. The submission notes anecdotal information from fishers of increased abundance in the fishery, as well as ECSI trawl survey and catch trends that they feel support a larger increase of the TACC. They note the economic impact of deemed value bills on fishers with $1.6 million of deemed values paid for GUR 3 (a third of that in the last two fishing years). Southern Inshore Fisheries does not feel the increase in Option 2 is enough to provide for optimal utilisation in the fishery.

124. Fisheries New Zealand considers reviewing these ECSI stocks together using 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. Noting the interdependences of the ECSI multi-species trawl fishery an increase in the TACC for red gurnard may result in an increase in bycatch of leatherjacket and rig.

125. Overall, Fisheries New Zealand considers the ECSI trawl survey and abundance indices suggest that abundance of GUR 3 is high and that a modest increase allows for increased utilisation and an adaptive approach to managing this highly productive stock.

3.4.4 SPO 3

Option 1 – status quo

126. Option 1 is the *status quo*. This option carries the least risk and places the most weight on the uncertainty associated with the scientific assessment. It retains the TAC at 710 tonnes.

127. It is unlikely that current catch levels would cause the stock to decline below the soft or hard limit.

128. One submission from the NZ Sport Fishing Council supports Option 1. They reject any increase to the TAC and TACC on the basis a precautionary approach is required, and the increases are unnecessary.

Option 2

129. Under Option 2, the TACC would increase by 10% from 600 tonnes to 660 tonnes. The allowance for all other sources of mortality from fishing would increase by 36 tonnes.

130. Best available scientific information suggests that SPO 3 is at or above the target reference level and there has been an increasing trend in the bottom trawl CPUE series suggesting good recruitment. A new characterisation of SPO 3 indicated that both the set net and bottom trawl fisheries have increased targeting of rig in recent years, which may explain increases in catch. Trends in CPUE may therefore be a result of changes in reporting and retention rather than abundance.

131. Fisheries New Zealand has no new information to support changing customary allowances for rig. SPO 3 customary harvests in 2018 was reported as 358 kg, 2% of the current customary allowance. In 2017 64 kg of customary catch was reported for SPO 3 and 100 kg reported in 2016.

132. Estimates from the National Panel Survey of Marine Recreational Fishers indicate catch is well below the recreational allowance for SPO 3 of 60 tonnes. Recreational catch from the survey in 2017/18 was estimated to be 14.9 tonnes.

133. Fisheries New Zealand is proposing to standardise other sources of mortality caused by fishing for inshore trawl fish stocks at 10% of commercial catch unless we have evidence that a different allowance is appropriate. Therefore, the other sources of mortality caused by fishing allowance would increase to 66 tonnes.

134. Based on the 2019/20 reported port price (which does not reflect the total economic benefit), this increase may support an approximate increase in revenue of $244,039 per year if the entire TACC is caught.

135. This option was supported by Sealord and Te Kupenga o Maniapoto Limited. Sealord supports an increase that is in-line with recent catch and trawl survey information. Te Kupenga o Maniapoto Limited supports a moderate increase in the fishery.

136. Commercial entity Harbour Fish supports increasing the TACC beyond the level proposed in Option 2 (660 tonnes). They advocate for a less-restrictive management approach that could mitigate economic impacts on fishers. The submission notes the deemed values impact from landings in which there is insufficient ACE to cover catch.

137. Southern Inshore Fisheries also supports an alternative option with a TACC increase to 700 tonnes. They note the most recent CPUE review in 2019 showed an upward trend and catch in SPO 3 has been increasing since 2000.

138. Southern Inshore Fisheries does not agree that the other sources of mortality caused by fishing should increase from 30 tonne to 66 tonnes to align with the principle of 10% for other sources of mortality caused by fishing. They state there is no evidence to support those mortality levels. They further note the selectivity of larger mesh sizes in the trawl fisheries provide for the release of the smaller fish and therefore reduce levels of mortality. Rig is on Schedule 6 of the Fisheries Act to provide for return to the sea. Fish on this schedule are deemed to have high survivability and low mortality rates when captured and returned to the sea.

139. Noting the interdependences of the ECSI multi-species trawl fishery an increase in the TACC of rig is likely to result in an increase in the catch of leatherjacket, which in turn may influence the bycatch of red gurnard.

Option 3 (New)

140. Te Ohu Kaimoana proposes an alternative option which is similar to Option 2 but decreases the recreational allowance from 60 tonnes to 20 tonnes (with a consequential reduction in the TAC). Fisheries New Zealand supports this proposal, given further analysis of the available information suggests setting the allowance at this level would better reflect estimated recreational catch. Data from the 2017/18 recreational panel survey estimated recreational catch of 14.9 tonnes. A recreational allowance of 20 tonnes is an appropriate allowance based on the available data for the fishery.

141. Te Ohu only supports this option, however, if it is executed in a way that does not diminish Settlement quota as a proportion of the TACC. There is one tonne of 28N rights associated with the SPO 3 fishery. Any increase to the TACC as part of the October 2020 Sustainability Round will have an impact on those rights. Te Ohu does not support a management decision that will result in a proportional reduction of iwi ownership. Te Ohu state increasing the TACC in SPO 3 will result in 28N rights being discharged and that is a breach of the Fisheries Settlement.

3.5 Other considerations

142. One submission from the general public contends that catch using bottom trawl and set-net should be prohibited. There is evidence that bottom-trawling damages benthic environments. The proposed increases are modest and not likely to significantly increase trawl effort as they reflect increased fish abundance and CPUE. In this fishery trawl activity is largely confined to areas that have been consistently fished over time.

143. As noted, there is one tonne of 28N rights associated with the SPO 3 fishery. Any increase to the TACC as part of the October 2020 Sustainability Round will have an impact on those rights. Te Ohu opposes any decision that will result in a proportional reduction of iwi ownership as that is a breach of the Fisheries Settlement.

144. Southern Inshore Fisheries accepts that there are issues around the discharge of 28N rights and reallocation of quota shares. They prefer the discharge of the 28N rights be provided. They seek a TACC increase for SPO 3 and the first 1 tonne would discharge all of the 28N rights for the stock. They would like this done in a way that Settlement quota as a proportion of the TACC is not reduced.

145. Te Ohu support the multi-species management approach, noting in their submission that "stocks that are fished together should be managed together".

4 Conclusion and recommendations

146. Fisheries New Zealand recommends that you agree to Option 2 for MOK 3, LEA 3 and GUR 3.

147. An alternative option for SPO 3 (Option 3) is recommended that decreases the recreational allowance consistent with recorded recreational catch. It is recommended that the recreational allowance for SPO 3 decrease from 60 tonnes to 20 tonnes to better reflect estimated recreational catch.

148. The scientific information for SPO 3 is of high quality and suggests that targeting of rig has increased in recent years. The cautious recommendation to increase the TACC by 10% takes into account that rig could be near its target point and overfishing is about as likely as not to be occurring, and that an increase in catch could result in overfishing and moving the stock below the target.

149. Overall, these are modest increases to the TAC (including TACC increases of 10%) for these stocks, reflecting that available information suggests the abundance of these species has increased, or is high, but there is uncertainty associated with the scientific and other available information on these stocks. Changes to the TAC for one stock in this multispecies fishery will also have effects on the other stocks that are caught with it, and these interactions factor into management decisions.

150. The changes will contribute towards the achievement of the Te Waipounamu Iwi Forum Fisheries Plan management objectives; particularly Objective 3, supporting environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi.

151. Fisheries New Zealand considers the proposals in this paper will not impact on, or be impacted by, the taiāpure of Te Taumanu o Te Waka a Māui (Kaikōura), Oaro-Haumuri (Kaikōura),

Akaroa Harbour (Canterbury) and East Otago (Otago). Commercial fishing is prohibited in the mātaitai reserves and taiāpure, and the large area of ECSI fishery in combination with the modest increases proposed, means there is unlikely to be any change in fishing patterns or the abundance of these stocks.

5 Decisions for MOK 3, LEA 3, GUR 3 & SPO 3

MOK 3

Option 1

Agree to retain the MOK 3 TAC at 197 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 20 tonnes;
iii. Retain the allowance for other sources of mortality caused by fishing at 16 tonnes;
iv. Retain the MOK 3 TACC at 160 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the MOK 3 TAC at 217 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Increase the allowance for recreational fishing interests from 20 to 22 tonnes;
iii. Increase the allowance for other sources of mortality caused by fishing from 16 to 18 tonnes;
iv. Increase the MOK 3 TACC from 160 to 176 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the MOK 3 TAC at 234 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Increase the allowance for recreational fishing interests from 20 to 22 tonnes;
iii. Increase the allowance for other sources of mortality caused by fishing from 16 to 19 tonnes;
iv. Increase the MOK 3 TACC from 160 to 192 tonnes.

Agreed / Agreed as Amended / Not Agreed

LEA 3

Option 1

Agree to retain the LEA 3 TAC at 140 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 2 tonnes;
iii. Retain the allowance for other sources of mortality caused by fishing at 7 tonnes;
iv. Retain the LEA 3 TACC at 130 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the LEA 3 TAC at ~~160~~ 164 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
ii. Retain the allowance for recreational fishing interests at 2 tonnes;
iii. Increase the allowance for other sources of mortality caused by fishing from 7 to ~~14~~ 21 tonnes;
iv. Increase the LEA 3 TACC from 130 to ~~143~~ 140mt tonnes.

Agreed / Agreed as Amended / Not Agreed

5%

GUR 3

Option 1

Agree to retain the GUR 3 TAC at 1593 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 6 tonnes;
iii. Retain the allowance for other sources of mortality caused by fishing at 264 tonnes;
iv. Retain the GUR 3 TACC at 1320 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the GUR 3 TAC at ~~1606~~ 1614mt tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
ii. Retain the allowance for recreational fishing interests at 6 tonnes;
iii. Decrease the allowance for other sources of mortality caused by fishing from 264 to ~~145~~ 105mt tonnes;
iv. Increase the GUR 3 TACC from 1,320 to ~~1,452~~ 1500mt tonnes.

Agreed / Agreed as Amended / Not Agreed

SPO 3

Option 1

Agree to retain the SPO 3 TAC at 710 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Retain the allowance for recreational fishing interests at 60 tonnes;
iii. Retain the allowance for other sources of mortality caused by fishing at 30 tonnes;
iv. Retain the SPO 3 TACC at 600 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SPO 3 TAC at 806 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Retain the allowance for recreational fishing interests at 60 tonnes;
iii. Increase the allowance for other sources of mortality caused by fishing from 30 to 66 tonnes;
iv. Increase the SPO 3 TACC from 600 to 660 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the SPO 3 TAC at 766 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
ii. Decrease the allowance for recreational fishing interests to 20 tonnes;
iii. Increase the allowance for other sources of mortality caused by fishing from 30 to 66 tonnes;
iv. Increase the SPO 3 TACC from 600 to 660 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

Kingfish (KIN 2, 3, 7 & 8) – Central East, All of West Coast, South & Sub-Antarctic

Seriola lalandi, Haku

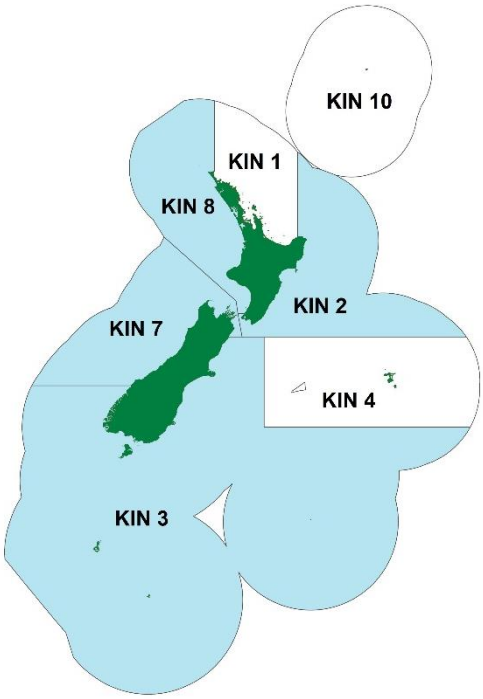


Figure 1: Quota management areas (QMAs) for kingfish (KIN), with KIN 2, 3, 7 & 8 highlighted in blue. A kingfish is pictured on the left.

Table 1: Summary of options proposed for KIN 2, 3, 7 & 8 from 1 October 2020. All figures in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
KIN 2	**Current** *(status quo)*	170	63	18	65	24
	Option 1	185 ↑ (9%)	70 ↑ (11%)	21 ↑	79 ↑	15 ↓
KIN 3	**Current** *(status quo)*	17	6	4	6	1
	Option 1	21 ↑ (24%)	9 ↑ (50%)	4	6	2 ↑
	Option 2	23 ↑ (35%)	11 ↑ (83%)	4	6	2 ↑
KIN 7	**Current** *(status quo)*	41	15	2	20	4
	Option 1	81 ↑ (98%)	30 ↑ (100%)	4 ↑	40 ↑	7 ↑
	Option 2	120 ↑ (193%)	44 ↑ (193%)	6 ↑	60 ↑	10 ↑
	Option 3 (new)	98 ↑ (139%)	44 ↑ (193%)	6 ↑	40 ↑	8 ↑
KIN 8	**Current** *(status quo)*	92	45	9	31	7
	Option 1	167 ↑ (82%)	80 ↑ (78%)	19 ↑	55 ↑	13 ↑

New option incorporated following consultation	Yes (KIN 7 Option 3)			
Total submissions received for KIN stocks	13			
Number of submissions received in support of each option	**KIN 2**	**KIN 3**	**KIN 7**	**KIN 8**
Option 1	1	1	1	1
Option 2	N/A	4	0	N/A
Other	7	5	8	10

1 Why are we proposing that you review the TACs and TACCs?

1. Standardised catch per unit effort (CPUE) indices and recent on-the water experience suggests that the abundance of kingfish has increased nationwide.

2. In addition, increases in average sea surface temperature around New Zealand have likely made southern regions more habitable for kingfish, with both commercial and recreational fishers reporting increasing kingfish catches from as far south as Stewart Island.

3. The increased abundance of kingfish has resulted in increased catches across all sectors. The estimated recreational catch of kingfish exceeds the recreational allowance for a number of stocks. Catches by commercial vessels in excess of the available annual catch entitlement (ACE) have resulted in significant deemed value obligations for fishers.

4. Having regard to the importance of kingfish to all sectors, and therefore the socio-economic benefits associated with harvesting, Fisheries New Zealand proposes that you increase the total allowable catch (TAC) of KIN 2, 3, 7 & 8, to reflect the likely increases in abundance and availability to all sectors.

1.1 About the stocks

1.1.1 Fishery characteristics

5. Prized for their large size and sporting attributes, kingfish are a very important species to recreational fishers. Kingfish in KIN 2, 3, 7 & 8 are also taken as unavoidable bycatch in commercial trawl and set net fisheries targeting other species.

1.1.2 Biology

6. Kingfish are a fast growing, medium-lived species that reach sexual maturity at around five to six years of age. Within New Zealand, it is thought there are separate stocks of kingfish off the west and east coasts. Kingfish are known to be a robust species and, when handled appropriately, likely to survive catch and release by fishers. The biological characteristics indicate that it is a medium productive species (as per the Harvest Strategy Standard), which means it has an average level of resilience to high levels of fishing pressure.

7. Being a warm-temperate species, kingfish have historically been most abundant in the northern half of the North Island. However, in recent years kingfish have been found more frequently in southern regions, particularly during the summer months when water temperatures are at their highest (Figure 2).

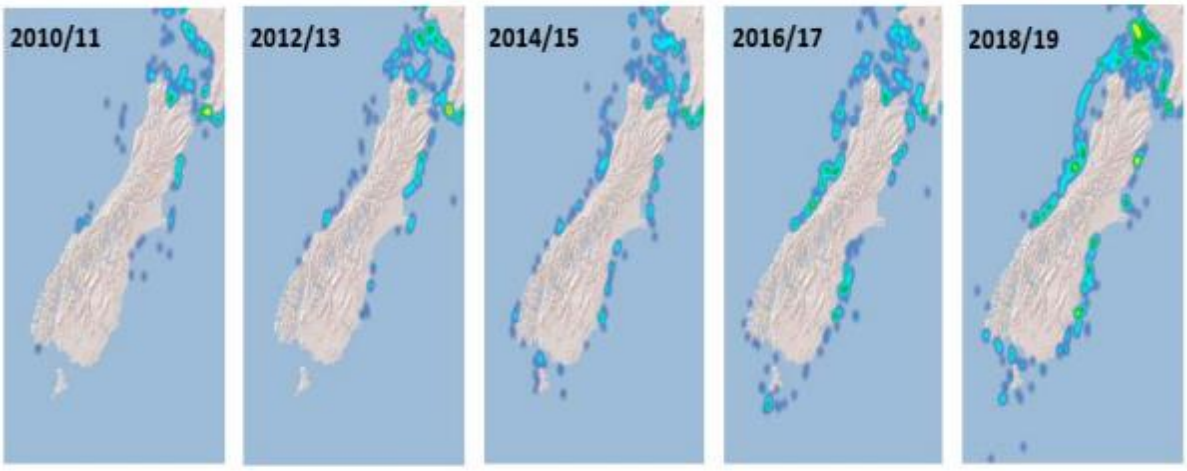


Figure 2: Location of commercial catches of kingfish around the South Island between the 2010/11 and 2018/19 fishing years.

1.2 Management of kingfish

1.2.1 Management strategy

8. Due to the value of kingfish to non-commercial fishers, the goal of the overall management framework is to manage commercial catches to unavoidable bycatch levels only. This is achieved through a combination of low Total Allowable Commercial Catches (TACCs), inclusion on Schedule 6 (explained below) and high deemed value rates.

9. Fisheries New Zealand acknowledges that the default target (*40% B_0*) and reference points, as suggested by the Harvest Strategy Standard, may be too low given the importance of kingfish to non-commercial fishers and this view is reflected in the strategy outlined above.

1.2.2 TAC settings

10. Upon introduction to the Quota Management System (QMS) in 2003, both the recreational allowances and commercial catch limits of kingfish were set lower than pre-QMS catch levels due to concerns regarding sustainability, and to provide an opportunity for abundance to increase.

11. Since 2003, the TACs of KIN 3, 7 & 8 have been increased to reflect larger catches across all sectors. Changes to TACs have largely retained the original (2003) proportionality of the TAC between sectors. No changes have been made to the TAC of KIN 2 since introduction to the QMS (Figure 3).

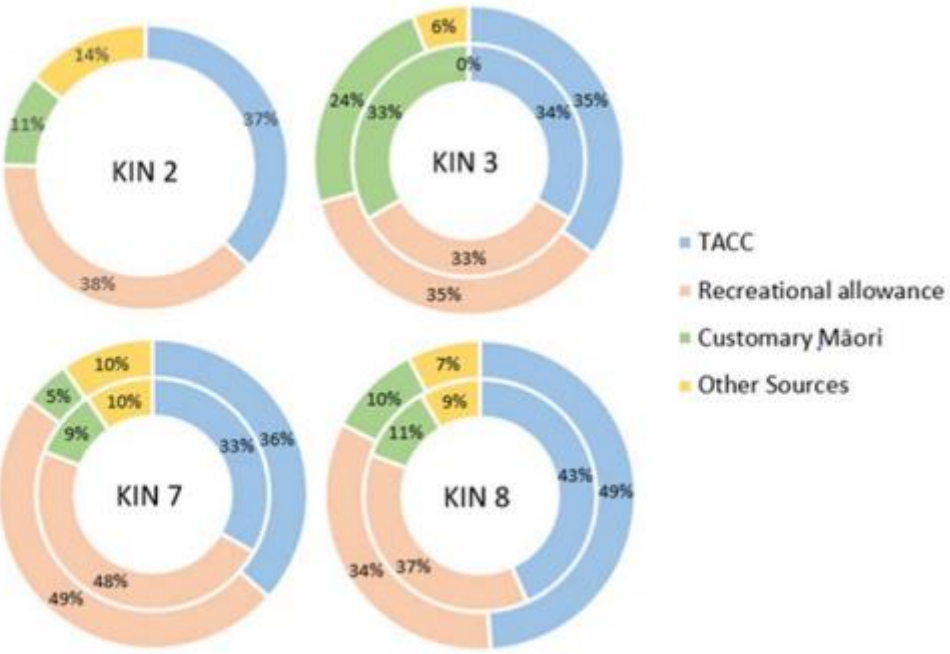


Figure 3: Proportion each sector comprises of the TAC both prior to, and following, the changes to the TACs of KIN 2, 3, 7 & 8. Inner circle represents the TAC upon introduction to the QMS in 2003; the outer circle represents the current TAC.

1.2.3 Deemed value rates

12. To reflect the value of the stocks to non-commercial fishers, the deemed value rates of all kingfish stocks are set above the landed price so as to provide a strong incentive for commercial fishers to avoid kingfish (where possible) and return any live kingfish to the sea (Schedule 6 conditions permitting).

13. The current deemed value rates of KIN 2, 7 and 8 are essentially unchanged from the initial rates upon introduction to the QMS. To reflect the difficulties fishers face in managing unintended kingfish catches, the deemed value rates of KIN 3 were reduced by 50% from 1 October 2019. However, to ensure the incentive for fishers to avoid and return live kingfish to the sea remained, the amended deemed value rates were set above the landed price of the fish.

1.2.4 Other management settings

14. Since 2006, kingfish have been listed on Schedule 6 of the Fisheries Act 1996 (the Act) which allows commercial fishers, that are not using the method of set netting, to return live kingfish to the sea providing that the fish are likely to survive, and are returned to the sea as soon as practicable.

15. By allowing some fishers to return live kingfish to the sea, Schedule 6 provisions provide fishers with some flexibility to manage their kingfish bycatch.

16. Both commercial and recreational fishers are subject to minimum legal-size limits, set at 65 cm and 75 cm respectively. In addition, recreational fishers in all areas are limited to three kingfish per person per day, as part of a hāpuku/kingfish daily bag limit.

1.3 State of the stocks

17. Standardised CPUE series of relative abundance were developed for KIN 2, 7 & 8 during 2019 and 2020. No standardised CPUE index has been developed for KIN 3.

18. All kingfish CPUE indices used to inform this review were presented to, and subsequently accepted by, both the Inshore Finfish Science Working Group and Stock Assessment Plenary in 2020.

19. Given the lack of stable periods of high catch and high abundance within the CPUE indices, the Working Group and Plenary concluded that the only defendable approach to determining reference points was to choose stable periods of low abundance early in the series as representing the soft limit (*20% B_0*). The default Harvest Strategy Standard target (*40% B_0*) would therefore be set at twice the soft limit.

20. More information on the status of specific stocks are provided in the relevant sections below.

1.4 Catch information

21. This section summarises catch information across all relevant kingfish stocks. Information on the commercial, customary and recreational catch of specific stocks is provided in the relevant sections below.

1.4.1 Commercial

22. Almost all (>99%) commercial kingfish landings in KIN 2, 3, 7 & 8 are taken as bycatch by trawl or set net vessels targeting other species.

23. Landings of kingfish from KIN 2, 3, 7 & 8 have regularly exceeded the available ACE during recent years. Given the financial penalties associated with catching in excess of kingfish ACE, and the ability of some fishers to return live kingfish to the sea, Fisheries New Zealand considers that such catches represent genuine unavoidable bycatch.

1.4.2 Customary Māori

24. All customary take under the *Fisheries (Kaimoana Customary Fishing) Regulations 1998* (Kaimoana Customary Fishing Regulations) and the *Fisheries (South Island Customary Fishing) Regulations 199*9 (South Island Customary Fishing Regulations) is required to be reported. However, information on the level of the customary take of kingfish is incomplete as the customary regulations have not yet been implemented in parts of both the North and South Islands. In these areas, customary catch is taken under regulation 50 and 51 of the *Fisheries (Amateur Fishing) Regulations 2013* (Amateur Fishing Regulations), which do not have a reporting requirement.

25. Customary authorisations can be exercised on commercial vessels, provided that customary catch is kept separate.

1.4.3 Recreational

26. Kingfish are highly regarded as both a sport and a table fish by recreational fishers. In 2017/18 the recreational take equated to approximately two thirds of the nationwide catch. Although KIN

1 is the most significant recreational stock, important recreational fisheries for kingfish also exist in KIN 2, 3, 7 & 8.

27. The National Panel Survey of Marine Recreational Fishers (NPS) provides the best available information on the recreational harvest of kingfish. The 2017/18 NPS represents the first estimate of recreational take since 2011/12. However, estimates of recreational harvests are uncertain, and recreational fishing activity can vary between years due to weather conditions and other factors.

28. The survey estimated that the total number of recreational fishing trips in 2017/18 was 20% lower than in 2011/12. However, despite the decrease in recreational fishing effort the total estimated national recreational harvest of kingfish increased, from 647 tonnes in 2011/12 to 897 tonnes in 2017/18.

2 Allowances within the TAC

2.1 Māori customary interests

29. The customary allowances for KIN 2, 7 and 8 have remained unchanged since 2003. The customary allowance of KIN 3 was increased in 2018.

30. In recent years, the majority of the customary harvest of kingfish in KIN 8 has been taken using commercial vessels. A similar mechanism may be utilised more frequently in other areas in the near future, and this has already been observed in KIN 2 as a mechanism for iwi to feed their people during the COVID-19 pandemic. Where such a mechanism is utilised, customary harvest of kingfish is likely to increase over the next few years.

31. While the information about annual customary harvest is uncertain, we propose that you increase the allowance for customary fishers in KIN 2, 7 & 8 to ensure future customary take is accounted for. We propose that you retain the current customary allowance in KIN 3, as the customary allowance was reviewed recently (2018) and feedback received from Iwi Fisheries Forum's and through consultation suggests it adequately accounts for customary take at this time.

2.1.1 Customary fisheries areas

32. Mātaitai reserves, taiāpure and temporary closures are customary management tools that provide for kaitiakitanga. You are required to take these into account when making allowances for customary non-commercial fishing interests. A number of mātaitai reserves, taiāpure and temporary closures fall within the quota management areas of the relevant kingfish stocks, including:

    - **KIN 2:** the taiāpure of Porangahau and Palliser Bay, and; the mātaitai reserves of Te Hoe, Moremore, Horokaka, Hakihea and Toka Tamure.
    - **KIN 3:** the taiāpure of Te Taumanu o Te Waka a Mäui, East Otago, Akaroa Harbour and Oaro-Haumuri; the mātaitai reserves of Motupöhue (Bluff Hill), Lyttelton Harbour/ Whakaraupō, Otakou, Oreti, Waikouaiti, Koukourarata, Moeraki, Waitutu, Waikawa Harbour/Tumu Toka, Waitarakao, Puna-wai-Toriki, Te ahi Tarakihi, Te Kaio, Te Whaka a Te Wera, Waihao and Tuhawaiki; and the Kaikoura-Wakatu Quay temporary closure.
    - **KIN 7:** the taiāpure of Whakapuaka (Delaware Bay), and the mātaitai reserves of Tauparikaka, Okuru/Mussel Point, Te Tai Tapu (Kaihoka), Mahitahi/Bruce Bay, Te Tai Tapu (Anatori), Manakaiaua/Hunts Beach, Aotea Harbour and Marokopa.
    - **KIN 8:** the taiāpure of Kawhia Aotea.

33. Given that tagging studies indicate that most adult kingfish do not move outside of local areas, and the abundance of kingfish is expected to increase under each option (see respective sections below), the proposed options are considered unlikely to affect the availability of kingfish within these areas of customary importance.

2.2 Recreational interests

34. The allowance for recreational fishers provides for the cumulative catch taken by recreational fishers over a fishing year.

35. While the information about annual recreational catches is uncertain, we propose that you set allowances for recreational fishers to reflect current catch levels and account for recreational fish landed under a section 111 permit (fish landed using recreational fishing gear used on commercial vessels).[59] Additionally, we propose you increase the KIN 7 recreational allowance so as to reflect the increased availability of kingfish in southern areas and provide for the continuation of increasing trend in recreational catches since the most recent NPS estimate.

2.3 Other sources of mortality caused by fishing

36. 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.

37. In 2018 you indicated a preference for Fisheries New Zealand to move toward standardising the other mortality allowance for inshore trawl fish stocks at an amount that equates to 10% of the TACC, unless there is evidence to suggest otherwise[60].

38. The extent of other sources of mortality to kingfish caused by fishing have yet to be quantified. However, this allowance is likely to be notable given that:

    - a large proportion of both recreationally and commercially caught kingfish are released alive with an unknown proportion subject to post-release handling mortality;
    - the minimum legal size applies to both recreational and commercially caught kingfish, and;
    - some level of fisher misreporting may occur given the incentives created by a high deemed value rate and shortage of available ACE.

39. When kingfish were introduced to the QMS in 2003, the allowances for other sources of mortality caused by fishing varied between stocks. At this time, kingfish were subject to minimum legal-size restrictions, but were not listed on Schedule 6, meaning that all commercially caught kingfish of legal size were required to be landed and balanced with ACE.

40. Upon introduction to the QMS, post-release mortality of undersize fish was considered to contribute the majority of unrecorded kingfish mortality. Therefore, the allowance for other sources of mortality caused by fishing was estimated by multiplying the estimated proportion of undersized fish in both recreational and commercial catches by mortality rates for each method of fishing. Estimates were based on the current fishing activity and industry practices at that time, and it was noted that there was considerable scope for reductions in the commercial contribution to other sources of mortality caused by fishing.

41. Since 2003, there have been notable changes to fishing activity and the management of kingfish that are likely to have affected the extent of both recreational and commercial contribution to other sources of mortality caused by fishing, including:

    - Listing of kingfish on Schedule 6 of the Act in 2006 which enables commercial fishers, not using the method of set netting, to release live kingfish to manage their catches, and is likely to have reduced the incentive to misreport;
    - A reduction in the proportion of kingfish caught by set netters in KIN 2, 7 & 8 since 2003; and
    - Notable improvements to both commercial and recreational handling practices, which have likely reduced post-release mortality of kingfish.

[59] Fish landed under a section 111 permit is not included within the panel survey estimate.
[60] For further rationale on the setting of allowances for all other sources of mortality caused by fishing please see your Decision Letter for the 2018 October Sustainability Round.

42. To reflect the above changes to kingfish management since introduction to the QMS, Fisheries New Zealand proposes that you adjust the allowance for other sources of mortality to the stock caused by fishing as noted in the stock specific sections below.

3 Statutory considerations

3.1 Environmental principles (section 9 of the Act)

43. As the proposed increases to the TACC for KIN 2, 3, 7 & 8 are around, or below, current commercial catch levels, Fisheries New Zealand considers it highly unlikely that the options proposed in this paper will result in the initiation of a target fishery for kingfish or an increase in total fishing effort. Rather, any additional ACE made available through TACC increases is expected to be used to balance against kingfish taken as bycatch.

44. Fisheries New Zealand notes that unavoidable kingfish bycatch from set netting in KIN 8 is likely to decrease as a result of decisions made on the fisheries management components of the Hector's and Māui dolphins Threat Management Plan (TMP) review, although the magnitude of this impact cannot be quantified. As majority of kingfish bycatch in KIN 3 is taken outside of the fisheries closures associated with the TMP, Fisheries New Zealand considers it unlikely that unavoidable KIN 3 bycatch from set netting will decrease.

45. Commercial fishing activity is highly unlikely to increase as a result of these proposals. Therefore, 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.

3.2 Sustainability measures (section 11 of the Act)

46. 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, natural variability of the stock concerned, and any relevant fisheries plan.

47. As discussed above, the impacts of the proposed options on the aquatic environment are likely to be negligible.

48. The Kaikōura (Te Tai ō Marokura) Marine Management Act 2014 establishes a number of marine protection and sustainable fisheries measures in the Kaikōura marine environment. Additionally, the Act established the Kaikōura Marine Guardians, an advisory committee that provides advice regarding biosecurity, conservation, and fisheries matters within Te Whata Kai o Rakihouia i Te Tai o Marokura—Kaikōura Marine Area. As it is highly unlikely that there will be any change in fishing patterns or increase in commercial fishing activity as result of the options proposed in this paper, Fisheries New Zealand consider that the options will not impact on, or be impacted by, the measures under this Act.

49. Within KIN 2, 3, 7 & 8. There are a number of regional coastal plans in place to address the cumulative effects of activities in the coastal marine area, and the adverse impacts from land-based activities on the marine environment (e.g. the Marlborough District Council Coastal Plan). Fishers are subject to the rules in these plans (for example, small scale restrictions on fishing methods), however, the large area of kingfish QMAs means these rules do not, in general, stop fishers taking their ACE from other areas within the QMAs.

50. Fisheries New Zealand also notes that the National Inshore Finfish Fisheries Plan (within which all kingfish stocks will be managed) is still in draft form and has yet to be approved under section 11A. However, Fisheries New Zealand considers all options in this paper consistent with the management objectives of the draft plan.

51. No other plans, strategies or statements are relevant to kingfish in KIN 2, 3, 7 or 8.

4 Input and participation

4.1 Input and participation of tangata whenua

52. Tangata Tiaki/Kaitiaki exercise kaitiakitanga on behalf of their tangata whenua. Collectively, Iwi Fisheries Forums and Forum Fisheries Plans provide a view of the objectives and outcomes iwi seek from the management of their fishery interests 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 information on kaitiakitanga.

53. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, a two-page document with information on the proposal to review these kingfish stocks was provided to Iwi Fisheries Forums electronically, and input sought.

54. Table 2 outlines the feedback received from Iwi Fisheries Forum's relevant to proposed options for Kingfish stocks.

Table 2: Iwi Fisheries Forums and responses received

Iwi Fisheries Forum	Rohe (area represented)	Feedback received
Te Hiku o Te Ika	Far North (Muriwhenua)	• Acknowledge the scientific information and the recommendations and are broadly supportive of the proposed changes. • Noted that the increased abundance was not reflected in their locally fished areas and raised the large management scale of kingfish stocks, and the potential benefits of local area management.
Mid-North	Mid-North	• Prefer a precautionary approach in management of low information stocks.
Nga Hapu o Te Uru o Tainui	Waikato, particularly coastal	• Does not support proposed changes as they have only observed very minor increase to kingfish abundance, noting increased presence of small kingfish.
Ngāti Porou	East Cape	• Require more in-depth knowledge and information on the stocks before making a judgement on proposals but prefer a precautionary approach.
Mai Paritu tae atu ki Turakirae	East Coast North Island to South Wairarapa	• Bycatch concerns not evident for all commercial fishers in the area and suggest maintaining the status-quo, with any extra catch used for Pātaka.[61]
Te Tai Hauāuru	Taranaki/ Whanganui/ Manawatu/ Horowhenua/ Kapiti	• Support the proposed changes provided that the best information was used so as to ensure sustainability. • Kingfish is a significant and growing component of the Pātaka operating in Te Taihauauru Forum area. Customary allowances should reflect future need rather than past catches.
Te Waka a Māui me Ōna Toka	South Island	• Whilst not commenting directly on the proposed options for KIN 3 & 7, the Forum stated it has strong concerns with the accuracy of recreational fishing estimates for setting sustainability measures across the range of stocks important to iwi. • Consider recreational reporting (preferably mandatory as for commercial fishing and fishing under the customary fisheries regulations) is required to provide better management of these fisheries across all sectors. As such, the forum concludes that only once all sectors are accurately reporting will the TACC and allowances be meaningful.

55. Fisheries New Zealand notes that the standardised CPUE indices for kingfish in KIN 2, 7 & 8 were not finalised until mid-May. As such this information was not available for inclusion within the two-page document provided to Iwi Fisheries Forums in late April. However, in response to feedback received, a summary of the CPUE analyses was provided to the Chair of Te Hiku o Te Ika Iwi Fisheries Forum.

[61] Customary catch taken through the exercising of customary permits on commercial vessels.

56. Within their submission, the Iwi Collective Partnership acknowledged the strong and growing interest of kingfish for Pātaka.

4.2 Kaitiakitanga

57. Information provided by Iwi Fisheries Forums and their views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are the way that tangata whenua exercise kaitiakitanga in respect to fish stocks. Particular regard must be given to kaitiakitanga when making sustainability decisions.

58. The Mai i ngā Kuri a Whārei ki Tihirau, The Mai Paritu tai atu ki Turakirae, Nga Hapu o te Uru o Tainui, Rangitaane (North Island), Te Hiku o Te Ika, Te Tai Hauāuru and Te Waka a Māui me Ōna Toka Iwi Fisheries Forums represent iwi with an interest in the stocks under review. Additionally, Ngāti Porou are in the process of establishing an Iwi Fisheries Forum. Views on kaitiakitanga and feedback specific to kingfish has been captured in the input and participation section above.

59. Kingfish is explicitly identified as taonga species in Te Hiku o Te Ika, the Mai i ngā Kuri a Whārei ki Tihirau and Nga Hapu o te Uru o Tainui Iwi Fisheries Forum Plans.

60. Rangitaane and Te Tai Hauāuru Iwi Forum Fisheries Plans do not provide a full list of taonga species, however the scope of the plans covers all fisheries managed within the represented areas and specific objectives are provided in respect of commercial fisheries.

61. Kingfish is not explicitly listed as a taonga species in Te Wai Pounamu Iwi Forum Fisheries Plan, however Te Waka a Māui me Ōna Toka Iwi Forum consider all species taonga.

62. Generally speaking, these Plans reflect objectives for creating thriving customary and non-commercial fisheries that support the cultural well-being of iwi and their whānau. This will be achieved through measures such as enabling iwi to collect fisheries resources, according to their tikanga, through their takiwā/rohe, and utilisation of tikanga in the wider management of fisheries.

63. Fisheries New Zealand considers that the options presented in this paper are consistent with the objectives of these Iwi Fisheries Plans and will contribute towards kaitiakitanga and provide for the rights and interests for Māori with respect to kingfish.

5 Consultation

64. Fisheries New Zealand consulted on one option for both KIN 2 and KIN 8, and two options for both KIN 3 and KIN 7 (Table 3). A response from Te Ohu Kaimoana and a total of 12 submissions were received from various organisations, groups and individuals, with some providing comments on multiple stocks. Submissions received are summarised in Table 3 below.

65. Key issues raised during consultation that relate to all kingfish stocks, and Fisheries New Zealand's response to these issues are summarised in this section. Each response is discussed further in the chapters below, as relevant to each stock.

Table 3: Written responses and submissions received on the kingfish consultation options for the 1 October 2020 fishing year (in alphabetical order)

Submitter	Option Supported									
	KIN 2		KIN 3			KIN 7			KIN 8	
	1	Other	1	2	Other	1	2	Other	1	Other
Deepwater Group Limited (DWG)								✓		✓
Fisheries Inshore New Zealand Ltd (FINZ)	✓				✓					✓
Harbour Fish Limited					✓					
Iwi Collective Partnership (ICP)		✓								✓
Jonathan Boyd										✓
Mike Currie		✓			✓			✓		✓
New Zealand Sport Fishing Council (NZSFC) and LegaSea Joint Submission		✓	✓					✓	✓	
Our Seas Our Future (OSOF)		✓			✓			✓		✓

Sealord Group Limited (Sealord)				✓				✓		✓
Southern Inshore Fisheries Management Co. (Southern Inshore)					✓			✓		
Spearfishing New Zealand Incorporated (SNZ)		✓		✓		✓				✓
Te Kupenga o Maniapoto Limited		✓		✓				✓		✓
Te Ohu Kaimoana		✓		✓				✓		✓

5.1 Kingfish management strategy

66. The NZSFC note that there is a general acceptance that kingfish stocks have increased, and that schools have moved further south than usual. Within their submission, the NZSFC provided a copy of their yellowtail kingfish policy which has a goal of '*maintaining New Zealand's world class recreational fishery for kingfish'*. As set out in their policy, the NZSFC supported maintaining kingfish abundance at high levels to ensure large (20kg+) kingfish are available across a range of habitats. As such, the NZSFC submit that the value to New Zealand of a world class sport fishery for kingfish far outweighs that value that could be obtained by fishing the stock down to 40% B_0.

67. Similarly, SNZ note that managing kingfish stocks at levels desirable from commercial viewpoints will damage the recreational sector by impacting upon the abundance of large kingfish valued by the recreational sector. Therefore, SNZ consider that kingfish stocks should be managed at a level of at least 40% B_0.

68. Te Ohu Kaimoana consider it to be inconsistent with the purpose of the Act and the Fisheries Settlement to unnecessarily constrain commercial catch and consider there is an opportunity for greater utilisation of kingfish given the increased abundance. Furthermore, Te Ohu Kaimoana note that the value of kingfish to the recreational sector should not undermine the values of the commercial sector whilst commenting that the proposed approach jeopardises shared fisheries management by driving a further wedge between commercial and recreational sectors. The response from Te Ohu Kaimoana was supported by the Iwi Collective Partnership and Te Kupenga o Maniapoto Limited.

69. Commercial sector organisations (including FINZ & DWG) view Fisheries New Zealand's proposed approach of managing commercial kingfish catches to unavoidable bycatch levels only as an unnecessary constraint on utilisation. Additionally, FINZ submit that commercial fishers should not be constrained from sustainably utilising the stock because of the value of kingfish to non-commercial fishers and that the Act does not confer priority for any interest over the other (nothing that this judgement is left to you as the Minister).

70. Our Seas Our Future support using a management target of 40% B_0 as this is the average point of the management target for most species of fish (30%-50% B_0).

5.1.1 Fisheries New Zealand's response

71. One of the objectives of kingfish management since its introduction to the QMS has been to manage commercial catches to unavoidable bycatch levels only so as to support heathy recreational fisheries and provide for the stock to increase in abundance. This approach has been successful, with the best available information indicating that the biomass of kingfish has increased considerably.

72. Whilst setting a TAC to provide for increased commercial catches is unlikely to result in a sustainability risk to the stock, Fisheries New Zealand considers it appropriate to act conservatively with respect to kingfish given the importance of the species to non-commercial sectors. Therefore, given the uncertainty regarding the best available information on kingfish abundance (stock structure, historical abundance levels etc.) Fisheries New Zealand recommends that you continue to manage commercial kingfish catches to unavoidable bycatch levels only.

73. Should the trend of increasing kingfish abundance continue, this management strategy may unnecessarily restrict commercial utilisation and may no longer be appropriate. However, given uncertainty regarding the status of kingfish stocks, historical abundance levels and future biomass projections, Fisheries New Zealand does not consider that this point has been reached

for any kingfish stocks. Fisheries New Zealand will continue to monitor kingfish stocks and will review the management strategy as appropriate.

74. FINZ is correct in asserting that the Act does not confer priority for any interest over the other. As such, you are not bound by Fisheries New Zealand's policy position on kingfish and may adjust the options proposed for the TAC, and subsequently the TACC and allowances, to provide for increased commercial utilisation should you judge it consistent with your sustainability obligations.

5.2 Proportionality of the TACs

75. The proportionality of the KIN 2, 3, 7 & 8 TACs between sectors has either remained unchanged or undergone relatively minor adjustments since introduction to the QMS and was based on levels of fishing activity pre-2003.

76. The initial options proposed for KIN 2, 7 & 8 were developed based upon retaining the current proportionality of the TACs between sectors. Given that the TAC for KIN 3 was set at a nominal (3 tonne) level until 2018, the recommended options for this stock depart from the current TAC proportionality ratios.

77. However, feedback received during consultation showed no support for retaining the current proportionality of the TAC between sectors with the following views shared:

- The NZSFC do not support the use of a model that retains proportionality for increases to the TACC and allowances of KIN 2, 7 & 8 and specifically note there is no need for over-allocation of allowances, and that increases should be in line, or close to, current utilisation of the stock.
- Te Ohu Kaimoana comment that current TAC proportionalities do not reflect the current state of kingfish fisheries and that being consistent with a historical management approach is not in itself a reason for such an approach to continue.
- FINZ and Southern Inshore submit that there is no rationale for retaining the current proportionality of kingfish TACs when this would result in the setting of a recreational allowance above current catch levels. Likewise, DWG argue that retaining the proportionality of kingfish TACs does not provide for sustainable utilisation. In addition to their views on recreational allowances, FINZ also note that there is no requirement under the Act for you to maintain proportionality.
- Our Seas Our Future do not support a proportional increase in the allowance of kingfish stocks.

78. General guidance on allocation within the TAC is provided in Section 5.2 within the Introduction to this decision document (p. 9). This includes further discussion on Te Ohu Kaimoana and FINZ's views with respect to the setting of recreational allowances.

5.2.1 Fisheries New Zealand's response

79. Fisheries New Zealand agrees that the current proportionality of kingfish TAC does not reflect the increase in kingfish abundance and changes in levels of recreational and commercial fishing activity over the last 16 years. As such, Fisheries New Zealand considers that maintaining the proportionality of the TAC may no longer be appropriate for all kingfish stocks.

80. This is particularly applicable to KIN 7 where proportionality has remained relatively unchanged since introduction into the QMS and pre-2003 catches no longer reflect contemporary fishing activity and kingfish distribution. Therefore, in addition to the two options consulted on for KIN 7 which retained the current proportionality of the TAC, Fisheries New Zealand has developed (and recommended) a third option which departs from the current TAC proportional ratios.

81. Options recommended for KIN 2 & 8 generally retain the current proportionality of the TAC as kingfish catch patterns in more northern stocks have changed less than those in southern areas. However, the Act does not provide an explicit statutory mechanism to apportion available catch between sector groups, either in a quantitative measure or prioritisation of apportions.

Accordingly, you have the discretion to make allowances for various sectors based on the best available information.

5.3 Deemed value rates

82. The NZSFC do not support reductions to the deemed value rates of kingfish stocks. The SNZ consider that it may be necessary to increase the deemed value rates of kingfish to further discourage large vessels from taking kingfish.

83. Te Ohu Kaimoana consider that the deemed value rates for kingfish are extremely punitive and need to be significantly reduced whilst noting that such a reduction would not generate a target fishery for kingfish. The Iwi Collective Partnership also consider that the deemed value rates of kingfish are set too high.

84. DWG comment that the deemed value rates of KIN 7 & 8 are unnecessarily high given the low value of frozen kingfish product. Similarly, Sealord noted that deemed value rates set above the landed price inflate the ACE market and result in lost utilisation opportunities.

5.3.1 Fisheries New Zealand's response

85. Relatively high deemed value rates, compared to the landed price of fish, are necessary to provide commercial fishers with an incentive to avoid kingfish and return live kingfish to the sea under Schedule 6.

86. However, for stocks such as KIN 7 where the majority of catch is landed frozen and is of a lower value to kingfish landed elsewhere (which is predominantly fresh), it is possible to reduce the deemed value rates whilst retaining the incentives to avoid and return live kingfish. Fisheries New Zealand's recommendation on the deemed value rates of KIN 7 can be found in Section 8.6.

5.4 Other sources of mortality caused by fishing

87. Te Ohu Kaimoana note that catch and release is unlikely to be a common occurrence in customary fisheries and therefore recommend that the allowance for other sources of mortality caused by fishing be set at 10% of the TACC and recreational allowance combined. DWG endorse the response from Te Ohu Kaimoana.

88. FINZ submit that the allowance for other sources of mortality caused by fishing should be set at 10% of the TACC, recreational allowance and customary allowance combined.

5.4.1 Fisheries New Zealand's response

89. Fisheries New Zealand accepts the argument from Te Ohu Kaimoana that catch and release (and therefore other mortality to the stock caused by fishing) is unlikely to occur in customary fisheries.

90. Fisheries New Zealand recommends the allowance for other sources of mortality caused by fishing be set at an amount which equates to 10% of the TACC and recreational allowance combined for each stock. This is reflected in all options and is aligned to the approach taken in 2018 for other inshore stocks, with minor differences to reflect that kingfish is taken by both recreational fishers and a variety of commercial fishing methods.

6 Review of KIN 2 (East Coast North Island)

6.1 Catch information

6.1.1 Customary

91. The current allowance for the Māori customary harvest of kingfish in KIN 2 is set at 18 tonnes.

92. During 2019, customary catches of three 'bins' of kingfish were reported from KIN 2, this is the only recorded kingfish catch since 2012. Fisheries New Zealand is not able to provide an

estimated weight of catch reported in bins, and recognises this information is incomplete and uncertain.

93. In addition, many iwi in the QMA operate under regulations 50 and 51 of the Amateur Fishing Regulations, for which reporting is not mandatory (see Section 8.1).

94. While information about annual customary harvest in KIN 2 is uncertain, it is anticipated to increase over future years given the greater use of commercial vessels for customary take.

6.1.2 Recreational Panel Survey information

95. Between 2011/12 and 2017/18, the estimated recreational take of kingfish in KIN 2 increased from 41 to 79 tonnes, exceeding the current recreational allowances by 14 tonnes (Table 4).

96. The 2017/18 NPS represents the first estimate of recreational take since 2011/12.

Table 4: Current recreational allowance, and the 2011/12 and 2017/18 NPS estimates of the recreational harvest of kingfish for KIN 2 in tonnes.

Stock	Current recreational allowance	Estimate of recreational harvest	
		2011/12	2017/18
KIN 2	65	41	79

6.1.3 Commercial

97. The majority of commercially caught kingfish in KIN 2 are taken as bycatch by inshore bottom trawl vessels targeting other species. There has been very little targeting of kingfish since 2016/17, with two hand line events and one trawl event that reported targeting kingfish, the total estimated catch from these events was 85 kg.

98. KIN 2 catches have increased during recent years with landings exceeding the available ACE in three out of the last four years (Figure 4).

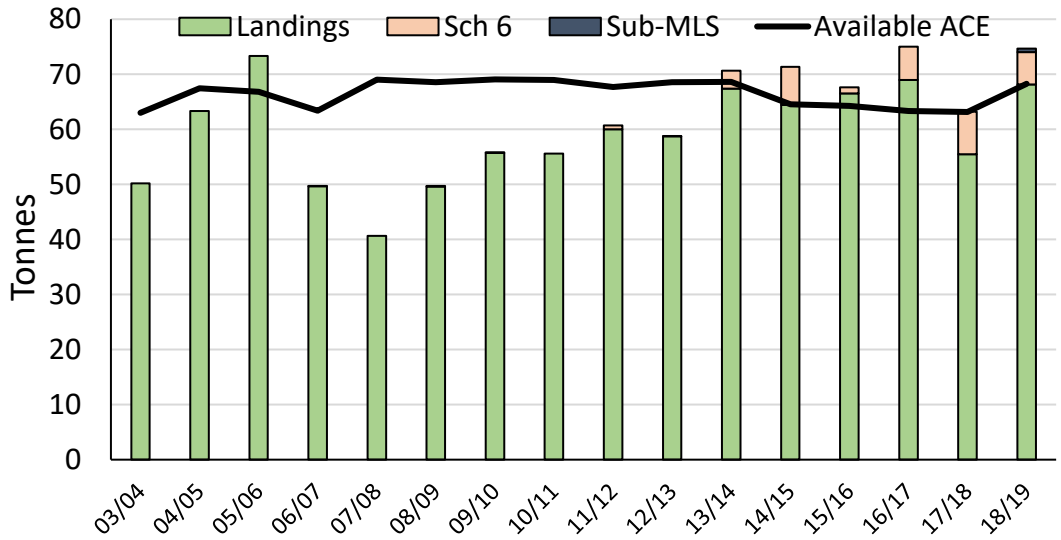


Figure 4: KIN 2 commercial catch since introduction to the QMS. Note that data on sub-MLS kingfish is only available post 2017/18.

6.2 State of KIN 2

99. For stock assessment purposes, KIN 2 and the Bay of Plenty sub-stock of KIN 1 were considered to form part of the same biological population.

100. The abundance of kingfish in the Bay of Plenty/KIN 2 population was assessed using CPUE indices from the mixed-target bottom trawl fishery. As the bottom trawl fishery primarily catches juvenile kingfish, the CPUE indices were considered to reflect relative abundance of juvenile kingfish only.

101. The CPUE indices indicate there was a general increase in pre-recruit abundance from 2004 to 2016, when the fishing mortality for adults was estimated to be lower than the target. Although CPUE indices decreased somewhat from 2016 to 2019, they were above average from 2013-2019, and the stock is expected to increase in the short term (Figure 5).

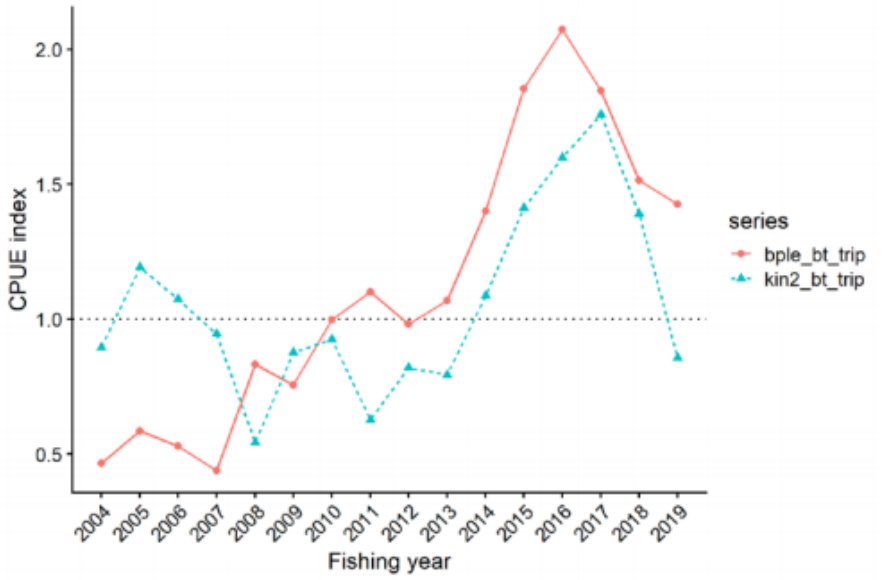


Figure 5: CPUE indices for juvenile kingfish in KIN 2 (blue) and the Bay of Plenty (red).

102. An additional supporting index was developed for the Bay of Plenty ramp survey data of catch information from recreational bait fishing trips. The bait fishing index shows significant inter-annual fluctuations but has a generally increasing trend from 2001 to 2019.

103. The best available information on stock status comes from estimates of total fishing mortality in 2016 which was developed from catch at age sampling in 2010-11 and 2014-15. The assessment indicated that total mortality was low, with fishing mortality '*Likely*' (>60%) to be below the default target, and overfishing *'Unlikely'* (<40%) to be occurring.

104. Whilst information suggests that kingfish in the Bay of Plenty (KIN 1) and East Cape (KIN 2) may comprise a single biological population, linkages between kingfish in this area, and those elsewhere in KIN 2 are unknown. Therefore, the structure of the KIN 2 stock is uncertain.

105. It remains unknown whether or not the KIN 2 stock is at, above, or below the biomass that will support the maximum sustainable yield (B_{MSY}), however best available information indicates total mortality is low for the northern part of the stock, with fishing mortality below the target, and high average recruitment of young kingfish since 2013.

6.3 Summary of KIN 2 options

106. In cases such as KIN 2, 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.

107. The best available information suggests that KIN 2 is relatively lightly exploited, and that an opportunity exists to increase utilisation. Option 1 reflects that the information to assess the status of KIN 2 is uncertain and takes a cautious approach to increasing the KIN 2 TAC. Given the above, Fisheries New Zealand considers the option unlikely to result in a sustainability risk to the stock.

108. There is only one option proposed for KIN 2 which is presented in Table 5. No new options have been incorporated following consultation, however this Option ("Option 1") has been amended from the one consulted on so that the allowance for all other mortality to the stock caused by fishing would be set at an amount which equates to 10% of the TACC and recreational allowance combined (rather than the TAC).

109. A total of seven submissions and a response from Te Ohu Kaimoana were received on the proposed TAC changes to KIN 2 (Table 3).

110. Views on KIN 2 received during consultation are summarised below. Submitters comments on aspects of kingfish management relevant across all kingfish stocks (including deemed value rates, the proportionality of the TAC and management strategy) are provided in Section 5.

Table 5: Proposed management setting for KIN 2 from 1 October 2020. All figures are in tonnes.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
KIN 2	Option 1	185 ↑ (9%)	70 ↑ (11%)	21 ↑	79 ↑	15 ↓

6.4 Responses & submissions

6.4.1 Increasing the TAC

111. Our Seas Our Future commented that the bottom trawl indices show decreases over recent years. Therefore, Our Seas Our Future do not support an increase to the TAC of KIN 2.

112. Whilst neither supporting, nor opposing the proposed options for KIN 2, Mike Currie (a member of the public) submits that kingfish catch using set nets should be banned and kingfish catch from longline fishing should only be allowed to continue if seabird bycatch is reduced.

113. All other submissions received were supportive of an increase to the TAC of KIN 2.

6.4.2 Increasing the recreational allowance

114. The NZSFC and SNZ support setting the recreational allowance of KIN 2 at the current survey estimate.

115. Te Ohu Kaimoana do not support any increase to the recreational allowance of KIN 2 and further state that they do not support a fisheries management system that provides for increased utilisation for the recreational sector with no visible upper limit. Te Ohu Kaimoana's response was endorsed by Te Kupenga o Maniapoto Limited and the Iwi Collective Partnership.

116. FINZ support an increase to the recreational allowance of KIN 2 to reflect recent estimates but note this should only be done when Fisheries New Zealand is committed to managing it, as the allowance becomes irrelevant without regulatory management.

6.4.3 Increasing the TACC

117. NZSFC consider the rationale for increasing the KIN 2 TACC to be weak and therefore do not support any increase to the TACC. However, NZSFC submit they could support an increase within the objectives and strategies of their yellowtail kingfish policy which has a goal of '*maintaining New Zealand's world class recreational fishery for kingfish'*.

118. SNZ do not support an increase to the TACC of KIN 2 and consider the best available information warrants a decrease rather than an increase.

119. Te Ohu Kaimoana, the Iwi Collective Partnership, Te Kupenga o Maniapoto and FINZ support the proposed increase to the KIN 2 TACC.

6.4.4 Other feedback

Best available information

120. SNZ submit that the CPUE data for KIN 2 only indicates a brief increase, with a rapid decline in the most recent two to three years, noting that it might simply reflect a single year class moving through the data, which has now disappeared. They also question why the CPUE for the Bay of Plenty stock (KIN 1-BoP) has been included, as the document states that the structure of KIN 2 is uncertain. They believe the conflation of two stocks (KIN 2 and KIN 1-BoP) risks misleading readers into making a decision on KIN 2, based on data from KIN 1.

121. The NZSFC comment that although the trawl catch rate for KIN 2 was above average a few years ago, it was lower in 2017/18 and 2018/19, noting this is the opposite of the trend seen in the KIN 1 and KIN 8 fisheries, but similar to the Bay of Plenty trawl CPUE.

122. The NZSFC note that it is incorrect that no available information exists on the spatial distribution of recreational kingfish catches within QMAs, or that because fishing effort is concentrated inshore, that is where most kingfish are caught. They state that adult kingfish often school near offshore structures where there is good current flow, like Ranfurly Bank in KIN 2.

Fisheries New Zealand's response

123. Fisheries New Zealand notes that the CPUE indices for KIN 1-BoP and KIN 2 are an indicator of juvenile abundance, reflecting trends in the abundance of sub-adults.

124. The CPUE indices suggest that there was good recruitment of juvenile and sub-adult kingfish between 2011 and 2017. This recruitment pulse has likely led to an increase in the biomass of adult kingfish (for which there is no accepted index of abundance). Whilst the CPUE trend has decreased since 2017, stock abundance is expected to increase during the short term. As the CPUE index represents the best available information on the biomass of KIN 2 and does not suggest a sustainability concern, Fisheries New Zealand considers it appropriate to adjust the TAC of KIN 2 as proposed.

125. Fisheries New Zealand notes that uncertainty in information should not postpone or result in a failure to set a TAC. The best available information suggests that kingfish in the Bay of Plenty (KIN 1) and East Cape (KIN 2) comprise a single biological population. However, the linkages between kingfish in this area and those elsewhere in KIN 2 (excluding East Cape) is unknown, which creates uncertainty around the structure of the KIN 2 stock. Fisheries New Zealand considers it appropriate to act on the best available information indicating increasing abundance in KIN 2.

126. To ensure the sustainability of the stock, Fisheries New Zealand will continue to monitor the abundance of KIN 2 and will recommend TAC adjustments should future information indicate a sustainability risk.

6.5 Option 1 *(preferred)*

127. A single option was provided for KIN 2, which proposes to increase the TAC of KIN 2 from 170 to 185 tonnes (9% increase). Within the TAC, the recreational allowance would be set at 79 tonnes (22% increase), the customary Māori allowance would at 21 tonnes (17% increase), and the allowance for other sources of mortality caused by fishing set at 15 tonnes (38% decrease), which equates to 10% of the TACC and recreational allowance combined. Under Option 1 the TACC would be set at 70 tonnes (11% increase).

128. Option 1 was supported by FINZ.

Analysis of Option 1

129. Feedback received prior to and during consultation indicates that the customary harvest of kingfish in KIN 2 is likely to increase over future years due to the increased exercise of customary permits on commercial vessels. Information on the current level of customary harvest in KIN 2 is uncertain, however Fisheries New Zealand considers it likely that the proposed allowance of 21 tonnes will be sufficient to ensure future customary harvest is accounted for.

130. Option 1 would set the recreational allowance at the most recent NPS estimate of 79 tonnes. Fisheries New Zealand considers setting the recreational allowance at the most recent estimate to be appropriate as it provides for current catch.

131. Fisheries New Zealand notes that commercial landings of kingfish in KIN 2 have only exceeded the TACC proposed under Option 1 on one occasion. However, catches to date in the incomplete 2019/20 fishing year are at higher levels than those seen during the comparative periods in recent years.

132. Availability of KIN 2 ACE would be increased as consequence of Option 1, which would provide economic benefits through the effect of reducing deemed value invoices incurred by fishers, and it is likely that no deemed value invoices will be incurred under this option. However, deemed

value invoice calculations are uncertain and dependent upon an individual operator's ACE holdings and level of over-catch.

133. The benefits obtained from KIN 2 are not limited solely to economic benefits but also social and cultural benefits. The option recognises the high-value and shared nature of KIN 2, and provides for increased benefits for all sectors, while taking a cautious approach to ensure the sustainability of the stock.

6.6 Other options

134. SNZ believe the CPUE index for KIN 2 indicates a rapid decline in recent years, warranting catch reductions rather than increases. Therefore, SNZ propose an alternative option for the KIN 2 TAC and TACC, proposing to set the TAC at 170 tonnes, and a decrease to the current TACC from 63 to 55 tonnes (13% decrease), while increasing the allowances as proposed in Option 1.

135. The NZSFC submit that the case for increasing the KIN 2 TAC is weak and are therefore not supportive of any increases to the TACC. They propose an alternative option setting the TAC of KIN 2 at 181 tonnes, with the allowance for other sources of mortality caused by fishing set at 18 tonnes (10% of the TAC) and customary and recreational allowances increased as proposed in Option 1, while retaining the current TACC of 63 tonnes.

136. Te Ohu Kaimoana support increasing the TAC, TACC and customary allowance of KIN 2 as proposed in Option 1 but propose an alternative option for the recreational allowance which would retain the current allowance of 65 tonnes. Te Ohu Kaimoana's response is endorsed by the Iwi Collective Partnership and Te Kupenga o Maniapoto.

137. Our Seas Our Future do not support any increases to the KIN 2 TAC, TACC or allowances, and propose no changes are made (Status Quo), noting that bottom trawl indices for KIN 2 show a decrease in recent years, and that at present, the stock is not shown to be increasing in abundance.

Fisheries New Zealand's response

138. Fisheries New Zealand notes that the recommended option (Option 1) reflects a cautious approach, and the increase proposed is conservative and does not provide for significantly higher levels of harvest. Therefore, Fisheries New Zealand consider the option is unlikely to result in a sustainability risk to the KIN 2 stock.

139. To ensure that KIN 2 continues to support healthy recreational fisheries and that commercial fishers are incentivised to avoid and return live kingfish, Fisheries New Zealand will continue to closely monitor the catch levels of KIN 2 to ensure appropriate and timely adjustment can be made if required and backed by updated information.

6.7 Conclusion and recommendations for KIN 2

140. Fisheries New Zealand proposes that you increase the TAC, TACC and allowances of KIN 2 to reflect this increase in kingfish abundance and availability to all sectors.

141. Submissions received showed variable support for increasing the KIN 2 TAC, with several submitters either being supportive of increasing the TACC but not the allowances, or vice versa. However, submissions generally, although not exclusively, did not favour retaining the status-quo.

142. The recommended option (Option 1) would increase the customary allowance to ensure future customary harvest is accounted for and set the recreational allowance at the most recent NPS estimate. This option would also set the TACC around current catch levels so to provide for existing use and address socio-economic impacts in this fishery.

7 Review of KIN 3 (South East Coast, Southland & Sub-Antarctic)

7.1 Catch information

7.1.1 Customary

143. The current customary Māori allowance in KIN 3 is set at 4 tonnes. Māori customary catch reporting data held by Fisheries New Zealand shows no records of customary catch in KIN 3. This reporting is likely to be largely complete with the KIN 3 QMA under the South Island Customary Fishing Regulations, which carry a requirement to report.

144. With increasing kingfish abundance in KIN 3, it is likely that there will be some customary catch of kingfish in the future. However, Fisheries New Zealand considers the current customary allowance appropriate to account for this take.

7.1.2 Recreational

145. Between 2011/12 and 2017/18, the estimated recreational take of kingfish in KIN 3 increased from 3 to 6 tonnes (Table 6).

Table 6: Current recreational allowance and the 2011/12 and 2017/18 NPS estimates of the recreational harvest of kingfish for KIN 3 in tonnes.

Stock	Current recreational allowance	Estimate of recreational harvest	
		2011/12	2017/18
KIN 3	6	3	6

7.1.3 Commercial

146. The majority of commercial KIN 3 catch is taken as bycatch by the coastal set net fleet targeting species such as school shark or rig. Kingfish caught in set nets are unable to be returned to the sea under Schedule 6 provisions. Therefore, all kingfish caught by set net vessels are required to be landed despite observers reporting many fish to be alive when brought on board.

147. KIN 3 commercial catch has increased, over the last decade (Figure 6). Fishing effort by the coastal set net fleet has decreased over this time period and there is no evidence to suggest a noticeable change in areas fished or operational practices that may have increased the amount of kingfish taken as bycatch.

148. Catches regularly exceed the available ACE resulting in deemed value invoices averaging $42,000 over the last three fishing years. Despite the increase to the TACC from 1 October 2018, catch exceeded the available ACE for the 2018/19 fishing year, and as of June 2020, available ACE was 161% caught.

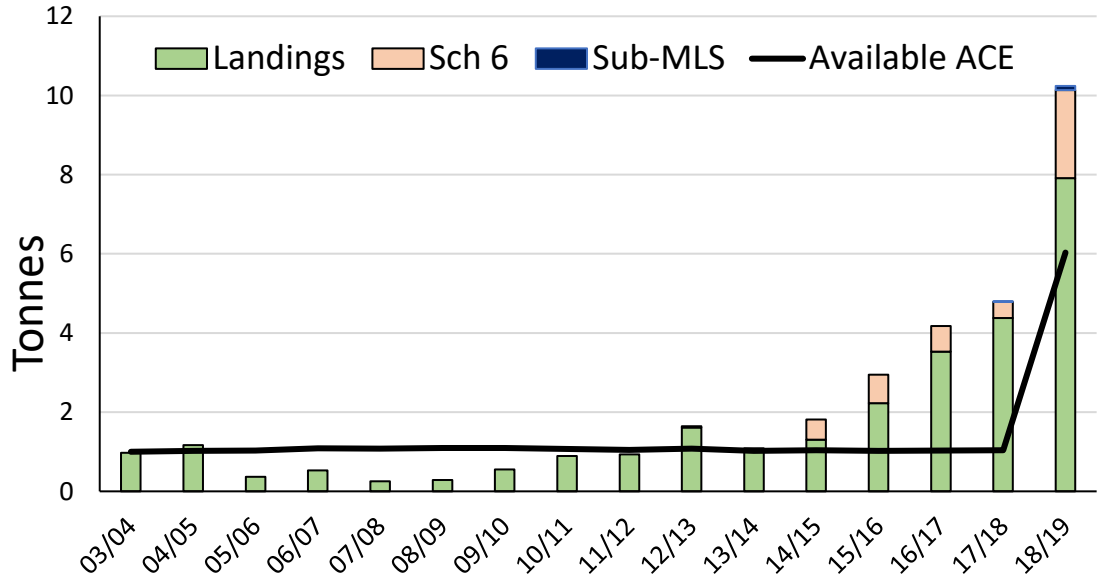


Figure 6: KIN 3 commercial catch in tonnes since introduction to the QMS. Note that data on sub-MLS kingfish is only available post 2017/18.

7.2 State of KIN 3

149. Catch data alone is used to monitor KIN 3 and the best available information comes from commercial catch records.

150. As kingfish in KIN 3 are entirely taken as bycatch by commercial fishers, and catches have been small until recently, there are no accepted reference points to determine the status of KIN 3 in relation to targets, and the level of stock biomass that can support harvest of the maximum sustainable yield (B_{MSY}) is not known.

151. The best available information suggests that there has been an increase in the abundance of kingfish in KIN 3, which appears to be the result of increased population size in northern regions and increasing water temperature encouraging range expansion.

152. It is likely that the observed increase in abundance will continue to be reflected in increased kingfish bycatch by commercial fishers. As the majority of KIN 3 is taken using the method of set netting, many fishers will be unable to manage this increase in abundance through the use of Schedule 6 provisions.

7.3 Summary of KIN 3 options

153. In cases such as KIN 3, 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.

154. The best available information suggests increased abundance of kingfish in KIN 3. Fisheries New Zealand considers the current TAC to be unnecessarily constraining and does not appropriately reflect the unavoidable bycatch of kingfish in relevant target fisheries. Consequently, there is an opportunity to increase the TAC of KIN 3 in a manner that is not inconsistent with the objectives of section 13.

155. The options proposed are presented in Table 7. No new options have been incorporated following consultation.

156. A total of nine submissions and a response from Te Ohu Kaimoana were received on the proposed TAC changes to KIN 3 (Table 3).

157. Views on KIN 3 received during consultation are summarised below, with comments on the options proposed included in the sections below. Submitters' comments on aspects of kingfish management relevant across all kingfish stocks (including deemed value rates, the proportionality of the TAC and management strategy) are provided in Section 5.

Table 7: Summary of proposed management settings for KIN 3 from 1 October 2020. All figures are in tonnes. The preferred option of Fisheries New Zealand is highlighted blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
KIN 3	Option 1	21 ↑ (24%)	9 ↑ (50%)	4	6	2 ↑ (100%)
	Option 2	23 ↑ (35%)	11 ↑ (83%)	4	6	2 ↑ (100%)

7.4 Responses & submissions

7.4.1 Increasing the TAC

158. Our Seas Our Future commented that there is not sufficient information available on the status of the stock. Therefore, they do not support any increases to the TAC of KIN 3.

159. Whilst neither supporting, nor opposing the proposed options for KIN 3, Mike Currie (a member of the public) submits that kingfish catch using set nets should be banned and kingfish catch from longline fishing should only be allowed to continue if seabird bycatch is reduced.

160. All other submissions received were supportive of increases to the TAC of KIN 3.

7.4.2 Increasing the TACC

161. SNZ and the NZSFC support increasing the KIN 3 TACC with the NZSFC preferring a precautionary increase to make allowance for current utilisation in KIN 3, while retaining incentives to release kingfish alive.

162. Te Ohu Kaimoana, Te Kupenga o Maniapoto and Sealord support increasing the KIN 3 TACC above the level of current catches. Sealord further note the importance of continued monitoring of CPUE data to allow adjustments to be made to the TACC, given the strong increase and continued favourable environmental factors for kingfish in southern regions.

163. Southern Inshore, endorsed by FINZ, and Harbour Fish Limited support increases to the KIN 3 TACC above those proposed as they believe the options proposed do not provide a sufficient increase to ensure further reviews are not required in a short space of time. Harbour Fish Limited state a higher increase is required based on current landing information and unnecessarily high economic impacts due to deemed values.

7.5 Option 1

164. Option 1 proposes to increase the TAC from 17 to 21 tonnes (24% increase), reflecting current catches of all sectors. The option would set the TACC at 9 tonnes (50% increase) and the allowance for other sources of mortality caused by fishing at 2 tonnes (100% increase), which equates to 10% of the TACC and recreational allowance combined. Current allowances for customary Māori and recreational take would be retained.

165. Option 1 was supported by the NZSFC.

Analysis of Option 1

166. Option 1 takes a more cautious approach to increasing the TAC of KIN 3, reflecting that the stock is managed with less information than other kingfish stocks and therefore higher uncertainty, while responding to the best available information indicating increased abundance of kingfish.

167. Feedback received prior to, and during, consultation indicates that the current allowances for customary Māori and recreational harvest in KIN 3 adequately account for utilisation at this time. Therefore, Fisheries New Zealand considers it appropriate to retain the customary Māori allowance at 4 tonnes and the recreational allowance at 6 tonnes.

168. Based on landings in the last five complete fishing years, Option 1 would have the consequence of increasing the availability of KIN 3 ACE. Based on landings in the last five complete fishing years, deemed value invoices would be reduced by approximately $42,000 per annum (100%) as consequence of increased availability of KIN 3 ACE. However, catches to date in the 2019/20 fishing year have already exceeded the TACC proposed under Option 1 (9 tonnes), and are anticipated to increase further before the end of the fishing year.

169. Based on current catches there is a possibility that Option 1 may be insufficient in responding appropriately to the unavoidable bycatch of kingfish in relevant target commercial fisheries. If this is an indicator of future trends in KIN 3, this option may result in constraints on commercial utilisation and not fully address socio-economic impacts in this fishery. As such, Fisheries New Zealand does not recommend Option 1.

7.6 Option 2 (*Preferred)*

170. Option 2 is set to provide for anticipated unavoidable bycatch in the commercial sector and would increase the KIN 3 TAC from 17 to 23 tonnes (35% increase). This option would set the TACC at 11 tonnes (83% increase), and the allowance for other sources of mortality caused by fishing at 2 tonnes (100% increase), which equates to 10% of the TACC and recreational allowance combined. Current allowances for customary Māori and recreational would be retained as they correspond with the best available information on level of harvest.

171. Option 2 was supported by SNZ, Te Ohu Kaimoana, Te Kupenga o Maniapoto Limited and Sealord.

Analysis of Option 2

172. The best available information suggests increased abundance of kingfish in KIN 3. Fisheries New Zealand considers the current TAC to be unnecessarily constraining and does not appropriately reflect the unavoidable bycatch of kingfish in relevant target fisheries.

173. KIN 3 catches in the incomplete 2019/20 fishing year have already exceeded the available ACE, with 9.7 tonnes caught as of June 2020 (161% of available ACE). If the current level of over-catch is an indicator of future trends, the recommended option (Option 2) is more likely to provide for existing use and address socio-economic impacts in this fishery.

174. Although the availability of KIN 3 ACE would be increased as consequence of Option 2 (compared to Option 1), it is unknown whether the TACC proposed would provide sufficient ACE to balance against all kingfish catch in future years. Based on current level of over-catch in the incomplete 2019/20 fishing year, it is likely that no deemed value invoices will be incurred as consequence of this option. If catches continue to increase, this option would have the effect of reducing deemed value invoices in future years.

175. Given the above, Fisheries New Zealand considers it appropriate to set the TAC at a level which reflects current catch trends and appropriately addresses socio-economic impacts in the fishery in future years. As such, Fisheries New Zealand recommends Option 2.

176. To ensure that KIN 3 continues to support healthy recreational fisheries, Fisheries New Zealand will continue to closely monitor the catch levels of KIN 3 to ensure appropriate and timely adjustment of management settings where required.

7.7 Other options

177. Three submissions from commercial sector organisations propose alternative, higher, KIN 3 TACC options than those proposed. Southern Inshore and FINZ propose that the TACC be set at 15 tonnes whilst Harbour Fish Limited submit that the TACC is increased even further than that, while not proposing a specific level of increase to the TACC.

178. As the stock is managed using catch data alone and the status of the stock is uncertain, increasing the KIN 3 TACC higher than the proposed options places even greater weight on the information indicating increased abundance in KIN 3 and may further represent an increased sustainability risk to the stock. At this time, Fisheries New Zealand does not recommend increasing the TACC higher than the recommended option (Option 2) but notes the catch levels will continued to be monitored to ensure management settings are appropriate.

179. Our Seas Our Future do not support any increases to the KIN 3 TAC and propose no changes are made (Status Quo), noting that there is not enough information about the status of the stock.

7.8 Conclusion and recommendations for KIN 3

180. The best available information suggests increased abundance of kingfish in KIN 3. Fisheries New Zealand considers the current TAC to be unnecessarily constraining and does not appropriately reflect the unavoidable bycatch of kingfish in relevant target fisheries. Consequently, Fisheries New Zealand considers there is an opportunity to increase the TAC in a manner that is not inconsistent with the objectives of section 13, and propose that you increase the TAC, TACC and the allowance for other sources of mortality caused by fishing of KIN 3 to reflect the increase in abundance.

181. Submissions received were generally, although not exclusively, supportive of increases to the KIN 3 TAC. However, concern was raised regarding the proposed increase not being large enough to address the current levels of over-catch, possibly resulting in further reviews being required in the near future.

182. The recommended option (Option 2) would retain the recreational and customary allowances at current levels, while setting the TACC above current catch levels, reflecting the significant increase in the level of over-catch observed to date in the incomplete 2019/20 fishing year. The TACC increase also takes into account that the majority of KIN 3 is taken using the method of set netting, and those fishers are unable to manage the increase in abundance through the use of Schedule 6 provisions.

8 Review of KIN 7 & 8 (West Coast North Island and South Island)

8.1 Catch information

8.1.1 Customary

183. The current allowance for the Māori customary harvest of kingfish in KIN 7 is set at 2 tonnes and has remained unchanged since 2003. Information held by Fisheries New Zealand shows no records of customary catches of kingfish in KIN 7. However, tangata whenua north of Kahurangi Point, and in the Marlborough Sounds and Tasman/Golden Bays area are still operating under regulation 50 of the Amateur Fishing Regulations, which do not require customary permits or catches to be reported.

184. Available data on the level of the customary take of kingfish in KIN 8 shows variation in catches between years. In 2019, the customary catch was estimated to be approximately 16.5 tonnes, the majority of which was taken using commercial vessels. This was the highest annual reported volume of customary take on record in KIN 8 and exceeds the current Māori customary allowance of 9 tonnes.

185. Fisheries New Zealand anticipates that the use of commercial vessels for customary take will increase in the near future. As such, the customary harvest of KIN 7 & 8 is likely to increase.

8.1.2 Recreational

186. Between 2011/12 and 2017/18, the estimated recreational take of KIN 7 increased from 21 to 27 tonnes, and in KIN 8 decreased from 63 to 55 tonnes. For both stocks estimated recreational take in 2017/18 exceeded the current recreational allowance (Table 8).

Table 8: Current recreational allowance, and the 2011/12 and 2017/18 NPS estimates of the recreational harvest of kingfish for KIN 7 & 8 in tonnes.

Stock	Current recreational allowance	Estimate of recreational harvest	
		2011/12	2017/18
KIN 7	20	21	27
KIN 8	31	63	55

8.1.3 Commercial

187. The majority (>90%) of commercially caught kingfish in KIN 7, and approximately 40% of the kingfish in KIN 8 are taken by large (>80 m) midwater trawl vessels targeting pelagic species, principally jack mackerel. The remaining catch in KIN 8 is taken by inshore bottom trawl vessels, especially those targeting trevally off the Northland coast, or set net vessels fishing off the coast of Taranaki.

188. The pelagic midwater trawl fishery is a large volume fishery. Kingfish catches by the midwater trawl fleet occurs during all months, and in all areas where such vessels are active. However, kingfish catches comprise a very small proportion of the total catch, although catches can sporadically occur in large quantities (due to the schooling behaviour of the species).

189. Approximately 50% of kingfish taken by the midwater trawl fleet are returned to the sea alive under Schedule 6. This fleet has very high levels of observer coverage (approximately 80% per annum since 2012), with observers consistently commenting that the crew make every possible effort to return live fish to the sea following hauling.

190. Commercial catches of KIN 7 have exceeded the available ACE by progressively increasing margins over the last decade (Figure 7). Such over-catch has resulted in deemed value invoices totalling $536,000 and $798,000 for the 2017/18 and 2018/19 fishing years respectively.

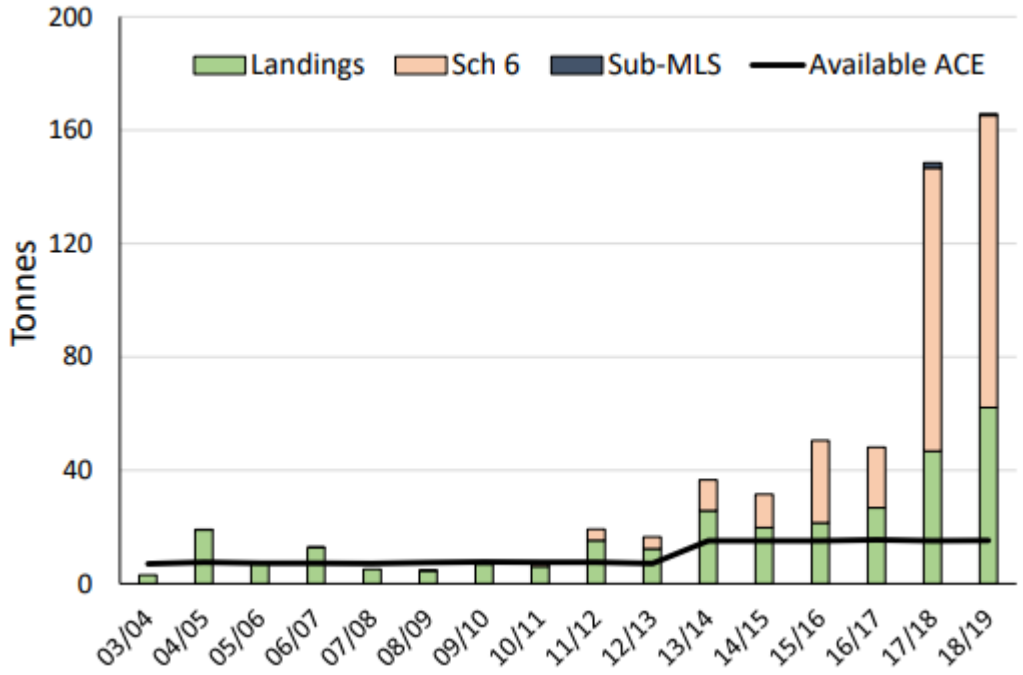


Figure 7: KIN 7 commercial catch in tonnes since introduction to the QMS. Note that data on sub-MLS kingfish is only available post 2017/18.

191. The landed catch of kingfish in KIN 8 has exceeded the available ACE each year since introduction to the QMS in 2003 (Figure 8). Such over-catch has resulted in deemed value invoices averaging $279,000 over the previous five years. As of June 2020, available KIN 8 ACE was 209% caught.

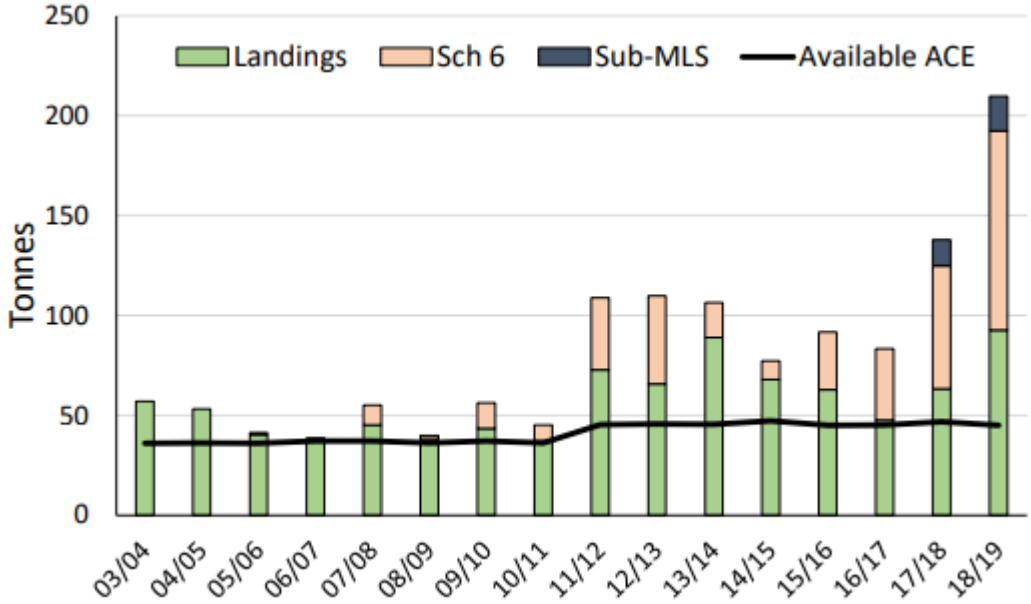


Figure 8: KIN 8 commercial catch in tonnes since introduction to the QMS. Note that data on sub-MLS kingfish is only available post 2017/18.

8.2 State of KIN 7 & 8

192. Kingfish in KIN 7 & 8 are considered to form part of the same biological stock.

193. The abundance of kingfish in KIN 7 & 8 was assessed using a standardised CPUE index developed based on observer recorded tow-by-tow data of kingfish catches by the midwater trawl fleet targeting jack mackerel (midwater trawl index). A separate standardised CPUE index for KIN 8 was also developed using commercially reported catch effort and landing data from the mixed-target inshore bottom trawl fishery north of Cape Egmont (bottom trawl index).

194. The midwater trawl fleet captures a wide size range of kingfish and is considered to index the entire kingfish population. As the bottom trawl fishery captures mainly juvenile fish, the Working Group concluded that the bottom trawl index was best regarded as an index of juvenile fish only. Therefore, the Working Group concluded that the midwater trawl index provided the best available index of the overall kingfish population in KIN 7 & 8, with the bottom trawl index used as supporting index to assist with the interpretation of future trends.

195. The midwater trawl index showed a considerable increase in the CPUE between 2006/07 and 2016/17, after which the index remained stable. This trend was apparent in all areas where the midwater trawl fleet was active (i.e. the increase in the index was not driven by increased kingfish catch rates in KIN 7 only, rather catch rates increased in all areas).

196. The Working Group considered that an increase in the abundance of KIN 7 & 8 was the only biologically plausible explanation for the rise in CPUE. Evidence from the size composition data from the midwater trawl fleet suggested that strong recruitment, first observed as sub-MLS fish in 2015, is responsible for the increase in population biomass.

197. Using the mean CPUE between 2004/05 and 2009/10 as the soft limit, the abundance of KIN 7 & 8 was estimated to be '*Very Likely*' (>90%) above the default management target (Figure 9).

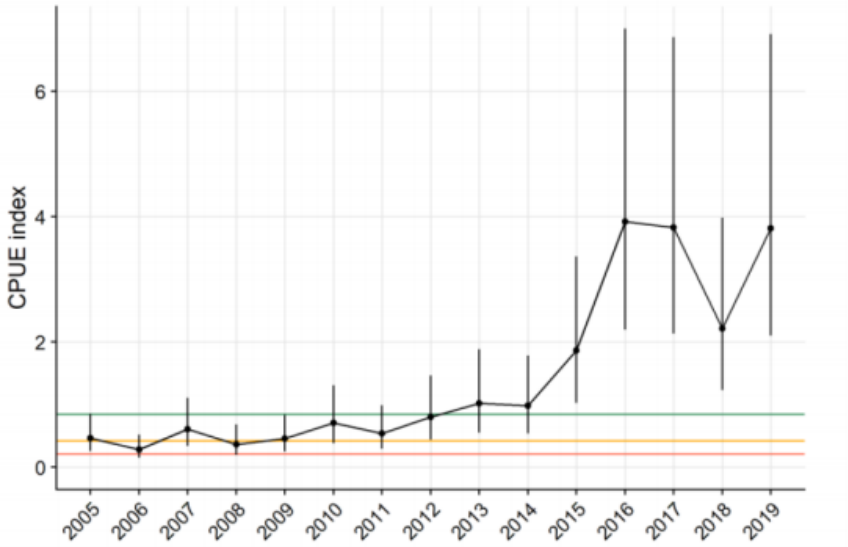


Figure 9: Standardised CPUE index for kingfish (KIN 7 & 8) catches by the midwater trawl fleet targeting jack mackerel between the 2004/05 and 2018/19 fishing years (midwater trawl index). The solid green horizontal line represents the default target, the orange line the soft limit and the red line the hard limit. Error bars represent 95% confidence intervals.

198. The bottom trawl index of juvenile kingfish in KIN 8 fluctuated without trend between 2004/05 and 2014/15, before a particularly strong increase from 2017/18 (Figure 10).

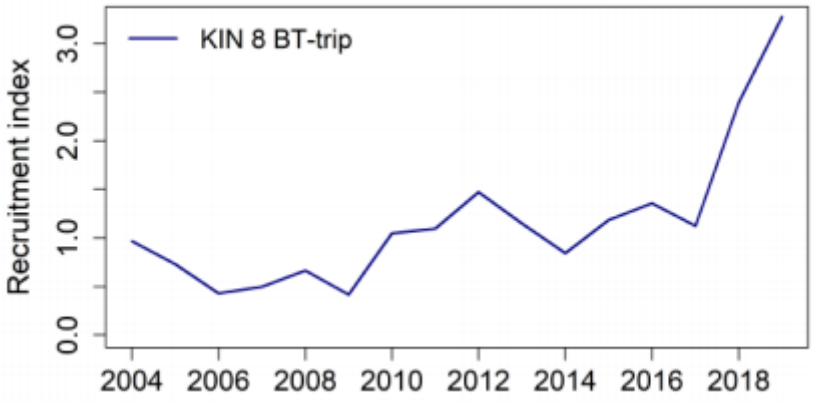


Figure 10: CPUE index of juvenile kingfish in KIN 8 between the 2004/04 and 2018/19 fishing years.

Biomass projections

199. The Working Group considered that current catch levels were '*Very Unlikely*' (<10%) to result in the biomass of KIN 7 & 8 declining below the soft limit in the short term. Given the substantial increase in the last two years, the Working Group anticipated that the biomass of KIN 7 & 8 will continue to increase at current catch levels.

Uncertainties

200. The index used to determine the status of KIN 7 & 8 in relation to the default target (the midwater trawl index) includes catches of both juvenile and adult fish. Therefore, by including a component of juvenile fish, the midwater CPUE is not a direct index of spawning stock biomass (SSB). As the Harvest Strategy Standard uses reference points based on spawning stock biomass, rather than that of the whole population, it is possible that the midwater trawl index overestimates the status of the stock by also indexing juvenile fish. However, this was compensated for by the Working Group through choosing a higher default management target *(40% B_0* rather than *35% B_0*) than is suggested by the Harvest Strategy Standard.

201. The risk of this overestimation significantly altering the status of the stock is low given the extent to which the midwater trawl index exceeds the default target, and the likelihood that trends in the entire population and spawning stock biomass are not noticeably different.

202. The Working Group also recognised that if the increases in kingfish abundance represent a regime shift, with an associated increase in B_0, then the use of historical levels of relative abundance to establish a soft limit would not be appropriate.

8.3 Summary of KIN 7 & 8 options

203. In cases such as KIN 7 & 8, 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.

204. The best available information suggests that the biomass of kingfish in KIN 7 & 8 is significantly above the default target (a proxy for B_{MSY}) and is expected to increase at current catch levels. The proposed options would set the TACs of KIN 7 & 8 either below, or slightly above, the best estimates of current catch levels. Consequently, there is an opportunity to increase the TACs of both KIN 7 & 8 in a manner that is not inconsistent with the objectives of section 13.

205. The options proposed are presented in Table 9 below. A new option for KIN 7 (Option 3) has been incorporated following consultation. For KIN 8, Option 1 has been amended slightly so as to account for increased customary take, however the TAC, TACC and recreational allowance remain the same as consulted on.

206. Note that all options for KIN 7 & 8 have been amended from those consulted on so that the allowance for all other mortality to the stock caused by fishing would be set at an amount that equates to 10% of the TACC and recreational allowance combined (rather than the TAC).

207. Along with a response from Te Ohu Kaimoana, the proposed TAC changes to KIN 7 and 8 received a total of eight and ten submissions respectively (Table 3).

208. Views on KIN 7 & 8 received during consultation are summarised below, with comments on the options proposed included in stock specific sections. Submitters comments on aspects of kingfish management relevant across all kingfish stocks (including deemed value rates, the proportionality of the TAC and management strategy) are provided in Section 5.

Table 9: Summary of proposed management settings for KIN 7 & 8 from 1 October 2020. All figures are in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	All other mortality caused by fishing
KIN 7	Option 1	81 ↑ (98%)	30 ↑ (100%)	4 ↑	40 ↑	7 ↑
	Option 2	120 ↑ (193%)	44 ↑ (193%)	6 ↑	60 ↑	10 ↑
	Option 3 (new)	98 ↑ (139%)	44 ↑ (193%)	6 ↑	40 ↑	8 ↑
KIN 8	Option 1	167 ↑ (82%)	80 ↑ (78%)	19 ↑	55 ↑	13 ↑

8.4 Responses & submissions

8.4.1 Increasing the TAC

209. Jonathan Boyd, a recreational fisher, comments that the average size of kingfish he has caught off the Taranaki coastline has significantly decreased over recent years. Therefore, Mr Boyd does not support increases to the TACs of KIN 7 & 8 and submits that there should be a total ban on commercial fishing in the South Taranaki Bight.

210. As they do not consider the population of kingfish sufficiently stable, Our Seas Our Future favour a conservative approach and recommend smaller increases to the TACs, TACCs, and allowances than those proposed.

211. Whilst neither supporting nor opposing the proposed options for KIN 7 & 8, Mike Currie (a member of the public) submits that kingfish catch using set nets should be banned and kingfish catch from longline fishing should only be allowed to continue if seabird bycatch is reduced.

212. All other submissions received were supportive of increases to the TAC of KIN 7 & 8.

8.4.2 Increasing the recreational allowance

213. Te Ohu Kaimoana and commercial groups do not consider it appropriate to set recreational allowances at, or above the best estimate of recreational take, whilst not providing sufficient ACE to cover all commercial catches. Further, Te Ohu Kaimoana view such an approach as restrictive, contradictory to the framework provided by the Act and case law and possibly *ultra vires.*

214. The NZSFC and SNZ support setting the recreational allowance at, or above estimates of recreational harvest.

8.4.3 Increasing the TACC

215. Te Ohu Kaimoana, Te Kupenga o Maniapoto, the Iwi Collective Partnership, DWG, FINZ, Sealord and Southern Inshore support increases to the TACCs of KIN 7 & 8 above those proposed. As the biomass is expected to increase at current catch levels, these organisations question the scientific rationale of not setting higher TACCs to provide for improved utilisation. Furthermore, FINZ comment that not increasing the TACC to current catch levels is inconsistent with Fisheries New Zealand's management framework to manage commercial kingfish catches to unavoidable bycatch only.

216. Whilst supportive of the proposed TACC increases, the NZSFC are in favour of setting TACCs below current catch levels so as to retain incentives for commercial fishers to release kingfish alive. SNZ support increases to the TACC of KIN 7 but consider that any increases to the catch limits or apportions of KIN 8 should be prioritised to the recreational and customary sectors.

8.4.4 Other feedback

217. The NZSFC noted the lack of a quantitative stock assessment and the need to consider that recent levels of high recruitment may not continue.

218. SNZ do not view the harvest of considerable volume of kingfish as unavoidable bycatch in the low-value, high-volume jack mackerel fishery as appropriate.

219. DWG comment that KIN 7 & 8 bycatch levels are likely to continue to increase due to changing oceanographic conditions.

220. Sealord, operators of two large midwater trawl vessels, note that although cross-industry work is underway to develop a kingfish bycatch reduction device, reducing kingfish bycatch is extremely difficult given the very low proportion of kingfish bycatch relative to total catch.

221. Southern Inshore comment that they are working with DWG to tag those kingfish released alive from large midwater trawl vessels so as to collect information to inform future decision making.

8.5 KIN 7 options

8.5.1 Option 1

222. Option 1 proposes to approximately double the TAC of KIN 7 so that it is set at 81 tonnes whilst broadly retaining the current proportionality of the TAC.

223. Within the TAC, the recreational allowance would be set at 40 tonnes (100% increase), the customary Māori allowance set at 4 tonnes (100% increase) and the allowance for other sources of mortality to the stock caused by fishing set at 7 tonnes (75% increase), which equates to 10% of the TACC and recreational allowance combined. Under Option 1 the TACC would be set at 30 tonnes (100% increase).

224. Option 1 was supported by SNZ.

Analysis of Option 1

225. Feedback received prior to, and during, consultation indicates that the customary harvest of kingfish in KIN 7 is likely to increase over future years due to the increased exercise of customary permits on commercial vessels. Information on the current level of customary harvest in KIN 7 is uncertain, however Fisheries New Zealand considers it likely that an allowance of 4 tonnes may not reflect customary harvest in future years. As such, a larger increase to the customary allowance of KIN 7 is recommended.

226. Option 1 would set the recreational allowance above the most recent (2017/18) panel survey estimate (40 tonnes compared with 27 tonnes). Fisheries New Zealand considers setting the recreational allowance above the most recent panel survey estimate appropriate for KIN 7 so as to account for recreational fish landed under a section 111 permit[62] and provide for the likely continuation of the increasing trend in recreational kingfish catches (as seen between the 2011/12 and 2017/18 panel surveys).

227. As a consequence of Option 1, the KIN 7 TACC would be set below current catch levels (which have averaged 55 tonnes over the last two years). Therefore, Option 1 is unlikely to provide sufficient KIN 7 ACE to balance all kingfish catch. As such, under Option 1 operators would continue to incur considerable deemed value invoices of between $200,000 and $400,000 per annum (based on landings during the two most recent complete fishing years).[63]

228. Option 1 represents the most precautionary approach to setting the TAC for kingfish in KIN 7. Given that the best available information indicates that kingfish abundance in KIN 7 has increased considerably, and is likely to further increase over coming years, Fisheries New Zealand does not consider it appropriate for the TACC to be set at such a low level. Therefore, Fisheries New Zealand does not recommend Option 1.

8.5.2 Option 2

229. Option 2 proposes to approximately treble the TAC of KIN 7, so that it is set at 120 tonnes whilst broadly retaining the current proportionality of the allowances and TACC within the TAC.

[62] Recreational catch taken under a special permit which authorises the taking of recreational catch while on board a commercial vessel.
[63] Calculations of potential deemed value invoices are uncertain and dependent upon an individual operator's ACE holdings and level of over-catch.

230. Within the TAC, the recreational allowance would be set at 60 tonnes (200% increase), the customary Māori allowance set at 6 tonnes (200% increase) and the allowance for all other mortality to the stock caused by fishing set at 10 tonnes (150% increase), which equates to 10% of the TACC and recreational allowance combined. Under Option 2 the TACC would be set at 44 tonnes (193% increase).

231. No submissions were received supporting Option 2.

Analysis of Option 2

232. Option 2 would set the recreational allowance 33 tonnes above the most recent panel survey estimate. Feedback received during consultation suggests that setting the recreational allowance at such a level would be considerably above the likely recreational harvest during future years. As such, Fisheries New Zealand does not recommend Option 2.

8.5.3 Option 3 (Preferred)

233. Option 3 represents a combination of Options 1 and 2 and proposes to increase the TAC of KIN 7 by 139% so that it is set at 98 tonnes. This is a new option introduced following consultation.

234. Within the TAC, the recreational allowance would be set at 40 tonnes (100% increase), the customary Māori allowance set at 6 tonnes (200% increase) and the allowance for other sources of all other mortality to the stock caused by fishing set at 8 tonnes (100% increase), which equates to 10% of the TACC and recreational allowance combined. Under Option 3 the TACC would be set at 44 tonnes (193% increase).

235. Option 3 is very similar to the option suggested by the NZSFC. The only difference between Option 3 and that provided by the NZSFC is a 2 tonne difference in the customary Māori allowance (the NZSFC proposed setting this allowance at 4 tonnes).

Analysis of Option 3

236. Feedback received prior to, and during, consultation indicates that the customary harvest of kingfish in KIN 7 is likely to increase over future years due to the increased exercise of customary permits on commercial vessels. Information on the current level of customary harvest in KIN 7 is uncertain, however Fisheries New Zealand considers it likely that an allowance of 6 tonnes (the largest proposed increase) will be sufficient to reflect customary harvest in 2020/21 and future years.

237. Option 3 would set the recreational allowance above the most recent panel survey estimate (40 tonnes compared with 27 tonnes). However, Fisheries New Zealand considers setting the recreational allowance of KIN 7 above the most recent panel survey estimate appropriate so as to account for recreational fish landed under a section 111 permit and provide for the expected continuation of the increasing trend in recreational kingfish catches since the most recent survey estimate.

238. Current commercial catch levels in KIN 7 have averaged 55 tonnes over the last two years. However, Fisheries New Zealand notes that commercial landings of kingfish in KIN 7 have only exceeded the TACC proposed under Option 3 (44 tonnes) by considerable margins on one occasion (the 2018/19 fishing year). Additionally, catches to date in 2019/20 are at lower levels than those seen during the comparative periods of 2017/18 or 2018/19 and appear unlikely to exceed 44 tonnes at the end of this year.

239. Although the availability of KIN 7 ACE would be increased as consequence of Option 3 (when compared to Option 1), it is unknown whether the TACC proposed under Option 3 would provide sufficient ACE to balance against all kingfish catch in future years. As such, under Option 3 operators may continue to incur deemed value invoices of up to $200,000 per annum (based on catch during 2018/19).

240. To reflect the value of the species to non-commercial fishers, Fisheries New Zealand considers it necessary to promote the growth of the stock by providing commercial fishers with an incentive to avoid kingfish (where possible) and to return any live kingfish to the sea. To continue to provide this incentive, Fisheries New Zealand considers it appropriate to set the

TACC of KIN 7 at, or below current catch levels (average landings from KIN 7 over the three most recent fishing years is 1 tonne greater than the TACC proposed under Option 3).

241. Option 3 places greater weight on the best available information suggesting a considerable increase in the biomass of KIN 7. However, this option also recognises the shared nature of the stock and the need to incentivise fishers to avoid and return live kingfish. As such, Fisheries New Zealand recommends Option 3.

242. Given that the abundance of kingfish in KIN 7 is expected to increase at current catch levels (which are higher than the TACC options proposed under any option), the sustainability risk associated with catch in excess of the available ACE is low. Given that the annual deemed value rate of KIN 7 is set at almost five times the port price, reducing the deemed value rates of KIN 7 is unlikely to remove the incentives for commercial fishers to avoid and return live kingfish. Therefore, in conjunction with all options, Fisheries New Zealand recommends that you reduce the deemed value rates of KIN 7

243. More information on the deemed value rates of KIN 7 is provided in Section 8.6.

8.5.4 Other options

244. As an alternative, Te Ohu Kaimoana propose setting the TAC of KIN 7 at 116 tonnes, with a TACC of 72 tonnes (~10 tonnes above 2018/19 landings) and a customary Māori allowance of 4 tonnes. Te Ohu Kaimoana were supported by the Iwi Collective Partnership and Te Kupenga o Maniapoto.

245. A number of submissions from industry propose alternative KIN 7 TACC options greater than the options proposed. Sealord propose that the TACC be set at 77 tonnes whilst Southern Inshore submit that the TACC be set at 64 tonnes.

246. Our Seas Our Future support increasing the TAC, TACC and allowances of KIN 7 by 50% which is half that proposed in Option 1.

Fisheries New Zealand's response

247. Fisheries New Zealand notes that the recommended option (Option 3) reflects a cautious approach, and that setting a higher TAC is unlikely to result in a sustainability risk to the KIN 7 stock. However, to ensure that KIN 7 continues to support healthy recreational fisheries, Fisheries New Zealand considers it important that the stock continues to grow and that commercial fishers are incentivised to avoid and return live kingfish. Therefore, Fisheries New Zealand does not recommend setting a higher TAC.

248. However, Fisheries New Zealand consulted on a range of TAC options (between 82 tonnes and 120 tonnes). Therefore, setting a TAC within this range, as suggested by industry and Te Ohu Kaimoana, is an option available to you.

249. Likewise, given that the best available information suggests that the biomass of kingfish in KIN 7 has increased considerably, Fisheries New Zealand considers there to be no sustainability risk associated with the proposed options. Therefore, Fisheries New Zealand does not recommend setting a lower TAC or TACC.

8.6 Deemed value rates of KIN 7

250. The current annual deemed value rates of KIN 7 are set above the 2018/19 port price ($1.82/kg).

251. As the majority of kingfish in KIN 7 is landed as a relatively low value frozen product, reducing the deemed value rates of KIN 7 by 50% is unlikely to remove the incentives for commercial fishers to avoid and return live kingfish. Therefore, in conjunction with all proposed TAC options, Fisheries New Zealand recommends that you decrease the deemed value rates of KIN 7 to those shown in Table 10.

252. The recommended rates are the same as those currently applied to the adjacent KIN 3 stock and are consistent with the Deemed Value Guidelines.

Table 10: Current and recommended deemed value rates ($/kg) for KIN 7

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-150%	150-160%	160-170%	>170%
KIN 7	Current	8.00	8.90	10.68	12.46	14.24	16.02	17.80
				120-140%	140-160%	160-180%	180-200%	>200%
	Recommended	4.00	4.45	5.34	6.23	7.12	8.01	8.90

253. Feedback received during submissions on the deemed value rates of kingfish can be found in section 5.3 above.

254. Fisheries New Zealand notes that should you choose a higher KIN 7 TACC than that recommended, decreasing the deemed value rates as recommended in Table 10 may reduce the incentive for fishers to avoid kingfish and return live kingfish to the sea.

255. Fisheries New Zealand also notes that a large proportion of the KIN 7 catch by the large midwater trawl fleet is taken during tows which cross the KIN 7/KIN 8 QMA boundary. Therefore, adjusting the deemed value rates of KIN 7 would introduce a risk of area misreporting to take advantage of the lower deemed value rate. As such a compliance and monitoring response will be required to reduce this risk.

8.7 KIN 8 options

8.7.1 Option 1 (Preferred)

256. A single option is proposed for increasing the TAC of KIN 8. This option proposes to increase the TAC by 82% so that it is set at 167 tonnes whilst broadly retaining the current proportionality of the TAC. Option 1 has been amended slightly from that consulted on to account for increased customary take, however the TAC, TACC and recreational allowance remain the same.

257. Within the TAC, the recreational allowance would be set at 55 tonnes (77% increase), the customary Māori allowance set at 19 tonnes (111% increase) and the allowance for all other mortality to the stock caused by fishing set at 13 tonnes (86% increase), which equates to 10% of the TACC and recreational allowance combined. Under Option 1 the TACC would be set at 80 tonnes (78% increase).

258. Option 1 was supported by the NZSFC.

Analysis of Option 1

259. Feedback received prior to, and during consultation indicates that the customary harvest of KIN 8 is likely to increase and that the allowance should be set based on future need rather than past catches. In the absence of information on likely future take, Option 1 would set the allowance for customary harvest at 19 tonnes which is around 15% above the current best estimate of customary take.

260. Option 1 would set the recreational allowance of KIN 8 at 55 tonnes, the best available estimate of the current level of recreational take. Fisheries New Zealand acknowledges that the approach for setting the recreational allowance of kingfish differs between KIN 7 & 8. However, Fisheries New Zealand considers the approach taken for KIN 8 appropriate for this stock given the:

- Estimated decline in recreational catches of kingfish in KIN 8 between 2011/12 and 2017/18; and
- KIN 8 is further north than KIN 7, therefore future recreational kingfish catches may increase less when compared to southern areas.

261. Commercial landings of kingfish from KIN 8 have typically been below 80 tonnes. However, landings from 2018/19 exceeded 90 tonnes, with landings to date from 2019/20 also exceeding 90 tonnes. However, Fisheries New Zealand notes that unavoidable kingfish bycatch from set netting is likely to decrease as a result of decisions made on the fisheries management

components of the Hector's and Māui dolphin Threat Management Plan review. Although the magnitude of this impact cannot be quantified, Fisheries New Zealand considers it likely that KIN 8 landings in previous years may no longer be indicative of future catches.

262. Taking into account the likely growth of the stock, Fisheries New Zealand considers it likely that Option 1 would set the TACC either at, or slightly below, future catches over the short term. Therefore, Option 1 would have the effect of considerably reducing deemed value invoices whilst also retaining the incentives for commercial fishers to avoid and return live kingfish to the sea.

8.7.2 Other options

263. SNZ note that the bottom trawl CPUE index only shows a significant increase in recent years and consider that any increases to catch limits or apportions should be prioritised to the recreational and customary sectors. As such, SNZ support the customary and recreational allowances proposed in Option 1 whilst opposing any increases to the TACC.

264. As an alternative, Te Ohu Kaimoana propose setting the TAC of KIN 7 at 192 tonnes, with a TACC of 103 tonnes (~10 tonnes above 2018/19 landings) and a customary Māori allowance of 17 tonnes. Te Ohu Kaimoana were supported by the Iwi Collective Partnership and Te Kupenga o Maniapoto.

265. FINZ support an alternative option for KIN 8 which would set the TAC at 189 tonnes, with a TACC of 100 tonnes, a customary allowance of 17 tonnes and a recreational allowance of 55 tonnes. Similarly, Sealord submit that a TACC of 100 tonnes for KIN 8 would be appropriate.

266. Our Seas Our Future support increasing the TAC, TACC and allowances of KIN 8 by 30% which is less than half that proposed in Option 1.

Fisheries New Zealand's response

267. Fisheries New Zealand notes that the recommended option (Option 1) reflects a cautious approach, and that setting a higher TAC is unlikely to result in a sustainability risk to the KIN 8 stock. However, to ensure that KIN 8 continues to support healthy recreational fisheries, Fisheries New Zealand considers it important that the stock continues to grow and that commercial fishers are incentivised to avoid and return live kingfish. Therefore, Fisheries New Zealand does not recommend setting a higher TAC or TACC.

268. Likewise, given that the best available information suggests that the biomass of kingfish in KIN 8 has increased considerably, Fisheries New Zealand considers there to be no sustainability risk associated with the proposed option. Therefore, Fisheries New Zealand does not recommend setting a lower TAC or TACC.

8.8 Conclusion and recommendations for KIN 7 & 8

269. Fisheries New Zealand does not expect that catches of KIN 7 or 8 by commercial fishers will increase above existing levels as a consequence of any of Fisheries New Zealand's recommended options. As the biomass of kingfish is anticipated to increase under current catches, the recommended options are considered unlikely to impact upon the sustainability of either KIN 7 or KIN 8.

270. Submissions received were generally, although not exclusively, supportive of increases to the TAC, TACC and allowances of KIN 7 & 8. However, concern was raised by commercial groups and Te Ohu Kaimoana regarding setting the recreational allowance of KIN 7 above the best estimate of recreational take whilst setting the TACC below current commercial catch.

271. The options recommended by Fisheries New Zealand would set the recreational and customary allowances to reflect current and future catch. Options for increasing the TACC would set commercial catch limits at, or below current catch levels so as to reduce deemed value obligations whilst retaining incentives for fishers to avoid kingfish and return live kingfish to the sea.

272. In conjunction with the recommended TAC option, Fisheries New Zealand also recommends that you reduce the deemed value rates of KIN 7.

9 Decisions for kingfish stocks

KIN 2

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the KIN 2 TAC at ~~185~~ tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 18 to ~~20~~ tonnes;

ii. Increase the allowance for recreational fishing interests from 65 to ~~70~~ tonnes;

iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 24 to ~~15~~ tonnes;

iv. Increase the KIN 2 TACC from 63 to ~~70~~ 69 tonnes.

Agreed / Agreed as Amended / Not Agreed

KIN 3

Option 1

Agree to set the KIN 3 TAC at 21 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 4 tonnes;

ii. Retain the allowance for recreational fishing interests from at 6 tonnes;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 1 to 2 tonnes;

iv. Increase the KIN 3 TACC from 6 to 9 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the KIN 3 TAC at 23 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests at 4 tonnes;

ii. Retain the allowance for recreational fishing interests from at 6 tonnes;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 1 to 2 tonnes;

iv. Increase the KIN 3 TACC from 6 to ~~11~~ 11 tonnes.

Agreed / Agreed as Amended / Not Agreed

KIN 7

Option 1
Agree to set the KIN 7 TAC at 81 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 4 tonnes;
ii. Increase the allowance for recreational fishing interests from 20 to 40 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 4 to 7 tonnes;
iv. Increase the KIN 7 TACC from 15 to 30 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the KIN 7 TAC at 120 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 6 tonnes;
ii. Increase the allowance for recreational fishing interests from 20 to 60 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 4 to 10 tonnes;
iv. Increase the KIN 7 TACC from 15 to 44 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 *(Fisheries New Zealand preferred option)*

Agree to set the KIN 7 TAC at 98 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 2 to 6 tonnes;
ii. Increase the allowance for recreational fishing interests from 20 to 40 tonnes;
iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 4 to 8 tonnes;
iv. Increase the KIN 7 TACC from 15 to 44 tonnes.

AND

Deemed value rate

Agree to change the deemed value rates for KIN 7 as outlined in the table below.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-150%	150-160%	160-170%	>170%
KIN 7	Current	8.00	8.90	10.68	12.46	14.24	16.02	17.80
	Recommended	4.00	4.45	120-140% 5.34	140-160% 6.23	160-180% 7.12	180-200% 8.01	>200% 8.90

Agreed / Agreed as Amended / Not Agreed

KIN 8

Option 1 *(Fisheries New Zealand preferred option)*

Agree to set the KIN 8 TAC at 167 tonnes and within the TAC:

i. Increase the allowance for Māori customary non-commercial fishing interests from 9 to 19 tonnes;

ii. Increase the allowance for recreational fishing interests from 31 to 55 tonnes;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 7 to 13 tonnes;

iv. Increase the KIN 8 TACC from 45 to 80 tonnes.

Agreed / Agreed as Amended / Not Agreed

why only one option?
- of substantial review -

Hon Stuart Nash
Minister of Fisheries
17 / 8 / 2020

Review of Deemed Value Rates for Selected Stocks for 2020/21

1 The deemed values regime

1. The Quota Management System (QMS) is the backbone of New Zealand's fisheries management regime and includes a total of 642 fish stocks representing 98 species or species groups. Balancing catch against catching rights is key to ensuring the integrity of the QMS.

2. On the first day of each fishing year, all quota owners are allocated annual catch entitlement (ACE), based on their share of quota and the current total allowable commercial catch (TACC). ACE may be freely traded between fishers to balance against catch. Under the catch balancing regime, deemed values are charges that commercial fishers must pay for every unprocessed kilogram of QMS fish landed in excess of their ACE holdings ($/kg).

3. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.

4. The intent is to protect the long-term value of stocks and support kaitiakitanga by providing an incentive for the total commercial catch for each QMS stock to remain within the 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.

5. The deemed value regime 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 every kilogram of unprocessed fish landed in excess of ACE. If the fisher subsequently sources ACE to cover his or her catch, the interim deemed value payments are remitted. Operational policy provides that interim deemed value rates should be set at 90% of the annual rate.
    - **Annual deemed value rates** are charged at the end of the fishing year on all catch in excess of ACE. If the fisher has not sourced ACE by the end of the fishing year, the difference between the interim and annual deemed value rates are charged for all catch in excess of ACE.
    - **Differential deemed value rates** (also known as ramping) are the progressively increased annual deemed value rates that apply to some stocks as the percentage by which a fisher's catch in excess of ACE also increases. The standard approach is to increase the annual rate in 20% increments, up to a maximum of 200% of the annual deemed value, however more or less stringent schedules may be applied depending on the specific circumstances of the stock.[64] Differential rates provide fishers with a stronger incentive to remain within their ACE and reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and the long-term value of the resource.

6. The operation of the deemed value framework is described within the supplemental information.

2 Legal context

7. Section 75(1) of the Fisheries Act 1996 (the Act) requires you to set deemed value rates for all stocks managed under the QMS.

[64] For vulnerable or rebuilding stocks, or those taken with a high degree of selectivity, a more stringent differential schedule may be appropriate. Likewise, less stringent differential schedules may be more appropriate for low value, low TACC stocks where targeted fishing does not occur.

8. 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 sufficient ACE that is not less than the fisher's total catch of each stock taken.

9. Section 75(2)(b) allows you, when setting deemed values, 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 any other fish commonly taken in association 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 you consider relevant.

13. Section 75(3) requires you to set an annual deemed value rate for each stock that is greater than the interim deemed value rate set for that stock.

14. Further, under section 75(6), when setting either interim or annual deemed value rates, you must not:

   - Have regard to the personal circumstances of any individual or class of person liable to pay the deemed value of any fish, aquatic life, or seaweed; or
   - Set separate deemed value rates in individual cases.

3 Setting deemed value rates

10. The practical application of your obligations under section 75 is set out in the Deemed Value Guidelines 2020 (the Guidelines). The 2020 iteration of the Guidelines were developed by the Deemed Values Working Group and supersede the previous (2012) version.

11. The Guidelines are an operational policy statement used by Fisheries New Zealand to guide the development of advice to you on the setting of deemed value rates. The Guidelines provide for flexibility in the deemed value settings of individual stocks so as to meet the sustainability and utilisation objectives of the Act.

12. In summary, the Guidelines provide six statements used to inform the setting of deemed value rates:

   1. Deemed value rates should incentivise fishers to balance catch against ACE;
   2. Deemed value rates should incentivise accurate catch reporting;
   3. Differential deemed values may be set;
   4. Other relevant matters may be considered when setting deemed value rates;
   5. The interim deemed value rates of all stocks should be set at 90% of the annual rate; and
   6. The deemed value rates for Chatham Island landings may be lower.

13. All options for deemed value rate adjustments recommended within this paper were informed by the Guidelines. However, the Guidelines are not binding. When making decisions on deemed value rates, you use the statutory criteria in making decisions and can act within the bounds of the statute, notwithstanding the Guidelines.

4 Identifying stocks for deemed value rate review

14. Stocks for deemed value rate review were identified through the Catch Balancing Review Process.

15. The purpose of the Catch Balancing Review Process is to identify those stocks where catch balancing issues are of concern and provide options for management responses. The appropriate management actions are determined based on the potential causes of the over-catch, economic changes in the fishery and stock specific considerations. The Catch Balancing Review Process was developed during 2019 by the Deemed Values Working Group.

16. The Commercial Catch Balancing Forum, comprising industry representatives, Te Ohu Kaimoana and Fisheries New Zealand officials met in November 2019 as part of the Review Process. The purpose of the Commercial Catch Balancing Forum is to discuss stocks where catch balancing issues are of concern and provide information and input into decision making on what the appropriate management response may be. During the November meeting, the proposed management approaches for BNS 3, SKI (all stocks), RBT 3 and TRE 2 were considered, and opportunity was provided for the discussion of the deemed value rates of other stocks.

17. Eleven stocks were identified for deemed value rate review for the fishing year starting 1 October 2020. Those stocks prioritised for deemed value rate review, and the accompanying rationale are provided in Table 1.

Table 1: Rationale for stocks prioritised for review

Species	Stock	Rationale for review
Arrow squid	SQU 1J SQU 1T SQU 6T	- Landed price of squid has increased during recent years.
Bluenose	BNS 3	- Deemed value rates for BNS 3 currently set at the same level as the adjacent BNS 2 stock. - Economic and fishery characteristics of both stocks differ, therefore identical deemed value rates may no longer be appropriate as current reporting requirements have mitigated the risk of area misreporting.
Gemfish	SKI 1	- Current deemed value rates not providing sufficient incentive for fishers to avoid catching in excess of SKI 1 ACE.
	SKI 2	- Current stringent differential schedule not appropriate for a stock taken primarily as bycatch.
	SKI 7	- Decision to increase SKI 7 TACC from 1 Oct 2019 not given effect due to court injunction regarding '*28N*' rights. - Known to be no sustainability risks associated with catching in excess of the available ACE (providing that total commercial catches do not exceed 599 tonnes).
Pilchard	PIL 7 PIL 8	- Deemed value rates are currently set above the landed price.
Redbait	RBT 3	- Current deemed value rates not providing sufficient incentive for fishers to remain within the available ACE.
Trevally	TRE 2	- Current stringent differential schedule not appropriate for a stock taken primarily as bycatch.

18. Table 2 sets out supporting information that informed the development of recommendations for the prioritised stocks.

Table 2: Supporting information for stocks prioritised for review.

Stock	2018/19 TACC (t)	% ACE caught 2018/19[65]	ACE $/kg[66]	Interim DV $/kg	Annual DV $/kg	2019/20 Port Price $/kg
SQU 1J	5,000	<1%	-[67]	0.79	0.88	1.14
SQU 1T	44,741	69%	0.07	0.79	0.88	1.22
SQU 6T	32,369	26%	0.09	0.79	0.88	1.24
BNS 3	93	112%	0.84	3.60	4.00	3.13
SKI 1	210	168%	1.08	1.35	1.50	1.98
SKI 2	240	135%	1.03	1.35	1.50	2.10
SKI 7	300	312%	0.49	0.65	0.72	1.37
PIL 7	150	52%	0.12	0.41	0.45	0.83
PIL 8	65	97%[68]	0.12	0.41	0.45	0.83
RBT 3	2,190	111%	0.20	0.45	0.50	0.10
TRE 2	241	110%	0.78	1.13	1.25	1.99

19. The review of the management settings of kingfish (KIN 2, 3, 7 & 8) also provides an opportunity to review the deemed value rates applicable to these stocks. However, Fisheries New Zealand did not initially propose any changes to the deemed value rates of these stocks. Feedback from tangata whenua and stakeholders on the deemed value rates of these stocks, and Fisheries New Zealand's final advice can be found in the kingfish section of this briefing.

5 Input and participation of tangata whenua

20. Input and participation into the sustainability round decision-making process is provided through Iwi Fisheries Forums, which have been established for that purpose. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.

21. 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 fisheries. Particular regard must be given to Iwi Fisheries Forum Plans and the concept of kaitiakitanga when making sustainability decisions.

22. Generally speaking, Iwi Fisheries Forum Plans reflect objectives for creating thriving customary and non-commercial fisheries that support the cultural well-being of iwi and their whānau. This will be achieved through measures such as enabling iwi to collect fisheries resources, according to their tikanga, through their takiwā/rohe, and utilisation of tikanga in the wider management of fisheries.

23. Fisheries New Zealand considers that the recommended deemed value rate adjustments will contribute towards the management objectives contained in Iwi Fisheries Forum Plans by ensuring fishers are incentivised to balance catch with available ACE and accurately report catch.

24. Due to COVID-19 travel restrictions, input and participation from Iwi Fisheries Forums was sought through remote mechanisms. In late April 2020, a two-page document with information on the proposal to review the deemed value rates of these eleven stocks was provided to Iwi Fisheries Forums, and input sought.

25. Feedback received from Mai i nga Kuri a Wharei ki Tihirau Iwi Forum (Bay of Plenty) prior to public consultation commencing indicated a level of concern regarding the deemed value

[65] 2018/19 landings against available ACE, as opposed to the TACC.

[66] Average price paid per kg of ACE transferred (exc. GST) during the 2018/19 fishing year (as reported by FishServe). Excludes transfers considered unrepresentative of true ACE price.

[67] Unavailable due to lack of activity within the SQU 1J ACE market.

[68] Available PIL 8 ACE for the 2019/20 fishing year was 168% caught as of June 2020.

framework. Mai i nga Kuri a Wharei ki Tihirau commented that the current regime incentivised the discarding of unwanted fish that could otherwise be utilised (e.g. distributed through marae).

26. Te Tai Hauāuru Iwi Forum (Taranaki and Manawatu) expressed support for the proposed deemed value changes for all stocks within feedback provided to Fisheries New Zealand prior to public consultation commencing.

6 Consultation

27. Before setting any interim or annual deemed value rate, section 75A of the Act requires you to, if practicable, consult with tangata whenua and stakeholders. Fisheries New Zealand sought input on the proposed deemed value rate adjustments during the formal consultation process between 25 May 2020 and 1 July 2020.

28. Fisheries New Zealand received 13 submissions relating to the proposed deemed value rate adjustments. Submissions were received from:

- Chatham Islands Finfish Association;
- Chatham Islands Quota Holding Company;
- Deepwater Group Limited (DWG);
- Fisheries Inshore New Zealand (FINZ);
- Harbour Fish Ltd;
- Hokotehi Moriori Trust;
- Ngāti Mutunga o Wharekauri Asset Holding Company Ltd;
- Sealord;
- Southern Inshore Fisheries Management Company Ltd (Southern Inshore);
- Specialty & Emerging Fisheries Group;
- Tasman and Sounds Recreational Fishers' Association (TASFISH);
- Te Kupenga o Maniapoto Ltd; and
- Te Ohu Kaimoana.

29. Submitters' comments on the proposed deemed value rate settings for specific stocks are addressed in the analysis of each species or stock below. Feedback on the deemed values regime, or applicable across all stocks is summarised below.

6.1 Submissions on the deemed values regime, or applicable across all stocks

6.1.1 Selecting stocks for deemed value rate review

30. DWG and Te Ohu Kaimoana question the process for selecting stocks for deemed value rate review and note that stocks undergoing TAC review should also have their deemed value rates reviewed. Whilst acknowledging that not all stocks require deemed value rate adjustments, Te Ohu Kaimoana request that the rationale for not reviewing the deemed value rates of stocks undergoing a TAC review be provided within the respective consultation papers.

Fisheries New Zealand's response

31. As stated above, stocks for deemed value rate review are selected through the Catch Balancing Review Process. The Review Process, as agreed by the Deemed Values Working Group, does not state that stocks will have their deemed value rates automatically reviewed if a TAC review is taking place. Rather, the Review Process notes that deemed value rates will be reviewed if the criteria for review is met, and a deemed value rate review is considered appropriate. Criteria for review include; catch in excess of available ACE, significant changes in the economic characterises of a fishery or deemed value rates inconsistent with the Guidelines.

32. Fisheries New Zealand additionally notes that over one third of stocks included for TAC review in the October 2020 sustainability round are either undergoing a deemed value rate review this year or underwent a deemed value rate as part of the October 2019 sustainability round.

33. However, in future sustainability rounds, Fisheries New Zealand will provide the rationale for not reviewing the deemed value rates of stocks undergoing a TAC review within the consultation document.

6.1.2 Setting deemed value rates

34. The Tasman and Sounds Recreational Fishers' Association (TASFISH) comment that catch in excess of the available ACE impacts negatively on stock abundance and the recreational sector and submit that all deemed values should be set at a minimum of three times the port price. TASFISH also comment that any over catch should be taken off the following years ACE.

35. Te Ohu Kaimoana support deemed values being used primarily as utilisation tools and therefore favour setting deemed value rates close to the ACE price for all over caught stocks where there are no known sustainability concerns.

36. FINZ and Te Ohu Kaimoana do not support setting deemed values (including differential rates) above the market price of fish as this can create an incentive to misreport and can inflate the ACE price.

Fisheries New Zealand's response

37. Given that the policy purpose of the deemed values regime is to '*provide incentives for fishers to acquire or maintain sufficient ACE…while encouraging accurate catch reporting*', Fisheries New Zealand does not consider setting the annual deemed value rate at three times the port price as appropriate for the majority of stocks. Such a rate would incentivise misreporting and place an undue financial burden on commercial fishers for accidental over catch.

38. The Guidelines, developed by the Deemed Values Working Group, note that in general, setting the annual deemed value rates above the average ACE price should incentivise the majority of fishers to balance catch against ACE. The adjustments recommended below would set annual deemed value rates above the average ACE price (unless otherwise indicated) whilst recognising that aspects other than the sustainability status of a stock should be considered when determining appropriate deemed value rates.

39. The final report of the Deemed Values Working Group noted the importance of differential deemed values as a backstop to protect stocks from over-fishing. Fisheries New Zealand holds limited information on the market value of fish stocks, and it is not possible to change deemed value rates over the course of the fishing year so as to respond to changing market conditions. Therefore, for the majority of stocks, Fisheries New Zealand considers it necessary to set the higher differentials rates above the port price so as to ensure that stocks are protected from over-fishing.

6.1.3 Other matters

40. Harbour Fish, a South Island based quota holder and operator, questioned why deemed value payments are not used to support science, technology and initiatives which support fishers.

41. FINZ noted that the lack of a SNA 8 deemed value rate review was concerning, given the difficulties of avoiding SNA 8 and the impact of the Hectors and Māui Dolphins Threat Management Plan decisions on West Coast North Island inshore fishers.

Fisheries New Zealand's response

42. Fisheries New Zealand notes that the use of deemed values revenue, and the deemed value rates of stocks other than those consulted on is outside the scope of this deemed value rate

review. However, a review of the SNA 8 management settings (including deemed value rates) is being considered for the October 2021 sustainability round.

7 Deemed value rate adjustments

7.1 Arrow squid/wheketere (SQU 1J, 1T & 6T) – Nationwide

7.1.1 Stock information

43. Excluding the Kermadec Islands, arrow squid (*Nototodarus gouldi; N. sloanii)* in New Zealand are managed as three fisheries based on a combination of fishing method and geographical area:
    - **SQU 1J**: All squid taken using the method of jigging[69] around New Zealand, excluding the Auckland and Campbell islands;
    - **SQU 1T**: All squid taken using methods other than jigging around New Zealand, excluding the Auckland and Campbell islands; and
    - **SQU 6T**: All squid taken from the Auckland and Campbell Islands regardless of fishing method (also known as the southern squid fishery).

44. Historically, large amounts of squid were taken using the method of jigging, principally by foreign charter vessels. However, as such vessels have not been active in New Zealand during recent years, the amount of catch balanced with SQU 1J ACE has been negligible.

45. Both SQU 1T and 6T have high TACCs (44,741 t and 32,369 t respectively) and are almost entirely taken through targeted fishing by large trawl vessels along the Stewart/Snares shelf, on the Chatham Rise and around the Auckland Islands.

46. Squid biomass is highly variable between years due to the biological characteristics of the species (squid are fast growing, live for 12-18 months and die following spawning). To reflect the variability in squid availability, all squid stocks are listed on schedule 3 of the Act which allows for in-season increases to the TAC (and TACC).

7.1.2 Proposed deemed value rates

47. The landed price of squid has increased during recent years, with the port prices of SQU 1T & 6T increasing by almost 60% between 2009/10 and 2018/19. The deemed value rates of squid stocks have remained unchanged since 2001.

48. To reflect the increase in the landed price of squid, Fisheries New Zealand proposed increasing the annual deemed value rates of squid from $0.88/kg to $1.20/kg. Given that catches in excess of the available squid ACE are unlikely to occur by chance (due to the large TACCs and high degree of control fishers have over catches), Fisheries New Zealand also proposed introducing a more stringent differential schedule.

7.1.3 Submissions

49. Five submissions were received directly commenting on the deemed value rates of squid.

50. DWG note that squid prices have been heavily affected by the impact of COVID-19 on the food service industry and that the port price information used to inform the proposed changes is outdated. Therefore, DWG submit that Fisheries New Zealand either retain the current deemed value rates for squid or use the current (post COVID-19) market price to inform any changes (which DWG note would result in a deemed value rate decrease).[70] FINZ endorse the submission from DWG.

[69] Any fishing method for taking squid by means of a line rather than a net.

[70] No information was provided by Deepwater Group to support this assertion.

51. Sealord does not support the proposed changes as the increase in the landed price of squid has been eroded due to COVID-19.

52. As there is no over catch in this fishery, Te Kupenga o Maniapoto, the asset holding company of Maniapoto iwi, support retaining the current deemed value rates of squid or setting the annual rate at the current port price.

53. Te Ohu Kaimoana also note the impact of COVID-19 on the landed price of squid and comment that the deemed value rates of squid should be reduced to reflect the current market price.

54. The submissions from DWG, Sealord and Te Ohu Kaimoana question the validity of increasing the deemed value rates of squid given that squid stocks have not been fully caught for some time and any potential over catch can be managed through in-season increases.

7.1.4 Analysis of submissions

55. Fisheries New Zealand accepts that COVID-19 has had a significant impact on the landed price of squid and that the port price information used to inform the proposed changes does not reflect current market conditions. Therefore, Fisheries New Zealand recommends that you retain the current annual deemed value rate of squid ($0.88/kg), with the interim rate set at 90% of this level. Fisheries New Zealand notes that such a rate is below the current port price.

56. However, COVID-19 has not changed the nature of the squid fishery in that fishers have a high degree of control over the amount of squid landed (as almost all squid are taken through targeted fishing). Given this level of control, coupled with the high TACC, Fisheries New Zealand recommends that a stringent differential schedule be applied to squid. Such a recommendation is in accordance with the Guidelines which note that the nature of the differential schedule applied will differ between stocks depending on (amongst other things) the volume of fish taken and the ability of fishers to control catch.

7.1.5 Recommendation

57. Based on feedback received during the consultation period, Fisheries New Zealand recommends that the deemed value rates of SQU 1J, 1T & 6T be adjusted as shown in Table 3.

58. Note that that you made the decision to increase the interim deemed value rates of SQU 1J, 1T & 6T to 90% of the annual rate as part of the April 2020 sustainability round. However, this decision will not be given effect until 1 October 2020. Therefore, any decision made to adjust the interim deemed value rates of these stocks in this briefing would supersede decisions made as part of the April 2020 sustainability round.

Table 3: Current and recommended deemed value rates ($/kg) for SQU 1J, 1T & 6T.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
SQU 1J, 1T & 6T	Current	0.79[71]	0.88	1.06	1.23	1.41	1.58	1.76
	Recommended	0.79	Annual 100-105%		105-130%		>130%	
			0.88		1.23		1.76	

[71] What the interim deemed value rates of SQU 1J, 1T & 6T would be from 1 October 2020. The interim deemed value rates of these stocks for the 2018/19 fishing year are $0.44/kg.

7.2 Bluenose/matiri (BNS 3) – South & East Coasts of the South Island, Chatham Rise and sub-Antarctic

7.2.1 Stock information

59. Bluenose (*Hyperoglyphe Antarctica*) in BNS 3 is primarily taken as bycatch in the alfonsino trawl fishery or by longline vessels targeting ling or hapuka/bass. However, small amounts are taken through targeted longline fishing (approx. 10% of landings over recent years).

60. Since 2007/08 the TACC of BNS 3 has been progressively reduced from 925 tonnes to 93 tonnes due to concerns regarding the status of the stock.[72] Over the last decade, catches of bluenose have regularly exceeded the available ACE, however, catches during 2018/19 were at the lowest level since 1989/90.

7.2.2 Proposed deemed value rates

61. To reduce the risk of area misreporting, the deemed value rates of BNS 3 are currently set at the same level as that of the adjacent bluenose stock (BNS 2).

62. However, the economic and fishery characteristics of both stocks are noticeably different. For example, approximately 70% of bluenose in BNS 2 are taken through targeted longline fishing. Additionally, a higher proportion of fish taken in BNS 3 are landed as lower value frozen product. Such differences in economic and fishery characteristics are reflected in consistent differences in the landed price between the stocks (Table 4).

Table 4: Comparison of the port price index of BNS 2 and BNS 3 between the 2015/16 and 2019/20 fishing years.

Stock	Port price ($/kg)					
	2015/16	2016/17	2017/18	2018/19	2019/20	Five-year average
BNS 2	5.40	6.49	5.11	6.05	5.41	5.69
BNS 3	3.24	6.23	4.65	3.97	3.13	4.24
Difference	2.16	0.26	0.46	2.08	2.28	1.45

63. Given the roll out of electronic catch and position reporting, the risk of area misreporting is considered to be significantly lower than when fishers reported using paper forms. Therefore, Fisheries New Zealand considers that it may no longer be appropriate to set identical deemed value rates for BNS 2 and BNS 3.

64. To reflect the lower landed price received by fishers, Fisheries New Zealand proposed decreasing the annual deemed value rates of BNS 3 by 25%, with the rate at each step on the differentials schedule decreased in proportion.

7.2.3 Proposed Chatham Island deemed value rates

65. Bluenose from BNS 3 landed to a licenced fish receiver located on the Chatham Islands are subject to lower deemed value rates than BNS 3 landed elsewhere. This is because the price received for fish landed in the Chatham Islands is generally lower than the price for the same species landed since there is a higher cost of transporting fish to markets.

66. The annual deemed value rate of BNS 3 landed to the Chatham Islands is set at 35% of the annual deemed value rate applicable to BNS 3 landed elsewhere. Other species that share similar characteristics to BNS 3 to which different Chatham Island deemed value rates apply generally have the Chatham Islands annual deemed value rate set closer to the nationwide annual deemed value rate (Table 5).

[72] B_{2016} was estimated to be at 17-27% B_0 and was considered '*Unlikely*' to be at or above the management target (40% B_0).

Table 5: Comparison of the annual deemed value rate for fish landed to the Chatham Islands compared to those landed elsewhere. Stocks shown are those which show similar characteristics to BNS 3 (e.g. frequently taken on longlines, likely to be taken by non-Chatham Island based vessels capable of landing to the Chatham Islands, similar value)

Stock	Annual deemed value rate ($/kg)		Ratio
	Chatham Islands	Elsewhere	
BNS 3 (current)	1.40	4.00	35%
BYX 3	1.10	2.20	50%
SCH 4	0.80	1.05	76%
HPB 4	1.31	1.80	72%
TRU 4	1.44	1.50	96%
BNS 3 (recommended)	1.40	3.00	47%

67. Therefore, to avoid creating an incentive for fishers to preferentially land BNS 3 to the Chatham Islands so as to avoid the higher deemed value rate that would otherwise apply, Fisheries New Zealand did not propose reducing the annual deemed value rate of BNS 3 landed to the Chatham Islands at this time.

68. However, Fisheries New Zealand proposed adjusting the differential schedule of BNS 3 landed to the Chatham Islands so that the rate at maximum excess is set at 200% of the annual rate.

7.2.4 Submissions

69. Ten submissions were received directly commenting on the deemed value rates of BNS 3.

70. The Chatham Islands Finfish Association (CIFA), an organisation which represent the finfish quota holders, ACE fishers and processors on the Chatham Islands, support the proposed deemed value rates for BNS 3 landed to the Chatham Islands. CIFA note that the proposed change will promote the development of a Chathams-based longline fishery for species such as ling & hapuka/bass. Whilst this fishery will likely catch bluenose, CIFA propose to conduct research to minimise the amount of bluenose landed. CIFA additionally comment that such catch is unlikely to impact the sustainability of the stock given that the volume of bluenose likely to be taken by Chathams-based longliners will be insignificant compared to that landed elsewhere.

71. The Chatham Islands Quota Holding Company (CIQH) support the proposed deemed value rates for BNS 3 landed to the Chatham Islands. CIQH also note that the special deemed value rates should apply only to bluenose that is both caught in waters adjacent to the islands and landed to Chatham Islands domiciled licenced fish receivers.

72. The Hokotehi Moriori Trust support the proposed deemed value rates for BNS 3 landed to the Chatham Islands as an interim measure pending action to establish a separate BNS 4 (Chatham Islands) Quota Management Area (QMA).

73. Ngāti Mutunga o Wharekauri Asset Holding Company support the proposed deemed value rates of BNS 3 landed to the Chatham Islands whilst noting a long-standing grievance regarding the decision not to establish a separate BNS 4 QMA.

74. Sealord support the proposed changes to the deemed value rates of BNS 3.

75. The Specialty and Emerging Fisheries Group support the proposed deemed value rates of BNS 3 landed to the Chatham Islands and endorse all statements made in the Chatham Islands Finfish Association submission.

76. Southern Inshore support the proposed changes to the deemed value rates of BNS 3, whilst noting that the TACC of BNS 3 is in need of review. Southern Inshore also comment on the need to vigilantly monitor landings of BNS 3 to the Chatham Islands to ensure that non-Chatham Island based fishers do not take advantage of the lower Chatham Islands deemed value rate. FINZ endorsed the submission from Southern Inshore.

77. Te Kupenga o Maniapoto support decreasing the deemed value rates of BNS 3 given the different economic characteristics between BNS 3 and other bluenose stocks. Te Kupenga o Maniapoto also support adjusting the differential schedule of BNS 3 landed to the Chatham Islands.

78. Te Ohu Kaimoana support setting the deemed value rates of BNS 3 slightly below the port price given the sustainability concerns in this fishery. However, Te Ohu Kaimoana do not support the proposed differential schedule as it would set deemed value rates above the port price. Te Ohu Kaimoana support the proposed deemed value rates of BNS 3 landed to the Chatham Islands.

7.2.5 Analysis of submissions

79. Given concern regarding the sustainability of bluenose stocks, Fisheries New Zealand considers it appropriate to retain a stringent differential schedule for BNS 3. This is consistent with the Guidelines which state that a stringent differential schedule may be applied to those stocks where sustainability objectives require a very strong incentive for catch to not exceed available ACE.

80. Regarding the proposal to establish a separate BNS 4 QMA, this can be done if 75% of quota owners agree, or alternatively, if you were satisfied that it was necessary to ensure sustainability. You are not required to consider this in the current consultation and decision process.

81. Fisheries New Zealand also notes that a bluenose stock assessment is currently underway. The outcome of this stock assessment will inform the decision to include bluenose stocks for TAC review as part of the October 2021 sustainability round.

7.2.6 Recommendation

82. 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.

83. Fisheries New Zealand recommends that the deemed value rates of BNS 3 be adjusted as shown in Table 6.

Table 6: Current and recommended deemed value rates ($/kg) for BNS 3.

Stock	Option	Interim	Annual 100-110%	Differential rates ($/kg) for excess catch (% of ACE)					
				110-120%	120-130%	130-140%	140-150%	150-160%	>160%
BNS 3	Current	3.60	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	Recommended	2.70	3.00	3.75	4.50	5.25	6.00	6.75	7.50

84. Fisheries New Zealand also recommends that the deemed value rates of BNS 3 applicable to fish landed to licenced fish receivers located on the Chatham Islands be adjusted as shown in Table 7.

Table 7: Current and recommended deemed value rates ($/kg) for BNS 3 landed to licenced fish receivers located on the Chatham Islands.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)					
				120-130%	130-140%	140-150%	150-160%	160-220%	>220%
BNS 3	Current	1.26	1.40	4.00	5.00	6.00	7.00	8.00	11.00
	Recommended	1.26	**Annual 100-120%**	**120-130%**	**130-140%**	**140-150%**	**150-160%**	**>160%**	
			1.40	1.68	1.96	2.24	2.52	2.80	

7.3 Gemfish/maka-tikati (SKI 1) – Northern North Island

7.3.1 Fishery information

85. Prior to 2014/15, the majority of gemfish (*Rexea solandri*) in SKI 1 were taken as part of a target trawl fishery, however in recent years almost all gemfish have been taken as bycatch by trawlers targeting species such as hoki or tarakihi.

86. Landings of gemfish in SKI 1 have increased during recent years and have exceeded the available ACE, by progressively increasing margins, since 2016/17. Minimal gemfish targeting has occurred during this time with the increase in landings driven by increased catches from the western Bay of Plenty hoki fishery.

87. When targeting hoki in the western Bay of Plenty, gemfish regularly comprise a substantial (>30%) proportion of the total catch, particularly over the winter months. The amount of effort targeting hoki in the western Bay of Plenty during the winter months has increased over recent years, despite the increased catches of SKI 1 (and consequent deemed value invoices).

7.3.2 Proposed deemed value rates

88. The deemed value rates of SKI 1 have remained unchanged since 2008. During this time, the price received by fishers for landings of SKI 1 has increased.

89. Given that the current deemed value rates have not constrained fishers from operating in fisheries with high levels of SKI 1 bycatch, Fisheries New Zealand proposed to increase the annual deemed value rate by $0.50/kg (with the rate at each step on the differential schedule increased in proportion). Such a change reflects the difference in the port price index between 2019/20 and when the deemed value rates of SKI 1 were last reviewed.

7.3.3 Submissions

90. Three submissions were received directly commenting on the deemed value rates of SKI 1.

91. FINZ comment that the increased catches of SKI 1 are due to difficulties in avoiding taking gemfish as bycatch (due to an increase in abundance as reflected in the recent SKI 1 CPUE analysis). Given that the purpose of the deemed values regime is '*to provide incentives for individual fishers to acquire or maintain sufficient ACE*',[73] FINZ consider that the most appropriate management response to the over catch was correctly setting the TACC, rather than increasing deemed values. As such, FINZ do not support the proposed changes and favoured retaining the current deemed value rates of SKI 1.

92. Te Kupenga o Maniapoto support retaining the current deemed value rates of SKI 1 given the current TAC review.

[73] As recognised by the Deemed Values Working Group.

93. Te Ohu Kaimoana do not support the proposed deemed value rates of SKI 1 and comment that increases to the deemed value rate would further constrain a utilisation opportunity given that the proposed TACC adjustments would not provide for current catch levels.

7.3.4 Analysis of submissions

94. One of the recommendations of the Deemed Values Working Group was that recurrent catch in excess of ACE should prompt management action, with the appropriate action(s) depending upon both the potential causes of the over catch and stock specific considerations.

95. Whilst the catch per unit effort of gemfish in SKI 1 has increased over recent years (see the SKI 1 & 2 chapter of this briefing), fishers have continued to operate in fisheries where gemfish can be expected to comprise a significant (>30%) proportion of the total catch (i.e. the western Bay of Plenty hoki fishery). Therefore, Fisheries New Zealand considers that there are two drivers of over catch for this stock; an increase in gemfish abundance and fishers not being incentivised to avoid fishing in areas, and at times, where significant gemfish catch is likely. As such, Fisheries New Zealand views both increasing the TAC, and increasing the deemed value rates, as appropriate management options in this case.

96. However, given the impact of COVID-19 on the industry, Fisheries New Zealand considers that setting the deemed value rate of SKI 1 based on previous port price data may no longer be appropriate. As such, Fisheries New Zealand recommends that the annual deemed value rate of SKI be increased by $0.25/kg, rather than the $0.50/kg initially proposed (with each step on the differential schedule increased in proportion). This would ensure that the annual deemed value rate of SKI 1 is set less than the 2019/20 port price ($1.98/kg).

7.3.5 Recommendation

97. Based on feedback received during the consultation period, Fisheries New Zealand recommends that the deemed value rates of SKI 1 be adjusted as shown in Table 8. Whilst changes to the TAC of SKI 1 are also proposed, Fisheries New Zealand considers the recommended deemed value rates appropriate regardless of the TAC option chosen.

98. Note that you made the decision to increase the interim deemed value rate of SKI 1 to 90% of the annual rate as part of the April 2020 sustainability round. However, this decision will not be given effect until 1 October 2020. Therefore, any decision made to adjust the interim deemed value rates of this stocks in this briefing would supersede the decision made as part of the April 2020 sustainability round.

Table 8: Current and recommended deemed value rates ($/kg) for SKI 1

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
SKI 1	Current	1.35[74]	1.50	1.80	2.10	2.40	2.70	3.00
	Recommended	1.58	1.75	2.10	2.45	2.80	3.15	3.50

[74] What the interim deemed value rate of SKI 1 would be from 1 October 2020. The interim deemed value rate for the 2018/19 fishing year is $0.75/kg.

7.4 Gemfish/maka-tikati (SKI 2) – East Coast North Island

7.4.1 Fishery information

99. Gemfish in SKI 2 are both targeted and taken as bycatch in various inshore and middle-depth fisheries

100. Landings of SKI 2 have progressively increased over the last five years and exceeded the available ACE in 2017/18 and 2018/19. The increase in landings has been driven by increased catches from the tarakihi trawl fishery, with a decrease in gemfish targeting during this time.

101. When targeting tarakihi, gemfish are taken as bycatch during all months of the year, with gemfish typically comprising a relatively low proportion of the catch.[75] However, catches can sporadically occur in large quantities with 30% of the gemfish catch from tarakihi target tows over the last three years taken during 30 fishing events (0.3% of total tarakihi effort during this time).

7.4.2 Proposed deemed value rates

102. A stringent differential schedule is currently applied to SKI 2, with the rate at maximum excess (set at 360% of the annual rate) incurred when catches exceed 180% of an operators ACE holdings.

103. As gemfish in SKI 2 is mostly taken as bycatch, has a relatively low TACC (240 tonnes) and is no longer considered to be of sustainability concern, a stringent differential schedule may not be appropriate for this stock.

104. Therefore, Fisheries New Zealand proposed to adjust the differential schedule to that applicable to most stocks (the standard schedule).

7.4.3 Submissions

105. Four submissions were received directly commenting on the deemed value rates of SKI 2.

106. FINZ support the proposed changes to the deemed value rates of SKI 2.

107. Sealord comment that as the SKI 2 consultation paper proposed to set the TACC below recent catch levels, the deemed value rates should be set as close to the ACE price as possible ($1.03/kg) with differentials not incurred until catch exceeded 200% of ACE holdings.

108. Te Kupenga o Maniapoto supported adjusting the differential schedule of SKI 2.

109. Te Ohu Kaimoana support a greater reduction in the deemed value rates until such time as the issue of '*28N*' rights are resolved and do not support the use of differential deemed values in SKI 2.

7.4.4 Analysis of submissions

110. Although the best available information suggests that the abundance of gemfish in SKI 2 has increased threefold since 2007, gemfish stocks in New Zealand have shown similar patterns over time: high initial biomass followed by a rapid decline after which biomass remains low and relatively stable for long periods. Given such characteristics, Fisheries New Zealand considers that setting the annual deemed value rate between the ACE and port price, and applying the standard differential schedule are appropriate to provide sufficient incentive for fishers to balance catch with ACE and therefore meet sustainability objectives.

[75] On average, gemfish comprised 2% of the total catch when targeting tarakihi off the east coast of the North Island between 2016/17 and 2018/19.

7.4.5 Recommendation

111. No input or feedback received through consultation suggests that Fisheries New Zealand's initial proposals should change, hence this recommendation is the same as that consulted on.

112. Fisheries New Zealand recommends that the deemed value rates of SKI 2 be adjusted as shown in Table 9. Whilst changes to the TAC of SKI 2 are also proposed, Fisheries New Zealand considers the recommended deemed value rates appropriate regardless of the TAC option chosen.

113. Note that that you made the decision to increase the interim deemed value rate of SKI 2 to 90% of the annual rate as part of the April 2020 sustainability round. However, this decision will not be given effect until 1 October 2020. Therefore, any decision made to adjust the interim deemed value rates of this stocks in this briefing would supersede the decision made as part of the April 2020 sustainability round.

Table 9: Current and recommended deemed value rates ($/kg) for SKI 2.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-160%	160-180%		>180%
SKI 2	Current	1.35[76]	1.50	3.60	4.20	4.80		5.40
	Recommended	1.35	**Annual 100-120%**	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**>200%**
			1.50	1.80	2.10	2.40	2.70	3.00

7.5 Gemfish/maka-tikati (SKI 7) – West Coast South Island

7.5.1 Fishery information

114. Gemfish in SKI 7 are principally taken as bycatch in the West Coast South Island hoki fishery, although smaller quantities are taken in a small target fishery, or by inshore vessels targeting species such as tarakihi.

115. The biomass of gemfish in SKI 7 has increased considerably over recent years. The increase in abundance has resulted in increased catches, particularly in the hoki fishery. This has led to landings exceeding the available ACE by progressively increasing margins over the last three years (the stock was 312% caught during 2018/19). Such levels of over catch have resulted in significant deemed value obligations for fishers, with invoices for the most recent fishing year exceeding $800k.

116. To reflect the increase in abundance, you decided to increase the TACC of SKI 7 from 300 tonnes to 599 tonnes as part of the Oct 2019 sustainability round. However, due to the association of preferential allocation ('*28N*') rights with this stock, your decision was subject to court proceedings and frozen by court order. As this issue has yet to be resolved, the TACC of SKI 7 remains at 300 tonnes.

117. Therefore, SKI 7 is unique in that there are known to be no sustainability risks associated with catching in excess of the available ACE (providing that total commercial catches do not exceed 599 tonnes).

7.5.2 Proposed deemed value rates

118. Given the lack of a sustainability risk associated with catching in excess of the TACC, Fisheries New Zealand proposed to adjust the deemed value rates of SKI 7 so that differential rates would not be incurred until a fisher exceeded their ACE holdings by 200%.

[76] What the interim deemed value rate of SKI 2 would be from 1 October 2020. The interim deemed value rate for the 2018/19 fishing year is $0.75/kg.

119. No changes were proposed to the interim or annual deemed value rates of SKI 7.

7.5.3 Submissions

120. Five submissions were received directly commenting on the deemed value rates of SKI 7.

121. Sealord support the proposal to review the deemed value rates of SKI 7 so that fishers are not financially penalised due to ongoing court proceedings. However, Sealord propose that the deemed value rate for catch between 100% and 200% of ACE should be set at the average ACE price ($0.49/kg), with differentials (starting at $0.72/kg) not incurred until catch exceeds 200% of a fishers ACE holdings.

122. Southern Inshore support the proposed changes to the deemed value rates of SKI 7. FINZ endorse the submission from Southern Inshore.

123. Te Kupenga o Maniapoto support adjusting the differential schedule of SKI 7 whilst noting the association of '*28N*' rights with this stock.

124. Given the constraints of '*28N*' rights in this fishery, Te Ohu Kaimoana encourage setting a lower deemed value rate until such time as the TACC can be increased in such a way that would not diminish the proportional holdings of Iwi Settlement quota. Therefore, Te Ohu Kaimoana oppose the use of a differential schedule in SKI 7 and support setting the deemed value rate close to the ACE price. Te Ohu Kaimoana also note that as over catch of the TACC is demonstrably sustainable, revenue generated from the deemed values invoiced for SKI 7 should go back into fisheries management rather than the consolidated fund.

7.5.4 Analysis of submissions

125. Given the unique situation, Fisheries New Zealand considers that setting the annual deemed value rate of SKI 7 close to the ACE price is appropriate in this case. Therefore, Fisheries New Zealand recommends that you decrease the annual deemed value rate of SKI 7, so that it is set at the average ACE price of $0.49/kg (with the interim set at $0.44/kg).

126. Given the biological characteristics of gemfish (see SKI 2 above), Fisheries New Zealand considers it appropriate to retain a differential schedule for this stock. However, differential rates would not be incurred until a fisher exceeds their ACE holdings by 200% (i.e. what a fishers ACE holdings would likely have been had your decision to increase the SKI 7 TACC been given effect).

127. Fisheries New Zealand notes that the use of deemed values revenue is outside the scope of this deemed value rate review.

7.5.5 Recommendation

128. Based on feedback received during the consultation period, Fisheries New Zealand recommends that the deemed value rates of SKI 7 be adjusted as shown in Table 10.

Table 10: Current and recommended deemed value rates ($/kg) for SKI 7.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
SKI 7	Current	0.65	0.72	0.86	1.01	1.15	1.30	1.44
	Recommended	0.44	**Annual 100-200%**	**200-220%**	**220-240%**	**240-260%**	**260-280%**	**280-300%**	**>300%**
			0.49	0.72	0.86	1.01	1.15	1.30	1.44

7.6 Pilchard/mohimohi (PIL 7 & 8) – West Coast of the North and South Island

7.6.1 Fishery information

129. Almost all pilchard (*Sardinops sagax*) in PIL 7 and PIL 8 are taken as bycatch by large (>80 m) trawl vessels targeting pelagic species such as jack mackerel.

130. Due to the large volume nature of pelagic trawl fisheries, all pilchard brought on board are typically in poor condition and are not suitable for entry into the frozen bait market (the usual destination for pilchard caught elsewhere in New Zealand). Therefore, all pilchard are processed into low-value fish meal at sea.

131. The TACC of pilchard in PIL 7 and PIL 8 is set conservatively to reflect the importance of the species within the wider marine system. Landings of PIL 7 and PIL 8 are highly variable between years and are believed to be driven by environmental-induced changes in pilchard abundance and/or distribution. During years when pilchard in PIL 7 and PIL 8 are more available, catches are very sporadic but can occur in large quantities.[77]

7.6.2 Proposed deemed value rates

132. The annual deemed value rates of PIL 7 and PIL 8 are currently set at $0.45/kg. This rate is based on the port price index of both stocks ($0.83/kg), which is influenced by the landed price of pilchard landed whole for entry into the frozen bait market. As all pilchard in PIL 7 and PIL 8 are processed into fish meal, this estimate of landed value is likely an overestimate.

133. As the deemed value rates of PIL 7 & 8 are currently set above the landed price, Fisheries New Zealand proposed to decrease the annual deemed value rate so that they are set at the same rates as JMA 7 (the targeted stock both PIL 7 and PIL 8 are taken in association with).

7.6.3 Submissions

134. Six submissions were received directly commenting on the deemed value rates of PIL 7 & 8.

135. DWG support the proposed reduction in the deemed value rates of PIL 7 & 8. However, DWG submit that the deemed value rates should be set at the same level as those of anchovy stocks ($0.06/kg rising to $0.12/kg for catch in excess of 200% of ACE) given that both species are occasionally taken as bycatch by large deepwater trawlers and are rendered into fish meal. Southern Inshore support the submission from DWG.

136. FINZ support the proposed adjustments to the deemed value rates of PIL 7 & 8.

137. Sealord consider the proposed deemed value rates as excessive and similarly recommended that the deemed value rates of PIL 7 & 8 be set at the same level as that of anchovy stocks. Sealord also comment that given the variability in pilchard abundance, other management measures should be considered for addressing over catch (e.g. adding the stocks to schedule 2 of the Act which would provide for in-season increases to the TACC).

138. Te Kupenga o Maniapoto note that PIL 7 & 8 are a low value product and support reducing the deemed value rates of these stocks.

139. Te Ohu Kaimoana note that the average ACE price of PIL 7 & 8 is likely to be an overestimate and comment that the deemed value rates should be set at the same rates as those of anchovy stocks.

7.6.4 Analysis of submissions

140. Whilst noting that the proposed deemed value rates are likely in excess of the landed price of pilchards rendered into fish meal, Fisheries New Zealand notes that target purse seine fisheries

[77] Available PIL 8 ACE for the 2019/20 fishing year was 167% caught as of April 2020, with over 50% of landings taken during three fishing events.

have existed in PIL 7 historically and exist elsewhere in New Zealand. Pilchards landed fresh are of a considerably higher value than those processed into fish meal, with possible destinations including the food service industry or the frozen bait market.

141. As it is not possible for you to set method-specific deemed value rates, or change deemed value rates over the course of the year, if the deemed value rates of PIL 7 & 8 were set at the same level as those of anchovy, sufficient incentive would not exist for a target pilchard fishery to balance catch against ACE. Therefore, given the ecological importance of pilchards, Fisheries New Zealand does not recommend setting the deemed value rates of PIL 7 & 8 at $0.06/kg.

142. Given the variability in pilchard abundance, Fisheries New Zealand considers that other management measures may be appropriate for managing these stocks and has initiated steps which would allow for PIL 7 & 8 to be added to schedule 2 of the Act. This would allow for in-season increases to the TACC of these stocks to be made to reflect those years when pilchard availability has increased.

7.6.5 Recommendation

143. No input or feedback received through consultation suggests that Fisheries New Zealand's initial proposals should change, hence this recommendation is the same as that consulted on.

144. Fisheries New Zealand recommends that the deemed value rates of PIL 7 & 8 be adjusted as shown in Table 11.

145. Note that that you made the decision to increase the interim deemed value rates of PIL 7 & 8 to 90% of the annual rate as part of the April 2020 sustainability round. However, this decision will not be given effect until 1 October 2020. Therefore, any decision made to adjust the interim deemed value rates of these stocks in this briefing would supersede decisions made as part of the April 2020 sustainability round.

Table 11: Current and recommended deemed value rates ($/kg) for PIL 7 & 8.

Stock	Option	Interim	Annual >100%
PIL 7 & 8	Current	0.41[78]	0.45
	Recommended	0.18	0.20

7.7 Redbait (RBT 3) – South & East Coasts of the South Island, Chatham Rise and sub-Antarctic

7.7.1 Fishery information

146. Almost all redbait (*Emmelichthys nitidus*) in RBT 3 are taken by large pelagic trawl vessels, principally as bycatch, but also through targeted fishing

147. Landings of RBT 3 during 2018/19 exceeded the available ACE by over 10%. The increase in landings during 2018/19 was driven in part by a greater than three-fold increase in the amount of redbait taken as bycatch in the squid fishery on the Chatham Rise (reflecting an unusually large amount of squid effort in this area). However, approximately 17% of RBT 3 catches during 2018/19 were taken during fishing events targeting redbait, with targeted redbait fishing taking place after the squid season had finished.

[78] What the interim deemed value rates of PIL 7 & 8 would be from 1 October 2020. The interim deemed value rates of these stocks for the 2018/19 fishing year are $0.30/kg.

7.7.2 Proposed deemed value rates

148. As the RBT 3 stock has a relatively high TACC (2,190 tonnes),[79] and those operators which target redbait also take the vast majority of the bycatch, fishers have a high degree of control over the amount of RBT 3 taken over the course of the year.

149. Therefore, Fisheries New Zealand proposed to introduce a stringent differential schedule so as to provide a greater incentive for fishers to balance catch with ACE.

7.7.3 Submissions

150. Six submissions were received directly commenting on the deemed value rates of RBT 3.

151. DWG support the proposed changes to the deemed value rates of RBT 3. FINZ Zealand endorse the submission from DWG.

152. Sealord note that little is known about the RBT 3 stock and view the collection of more information through a fishery characterisation as a more pragmatic management approach than the proposed deemed value rate changes. Until better information is received, Sealord propose that the annual deemed value rate of RBT 3 bet set at the average ACE price ($0.20/kg), with $0.10/kg step changes incurred from 100-105%, 105-150% and >150% of ACE holdings.

153. Whilst supporting the proposed changes to the deemed value rates of RBT 3, Southern Inshore consider the rate at maximum excess ($0.70/kg) as high. Southern Inshore also encourage Fisheries New Zealand to review the RBT 3 TACC as part of the October 2021 sustainability round.

154. Te Kupenga o Maniapoto support adjusting the differential schedule of RBT 3 whilst noting that $0.70/kg provided a sufficient disincentive.

155. Te Ohu Kaimoana do not support the proposed deemed value rates of RBT 3. Whilst acknowledging that port price information is uncertain, Te Ohu Kaimoana favour setting the deemed value rate close to the average ACE price given that the stock is primarily taken as bycatch and there are no known sustainability concerns. Te Ohu Kaimoana do no support the use of differential deemed value rates in RBT 3.

7.7.4 Analysis of submissions

156. As noted above, those operators which target redbait also take the vast majority of the bycatch. Therefore, fishers have a high degree of control over the volume of RBT 3 landed. Although the current deemed value rates are set above the best available information on the landed price of RBT 3, some operators have targeted redbait in excess of their ACE holdings. Therefore, Fisheries New Zealand considers that the current deemed value rates are not creating a sufficient incentive for fishers to maintain sufficient ACE with an appropriate management response being to increase deemed value rates.

157. Given the ability of fishers to control catches of RBT 3 and the relatively large TACC (2,190 tonnes), Fisheries New Zealand considers it appropriate to apply a stringent differential schedule. This is consistent with the Guidelines which note that the nature of the differential schedule will differ between stocks depending on (amongst other things) the volume of fish taken and the ability of fishers to control catch.

7.7.5 Recommendation

158. No input or feedback received through consultation suggests that Fisheries New Zealand's initial proposal should change, hence this recommendation is the same as that consulted on.

[79] Over catch may occur more frequently as a matter of change for stocks with a low TACC.

159. Fisheries New Zealand recommends that the deemed value rates of RBT 3 be adjusted as shown in Table 12.

Table 12: Current and recommended deemed value rates ($/kg) for RBT 3.

Stock	Option	Interim	Annual 100-120%	Differential rates ($/kg) for excess catch (% of ACE)				
				120-140%	140-160%	160-180%	180-200%	>200%
RBT 3	Current	0.45	0.50	0.60	0.70	0.80	0.90	1.00
	Recommended	0.45	Annual 100-105%		105-150%		>150%	
			0.50		0.60		0.70	

7.8 Trevally/arara (TRE 2) – East Coast North Island

7.8.1 Fishery information

160. Although targeted fishing does occur, the majority (80-90%) of commercially caught trevally (*Pseudocaranx dentex*) in TRE 2 are taken as bycatch by inshore trawl vessels targeting tarakihi or gurnard.

161. The TACC of TRE 2 has remained at 241 tonnes since 1993 and is regularly over-caught by between 5% and 20%.

7.8.2 Proposed deemed value rates

162. A very stringent differential schedule is currently applied to TRE 2, with the rate at maximum excess (set at 400% of the annual rate) incurred when catches exceed 120% of an operators ACE holdings.

163. As trevally in TRE 2 is mostly taken as bycatch and has a relatively low TACC (241 tonnes), a stringent differential schedule may not be appropriate for this stock.

164. Therefore, Fisheries New Zealand proposed to adjust the differential schedule to that applicable to most stocks (the standard schedule).

7.8.3 Submissions

165. Three submissions were received directly commenting on the deemed value rates of TRE 2.

166. FINZ support the proposed changes to the deemed value rates of TRE 2 whilst noting that a deemed value rate review is not a substitute for a correctly set TACC.

167. Te Kupenga o Maniapoto note that TRE 2 is taken primarily as bycatch and support adjusting the differential schedule.

168. Te Ohu Kaimoana do not support the use of differential deemed value rates in TRE 2 and note that a review of the deemed value rates of a fish stock should not be considered a substitute for a TAC review.

7.8.4 Analysis of submissions

169. Given the importance of trevally to the non-commercial sector, Fisheries New Zealand considers it appropriate to apply a differential schedule to this stock. This is consistent with the Guidelines which note that other relevant matters, such as the significance of the stock to customary and non-commercial users, may be considered when setting deemed values.

170. Fisheries New Zealand also notes that a stock assessment for TRE 1 & 2 is scheduled to begin from 1 October 2020. The TRE 2 stock will be considered for TAC review following the completion of this stock assessment.

7.8.5 Recommendation

171. No input or feedback received through consultation suggests that Fisheries New Zealand's initial proposal should change, hence this recommendation is the same as that consulted on.

172. Fisheries New Zealand recommends that the deemed value rates of TRE 2 be adjusted as shown in Table 13.

Table 13: Current and recommended deemed value rates ($/kg) for TRE 2.

Stock	Option	Interim	Annual 100-110%	Differential rates ($/kg) for excess catch (% of ACE)				
				110-120%			>120%	
TRE 2	Current	1.13	1.25	3.50			5.00	
	Recommended	1.13	**Annual 100-120%**	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**>200%**
			1.25	1.50	1.75	2.00	2.25	2.50

8 Decisions for Deemed Value Rates

173. Fisheries New Zealand recommends that you approve changes to the deemed value rates for selected stocks as outlined in Table 14.

174. 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.

175. Note that you made the decision to increase the interim deemed value rates of 362 October stocks, including SQU 1J, 1T & 6T, SKI 1 & 2 and PIL 7 & 8, to 90% of the annual rate as part of the April 2020 sustainability round. However, this decision will not be given effect until 1 October 2020. Therefore, any decision made to adjust the interim deemed value rates of these stocks in this briefing would supersede decisions made as part of the April 2020 sustainability round.

Table 14: Current and recommended deemed value rates ($/kg) for selected stocks.

		Current				Recommended			
Species	Stock	Interim $/kg	Annual $/kg	Annual at maximum excess $/kg	Differential	Interim $/kg	Annual $/kg	Annual at maximum excess $/kg	Differential
Arrow squid	SQU 1J	0.79[80]	0.88	1.76	Standard	0.79	0.88	1.76	Special
	SQU 1T								
	SQU 6T								
Bluenose	BNS 3	3.60	4.00	10.00	Special	2.70	3.00	7.50	Special
	BNS 3[81]	1.26	1.40	11.00	Special	1.26	1.40	2.80	Special
Gemfish	SKI 1	1.35[82]	1.50	3.00	Standard	1.58	1.75	3.50	Standard
	SKI 2			5.40	Special	1.35	1.50	3.00	Standard
	SKI 7	0.65	0.72	1.44	Standard	0.44	0.49	1.44	Special
Pilchard	PIL 7	0.41[83]	0.45	0.45	Not applied	0.18	0.20	0.20	Not applied
	PIL 8								
Redbait	RBT 3	0.45	0.50	1.00	Standard	0.45	0.50	0.70	Special
Trevally	TRE 2	1.13	1.25	5.00	Special	1.13	1.25	2.50	Standard

a) **Agree** to change the deemed value rates for arrow squid (SQU 1J, 1T & 6T) as outlined in the Table above.

Agreed / Not Agreed

b) **Agree** to change the deemed value rates for bluenose (BNS 3) as outlined in the Table above.

Agreed / Not Agreed

c) **Agree** to change the deemed value rates for bluenose (BNS 3) landed to Licenced Fish Receivers located on the Chatham Islands as outlined in the Table above.

Agreed / Not Agreed

[80] What the interim deemed value rates of SQU 1J, 1T & 6T would be from 1 October 2020. The interim deemed value rates of these stocks for the 2018/19 fishing year are $0.44/kg.

[81] Different deemed value rates applicable to fish landed to a licenced fish receiver located on the Chatham Islands.

[82] What the interim deemed value rates of SKI 1 & 2 would be from 1 October 2020. The interim deemed value rates of these stocks for the 2018/19 fishing year are $0.75/kg.

[83] What the interim deemed value rates of PIL 7 & 8 would be from 1 October 2020. The interim deemed value rates of these stocks for the 2018/19 fishing year are $0.30/kg.

d) **Agree** to change the deemed value rates for gemfish (SKI 1) as outlined in the Table above.

Agreed / Not Agreed

e) **Agree** to change the deemed value rates for gemfish (SKI 2) as outlined in the Table above.

Agreed / Not Agreed

f) **Agree** to change the deemed value rates for gemfish (SKI 7) as outlined in the Table above.

Agreed / Not Agreed

g) **Agree** to change the deemed value rates for pilchard (PIL 7 & 8) as outlined in the Table above.

Agreed / Not Agreed

h) **Agree** to change the deemed value rates for redbait (RBT 3) as outlined in the Table above.

Agreed / Not Agreed

i) **Agree** to change the deemed value rates for trevally (TRE 2) as outlined in the Table above.

Agreed / Not Agreed

Agreed / Not Agreed

Hon Stuart Nash
Minister of Fisheries

17 / 8 / 2020

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 (over-fishing 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.

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 over-fishing 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 interim deemed value should be set at 90% of the annual rate. 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 increases in 20% increments up to a maximum of 200% of the annual deemed value (see Table 15). 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 15: 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 available ACE, regardless of the level at which the TACC is set, by encouraging balancing of landings with ACE while avoiding creating incentives to discard and misreport catch.