

Review of Sustainability Measures for the 2021 October round

Fisheries New Zealand Decision Paper

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Contents	Page
Introduction and legal overview	
 Introduction Overview of powers and obligations under the Fisheries Act 1990 Relevant Standards, Guidelines and Strategies Input and consultation General themes 	1 2 9 11 13
Deemed value reviews for selected stocks	18
Deepwater stocks	
Hoki (HOK 1) Ling (LIN 5) Gemfish (SKI 3 & SKI 7) Black cardinalfish (CDL 1)	35 54 69 84
Highly migratory stocks Southern bluefin tuna (STN 1)	98
Inshore stocks	33
Snapper (SNA 8) Hāpuku / Bass (HPB 1 & HPB 2) Red Gurnard (GUR 1) Red Gurnard (GUR 7) Pāua (PAU 3) Blue cod (BCO 3) School shark (SCH 5)	116 153 177 200 215 234 257
Public submissions received	see separate document

1 Introduction

- 1. This paper seeks your decisions in relation to the October 2021 Sustainability Review. You are asked to make decisions on sustainability measures and allowances for a selected number of fish stocks.
- 2. The measures you are asked to consider for these stocks are:

Catch limits and allowances

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

Deemed values

Adjusting deemed value settings or regimes for stocks where needed.

Recreational controls

- Varying recreational bag limits for hāpuku/bass stocks (HPB 1 & 2).
- Your decisions on catch limits, allowances and deemed values for fish stocks will take effect on 1 October 2021. Your decisions for recreational controls require giving effect to through regulations, and will not take effect until later after they have proceeded through Cabinet processes.
- 4. The fish stocks proposed for changes as part of the October 2021 Sustainability Review are listed below in Table 1 and Table 2.

Table 1: Summary of stocks reviewed for catch limits, allowances and deemed values as part of the 1 October 2021 sustainability round.

Deepwater and Highly Migratory Species (HMS) stocks	Inshore stocks
 Hoki (HOK 1 – All New Zealand, excluding Kermadec) Ling (LIN 5 – Southland, Sub-Antarctic) Gemfish (SKI 3 & 7 – Entire South Island, Chatham Rise, West Coast off Taranaki and Wellington) Black cardinalfish (CDL 1 – East Coast of Northland/Auckland) Southern bluefin tuna (STN 1 – All New Zealand and Extra Territorial waters) 	 Snapper (SNA 8 – West Coast of Northland, Auckland, Taranaki, Wellington) Hāpuku / Bass (HPB 1 & 2 – Northland, Bay of Plenty, East Coast North Island) Red Gurnard (GUR 1 – East and West Coasts of Auckland / Northland, Bay of Plenty) Red gurnard (GUR 7 – West Coast & top of South Island) Pāua (PAU 3A & 3B – Kaikoura, Canterbury) Blue cod (BCO 3 – Kaikoura, Canterbury, Otago) School shark (SCH 5 – Southland, Sub-Antarctic) Tarakihi (TAR 1 (East), 2, 3 & 7 (East) – All of East Coast from Northland down to Otago)

Table 2: Summary of stocks with a standalone deemed value review as part of the 1 October 2021 sustainability round.

Deepwater stocks	Inshore stocks
Alfonsino (BYX 2 – East Cape, Hawke's Bay, Wellington)	 Blue cod (BCO 7 – West Coast & Top of South Island) Bluenose (BNS 2 - East Cape, Hawke's Bay, Wellington) Gemfish (SKI 1 & 2 – Northern East and West Coasts of North Island, East Cape, Hawke's Bay, Wellington) Kingfish (KIN 8 – West Coast of Auckland / Northland, Taranaki, Wellington)

- 5. This decision document provides you with Fisheries New Zealand's final advice on proposals for all fish stocks except for tarakihi. Fisheries New Zealand will provide you final advice on proposed changes to tarakihi stocks in a separate document in early September 2021.
- 6. We have consulted on all 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.
- 7. We have provided for input and participation of tangata whenua on these decisions, primarily through lwi 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.
- 8. The submissions have been summarised where relevant for each stock. However, should you wish to view full submissions on the October 2021 sustainability round proposals, these have been provided separately to your office (titled: "Public Submissions Received for the 2021 October Sustainability Round").

2 Overview of powers and obligations under the Fisheries Act 1996

2.1 Decisions Ministers may make in relation to sustainability reviews

9. Provisions of the Fisheries Act 1996 allow you as Minister for Oceans and Fisheries to:

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
 having allowed 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).
- 10. In making decisions on those matters there are several things you are required to do and take account of.

2.2 Overarching requirements

11. 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.

- 12. 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."
- 13. 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".¹
- 14. 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.
- 15. 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.
- 16. Sections 12, 21 and 75A require you to consult before making decisions on sustainability measures, the TACC, and deemed values rates, respectively.

2.3 The Hauraki Gulf Marine Park Act 2000

- 17. 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.
- 18. Section 7 of the HGMPA recognises the national significance of the Hauraki Gulf and section 8 sets out objectives for management of the Gulf (see Table 3). The HGMPA is discussed in stock chapters of decision documents where this is relevant.

¹ Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 at [39].

Table 3: Outline of the relevant sections of the Hauraki Gulf Marine Park Act 2000

Section 7: Recognition of national
significance of Hauraki Gulf

- (1) The interrelationship between the Hauraki Gulf, its islands, and catchments and the ability of that interrelationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands are matters of national significance.
- (2) The life-supporting capacity of the environment of the Gulf and its islands includes the capacity—
 - (a) to provide for-
 - (i)the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and its islands; and
 - (ii)the social, economic, recreational, and cultural well-being of people and communities:
 - (b) to use the resources of the Gulf by the people and communities of the Gulf and New Zealand for economic activities and recreation:
 - (c) to maintain the soil, air, water, and ecosystems of the Gulf.

Section 8: Management of Hauraki Gulf

To recognise the national significance of the Hauraki Gulf, its islands, and catchments, the objectives of the management of the Hauraki Gulf, its islands, and catchments are—

- (a) the protection and, where appropriate, the enhancement of the life-supporting capacity of the environment of the Hauraki Gulf, its islands, and catchments:
- (b) the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments:
- (c) the protection and, where appropriate, the enhancement of those natural, historic, and physical resources (including kaimoana) of the Hauraki Gulf, its islands, and catchments with which tangata whenua have an historic, traditional, cultural, and spiritual relationship:
- (d) the protection of the cultural and historic associations of people and communities in and around the Hauraki Gulf with its natural, historic, and physical resources:
- (e) the maintenance and, where appropriate, the enhancement of the contribution of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments to the social and economic well-being of the people and communities of the Hauraki Gulf and New Zealand:
- (f) the maintenance and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments, which contribute to the recreation and enjoyment of the Hauraki Gulf for the people and communities of the Hauraki Gulf and New Zealand.

2.4 Statutory Considerations

19. Table 4 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 4: Information on your key requirements when making decisions under the Act.

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

Decisions you may make	Requirements – things you must do when making decisions
	(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	Fisheries plans may include:
You may approve, amend or revoke fisheries plans	 (3) (a-c) fisheries management objectives to support the purpose and principles of the Act, 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	(2) You shall set (and may vary – s(4)) a TAC that:
You shall set and may vary, a TAC for stocks in the Quota	(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
Management System (QMS)	(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 <i>Gazette</i> , 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. A TACC shall not be set unless the TAC has 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) Before setting or varying TACC you shall consult representatives of classes of people that have an interest
- (3) After setting or varying a TACC you shall give the parties listed under (2) reasons in writing for your decision
- (4) When allowing for Māori customary interests you must take into account
 - (a) any mātaitai reserve in the Quota Management Area (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	(2) In setting deemed values you:
You must set and may vary interim and annual deemed	(a) must take into account the need to provide incentive for fishers to acquire or maintain sufficient ACE
value rates for each quota	(b) may have regard to:
management stock	(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) You must set annual deemed values that are greater than interim deemed values for that stock
	(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.

2.5 Judicial Guidance

2.5.1 Recent High Court judgment (East Coast Tarakihi)

- 20. In December 2019, Forest and Bird New Zealand filed proceedings seeking judicial review of the then Minister of Fisheries 2019 decision on catch limit settings for East Coast tarakihi. Their arguments included that the catch limit reductions were not sufficient to allow the stock to rebuild in a "period appropriate to the stock."
- 21. The judgment² was received on 16 June 2021, with the following key findings:
 - first cause of action: period appropriate to the stock the Minister erred by not making an assessment of the period appropriate for rebuilding a stock, as required by s 13(2)(b)(ii), before applying social, cultural and economic factors to determine the way and rate of rebuild;
 - second cause of action: probability of achievement the Minister was required to identify a probability level at the time of setting the TAC. Her Honour found (by a fine margin) that a probability level of 50 percent was adequately identified in the 2019 decision;
 - third cause of action: failure to consider Harvest Strategy Standard (HSS) guidance the Harvest Strategy Standard and associated Operational Guidelines advice on probability for achieving a rebuild is a mandatory relevant consideration, which the Minister failed to have regard to; and
 - fourth cause of action: irrelevant consideration the Minister erred by taking into account an Industry Rebuild Plan in setting the TAC, and that, as inferred by her Honour, the Minister had regard to the plan in determining the period appropriate to the stock, as well as the way and rate of rebuild. Doing so had the effect of applying social, cultural and economic factors to the Minister's determination of the period appropriate to the stock. Steps taken by the industry which have the effect of speeding up a rebuild can be considered when determining the way and rate (refer s 13(2)(b)(i)), but not when determining the period approach to the stock.

6 • Review of sustainability measures for the 2021 October round: Introduction and Legal Overview

² Royal Forest and Bird Protection Society of New Zealand Incorporated v Minister of Fisheries [2021] NZHC 1427 [16 June 2021]

- 22. The judgment anticipates that the Minister for Oceans and Fisheries will make new decisions on the TAC and TACC for East Coast tarakihi with effect from 1 October 2021.³ Fisheries New Zealand has recently completed consultation on proposed options to give effect to the judgment and advice will be provided to you in early September.
- 23. Along with East Coast tarakihi, this decision has wider implications for what matters you must, and must not, consider when deciding to set or vary a stock's TAC. More specifically the judgment has provided direction on the application of s 13(2)(b) which pertains to any stock whose current level is below that which can produce Maximum Sustainable Yield.⁴ Where applicable, Fisheries New Zealand has reflected the court's decision within our advice to you.

2.5.2 Allocation decisions under section 21

- 24. Relevant judicial findings provide useful guidance in terms of your allocation decisions under section 21 of the Act.
- 25. In a case relating to Kahawai the Supreme Court said that the wording of the Act sets out a particular order of decisions after allowing for Māori customary non-commercial fishing interest, recreational fishing interests, and all other sources of fishing-related mortality, the remainder constitutes the TACC.⁵ 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.⁶ That does not, however, mandate any particular outcome.⁷
- 26. Importantly, the Act does not confer priority for any interest over the other⁸ and does not limit the relative weight which you may give to the interests of competing sectors.⁹ It leaves that judgement to you.
- 27. The Courts have also provided guidance as to the nature of the allowances to be provided. Where there are competing demands exceeding 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. 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. The said of t
- 28. Section 21 is concerned with allocation of a limited resource and that what is allowed for non-commercial fishing interests will impact on the total allowable commercial catch. ¹³ The consideration of the wellbeing factor (as expressed in section 8 of the Act) requires a balance of competing interests, especially in the case of a shared fishery. ¹⁴

⁴ Refer to section 3.1 for an explanation of Maximum Sustainable Yield.

³ Ibid, para 218

⁵ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009), para 53.

⁶ *Ibid*, para 55

⁷ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008), para 57.

⁸ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009), para 65.

⁹ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008), para 61.

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

¹¹ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97), p 150

¹² New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009), para 65.

¹³ Ibid, para 53

¹⁴ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008), para 61.

- 29. In terms of recreational interests, the Supreme Court stated that "Although what the Minister allows for, is an estimate of what recreational interests will catch, it is an estimate of a catch which the Minister is able to control. The Minister is, for example, able to impose bag and fish length limits. The allowance accordingly represents what the Minister considers recreational interests should be able to catch but also all that they will be able to catch. The Act envisages that the relevant powers will be exercised as necessary to achieve that goal". 15
- 30. No implied obligation to attain proportionality between commercial and recreational catch arises from the legislation. The imprecise [estimation] of the recreational catch precludes strict proportionality. ¹⁶ Further, in the Snapper 1 case the Court of Appeal said:

"We can see no reason why either as his primary purpose or as a consequence of some other purpose the Minister should not be able to vary the ratio between commercial and recreational interests." ¹⁷

"If over time a greater recreational demand arises it would be strange if the Minister was precluded by some proportional rule from giving some extra allowance to cover it, subject always to his obligation to carefully weigh all the competing demands on the TAC before deciding how much should be allocated to each interest group." 18

31. The High Court earlier said in that case:

"It is not outside or against the purposes of the Act to allow a preference to non-commercials to the disadvantage in fact of commercials and their valued ITQ rights, even to the extent of the industry's worst case of a decision designed solely to give recreationalists greater satisfaction. Both are within the Act." 19

32. The Courts have also emphasised the importance of decisions undertaken for sustainability purposes not being undermined by increased fishing by one or other of the fishing sectors. In the Snapper 1 case the High Court said:

"When Parliament empowered the Minister to reduce the TACC for conservation purposes—not to improve recreational catch rate—it expected the Minister to take any concurrent steps necessary to minimise sabotage by recreational fishing. . . The significant point is that both law and common sense dictate that a Minister should not reduce the TACC for conservation reasons unless able to take, and taking, reasonable steps to avoid the reduction being rendered futile through increased recreational fishing." ²⁰

- 33. While this statement relates to reduction of the TACC, the principle equally applies in situations where measures are enacted to rebuild a fishery. Litigation relating to management decisions for kahawai involved this very issue, where the failure to agree to a reduction in the daily bag limit was found to be unlawful.²¹
- 34. In respect of quota granted to iwi under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and the Maori Fisheries Act 1989, in the Snapper 1 case the Court of Appeal said:

"Under the settlement Maori became holders of quota along with all other holders. Their rights were in our view no more and no less than those of non-Maori quota holders."²²

¹⁵ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009), para 56.

¹⁶ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) p 18

¹⁷ New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors (Court of Appeal, CA82/97, 22/7/97) at p 17-18

¹⁹ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) at p 89.

²⁰ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) p 102.

²¹ New Zealand Recreational Fishing Council Inc & Anor v Minister of Fisheries (HC, Auckland CIV 2005-404-4495, 21 March 2007, Harrison J). at paras 110-126.

²² New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors (Court of Appeal, CA82/97, 22/7/97) at p 20.

"Under s5 of the 1996 Act the Minister in making future decisions is obliged to act in a manner consistent with the Settlement Act. The idea that the settlement is any the less just, honourable and durable should Maori quota be reduced, is unpersuasive. An asset which Maori obtained under the settlement had within it the capacity for diminution. If that capacity is lawfully realised, there cannot be any complaint on the basis that the settlement has been broken or have not proved durable. Something which was liable to happen under the settlement has happened. A reduction in TACC, which is otherwise lawful, cannot be viewed as a decision by the Minister inconsistent with the Settlement Act."²³

35. While the Court of Appeal was dealing with a TAC/TACC reduction for sustainability purposes, the same principle would apply in terms of an adjustment of the ratio of the TAC allocated to commercial and non-commercial fishing interests.

3 Relevant Standards, Guidelines and Strategies

3.1 Maximum Sustainable Yield

- 36. As noted above in Table 3, section 13 of the Act requires you to set a stock's TAC at a level that maintains the stock at or above a level that can produce the Maximum Sustainable Yield (MSY).
- 37. The MSY of a stock is the largest long-term average catch or yield that can be taken without impairing the stock's renewability through natural growth and reproduction (under prevailing ecological and environmental conditions). There are a number of factors that contribute to the determination of a stock's MSY, including how fast the species grows, when and how they reproduce and the pattern of harvesting in the fishery. Typically, MSY for a fish stock is also variable over time, because of changes in productivity and environmental factors.
- 38. In general, scientific working groups will estimate *MSY*-compatible reference points for stocks based on best available information, and management working groups will set fishery or stock targets that consider these estimates as an input.
- 39. In the context of this review there are a number of stocks for which *MSY* is not able to be estimated due to a lack of available scientific information. In addition to their interdependence, biological characteristics, and environmental conditions, proposals for changes in catch limits have been based primarily on an assessment of trends in catch and are considered to be not inconsistent with the objective of maintaining the stock at or above levels that can produce *MSY* as provided for by s 13(2A) of the Act.

3.2 Overview of the Harvest Strategy Standard

- 40. The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in New Zealand's Quota Management System (QMS). The HSS and associated Operational Guidelines are 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.
- 41. It is important to note that a minimum requirement for satisfying the Harvest Strategy Standard is that fishery or stock targets will be set at the level of MSY-compatible reference points (however, they may also exceed this minimum requirement).

²³ <i>Ibid</i> , at p 21.		

- 42. The HSS outlines Fisheries New Zealand's approach to relevant sections of the Act and, as such, forms a core input to Fisheries New Zealand's advice to the Minister on the management of fisheries, particularly the setting of TACs under sections 13 and 14.²⁴
- 43. The High Court has recently held that although the HSS is not legally binding, it is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act. In addition to its recognised status as a mandatory relevant consideration, the Court also concluded that the HSS is the "best available information" in terms of section 10(a) of the Act in relation to acceptable probability levels for rebuilding stocks.
- 44. 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 5):

Table 5: Guidelines on default targets as set out in the Harvest Strategy Standard.

Reference point	Default	Management response
Management target	Differs depending on productivity of the stock 40% unfished biomass (<i>B</i> ₀) is the default target for low productivity stocks	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	$\frac{1}{2}$ B_{MSY} or 20% B_0 , whichever is higher	A formal time constrained rebuilding plan will be implemented if this limit is reached.
Hard limit	$\frac{1}{4} B_{MSY}$ or 10% B_0 , whichever is higher	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.
		Stocks will be considered to have been fully rebuilt when it can be demonstrated that there is at least 70% probability that the target has been achieved and there is at least 50% probability that the stock is above the soft limit ²⁵ .
		T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing.

3.3 Deemed Value Guidelines

- 45. Within various chapters of this decision document, you are asked to make decisions in relation to setting deemed values for fish stocks. Where relevant, we have provided our advice on settings in line with our Deemed Value Guidelines (2020) which set out operational policy, including a set of principles to be applied when setting deemed value rates. Notably, these guidelines serve only as a guide and do not preclude you from taking into account relevant information on a case by case basis.
- 46. We have provided further information on our Deemed Value Guidelines, in addition to legal context around deemed value settings, within the first chapter following this introduction.

²⁴ Section 14 of the Act outlines alternative TAC settings for stocks specified in Schedule 3. For stocks listed in Schedule 3, the Minister may set a TAC otherwise than in accordance with section 13 if he or she considers that the purpose of the Act would be better achieved by doing so. Southern bluefin tuna (STN 1) in the current round is a Schedule 3 stock.

²⁵ A stock that has a probability of 70% of having achieved the target must have more than a 50% probability of being above the soft limit. Fisheries New Zealand notes this was an error and that the 50% should have been a higher number, such as 80% or 90%.

3.4 Relevant Strategies and Plans

- 47. There are many strategies and plans which are relevant to setting sustainability measures for fish stocks. Strategies and plans relevant to this round include:
 - Iwi Fisheries Forum Plans
 - National Fisheries Plan for Deepwater and Middle-depths Fisheries (2019)
 - National Fisheries Plan for Highly Migratory Species (2019)
 - Draft National Inshore Finfish Fisheries Plan
 - Regional plans (local environmental and coastal plans)
 - Southern bluefin tuna Regional Rebuilding Plan
 - National Blue Cod Strategy (2019)
 - PAU3 Fisheries Plan (2021)
 - National Plan of Action for Seabirds NPOA Seabirds (2020)
 - National Plan of Action for sharks NPOA sharks (2013)
 - Hector's and Māui dolphins Threat Management Plan (TMP)
- 48. In our advice to you on different fish stocks we have highlighted which strategies and plans are important to consider for those stocks and their proposed sustainability measures. Te Mana o te Taiao (the Aotearoa New Zealand Biodiversity Strategy) is also broadly relevant to the proposed changes for all stocks in this round. Te Mana o te Taiao sets a strategic direction for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity in New Zealand. The Strategy sets a number of objectives across three timeframes. The most relevant to setting sustainability measures for fish stocks are objectives 10 and 12:
 - **Objective 10:** Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths.
 - Objective 12: Natural resources are managed sustainably.

4 Input and consultation

4.1 Input and participation of tangata whenua

- 49. 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.
- 50. Input and participation into the sustainability decision-making process is provided primarily through lwi Fisheries Forums, which have been established for that purpose. lwi 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.
- 51. The individual stock chapters in this decision document provide specific information about input and participation of tangata whenua and kaitiakitanga in relation to those stocks.

4.2 Consultation process

- 52. Public consultation on the 2021 October sustainability round commenced on 23 June 2021.
- 53. Fisheries New Zealand notified Treaty partners and stakeholders that consultation documents were available for the stocks under review and directed them to a relevant consultation page on Fisheries New Zealand's website. The consultation page had links to each of the consultation papers, and an invitation to provide written submissions on any or all of the proposed changes.

- 54. Submissions officially closed at 5.00 pm on 27 July 2021, allowing a period of five working weeks for people to submit on the proposed changes.²⁶
- 55. Table 6 below provides a summary of the submissions received during consultation, with a breakdown of how many submissions were received from different interest groups and on each different stock proposals.

Table 6: Summary of submissions received on proposals included in the October 2021 Sustainability Round.

Fish stock(s) reviewed	Total	Submissions by main interest group of submitters ¹					
	submissions	Commercial fishing	Recreational fishing	Conservation/ Environmental	Tangata whenua and iwi representatives	Other ²	
<u>Total</u>	10239	27	57	11	14	10130	
HOK 1	18	3	1	3	7	4	
LIN 5	19	4	1	3	7	4	
SKI 3 & 7	19	5	1	3	6	2	
CDL 1	12	3	1	3	1	4	
STN 1	44	1	15	5	7	15	
SNA 8	8854	11	34	8	10	8791	
HPB 1 & 2	25	3	6	4	3	9	
GUR 1	33	4	12	3	5	9	
GUR 7	15	3	2	2	2	6	
PAU 3A & 3B	7	4	1	1	1	0	
BCO 3	1350	8	8	2	1	1331	
SCH 5	13	4	2	2	1	4	
Deemed values paper	12	3	5	2	1	1	

¹ Main interest group was derived by how submitters identified themselves, but some submitters may fit within multiple categories (for example, there are commercial fishers and quota holders which are also tangata whenua and iwi representatives.

- 56. Fisheries New Zealand received a total of 10,239 submissions or responses, and of these, 10,066 were received from individuals via online template forms set-up by LegaSea.²⁷ The online forms were focused on SNA 8 (snapper) and BCO 3 (blue cod) proposals, which accounted for 8,743 and 1,323 form submissions, respectively.²⁸
- 57. Outside of form submissions, there were 173 submissions received from various individuals and groups on the proposals. Many of these submissions and responses were received from stakeholders on behalf of large representative bodies and organisations:
 - Te Ohu Kaimoana, the lwi Collective Partnership and a number of other iwi groups and tangata whenua responded in relation to Māori commercial and customary interests.
 - Several quota owner and commercial representative groups submitted, including Fisheries Inshore New Zealand Ltd (FINZ), Southern Inshore Fisheries (SIF) and Deepwater Group Ltd (DWG).
 - Several large recreational representative groups submitted, including LegaSea, NZ Sport Fishing Council (NZSFC) and NZ Recreational Fishing Council (NZRFC).

12 • Review of sustainability measures for the 2021 October round: Introduction and Legal Overview

 $^{^2}$ Other included all submissions received via template forms set-up by LegaSea, submissions from science-related groups, and submissions from members of the public with unspecified interests.

²⁶ Fisheries New Zealand continued to accept and count all submissions received after the deadline until 5.00 pm on 30 July 2021. Extensions were also provided for submitters upon request and within reason.

²⁷ LegaSea is an organisation that was established in 2012 by the New Zealand Sport Fishing Council to elevate public awareness of the issues that affect recreational fishers.

²⁸ These totals reflect the number of form submissions received by 5.00 pm 30 July 2021, following grooming to remove duplicate submissions from identical names and emails.

- Several eNGOs made submissions including the Environmental and Conservation Organisations of NZ (ECO), Our Seas Our Future, Forest and Bird NZ and the Environmental Defence Society (EDS).
- 58. Fisheries New Zealand notes that following the release of the recent High Court judgment in relation to East Coast tarakihi, a subsequent consultation was initiated on proposed changes to East Coast tarakihi catch settings for 1 October 2021. A summary of the process and submissions for that consultation will be provided to you as separate advice in early September.

Feedback on consultation length

- 59. Some submissions commented that the consultation period for this round was too short. Submissions from Ronald Takerei (a gazetted tangata kaitiaki for marokopa paa) and LegaSea (joint with NZSFC, the NZ Underwater Association and the NZ Angling and Casting Association) objected to the consultation period noting that it was difficult in this time to organise a response to a varied range of proposals that have significant management implications for important fish stocks.
- 60. Fisheries New Zealand considers that the consultation allowed sufficient time for input via submissions on the proposals but acknowledges the difficulties raised in these submitters. We try to allow for longer public consultations on sustainability rounds where possible to lessen these difficulties. However, the amount of additional time we can provide is also notably limited by processes embedded in these rounds that allow for changes to be implemented in time for the start of each fishing year.
- 61. Furthermore, pre-engagement was utilised by Fisheries New Zealand prior to consultation commencing for some of the high profile and important shared fisheries (SNA 8, HPB 1 & 2). This provided an opportunity for early input and information sharing and included engagement with tangata whenua and stakeholders (recreational representatives, environmental stakeholders, and/or commercial representatives).

5 General themes

5.1 Managing recreational catch and allowance setting

- 62. After setting or varying the TAC for a stock, a separate decision arises in respect of allocating the TAC. Te Ohu Kaimoana believes that allocation of the TAC currently lacks a principled approach and notes that whenever you make a decision to implement a sustainability measure or provide for utilisation, you must ensure your decision is consistent with, and does not undermine, the Fisheries Deed of Settlement.²⁹
- 63. Te Ohu Kaimoana holds the view 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. Further to this view it considers that:
 - Once an allowance for recreational fishing is set under a TAC, it should not be increased without agreement with iwi/Māori because any reallocation to the recreational sector has the effect of reducing the overall value of the Fisheries Settlement.
 - There is a disconnect between allowances for recreational fishing and the
 management controls in place for constraining recreational catch within sustainable
 limits, and where recreational catches are increasing in a fishery, it is inappropriate to
 recommend allocating a greater proportion of the TAC to the recreational sector.

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²⁹ 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)".

- 64. 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.
- 65. Legislative and judicial guidance on these matters is noted in sections 2.4 and 2.5.2 above. In Fisheries New Zealand's view, Te Ohu Kaimoana's argument is not correct. The law provides you with considerable discretion in making allocation decisions and the matters you consider relevant. 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.
- 66. Regarding the disconnect between decisions on recreational controls and recreational allowances, Fisheries New Zealand has tested a streamlined approach to this within the review of HPB 1 and HPB 2 in this round. In doing so, options for recreational bag limit adjustments have been presented alongside different options for catch settings and allowances. Te Ohu Kaimoana expressed support for this approach and saw this as progress toward more connected management.

5.2 Setting other mortality allowances for inshore stocks

- 67. 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 legal size to the sea, mortality from accidental loss due to damaged or lost fishing gear and misreporting or illegal take from all sectors. 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.
- 68. Other sources of mortality caused by fishing is naturally difficult to quantify when you consider the range of contributing sources. This means that for some stocks there is a high degree of uncertainty and/or notional allowances are proposed. As part of the previous Minister's decisions on the *Review of Sustainability Measures for selected stocks for 1 October 2018* he 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.³⁰
- 69. 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.
- 70. A number of submitters have expressed concerns relating to the above approach, suggesting that for some inshore trawl-caught fish stocks, there is a lack of rationale to support setting the allowance for other mortality caused by fishing to this level.
- 71. 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.

5.3 Preferential allocation (Section 28N) rights

72. 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

³⁰ This is outlined in the previous Minister's Decision Letter for the 2018 October Sustainability Round.

holders of 28N rights³¹.

- 73. Te Ohu Kaimoana, the lwi Collective Partnership, and various other lwi representatives 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 this matter.
- 74. 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 obliged to legally challenge the decision. Legal challenges have the effect of delaying the implementation of any TACC increase, thereby preventing increased utilisation of a stock.³²
- 75. Notwithstanding their automatic consequence for quota holders, the existence of 28N rights is not a reason for or against setting or varying the TAC, TACC, and allowances. This sustainability round includes four stocks with associated 28N rights (SNA 8, HPB 1, HPB 2 and GUR 1). Details of these rights can be found in the individual chapters for those stocks.

5.4 Observers and camera coverage on inshore vessels

- 76. Many submissions raised concerns around current levels of observer and camera coverage on inshore commercial vessels, noting that the absence of observers or cameras undermines the management and monitoring regime in place. Forest and Bird, ECO, LegaSea (and its associates), SPCA and various other groups and individuals reiterated their support for wider camera coverage across the inshore commercial fishing fleet.
- 77. In June of this year you announced that up to 300 inshore fishing vessels will be fitted with cameras by 2024 to increase levels of independent verification across those inshore fisheries which pose a risk to protected species. These on-board cameras will provide independent, accurate information about commercial fishing activity and will ultimately provide a greater evidence base to inform fisheries management decisions.
- 78. Forest and Bird has also suggested that observer and camera coverage should be disclosed in consultation documents for stocks so that submitters can better understand the quality of information on bycatch and other environmental impacts of fishing. Fisheries New Zealand is looking into how it can provide for this suggestion in future sustainability rounds, noting that there are several different approaches that could be taken to calculate levels of coverage for individual stocks.

5.5 Ecosystem based fisheries management and habitats of particular significance for fisheries management

- 79. Many submitters emphasised the need for ecosystem based fisheries management (EBFM) to be clearly reflected in our approach to managing multispecies fisheries. Fisheries New Zealand understands this need and has tried to provide clear links between the reviews of interdependent stocks so that decisions on their settings are better informed and take the wider ecosystem into account.
- 80. We have also provided relevant information on habitats of particular significance for fisheries management in our advice for each stock.
- 81. The Prime Minister's Chief Science Advisor's report titled *The Future of Commercial Fishing in Aotearoa New Zealand* (March 2021) has recommended creating a framework for prioritisation

³¹ This is done in accordance with formulas set out in Section 23 of the Act.

³² There are currently proceedings before the Court concerning 28N rights for PAU 5B and SKI 2.

- and protection of habitats of particular significance for fisheries management (see 9(c) of Fisheries Act 1996) and a guidance document for their definition and identification.
- 82. The submissions for this round, including those from industry representatives, recreational organisations and eNGOs alike, indicated broad support for Fisheries New Zealand to improve efforts toward better identification and management of habitats of particular significance for fisheries management (HPSFM). Submitters emphasised that improved identification and management of these habitats is needed to contribute to a more holistic approach to management that will allow us to better account for the interconnected nature of our fisheries.
- 83. While work remains regarding the development of effective and consistent guidance for defining, identifying and managing HPSFM, progress is being made on the recommendations from the Prime Minister's Chief Science Advisor, including increasing the focus on this and the other environmental principles in our sustainability rounds.
- 84. It is important to note that in this sustainability round Fisheries New Zealand has not asked for your decisions in relation to protection or mitigation measures for any HPSFM. We have provided more detail as to what is known about HPSFM in our final advice for each stock so that this can be taken into consideration within your decisions on their management settings. In cases where habitats of significance to fisheries management are identified to be at risk, Fisheries New Zealand will initiate separate processes for mitigating and addressing those risks which may result in future decisions being warranted.

5.6 Public concerns about the impacts of trawling fisheries

- 85. Recently there has been considerable attention from stakeholders and the public on the effects of trawling on our fisheries and benthic environment. This was reflected in submissions, which had several thousand individuals and a broad range of entities and eNGOs sharing concerns about the impacts of bottom trawling.
- 86. The snapper (SNA 8) and blue cod (BCO 3) proposals in this round received particular attention on this matter, with thousands of individuals using LegaSea's submission template for those stocks to indicate their support for certain limits or bans to bottom trawling in those fisheries.
- 87. Fisheries New Zealand notes that bottom trawling is closely monitored as part of our management regime. There is regular monitoring of where fishing vessels have fished, and the type and quantity of marine species, such as corals and sponges, which are caught. Trawling activity is also closely monitored to make sure that fishing effort remains within acceptable limits and impacts are managed to an acceptable level.
- 88. Fisheries New Zealand has implemented, and will continue to implement, management controls that help to ensure any adverse effects from bottom trawling on the aquatic environment are avoided, remedied and mitigated.
- 89. Notably, large areas of the seabed are already closed to bottom trawling, In 2007, the New Zealand Government, with support of the fishing industry, closed 1.1 million square kilometres of seabed to bottom trawling and dredging (this is about a third of New Zealand's entire EEZ). The 17 separate closed areas, known as benthic protection areas (BPAs), mainly cover areas of New Zealand waters that have never been trawled³³. In addition, 18 seamounts within the EEZ are closed to all trawling.
- 90. New Zealand is considered to be a world leader in successfully managing the effects that bottom trawling has on the seabed, having closed one of the largest areas of marine space to

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³³ Scientists have estimated that 90% of New Zealand's EEZ has never been trawled.

bottom trawling in the world. Similar approaches are used in other countries to manage bottom trawling.

91. Fisheries New Zealand recognises the need to ensure the marine environment is adequately managed to mitigate fishing impacts, which includes ensuring that the effects of bottom trawling are appropriately managed. Within our advice on each stock we have outlined what is known about the impacts of bottom trawling and other fishing methods as it relates to those stocks and their management. Where relevant, we have also responded to submitters' more specific concerns about trawling and provided our analysis for you to consider.

Review of Deemed Value Rates for Selected Stocks for the October 2021/22 Fishing Year

1 The deemed values regime

- 92. 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.
- 93. 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 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).
- 94. Section 75 of the Fisheries Act 1996 (the Act) requires you to set interim and annual deemed value rates for each stock within the QMS. Incentivising fishers to align their ACE with their total catch is the core purpose of the deemed values regime.
- 95. The deemed value regime consists of 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. The 2020 Deemed Value Guidelines (the Guidelines)³⁴, which Fisheries New Zealand uses when developing its advice to you, recommends that interim deemed value rates 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 is 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, which is set out in the Deemed Value Guidelines, is to increase the annual rate in 20% increments, up to a maximum of 200% of the annual deemed value rate. However, more or less stringent schedules may be applied depending on the specific circumstances of the stock.³⁵ Differential rates provide fishers with a stronger incentive to remain within their ACE holding and reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and the long-term value of the resource.
- 96. The effectiveness of the incentive to balance catch against ACE is dependent on individual fishers' compliance with landing and reporting requirements, their responses to the incentives provided, and the impact of other incentives such as those created by market conditions.
- 97. The operation of the deemed value framework is described within the supplemental information, provided at the end of this chapter.

³⁴ The Guidelines are available on Fisheries New Zealand's website at: https://www.mpi.govt.nz/dmsdocument/40250-Deemed-value-guidelines

³⁵ 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.

2 Legal context

- 98. Section 75(1) of the Act requires you to set interim and annual deemed value rates for all stocks managed under the QMS.
- 99. 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.
- 100. Section 75(2)(b) allows you, when setting deemed value rates, to have regard to:
 - The desirability of commercial fishers to land catch for which they do not have ACE;
 - The market value of the stock's 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.
- 101. 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.
- 102. 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

- 103. All options for deemed value rate adjustments recommended within this paper were informed by the Guidelines. 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.
- 104. The 2020 iteration of the Guidelines were developed by the Deemed Values Working Group in 2019 and supersede the previous (2012) version.

4 Identifying stocks for deemed value rate review

- 105. Stocks for deemed value rate review were identified through the Catch Balancing Review Process, which was developed during 2019 by the Deemed Values Working Group.
- 106. 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 over-catch (if relevant), economic changes in the fishery and stock specific considerations.
- 107. The Commercial Catch Balancing Forum, comprising industry representatives, Te Ohu Kaimoana and Fisheries New Zealand officials met in December 2020 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.
- 108. Six stocks were identified for deemed value rate review for the fishing year starting 1 October 2021. Those stocks prioritised for deemed value rate review, and the accompanying rationale

are provided in Table 1.

109. Table 2 sets out supporting information that informed the development of recommendations for the prioritised stocks.

Table 1: Rationale for stocks prioritised for review

Species	Stock	Rationale for review
Alfonsino	BYX 2	Landed price for this stock has increased by around 25% in the last year.Catch regularly exceeds available ACE.
Blue cod	BCO 7	 Current deemed value rates much lower than neighbouring BCO 3 stock, and well under the landed price.
Bluenose	BNS 2	 Landed price for this stock has increased by over 15% in the last year. Catch regularly exceeds available ACE. Fishery rebuilding, ongoing need to ensure appropriate incentives for fishers to remain within ACE holdings.
Gemfish	SKI 1	 Basic annual deemed value rate increased by \$0.25/kg from 1 October 2020 based on an increase in landed price for 2020/21. Landed price for 2021/22 has subsequently decreased back to the 2019/20 value.
Gemfish	SKI 2	 Decision to increase SKI 2 TACC from 1 Oct 2020 not given effect due to court injunction regarding '28N' rights. No sustainability risk to stock if fishers catch up to the level of where the TACC would be if court action had not been taken.
Kingfish	KIN 8	 Deemed values rates are double the rates of the adjoining KIN 7 stock. Landed price for this stock has almost halved in the last year.

Table 2: Supporting information for stocks prioritised for review.

Stock	2019/20 TACC (t)	% ACE caught 2019/20 ³⁶	Average ACE price \$/kg ³⁷	Interim DV \$/kg	Basic annual DV \$/kg	2021/22 Port Price \$/kg
BCO 7	70	74%	0.90	1.21	1.34	7.64
BNS 2	93	112%	3.81	3.60	4.00	6.11
BYX 2	1,574.8	102%	1.44	1.98	2.20	2.50
KIN 8	45 ³⁸	256%	9.65	8.00	8.90	2.25
SKI 1	210 ³⁹	187%	1.11	1.58	1.75	1.95
SKI 2	240 ⁴⁰	115%	1.01	1.35	1.50	2.18

110. The review of the management settings for the other 19 stocks in the October 2021 sustainability round provided the opportunity for a review of the deemed value rates applicable to those stocks. Feedback from tangata whenua and stakeholders on the deemed value rates of those stocks, and Fisheries New Zealand's final advice can be found in the relevant stock chapters.

³⁶ 2019/20 landings are compared to available ACE, rather than the TACC. Available ACE exceeds the TACC for most stocks as section 67A of the Act provides for up to 10% of ACE to be carried forward to the next fishing year provided the TACC in the subsequent year is not reduced.

37 Average price paid per kg of ACE transferred (exc. GST) during the 2019/20 fishing year (as reported by FishServe).

Excludes transfers considered unrepresentative of true ACE price.

³⁸ The TACC for 2020/21 was increased to 80 tonnes

³⁹ The TACC for 2020/21 was increased to 252 tonnes

⁴⁰ The decision to increase the TACC for 2020/21 to 288 tonnes has not been implemented due to court action

5 Consultation

- 111. Before setting any interim or annual deemed value rate, section 75A of the Act requires you to consult, if practicable, persons or organisations that you consider represent classes of persons who have an interest in the stocks concerned, including Māori, recreational, commercial and environmental interests.
- 112. Fisheries New Zealand sought input on the proposed deemed value rate adjustments during the formal consultation process between 23 June 2021 and 27 July 2021.
- 113. Thirteen submissions were received relating to the proposed deemed value rate adjustments. These were from:
 - Council of Outdoor Recreation Associations of New Zealand (CORANZ)
 - Deepwater Group Limited (DWG)
 - Environment and Conservation Organisations of New Zealand Inc (ECO)
 - Fisheries Inshore New Zealand (FINZ)
 - Iwi Collective Partnership (ICP)
 - J. Heath
 - Marlborough Recreational Fishers' Association (MRFA)
 - New Zealand Recreational Fishing Council (NZRFC)
 - New Zealand Sport Fishing Council, New Zealand Angling and Casting Association, New Zealand Underwater Association, LegaSea (joint recreational submission)
 - Royal Forest and Bird Protection Society (Forest and Bird)
 - Sealord Group Ltd (Sealord)
 - Southern Inshore Fisheries Management Company Ltd (Southern Inshore)
 - Te Ohu Kaimoana⁴¹
- 114. Submitters' and respondents' comments on the proposed deemed value rate settings for specific stocks are addressed in the analysis of each species or stock below. Comments on the deemed values regime itself, or feedback that was applicable across all stocks is summarised below.
- 115. Information on the stocks Fisheries New Zealand had initially identified for deemed value rate review was also made available for lwi Fisheries Forum hui held after 10 May. No specific feedback was received.

5.1 Submissions on the deemed values regime, or applicable across all stocks

5.1.1 Deemed value rates should constrain fishing to the level of the TACC

116. Forest and Bird submits that deemed values across all stocks should be set at a level that acts as a sufficiently effective constraint on fishing so that commercial catches do not exceed the TACC.

Fisheries New Zealand's response

117. Forest and Bird's suggestion is inconsistent with the purpose of the deemed values regime, which is 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. It is not to constrain fishing so that commercial catches do not exceed the TACC.

⁴¹ Te Ohu Kaimoana's response was also endorsed by the Iwi Collective Partnership (ICP), Te Kupenga o Maniapoto, Ngāti Mutunga o Wharekauri Asset Holding Company Ltd, Ngātiwai Trust Board, Maruehi Fisheries Ltd, Tama Asset Holding Company Ltd (TAHCL) and Taranaki Iwi Fisheries Ltd.

5.1.2 Process for how decisions on deemed value rates are implemented

118. In its submission, the NZRFC asks that Fisheries New Zealand investigate a better process for implementing deemed values deliverables, one that can remain robust in achieving the objective while being flexible to combat potential ACE holder abuse. NZRFC suggests removing the process of changing values out of regulation and into a circular notification process.

Fisheries New Zealand's response

119. Fisheries New Zealand notes that deemed value rates are not set in regulations. Section 75 of the Act requires that deemed value rates are published in the *Gazette* and can therefore be adjusted relatively quickly.

5.1.3 Incorrect application of deemed values framework

120. Sealord expresses concerns about deemed value rates changes and TAC reviews. Broadly, they consider Fisheries New Zealand can be too quick to recommend you increase deemed value rates and too slow to recommend you increase TACs for stocks where relative abundance appears to be increasing. They consider that, where management settings don't align, this may not be consistent with the purpose of the deemed value framework (encouraging fishers to balance catch with ACE).

Fisheries New Zealand's response

121. Fisheries New Zealand notes that all relevant information is analysed when recommending you make adjustments to deemed value rates and that all recommendations are based on the criteria in the Act.

6 Deemed value rate adjustments

6.1 Alfonsino (BYX 2) – East Coast North Island

6.1.1 Stock information

- 122. Most alfonsino (*Beryx splendens* and *B. decadactylus*) in BYX 2 is taken through targeted midwater trawling. Smaller quantities are also taken as non-target catch by trawl vessels targeting species such as hoki, or bottom longline vessels targeting bluenose. As a high proportion of catch is taken via targeted fishing, fishers' ability to remain within their ACE holding is higher than, for example, stocks that are taken in mixed trawl fisheries.
- 123. The TACC for BYX 2 has remained unchanged at 1,574.8 tonnes since 1996/97. Catch has exceeded available ACE in seven of the last 10 completed fishing years; in the three remaining years catch was between 95% and 99% of available ACE.

6.1.2 Recommendation

404 Fisheries New 7

124. Fisheries New Zealand recommends you increase the annual deemed value rate for BYX 2 by \$0.20, from \$2.20/kg to \$2.40/kg. The increase is recommended as the port price increased from \$2.03/kg for the 2020/21 year to \$2.50 for 2021/22.42

125. The targeted nature of this fishery, and the ability for fishers to remain within ACE holdings, means that increasing the annual deemed value rate to around the same level as the port price will provide incentives for fishers to balance catch with ACE. An annual deemed value rate at this level means little or no profit margin for fishers who are unable to balance catch against ACE. Conversely, the recommended annual deemed value rate would not incentivise illegal returning of fish to the sea as fishers should be able to cover costs.

⁴² Each year, MPI surveys all licensed fish receivers to calculate the port price index. Port price represents the average price paid during a period using the greenweight price per kg paid at the dockside, or an LFR's best estimate of the price that would have been paid in the event of an arm's length transaction. There are known issues around this process including a low response rate to the port price survey, and incentives for LFRs to under-report values in order to affect the distribution of cost recovery levies.

126. The recommended deemed value rates for BYX 2 are shown in Table 3.

Table 3: Current and recommended deemed value rates (\$/kg) for BYX 2.

Stock	Ontion	Interim	Interim Annual		Differential rates (\$/kg) for excess catch (% of ACE)			
	Option	Interim	100-110%	110-130%	130-150%	150-170%	170-190%	>190%
DVV 0	Current	1.98	2.20	2.64	3.08	3.52	3.96	4.40
BYX 2	Recommended	2.16	2.40	2.88	3.36	3.84	4.32	4.80

6.1.3 Consultation

- 127. The deemed value rates for BYX 2 were last reviewed in 2012, when the basic annual rate was increased from \$2.00/kg to \$2.20/kg, and a stock-specific differential starting at 10% of catch in excess of ACE was introduced.
- 128. To reflect the increase in the landed price of alfonsino in BYX 2, Fisheries New Zealand proposed that the deemed value rates for this stock be increased, with the basic annual deemed value rate increasing by \$0.20/kg from \$2.20/kg to \$2.40/kg.
- 129. Three submissions were received directly commenting on the proposed deemed value rates for BYX 2.
- 130. FINZ supports the status quo. Te Ohu Kaimoana suggests reviewing the TACC for BYX 2 would be more appropriate. Te Ohu Kaimoana also suggests a joint approach to BYX 2 and BNS 2 (which is addressed below) as the species are caught together. This includes the use of over-fishing thresholds to target the individual parties incurring the majority of the deemed values.⁴³

6.1.4 Analysis of submissions

- 131. Fisheries New Zealand notes that research undertaken to date has not resulted in information that would support a review of the TAC for this stock. Industry stakeholders are currently considering options for further research on this stock.
- 132. The use of over-fishing thresholds is addressed in the BNS 2 analysis below.

6.2 Blue cod rawaru (BCO 7) – West Coast and top of the South Island

6.2.1 Stock information

- 133. Blue cod (*Parapercis colias*) in BCO 7 is primarily taken through targeted potting or handlining in the Marlborough Sounds, and Tasman and Golden Bays, with smaller quantities taken as non-target catch in a variety of fisheries.
- 134. The TACC for BCO 7 has remained unchanged at 70 tonnes since the 1995/96 fishing year. Catch has not exceeded available ACE in any of the last 10 completed fishing years, although it did exceed the TACC once. Catch has ranged between 51 and 71 tonnes during that period.

6.2.2 Recommendation

- 135. Fisheries New Zealand recommends that you increase the annual deemed value rate for BCO 7 by \$3.16/kg, taking it from \$1.34/kg to \$4.50/kg. Fisheries New Zealand also recommends you retain the existing differential rate structure, which uses the standard differential rate schedule.
- 136. The recommendation is based on the 2021/22 BCO 7 port price, which is \$7.64/kg. The recommended increase will provide incentives for fishers to balance catch against ACE, as an annual deemed value rate at this level means little or no profit margin for fishers. At the same

⁴³ Section 77 of the Act provides for the creation of over-fishing thresholds. If a stock becomes subject to an over-fishing threshold, a fisher whose catch exceeds a pre-defined ACE threshold becomes subject to automatic permit suspension.

- time, the recommended annual deemed value rate would not incentivise illegal returning of fish to the sea as fishers should be able to cover costs.
- 137. The existing annual deemed value rate, which is \$6.30 below the current port price, does not provide the same incentives for fishers to balance catch with ACE as fishers may still make a profit after paying deemed values.
- 138. The recommended deemed value rates for BCO 7, which are shown in Table 4, would align the rates for BCO 7 with those for the adjacent BCO 3 stock, which would reduce any incentives for area misreporting.

Table 4: Current and recommended deemed value rates (\$/kg) for BCO 7.

Stock	Ontion	Interim	Annual	Diff	erential rates (\$/kg) for excess	s catch (% of AC	CE)
	Option	Interim	100-120%	120-140%	140-160%	160-180%	ss catch (% of ACE) 180-200% >200% 2.41 2.68 180-200% >200% 8.10 9.00	>200%
	Current	1.21	1.34	1.61	1.88	2.14	2.41	2.68
BCO 7	BCO 7 Recommended		Annual 100-120%	120-140%	140-160%	160-180%	180-200%	>200%
		4.05	4.50	5.40	6.30	7.20	180-200% >200% 2.41 2.68 180-200% >200%	9.00

6.2.3 Consultation

- 139. Deemed value rates for BCO 7 have remained unchanged since the 2003/04 fishing year. The current basic annual rate (\$1.34/kg) is considerably less than the rate that applied to the neighbouring BCO 3 stock during the 2020/21 fishing year (\$3.75/kg) and is also well below the 2021/22 BCO 7 port price of \$7.64.
- 140. Fisheries New Zealand proposed that the deemed value rates for BCO 7 be increased to be the same as those that apply in BCO 3. The initial proposal was that the basic annual deemed value rate increased from \$1.34/kg to \$4.50/kg and that a stock-specific differential deemed value rate schedule was implemented, with the first step applying at catch between 110% and 120% of ACE holdings.
- 141. Six submissions were received directly commenting on the deemed value rates of BCO 7.
- 142. CORANZ and MRFA support the proposed increase in deemed value rates, noting the need to ensure incentives for fishers to balance catch with ACE.
- 143. Te Ohu Kaimoana supports aligning the deemed value rates of BCO 7 with those in BCO 3. Te Ohu does not, however, support the proposed ramping of deemed values rates for BCO 3 (and BCO 7). Te Ohu's position is supported by ICP.
- 144. Southern Inshore does not support the proposal to increase the deemed value rate for BCO 7. Southern Inshore comments that aligning the deemed value rates for all blue cod stocks is inappropriate when the species is caught by various methods at varying degrees. Southern Inshore notes that BCO 7 is primarily a potting fishery, while the BCO 3 is both a potting fishery (target) and, increasingly, a trawl bycatch fishery. FINZ endorses the Southern Inshore submission.

6.2.4 Analysis of submissions

145. Most submissions support increasing the deemed value rates for BCO 7 and aligning them with those of BCO 3. Fisheries New Zealand agrees with Te Ohu Kaimoana that it is not necessary to apply the ramped deemed value schedule initially proposed for this stock; Fisheries New Zealand is confident that increasing the annual deemed value rate and applying the standard differential deemed value rate schedule will create sufficient incentives for catch not to exceed ACE.

- 146. The submissions from CORANZ and MRFA comment on other matters associated with the BCO 7 fishery, including habitat degradation related to the forestry industry.
- 147. Fisheries New Zealand agrees with Southern Inshore that blue cod in the BCO 7 fishery is mainly a potting fishery. However, the method of fishing does not change incentives around balancing catch with ACE.

6.3 Bluenose / matiri (BNS 2) – East Coast North Island

6.3.1 Fishery information

- 148. Although the majority of bluenose in BNS 2 has historically been taken through targeted bottom longline fishing, a greater proportion (approximately 30%) has been taken as non-target catch in the alfonsino trawl fishery in the last 2-3 years. The amount of longline effort targeting BNS 2 has decreased and the amount of effort targeting alfonsino in BYX 2 has increased by more than 50%.
- 149. Smaller quantities of bluenose in BNS 2 are taken as non-target catch in other bottom longline or trawl fisheries.
- 150. In response to concerns about the status of bluenose stocks nationwide, the TACCs of all bluenose stocks were progressively reduced between 2008/09 and 2017/18. The current TACC for BNS 2 is 247 tonnes. Since 2017/18, catch of BNS 2 exceeded available ACE during each of the three completed fishing years (108% in 2017/18, 119% in 2018/19, and 117% in 2019/20).

6.3.2 Recommendation

- 151. Fisheries New Zealand recommends that you agree to increase the annual deemed value rate for BNS 2 by \$0.50/kg, taking it from \$4.00/kg to \$4.50/kg. The recommended increase is based on the port price having increased from \$5.21 for the 2020/21 year to \$6.11 for the 2021/22 year.
- 152. Although the recommended annual deemed value rate is \$1.61 below the port price, Fisheries New Zealand considers it will provide incentives for fishers to balance catch against ACE. An annual deemed value rate at this level means little or no profit margin for fishers. Additionally, the more stringent differential deemed value rates, which commence when a fisher's catch exceed their ACE holding by 5%, act as a further incentive to balance catch with ACE. The recommended annual deemed value rate would not incentivise illegal returning of fish to the sea as fishers should be able to cover costs in the event of talking this stock as non-target catch.
- 153. Bluenose stocks are currently in a rebuilding phase. A such, Fisheries New Zealand considers the need for strong incentives for fishers to balance catch with ACE is particularly important. The recommended deemed value rates for BNS 2 are as shown in Table 5.

Table 5: Current and recommended deemed value rates (\$/kg) for BNS 2.

Stock		Interi	Annual	Differential rates (\$/kg) for excess catch (% of ACE)						
	Option	m	100- 105%	105- 110%	110-120%	120-130%	130-140%	140-150%	150-160%	>160%
DNC 2	Current	3.60	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
BNS 2	Recommended	4.05	4.50	5.50	6.50	7.50	8.50	9.50	10.50	11.50

6.3.3 Consultation

154. The landed price of BNS 2 increased from \$5.21 for the 2020/21 year to \$6.11 for the 2021/22 year. On this basis, Fisheries New Zealand proposed that the basic annual deemed value rate be increased from \$4.00/kg to \$4.50/kg, with the existing differential schedule retained although the rates themselves would increase to reflect the increase in the basic annual deemed value

rate.

- 155. Four submissions were received directly commenting on the deemed value rates of BNS 2.
- 156. FINZ does not support the proposed options for BNS 2. They would prefer a more nuanced approach that ensures the correct incentives are in place to stop fishers changing operations in a manner that will put pressures on the continued rebuild of the bluenose fishery, while not punishing fishers who catch bluenose as bycatch. They suggest retaining the existing basic annual deemed value rate but adjusting the differential rates.
- 157. Sealord also does not support the proposal, noting that the proposed change appeared to address the actions of a single permit holder. Sealord also notes it has manged to reduce its bluenose catch that is taken as non-target catch in the alfonsino target fishery.
- 158. As noted above, Te Ohu Kaimoana, supported by ICP, suggests a joint approach to the BYX 2 and BNS 2 fisheries. This includes the use of over-fishing thresholds to target the individual parties incurring the majority of the deemed values.

6.3.4 Analysis of submissions

- 159. Fisheries New Zealand notes that during the last three completed fishing years, the overcatch (catch exceeding available ACE) has not been due to a single permit holder. However, Fisheries New Zealand will continue to consider all available options, including the use of overfishing thresholds, should catch of BNS 2 continue to exceed available ACE.
- 160. Fisheries New Zealand also notes that two of the operators who have incurred deemed value invoices for BNS 2 in the last three years have either recently exited the industry or have indicated they are likely to exit the industry. The reduction in the number of vessels operating in both the target bottom longline fishery, and trawl fisheries that takes BNS 2 as non-target catch, should result in reduced pressure on the stock while it continues to rebuild. It should also result in more ACE being available to fishers who take BNS 2 as non-target catch.
- 161. Fisheries New Zealand acknowledges FINZ's suggestion for adjusting the differential deemed value rates and retaining the existing basic annual rate. The FINZ proposal does not address the fact that with the increase in port price, the existing basic annual deemed value rate may not provide sufficient disincentive for fishers targeting bluenose to ensure catch remains within available ACE.

6.4 Gemfish / maka-tikati (SKI 1) - Northern East and West Coasts North Island

6.4.1 Fishery information

- 162. In SKI 1, gemfish is largely taken as non-target catch by trawl vessels targeting a variety of inshore and middle depth species. There is also a small target fishery.
- 163. The biomass of all gemfish stocks, including SKI 1, has increased considerably over recent years, which has resulted in increased catch. This has led to landings exceeding available ACE every year since 2016/17. Consequently, this created deemed value obligations for fishers, with invoices for the 2019/20 fishing year close to \$400,000. To reflect the increase in abundance, the then Minister of Fisheries agreed to increase the TACC of SKI 1 from 210 tonnes to 252 tonnes as part of the October 2020 sustainability round.

6.4.2 Recommendation

- 164. Fisheries New Zealand recommends that the annual deemed value rate for SKI 1 is decreased by \$0.25/kg from \$1.75/kg to \$1.50/kg. The recommendation is based on the port price for this stock having decreased from \$2.68/kg for 2020/21 to \$1.95/kg for 2021/22.
- 165. The recommended decrease in deemed value rates, as shown in Table 6, will continue to provide incentives for fishers to balance catch with ACE. An annual deemed value rate at this

level still means little or no profit margin for fishers. It is unlikely to incentivise illegal returning of fish to the sea as fishers should be able to cover costs after paying deemed values.

Table 6: Current and recommended deemed value rates (\$/kg) for SKI 1.

Stock	Ontion	Interim	Annual	nual Differential rates (\$/kg) for excess cate			s catch (% of A	CE)
	Option	interim	100-120%	120-140%	140-160%	160-180%	160-180% 180-200% >200 2.80 3.15 3.5	
01/1.4	Current	1.58	1.75	2.10	2.45	2.80	3.15	3.50
SKI 1	Recommended	1.35	1.50	1.80	2.10	2.40	2.70	3.00

6.4.3 Consultation

- 166. As part of decisions on SKI 1 during the October 2020 sustainability round, the then Minister of Fisheries agreed to increase deemed value rates; the annual deemed value rate increased from \$1.50/kg to \$1.75/kg. Rationale for the increase was to increase incentives to avoid fishing in areas and at times where significant gemfish catch was likely. Additionally, the port price for SKI 1 had increased from \$1.98 to \$2.68.
- 167. The 2021/22 port price for SKI 1 has decreased to \$1.95, which is very close to the 2019/20 value of \$1.98. The biomass of gemfish in SKI 1 appears to be continuing to increase, with good recruitment into the fishery expected in coming years.
- 168. On this basis, together with the reduction in port price, Fisheries New Zealand proposed that the deemed value rates for SKI 1 be reduced to the rates that applied during the 2019/20 fishing year.
- 169. Five submissions were received directly commenting on the deemed value rates of SKI 1.
- 170. FINZ supports the proposal, with DWG supporting the FINZ submission. Te Ohu Kaimoana acknowledges the proposal but does not express a position, while ICP supports Te Ohu's submission.
- 171. ECO does not support the proposed reduction but does not provide specific rationale for that position.

6.4.4 Analysis of submissions

172. Submissions did not raise any specific issues with Fisheries New Zealand's initial proposal.

6.5 Gemfish / maka-tikati (SKI 2) - East Coast North Island

6.5.1 Fishery information

- 173. In SKI 2, gemfish is taken as both target and non-target catch by trawl vessels targeting a variety of inshore and middle depth species.
- 174. The biomass of all gemfish stocks, including SKI 2, has increased over recent years, which has resulted in increased catch. This has led to landings exceeding available ACE every year since 2017/18. Consequently, this has created deemed value obligations for fishers, with invoices for SKI 2 for the 2018/19 and 2019/20 fishing years exceeding \$200,000 and \$85,000 respectively. Catches of 328 tonnes and 275 tonnes were reported during the 2018/19 and 2019/20 fishing years respectively.
- 175. To reflect the increase in abundance, the then Minister of Fisheries agreed to increase the TACC of SKI 2 from 240 tonnes to 288 tonnes as part of the October 2020 sustainability round. However, due to the association of preferential allocation ('28N') rights with this stock, the decision was subject to court proceedings and frozen by court order. As this issue has yet to be resolved, the TACC of SKI 2 remains at 240 tonnes.

6.5.2 Recommendation

- 176. Fisheries New Zealand recommends that you reduce the annual deemed value rate by \$0.50/kg from \$1.50/kg to \$1.00/kg. Fisheries New Zealand also recommends you set differential deemed value rates, with a stock specific schedule starting at \$1.50/kg for catch that is between 120% and 140% of ACE holdings. The recommended deemed value rates are shown in Table 7 below.
- 177. The circumstances of SKI 2 are unique in that there are known to be no sustainability risks associated with catching in excess of the available ACE (providing that total catch does not exceed 288 tonnes, which equates to 20% in excess of the 240 tonne TACC).
- 178. The recommended annual deemed value rate of \$1.00/kg for catch of SKI 2 of up to 288 tonnes corresponds to the average ACE price for this stock for the 2019/20 fishing year. Fisheries New Zealand considers the approach of setting the annual deemed value rate at the same level as the ACE price is a pragmatic approach that remains consistent with the need to provide an incentive for fishers to balance catch with ACE.
- 179. The recommended differential deemed value rates start at \$1.50/kg for catch that is between 120% and 140% of ACE holdings. This corresponds to catch above what the TACC would have been if the Minister's 2020 decision had been implemented. The recommended differential deemed values will provide an incentive for fishers to balance catch with ACE as there is little or no profit margin at \$1.50/kg and the rates that apply to increased catch in excess of ACE.

Table 7: Current and proposed deemed value rates (\$/kg) for SKI 2.

Stock	Ontion	Interim	Annual Differential ra		rential rates (\$	rates (\$/kg) for excess catch (% of ACE)			
	Option	interim	100-120%	120-140%	140-160%	160-180%	180-200%	>200%	
CIZLO	Current	1.35	1.50	1.80	2.10	2.40	2.70	3.00	
SKI 2	Recommended	0.90	1.00	1.50	1.80	2.10	2.40	2.70	

6.5.3 Consultation

- 180. In recognition of the increased abundance of gemfish, and delays with implementing the decision to increase the TACC for SKI 2, Fisheries New Zealand consulted on a proposal to reduce deemed value rates to provide some relief to fishers. The approach taken was to set the basic annual deemed value rate at the average ACE price during the preceding year, and for differential rates to commence at what fishers' collective ACE holdings would have been if the TACC decision had been given effect.
- 181. The proposed deemed value rates for SKI 2 used the same approach that was taken for SKI 7 in 2020 as a similar scenario had occurred with that stock during 2020.
- 182. Based on data collated by FishServe, the average ACE price for the 2019/20 fishing year for SKI 2 was \$1.00/kg. Fisheries New Zealand also proposed a stock-specific schedule, with differential rates commencing at \$1.50/kg for catch between 120-140% of ACE holdings. This represents the point at which the current annual rate would apply if court action had not prevented the TACC increase from being implemented.
- 183. Six submissions were received directly commenting on the deemed value rates of SKI 2.
- 184. FINZ supports the proposal, with DWG endorsing the FINZ submission. Te Ohu Kaimoana, endorsed by ICP, supports the approach of adjusting deemed value rates to reflect the absence of risk to sustainability and setting deemed value rates close to the ACE price.
- 185. Sealord also supports the proposal to reduce deemed value rates for SKI 2 but proposes lower rates; \$0.49/kg for the basic annual rate and \$0.72/kg for catch >200% in excess of ACE holdings. Sealord's rationale is that it would be inappropriate for industry to incur deemed values at the rate proposed by Fisheries New Zealand when, in their view, the TACC increase

was not high enough and has not addressed the spike in abundance.

186. ECO does not support the proposed reduction but does not provide specific rationale for that position.

6.5.4 Analysis of submissions

187. Regarding Sealord's comment that the TACC increase was not high enough, Fisheries New Zealand notes that it will continue to monitor the abundance of all gemfish stocks. If evidence suggests further utilisation opportunities exists, it will recommend a review of catch limits. Fisheries New Zealand also notes that setting deemed value rates well below the average ACE price does not provide an incentive for fishers to balance catch against ACE.

6.6 Kingfish / haku (KIN 8) – West Coast North Island

6.6.1 Fishery information

- 188. Kingfish in KIN 8 are principally taken as non-target catch by large trawlers targeting jack mackerel and barracouta off the West Coast of the North Island. Some catch is also taken by inshore trawl vessels targeting species such as snapper and trevally. It is not uncommon for KIN 8 catch to be taken during tows that cross the KIN 7 / KIN 8 quota management area boundaries.
- 189. There is a considerable difference in the value of the frozen kingfish landed by the large trawlers, compared to the value of fresh chilled kingfish taken by inshore vessels. Frozen kingfish is worth around \$2.00/kg, whereas in comparison, the 2021/22 port price for KIN 1, where all catch is assumed to be landed fresh chilled, is \$4.35/kg. 44,45
- 190. The biomass of kingfish in most stocks, including KIN 7 and KIN 8, has increased in recent years. In KIN 8, catch during the last two completed fishing years was double the amount of available ACE.
- 191. Kingfish stocks are listed on Schedule 6 of the Fisheries Act 1996, which enables fishers to return kingfish to the sea subject to certain conditions. Since the 2017/18 fishing year, the quantity of kingfish returned to the sea has been similar to the quantity balanced with ACE.
- 192. Management measures for four kingfish stocks (KIN 2, KIN 3, KIN 7, and KIN 8) were reviewed as part of the October 2020 sustainability round, with the then Minister of Fisheries agreeing to increase the TAC and TACC for all four stocks. The Minister also agreed to decrease the deemed value rates for KIN 7 by 50% to reflect the landed price received by fishers. While the annual deemed value rate for KIN 7 was reduced from \$8.90 to \$4.45/kg, deemed value rates for KIN 8 remained unchanged.

6.6.2 Recommendation

- 193. Fisheries New Zealand recommends that you decrease the annual deemed value rate for KIN 8 by \$4.45/kg from \$8.90/kg to \$4.45/kg. The recommendation is based on the port price for the stock having decreased from \$4.30/kg in 2020/21 to \$2.25/kg for 2021/22.
- 194. Fisheries New Zealand considers the recommended rate will provide more incentive for all fishers to balance catch with ACE than retaining the current rate. However, even at the recommended deemed value rate, most fishers are still likely to incur costs if they are unable to balance catch with ACE, which could incentivise them to return catch illegally.
- 195. Fisheries New Zealand also considers that the recommended deemed value rates will ensure that existing incentives for fishers to return live kingfish wherever possible, and to find ways of avoiding or reducing kingfish catch, will remain. For most fishers, there will continue to be no profit margin after paying deemed values and, therefore, no incentive to retain live kingfish that

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⁴⁴ The 2021/22 port price for KIN 1 of \$4.35/kg was down on the 2020/21 value of \$6.13/kg

⁴⁵ Sealord's submission notes the net sales price for frozen at sea kingfish is between \$1.70 and \$2.00/kg,.

- could legally be returned.
- 196. The recommended deemed value rates for KIN 8, which are shown in Table 8, would align the rates for KIN 8 with those in the adjacent KIN 7 stock. As noted, it is not uncommon for kingfish to be taken during trawl tows that cross the KIN 7 / KIN 8 quota management area boundaries. Aligning deemed value rates between the two stocks would reduce incentives for area misreporting.

Table 8: Current and recommended deemed value rates (\$/kg) for KIN 8.

Stock	Option	Interim	Annual 100-120%	Differential rates (\$/kg) for excess catch (% of ACE)					
KIN 8 Reco	Cumant	0.00	0.00	120-140%	140-150%	150-160%	160-170% >170%		
	Current	8.00	8.90	10.68	12.46	14.24	16.02	17.80	
	Decemmended	4.00	4.45	120-140%	140-160%	160-180%	180-200%	>200%	
	Recommended	4.00	4.45	5.34	6.23	7.12	8.01	8.90	

6.6.3 Consultation

- 197. As noted, in 2020 the then Minister of Fisheries agreed to reduce the deemed value rates for the KIN 7 stock to reflect the fact that most catch is landed as low value frozen product. The decision resulted in the deemed value rates for KIN 7 being half those of KIN 8.
- 198. In its advice to the Minister, Fisheries New Zealand noted that the difference in deemed value rates between the two stocks could create a risk of area misreporting to reflect the lower deemed value rates in the adjacent KIN 7 stock.
- 199. Fisheries New Zealand proposed to reduce the deemed value rates for KIN 8 to align them with KIN 7. Rationale for the proposal included:
 - Most kingfish landed in KIN 8 is also landed as low value frozen product (60-70% over the last two completed fishing years).
 - The quantity of KIN 8 landed as low value frozen product is higher than for KIN 7 (60-70 tonnes during the last two completed fishing years).
 - It would reduce incentives for area misreporting.
- 200. Six submissions were received directly commenting on the deemed value rates of KIN 8.
- 201. FINZ supports the proposed decrease to the deemed value rates of KIN 8 and suggests a further TACC review is warranted given the ongoing abundance of the species in this area. Sealord also supports the proposal, noting that even with the reduction, an annual deemed value rate of \$4.45/kg is still considerably higher than the return obtained from frozen kingfish product. They also suggest a further review of the TACC for this stock, noting the ongoing increased abundance.
- 202. Sealord also commented on ongoing work to mitigate kingfish catch in the jack mackerel fishery. Work includes identifying 'hotspots' and avoiding fishing in those areas, and a three year project to develop bycatch reduction measures. Sealord has ongoing concerns that any reduced KIN 8 catch as a result of these measures could be interpreted as a signal of reduced abundance.
- 203. Sealord also notes they are actively involved in tagging kingfish to monitor survival and assist in understanding fish migration and stock structure.
- 204. Te Ohu Kaimoana supports reducing the deemed value rates for KIN 8, noting the need to take the price difference between fresh and frozen product into consideration when considering deemed value rates. ICP supports Te Ohu Kaimoana's submission.

- 205. J. Heath and the joint recreational submission both oppose any reduction in deemed value rates for KIN 8, noting kingfish is highly valued by non-commercial interests. J. Heath considers that reducing KIN 8 deemed value rates would incentivise larger trawlers to increase their catches of jack mackerel and barracouta.
- 206. The joint recreational submission also considers that reducing the deemed value rates for KIN 8 will allow vessel operators to catch more of the other West Coast species and treat kingfish as low value bycatch. The submission also queries whether the deemed value invoices that have been issued in recent years have actually been paid.
- 207. J. Heath and the joint recreational submission both advocate for cameras on the jack mackerel fleet to verify how much kingfish is returned to the sea.

6.6.4 Analysis of submissions

- 208. The jack mackerel trawl fishery has had very high observer coverage for several years now; at least 80% since the 2011/12 fishing year. This level of coverage gives Fisheries New Zealand confidence that the quantity of kingfish reported by fishers as returned to the sea is accurate. The introduction of cameras, as suggested by J. Heath and the joint recreational submission, is unnecessary given the high observer coverage.
- 209. The key target fisheries where KIN 8 is taken as non-target catch by large trawl vessels, primarily jack mackerel and barracouta, are both managed under the QMS and have deemed value rates that provide an incentive for fishers to balance catch with ACE. In the case of jack mackerel, where the TACC for JMA 7 is around 32,000 tonnes, catch is consistently at around the level of the TACC. A reduction in deemed value rates for KIN 8 is therefore unlikely to result in increased effort by this fleet on the West Coast, as suggested by J. Heath and in the joint recreational submission.
- 210. Regarding non-payment of deemed value invoices, a permit holder's fishing permit is suspended if the amount owed in deemed values exceeds \$1,000.
- 211. Fisheries New Zealand will continue to monitor all kingfish stocks and will review management settings if there is evidence of changes in abundance or that deemed value rates are not resulting in incentives for fishers to balance catch with ACE.

7 Decisions

- 212. Fisheries New Zealand recommends that you approve changes to the deemed value rates for selected stocks as outlined in Table 9.
- 213. 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.

Table 9: Current and recommended deemed value rates (\$/kg) for selected stocks.

		Cu	rrent	Proposed					
Species	Stock	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential
Alfonsino	BYX 2	1.98	2.20	4.40	Special	2.16	2.40	4.80	Special
Blue cod	BCO 7	1.21	1.34	2.68	Standard	4.05	4.50	9.00	Standard
Bluenose	BNS 2	3.60	4.00	11.00	Special	4.05	4.50	11.50	Special
Gemfish	SKI 1	1.58	1.75	3.50	Standard	1.35	1.50	3.00	Standard
Gemfish	SKI 2	1.35	1.50	3.00	Standard	0.90	1.00	2.70	Special
Kingfish	KIN 8	8.00	8.90	17.80	Special	4.00	4.45	8.90	Standard

a) Agree to change the deemed value rates for alfonsino (BYX 2) as outlined in the Table above.

Agreed / Not Agreed

AN

b) Agree to change the deemed value rates for blue cod (BCO 7) as outlined in the Table above.

Agreed / Not Agreed

IN

c) Agree to change the deemed value rates for bluenose (BNS 2) as outlined in the Table above.

Agreed / Not Agreed

M

d) Agree to change the deemed value rates for gemfish (SKI 1) as outlined in the Table above.

Agreed / Not Agreed

AN

e) Agree to change the deemed value rates for gemfish (SKI 2) as outlined in the Table above.

Agreed / Not Agreed

DM

f) Agree to change the deemed value rates for kingfish (KIN 8) as outlined in the Table above.

Agreed / Not Agreed

DN

Hon David Parker Minister of Fisheries and Oceans

10 / 9 / 2021

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.

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 TAC or 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 a 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 effective 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 10). 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 10: 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 recommended in this decision document 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.

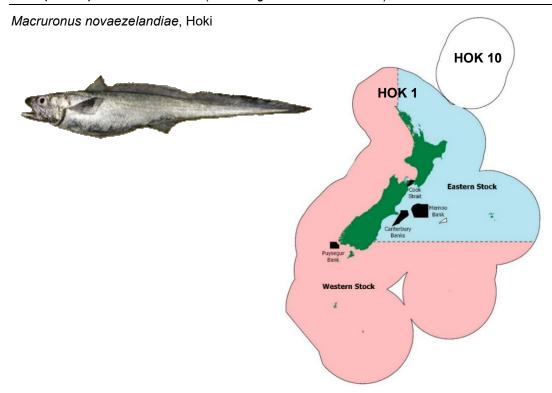


Figure 1: Quota Management Areas (QMAs) for hoki, with HOK 1 highlighted and divided into eastern (blue) and western (pink) stocks. The black polygons represent the four hoki management areas.

Table 1: Summary of options proposed for HOK 1 from 1 October 2021. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Ontion	TAC	TACC	Non-regu split arra	latory catch ngement	Allowances		
Option TAC TACC Western Eastern stock limit stock lin			Customary Māori	Recreational	All other mortality caused by fishing		
Option 1 (Status quo)	116,190	115,000	55,000	60,000	20	20	1,150
Option 2 (Modified status quo)	116,190	115,000	50,000 ↓ (5,000)	65,000 ↑ (5,000)	20	20	1,150
Option 3 (West → 5,000)	111,140 ↓ (5,050)	110,000 ↓ (5,000)	50,000 ↓ (5,000)	60,000	20	20	1,100 ↓ (50)
Option 4 (West 1 0,000, East ↑ 5,000)	111,140 ↓ (5,050)	110,000 ↓ (5,000)	45,000 ↓ (10,000)	65,000 ↑ (5,000)	20	20	1,100 ↓ (50)
Option 5 (West ↓ 10,000)	106,090 ↓ (10,100)	105,000 ↓ (10,000)	45,000 ↓ (10,000)	60,000	20	20	1,050 ↓ (100)
New option inco	rporated foll	owing consu	Itation	No			
Total submission	ns received			18			
Number of subn	nissions rece	ived in supp	ort of	Option 1		10	
each option			Option 2	0			
		Option 3		0			
		Option 4		0			
			-	Option 5		5	
				Other		3	

1 Why are we proposing a review?

- 214. HOK 1 is managed to a target biomass range of 35-50% of the unfished mature biomass (B_0). Stock status is assessed annually as two separate but interlinked stocks, eastern and western, with a separate catch limit set for each stock through a non-regulatory catch split arrangement.
- 215. The current HOK 1 TAC is 116,190 tonnes, which includes a 115,000 tonne TACC that is split into 60,000 tonnes for the eastern and 55,000 tonnes for the western stock. There are also recreational and customary allowances of 20 tonnes each and 1,150 tonnes for all other mortality caused by fishing (equivalent to 10% of the TACC).
- 216. The 2021 stock assessment assumed two separate stocks (Figure 1) as morphometric (size and shape) and ageing studies have found differences between the two main dispersed areas (Chatham Rise and the Sub-Antarctic). The biomass of the eastern stock was estimated to be within the management target range at 48% B_0 . The biomass of the western stock was estimated to be at the lower threshold of the management target range (35% B_0).
- 217. Five-year projections estimate that the eastern stock biomass will remain within the top third of the management target range, assuming catch occurs at current catch limits. However, the western stock biomass is predicted to drop below the management target range next year and remain below this threshold for the rest of the five-year projection (see Figure 3).

1.1 About the stock

1.1.1 Harvest Strategy

- 218. The hoki stocks are generally assessed every year (except 2020) and the TAC and TACC are set based upon the status of the stock and informed through the use of the hoki harvest strategy, as set out in the species-specific chapter of the National Deepwater Plan for hoki (Part 1B) and described in Table 2 below.
- 219. The management target range is based on a Management Strategy Evaluation that aimed to identify a target range that would ensure managers were able to respond and maintain the stock above the deterministic estimate of B_{MSY}⁴⁶ as well as meet objectives for catch rates and fish size.

Table 2: Hoki reference points and the associated management response.

Harvest strategy components	Management response
Management target range of 35 - 50% <i>B</i> ₀	Stock permitted to fluctuate within this management target to an acceptable level
Soft limit of 20% B ₀	A formal time constrained rebuilding plan should be implemented if this limit is reached
Hard limit of 10% B₀	The limit below which fisheries should be considered for closure
Rebuild strategy	Catch limit set so that fishery will deliver half the rate of rebuild that would occur in the absence of fishing considered for closure

220. A number of non-regulatory measures are in place for hoki, including an east-west catch split arrangement and Hoki Operational Procedures.

1.1.2 East West catch split arrangement

221. The HOK 1 TACC has been divided between the eastern and western stocks each year via a non-regulatory catch split arrangement, with this first occurring in 2001. This catch split arrangement has been endorsed by previous Ministers of Fisheries and agreed to by guota

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⁴⁶ Deterministic B_{MSY} for hoki was calculated in 2019 to be 27% B_0 .

- holders (most recently in 2019). Each catch limit is varied in response to the current estimate of stock status, and projected impacts of catch levels on each stock. The catch split is formally administered through FishServe.
- 222. The 'western' stock' comprises the West Coast of the North and South Islands and the area south of New Zealand including Puysegur, Stewart-Snares shelf and the sub-Antarctic. The 'eastern' stock comprises the area of the East Coast of the South Island, Mernoo Bank, Chatham Rise, Cook Strait and the East Coast of the North Island up to North Cape (Figure 1).
- 223. Fishers report east-west catch information directly to FishServe and Fisheries New Zealand has access to this information. Adherence to the catch split arrangement is also monitored using electronic reporting and geopositional reporting and is reported on annually by Fisheries New Zealand.
- 224. In response to concerns regarding declining catch rates in the West Coast hoki fishery, hoki quota owners agreed not to catch⁴⁷ 20,000 tonnes (plus any carry forward⁴⁸ of western stock Annual Catch Entitlement (ACE)) for the 2018/19 fishing year. This resulted in approximately 30,000 tonnes of ACE being transferred to a holding account that was not available for balancing against catch in the 2018/19 fishing year, thereby leaving ACE of 130,000 tonnes in 2018/19 fishing year for HOK 1. There was a reduction in the HOK 1 TACC in the 2019/20 fishing year from 150,000 to 115,000 tonnes and no shelving of HOK 1 ACE occurred for this fishing year.
- 225. For the current fishing year quota owners have shelved 20,000 tonnes of HOK 1 ACE 10,000 tonnes from each of the eastern and western stocks. This means that the available ACE for HOK 1 is effectively 95,000 tonnes for the 2020/21 fishing year (West: 45,000, East: 55,000).

1.1.3 Hoki Operational Procedures

226. Hoki Operational Procedures are administered by the Deepwater Group Ltd (DWG), which represents 93% of HOK 1 quota owners. These procedures include Hoki Management Areas (HMAs) and Hoki Seasonal Spawn Areas (HSSAs).

Hoki Management Areas

227. HMAs are intended to reduce fishing pressure on fish smaller than 55 cm within four areas where there is relatively high abundance of small hoki. HMAs are in place for the Narrows Basin in the Cook Strait, Canterbury Banks, Mernoo Bank and Puysegur (Figure 1). Within HMAs, vessels larger than 28 m have agreed not to target hoki and Fisheries New Zealand monitors and reports on adherence to this annually.

Hoki Seasonal Spawn Areas

- 228. HSSAs were added to the Operational Procedures in 2018/19 to reduce fishing pressure on spawning fish and have applied to the 2019/20 and 2020/21 fishing years (Figure 2). They consist of short-term (week-long) closures to hoki targeting by all vessels in the main spawning areas:
 - West Coast of the South Island within 25 nautical miles of the coast from 18 to 24 July (Note: vessels larger than 46 metres are already permanently excluded from this area by regulation);
 - West Coast outside of 25 nautical miles from the coast, shallower than 800 metres, between Kahurangi Point in the north and the boundary between FMAs 5 and 7 in the south from 25 July to 31 July;
 - the entire Cook Strait fishery from 1 to 7 August
 - designated areas in the Pegasus Canyon from 1 to 7 September.

Fisheries New Zealand

⁴⁷ Agreement among quota holders to not catch ACE is commonly referred to as "shelving" ACE.

⁴⁸ "Fishers may carry forward 10% of HOK 1 uncaught ACE into the following fishing year, provided the TACC has not been reduced.

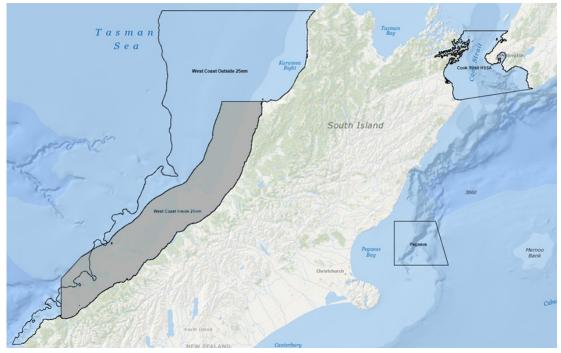


Figure 2: Hoki Seasonal Spawn Areas for hoki. The West coast inside the line has been shaded to help distinguish it from West coast outside 25 nm. The West coast inside the line has been shaded to help distinguish it from West coast outside 25 nm, the black line within the shaded area represents a section of the West coast outside 25nm boundary.

1.1.4 Biology

- 229. Hoki are widely distributed throughout New Zealand waters from depths of 10 m to over 900 m, with the greatest abundance between 200-600 m. The largest hoki are generally found deeper than 400 m whereas juveniles are more abundant in shallower water.
- 230. Hoki spawn from late June to mid-September, primarily on the West Coast of the South Island (Hokitika Canyon) and in the Cook Strait (Murdoch et al 1990). Spawning has also been found in the Puysegur area and in Pegasus Canyon. The main grounds for hoki aged 2–4 years are along the Chatham Rise, in depths of 200 to 600 m. The older fish disperse to deeper water and are widely distributed in both the Sub-Antarctic and Chatham Rise (Livingston et al 2002).
- 231. Hoki grow to a maximum size of 130 cm and maximum age of 20-25 years. Hoki are estimated to reach maturity between 3–5 years of age, however, there is some variation between areas and sex. The age of the commercial catch also varies among areas, however most fish caught are estimated to be between 3–12 years old.
- 232. Morphometric and ageing studies have found consistent differences between adult hoki taken from the two main dispersed areas (Chatham Rise and the Sub-Antarctic) indicating that there could be two sub-populations (stocks) of hoki (Livingston and Schofield 1996). No genetic differences between these stocks have been found to date but work is ongoing to complete further assessments to confirm whether any genetic differences are present.
- 233. Hoki primarily predate on lantern fishes, other midwater fishes, squid and decapods (Stevens et al 2011). Larger hoki (over 80 cm) consume proportionately more fish and squid than smaller hoki (Connell et al 2010). Hoki are important prey to several species, particularly hake but also stargazers, smooth skates, several deep-water shark species and ling (Dunn et al 2009).

1.2 Status of the stock

234. Hoki in HOK 1 are managed to a target range of 35-50% of mature unfished biomass. This target range is from the hoki harvest strategy within the hoki fisheries plan, which is consistent

with the harvest strategy standard (HSS). This target range is also above the deterministic biomass level to produce MSY which was calculated as 27% B_0 in 2019. The stock assessment for hoki was subject to extensive revision between 2019 and 2021. This followed a review of input data and model assumptions completed between 2018 and 2020 (Dunn & Langley 2018; Langley 2020). The 2021 assessment model differs from the previous assessment substantially, in having different assumptions for natural mortality, maturation, and migration, and spatially restructured fisheries-dependent data with revised selectivity assumptions.

1.2.1 Western stock

- 235. For the western stock, the 2021 stock assessment estimated stock status to be at 35% B_0 (Figure 3). The 2021 Fisheries Assessment Plenary (The Plenary) agreed the stock is 'about as likely as not' (40–60% probability) to be at or above the lower end of the target range.
- 236. Five-year projections at the current catch limit predict this stock will fall below the management target range in the next year. With a reduction of 5,000 tonnes for the western stock catch limit the stock is predicted to remain below the target range for two years and then return to the lower bound of this range (35% B_0) in three years. With a reduction of 10,000 tonnes the stock is predicted to dip below the lower bound for a single year, be at the lower bound for a year and then be within the target range in three years (Figure 3).

1.2.2 Eastern stock

- 237. For the eastern stock, the 2021 stock assessment estimated stock status to be at 48% B_0 (Figure 3). The Plenary agreed the stock is 'very likely' (>90% probability) to be at or above the lower end of the management target range (35% B_0) and that it is 'about as likely as not' (40–60% probability) to be above the upper end of the management target range (50% B_0).
- 238. Five-year projections at the current catch limit predict that the biomass will be 46% B_0 (median value) in 2026. With a 5,000 tonne increase to the eastern stock catch limit the biomass is predicted to be 44% B_0 in 2026, which is still within the upper half of the management target range.

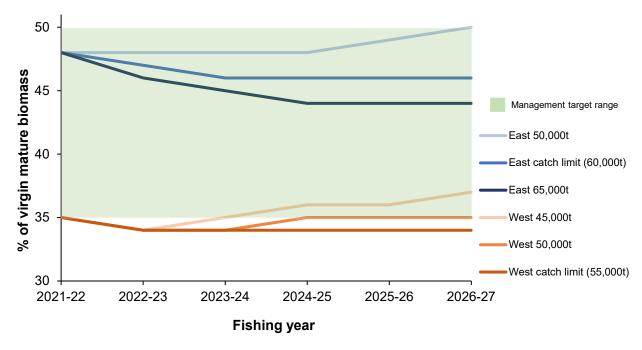


Figure 3: The Eastern and Western stock five-year biomass projections under different catch limit scenarios in relation to the management target range with recruitment modelled using recent (2008-17) year class strength.

2 Catch information and current settings within the TAC

2.1 Commercial

- 239. The largest fishery for HOK 1 is the West Coast South Island spawning fishery, which operates seasonally from May-September. In 2019/20 43,900 tonnes of hoki was caught in the West Coast South Island fishery, which represents 41% of overall HOK 1 catch and 84% of the total western stock catch. The Sub-Antarctic is the second most important western stock fishery (8,037 tonnes caught in 2019/20).
- 240. Catch from the eastern stock is primarily taken on the Chatham Rise and on the East Coast of the South Island with 32,900 tonnes taken in 2019/20. This represents 31% of HOK 1 catch and 59% of the total eastern stock catch. A smaller amount of hoki is taken in spawning fisheries in the Cook Strait and off the East Coast of the South Island.
- 241. The TACC has been under-caught by more than 10,000 tonnes in HOK 1 from 2015/16-2018/19 (Figure 4). This is the result of non-regulated 'shelving' arrangements implemented by the fishing industry and in part reflects operational decisions to not take the full catch limit and divert effort to other fisheries in the West Coast South Island spawning fishery (e.g. squid). These decisions to divert effort are usually based on either the hoki catch rates being low or the value of catch in other fisheries being high during that period.

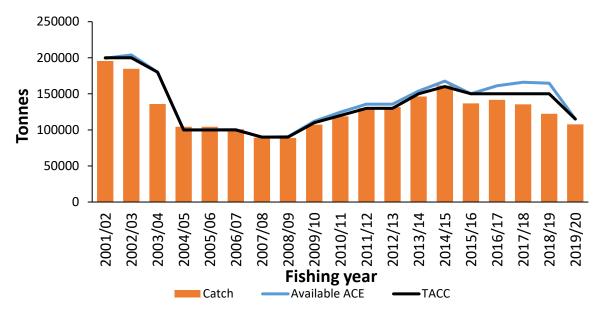


Figure 4: The HOK 1 catch, TACC and available ACE 2001/02 - 2019/20.

2.2 Customary Māori

242. The current annual customary allowance for HOK 1 is set at 20 tonnes. Over the past 15 fishing years the total reported customary catch of hoki in HOK 1 has been 20 kg, which was caught between January and March 2008. Therefore, using the best available information the current annual customary allowance adequately covers customary catch and so it does not need to be amended.

2.3 Recreational

243. The current annual recreational allowance for HOK 1 is set at 20 tonnes. There is no information to suggest there is anything more than a nominal recreational catch of hoki in HOK 1. The National Panel Survey of Marine Recreational Fishers (NPS) in 2017/18 did not list hoki as a separate species for reporting catch data, most likely due to the low level of recreational

catch. Therefore, using the best available information the current annual recreational allowance adequately covers recreational catch and so it does not need to be amended.

2.4 All other mortality caused by fishing

244. There is an allocation of 1,150 tonnes for all other mortality caused by fishing, equivalent to 10% of the TACC. It is likely that large catches within this fishery have resulted in burst bags, loss of catch, and some mortality.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 245. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 246. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
- 247. The list of species being considered for proposed adjustments to the TAC, which included HOK 1, was provided to the following lwi Fisheries Forums: Te Hiku o te Ika, Mid North, Ngā Hapū o Te Uru o Tainui, Te Tai Hauāuru and Te Waka a Māui me Ōna Toka.
- 248. In May 2021, a two-page document with the proposal to amend the non-regulatory catch limits and the TAC/TACC for HOK 1 was provided to Te Hiku o te Ika and Ngā Hapū o Te Uru o Tainui and input sought. Feedback specific to HOK 1 was received, with Ngā Hapū o Te Uru o Tainui supporting a decrease in catch limit and confirming that hoki are not pursued customarily as they are located too far offshore and too deep, and Te Hiku o te Ika supporting Option 5.
- 249. At a Te Waka a Māui me Ōna Toka hui in July HOK 1 was discussed. The main points raised were the difference in East/West stocks and whether the distribution was changing. There was also a request for more information on previous declines in hoki catch and how management has changed as a response.

3.2 Kaitiakitanga

- 250. Hoki is identified as a taonga species by the following lwi fisheries forums: Chatham Islands Fisheries Forum @ 44°, Mai i Nga Kuri a Wharei ki Tihirau, Te Tai Hauāuru, Te Hiku o Te Ika and Te Waka a Māui me Ōna Toka.
- 251. The HOK 1 fish stock (Figure 1) includes the rohe of: Te Hiku o Te Ika (far North), Mid-North, Ngā Hapū o Te Uru o Tainui (Waikato), Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty), Ngāti Porou (East Cape), Mai Paritu tae atu ki Turakirae (East coast Paritu to Turakirae), Te Tai Hauāuru (Taranaki/ Whanganui/ Manawatu/ Horowhenua/ Kapiti), Rangitaane (North Island), Te Tau Ihu (North of the South Island), Te Waka a Māui me Ōna Toka (South Island and Stewart Island), Hauraki and Chatham Islands.
- 252. Fisheries New Zealand considers the proposals for HOK 1 to be generally consistent with the objectives of these lwi 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 fish stocks are healthy and support the social, cultural and economic prosperity of iwi and hapū.
- 253. There are no customary fisheries management tools such as mātaitai, taiāpure or section 186A or 186B temporary closures relevant to the proposals in this this document.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 254. The key environmental interactions with the HOK 1 fishery, which must be taken into account when considering sustainability measures, concern associated and dependent species (including marine mammals, seabirds, fish and invertebrate bycatch), biological diversity (including benthic impacts) and habitats of particular significance for fisheries management.
- 255. None of the options proposed will result in increases to the HOK 1 TAC or TACC and some include decreases. Therefore, the frequency or scale of environmental interactions is predicted to either decrease or remain the same in line with fishing effort in HOK 1. However, two of the options do include an increase to the eastern stock catch limit, so there may be an increase in fishing effort in this area.
- 256. Observers are only present on some fishing trips. The average observer coverage for hoki targeted tows over the 2014/15 2018/19 fishing years was 28%.

4.1.1 Marine mammals

- 257. Fur seals are sometimes caught in hoki target tows, with the majority of captures occurring in the West Coast South Island and Cook Strait fisheries. During the 2014/15 2018/19 fishing years an annual average of 35 fur seals were reported by observers as caught by hoki targeted tows.
- 258. To minimise the risk of marine mammal captures, industry has developed Marine Mammal Operational Procedures (MMOP) for all trawlers greater than 28 m in length. The MMOP describes a range of procedures that a vessel and crew should follow to reduce the risk of marine mammal captures. Fisheries New Zealand monitors and audits vessel performance against the MMOP via the Observer Programme.

4.1.2 Seabirds

- 259. Seabirds are caught during hoki targeted trawling and during the 2014/15 2018/19 fishing years an average of 82 birds were reported by observers as caught by hoki targeted tows annually.
- 260. The 2019 seabird risk assessment (Richard et al 2019) estimates that hoki fishing poses more than 10% of risk from commercial fisheries for three species identified as being in a high or very high risk category; Salvin's albatross (hoki fishing contributes 16% of risk), Southern Buller's albatross (hoki fishing contributes 31% of risk), and Westland petrel (hoki fishing contributes 11% of risk).
- 261. From the statistically modelled seabird capture data from 2013/14 2017/18 fishing years, 60% of estimated Salvin's albatross captures from hoki targeted tows occurred in the eastern stock area (where an increase in the catch limit is being considered). However, observed captures of Westland petrel and Southern Buller's albatross in the eastern stock area during this five-year time period were rare (one for each species).
- 262. In 2020 the National Plan of Action for Seabirds (NPOA Seabirds 2020), which sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds, was approved. The vision of this NPOA is that New Zealanders work towards zero fishing-related seabird mortalities.
- 263. There are regulations in place that require seabird mitigation to be used on trawl vessels. In addition, industry have developed non-regulatory vessel-specific plans that set out practices that vessels should implement to reduce the risk of seabird interactions. Examples of these mitigation measures include bird bafflers, tori lines, managing fish waste discharge and effective clearing of nets between tows. Fisheries New Zealand audits performance against these seabird mitigation measures.

4.1.3 Fish bycatch

- 264. For the statistically modelled bycatch of the combined trawl effort for hoki, hake and ling based on observer reported data from 2002/03-2016/17, these three target species accounted for 91% of catch (Anderson et al 2019). The remaining catch was primarily silver warehou (3.9%), javelinfish (1.9%), rattails (1.6%) and spiny dogfish (1.4%).
- 265. The majority of the species most commonly caught as bycatch during hoki targeted tows, as outlined above, are in the QMS. There is limited data for some of these species in the hoki eastern stock area where an increase in the catch limit is being considered, however there are currently no known sustainability concerns for these species.

4.1.4 Benthic impacts

- 266. Trawling for hoki can interact with the seabed and the associated benthic environment. The nature and extent of those impacts depends on a range of factors such as seafloor type (e.g., mud/sand/rock), gear type, types of organisms encountered and oceanographic characteristics. Contact of the trawl gear with the seabed can lead to bycatch of benthic organisms including corals, sponges and sea anemones. Some benthic species which are damaged or suffer mortality due to bottom trawl fishing are long lived, legally protected under the Wildlife Act 1953, or are defined as 'threatened' or 'at risk'. Where benthic species do survive impacts from bottom trawling, they may suffer delayed growth or reproductive capacity while recovering from injury.
- 267. The impact of hoki target tows on the benthic environment (the trawl footprint) is mitigated by the spatial concentration of the fishery where vessels typically trawl along previously trawled tow lines. The trawl footprint for all hoki target effort is mapped and monitored annually. In 2018/19, 0.6% of the New Zealand Exclusive Economic Zone (EEZ) and 1.8% of the fishable area (shallower than 1,600 metres and open to bottom trawling) of the EEZ was contacted by trawl fishing for hoki (Baird and Mules 2021). This annual footprint for hoki is lower than the previous five fishing years (Figure 5).
- 268. Fisheries New Zealand monitors the HOK 1 trawl footprint annually and the cumulative fishable area contacted by trawl fishing for hoki between 1989/90-2018/19 was 4.1% of the NZ EEZ.

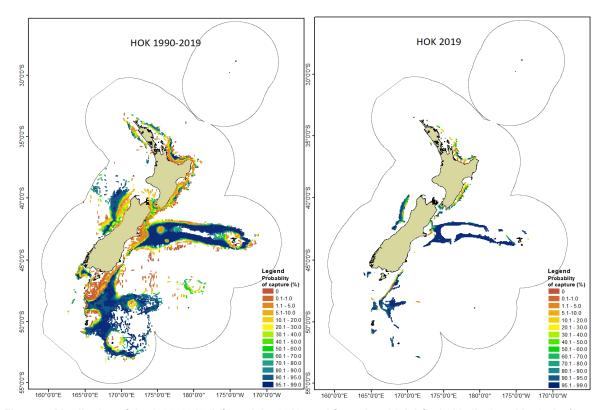


Figure 5: Distribution of the 1990–2019 (left) and the 2019 trawl footprints (right) for hoki, displayed by 25-km² contacted cell, relative to the probability of capture for that species.

269. Management measures to address the effects of trawl activity have focused on avoiding benthic impacts. 30% of New Zealand's fisheries waters are closed to trawling. These closures are primarily Seamount Closures and Benthic Protection Areas (BPAs) which were implemented to avoid adverse effects of fishing on the benthic environment (Figure 6). HOK 1 contains all of the seamount closures and BPAs excluding the BPA surrounding the Kermadec region.

4.1.5 Habitats of particular significance for fisheries management

270. There are two potential types of habitats of particular significance in HOK 1, these are spawning grounds and areas with high densities of small hoki. Spawning grounds include the West Coast of the South Island (Hokitika Canyon), the Cook Strait, the Puysegur area and in Pegasus Canyon. Areas with high densities of small hoki include the Cook Strait (narrows basin), Canterbury Banks, Mernoo Bank and Puysegur (Table 3).

Table 3: Summary of information on habitats of particular significance for HOK 1.

Fish Stock	HOK 1
Habitat	Hokitika Canyon, the Cook Strait, the Puysegur area and Pegasus Canyon
Attributes of habitat	 Key spawning areas (winter months: June-September). Potentially due to the presence of canyons and trenches within these areas, however this is speculative at present.
Reasons for particular significance	Spawning is of critical importance in supporting the productivity of fish species. These are the main ensuring leastings identified in NZ veters to date.
Habitat	 These are the main spawning locations identified in NZ waters to date. Cook Strait (Narrows basin), Canterbury banks, Mernoo bank and Puysegur bank
Attributes of habitat	There are thought to be higher densities of small hoki in these areas.
Reasons for particular significance	 Survival of juveniles to an age where they can reproduce is essential for the productivity of a fish species. These are the main areas identified with high densities of small hoki in NZ
	EEZ to date.
Risks/Threats	 Trawl fishing can contact the seafloor impacting benthic habitats. It is currently unknown what conditions make these habitats favourable for spawning or for small hoki, so it is also unknown to what extent this fishing activity impacts these habitats. Oceanographic features could be impacted by cable laying but there is an existing cable protection zone and laying of new cables is unlikely. Oceanographic features and current/circulation patterns could be impacted by future development of tidal power (e.g. Sustainable Seas project - tidal farm potential in the Cook Strait). Long term - current/ circulation patterns could be impacted by climate change (ocean warming, changes to wind patterns). Research trawl data indicate small hoki (<30 cm) are absent at bottom temperatures above about 15°C and occur most frequently at 13–14°C, whilst adults prefer cooler bottom water temperatures of about 6–10°C. These could be environmental conditions which define spawning grounds and areas with high densities of small hoki, highlighting how important monitoring of climate change driven temperature changes could be.
Current marine protection in place	The current regulatory marine protection in HOK 1 which could be relevant to potential spawning locations and areas with high densities of small hoki include all: benthic protection areas and marine reserves (excluding those surrounding the Kermadec islands), marine parks, seamount closures and cable protection zones (Figure 6).

271. Whilst none of the options proposed have increases in the HOK 1 TAC some of the options do contain an increase in in Eastern stock catch limit. The Cook Strait (Narrows basin), Canterbury banks, Mernoo bank and Pegasus canyon identified in the habitats of particular significance for fisheries management table are within the Eastern stock area. Therefore, an increase in the fishing effort in the Eastern stock area from an increased catch limit could result in greater benthic impacts to these habitats of particular significance for fisheries management.

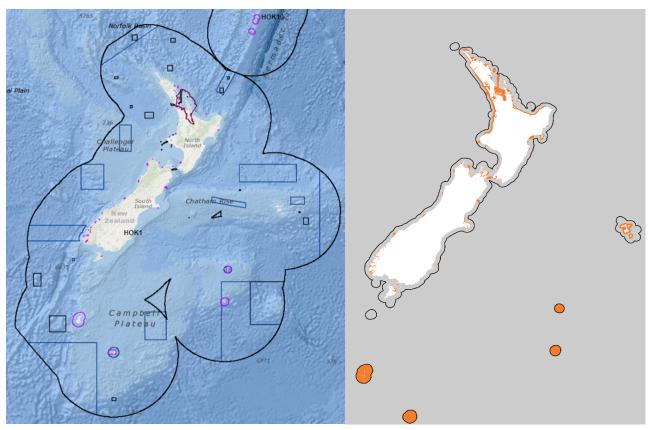


Figure 6: Non hoki-specific marine environmental protection in place within HOK 1: the left panel shows benthic protection areas (blue), marine reserves (pink), marine parks (purple) and cable protection zones and seamount closures (black), the right panel shows areas closed to trawling (orange) within the territorial sea.

4.2 Sustainability measures (section 11 of the Act)

- 272. 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 plans.
- 273. For all of the options outlined in this document, excluding the *status quo* (Option 1), if catch was taken at the limits set for the stocks for 5 years both the eastern and the western stocks would be projected to be at or within the target range of 35-50% *B*₀ whilst accounting for natural variability, with a minimum probability of 50%.
- 274. The HOK 1 target trawl fishery has a relatively low level of bycatch of non-QMS species, with >95% of species caught from statistically modelled combined trawl effort for hoki, hake and ling based on observer reported data from 2002/03-2016/17, being QMS species.

4.2.1 National Fisheries Plan for Deepwater and Middle-depths Fisheries

275. Hoki in HOK 1 is managed as a Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depths Fisheries. A species-specific chapter of the National Deepwater Plan for

- hoki (Part 1B) was completed in 2010.
- 276. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to the proposals for HOK 1 being:
 - **Management Objective 1:** Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the needs of future generations.
 - Management Objective 4: Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.

4.2.2 Regional Plans

- 277. All regional councils have a coastline within HOK 1. Coastal plans for these regions aim to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems and habitats.
- 278. Fisheries New Zealand considers that the proposed management options presented are in keeping with the objectives of the relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

5 Submissions

279. Eighteen submissions were received in relation to the HOK 1 proposal. There were 10 submissions received in support of Option 1 (*status quo*), these were submitted by a combination of fishing companies, iwi representative groups, quota owners, and quota owner representatives. There were five submissions received in support of Option 5 (*West* ✔ 10,000), these were submitted by a combination of environmental non-government organisations (eNGOs), animal welfare advocacy organisations and representative organisations of recreational fishers. There were also three other submissions/responses. Two were from members of the public opposing any increases and supporting any decreases to the TAC for all species, and one supported managing stocks to higher biomass levels generally.

Table 4: Written submissions and responses received for HOK 1 (in alphabetical order).

Submitter		Option Support							
Gustilittei		2	3	4	5	Other			
A. Flavell-Johnson						✓	Opposes any increases and supports any decreases to TAC for all species		
B. Price						✓	Supports slowly increasing biomass back to higher levels (80% B_0)		
Deepwater Group (DWG), Endorsed by: Fisheries Inshore New Zealand (FINZ)	✓								
Environment and Conservation Organisations of New Zealand (ECO)					~				
Iwi Collective Partnership (ICP)	✓								
K. Mason						✓	Opposes any increases and supports any decreases to TAC for all species		
New Zealand Recreational Fishing Council (NZRFC)					~				
Maruehi Fisheries Ltd	✓								
Ngāti Mutunga o Wharekauri Asset Holding Company Ltd	✓								

Ngātiwai Trust Board	✓			
Our Seas Our Future			✓	
Royal Forest & Bird Protection Society (Forest & Bird)			✓	Also support for phasing out of bottom trawling
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)			✓	
Sealord Ltd	✓			
Sanford Ltd	✓			
Tama Asset Holding Company Ltd	✓			
Taranaki lwi Fisheries Ltd	✓			
Te Ohu Kaimoana, Endorsed by: Te Kupenga O Maniapoto	~			

6 Options and analysis

280. No changes are made to the customary or recreational allowances under any of the options proposed.

6.1 Option 1 - Status quo

TAC: 115,000 t Western stock limit: 55,000 Eastern stock limit 60,000	Customary: 20 t	Recreational: 20 t	Other mortality: 1,150 t
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- 281. No changes are made to the TAC, TACC, other mortality caused by fishing, or the non-regulatory eastern or western stock catch limits.
- 282. For five-year projections under this option, the western stock is projected to be at $34\% B_0$, with a 45% probability of being within or above the management target range and the eastern stock is projected to be at $46\% B_0$, with a 78% probability of being within or above the management target range.
- 283. This option was largely supported by Te Ohu Kaimoana, fishing companies and quota owners. A common theme of these submissions is that there are no genetic results to confirm the presence of eastern and western stocks and if the 2021 stock assessment model is run assuming a single stock then the biomass is within the target range (38% *B*₀). A 2020 industry funded project using genomic techniques to test the current stock hypothesis did not find genetic differences between the eastern and western stocks suggesting there is a single genetically panmictic⁴⁹ population of hoki in NZ waters. There was also a large amount of support, including from Te Ohu Kaimoana, for the continuation of managing this stock using industry led shelving of ACE. This is proposed as being a bottom up approach to fisheries management and allowing for the fishing industry to show good stewardship of marine resources.
- 284. Morphometric and ageing studies have found consistent differences between adult hoki taken from the two main dispersed areas. The eastern and western stocks also contain spawning grounds (Cook Strait and West Coast South Island respectively) and it was samples taken from these locations that showed the biggest differences found in this study. Based on the geographically distinct annual spawning events for hoki, Fisheries New Zealand will continue to manage HOK 1 from within agreed separate sub areas. Multiple stock assessment models were reviewed by the Deepwater working group, including both single stock and two stock

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⁴⁹ Panmictic populations are characterised by random mating within a breeding population i.e. there are no barriers to mating between the Eastern and Western stocks.

models, and the working group agreed that the two stock model used for the 2021 hoki stock assessment best represented the available information. Therefore, unless the results from the industry funded genetic work can be confirmed through further analyses, Fisheries New Zealand is confident in the approach to continue to conduct stock assessments using agreed eastern and western stocks. Consequently, any sustainability concerns within these separate stocks should be addressed; this represents a cautious approach to avoid localised stock depletions.

- 285. This option would include no potential economic impacts to the fishing industry resulting from reductions to the TACC and it provides the opportunity for the fishing industry to display finer scale, bottom-up management including good stewardship through voluntary shelving to manage HOK 1.
- 286. A risk associated with this option is that if catch was taken at the limits outlined, the western stock would be projected to fall below the management target range next year and remain below it for the next five years. Under this option, some potential utilisation may be foregone, as the Eastern stock is near the top end of the target range.

6.2 Option 2 - Modified status quo

TACC: 115,000 t

TAC: 116, 190 t

Western stock limit: 50,000 (→ 5,000)

Eastern stock limit: 65,000 (↑ 5,000)

Eastern stock limit: 65,000 (↑ 5,000)

- 287. No changes are made to the TAC, TACC or other mortality caused by fishing, however there is a non-regulatory increase in the Eastern stock catch limit of 5,000 tonnes and a decrease in the western stock catch limit of 5,000 tonnes.
- 288. For five-year projections under this option, the western stock is projected to be at 35% B_0 , with a 50% probability of being within or above the management target range and the eastern stock is projected to be at 44% B_0 , with a 74% probability of being within or above the management target range.
- 289. This option was not mentioned in any submission or response.
- 290. This option includes no potential economic impacts to the fishing industry resulting from reductions to the TACC and provides for further utilisation the Eastern stock that is near the top end of the target range. In addition, under the catch limits outlined for this option the western stock is projected to be at, but not below, the lower threshold of the target range in five years.
- 291. A key risk associated with this option is that while the western stock is projected to be at the lower threshold of the target range within five years, it is not projected to increase above that threshold during that period. Given that stock assessment models contain a degree of uncertainty managing a stock to only be at the lower threshold of the target range in five years could result in the stock being below this target range in five years (50% probability).

6.3 Option 3 - West **✓** 5,000

TAC: 111, 140 t
(▶ 5,050)

TACC: 110,000 t (▶ 5,000)

Western stock limit: 50,000 (▶ 5,000)

Eastern stock limit 60,000

Customary: 20 t Recreational: 20 t Other mortality: 1,100 t (▶ 50)

- 292. Under Option 3 the TAC decreases by 5,050 tonnes, the TACC decreases by 5,000 tonnes, the other mortality caused by fishing decreases by 50 tonnes, and there is a non-regulatory decrease in the western stock catch limit of 5,000 tonnes.
- 293. For five-year projections under this option, the western stock is projected to be at 35% B₀, with a 52% probability of being within or above the management target range and the eastern stock

is projected to be at 46% B₀, with a 78% probability of being within or above the management target range.

- 294. This option was not mentioned in any submission or response.
- 295. Under the catch limits outlined for this option the western stock is projected to be at, but not below, the lower threshold of the target range in five years.
- 296. A key risk associated with this option is that while the western stock is projected to be at the lower threshold of the target range within five years it is not projected to increase above that threshold during that period. Given that stock assessment models contain a degree of uncertainty managing a stock to only be at the lower threshold of the target range in five years could result in the stock being below this target range in five years (50% probability). Under this option, some potential utilisation may be foregone, as the Eastern stock is near the top end of the target range. This option also includes a reduction to the HOK 1 TACC so there will be a potential economic cost to the industry (section 6.7).
- **6.4 Option 4** West ✓ 10,000, East ↑ 5,000 (Fisheries New Zealand's preferred option)

TAC: 111, 140 t (♣ 5,050) Western stock limit: 45,000 (♣ 10,000) Eastern stock limit 65,000 (♠ 5,000) Customary: 20 t Recreational: 20 t Other mortality: 1,100 t (♣ 50)

- 297. The TAC decreases by 5,050 tonnes, the TACC decreases by 5,000 tonnes, the other mortality caused by fishing decreases by 50 tonnes, also there is a non-regulatory increase in the Eastern stock catch limit of 5,000 tonnes and a decrease in the western stock catch limit of 10,000 tonnes.
- 298. For five-year projections under this option, the western stock is projected to be at 37% B₀, with a 56% probability of being within or above the management target range and the eastern stock is projected to be at 43% B₀, with a 73% probability of being within or above the management target range.
- 299. This option was not mentioned in any submission or response.
- 300. The key benefit of this option is that it addresses the sustainability concern in the western stock, as under the catch limits outlined in this option the western stock is projected to be within the target range in five years. This option also buffers against the economic impact to the fishing industry with a small increase in the utilisation of the Eastern stock, which is at the upper end of the target range.
- 301. Whilst there is this buffer by increasing the utilisation of the Eastern stock this option does still include a reduction to the HOK 1 TACC so there will be a potential economic cost to the industry (see section 6.7 below for more detail on this).

6.5 Option 5 - West **✓** 10,000

- 302. The TAC decreases by 10,100 tonnes, the TACC decreases by 10,000 tonnes, and the other mortality caused by fishing allowance decreases by 100 tonnes. There is also a non-regulatory decrease in the western stock catch limit of 10,000 tonnes.
- 303. For five-year projections under this option, the western stock is projected to be at $37\% B_0$, with a 57% probability of being within or above the management target range and the eastern stock is projected to be at $46\% B_0$, with a 77% probability of being within or above the management

target range.

- 304. This option was largely supported by environmental organisations, animal welfare organisations, iwi fisheries forums and representatives of recreational fishers. There were also two submissions by members of the public and one response by an iwi fisheries forum, that did not explicitly state support for a proposed option for HOK 1 but stated support for a decrease in the TAC. A common theme of these submissions and responses was concern over the western stock being projected to fall below the target range in the next fishing year if catch is taken at the current limits and the environmental impact of the HOK 1 fishery on the benthic environment, seabirds, sharks and fur seals.
- 305. The key benefit of this option is that it addresses the sustainability concern in the western stock, as under the catch limits outlined in this option the western stock is projected to be within the target range in five years. This option also has the largest decrease in the TAC therefore it represents the largest reduction in any environmental impacts caused by the fishery.
- 306. This option does include the largest reduction to the HOK 1 TACC so it will result in the largest economic cost to the fishing industry (section 6.7).

6.6 Other options proposed by iwi fisheries forums and submitters

307. Some members of the public opposed any increases and supported any decreases to the TAC for all species (A. Flavell-Johnson and K. Mason). One submitter also supported managing stocks generally to higher biomass levels than under the proposed options. An iwi fisheries forum (Ngā Hapū o Te Uru o Tainui) also supported a decrease in the catch limit for HOK 1 but did not specify support for a particular option.

6.7 Economic considerations

- 308. The vast majority of annual hoki catch is exported frozen in various filleted product states or as headed and gutted. These products are primarily exported to China, Australia, Japan and certain European countries.
- 309. Options 1 and 2 would result in no overall change to the HOK 1 TAC or TACC.
- 310. Options 3 and 4 reduce the HOK 1 TAC by 5,050 tonnes. This would result in a potential reduction of \$11.8 million in export revenue from the 5,000 tonne reduction in the HOK 1 TACC⁵⁰. However, the catch in the 2019/20 fishing year was below the TACC proposed under these options and the 2020/21 catch is also expected be below this proposed TACC due to shelving, so these options should not result in any negative economic impact compared to the previous fishing year.
- 311. Option 5 reduces the HOK 1 TAC by 10,100 tonnes. This option would result in a potential reduction of \$23.5 million in export revenue from the 10,000 tonne reduction in the HOK 1 TACC. The catch in the 2019/20 fishing year was approximately 3,000 tonnes more than the TACC proposed under this option, so the potential reduction in export revenue compared to the 2019/20 fishing year is estimated to be \$7.1 million. However, the 2020/21 catch is expected be below this proposed TACC due to shelving, so this option should not result in an economic impact compared to the previous fishing year.

6.8 Other matters raised

312. Forest and Bird proposed support for the phasing out of bottom trawling, however this is outside the scope of this sustainability round. This input has been passed on to other workstreams within the Ministry that are specifically focused on bottom trawling.

7 Deemed values

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⁵⁰ This analysis is based on export statistics from the 2019 calendar year and assumes there will be no change in the current demand or premium for New Zealand hoki.

- 313. The current deemed value rate for HOK 1 (\$0.90 per kg) is above the average price paid by fishers for one kilogram of HOK 1 ACE during the 2019/20 fishing year (\$0.38 per kg).
- 314. Some of the options outlined above contain reductions in the TACC, with a maximum reduction of 8.6% (option 5). Changes in fishing behaviour caused by a reduction in the TACC of this size are likely to be small and so unlikely to greatly impact the ACE market, therefore no changes are proposed to the deemed value rates at this time (Table 5). Changes in fishing behaviour caused by a reduction in the TACC of this size are likely to be small given the relatively small reduction in the TAC/TACC and so unlikely to greatly impact the ACE market. Therefore no changes are proposed to the deemed value rates at this time (Table 5). The 2019/20 port price index of HOK 1 was \$0.63 per kg.

Table 5: Deemed value rates for HOK 1.

Fish stock	Interim Date (¢/kg)	Annual Differential Rates (\$/kg) for	excess catch (% of ACE)
FISH SLOCK	Interim Rate (\$/kg) —	100-102%	102%+
HOK 1	0.81	0.90	1.30

315. No submissions or responses included reference to the current deemed values for HOK 1.

8 Conclusions and recommendations

- 316. Fisheries New Zealand consulted on changes to the TAC, TACC, and non-regulatory catch split arrangement for the HOK 1 stock on the basis of the 2021 HOK 1 stock assessment that assumed two stocks (eastern and western). This stock assessment indicated that the western stock could fall below the target range in the next fishing year, but the eastern stock was near the upper end of the target range.
- 317. Of the 21 submissions and responses received (including those by iwi fisheries forums and submissions that endorsed the preferences of other submissions), 12 stated a preference for the status quo (Option 1) and six stated a preference for the largest decrease in TAC (Option 5). Three submissions did not explicitly state a preference for one of the options proposed for HOK 1, however they stated support for a decrease in the TAC.
- 318. Submissions supporting the status quo, primarily from fishing companies and quota owners, including iwi, broadly state that there are no genetic results to confirm the presence of the eastern and western stocks and if the 2021 stock assessment model is run assuming a single stock the biomass is within the target range. Within these submissions there is also a high level of support for industry-controlled shelving of ACE to manage the stock.
- 319. Submissions supporting the largest decrease in TAC, primarily from eNGOs and iwi fisheries forums broadly state a concern over the western stock being projected to fall below the target range in the next fishing year with a catch at the current catch limits and the environmental impact of the HOK 1 fishery on the benthic environment, sharks, seabirds and fur seals.
- 320. Based on the geographically distinct annual spawning events for hoki and that morphometric and ageing studies have found consistent differences between adult hoki taken from the two main dispersed areas, Fisheries New Zealand supports continuation of stock assessment models and catch management from within agreed eastern and western sub areas of HOK 1. This is a conservative approach as the lack of a genetic difference found between the Eastern and western stocks could mean that there is not a difference or that the study was unable to find it. Work is ongoing to help to determine whether there are any differences between the two stocks including further genetic assessments and considering alternative analyses, such as otolith microchemistry.
- 321. Whilst there was no specific support for option 4 in the submissions or responses, this is Fisheries New Zealand's preferred option. This option represents a conservative approach to the uncertainty surrounding the HOK 1 stock structure by addressing the sustainability concern in the western stock whilst buffering against the economic impact to the fishing industry with a small increase in the utilisation of the Eastern stock, which is at the upper end of the target range. Option 4 also provides a balance between the two groups of opposing submissions.

9 Decision for HOK 1

Option 1 - Status quo

Agree to set the HOK 1 TAC at 116,190 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 20 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 1,150 tonnes:
- iv. Retain the HOK 1 TACC at 115,000 tonnes, with the western stock limit at 55,000 tonnes and the eastern stock limit at 60,000 tonnes.

Agreed / Agreed as Amended / Not Agreed

AN

<u>AND</u>

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 115,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Western stock catch limit of 55,000 tonnes; and
- b) Eastern stock catch limit of 60,000 tonnes.

Noted

OR

Option 2 - Modified status quo

Agree to set the HOK 1 TAC at 116,190 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 20 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 1,150 tonnes;
- iv. Retain the HOK 1 TACC at 115,000 tonnes, with the western stock limit at 50,000 tonnes and the eastern stock limit at 65,000 tonnes.

Agreed / Agreed as Amended / Not Agreed



AND

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 115,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Western stock catch limit of 50,000 tonnes; and
- b) Eastern stock catch limit of 65,000 tonnes.

Noted

OR

Option 3 – West **↓** 5,000

Agree to set the HOK 1 TAC at 111,140 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 20 tonnes;
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 1,150 to 1,100 tonnes;
- iv. Reduce the HOK 1 TACC from 115,000 to 110,000, with the western stock limit at 50,000 tonnes and the eastern stock limit at 60,000 tonnes.

Agreed / Agreed as Amended / Not Agreed



<u>AND</u>

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 110,000 tonnes and will monitor to ensure the arrangement is adhered to:

a) Western stock catch limit of 50,000 tonnes; and

b) Eastern stock catch limit of 60,000 tonnes.

Noted

<u>OR</u>

Option 4 – West

10,000, East ↑ 5,000 (Fisheries New Zealand's preferred option)

Agree to set the HOK 1 TAC at 111,140 tonnes and within the TAC:

Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes;

Retain the allowance for recreational fishing interests at 20 tonnes; ii.

- Reduce the allowance for all other sources of mortality to the stock caused by fishing from iii. 1.150 to 1,100 tonnes;
- Reduce the HOK 1 TACC from 115,000 to 110,000, with the western stock limit at 45,000 iv. tonnes and the eastern stock limit at 65,000 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 110,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Western stock catch limit of 45,000 tonnes; and
- b) Eastern stock catch limit of 65,000 tonnes.

Noted

OR

Option 5 – West **↓** 10,000

Agree to set the HOK 1 TAC at 106,090 tonnes and within the TAC:

Retain the allowance for Māori customary non-commercial fishing interests at 20 tonnes; į.

Retain the allowance for recreational fishing interests at 20 tonnes;

- ii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from iii. 1,150 to 1,050 tonnes:
- Reduce the HOK 1 TACC from 115,000 to 105,000, with the western stock limit at 45,000 iv. tonnes and the eastern stock limit at 60,000 tonnes.

Agreed / Agreed as Amended / Not Agreed



AND

Note Fisheries New Zealand expects that quota owners will implement the following catch split arrangements within the TACC of 105,000 tonnes and will monitor to ensure the arrangement is adhered to:

- a) Western stock catch limit of 45,000 tonnes; and
- b) Eastern stock catch limit of 60,000 tonnes.

Noted

Hon David Parker Minister for Oceans and Fisheries

10/9/2021

Genypterus blacodes, Hoka, Rari, Hokarari

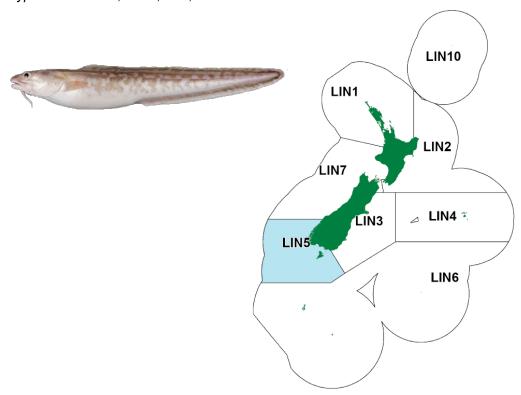


Figure 1: Quota Management Areas (QMAs) for ling, with LIN 5 highlighted in blue. A ling is pictured on the left.

Table 1: Summary of options proposed for LIN 5 from 1 October 2021. Figures are all in tonnes and the numbers within brackets represent the quantum of the increase. 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)	4,834	4,735		1	1	97
Option 2	5,314 ↑ (480 t)	5,208	(473 t)	1	1	104 ↑ (7 t)
Option 3	5,798 1 (964 t)	5,682	(947 t)	1	1	114 1 (17 t)
New option incorpora	ted following cons	ultation	No			
Total submissions red	ceived		19 ⁵¹			
Number of submission	ns received in sup	port of	Option 1		3	
each option			Option 2		10	
			Option 3		3	
			Other		4	

 $^{^{\}rm 51}$ One submission supported Option 2 and Option 3.

1 Why are we proposing a review?

- 322. Fisheries New Zealand is proposing that you review sustainability measures for the LIN 5 ling stock for the 1 October 2021 fishing year.
- 323. The best available information on the status of the stock from the 2021 LIN 5/6 stock assessment indicates that the biomass of ling in LIN 5 and LIN 6 is 'Virtually Certain' (>99% likelihood) to be above the management target of 40% virgin biomass (B_0).
- 324. LIN 5 biomass appears to have changed little in recent years and fishing pressure is estimated to have been low. Consequently, a utilisation opportunity is available.

1.1 About the stock

1.1.1 Fishery characteristics

- 325. Approximately 80% of ling in LIN 5 is taken by large trawl vessels (vessels >28 m) targeting ling or hoki at depths of 200 to 800 m, primarily by bottom trawl but with some mid-water trawl. Around 19% of catch is taken by bottom longline, with other methods (cod pots, Dahn line, and set net) accounting for less than 1% of catch.
- 326. Although ling are taken year-round, the majority of the catch is taken by trawl and bottom longline effort targeting ling during the spawning season. Spawning takes place from September to December each year on the Stewart Snares Shelf, Campbell Plateau and Puysegur Bank, with LIN 5 catches peaking in October.

1.1.2 Biology

- 327. Research supports the assumption that there are at least five biological stocks of ling in New Zealand waters. The sub-Antarctic stock (LIN 5/6) incorporates the Campbell Plateau, Puysegur Bank and Stewart-Snares Shelf.
- 328. Ling are thought to reach a maximum age of around 30 years. Females grow significantly faster than males and reach a maximum size of 120 cm. Little is known about the distribution of juvenile ling until they are about 40 cm total length, when they begin to appear in research trawl samples.
- 329. Ling have a diverse diet consisting of benthic crustaceans, scampi, demersal fish and scavenged offal from fishing vessels. Ling appear to be mainly bottom dwellers although at times can be caught well above the seafloor, for example when they are feeding on hoki during the hoki spawning season.

1.2 Status of the stock

- 330. The sub-Antarctic ling biological stock straddles LIN 5 and LIN 6 west of 176° E. There are regular stock assessments to ensure the LIN 5/6 fish stock is managed within the default reference points that are set out in the Harvest Strategy Standard (Target 40% B_0 , Soft Limit 20% B_0 , Hard Limit 10% B_0). The TAC is set based on the level that can produce the maximum sustainable yield. The TACC is then set as an allowance once the recreational, customary, and other sources of mortality allowances are set. The level of the stock is assessed with respect to the default reference points.
- 331. The main monitoring/assessment tool used to manage the LIN 5/6 biological fish stock is the 2021 LIN 5/6 stock assessment, and includes: consideration of catch history, biomass and catch-at-age data from Sub-Antarctic trawl surveys, longline catch per unit effort (CPUE) series,

- observer collected catch-at-age data from the longline and trawl fisheries, and estimates of biological parameters.
- 332. Section 13(2)(c) of the Act is considered relevant to setting a TAC for LIN 5, given its status the MSY can be reliably estimated, the Minister shall set a TAC that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. Current biomass (B_{2021}) for LIN 5/6 was estimated to be between 63% and 80% B_0 and is 'Virtually Certain' (>99%) to be above the management target of 40% B_0 .
- 333. The stock assessment estimates that the LIN 5/6 biomass appears to have changed little in recent years and fishing pressure is estimated to have been low.
- 334. The stock projections (Figure 2) indicate that stock status is unlikely to change significantly over the next five years at recent catch levels for LIN 5 and LIN 6 (only 40% of the LIN 6 TACC is caught on average annually).
- 335. Although stock biomass would decline if the full TACCs were taken for LIN 5 and LIN 6, it would not decline to a level that would cause a sustainability issue. The stock projections indicate that under either of the options proposed to increase the TACC for LIN 5 (10% or 20% increase) the biomass of the LIN 5/6 stock would not reduce below the management target level of 40% B_0 (Figure 2) in the next five years.

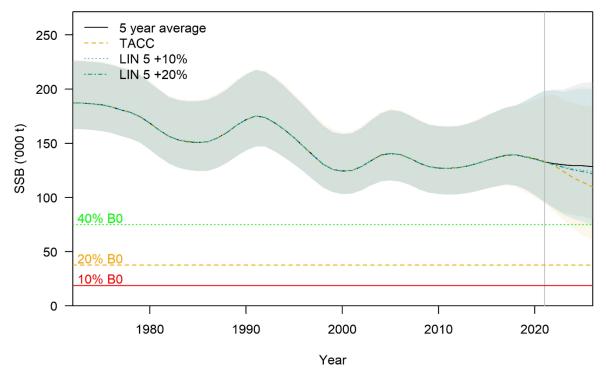


Figure 2: LIN 5/6 stock status trajectory over time of relative spawning biomass (with 95% credible intervals in grey) for the base case model. The dotted TACC line is a projection based on the LIN 5 and LIN 6 TACC being fully caught each year (currently only 40% of the LIN 6 TACC is caught each year).

336. The main source of uncertainty in the assessment model relates to the value at which the natural mortality rate (*M*) is fixed. A range of *M* value sensitivities were run, all of which placed the 2021 biomass above or within the management target with the worst case having a very low probability of being below the soft limit.

337. By only increasing the TAC for LIN 5, the risk of localised depletion is increased as more catch is taken from one part of the biological stock. However, the stock assessment includes information on specific location of catches and therefore would provide indications of any localised depletion in future.

2 Catch information and current settings within the TAC

2.1 Commercial

- 338. Annual landings of ling from LIN 5 are usually close to, and occasionally exceed the TACC (Figure 3).
- 339. Around 70% of ling catch in LIN 5 is targeted by trawl and bottom longline with the remainder taken as bycatch during trawl fishing effort targeting species such as hoki, hake, squid, and silver warehou.

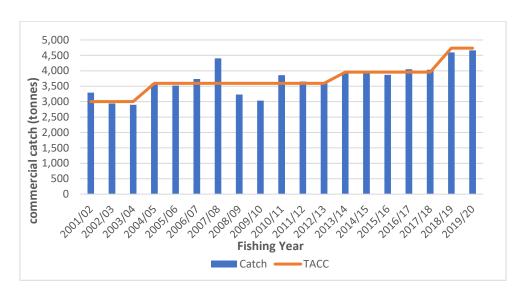


Figure 3: Commercial catch vs TACC for LIN 5 since the 2001/02 fishing year.

340. LIN 6 landings are consistently less than the TACC of 8,505 tonnes. Around 40% of the LIN 6 TACC (3,400 tonnes) has been caught on average each year since 2012/13.

2.2 Customary Māori

- 341. The best available information on Customary Māori use is via customary authorisations provided under the Fisheries (South Island Customary Fishing) Regulations 1999. Authorisations issued confirms the level of customary Māori non-commercial take of ling is very low. The only authorisation for LIN 5 under the South Island Customary Regulations since 1998 was for 16 ling in 2016.
- 342. The customary allowance for LIN 5 is currently set at one tonne which appears to meet customary Māori needs, therefore, no increase is needed.

2.3 Recreational

343. The National Panel Survey of Marine Recreational Fishers (NPS) is conducted every five or six years to collect fishing information from marine recreational fishers. The NPS in 2017/18 did not record any recreational catch of ling from LIN 5. The total nationwide recreational ling catch in

- 2017/18 from other ling QMAs was estimated at 320 fish. There has been no other recreational data provided since then.
- 344. The recreational allowance for LIN 5 is currently set at one tonne which appears to meet recreational needs, therefore, no increase is needed.

2.4 All other mortality caused by fishing

- 345. The allowance for 'all other mortality caused by fishing' in the LIN 5 fishery is set at 97 tonnes, which equates to about 2% of the TAC. This allowance is to provide for unrecorded mortality of ling such as fish escaping through trawl net mesh and subsequently dying from injuries, accidental loss from lost or ripped trawl net codends, predation and loss of fish on bottom longlines, and unreported discarding.
- 346. Discards of ling from the ling target trawl and bottom longline fisheries are estimated to be low. Incidental mortality of small ling associated with escapement from fishing nets is also considered to be low. In LIN 5, trawl research survey data for ling show that small ling are uncommon in areas where the fishery occurs.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 347. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 348. Iwi Fisheries Forums may also be used as entities to engage with iwi with an interest in fisheries. The Iwi Fisheries Forum with an interest in LIN 5 is Te Waka a Māui me Ōna Toka Iwi Forum which is Te Wai Pounamu (South Island) Iwi fisheries forum it includes all nine Iwi of Te Wai Pounamu, including Ngai Tahu who are tangata whenua for the area of LIN 5.

3.2 Kaitiakitanga

349. Ling is not named specifically as a taonga species in Te Waipounamu lwi Forum Fisheries Plan, however Te Waipounamu lwi regard all fish species as taonga species. The proposed changes for LIN 5 are particularly relevant to Management Objective Three of Te Waipounamu lwi Forum Fisheries Plan:

'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.'

- 350. At the March 2021 Te Waipounamu lwi Fisheries Forum hui, Fisheries New Zealand discussed the October sustainability round generally. At that time, South Island stocks to proceed to review were not finalised however LIN 5 was part of the longlist of likely fishstocks that would be consulted.
- 351. In May 2021, a two-page document with information on the proposal to amend the TAC/TACC for Ling in LIN 5 was provided to lwi Fisheries Forums. No specific feedback was received in regard to LIN 5. The options presented in this paper were discussed with Te Waka a Māui me Ōna Toka lwi Forum hui in July 2021.

352. There are no customary fisheries management tools such as mātaitai, taiāpure or section 186B temporary closures relevant to these proposals for LIN 5 because of the depth at which fishing takes place.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

353. The key environmental interactions with the LIN 5 fishery, which must be taken into account when considering sustainability measures, concern associated and dependent species (including marine mammals, seabirds, fish and invertebrate bycatch), biological diversity (including benthic impacts) and habitats of particular significance for fisheries management.

4.1.1 Marine mammals

- 354. New Zealand fur seals are sometimes caught in LIN 5 target tows, but the interaction rate is very low. In the five fishing years between 2014/15 and 2018/19, two fur seal captures were observed in ling trawl fisheries on the Stewart Snares Shelf in LIN 5. The average observer coverage for ling targeted tows over this period was 19.5 %. Over the same period no fur seals were reported caught in target ling bottom longline fisheries. On average 5% of all hooks set were observed annually on the Stewart-Snares Shelf. The New Zealand fur seal population is not threatened and is increasing in numbers and distribution. An increase in the LIN 5 TAC would not threaten the fur seal population and the incidental catch of fur seals is expected to remain low.
- 355. To minimise the risk of marine mammal captures, industry has developed Marine Mammal Operational Procedures (MMOP) for all trawlers greater than 28 m in length. The MMOP describes a range of procedures that a vessel and crew should follow to reduce the risk of marine mammal captures. Fisheries New Zealand monitors and audits vessel performance against the MMOP via the Observer Programme.

4.1.2 Seabirds

- 356. The 'National Plan of Action for Seabirds' (NPOA Seabirds 2020) guides management of seabird interactions with New Zealand fisheries. It employs a systematic risk assessment framework. The risk assessment identifies seabird species and fisheries associated with the highest risk and monitors changes in risk status over time.
- 357. In the five years from 2013/14 to 2017/18 an average of 20 seabirds per year were estimated as incidental captures in target ling trawl fisheries on the Stewart-Snares Shelf and an average of 59 seabirds per year from ling bottom longline. Based on the observed captures it is estimated that an average of 79 seabirds are caught in total each year in LIN 5 target trawl and bottom longline fisheries. Our Seas Our Future noted they are concerned with the numbers of seabirds estimated caught in the LIN 5 fishery.
- 358. An increase in the LIN 5 TAC may increase the number of seabirds caught annually, however 63% of seabirds observed caught by LIN 5 trawl effort were released alive and 97% of seabirds observed caught on LIN 5 bottom longline were released alive (although survival rates are not known). The majority of seabirds caught were species with a Threat Classification of low risk: 68% of trawl caught seabirds in LIN 5 were white chinned petrels (classified as 'not threatened') and 86% of bottom longline caught seabirds were common diving petrels (classified as 'relict' greater than 20,000 mature individuals, population stable or increasing). The assessment of the risk of commercial fisheries to New Zealand seabirds 2006/07 to 2016/17 used the sum of risk ratios across all 71 seabird taxa by fishery group and fishery management area (FMA) to identify the fisheries and areas where seabirds are the most at risk. LIN 5 trawl and LIN 5

- bottom longline were both estimated as low risk to seabirds with a total risk mean estimated between 0.0 and 0.1.52
- 359. Seabird mitigation devices must be deployed in LIN 5 for trawlers >28 m and bottom longline vessels >7 m when fishing. In addition to the regulated mitigation requirements, non-regulatory measures include industry developed vessel-specific plans which set out practices that vessels should implement to reduce the risk of seabird interactions. Fisheries New Zealand audits performance against these seabird mitigation measures. Annual performance is reported in the Deepwater Fisheries Annual Review Report.

4.1.3 Fish bycatch

- 360. Regular analyses are undertaken of non-target fish, invertebrate catch and discards in the ling target fisheries. The outputs of the most recent analysis show that when ling is the target species, it is also the predominant species caught (60% of total catch in the last two fishing years). The main fish species that have been observed caught in association with the LIN 5 target fisheries are hoki, comprising 21% of catch. No other species formed more than 3% of the total catch. Overall, QMS species comprised 88% of catch during this period (2018/19 and 2019/20). The main non-QMS species caught are rattails and javelinfish.
- 361. An analysis of discards from the ling bottom longline fishery between 2002/03 and 2017/18 found that the overall discard fraction average is low compared with most other fisheries that are monitored.

4.1.4 Benthic impacts

- 362. Trawling for ling in LIN 5 can interact with the seabed and the associated benthic environment. The nature and extent of those impacts depends on a range of factors such as seabed type (e.g., mud/sand/rock), gear type, types of organisms encountered and oceanographic characteristics. Contact of the trawl gear with the seabed can lead to bycatch of benthic organisms including corals, sponges and sea anemones.
- 363. The impact of ling target tows on the benthic environment (the trawl footprint) is mitigated by the spatial concentration of the fishery where vessels typically trawl along previously trawled tow lines. The trawl footprint for all ling target effort is mapped and monitored annually. In the 2017/2018 fishing year the total ling trawl footprint was estimated to be 1,422 km.² In the 2018/2019 fishing year after the LIN 5 TAC was increased, the estimated total ling trawl footprint increased to 1,645 km² which equates to 0.12% of the fishable area in the Exclusive Economic Zone. The percentage of the total bottom contacting tows that were ling target also increased from 4% to 4.8% between 2018 and 2019. If the LIN 5 TAC is increased the trawl footprint may increase.
- 364. There is significant interest from stakeholders on the impacts of trawling on benthic habitats, and on organisms, particularly those providing structure like long-lived and slow-growing corals. Ling are predominantly found in areas where soft sediment/mud substrate predominates, whereas fragile benthic invertebrate communities are most abundant in areas of hard benthic substrate. As such, tows targeting ling rarely catch sessile benthic invertebrates. Additionally, bottom longline is estimated to have impacts on the seabed that are orders of magnitude smaller than trawl and are therefore unlikely to pose a risk to benthic biodiversity or viability of populations.
- 365. Management measures to address the effects of trawl activity have focused on avoiding benthic impacts. This has been achieved through closing areas to trawling near the seabed. In

60 • Review of sustainability measures for the 2021 October round: LIN 5

⁵² 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.

- 2001, 18 seamounts were closed to fishing. One of these seamount closures is within LIN 5 being seamount #358. This is a closed area of seabed 4,106 km² in size. It was chosen as a representative habitat of seamounts in general in the mid-southern region of Macquarie Ridge. Geologically and hydrologically it is a dynamic seamount that has never been trawled.
- 366. In addition to seamount closures, the implementation of Benthic Protection Areas (BPAs) in 2007 effectively closed approximately 30% of the New Zealand Exclusive Economic Zone (EEZ) to bottom trawling. There are two BPAs in LIN 5; the Fiordland Transect BPA and the Puysegur BPA.

4.1.5 Habitats of particular significance for fisheries management

367. The two known spawning grounds for ling in LIN 5 from September to December are the Stewart-Snares Shelf and the Puysegur area (Table 2). Although it is currently unknown what conditions make habitat favourable for ling spawning, spawning areas for ling in LIN 5 may exist due to current/circulation patterns and oceanographic features. Consequently, it is also unknown to what extent commercial fishing activity impacts these habitats.

Table 2: Summary of information on habitats of particular significance for LIN 5.

Fish Stock	LIN 5
Habitat	Stewart-Snares Shelf and the Puysegur area
Attributes of habitat	 Spawning grounds are on the Stewart-Snares Shelf and Puysegur Bank (September - December). Potentially due to current/circulation patterns and oceanographic features however this is speculative at present.
Reasons for particular significance	Spawning is of critical importance in supporting the productivity of fish stocks.
Risks/Threats	 No known offshore development activities are happening or planned. Oceanographic features could be impacted by extractive processes e.g. mining but unlikely in this area. Oceanographic features could be impacted by cable laying but laying of new cables unlikely in FMA 5. Long term current and circulation patterns could be impacted by climate change (ocean warming, changes to wind patterns). It is currently unknown what conditions make habitat favourable for ling spawning, so it is also unknown to what extent commercial fishing activity impacts these habitats.

4.2 Sustainability measures (section 11 of the Act)

368. Section 11(1) 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 plans. Stock projections indicate that under either of the options to increase the TAC for LIN 5 (10% or 20% increase) the biomass of the LIN 5/6 stock would not reduce below the management target level of 40% B_0 in the next five years.

369. The LIN 5 target trawl and bottom long line fishery has a relatively low level of bycatch of non-QMS species, with >95% of species (including ling) caught being QMS species over the last two fishing years.

4.2.1 National Fisheries Plan for Deepwater and Middle-depths Fisheries

- 370. Ling are managed as a Tier 1 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 (National Deepwater Plan 2019) because they are considered high volume and/or high value fisheries. A species-specific chapter of the National Deepwater Plan for ling was completed in 2012.
- 371. The National Deepwater Plan (2019) is a formally approved s11A plan which you must take into account when making sustainability decisions. It sets out a series of Management Objectives for deepwater fisheries, the most relevant to LIN 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; and
 - **Management Objective 4:** Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.

4.2.2 Regional plan

- 372. There is one Regional Council that has a coastline within the LIN 5 boundary. Environment Southland (Te Taiao Tonga) has a Coastal Plan under the Resource Management Act 1991 to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems and habitats.
- 373. Fisheries New Zealand considers that the three management options for LIN 5 are in keeping with the objectives of the relevant regional plan, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

5 Submissions

374. A total of 19 submissions were received from iwi and stakeholders (Table 3). The majority of submissions and responses (9) supported Option 2, three supported Option 1 and two supported Option 3. Four submissions supported other options. One of these was concerned about the effect of ling bottom longline fishing on school sharks, two opposed any increases to catch limits across all stocks, and one supported allowing stocks build back to higher biomass levels generally. One submission indicated support for both Option 2 and Option 3.

Table 3: Written submissions and responses received for LIN 5 (in alphabetical order).

Submitter		Option	Suppo	rt	
		2	3	Other	Comments
A. Flavell-Johnson				✓	Opposes any increases and supports any decreases to TAC for all species
B. Price				✓	Supports slowly increasing biomass back to higher levels (80% B ₀)
C. Squires, Riverton Fishermen's Company Ltd.				✓	Concerned that release of bycaught hooked school sharks will increase under a LIN 5 TACC increase
Deepwater Group Limited (DWG),					
Endorsed by:			✓		
Fisheries Inshore New Zealand (FINZ)					
Environment and Conservation Organisations of NZ (ECO)	✓				
Iwi Collective Partnership (ICP)		√	✓		

K. Mason				✓	Opposes any increases for all species
Maruehi Fisheries Ltd.		✓			
Ngāti Mutunga o Wharekauri Asset Holding Company Ltd.		✓			
Ngātiwai Trust Board		✓			
New Zealand Recreational Fishing Council (NZRFC)		✓			
Our Seas Our Future (OSOF)		✓			
Royal Forest & Bird Protection Society (Forest & Bird)	✓				
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (SPCA)	✓				
Sanford Ltd.			✓		
Sealord Group Ltd.		✓			
Tama Asset Holding Company Limited (TAHCL)		✓			
Taranaki lwi Fisheries Ltd.		✓			
Te Ohu Kaimoana, Endorsed by:		✓			
Te Kupenga o Maniapoto Ltd. (Te Kupenga)					

6 Options and analysis

6.1 Option 1 status quo

TAC: 4,834 t TACC: 4,735 t Customary: 1 t Recreational: 1 t Other mortality: 97 t

- 375. Option 1 is the *status quo*. It retains the existing catch limits and allowances for 2021/22. This option represents a very cautious approach to the management of the stock given the status of the LIN 5 stock. It would forgo the utilisation opportunity that currently exists.
- 376. A. Flavell-Johnson opposed any increase to the TAC for any of the fish stocks in the sustainability round. No reason was given.
- 377. K. Mason opposed any increase to the TAC for any of the fish stocks in the sustainability round because they consider that there is not sufficient data about the marine environment and the current default target biomass is arbitrary. Additionally, this submission considers that we do not know enough about the environmental effects of fishing and climate change and opposes any increase to TACCs unless there is no chance of bycatch of any sort, and deep-sea trawling is removed as a catch method.
- 378. The Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA) prefer Option 1 because of the bycatch of spiny dogfish in the LIN 5 fishery. They note that around 70% of spiny dogfish catch is discarded dead or alive under Schedule 6 of the Act and submit that the welfare of spiny dogfish will be impacted under a TAC increase. They consider that it would be irresponsible to increase the TAC without addressing the issues of unselective fishing methods and incentives to reduce bycatch.
- 379. Environment and Conservation Organisations of NZ (ECO) support Option 1 and notes that the justification for an increase in LIN 5 does not apply to LIN 6 which "is mostly the same stock". They consider that an increase in the LIN 5 TAC is likely to increase the impact of bottom fishing on the marine environment.
- 380. The Royal Forest & Bird Protection Society (Forest & Bird) note that ling is caught with bottom trawling therefore the sustainability measure should "regulate a footprint freeze, protection of all

- seamounts and associated features in FMA 5, a move-on rule and phase out of bottom trawling".
- 381. Forest & Bird consider that these measures are needed to manage the environmental impact of bottom trawling, including in their submission, the damage it causes to sea floor ecosystems and the contribution of bottom trawling to climate change and ocean acidification. Forest & Bird notes that the soft sediments that are bottom trawled for ling are sediments that are likely to store carbon therefore bottom trawling for ling is likely to release greenhouse gases.
- 382. Forest & Bird supports Option 1 in combination with the measures they proposed above to phase out bottom trawling because this option is most consistent with minimising the environmental impact of bottom trawling, including the climate change impact. They would support a reconsideration of the TAC once bottom trawling is phased out.
- 383. Fisheries New Zealand notes that while trawling has an impact on the benthic system, its net effect on carbon stocks and fluxes at shelf scale is highly uncertain due to the complex interacting processes. Environmental issues are discussed further in section 4 of this paper.

6.2 Option 2 (Fisheries New Zealand's preferred option)

TAC: 5,314 t (↑ 480) **TACC:** 5,208 t (↑ 473) **Customary:** 1 t **Recreational:** 1 t **Other mortality:** 104 t (↑ 7)

- 384. Option 2 increases the TAC by 480 tonnes to 5,314 tonnes for the 2021/22 fishing year. The TACC increases by 10% to 5,208 tonnes. Option 2 is consistent with Section 13(2)(c) of the Act the MSY can be reliably estimated, the Minister shall set a TAC that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
- 385. Our Seas Our Future (OSOF) agree that Option 2 represents a cautious approach to management of the stock given the status of the stock. They support the utilisation opportunity but note that care needs to be taken by fishers so that they do not interfere with the ling spawning season because spawning is critical in supporting the productivity of the LIN 5 fish stock.
- 386. Te Ohu Kaimoana note that the LIN 5/6 stock assessment indicates that there is an opportunity for increased utilisation of the LIN 5 fishery. They support the more conservative Option 2 increase (than Option 3) because of the potential for localised depletion within LIN 5.
- 387. Tama Asset Holding Company Limited (TAHCL), Ngāti Mutunga o Wharekauri Asset Holding Company Ltd, Ngātiwai Trust Board, and Taranaki Iwi Fisheries Ltd fully support Te Ohu Kaimoana's submission that Option 2 is the preferred option.
- 388. The lwi Collective Partnership (ICP) note that the status of LIN 5 is very healthy at higher than 63% of the unfished biomass, and that the stock assessment projects that under current catch LIN 5 would remain above the level that will produce the maximum sustainable yield as required by the Act over the next five years. Therefore, ICP supports greater utilisation under either Option 2 or Option 3.
- 389. Sealord Group Ltd (Sealord) note that the stock assessment of the LIN 5/LIN 6 biological stock indicates that abundance is well above the management target of 40% *B*₀ which aligns with their experience in the fishery. They note that the LIN 6 fish stock is widely dispersed and remains unfished for commercial reasons. They state that the catch of ling in LIN 6 is mostly associated with hoki target tows which are unlikely to increase in intensity over the next five years. Sealord prefer Option 2 rather than Option 3 "due to an abundance of caution".

They recognise that the stock assessment for LIN 5/LIN 6 indicates that a 20% TACC increase to the LIN 5 TACC is likely to be sustainable but consider that a staged increase will highlight any unforeseen consequences to the commercial viability of the fishery.

- 390. The New Zealand Recreational Fishing Council supports Option 2 but ask Fisheries New Zealand to maintain its best efforts to monitor the fishery to ensure biomass does not dip below $40\% B_0$. They remain concerned about the bycatch of seabirds in this fishery and consider the current estimated number caught annually is unacceptable.
- 391. Option 2 was endorsed by the majority of submissions and is Fisheries New Zealand's preferred option. We note that there is a utilisation opportunity for LIN 5. Projections over five years indicate that with a 10% increase to the LIN 5 TACC, the probability of being below the management target of 40% B_0 is less than 2% (Figure 2) and the probability of being below the soft limit (20% B_0) is zero.
- 392. Option 2 is consistent with your obligations under the Act and will provide a direct economic benefit to the fishing industry. The modest increase to the TAC under this option presents less risk compared to Option 3 when considering sustainability measures. The key environmental interactions with the LIN 5 fishery will continue to be carefully monitored and mitigation measures implemented when necessary.

6.3 **Option 3**

TAC: 5,798 t (↑ 964) **TACC:** 5,682 t (↑ 947) **Customary**: 1 t **Recreational**: 1 t **Other mortality**: 114 t (↑17)

- 393. Option 3 increases the TAC by 964 tonnes to 5,798 tonnes for the 2021/22 fishing year. The TACC increases by 20% to 5,682 tonnes. Option 3 is consistent with section 13(2)(c) of the Act the MSY can be reliably estimated, the Minister shall set a TAC that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
- 394. Deepwater Group Ltd (DWG) notes that the best available science and current catches indicates that the stock can sustain a 20% increase in the TACC. It states that not only has fishing pressure been low, but the biomass trend is consistent with the estimated biomass never falling below 60% B_0 . Forward biomass projections under a 20% increase to the TAC would not result in the LIN 5 stock status going below the management target of 40% B_0 therefore DWG consider that Option 3 provides a better sustainable utilisation opportunity.
- 395. Fisheries Inshore New Zealand Ltd (FINZ) endorses the DWG response for LIN 5. Sanford Limited note that they are a quota holder, fisher, fish processor and member of DWG. It also supports Option 3 (with no rationale given).
- 396. As noted under Option 2 the lwi Collective Partnership (ICP) supports greater utilisation of LIN 5 under either Option 2 or Option 3.
- 397. Fisheries New Zealand notes that projections indicate that under a 20% increase to the LIN 5 TAC, the probability of being below the management target of 40% B_0 is less than 2% and the probability of being below the soft limit (20% B_0) is zero. This option provides increased utilisation opportunity.

6.4 Economic considerations

398. Increasing the TAC under Option 2 would have an economic impact because it would allow for a greater TACC, which would allow an increased utilisation opportunity over Option 1. On the

basis of the FOB⁵³ export value of frozen ling fillets during the 2020 calendar year, a 10% increase in catch (473 tonnes) could be worth approximately \$1.43 M in additional export revenue.⁵⁴

399. Increasing the TAC under Option 3 would result in a greater utilisation opportunity than either the Status quo (Option 1) or Option 2. On the basis of the export value of frozen ling fillets during the 2020 calendar year, a 20% increase in catch (947 tonnes) could be worth up to \$2.87 M in additional export revenue.

6.5 Other matters raised

400. Chris Squires from Riverton Fishermen's Company Ltd notes that they have received anecdotal comments from fishermen in FMA 5 that they are catching more damaged school shark. Damage may have been caused by longline hooks. They are concerned that the release of bycaught hooked school sharks will increase under a LIN 5 TACC increase.

7 Deemed values

401. The average price paid by fishers during the 2019/20 fishing year for one kilogram of LIN 5 ACE was \$1.48 kg. The 2019/20 port price index of LIN 5 was \$2.85 kg. The interim deemed value rate for ling was reviewed in 2020 and increased to \$2.14. As the current deemed value rates of LIN 5 are set slightly above the average ACE price, Fisheries New Zealand does not propose to change the deemed value rates for LIN 5 which are considered appropriate (Table 4).

Table 4: Deemed Value Rates for all ling stocks including LIN 5.

	Interim deemed	Annual deemed value rates for excess catch (% of ACE)			
	value rate	≤2%	>2% and ≤20%	>20%	
Status quo	\$2.14	\$2.38	\$3.40	\$6.00	

8 Conclusions and recommendations

- 402. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowances for the LIN 5 stock on the basis of the 2021 LIN 5/LIN 6 stock assessment indicating that fishing pressure for this stock had been low and that, consequently, a utilisation opportunity existed.
- 403. Of the 19 submissions received, 12 stated a preference for increasing the TAC; 10 preferred a 10% increase (Option 2), while three preferred a 20% increase (Option 3). Three submissions stated a preference for retaining the *status quo*.
- 404. The 2021 LIN 5/LIN 6 stock assessment and associated projections represent the best available information for LIN 5. Projections over five years indicate that with either a 10% or 20% increase to the LIN 5 TAC, the probability of being below the management target of 40% B_0 is less than 2%, and the probability of being below the soft limit (20% B_0) is zero.
- 405. Fisheries New Zealand recommends that you agree to Option 2, an increase of around 10% to the TAC and TACC for this stock. The majority of submissions supported Option 2. This option is consistent with your obligations under the Fisheries Act 1996 and will provide a direct economic benefit to the fishing industry. The increase to the TAC under this option is

⁵³ 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.

⁵⁴ This is based on an average unit value for frozen ling fillets of \$8.96 during the 2020 calendar year and a conversion factor for skin-off trimmed fillets of 2.95.

- considered to be modest and takes a conservative approach when considering sustainability measures.
- 406. Option 2 is considered a precautionary approach to the risk of localised depletion of the LIN 5/6 biological stock. By only increasing the TAC for LIN 5, the risk of localised depletion is increased as more catch is taken from one part of the biological stock. However, the stock assessment includes information on specific location of catches and therefore would provide indications of any localised depletion in future. This risk will be carefully assessed in three years' time in 2024 when the next LIN 5 stock assessment is scheduled. This will indicate whether or not the recommended increase in catch of LIN 5 has had any measurable effect on the status of the LIN 5/6 stock.
- 407. An increase in the LIN 5 TAC may increase the number of seabirds caught. However, the majority of seabirds caught by LIN 5 effort are released alive (although survival rates are not known) and the majority of seabirds caught were species with a threat classification of low risk. The key environmental interactions with the LIN 5 fishery will continue to be monitored and mitigation measures implemented when necessary.

Decision for LIN 5 9

Option 1 (Status Quo)

Agree to retain the LIN 5 TAC at 4,834 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 1 tonne; ij.
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 97 iii.
- Retain the LIN 5 TACC at 4,735 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



OR

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the LIN 5 TAC at 5,314 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 1 tonne; ii.
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 97 iii. to 104 tonnes;
- Increase the stock TACC from 4,735 to 5,208 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the LIN 5 TAC at 5,798 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne; i.
- Retain the allowance for recreational fishing interests at 1 tonne;
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 97 ii. iii. to 114 tonnes;
- Increase the stock TACC from 4,735 to 5,682 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

Hon David Parker Minister for Oceans and Fisheries

19 / 2021

Gemfish (SKI 3, SKI 7) – South Island, Chatham Rise, West Coast off Taranaki & Wellington

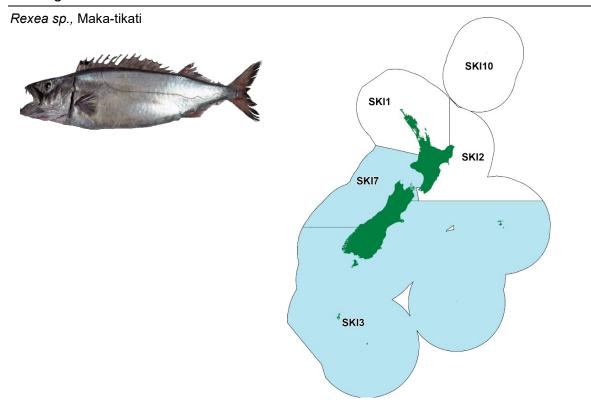


Figure 1: Quota Management Areas (QMAs) for gemfish, with SKI 3 and SKI 7 highlighted in blue. A gemfish is pictured on the left.

Table 1: Summary of options proposed for SKI 3 and SKI 7 from 1 October 2021. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

	Option	TAC	TACC	Allowances		
Stock				Customary Māori	Recreational	All other mortality caused by fishing
SKI 3	Option 1 (Status quo)	606	599	1	0	6
	Option 2	727 🔨 (121 t)	719 1 (120 t)	1	0	7 1 (1 t)
	Option 3	848 1 (242 t)	839 1 (240 t)	1	0	8 1 (2 t)
SKI 7	Option 1 (Status quo)	606	599	1	0	6
	Option 2	727 🔨 (121 t)	719 1 (120 t)	1	0	7 1 (1 t)
	Option 3	848 1 (242 t)	839 1 (240 t)	1	0	8 1 (2 t)
New option incorporated following consultation No						
Total su	bmissions received (for	both stocks)				
	of submissions receive	d in support of ea		SKI 3	SKI 7	
option			Option 1		3	3
			Option 2		2	2
			Option 3		3	5
			Other		7	7

1 Why are we proposing a review?

408. The best available information on the status of the SKI 3 and SKI 7 stocks indicates that the biomass of gemfish in SKI 3 and SKI 7 has increased in recent years and is likely to continue to increase over the short term. The information suggests that a modest increase in catch limits would not be likely to cause the stock to decline in the short term. Consequently, a utilisation opportunity is available.

1.1 About the stock

1.1.1 Fishery characteristics

- 409. Gemfish in SKI 3 and SKI 7 are almost entirely caught by commercial fishers, with most catch taken as non-target catch (97% to 98%) by large (>28 m) vessels using midwater and bottom trawl gear between 120 and 550 metres.
- 410. There are three main areas where gemfish are caught in SKI 3 and SKI 7 (Figure 2):
 - i. SKI 3 Stewart-Snares Shelf and Puysegur mostly caught in the squid target fishery. An estimated 22% of the catch from the southern gemfish stocks is taken in this fishery;
 - ii. SKI 3 East Coast South Island gemfish mostly caught a in the mixed target (squid, barracouta, hoki, red cod and tarakihi) trawl fisheries that operate year-round. This fishery takes an estimated 15% of catch from the southern gemfish stocks; and
 - iii. SKI 7 West Coast South Island- gemfish are mainly caught in the winter (May-September) hoki target fishery. An estimated 60% of catch from the southern gemfish stocks is taken in this fishery.

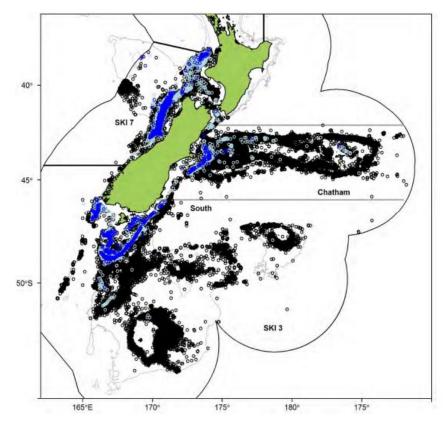


Figure 2: Distribution of observed tows in SKI 3 and SKI 7 (1990 - 2013). Light blue circles are tows with gemfish catch, dark blue circles are tows with gemfish catch that have been sampled, and black circles are tows without gemfish catch.

411. Gemfish product is primarily exported, with a FOB⁵⁵ value of \$NZ 2 million (for all gemfish stocks) in the 2020 calendar year. It is unknown how much is sold to the domestic market.

1.1.2 Biology

- 412. Gemfish (also known as southern kingfish) are benthopelagic fish found over the continental shelf and slope around the coastline of New Zealand, mainly in waters between 120 metres and 550 metres in depth.
- 413. Gemfish in SKI 3 and SKI 7 are considered to be one biological stock which migrates from the Stewart-Snares shelf in the south (SKI 3) to the West Coast of the South Island (SKI 7) to spawn in August and September (Figure 1).
- 414. Gemfish grow rapidly, attaining a length of approximately 30 cm at the end of the first year and growing to around 63 cm at the end of the fourth year. The maximum age of gemfish is around 10 years, with individuals recruiting into the fishery at age two at around 45 cm fork length. The recruitment variability of gemfish in SKI 3 and SKI 7 was correlated with wind and sea surface temperature patterns during the spawning season (in the 1980s and 1990s) although no correlation has been found more recently.

1.2 Status of the stocks

- 415. SKI 3 and SKI 7 are both low-medium knowledge stocks. ⁵⁶ The main monitoring/assessment tools used to inform management of the stocks are catch per unit effort (CPUE) indices derived from hoki target trawls in SKI 7 and mixed target trawls on the Stewart/ Snares Shelf, as well as observer data and fishery-independent trawl surveys.
- 416. Management of SKI 3 and SKI 7 is guided by the default values of the Harvest Strategy Standard (target 40% B_0 , soft limit 20% B_0 , Hard Limit 10% B_0).

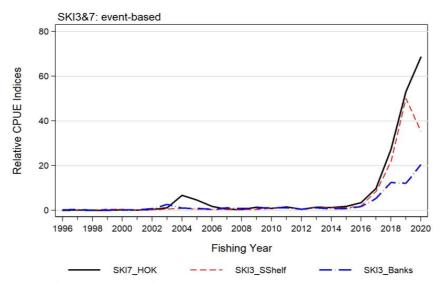


Figure 3: Standardised CPUE indices of event-based data from SKI 7 hoki trawl, SKI 3 Stewart/Snares Shelf trawl and SKI 3 Banks trawl.

417. A partial qualitative stock assessment for these stocks was accepted by the 2021 Fisheries Assessment Plenary (the Plenary). The assessment indicated that the status of the stock in relation to the target of 40% SB_o was unknown. Given that the level of the stock that can produce the maximum sustainable yield cannot be estimated reliably, you must make decisions based on the best available information (section 13(2A)).

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⁵⁵ 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.

⁵⁶ Low-medium knowledge stocks may have gaps in the data and have assessment methods which are semi-quantitative or CPUE based.

- 418. The Working Group concluded that given recent recruitments, SKI 3 and SKI 7 stock size is likely to increase over the short term (one to three years) and that it is unlikely that current catch levels will cause biomass to decline below hard limits (<40% probability).
- 419. The Working Group considered there was sufficient information available from the trawl surveys and commercial fisheries data to conclude that there had been a considerable increase in stock abundance in recent years due to strong cohorts from the 2014, 2015, and 2016 year classes. All CPUE series show a sharp increase beginning in 2017/18, differing only in magnitude.

2 Catch information and current settings within the TAC

2.1 Commercial

420. Historically, up to 7,000 tonnes of gemfish were landed annually from SKI 3 and SKI 7, mostly as non-target catch. Annual catches increased significantly in the early 1980s with landings of 5,446 tonnes and 1,741 tonnes for SKI 3 and SKI 7 respectively. Catches subsequently declined in the mid-1980s. TACCs were reduced to 300 tonnes for both stocks from 1997/98 until 2018/19. Between these years, catches of gemfish were generally below the TACC.

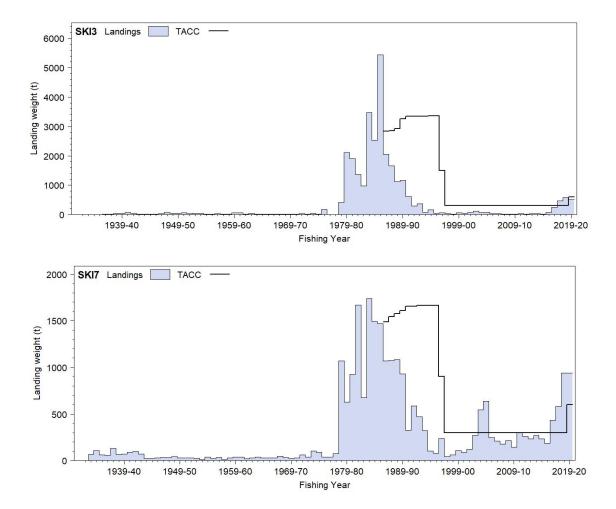


Figure 4: Reported commercial landings and TACC for SKI 3 (top panel) and SKI 7 (bottom panel).

421. Catches remained low until 2016/17 when both stocks indicated signs of high recruitment with annual landings increasing significantly. The gemfish landings have been mostly bycatch of other fisheries with over 98% of estimated catch in recent years having been reported from hoki and squid target effort. Gemfish are often an unavoidable bycatch species in these fisheries due to the species belonging to the same shelf assemblages.

422. On 1 October 2019, TACCs were increased in both SKI 3 and SKI 7 to 599 tonnes, however in the 2019/20 fishing year catch in SKI 7 was already in excess of the new TACC with total annual landings at 938 tonnes. Additionally, for the 2020/21 fishing year, landings of gemfish in SKI 3 have exceeded the TACC by at least 395 tonnes (as of August 2021).

2.2 Customary Māori

423. There has been no recorded customary harvest of gemfish in SKI 3 or SKI 7. However, a one tonne allowance was introduced in the 2019/20 fishing year to provide for gemfish taken under a pātaka arrangement, whereby fish (including gemfish) for the use of tangata whenua may be caught by commercial trawlers under a customary permit, and stored at designated areas (pātaka) at licenced fish receiver (LFR) premises.

2.3 Recreational

424. Although gemfish are often caught by recreational fishers in SKI 1, SKI 2 and SKI 9, there has been negligible reported catch in SKI 3 and SKI 7. The National Panel Survey of Marine Recreational Fishers (2017/18) reported 27 individual gemfish were caught by recreational fishers in SKI 7 in the 2017/18 fishing year and nil reported catch in SKI 3 for the same year. The negligible level of reported recreational catch for these stocks is reflected in their recreational allowances, which are currently both set at zero.

2.4 All other mortality caused by fishing

425. The allowance for all other mortality caused by fishing is set at approximately 1% of the TAC. This allowance is to provide for unrecorded mortality of gemfish, such as fish escaping through the trawl net and subsequently dying from injuries, accidental loss from ripped trawl nets and unreported discarding. Fisheries New Zealand has no information to suggest this proportion should be changed.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 426. Input and participation into the sustainability decision-making process was provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 427. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
- 428. In May 2021 information on the proposal to amend the TAC/TACC for gemfish SKI 3 and SKI 7 was provided to lwi Fisheries Forums and feedback was sought. The proposed changes were then discussed at the hui of Te Waka a Māui lwi Forum in July 2021. While the options were discussed, there was no strong preference expressed for any of the proposed options.

3.2 Kaitiakitanga

- 429. Te Taihauāuru lwi Fisheries Forum and Te Waka a Māui me Ōna Toka (Te Waka a Māui) lwi Forums represent iwi with an interest in these two gemfish stocks. lwi Forum Fisheries Plans contain objectives to support and provide for the interests of the relevant iwi. Te Tai Hauāuru lwi Fisheries Plan provides specific objectives in respect of commercial fisheries, that commercial fisheries are sustainable and support economic well-being of their iwi, and that the value of Annual Catch Entitlement is stable or increasing.
- 430. Although not explicitly listed as a taonga species in the lwi Fisheries Plan, Te Waipounamu lwi Forum regard all fish species as taonga species.

431. The proposed changes for SKI 3 and SKI 7 are generally consistent with management objectives of Te Waipounamu lwi Forum Fisheries Plan in relation to Management Objective Three:

'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.'

432. There are no customary fisheries management tools such as mātaitai, taiāpure or section 186B temporary closures relevant to these proposals, as the majority of gemfish SKI 3 and SKI 7 are caught offshore at depths between 120 m and 550 m.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 433. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern associated or dependent species and the biological diversity of the aquatic environment.
- 434. Gemfish are predominantly a bycatch species of the hoki target fishery on the West Coast of the South Island (SKI 7), squid trawl fishery off the Stewart/Snares shelf (SKI 3) and mixed trawl fishery off the East Coast of the South Island (SKI 3). As little as 2 to 3% of gemfish are caught in gemfish target effort. Due to the relatively low value of the species and limited international market, it is unlikely that the proposed options will result in increased effort to target gemfish. As such, Fisheries New Zealand considers it unlikely that any of the proposed options will increase the risk to associated or dependent species, the biological diversity of the environment, or habitats of particular significance for fisheries management.
- 435. There have been no reported protected species interactions involving vessels targeting gemfish in SKI 3 or SKI 7. Although unlikely, there is a chance that the proposed options may result in increased targeting of gemfish and therefore potential for increased protected species interactions.

4.1.1 Marine mammals

436. Sea lions, fur seals, common dolphins and other marine mammals inhabit the marine environment where gemfish are caught in SKI 3 and SKI 7. These species periodically interact with large trawl vessels, however there have been no reported captures of marine mammals while targeting gemfish in these areas.

4.1.2 Seabirds

- 437. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action for Seabirds (NPOA Seabirds 2020), which sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds.
- 438. Seabird species that overlap with the main fisheries that catch gemfish include the Westland petrel, white-chin petrel, sooty shearwaters, white-capped albatross and southern Buller's albatross. These species are periodically caught by trawl vessels in these areas. Statistical models have been developed to estimate total annual captures of seabirds from fishing events. In 2018-19 (the most recent data) an estimated 32 seabirds were captured by large trawl vessels on the West Coast, South Island and 327 captures on the Stewart-Snares Shelf. Despite this, there have been no reported seabird captures from vessels targeting gemfish in SKI 3 or 7 in recent years.

4.1.3 Fish bycatch

439. When gemfish has been targeted in the past 5 years, the dominant bycatch species are ling, giant stargazer, barracouta and silver warehou. The catch of these associated species is considered negligible over the past two years in both areas.

4.1.4 Benthic impacts

440. Since 2013 the annual trawl footprint of vessels targeting gemfish in SKI 3 and SKI 7 has decreased from 157 km² to 15 km² in 2019. Because these stocks are rarely targeted, the proposed options to increase the TAC/TACC are not expected to increase benthic impacts.

4.1.5 Habitats of particular significance for fisheries management

441. Gemfish are broadly distributed in SKI 3 and SKI 7 and there is little information available to assist identification of areas of particular significance to the stocks. Some general habitats that could be regarded as significant for SKI 3 and SKI 7 are discussed in Table 2 below.

Table 2: Summary of information on habitats of particular significance for SKI 3 and SKI 7.

Fish Stocks	SKI 3 and SKI 7
Habitat	West Coast South Island WCSI (exact area unknown)
Attributes of habitat	Continental shelf and slope with a benthic environment consisting mainly of soft sediment and no known benthic features.
	 The sea surface temperature of the WCSI is variable between March and October. Records have shown occasional periods of increased temperature and less fluctuation.
Reasons for particular significance	 Spawning is critically important in supporting the productivity and recruitment of a fish stock.
	 Observer data and research trawl surveys have suggested that the southern gemfish stock (SKI 3 and SKI 7) migrate to spawn off the West Coast of the South Island during August.
	 There may be other spawning grounds for the southern gemfish biological stock, however the WCSI spawning ground appears to be the most important.
	 Periodic increases in sea surface temperatures, as well as less than average strength south-westerly winds have been correlated with the presence of strong year class of gemfish.
Risks/ Threats	 Long term current and circulation patterns could be impacted by climate change (sea surface temperature change and changes to wind patterns).
	 Due to the unknown significance of the benthic environment to the life cycle of gemfish it cannot be determined whether bottom- contacting fishing activities will have an impact on any habitats of particular significance to the management of SKI 3 or SKI 7.

4.2 Sustainability measures (section 11 of the Act)

442. 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 plans.

- 443. While over recent years there has been little targeted effort on gemfish in both SKI 3 and SKI 7, it is feasible that effort could increase due to increased demand from overseas markets. In addition, non-targeted catch could increase due to indirect factors including the abundance and price of other target species such as squid and hoki.
- 444. However, an increase in target effort is deemed unlikely due to the limited demand from international markets. Target tows in SKI 3 and SKI 7 have also decreased in recent years despite the apparent increase in biomass.

4.2.1 National Fisheries Plan for Deepwater and Middle-depths Fisheries

- 445. Gemfish in SKI 3 and SKI 7 are managed as a Tier 2 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 Part 1A (National Deepwater Plan). Tier 2 species are typically smaller or less valuable bycatch fisheries, only target fisheries at certain times of the year, and/or are important bycatch from Tier 1 stocks. The National Deepwater Plan sets out a series of management objectives for deepwater fisheries, the most relevant to SKI 3 and SKI 7 being:
 - **Management Objective 1:** Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations
 - **Management Objective 4:** Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.

5 Submissions

446. Of the 19 responses and submissions received from iwi and stakeholders, one submission supported an option to cease all fishing where low knowledge stocks are involved and another supported slowly increasing biomass back to higher levels (80% B_0). Three supported the option to remain at the status quo for both stocks, two supported Option 2 and five supported Option 3 for either one or both of the stocks. Four submissions supported an increase above that of Option 3 (100% on top of current TACCs). The majority of submitters recognised that there was an opportunity for increased utilisation.

Table 3: Written submissions and responses received for SKI 3 and SKI 7 (in alphabetical order).

Submitter								Option Support
	SKI 3		SKI 7		7			
	1	2	3	1	2	3	other	
A. Flavell-Johnson							✓	Supports the cease of commercial fishing until fishery is more understood
B. Price							✓	Supports slowly increasing biomass back to higher levels (80% B_0)
Deepwater Group Limited (DWG), Endorsed by: Fisheries Inshore New Zealand (FINZ)							√	Supports an increase of 601 tonnes to the TACC for each stock
Environment and Conservation Organisations of New Zealand (ECO)	✓			✓				Suggests that a full stock assessment be completed before increasing the TACC
Iwi Collective Partnership (ICP)			✓					Supports Option 3 for SKI 3 only
K. Mason							✓	Does not support increase for any catch limits for any fish.
Maruehi Fisheries Ltd.						✓		Supports Option 3 for SKI 7 only

Ngāti Mutunga o Wharekauri Asset Holding Company Ltd. (NMOWAHC)			✓					
NZ Recreational Fishing Council (NZRFC)		✓			~			Supports option 2 providing two tonnes are introduced for recreational allowance
Ocean Fisheries Ltd			✓			✓		
Our Seas Our Future		✓			✓			
Royal Forest & Bird Protection Society (Forest & Bird)	~			~				Supports a trawl footprint freeze
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)	/			✓				
Sanford Ltd							✓	Supports an increase of 601 tonnes to the TACC for each stock
Sealord Ltd							✓	Supports setting the SKI 3 TACC at 1,200 t and the SKI 7 TACC at 1,400
Southern Inshore Fisheries (SIF)							✓	Supports an increase of 601 tonnes to the TACC for each stock
Tama Asset Holding Company Ltd						✓		
Taranaki lwi Fisheries Ltd						✓		
Te Ohu Kaimoana Endorsed by: Ngātiwai Trust Board Te Kupenga o Maniapoto Ltd			~			~		Supports Option 3 but recognises that the proposed TACC may not be high enough

6 Options and analysis

- 447. For all options, the allowance for all other mortality caused by fishing would be maintained at a level that is equivalent to 1% of the TAC as there is no new evidence to suggest this needs to be reviewed.
- 448. As there is no information suggesting any customary or recreational harvest of gemfish in SKI 3 or SKI 7, no changes were proposed to the customary Māori or recreational allowance of the stock.
- 449. No specific feedback was received by Iwi Fisheries Forums regarding the proposed changes to customary catch limits of SKI 3 and SKI 7.

6.1 Option 1 (status Quo)

SKI 3

TAC : 606 t	TACC : 599 t	Customary: 1 t	Recreational: 0 t	Other mortality: 6 t
SKI 7				
TAC : 606 t	TACC : 599 t	Customary: 1 t	Recreational: 0 t	Other mortality: 6 t

- 450. Option 1 for SKI 3 and SKI 7 is the status quo. It retains the existing catch limits and allowances for 2021/22. This is the most cautious approach and results in the lowest risk to the stocks, and wider ecosystem. As an administrative consequence, substantial deemed value payments will be incurred for the current 2020/21 fishing year.
- 451. By retaining the status quo, there is likely to be a missed opportunity for utilisation.

- 452. Forest & Bird, ECO, SPCA and K. Mason all support the option to retain the status quo for both SKI 3 and SKI 7. In the opinion of Forest & Bird, the CPUE analysis carries significant levels of uncertainty and that increasing the catch limits would be inconsistent with the Act. ECO also believes that a full stock assessment must be carried out before an increase is considered.
- 453. K. Mason also highlights that there is little knowledge on how climate change may negatively impact fish populations.
- 454. Fisheries New Zealand agrees that there is very little information available on the effects of climate change on fish stocks. However, research suggests that increases in sea surface temperatures are correlated with the presence of strong year class of gemfish on the WCSI.

6.2 Option 2

SKI 3

TAC: 727 t (121)	TACC: 719 t (120)	Customary: 1 t	Recreational: 0 t	Other mortality: 7 t (1)
SKI 7				
TAC : 727 t (↑ 121)	TACC : 719 t (↑ 120)	Customary: 1 t	Recreational: 0 t	Other mortality: 7 t (1)

- 455. Under Option 2 for SKI 3 and SKI 7 the TACs will increase by 121 tonnes, the TACCs will increase by 120 tonnes and the allowances for other mortality caused by fishing will increase by one tonne each. This proposed option will allow for increased utilisation of SKI 3 and SKI 7 over Option 1, however the TACCs proposed under Option 2 for both SKI 3 and SKI 7 are less than current catch levels.
- 456. Our Seas Our Future supports increasing the catch limits under Option 2. It was recognised that by retaining the status quo, there is likely to be a missed opportunity for utilisation.
- 457. NZ Recreational Fishing Council supports Option 2 for SKI 3 and SKI 7 with the provision that a two tonne recreational catch allowance is introduced for non-commercial utilisation.

6.3 Option 3 (Fisheries New Zealand's preferred option)

SKI 3

TAC: 848 t (1 242)	TACC: 839 t (240 t)	Customary: 1 t	Recreational: 0 t	Other mortality: 8 t (2)
SKI 7				
TAC: 848 t (242)	TACC: 839 t (240 t)	Customary: 1 t	Recreational: 0 t	Other mortality: 8 t (2)

- 458. Option 3 for both stocks is Fisheries New Zealand's preferred option. The option includes a TAC increase of 242 tonnes, from 606 tonnes to 848 tonnes. There would be a 40% increase to the TACCs bringing the commercial catch limits to 839 tonnes and an increase of two tonnes to the allowances for other mortality caused by fishing.
- 459. Option 3 for SKI 3 and SKI 7 provides an opportunity for increased utilisation, above that of Option 2. Decreasing effort over recent years suggests that Option 3 is unlikely to promote an increase in targeted effort on gemfish.
- 460. Tama Asset Holding Company Ltd (SKI 7 only), Te Kupenga o Maniapoto Ltd, Ngātiwai Trust Board, Taranaki lwi Fisheries (SKI 7 only), Maruehi Fisheries Ltd (SKI 7 only), lwi Collective Partnership (SKI 3 only) and Ngāti Mutunga o Wharekauri Asset Holding Company Ltd (SKI 3 only) all supported Te Ohu Kaimoana's views on increasing the catch limits under Option 3.

- 461. While supporting Option 3, it was also noted that current catch landings are above the proposed TACCs. Te Ohu Kaimoana also stated their support for Sealord's submission.
- 462. Ocean Fisheries support Option 3 for both SKI 3 and SKI 7. In their submission, Ocean Fisheries stated that over recent years they have experienced an increase in gemfish in SKI 3 as an unavoidable bycatch of their trawl fishery.
- 463. Although stakeholders such as Deepwater Group, SIF and Sealord Ltd supported an increase to catch limits, in their opinion the TACCs proposed under Option 3 do not go far enough. Sealord highlighted that the 2019 review did not raise the TACCs to the level of catch in the preceding year and it was suggested that Option 3 would likely repeat the same failure to account for the growth in biomass.

6.4 Other options proposed by submitters

- 464. Two submissions opposed any increase to the TACs for all species being reviewed and ceasing commercial fishing for decreasing or low knowledge stocks. Another submission expressed general support for building stocks back to higher biomass levels (80% B_o).
- 465. Fisheries New Zealand recognises the concern for fish stocks which are vulnerable to over exploitation. However, there is sufficient information to suggest there has been a considerable increase to the southern gemfish biological stock and that an option to cease fishing will have far reaching and unjustified socio-economic impacts.
- 466. NZ Recreational Fishing Council supported an option to introduce two tonnes to the recreational catch allowance for SKI 3 and SKI 7. It was highlighted that introducing this allowance would acknowledge the growing interest in gemfish as a bycatch species amongst recreational fishers.
- 467. While Fisheries New Zealand recognises gemfish are commonly caught by recreational fishers in the North Island, the most recent data suggests that recreational catch in SKI 3 and SKI 7 is negligible. Fisheries New Zealand notes that the lack of a recreational allowance does not prevent recreational fishers catching gemfish. If information becomes available in the future suggesting that gemfish are caught in significant numbers within SKI 3 or SKI 7, a recreational allowance can be set as part of future sustainability rounds.
- 468. Submissions by Deepwater Group Ltd, Sanford, Sealord Ltd and SIF supported an alternative option; to increase the TACCs of SKI 3 and SKI 7 to 1,200 tonnes each (Sealord proposed setting the TACC of SKI 7 to 1,400 tonnes).
- 469. The submissions highlighted the need to look further into the future regarding adjustments to the TACCs, as previous reviews have underestimated the projected abundance in these fisheries. This was reflected in the \$2.57 million paid in deemed values over the past five years between SKI 3 and SKI 7. In Sealord's submissions, they noted that all indications suggest that the southern gemfish population is undergoing a long-term sustained period of growth.
- 470. Commercial fishing submitters reiterated that over the past five years there has been a minimal number of target tows and that an increase in the TACCs will not affect the level of fishing effort on these stocks.
- 471. Fisheries New Zealand acknowledges the options proposed by industry stakeholders and considers that the increases suggested are consistent with the Fisheries Act. However, there is limited information to suggest the current recruitment will be long-term or sustained. The Working Group involved in assessing the status of the stocks suggest that the increase is likely to continue for the next one to three years.
- 472. Although the CPUE indices and trawl survey biomass indices indicate that stock abundance has increased considerably in recent years, the indices do not provide an estimate of the size

- of current stock biomass relative to historical (unfished) levels (SSB_o).
- 473. Additionally, SKI 3 and SKI 7 have experienced rapid depletion in biomass in the past, driven by unknown environmental factors, overfishing and the life history traits of gemfish.
- 474. Under these uncertainties, Fisheries New Zealand recommends a more precautious approach until a better estimate of *B*₀ is accepted.

6.5 Economic considerations

475. It is unlikely that changes to the TACC will affect fishing effort or the quantity of gemfish landed in SKI 3 or SKI 7. Therefore, the export value of SKI 3 or SKI 7 is also unlikely to be impacted by the proposed options.

7 Deemed values

476. The Deemed Value Guidelines set out the operational policy Fisheries New Zealand uses to inform the development of advice to the Minister on the setting of deemed values. Supporting information for SKI 3 and SKI 7 used to inform advice on deemed value rates is summarised in Table 4.

Table 4: Supporting information for deemed values advice

Stock	Average ACE price \$/kg ⁵⁷	Interim DV \$/kg	Basic annual DV \$/kg	2021/22 Port Price \$/kg
SKI 3	0.43	0.65	0.72	1.30
SKI 7	0.53	0.44	0.49	1.35

SKI 3

477. The basic annual deemed value rate is above the average ACE price for 2019/20. Fisheries New Zealand considers adequate incentives exist for fishers to balance catch against ACE and does not propose you agree to any changes to the deemed value rates for SKI 3.

SKI 7

- 478. The Minister's decision to increase the TAC/TACC for SKI 7 for the 2019/20 fishing year was frozen due to the preferential allocation rights ('28N rights') associated with this stock. As a means of providing some relief to fishers, Fisheries New Zealand recommended deemed value rates be reduced for the 2020/21 fishing year. The approach taken was to set the basic annual deemed value rate at the average ACE price during the preceding year, and for differential rates to commence at what fishers' collective ACE holdings would have been if the TACC decision had been given effect.
- 479. The court proceedings that resulted in the TAC/TACC increase for the 2019/20 year being frozen were subsequently resolved during that year. Accordingly, rationale no longer exists for retaining the existing deemed value rates for SKI 7 (Table 5); retaining the basic annual deemed value rate below the average ACE price is inconsistent with the Deemed Value Guidelines, and the Fisheries Act.

80 • Review of sustainability measures for the 2021 October round: SKI 3 & SKI 7

⁵⁷ Average price paid per kg of ACE transferred (exc. GST) during the 2019/20 fishing year (as reported by FishServe). Excludes transfers considered unrepresentative of true ACE price.

Table 5: Current and proposed deemed value rates for SKI 3 and SKI 7

		Interim deemed –			eemed valu				
CIVI 2	Ctatus aus	value rate	100%	120%	140%	160%	180	200%	
SKI 3	Status quo ——	\$0.65	\$0.72	\$0.86	\$1.01	\$1.15	\$1.30	1.44	
	Status aus -		100%	200%	220%	240%	260%	280%	300%
CIZI 7	Status quo —	\$0.44	\$0.49	\$0.72	\$0.86	\$1.01	\$1.15	\$1.30	\$1.44
SKI 7	Ontion 1.A		100%	120%	140%	160%	180	200%	
	Option 1 —	\$0.65	\$0.72	\$0.86	\$1.01	\$1.15	\$1.30	1.44	

- 480. Four submissions commented specifically on the proposed changes to deemed value rates. Southern Inshore Fisheries Management Co., Deepwater Group Ltd, Sealord Ltd and Te Ohu Kaimoana did not agree with the proposed change to the deemed value rate of SKI 7. In the opinion of these submitters and responders, the increase would unduly impact the commercial sector, especially if the TACC is not set at an appropriate level which represents the increased biomass of the fish stock.
- 481. Te Ohu Kaimoana also suggested that the deemed value rates be set closer to the ACE price rather than the port price, where there is no sustainability concern.
- 482. As the current interim deemed value rate for SKI 7 (\$0.44 per kg) is set slightly below the average price paid by fishers during the 2019/20 fishing year for 1 kg of SKI 7 ACE (\$0.47 per kg), Fisheries New Zealand recommends you agree to increase the deemed value rates for SKI 7 to match those of SKI 3 (Option 1 Table 5). These are the same rates that applied during the 2019/20 fishing year. Fisheries New Zealand considers these rates will provide adequate incentives for fishers to balance catch against ACE.

8 Conclusions and recommendations

- 483. Fisheries New Zealand consulted on increasing the catch allowances for the SKI 3 and SKI 7 stocks based off a partially quantitative stock assessment in 2021. The Working Group accepted that the biomass of gemfish in SKI 3 and SKI 7 has increased in recent years and is likely to continue to increase over the short term.
- 484. Of the 19 submissions received, 13 supported an increase to the catch limits of either SKI 3, SKI 7 or both fish stocks. Four of these supported increases above what was proposed.
- 485. After acknowledging the views of the submitters, Fisheries New Zealand recommends increasing the catch limits of SKI 3 and SKI 7 under Option 3. This option will provide an opportunity to increase utilisation of the fish stocks in line with recent CPUE increases.
- 486. The recommended increases to catch limits are unlikely to result in increased target effort due to the low market demand of the species and recent trends in fishing effort. It is also considered unlikely that the recommended option will cause the biomass of the southern gemfish stocks to decline below the soft limits.
- 487. The effects on associated species and habitats of particular significance is likely to be negligible due to the improbability of target effort increasing.
- 488. Fisheries New Zealand recommends that the deemed value rates be increased under Option 1 (Table 5) as retaining the status quo will be inconsistent with the Act.

9 Decision for SKI 3

Option 1 (Status quo)

Agree to retain the SKI 3 TAC at 606 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 0 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing from at 6 tonnes:
- iv. Retain the SKI 3 TACC at 599 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the SKI 3 TAC at 727 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 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 SKI 3 TACC from 599 to 719 tonnes.

-Agreed / Agreed as Amended / Not Agreed

Ans

OR

Option 3 (Fisheries New Zealand's preferred option)

Agree to set the SKI 3 TAC at 848 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 0 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 6 to 8 tonnes:
- iv. Increase the SKI 3 TACC from 599 to 839 tonnes.

Agreed Agreed as Amended / Not Agreed

Sp

10 Decisions for SKI 7

Option 1 (Status quo)

Agree to retain the SKI 7 TAC at 606 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 0 tonnes;
- Retain the allowance for all other sources of mortality to the stock caused by fishing from at 6 iii. tonnes:
- Retain the SKI 7 TACC at 599 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2

Agree to set the SKI 7 TAC at 727 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 0 tonnes; ii.
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 6 iii. to 7 tonnes:
- Increase the SKI 7 TACC from 599 to 719 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 (Fisheries New Zealand's preferred option)

Agree to set the SKI 7 TAC at 848 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 0 tonnes; ii.
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 6 iii. to 8 tonnes;
- Increase the SKI 7 TACC from 599 to 839 tonnes. iv.



Agreed/ Agreed as Amended / Not Agreed

AND

Agree to increase the SKI 7 deemed values to those outlined below (Option 1):

		Interim deemed value rate	ļ	Annual deer	ned value r	ates for exc	ess catch (% of ACE)
			100%	120%	140%	160%	180	200%
SKI 7	Option 1	\$0.65	\$0.72	\$0.86	\$1.01	\$1.15	\$1.30	1.44

Agreed Agreed as Amended / Not Agreed

Hon David Parker Minister for Oceans and Fisheries

Review of sustainability measures for the 2021 October round: SKI 3 & SKI 7 • 83

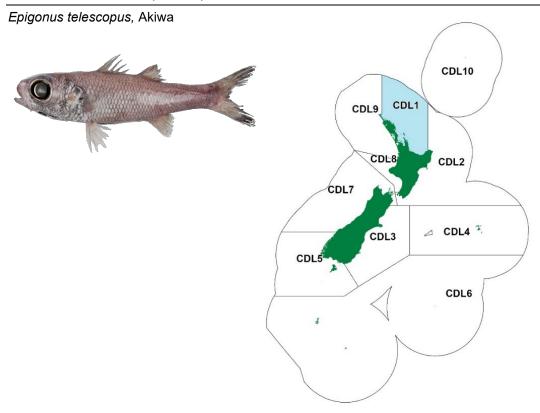


Figure 1: Quota Management Areas (QMAs) for black cardinalfish, with CDL 1 highlighted in blue. A black cardinalfish is pictured on the left.

Table 1: Summary of options proposed for CDL 1 from 1 October 2021. Figures are all in tonnes and the numbers within brackets represent the quantum of the decrease. The preferred option of Fisheries New Zealand is highlighted in blue.

		TAC TACC		Allowances		
Option	TAC			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (Status quo)	1,320	1,200		0	0	120
Option 2	176 ↓ (1,144 t)	160 🔱	(1,040 t)	0	0	16 ↓ (104 t)
Option 3	44 🔱 (1,276 t)	40 🔱 (1,160 t)	0	0	4 ↓ (116 t)
New option incorpo	rated following consu	Iltation	No			
Total submissions r	eceived		12			
	ions received in supp	ort of	Option 1		2	
each option			Option 2		0	
			Option 3		4	
			Other		6	

1 Why are we proposing a review?

- 489. Fisheries New Zealand is proposing that you review sustainability measures for the CDL 1 black cardinalfish stock for the 1 October 2021 fishing year.
- 490. When the CDL 1 stock was introduced to the QMS in 1999/2000, the TAC was set at 1,320 tonnes based on average annual landings of 1,100 tonnes between 1994/95 and 1997/1998, mostly from targeted effort. Landings of CDL 1 have declined in line with a reduction in targeted effort over the last 21 years (see Figure 3).
- 491. Given that the TAC is set much higher than current catch levels, there is uncertainty as to whether catch at the level of the TAC would be sustainable. This has prompted Fisheries New Zealand to review this stock.
- 492. CDL 1 is a low knowledge fish stock and the status of the stock is unknown. A rebuild is not proposed under the Harvest Strategy Standard rather it is considered that there is an opportunity to reduce the CDL 1 TAC to a level that better aligns with recent catch.
- 493. In undertaking this review, Fisheries New Zealand is proposing that you reduce the CDL 1 TAC to address the potential sustainability risk for this stock if catch increased to approach the current TAC.

1.1 About the stock

1.1.1 Fishery characteristics

- 494. Black cardinalfish catches have been reported since 1981 by research and commercial vessels, initially as a bycatch of target trawling for other high value species such as orange roughy. The preferred depth range of black cardinalfish overlaps the upper end of the depth range of orange roughy and the lower end of alfonsino and bluenose.
- 495. Between the 1993/94 and 1994/95 fishing years there was a sharp increase in landings of targeted black cardinalfish in CDL 1 from 0.4 tonnes to 1,000 tonnes. Since the 1999/2000 fishing year, CDL 1 landings have decreased with annual target black cardinalfish catch averaging 18 tonnes over the past five fishing years.
- 496. Estimated bycatch of black cardinalfish in CDL 1 has followed a similar trend with a peak in the 1996/97 fishing year of 1,073 tonnes (almost entirely from target orange roughy tows) to an average of 1.5 tonnes annually over the past five fishing years.
- 497. Black cardinalfish is primarily sold domestically due to the short freezer life of fillets and a section of dark flesh under the lateral line that causes problems with overseas marketing. The fillets can be tainted if this dark flesh is not removed quickly.

1.1.2 Biology

- 498. Black cardinalfish occur throughout the New Zealand EEZ at depths between 300 to 1,100 m, mostly in mobile schools that are found up to 150 m off the seabed over hills and rough ground. They are relatively slow-growing and long-lived with most fish aged between 35 and 55 years of age. Black cardinalfish feed on small fish, prawns, and octopus.
- 499. The reproductive biology of black cardinalfish is not well known. Indications from research surveys and observer programme data are that spawning may occur between November and July. Analysis of maturity at length indicates that fish become sexually mature at around 35 years of age. Juveniles are thought to inhabit shallower areas until they reach about five years of age, after which they move to deeper zones closer to the seabed.

1.2 Status of the stock

- 500. In the 2021 Fisheries Assessment Plenary, CDL 1 is a low knowledge stock, and there is little information with which to reliably estimate stock status. As such, the stock is managed under section 13(2A) of the Act. For the purposes of setting a TAC under this section, if the Minister considers that the current level of the stock or the level of the stock that can produce the MSY is not able to be estimated reliably using the best available information, the Minister must
 - (a) not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a TAC for the stock; and
 - (b) have regard to the interdependence of stocks, the 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 the *MSY*.
- 501. The only stock assessment conducted for black cardinalfish was undertaken in 2009 for the adjacent CDL 2, 3 and 4 stocks (Figure 1). It estimated that the biomass of the black cardinalfish population in the East Coast stocks was 12% B_0 . Because the stock was below the soft limit of 20% B_0 , the CDL 2 TACC was reduced from 2,223 tonnes in three stages to the level of 440 tonnes in 2010/11. This level was the maximum annual catch required to rebuild the CDL 2 stock to 30% B_0 .
- 502. There is currently no evidence to suggest that the CDL 1 stock is biologically distinct from CDL 2. Therefore, there may be a sustainability risk for the CDL 1 stock if catch levels increased to the current TACC. However, there is also no evidence to suggest that CDL 1, CDL 2, CDL 3 and CDL 4 are the same fish stock.
- 503. No stock assessment has been undertaken for CDL 1 and it is unlikely that one could take place because of the lack of data.

2 Catch information and current settings within the TAC

2.1 Commercial

504. Catch in CDL 1 has never reached the level of the TACC since it was introduced to the QMS in 1999/2000. Over the last decade, landings have been below 200 tonnes (Figure 2).

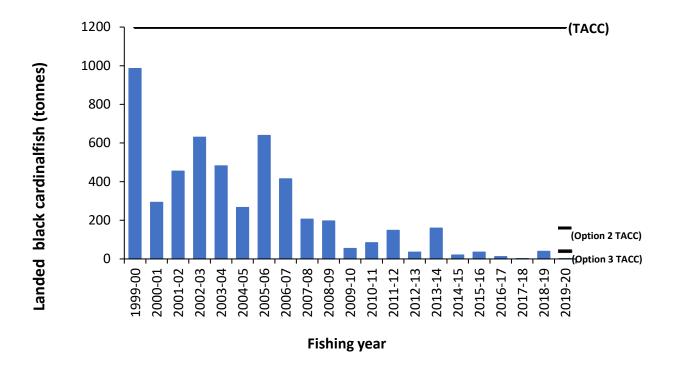


Figure 2: Landed greenweight of black cardinalfish from CDL 1 between 1999/2000 and 2019/20 showing the current TACC and the proposed TACC under Options 2 and 3.

505. Target orange roughy and black cardinalfish tows have caught an average of 98% of the estimated annual catch of black cardinalfish in CDL 1 since 2000/01. Fishing effort (when measured as the number of target tows), has declined steadily over the past 20 years (Figure 3).

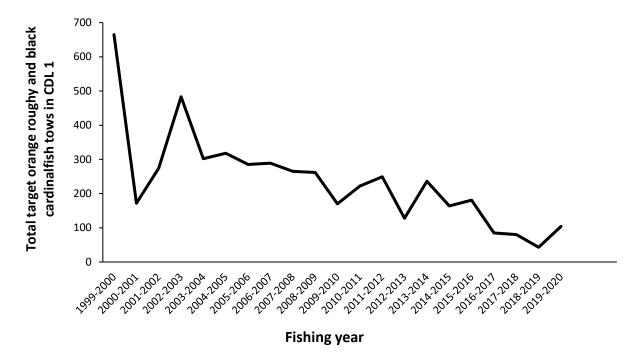


Figure 3: Number of target orange roughy and black cardinalfish tows in CDL 1 per fishing year between 1999-2000 and 2019-2020.

2.2 Customary Māori

506. There is no reported customary catch of black cardinalfish in CDL 1. The current customary Māori allowance for this stock is set at zero tonnes, however this does not preclude take of fish for customary purposes.

2.3 Recreational

507. There is no information to suggest there is any recreational catch in CDL 1. The current recreational allowance is set at zero tonnes. The National Panel Survey of Marine Recreational Fishers (NPS) report in 2017/18 did not list black cardinalfish as a separate species for reporting catch data.

2.4 All other mortality caused by fishing

508. The allowance of 120 tonnes for all other mortality caused by fishing was set based on a history of catch overruns (unreported catch) from loss of fish through burst nets and discarding at sea. This allowance is an amount equivalent to 9% of the TAC.

3 Treaty of Waitangi obligations

3.1 Input and participation of tangata whenua

- 509. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 510. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
- 511. In May 2021, a two-page document with information on the proposal to amend the TAC for black cardinalfish in CDL 1 was made available to the following four Iwi Fisheries Forums with rohe in CDL 1 area: Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty), Ngā Hapū o Te Uru o Tainui (Waikato), Te Hiku o Te Ika (far North), and Mid-North, and input sought⁵⁸. The CDL 1 proposal was not discussed at any length at the forums and no specific feedback was received regarding CDL 1 from the four Iwi Fisheries Forums.

3.2 Kaitiakitanga

512. Black cardinalfish (akiwa) are not named specifically as a taonga species by any lwi Fisheries Forum Plan. The CDL 1 fish stock (Figure 1) includes the rohe of Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty), Ngā Hapū o Te Uru o Tainui (Waikato), Te Hiku o Te Ika (far North), Hauraki and Mid-North.

- 513. Fisheries New Zealand considers the proposals for CDL 1 to be generally consistent with the objectives of these lwi Fisheries Forum Plans. In particular objectives to: improve the management of fisheries resources to ensure sustainability for future generations; ensure that commercial and non-commercial customary needs are met; and that fish stocks are healthy and support the social, cultural and economic prosperity of iwi and hapū.
- 514. There are no customary fisheries management tools such as mātaitai, taiāpure or section 186A temporary closures relevant to these CDL 1 proposals because black cardinalfish are caught offshore in depths between 300 to 1,100 m.

88 • Review of sustainability measures for the 2021 October round: CDL 1

⁵⁸ The Hauraki lwi Collective Fisheries Forum did not hold a hui during this sustainability round

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 515. The environmental principles which must be taken into account when considering sustainability measures for CDL 1 concern marine mammals, seabirds, fish and invertebrate bycatch, benthic impacts and habitats of particular significance for fisheries management.
- 516. Black cardinalfish in CDL 1 is predominantly taken by bottom trawling in target fishing effort and as bycatch in other bottom trawl fisheries. The proposed decrease to the TAC for CDL 1 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.

4.1.1 Marine mammals

517. No marine mammal captures have been reported by fishers, or by observers between the 2002/03 and 2017/18 fishing years from tows targeting or catching black cardinalfish as bycatch in CDL 1.

4.1.2 Seabirds

518. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action for Seabirds (NPOA Seabirds 2020). To estimate total protected species captures in a fishery, statistical methods are used to extrapolate from observed fishing to unobserved fishing. For the five fishing years up to 2017/18 in the whole of the New Zealand EEZ, black cardinalfish, orange roughy and oreo targeted tows had annual average captures of 15 seabirds. However, there have been no seabird captures reported by fishers or by observers from black cardinalfish targeted tows in CDL 1 from 2002/03-2017/18.

4.1.3 Fish bycatch

519. Black cardinalfish and orange roughy account for 95.5% of the fisher reported catch from black cardinalfish targeted tows in CDL 1 between the 2000/01 and 2019/20 fishing years. The remaining CDL 1 catch was taken in tows targeting alfonsino (2%), rubyfish (1%) and bluenose (0.6%).

4.1.4 Benthic impacts

520. Trawling for black cardinalfish can interact with the seabed and the associated benthic environment. This can lead to bycatch of benthic organisms including corals, sponges and sea anemones. However, the number of tows which target black cardinalfish in CDL 1 or catch black cardinalfish as bycatch have reduced over time to a low level (Figure 3). In the 2017/18 and 2019/20 fishing years only two tonnes of black cardinalfish were landed in CDL 1. The associated benthic impacts from fishing for black cardinalfish are considered to be small at this low level of effort and will be unaffected by the proposals to decrease the CDL 1 TAC.

4.1.5 Habitats of particular significance for fisheries management

521. As options proposed involve either maintaining current catch levels or decreasing fishing effort, they are not expected to increase the impact from fishing on any habitats of particular significance in CDL 1. The only habitat of particular significance known about in CDL 1 is the potential for spawning grounds to be located in the northern Bay of Plenty evidenced by the presence of ripe and running female black cardinalfish from November to June in 2009 (Table 2). It is unknown what makes these habitats preferable for spawning, but it is likely due to oceanographic features such as hills and perhaps current or circulation patterns.

Table 2: Summary of information on habitats of particular significance for CDL 1.

Fish Stock	CDL 1
Habitat	Northern Bay of Plenty (exact location unknown)
Attributes of habitat	 Potential spawning ground (November – June). It is currently unknown what makes these habitats preferable for spawning, but it is likely due to oceanographic features such as hills and perhaps current or circulation patterns. The CDL 1 stock is data deficient and the exact location of spawning is unknown.
Reasons for particular significance	 Spawning is of critical importance in supporting the productivity of a species. The only other locations where spawning females have been found are in CDL 2, CDL 7, CDL 9, and outside the EEZ on the northern Challenger Plateau, Lord Howe Rise, and West Norfolk Ridge. These three spawning areas may represent other biological stocks. Spawning site fidelity is unknown for black cardinalfish, however schools are thought to be highly mobile, so the spawning location could support multiple CDL stocks. Effects of damage to spawning locations might not be apparent in the population for many years due to the species being long lived (most of the commercial catch is 35 - 55 years old).
Risks/Threats	 Trawl fishing can contact the seafloor, impacting benthic habitats. It is currently unknown what conditions make these areas favourable for spawning for black cardinalfish, so it is also unknown to what extent this fishing activity impacts these habitats. No known offshore development activities are happening or are planned in CDL 1. Oceanographic features could be impacted by extractive processes e.g. mining. There is inshore sand mining in CDL 1 around Pakiri, however if spawning locations are offshore this mining is unlikely to impact them. Long term current and circulation patterns could be impacted by climate change (ocean warming, changes to wind patterns) which have the potential to impact spawning events.

4.2 Sustainability measures (section 11 of the Act)

522. 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 plans.

4.2.1 National Fisheries Plan for Deepwater and Middle-depths Fisheries

- 523. Black cardinalfish in CDL 1 is managed as a Tier 2 species within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 Part 1A National Deepwater Plan (2019). Tier 2 fisheries are typically less commercially valuable, comprise bycatch fisheries, or are only targeted periodically throughout the year.
- 524. The National Deepwater Plan (2019) is a formally approved section 11A plan, which you must take into account when making sustainability decisions.
- 525. The National Deepwater Plan (2019) sets out a series of Management Objectives for deepwater fisheries, the most relevant to CDL 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.
 - **Management Objective 11**: Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed.

5 Submissions

526. Twelve submissions and responses were received on CDL 1 (Table 3). Two submissions supported the status quo, with the remainder supporting a decrease in the TAC/TACC. Two submitters supported a decrease but didn't identify a preferred option; four submitters supported Option 3, and six submissions proposed an alternative option. Two of the alternative options proposed that the TAC/TACC be reduced less significantly than either Option 2 or Option 3. One alternative option proposed setting the TAC/TACC very low at half of the settings proposed in Option 3.

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

Submitter					Option Support
Oublinittei	1	2	3	Other	
A. Flavell-Johnson				✓	Supports any decreases to the TAC for all species, but does not specify support for a particular option
B. Price				✓	Supports slowly increasing biomass back to higher levels (80% B_0)
Deepwater Group Ltd (DWG), Endorsed by: Fisheries Inshore New Zealand Ltd (FINZ)	✓				
Environment & Conservation Organisations of New Zealand (ECO)			✓		
K. Mason				✓	Supports any decreases to the TAC for all species, but does not specify support for a particular option
New Zealand Recreational Fishing Council (NZRFC)			✓		
Our Seas Our Future (OSOF)			✓		
Royal Forest & Bird Protection Society (Forest & Bird)				✓	TAC and TACC set at 50% of Option 3: TAC 22 t, all other mortality caused by fishing 2 t, TACC 20 t
Royal New Zealand Society for the Prevent of Cruelty to Animals (SPCA)			✓		
Sanford Ltd	✓				
Sealord Ltd				✓	TAC 440 t, all other mortality caused by fishing 40 t, TACC of 400 t
Te Ohu Kaimoana, Endorsed by: Iwi Collective Partnership (ICP) Maruehi Fisheries Ltd Ngātiwai Trust Board Ngati Mutanga O Wharekauri Asset Holding Co Ltd Tama Asset Holding Company Limited (TAHCL) Taranaki Iwi Fisheries Ltd Te Kupenga o Maniapoto Ltd				✓	TAC 420 t, all other mortality caused by fishing 20 t, TACC 400 t

6 Options and analysis

6.1 Option 1

TAC: 1,320 t TACC: 1,200 t Customary: 0 t Recreational: 0 t Other mortality	120 t
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- 527. Option 1 is the *status quo*. It retains the existing catch limits and allowances for 2021/22. Three submissions supported Option 1.
- 528. Deepwater Group Ltd (DWG) represents the majority of deepwater fishing quota. They support Option 1, noting that given the lack of biological data on black cardinalfish stock structure and status of CDL 1, the current TACC is both nominal and arbitrary. They submit that CDL 1 quota owners will work with Fisheries New Zealand to develop a project to monitor the stock and assess its sustainable yield.
- 529. DWG state that CDL 1 catch has fluctuated in recent years with no sustainability concerns and very limited demand for black cardinalfish. They note that catch has exceeded 500 tonnes three times since the TACC was set in 1999/2000. They submit that the operational dynamics of the CDL 1 fishery have changed over the last decade as the target fisheries (mainly orange roughy) which also catch black cardinalfish as bycatch, have moved away from the CDL 1 area.
- 530. DWG consider that whether or not a fishery is fully utilised depends on many factors that are not sustainability related such as other target fisheries in the area and lack of a viable market for the species. They submit that changes to the TACC cannot be based on a "use it or lose it approach" rather they are required to be based on the best available information which for CDL 1 is inadequate. They note that the Plenary states that stock boundaries and number of black cardinalfish stocks are unknown and there are no data on genetics or movement. They conclude that other than recent low catches there is little evidence of a sustainability issue.
- 531. Fisheries Inshore New Zealand Ltd (FINZ) endorses the DWG response for CDL 1.
- 532. Sanford Ltd note that they are a quota holder, fisher, fish processor and member of DWG. They support Option 1, noting that they have an interest in a number of fish stocks (including black cardinalfish) that is greater than the general public. No other rationale was provided for supporting the status quo.
- 533. Fisheries New Zealand notes that the historical high level of CDL 1 catch has declined over the past 21 years in line with a reduction in targeted effort and a reduction in the bycatch of black cardinalfish in orange roughy target tows. Fisheries New Zealand consider that the TAC should be reduced to address the potential sustainability risk for the CDL 1 stock if catch increased to approach the current TAC and TACC. We agree with DWG that a research project should be considered to monitor the CDL 1 stock and assess its sustainable yield.
- 534. Submissions and responses that were not in favour of the status quo cited concerns over the future sustainability of the stock if the current TAC was caught.

6.2 Option 2 (Fisheries New Zealand's preferred option)

- 535. Option 2 reduces the TAC by 1,144 tonnes to 176 tonnes, reduces the TACC by 1,040 tonnes to 160 tonnes and reduces the allowance for other mortality caused by fishing by 104 tonnes to 16 tonnes.
- 536. Two submissions supported a decrease to the TAC but did not specify their preference for Option 2 or Option 3. A. Flavell-Johnson made a general submission on the stocks in this sustainability round. A. Flavell-Johnson agrees with decreases in the TACs for declining stocks and/or those stocks where there is a lack of knowledge. This submission states that

- commercial catch should be ceased until stocks have fully recovered and a clear understanding of how to sustainably manage them is developed.
- 537. K. Mason opposed any increase to the TAC for any of the fish stocks in the sustainability round because under the rational that there is not sufficient data about the marine environment and the current default target biomass is arbitrary. Additionally, K. Mason considers that we do not know enough about the environmental effects of fishing and climate change and opposes any increase to TACCs unless there is no chance of bycatch of any sort and deep-sea trawling is removed as a catch method.
- 538. Fisheries New Zealand note that the average total annual landings of black cardinalfish in CDL 1 over the past five years (an average of 18 tonnes per year) is 1.5% of the current TACC. Therefore, there is scope to substantially reduce the CDL 1 TAC. By reducing the current TAC we consider that this would reduce the potential sustainability risk associated with current management settings.
- 539. The proposed TACC of 160 tonnes under this option represents the highest total catch of black cardinalfish in the last 11 fishing years. This level of catch has not been exceeded since 2008/09.

6.3 **Option 3**

TAC: 44 t (**1**,276) **TACC:** 40 t (**1**,160) **Customary**: 0 **Recreational**: 0 **Other mortality**: 4 t (**1**16)

- 540. Option 3 reduces the TAC by 1,276 tonnes to 44 tonnes, reduces the TACC by 1,160 tonnes to 40 tonnes and reduces the allowance for other mortality caused by fishing by 116 tonnes to four tonnes.
- 541. A. Flavell-Johnson and K. Mason made a general submission on the stocks in this sustainability round supporting a decrease in the CDL TAC (see submissions in section 6.2).
- 542. The Environment and Conservation Organisations of NZ (ECO) support the reduction in the catch limit outlined by Option 3. They consider that this catch level will not constrain the current CDL 1 catch and support further research into the fish stocks covered by this QMA.
- 543. Our Seas Our Future (OSOF) support Option 3 because the TAC for CDL 1 has not been reviewed since it was first set in 1999/2000. They note that catch has never reached the level of the current TACC, has been well below it for over a decade, and has reduced in line with reduced effort. They note that the total commercial catch of CDL 1 has averaged 18 tonnes annually over the last five fishing years.
- 544. OSOF note that because annual landings have only been 1.5% of the TACC over the last five fishing years there is a large scope to reduce the CDL 1 TAC without constraining current targeted catch or bycatch of black cardinalfish in other target fisheries.
- 545. The New Zealand Recreational Fishing Council note that recreational catch is occasional and limited. They are concerned about the future sustainability of the CDL 1 stock and support Option 3 which makes black cardinalfish a limited bycatch species only.
- 546. The Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA) prefer Option 3 because it reduces the TAC and TACC by the largest amount. They consider that because the stock status and sustainability of CDL 1 is currently unknown it would be remiss to not attempt to reduce the sustainability risk until more information is available. They note that there is a critical need for more funding of robust stock assessments of all species under the QMS.
- 547. Fisheries New Zealand notes that Option 3 would significantly reduce the potential sustainability risk associated with current management settings. Whilst it is unknown whether

catch at this TAC would be sustainable or not, this option is considered to be a very cautious management approach.

6.4 Other options proposed by submitters

- 548. Sealord Group Ltd (Sealord) appreciate the intention of Options 2 and 3 to safeguard the CDL 1 stock in the event that future catch reaches the level of the current TACC. However, Sealord propose an alternative option to reduce the TACC by 67% to 400 tonnes. They note that black cardinalfish are primarily caught when targeting orange roughy in ORH 1 either as a low level of bycatch or occasionally in larger volumes either targeted or when a black cardinalfish aggregation is mistaken for orange roughy. Sealord disagree with the approach of setting the TACC at a level just above current catch because this may unnecessarily constrain the ORH 1 catch and will be problematic when CDL 1 abundance increases.
- 549. Sealord note that because black cardinalfish are a low value species it will not be economically viable to carry out a CDL 1 stock assessment to the level of certainty to increase the TACC in future. They consider that a TACC of 400 tonnes achieves the intention of preventing overexploitation of CDL 1 whilst at the same time providing headroom for a black cardinalfish biomass increase and allowing time to develop appropriate measures to index abundance and provide stock assessment guidance.
- 550. Te Ohu Kaimoana proposed an alternative option which they named "Option 4", which sets the TAC at 420 tonnes, the TACC at 400 tonnes and an allowance for all other mortality caused by fishing set at 20 tonnes. These values are the same as those proposed by Sealord.
- 551. Te Ohu Kaimoana note that there is substantial headroom between the current TACC and commercial catch of CDL 1. They note that there is an intention to "develop" the orange roughy fishery in the CDL 1 QMA. This will require sufficient CDL 1 ACE to be caught alongside ORH 1. Te Ohu Kaimoana agree there is a case for the CDL 1 TAC to be reduced but only to a level that will allow for "sustainable development" of the orange roughy fishery.
- 552. Iwi Collective Partnership (ICP), Ngātiwai Trust Board, Ngati Mutanga O Wharekauri Asset Holding Co Ltd and Te Kupenga o Maniapoto Ltd support the Te Ohu Kaimoana alternative option named "Option 4".
- 553. The Royal Forest & Bird Protection Society (Forest & Bird) note that the current catch of CDL 1 is approximately 1.5% of the TACC and that the fishery appears to be severely overfished. They consider that none of the options are likely to significantly constrain catch so will not rebuild the fishery and that none of the proposed options are assessed in the light of the Harvest Strategy Standard which is a mandatory consideration.
- 554. Forest & Bird propose an alternative option where the TAC and TACC are set at 50% of Option 3 to constrain the fishery and send a signal to fishers that a rebuild is required. This would set a TAC of 22 tonnes, TACC of 20 tonnes and an allowance for all other mortality caused by fishing at 2 tonnes. They propose that the TACC would be reviewed next year to set a TACC at a level that enables a rebuild of the stock consistent with the Harvest Strategy Standard.
- 555. Additionally, Forest & Bird propose that the benthic footprint caused by bottom trawling is frozen, seamounts and associated features are protected, a move on rule is adapted and bottom trawling is phased out. They consider that these measures are needed to manage the environment
- 556. Fisheries New Zealand does not support the alternative options proposed. A TACC of 400 tonnes is proposed by CDL 1 quota holders "to enable the development of the orange roughy fishery (ORH 1)". This level of catch of black cardinalfish (400 tonnes) has not been reached in the past 14 years (since 2006/07). The TACC for ORH 1 is currently 1,400 tonnes. In the past five fishing years (2015/16 to 2019/20) an average of 786 tonnes of ORH 1 has been caught annually (56% of the ORH 1 TACC). If average annual ORH 1 landings increase in future, then

- the CDL 1 TACC could be reconsidered based on bycatch data from ORH 1.
- 557. Forest & Bird state that the CDL 1 fishery appears to be severely overfished and a rebuild is necessary. Fisheries New Zealand does not consider that the fishery is overfished. Rather, black cardinalfish catch has declined over the last 20 years in line with a reduction in target effort in the cardinalfish fishery and lower bycatch from the orange roughy (ORH 1) target fishery in particular (Figure 3).
- 558. As noted in section 1.2 of this paper, CDL 1 is a low knowledge stock, and there is little information with which to reliably estimate stock status. As such, the stock status of CDL 1 is unknown, and the stock is managed under section 13(2A) of the Act.
- 559. Given that the information used to support this advice paper has some uncertainty, you are required under section 10(c) of the Act to be cautious, but to also not use the uncertainty of information as a reason for postponing or failing to set or vary a TAC under section 10(d). Selecting either of Options 2 or 3 allows you to meet the information requirements under the Act since both options are inherently cautious.

6.5 Economic considerations

- 560. Black cardinalfish in CDL 1 is managed as a Tier 2 species within the National Deepwater Plan (2019) because it has a low commercial value relative to other deepwater species such as orange roughy. The CDL 1 port price is low (\$0.93 per kg) as is the average price paid by fishers during the 2019/20 fishing year for one kilogram of ACE (CDL 1: \$0.10 per kg).
- 561. The economic impacts associated with the proposed options are likely minimal as historically the TACC has not been fully utilised. Provided recent catch trends continue, options 2 and 3 will provide for existing levels of utilisation. It is unlikely that fishers would need to adjust their fishing behaviour in response to these proposed changes. The two options to reduce the TAC are not expected to adversely affect CDL 1 quota holders. Over the last five fishing years the total black cardinalfish catch has averaged 18 tonnes annually.

7 Deemed values

- 562. You must take into account the need to provide an incentive for fishers to balance catch with ACE under section 75(2)(a) of the Act. You may then have regard to the economic benefits from taking any other fish under section 75(2)(b)(iv) of the Act. The current deemed value rates in CDL 1 may not provide sufficient incentive to ensure fishers limit their catch to CDL 1 ACE holdings as fishers may choose instead to pay deemed value penalties when targeting higher value fish in the area, in particular orange roughy.
- 563. The CDL 1 port price (\$0.93 per kg) is similar to that of CDL 2 (\$0.94 per kg), as is the average price paid by fishers during the 2019/20 fishing year for one kilogram of ACE (CDL 1: \$0.10 per kg, CDL 2: \$0.17 per kg). However, the interim and annual deemed values are much lower for CDL 1 than CDL 2, and CDL 2 has a differential deemed value rate for 20% in excess of ACE holdings which CDL 1 does not.
- 564. Due to the similarities in port price and ACE transfer price and the success of the CDL 2 deemed value rates at ensuring fishers acquire or maintain sufficient ACE to cover catch taken over the course of the year, Fisheries New Zealand is proposing to bring CDL 1 deemed value rates in line with those of CDL 2 (Table 4).

Table 4: Current and proposed deemed value rates for CDL 1.

Stock	Interim rate (\$/kg)	Annual rate (\$/kg) 100-120%	Differential rates (\$/kg) for excess catch (% of ACE) 120%+
Current CDL 1 rates	0.27	0.30	N/A
Option 1: Proposed CDL 1 rates	0.54	0.60	0.69
Current CDL 2 rates	0.54	0.60	0.69

- 565. Te Ohu Kaimoana did not support the proposed deemed value rates for CDL 1. They support the deemed value rate being set between ACE and the market price of fish and note that the current deemed value rate for CDL 1 already does this. They submit that it may be appropriate to set the deemed values rate closer to the market price if there is an indication that catch is not being balanced with ACE.
- 566. Fisheries New Zealand notes the Minister must set interim and annual deemed values that take into account the need to provide incentives for fishers to acquire sufficient ACE to cover their catch. In addition, section 75(4) of the Act allows different differential deemed value rates to be set for different stocks. For those stocks where utilisation and/or sustainability objectives require a very strong incentive for catch to not exceed available ACE, a stringent differential schedule may be applied. Likewise, differential deemed value rates may be less appropriate for those stocks for which there are no sustainability concerns and targeted fishing does not occur. Further, differential deemed values may be set for bycatch species taken in mixed fisheries ('shadow value') to remove the value of the target species taken in association with the bycatch species.
- 567. In the case of CDL 1, orange roughy is the main target species, and there is no indication that catch is not being balanced against ACE, since the CDL 1 TACC is undercaught (Figure 2). However, as noted, there is uncertainty as to whether catch at the level of the TAC is sustainable. Therefore, there is no reason to not align the CDL 1 deemed value rates (including differential deemed values) with that of CDL 2.

8 Conclusions and recommendations

- 568. Fisheries New Zealand recommends that you decrease the TAC for CDL 1, with our preferred option being Option 2.
- 569. The black cardinalfish CDL 1 TAC is based on a period of high historical catch in the years before the TAC was first set in 1999/2000. In the 21 years since then, the catch of black cardinalfish in CDL 1 has steadily declined as effort has declined. The decrease in landings of CDL 1 is likely attributed to a change in fishing dynamics.
- 570. CDL 1 is a low knowledge fish stock and the status of the stock is unknown. A rebuild is not proposed under the Harvest Strategy Standard rather it is considered that there is an opportunity to reduce the CDL 1 TAC to a level that better aligns with recent catch.
- 571. Fisheries New Zealand seeks to decrease the CDL 1 TAC, TACC and allowance for other sources of mortality caused by fishing based upon recent catch data. This is to address the potential sustainability risk for this stock if catch increased to the current TAC and TACC.
- 572. Reducing the TAC to 176 tonnes under Option 2 recognises that annual catch of CDL 1 has been below the TAC since introduction to the QMS and it is unknown whether the current TAC is sustainable. This option allows for moderate utilisation of the stock whilst providing some headroom to recognise the natural variability and fluctuations within the fishery. This option allows for modest commercial activity to continue, while limiting the potential for the stock to become unsustainable.
- 573. For the purposes of setting a TAC Fisheries New Zealand considers that the current level of the stock or the level of the stock that can produce the *MSY* is not able to be estimated reliably using the available information.
- 574. Under section 13(2A) of the Act you are required to set a TAC at a level that will maintain a stock at or above, or move it towards, a level that will produce the MSY. However, for CDL 1 there are no estimates of current or reference biomass available and therefore the current status of the stocks relative to MSY is unknown. Yield estimates are also not available for CDL 1 and it is also unknown if recent catches are at levels that will allow the stock to move towards the biomass that will support MSY. Therefore, it is recommended that the TAC be based on consideration of the level of recent catch.

Decisions for CDL 1 9

Option 1 status quo

Agree to retain the CDL 1 TAC at 1,320 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- Retain the allowance for recreational fishing interests at 0 tonnes;
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 120 iii.
- Retain the CDL 1 TACC at 1,200 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the CDL 1 TAC at 176 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- Retain the allowance for recreational fishing interests at 0 tonnes; ii.
- Decrease the allowance for all other sources of mortality to the stock caused by fishing from iii. 120 to 16 tonnes;
- Decrease the stock TACC from 1,200 to 160 tonnes iv.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the CDL 1 TAC at 44 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes; i,
- Retain the allowance for recreational fishing interests at 0 tonnes; ii.
- Decrease the allowance for all other sources of mortality to the stock caused by fishing from iii. 120 to 4 tonnes;
- Decrease the stock TACC from 1,200 to 40 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

<u>AND</u>

Agree to increase the CDL 1 deemed value rates to those outlined below:

	Interim rate	Annual rate (\$/kg) . 100-120%	Differential rates (\$/kg) for excess catch (% of ACE)		
Stock	(\$/kg)		120%+		
Option 1: Proposed rates for CDL 1	0.54	0.60	0.69		

Agreed / Agreed as Amended / Not Agreed

Hon David Parker Minister for Oceans and Fisheries

Thunnus maccoyii, Southern bluefin tuna, Ika tira iti

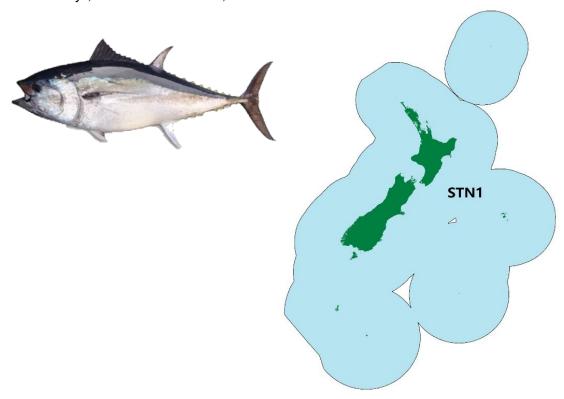


Figure 1: Quota Management Areas (QMAs) for southern bluefin tuna (STN 1), with STN 1 highlighted in blue. A southern bluefin tuna is pictured on the left.

Table 1: Summary of options proposed for STN 1 from 1 October 2021. 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	1,102 1 (14 t)	1060 🛧	(14 t)	2	20	20
Option 2	1,102 14t)	1,046		2	34 🔨 (14 t)	20
New option inco	rporated following cons	ultation	No			
Total submissio	ns received		44 59			
Number of submissions received in support of		Option 1		6		
each option					23	
			Other		15	

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 $^{^{59}}$ Many submissions proposed other options in addition to supporting either Option 1 or 2.

1 Why are we proposing a review?

- 575. Outcomes from the most recent meeting of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) resulted in an increase of New Zealand's national allocation for southern bluefin tuna of 14 tonnes. There is now a utilisation opportunity to reflect this international decision through New Zealand's domestic management framework.
- 576. Fisheries New Zealand is proposing that the TAC be increased, and a review of the TACC, and recreational allowance for this stock.

1.1 About the stock

1.1.1 Fishery characteristics

- 577. Globally, southern bluefin tuna is primarily caught in a target commercial fishery using the surface longline fishing method. Southern bluefin tuna is also caught as bycatch in surface longline fisheries targeting bigeye tuna and swordfish. Game fishing is also a highly valued pastime for many New Zealanders, and southern bluefin tuna is an important fishery to recreational fishers.
- 578. Southern bluefin tuna is regionally managed through the CCSBT, of which New Zealand is a founding member. The CCSBT sets the global total allowable catch using a science-based Management Procedure that is designed to ensure that the southern bluefin tuna spawning stock biomass achieves the CCSBT's rebuilding target. Under the adopted Management Procedure, the TAC is set in 3-year quota periods which is then allocated to members.
- 579. Under the CCSBT, all members have a binding obligation to manage their catch of southern bluefin tuna within their allocation. Members must account for all sources of mortality of southern bluefin tuna, including those related to discards, customary, commercial and recreational fishing within that allocation. The CCSBT does not determine how individual members divide this allocation domestically across the various sectors that make up their fishery. New Zealand's international obligation to CCSBT is to "make efforts to obtain best estimates of the actual catch amount" for all sources of mortality and to use these estimates when reporting total mortality against our national allocation. ⁶⁰ This obligation applies equally to all CCSBT members.
- 580. Domestically, southern bluefin tuna is a quota management species (QMS) that is managed under the National Fisheries Plan for Highly Migratory Species⁶¹, which was approved in 2019 by the then Minister of Fisheries under section 11A of the Fisheries Act 1996 (the Act).
- 581. A Harvest Strategy Standard (HSS) was adopted for New Zealand fisheries in October 2008. The HSS outlines classifications of stocks based on their status in relation to target and limit reference points. For highly migratory species (including southern bluefin tuna), the standard outlines that Fisheries New Zealand will generally rely on international organisations in which New Zealand participates to determine the status of the species in question in this instance the CCSBT. Fisheries New Zealand is satisfied that the advice from the CCSBT's Scientific Committee (including an independent panel) represents the best available information to inform management decisions.

1.1.2 Biology

582. Southern bluefin tuna is a highly migratory species, traversing between the high seas and states' exclusive economic zones throughout the southern hemisphere, primarily in waters between 30 and 45 degrees south. Southern bluefin tuna are apex predators and have been

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⁶⁰ Resolution on Limited Carry-forward of Unfished Annual Total Available Catch of Southern Bluefin Tuna.

- recorded to live up to 40 years old, weighing over 200 kilograms and reaching over two metres in length.
- 583. Adults are broadly distributed in the South Atlantic, Indian and western South Pacific Oceans, and are predominantly found in temperate latitudes. Juveniles are broadly distributed along the continental shelf of Western and South Australia and in high seas areas of the Indian Ocean. Southern bluefin tuna caught in the New Zealand exclusive economic zone appear to represent the easternmost extent of the stock.
- 584. There is some uncertainty about the average size and age that southern bluefin tuna become mature. Available information suggests that maturity may be at around 1.5 metres in length and no younger than eight years of age. The Indian Ocean is the only known area where spawning takes place, and this occurs between September and April.

1.2 Status of the stock

- 585. As southern bluefin tuna is a highly migratory species, migrating over considerable distances and spending only part of its time in New Zealand waters, it is not possible to calculate the *MSY* for the portion of the stock found within New Zealand fisheries waters.
- 586. Section 14 of the Act allows an alternative TAC to be set or varied for the limited number of stocks listed in Schedule 3. Southern bluefin tuna is listed under Schedule 3 based on the fact that it is a highly migratory stock and a national allocation for New Zealand has been determined as part of an international agreement.
- 587. The best available information on the global stock status of southern bluefin tuna is provided by the CCSBT stock assessment that was conducted in 2020. Fisheries New Zealand considers this to be the best available information, based on the robust scientific analysis undertaken by the CCSBT Scientific Committee, every three years, to provide updated information on whether the stock is rebuilding, the projected timeframe to meet the objective for the rebuilding plan, and current stock size and fishing mortality relative to commonly used reference points.
- 588. The relative Total Reproductive Output used to monitor stock size is estimated to be 20%. The stock remains below the level estimated to produce maximum sustainable yield. However, there has been improvement since previous stock assessments conducted in 2017 which indicated the stock was at 13% of initial biomass.
- 589. The current estimated trends indicate that the stock has been rebuilding by approximately 5% per year since the low point in 2009. The Management Procedure based rebuilding plan for southern bluefin tuna appears to be on track to achieving the objective of reaching 30% of unfished spawning stock biomass by 2035 (with 50% certainty). 62
- 590. The policy guidance in the national Harvest Strategy Standard states that, where an international organisation or agreement has adopted harvest strategies and rebuilding plans that meet or exceed the minimum standards contained in the Standard, the approach of the Ministry and Ministry representatives to the international organisation or agreement will generally be to support those strategies. Fisheries New Zealand is satisfied that the regional rebuilding plan under the CCSBT meets the standards in the harvest strategy.

⁶² https://www.ccsbt.org/sites/default/files/userfiles/file/docs english/meetings/meeting reports/ccsbt 27/report of SC25.pdf

2 Catch information and current settings within the TAC

2.1 Commercial

- 591. Southern bluefin tuna is a valuable commercial species, primarily sold for use as sashimi in the Japanese market. The New Zealand commercial southern bluefin tuna fishery provided export earnings of around \$9.9 million NZD in 2020.⁶³
- 592. Industry representatives reported that the fishery has been negatively impacted over the last year, due to the reliance on the fresh sashimi market, which has been seriously impacted by the COVID-19 pandemic.
- 593. Surface longline fishing targeting southern bluefin tuna primarily occurs off the West Coast of the South Island and along the East Coast of the North Island. The fishing season for southern bluefin tuna generally begins in April/May and finishes in July/August. In recent years, fishers have also been targeting southern bluefin tuna on the East Coast of the South Island in January April.
- 594. For the 2019/20 fishing year, the southern bluefin tuna TACC was 1,046 tonnes, and commercial catch was 857 tonnes (Figure 2).

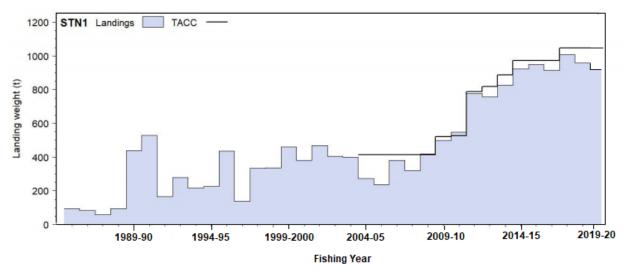


Figure 2: Annual commercial landings of southern bluefin tuna (STN 1) against the TACC.

- 595. New Zealand owned and operated longliners, mostly smaller than 50 gross registered tonnes, began fishing for southern bluefin tuna in 1991. The number of domestic vessels targeting southern bluefin tuna expanded throughout the 1990s and early 2000s prior to the introduction of southern bluefin tuna into the quota management system.
- 596. Since the introduction of southern bluefin tuna into the quota management system in 2004, of which 20% of commercial fishing quota for all new species brought within the QMS are allocated to Māori fisheries, the number of vessels operating in the fishery has declined from 99 to 29 in 2019/20 fishing year. The fleet is primarily comprised of smaller vessels, which are typically at sea for only a few days each trip, and take southern bluefin tuna both as a target, and as a bycatch of bigeye tuna and swordfish target sets.
- 597. Southern bluefin tuna are listed on Schedule 6 of the Fisheries Act 1996 with the provision that: 'A person who is a New Zealand national fishing against New Zealand's national allocation of southern bluefin tuna may return any southern bluefin tuna to the waters from which it was taken from if (a) that southern bluefin tuna is likely to survive on return; and (b) the return

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⁶³ https://www.seafoodnewzealand.org.nz/publications/export-information/

takes place as soon as practicable after the southern bluefin tuna is taken.'

2.2 Customary Māori

- 598. Customary non-commercial fishing for southern bluefin tuna is fishing which is undertaken under the Fisheries (South Island Customary Fishing) Regulations 1999, the Fisheries (Kaimoana Customary Fishing) Regulations 1998, or regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013. There are currently no records held by Fisheries New Zealand of southern bluefin tuna being taken under customary authorisation. Fisheries New Zealand is not recommending any changes to the current customary fishing allowance.
- 599. However, during previous iwi fisheries forums, tangata whenua have indicated an intention to take southern bluefin tuna using some of the regulatory mechanisms listed above. Input from those forums also suggested that southern bluefin tuna was in fact being used for customary purposes but taken under the recreational framework. Fisheries New Zealand's recent introduction of a bag limit may create an incentive to increase the use of customary fishing provisions in the future.

2.3 Recreational

- 600. Prior to 2017, recreational catches of southern bluefin tuna are likely to have been rare because of the locations and seasons during which southern bluefin tuna are found in New Zealand waters (generally winter months and areas with little recreational fishing).
- 601. In 2017, recreational catch was estimated at much higher levels than those previously seen in this fishery particularly around the East Cape. The increase in recreational fishing effort directly targeting southern bluefin tuna was likely due, in part, to favourable weather conditions, exposure to the fishery on social media and the relative proximity of the fish to shore that year. The recreational interest in this fishery has continued to grow and the increase in catch in recent years can largely be attributed to an increased number of participants.
- 602. At present, there are two distinct recreational fisheries for southern bluefin tuna in New Zealand. One, off the West Coast of the South Island from February to July and a second fishery that started in 2017 off the East Coast of the North Island, mainly in June and July.
- 603. The then Minister of Fisheries increased the recreational allowance from eight to 20 tonnes in 2018. Since then, recreational catch estimates have been both above and below the new recreational allowance (Figure 3). This variability is reflective of the highly migratory nature of these fish, and the fact that recreational fishers have a relatively short window for targeting southern bluefin tuna, which can easily be disrupted by unfavourable weather conditions.

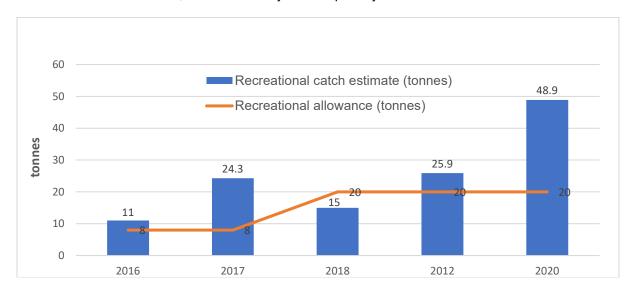


Figure 3: Recreational catch estimate vs recreational allowance, 2016-2020. All weight in tonnes.

- 604. In 2019, a bag limit of one southern bluefin tuna per person, per day was also introduced. At the time, the then Minister also signalled that additional constraints would be explored. As part of the 2018 consultation. Te Ohu Kaimoana and Fisheries Inshore New Zealand both suggested the addition of a boat limit and/or a balloting system tied to the maximum number of fish represented by the recreational allowance.
- Fisheries New Zealand continued to target research at this nascent recreational fishery during 2019 and 2020 in order to monitor the catch and assess the impact of the newly introduced bag limit.
- 606. Based on the information obtained from the annual research surveys. Fisheries New Zealand has determined that a boat limit would not be an effective means of constraining catch. In 2020, 71% of all trips did not catch a southern bluefin tuna, with only a very small proportion of trips catching more than one southern bluefin tuna (Figure 4).

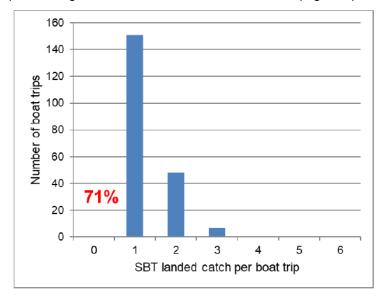


Figure 4: The number of southern bluefin tuna landed per private boat trip (day) in 2020 from on-site survey data and the proportion of trips with zero catch (red).

- 607. The suggestion of a recreational balloting system for recreational southern bluefin tuna fishers has not been pursued to date and would represent a significant shift in the domestic management of recreational fishing interests.
- 608. Feedback from compliance officers has been that fishers have been complying with the bag limits. Recreational fishers have also contributed greatly to the collection of 64 toliths that are used by the CCSBT for population aging data.
- 609. Since 2018, Fisheries New Zealand has funded an annual research project to estimate recreational southern bluefin tuna catch. This project includes, a boat ramp survey at Waihau Bay and a targeted survey of South Island fishers, with other information collected from a variety of sources including: sport fishing club records, reporting of authorised recreational take from commercial vessels, amateur charter vessel reporting, and anecdotal information. This project also takes into account the uncertainty in catch estimates and specifically accounts for a level of catch that hasn't been captured through the aforementioned information collection methods.
- 610. The recreational catch estimate for 2020 was 48.9 tonnes, 28.9 tonnes higher than the current allowance of 20 tonnes. This was the first year to see a significant increase in the number of

⁶⁴ Otoliths are the ear bones of the tuna, which enable scientists to age the fish and look at their chemical signatures, which is used to infer migrations and spawning sites.

southern bluefin tuna taken by amateur charter vessels (10.9 tonnes), which count towards the overall recreational catch estimate (Table 2)

Table 2: Amateur charter vessel catch rates 2015/16 – 2019/20 fishing years. All weight is in tonnes.

Fishing year	Days with STN target	Number of STN caught	Number of STN retained	Estimated landed weight (tonnes)
2015/16	33	38	37	1.2
2016/17	53	54	52	2.3
2017/18	37	12	12	0.5
2018/19	63	47	42	1.8
2019/20	125	225	153	10.9

2.4 All other Mortality caused by fishing

611. The current allowance for all other sources of mortality caused by fishing is set at 20 tonnes. This allowance reflects estimated mortality from live releases along with any potential underreporting. Fisheries New Zealand does not have any new information that would suggest that a review of this allowance is necessary and has not proposed any changes as part of this paper.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 612. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions
- 613. A one-page document with information on southern bluefin tuna stock regarding potential changes for the 1 October 2021 sustainability round (including those relating to southern bluefin tuna) was made available to lwi Fisheries Forum in April, May and June 2021, and input was sought. The potential changes on southern bluefin tuna for the 1 October 2021 sustainability round were then discussed at the lwi Fisheries Forum.
- 614. Feedback was provided by Ngā Hapū o Te Uru o Tainui, who suggested separating the potential increase between recreational and customary. Feedback was also provided by Te Hiku o Te Ika, who suggested the potential increase of TACC by 14 tonnes be allocated to commercial Māori quota owners. Te Waka a Māui me Ōna Toka suggested that Tangata whenua's increasing interest in the southern bluefin tuna fishery for pataka, should be reflected in the customary allowance.

3.2 Kaitiakitanga

- 615. The Te Waka a Māui me Ōna Toka Forum, Mai Nga Kuri a Wharei ki Tihirau Fisheries Forum, Te Hiku o Te Ika Fisheries Forum and Chatham Islands Fisheries Forum all identify southern bluefin tuna as taonga species of significance in their fisheries plans. Tangata whenua are also showing greater interest in southern bluefin tuna and its management over recent years.
- 616. Fisheries New Zealand considers the proposals for STN 1 to be generally consistent with the objectives of these lwi Fisheries Forum Plans, in particular those to: improve the management of fisheries resources to ensure sustainability for future generations and that fish stocks are healthy and support the social, cultural and economic prosperity of iwi and hapu.

617. There are no customary fisheries management tools such as mātaitai, taiāpure or section 186A or 186B temporary closures relevant to these proposals as southern bluefin tuna fishing largely takes place offshore. However, southern bluefin tuna migrate, and are caught recreationally and commercially, through a number of rohe moana such as Ngā Hapū o Taimai ki Te Marangi, Ngäti Kuta/Patukeha (Te Rawhiti Marae) and Ngāti Takapari, many of which extend out to 200 nm.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 618. In deciding whether to increase the TAC and how to allocate the increased allocation, you are required to take into account the following environmental principles:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained.
 - Habitats of particular significance to fisheries management should be protected.
- 619. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish bycatch and habitats of particular significance. It should be noted that only the first and second environmental principles under section 9, is relevant to this fishery. This is because southern bluefin tuna is a highly migratory species, and there are no habitats of particular significance for southern bluefin tuna identified in New Zealand's exclusive economic zone that could be impacted by the changes proposed in this decision paper.
- 620. New Zealand's southern bluefin tuna surface longline fishery also occasionally interacts with cetaceans and turtles.

4.1.1 Marine mammals

- 621. The southern bluefin tuna surface longline fishery is known to interact with fur seals. Incidental captures on longlines typically occur when fur seals attempt to feed on the bait and fish catch during hauling. Most New Zealand fur seals are released alive, typically with a hook and short snood or trace still attached. New Zealand fur seal captures in surface longline fisheries have been generally observed in waters south and west of Fiordland, but also in the Bay of Plenty-East Cape area.
- 622. The Department of Conservation classify the fur seal population as 'Not Threatened least concern' and note that the New Zealand population has been increasing in recent years 65.

 Based on observer information, most fur seals encountered in surface longline gear are able to be released alive and the potential increase in fishing effort associated with these options are not considered to give rise to concerns regarding increased fur seal interactions.

4.1.2 Seabirds

623. The southern bluefin tuna surface longline fishery is known to interact with seabirds. Captures on longlines typically occur when the seabirds attempt to feed on the baited hooks during setting and hauling. Most seabird captures result in mortality, with the bird having been hooked or tangled during the setting of gear. Seabirds captured on the haul are usually able to be released alive, however there is the possibility of subsequent unseen mortality.

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⁶⁵ https://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/nz-fur-seal/

- 624. The 'National Plan of Action for Seabirds (NPOA Seabirds 2020) guides management of seabird interactions with New Zealand fisheries. It employs a systematic risk assessment that identifies seabird species and fisheries associated with the highest risk and monitors changes in risk status over time.
- 625. The Department of Conservation's New Zealand Threat Classification System has ranked species according to the threat of extinction. A number of species with the highest ranking 'Threatened Nationally Critical' are captured in the surface longline fishery (black petrel, Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross and Gibson's albatross).
- 626. Fisheries New Zealand monitors seabird bycatch as part of its at-sea observer programme. Observations are used to calculate total estimated captures. This information is further used to model risk from fishing to each seabird species. According to the most recent Fisheries New Zealand risk assessment⁶⁶, the six species with the highest risk ranking all have recorded captures in the southern bluefin tuna surface longline fishery⁶⁷.
- 627. A recreational survey conducted at Waihau Bay reported no interactions with seabirds. However, there is uncertainty in this, given that the Waihau Bay survey does not cover the whole area of recreational fishing effort for southern bluefin tuna.
- 628. Fisheries New Zealand considers that the potential increase in fishing effort associated with the options presented in this paper would not be substantial enough to significantly exacerbate the risk to seabirds from the fishery.

4.1.3 Fish bycatch

- 629. Bigeye tuna, Pacific bluefin tuna, swordfish, ray's bream, albacore and blue sharks are common fish species associated with the New Zealand southern bluefin tuna surface longline fishery. These species were introduced into the Quota Management System on 1 October 2004, and the TACC is generally under-caught.
- 630. Fisheries New Zealand considers that the potential increase in fishing effort associated with the options proposed in this paper would not be substantial enough to give rise to concerns related to fish bycatch.

4.1.4 Benthic impacts

631. There are no benthic impacts associated with the southern bluefin tuna fishery.

4.1.5 Habitats of particular significance for fisheries management

- 632. Southern bluefin tuna is a highly migratory species, moving between New Zealand's exclusive economic zone, other states exclusive economic zones, and the high seas. The only known spawning ground for southern bluefin tuna is south of Java, Indonesia, where spawning occurs during September and April.
- 633. Juvenile southern bluefin tuna migrate from Indonesia south down the West Coast of Australia during the summer months (December-April). Southern bluefin tuna found in New Zealand's waters represent the eastern most extent of the stock. Therefore, there are no habitats of particular significance for southern bluefin tuna identified in New Zealand's exclusive economic zone that could be impacted by the changes proposed in this paper.

4.2 Sustainability measures (section 11 of the Act)

634. 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

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⁶⁶ https://www.mpi.govt.nz/dmsdocument/39407-AEBR-237

⁶⁷ The surface longline fishery poses a substantial portion of the fisheries risk to: black petrel, Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross, and Gibson's albatross.

of fishing on the stock and the aquatic environment, the natural variability of the stock concerned, and any relevant fisheries plans.

4.2.1 National Fisheries Plan for Highly Migratory Species

- 635. Domestically, southern bluefin tuna are managed under the National Fisheries Plan for Highly Migratory Species (HMS) 2019. The National HMS Plan sets out management objectives and strategies for HMS fisheries, the most relevant to STN 1 being:
 - **Management objective 1:** Support viable and profitable commercial HMS fisheries in New Zealand;
 - Management objective 2: Maintain and enhance world class game fisheries in New Zealand fisheries waters;
 - Management objective 3: Māori interests (including customary, commercial, recreational and environmental) are enhanced;
 - **Management objective 4:** Maintain sustainable HMS fisheries within environmental standards;
 - Management objective 7: Maintain an effective fisheries management regime; and
 - Management objective 8: Recognise and provide for Deed of Settlement obligations.
- 636. The National Fisheries Plan for Highly Migratory Species is a formally approved section 11A fisheries Plan, which you must take into account when making sustainability decisions.

4.2.2 Regional Rebuilding Plan

- 637. Southern bluefin tuna is a highly valued species currently subject to a regional rebuilding plan under CCSBT. In line with the rebuilding plan, CCSBT sets the global total allowable catch for southern bluefin tuna for three-year periods, with the global total allowable catch allocated to individual member countries (see Table 3 for global total allowable catch and New Zealand's allocation). A recent increase in New Zealand's allocation presents an opportunity to increase utilisation within the confines of the rebuilding strategy.
- 638. In 2011, CCSBT agreed that a science-based management procedure would be used to guide the setting of the global total allowable catch for southern bluefin tuna. The management procedure is designed to recommend an appropriate global catch limit that will allow the spawning stock biomass to achieve the rebuilding target of 30% of unfished spawning stock biomass by 2035 (with 50% certainty).
- 639. For the three-year period from 2021 to 2023, CCSBT retained the previous global total allowable catch of 17,647 tonnes. However, due to a change in how non-member catch is incorporated into the management procedure, there was an additional 306 tonnes to be allocated between members. As a result of this, New Zealand's allocation has increased by 14 tonnes, from 1,088 tonnes to 1,102 tonnes per annum.

Table 3: Global Total Allowable Catch and New Zealand's allocation (in tonnes).

	2011	2012	2013	2014	2015-17	2018-20	2021-23
Global total allowable catch	9,449	10,449	10,949	12,449	14,647	17,647	17,647
New Zealand allocation	570	800	830	910	1,000	1,088	1,102

640. 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). For highly migratory species (including southern bluefin tuna), the standard outlines that Fisheries New Zealand will generally rely on international organisations

- in which New Zealand participates to determine the status of the species in question in this instance the CCSBT.
- 641. The HSS outlines the Ministry's approach to relevant sections of the Act. It is therefore a core basis for the Ministry's advice to you in the management of fisheries, particularly the setting of TACs under section 13 and 14 of the Act

5 Submissions

642. A total of 44 submissions and responses were received on the STN 1 proposal. This included responses from iwi representatives and tangata whenua, commercial and recreational stakeholders, as well as members of the public. Six submissions supported Option 1, 23 submissions supported Option 2, and 15 submissions supported other options. Many more submissions proposed other options in addition to supporting either Option 1 or 2.

Table 4: Written submissions and responses received for STN 1 (in alphabetical order).

Submitter	Option Support				
Jubilittei	1	2	Other		
A. Flavell			✓	Opposes any increase to TAC for all species.	
A. Fulford			✓	Opposes increase of catch limit	
A. Schmid			✓	Opposes increase in catch limits for commercial and recreational fishing	
B. Price			✓	Supports slowly increasing biomass back to higher levels (80% <i>B</i> ₀)	
Counties Sport Fishing Club		✓			
C. DeLacey		√			
C. Gollop		✓	✓	Supports Option 2, suggests a bag limit of one fish per angler per season	
C. Huband		✓			
C. O'Neil - TopCatch Ltd.		✓			
C. Pullman		✓	✓	Supports Option 2, suggests a boat limit of two fish per boat per day.	
D. Airey		✓			
D. De Bruin		√			
D. Henry		✓			
D. Peters		✓			
Environment and Conservation Organisations of New Zealand (ECO)			√	Opposes increase of TAC	
Environmental Law initiative (ELI)			✓	Opposes increase of TAC	
Fisheries Inshore New Zealand (FINZ)		✓	✓	Supports Option 2, contingent with additional management controls	
J. Burton		✓	√	Supports Option 2, suggests a bag limit of one fish per angler per season, and a max of 2 fish per boat per trip.	
J. Skeates		√			
Kowhai Media Ltd (New Zealand Geographic)			√	Suggests no increase until stock has returned to target.	
K. Mason			✓	Opposes increase of TAC for all stocks	

K. Oxenham		√		
L. Wallace		✓		
M. Greenland - Goodfishing		✓		
Maruehi Fisheries Ltd	√		✓	Suggests a reset of TAC to better recognise the status of customary harvest. Supports Option 1 in the absence of alternative approach.
Ngāti Mutunga o Wharekauri Asset Holding Company Ltd	✓		✓	Suggests a reset of TAC to better recognise the status of customary harvest. Supports Option 1 in the absence of alternative approach.
Ngātiwai Trust Board	✓		✓	Suggests a reset of TAC to better recognise the status of customary harvest. Supports Option 1 in the absence of alternative approach.
NZ Recreational Fishing Council (NZRFC)		✓		
NZ Sport Fishing Council/ LEGASEA		✓		
O. Clark		✓		
Our Seas Our Future			✓	Opposes increase of TAC
PD. Burt		✓		
P. MacGregor			√	Suggests new limit of one fish per boat for recreational, no commercial fishing for 5 years, ban all foreign boats from New Zealand's territorial waters.
Royal Forest & Bird Protection Society (Forest & Bird)			✓	Suggests 100% observer compliance
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)			✓	Suggests no increase to TAC, and TACC or recreational allowance.
R. Palmer		✓		
R. Peart			✓	Oppose increase of TAC
S. Newland		✓	✓	Supports Option 2, suggests boat limit for recreational and charter vessels be set at four per day, limit of two fish per person in any calendar year.
Stu			✓	Suggests FNZ bank 14 tonnes to recreational allowance, increase TACC to 1060 tonnes, and set new limit of 1 fish per angler per season for recreational and unlimited tagging. No tunatakes below 50 kgs.
Te Ohu Kaimoana, Endorsed by: Te Kupenga o Maniapoto	✓		✓	Suggests FNZ reset the TAC to better recognise the status of customary rights in this fishery.
The Iwi Collective Partnership (ICP)			✓	Suggests FNZ increase TACC by 7 tonnes, and increase the recreational allowance by 7 tonnes.
Tama Asset Holding Company Ltd	✓		✓	Suggests a reset to TAC to better recognise the status of customary harvest. Supports Option 1 in the absence of alternative approach.
Taranaki lwi Fisheries Ltd	✓		✓	Suggests a reset of TAC to better recognise the status of customary harvest. Supports Option 1 in the absence of alternative approach.
T. Dalton		√		

6 Options and analysis

6.1 Option 1

TAC: 1,102 t (↑ 14) TACC: 1060 t (↑ 14) Customary: 2 Recreational: 20 Other m

- 643. Fisheries New Zealand considers this option satisfies section 14 of the Act for setting or varying a alternative TAC for stock specified in Schedule 3.
- 644. Option 1 proposes to increase the TAC by 14 tonnes, and then, increase the TACC by 14 tonnes. This option ensures that New Zealand's increased international allocation is reflected through our domestic fisheries management regime.
- 645. This option would allow the commercial sector to gain a small benefit from the increases permitted under the stock rebuilding strategy adopted by the CCSBT. There is considerable uncertainty in the commercial gains to be had from this increase in the short term as key tuna markets continue to feel the impacts of the COVID-19 pandemic. The commercial catch for 2019/20 fishing year was 857 tonnes, 189 tonnes lower than the current TACC of 1046 tonnes. Increasing the TACC by 14 tonnes would also lead to a small increase in levies, potentially adding further financial pressure to what is already a financially stressed fishery.
- 646. Fisheries New Zealand considers this option provides for additional utilisation by the commercial sector while meeting sustainability objectives. This is because the CCSBT management procedure ensures that the southern bluefin tuna global catch limit (which includes New Zealand's 14 tonne increase), achieves rebuilding targets. Furthermore, New Zealand's 14 tonnes increase represents a mere 0.08% of the global catch limit. Therefore, Fisheries New Zealand considers the risk of negatively affecting the rebuild of the stock to be negligible under this option.
- 647. Benefits could be gained by the commercial sector in the form of potential additional export revenues. Based on the average value derived from 2020 export statistics, an additional 14 tonnes allocated to the commercial sector could create a further \$198,800 in export revenues if the maximum amount under the TACC is caught. It should be noted that the commercial sector may not immediately catch all of the allocated entitlement, as key tuna markets continue to be affected by the COVID-19 pandemic.
- 648. New Zealand's longstanding position at CCSBT of advocating for credible management of mortality across all fishing sectors could potentially be undermined if you choose this option. This is because Option 1 ignores recent recreational catch estimates and puts New Zealand at a higher risk for exceeding its national allocation under CCSBT. Fisheries New Zealand notes, however, that the decision to allocate between sectors within the TAC remains a domestic one. Officials consider that New Zealand's international obligations to the CCSBT would continue to be fully met under Option 1.
- 649. Te Ohu Kaimoana supports Option 1 and considers that this option is the only one that "approximates compliance with Te Tiriti and the Fisheries Deed of Settlement".
- 650. Ngāti Mutunga o Wharekauri Asset Holding Company Ltd, Ngātiwai Trust Board, Maruehi Fisheries Limited, Tama Asset Holding Company Ltd and Taranaki lwi Fisheries Ltd expressed that if the Te Ohu Kaimoana suggestion, referred to later under Other Options, is not considered then their submission will be in favour of Option 1.

6.2 Option 2 (Fisheries New Zealand's preferred option)

TAC: 1,102 t (↑ 14) TACC: 1,046	Customary: 2	Recreational: 34 (14)	Other mortality: 20
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651. Fisheries New Zealand considers Option 2 also satisfies section 14 of the Act.

- 652. Option 2 proposes to increase the TAC by 14 tonnes, and then, increase the recreational allowance by 14 tonnes. As in Option 1, increasing the TAC ensures that New Zealand is reflecting our increased international allocation through our domestic fisheries management regime.
- 653. Fisheries New Zealand believes that increasing the recreational allowance would better reflect the best available information on recreational catch in this fishery, while noting that catch rates tend to vary significantly between years.
- 654. Fisheries New Zealand recognises that the existing recreational management controls of a bag limit of one southern bluefin tuna per day may not suffice in constraining catch to a level below the increased allocation. Fisheries New Zealand also recognises that should favourable weather and fishing conditions occur during the fishing season, the recreational allowance could continue to be exceeded given the level of effort recently seen in this fishery.
- 655. There are potential international reputational risks to New Zealand in not recognising the increased recreational activity in this fishery within its domestic allocation mechanisms. Failing to recognise the increased recreational catch domestically also puts New Zealand at higher risk of exceeding its national allocation under CCSBT.
- 656. Fisheries New Zealand again notes that New Zealand retains sovereignty over its domestic sector allocation decisions and how best to utilise New Zealand's CCSBT member allocation. Officials do consider that New Zealand's long-term negotiation position at CCSBT would best be served by Option 2, even though there is no existing international obligation that forces you to support this option.
- 657. The FINZ support for Option 2 is conditional/dependent upon: introducing stronger management controls to contain the recreational catch within the allowance, including daily electronic reporting by recreational fishers and ACV operators, closing the recreational fishery when the recreational allowance is reached and exploring the use of a system to allocate catching rights for recreational fishers.
- 658. The New Zealand Sport Fishing Council supports Option 2 and wished to emphasise that an annual allowance of 40 tonnes is required to allow the recreational fishery to develop responsibly.
- 659. The New Zealand Recreational Fishing Council (NZRFC) supports Option 2 and pointed to the contribution of recreational fishers to the collection of otoliths that are used by the CCSBT for population aging data. NZRFC expressed concerns around the international reputational risks to New Zealand in not recognising the increased activity in the recreational fishery within its domestic allocation.
- 660. Te Ohu Kaimoana have expressed concerns that this option rewards the currently unconstrained recreational sector through an attribution policy.
- 661. Te Ohu Kaimoana's position is that only an allocation of the TAC increase to the commercial sector recognises and respects the rangatiratanga of iwi of this traditional fishery and is consistent with the Fisheries Deed of Settlement.

6.3 Other options proposed by submitters

Habitat and environmental concerns

662. A. Flavell, A. Fulford, A. Schmid, Environmental Conservation Organisation, Environmental Law Initiative, K. Mason, New Zealand Geographic, Our Sea Our Future, R. Peart, SPCA and Wellington Recreational Marine Fishers Association stated a preference to not increase the TAC due to concerns over the uncertain long-term sustainability of catch levels, uncertainty to account for all sources of mortality under current fisheries management, not possible to calculate the *MSY* for the portion of stock found within New Zealand, the impacts of climate

- change on the long term viability of the stock, and the need to conserve and protect the southern bluefin tuna fishery.
- 663. B. Price suggested to slowly increase biomass back up to high levels (80% B_0), based on concerns around the unsustainable pressure fisheries are placing on ecosystems.
- 664. Fisheries New Zealand acknowledges these concerns in the context of a rebuilding stock but believes that the Management Procedure agreed at CCSBT (and the robust scientific analysis behind it) allows New Zealand to utilise the increase in its allocation without jeopardising that rebuild. The 14 tonnes proposed also represents an incredibly small portion of the global catch and foregoing that small increase is unlikely to present any meaningful benefits to the overall stock.

Alternative commercial and recreational allowance

- 665. Iwi Collective Partnership submitted a different option than those proposed. The Iwi Collective partnership suggests sharing the TAC increase across the TACC and recreational allowance; increasing the TACC by 7 tonnes and increasing recreational allowance by 7 tonnes. Iwi Collective Partnership expressed concerns around the limitations of current management measures in constraining recreational catch within catch limits.
- 666. This proposed option would allow the commercial sector a small potential benefit over Option 2, Fisheries New Zealand acknowledges the concerns in the context of an unconstrained recreational sector under limited management measures, and, refers to Heading 6.4 which presents Fisheries New Zealand's position in this regard.

Resetting the TAC

- 667. Te Ohu Kaimoana suggests an alternative option to reset the TAC to better recognise the status of customary rights in this fishery. Te Ohu Kaimoana and Te Waka a Māui me Ōna Toka consider that it is not appropriate that customary allowance should sit within an international allocation determined by CCSBT. Te Ohu Kaimoana expressed that the customary allowance should be added to the CCSBT allocation to make up the TAC.
- 668. Part of Te Ohu Kaimoana's rationale for this alternative is based on an assertion that the CCSBT does not currently require other members to account for customary non-commercial catch. That assertion is incorrect and all CCSBT members must in fact account for all sources of mortality when reporting against their Member allocation, including customary or traditional catch.⁶⁸
- 669. Ngāti Mutunga o Wharekauri Asset Holding Company Ltd, Ngātiwai Trust Board, Maruehi Fisheries Limited, Tama Asset Holding Company Ltd and Taranaki Iwi Fisheries Ltd, supported Te Ohu Kaimoana's suggestion to reset the TAC to better recognise the customary harvest in this fishery.
- 670. Fisheries New Zealand does not support this alternative whereby the TAC would be set at a level higher than New Zealand's member allocation at CCSBT as this would slightly increase the risk of exceeding that allocation. It is also likely that other members of CCSBT would not consider New Zealand to be acting "in good faith" with its international obligations.

6.4 Other matters raised

671. Although beyond the scope of the TAC review being conducted this year, a number of submitters recommended that additional management controls be implemented, and that observer coverage be increased. These other matters raised by submitters are presented in this section for your consideration.

⁶⁸ At CCSBT 21 (paragraph 50 of the CCSBT 21 Report), the Extended Commission agreed on a definition of attributable catch, which includes commercial, recreational, customary/traditional, and artisanal catch.

Additional considerations on recreational management

- 672. FINZ suggests that additional active management controls be put in place to effectively manage catch within New Zealand's international allocation. FINZ raises concern that current recreational management measures are limited in constraining recreational effort.
- 673. Te Ohu Kaimoana raised concerns around allocating the 14 tonnes to an unconstrained recreational sector that is over-catching its allowance, which could lead to New Zealand exceeding its national allocation and have suggested that this could risk New Zeeland's international reputation within CCSBT. Te Ohu Kaimoana suggests that more active management measures be put in place to better reflect the Crown's obligation under the Deed.
- 674. C. Gollop and J. Burton suggested that you consider imposing additional recreational management controls of a bag limit of one fish per angler per season, to further help with rebuilding of the stock.
- 675. C. Pullman and J. Burton submitted that you consider imposing a maximum boat limit of 2 fish per boat per day or trip, to help the stock continue to rebuild to a more sustainable biomass.
- 676. P. MacGregor submitted that you consider imposing a new limit of one fish per boat, no commercial fishing for five years, and ban all foreign boats from New Zealand's territorial waters. Their submission included a rationale around concerns to the long-term viability of the stock.
- 677. S. Newland proposed there be a bag limit of 2 fish per person per calendar year, a personal accumulation limit of 2 fish, with a boat limit of 4 fish for all non-commercial and charter vessels. Their submission included a rationale around concerns to recreational catch exceeding the additional 14 tonnes under the current recreational management regime.
- 678. Stu supported the continued sustainable fishing of southern bluefin tuna, and suggested that there be a bag limit of 1 tuna per angler per season, unlimited tagging and no tuna takes below 50 kgs. Their submission did not provide a rationale.
- 679. Fisheries New Zealand acknowledges these concerns and accepts that additional recreational management measures should be considered.
- 680. Based on the information available from recent surveys, Fisheries New Zealand does not believe that a boat limit or annual limit would be an effective tool to use given the characteristics of the fishery.
- 681. However, the recent increase in catch from amateur charter vessels does provide a potential opportunity to influence the level of catch using a more targeted intervention. Officials suggest that this, rather than a broader measure aimed at the wider recreational fishing community, would be a more efficient approach to take should you have concerns about further increases in recreational catch.

Observer coverage

- 682. Forest and Bird New Zealand, Our Seas Our Future, K. Mason, and Environmental Conservation Organisation, highlighted concerns around the bycatch of seabird in the surface longline fishery targeting southern bluefin tuna. Forest and Bird New Zealand also expressed concerns around low uptake of protected species self-reporting in the commercial highly migratory fishery, low observer coverage, and detected periods of poor compliance with regulations.
- 683. Forest and Bird New Zealand suggests to implement a regulatory requirement of 100% observer coverage, utilising both electronic monitoring tools and observers to ensure that fishers are complying with seabird mitigation measures.
- 684. Fisheries New Zealand acknowledges these concerns and refers to paragraphs 618-623, which discusses Fisheries New Zealand's role in this regard and the work we have underway. It

should also be noted that the surface longline fishery has been identified as one to be prioritised for the roll-out of electronic monitoring.

7 Deemed values

685. Southern bluefin tuna has a punitive deemed value, which is currently set at \$23.5 per kg, to reflect our international obligations to remain within our national allocation at the CCSBT. Fisheries New Zealand considers the options outlined in this paper will not result in changes to fishing behaviour. Therefore, no changes to deemed value settings are being considered.

8 Conclusions and recommendations

- 686. Recent decision by the CCSBT have created a utilisation opportunity for New Zealand by increasing our national allocation of southern bluefin tuna by 14 tonnes. Under Options 1 and 2, this increase would be given effect domestically during the current fishing year, with the increase being allocated among the sectors.
- 687. Although beyond the scope of the TAC review being conducted this year, a number of submitters expressed concerns that current recreational management measures were not sufficient to ensure the rebuild of the stock and suggested additional management controls be implemented.
- 688. The recent increase in catch from amateur charter vessels does provide a potential opportunity to influence the level of catch using a more targeted intervention. We recommend that you agree to have Fisheries New Zealand review potential management measures to be applied to amateur charter vessels fishing for southern bluefin tuna.
- 689. Fisheries New Zealand recommends that you approve Option 2, which increases the TAC by 14 tonnes, and then, increase the recreational allowance by 14 tonnes. Fisheries New Zealand considers that this option best meets New Zealand's international and domestic obligations.

Decision for STN 1

Option 1

Agree to set the STN 1 TAC at 1,102 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 2 tonnes;
- Retain the allowance for recreational fishing interests at 20 tonnes; ii.
- Retain the allowance for all other sources of mortality to the stock caused by fishing from at iii. 20 tonnes;
- Increase the STN 1 TACC from 1,046 to 1,060 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



OR

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the STN 1 TAC at 1,102 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 2 tonnes;
- Retain the STN 1 TACC at 1,046 tonnes; ii.
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 20 iii. tonnes:
- Increase the allowance for recreational fishing interests from 20 to 34 tonnes; iv.

Agreed Agreed as Amended / Not Agreed



AND

Agree to have Fisheries New Zealand review potential measures to be applied to Amateur Charter Vessels fishing for southern bluefin tuna.

Hon David Parker Minister for Oceans and Fisheries

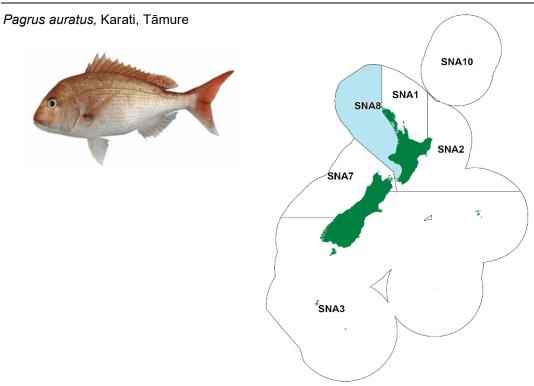


Figure 1: Quota Management Areas (QMAs) for Snapper (SNA), with SNA 8 highlighted in blue. A snapper is pictured on the left.

Table 1: Summary of options proposed for SNA 8 from 1 October 2021. 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 settings	1,785	1,300		43	312	130
Option 1	3,065 1280 t)	1,600 1 (300	t)	100 1 (57 t)	1,205 1 (893 t)	160 1 (30 t)
Option 2	3,437 1 (1652 t)	1,950 🛧 (650	t)	100 1 (57 t)	1,205 1 (893 t)	182 1 (52 t)
Option 3	3,794 1 (2009 t)	2,275 🛧 (975	t)	100 1 (57 t)	1,205 1 (893 t)	214 1 (84 t)
Option 4	4,152 1 (2367 t)	2,600 1300) t)	100 1 (57 t)	1,205 1 (893 t)	247 1117 t)
New option incor	porated following of	consultation	No			
Total submission	s received		8854			
	ssions received in	support of	Optio	n 1	274	
each option		Optio	n 2	17		
			Optio	n 3	10	
			Optio	n 4	21	
			Othe	·	8532	

1 Why are we proposing a review?

- 690. SNA 8 is the second largest snapper fishery in New Zealand and is highly valued by tangata whenua, and stakeholders. The fishery was overfished and heavily depleted in the 1960s and 1970s, prior to its introduction into the QMS, and the stock remained low through the mid-2000s.
- 691. An assessment of the stock in 2005 showed it was likely at 8-12% of the unfished biomass (*B*₀), well below the management target. In response, a series of management measures were introduced to support a rebuild of the fishery. This primarily involved cuts to the TACC and a reduction in the recreational bag limit. In 2007, a stringent deemed value regime was also introduced to ensure the commercial fishery was constrained at the catch limits set.
- 692. The rebuild of the SNA 8 fishery has been monitored over time using tools such as trawl surveys, catch per unit effort (CPUE) analysis of commercial fishing data, and biological sampling of landed catch. There have also been periodic surveys of recreational fishing activity and catch. These sources of information have been used to complete an updated stock assessment in 2021. The Plenary working group reviewed the results and rated the assessment as high quality. This indicates there is high confidence in the outputs from the stock assessment model, which represents the best available scientific information.
- 693. The results of the stock assessment demonstrate that SNA 8 has rebuilt from historical low levels and is now very likely to be above the Harvest Strategy Standard management target of 40% of unfished biomass. This is the default target that is expected to achieve the maximum sustainable yield from the SNA 8 stock.
- 694. The success of this rebuild is likely a result of the management measures introduced following the 2005 stock assessment and strong recruitment to the population over the last 10 years. Reports from commercial and recreational fishers support the findings that the biomass of SNA 8 has increased.
- 695. Based on the results of the 2021 stock assessment, Fisheries New Zealand considers there is an opportunity to provide for increased utilisation in the SNA 8 fishery. It is also considered critical that proposed management settings support maintaining the fishery at rebuilt levels and do not initiate a repeat of the decline seen in the past. As such, alongside decisions on setting sustainable catch limits, the ongoing monitoring and management framework for the fishery is a key part of the review.
- 696. Fisheries New Zealand consulted on four options, all of which recommend increasing the TAC, the TACC, customary and recreational allowances, and the allowance for all other mortality to the stock caused by fishing. The four options were based on projections from the stock assessment model.
- 697. The projections suggest all options will maintain the fishery above 57% SB_0 over the next five fishing years, and above 49% SB_0 out to 10 years (albeit with less certainty). This approach would maintain the fishery well above the current default management target of 40% and responds to strong feedback during pre-consultation engagement and consultation that further discussion around this target is needed and some caution should be applied to ensure the fishery is maintained at its current rebuilt level.

1.1 About the stock

1.1.1 Fishery characteristics

- 698. SNA 8 is a shared fishery that is highly valued by tangata whenua, recreational and commercial fishers, and the wider community. This means the fishery is utilised across sectors in a number of different ways.
- 699. Snapper is known to have been an important species for early Māori, with regular presence of snapper bones in Māori middens documented in literature. Snapper is considered a taonga and was an abundant and easily captured coastal species found in shallow waters close to the coastline, where people were most densely settled. Customary harvest of snapper has continued through time and, while data on customary fishing is limited, it is acknowledged that access to, and utilisation of, a healthy snapper fishery is of significant importance to Māori.
- 700. The highest intensity of recreational fishing is typically around population centres, particularly where launching points and sheltered areas of coast provide access to the fishery.

 Approximately 25% of the recreational harvest is estimated to come from fishing within West Coast harbours such as the Kaipara, Manukau and Raglan. It is understood that harbour fishers typically encounter, on average, smaller snapper than those fishing on the open coast. This is especially the case for land-based fishers and those fishing in the upper reaches of harbour environments. Feedback during engagement and consultation identified that subsistence fishing on West Coast harbours is common and supports local communities in these areas.
- 701. Coastal recreational fishing is also common; however, the remote and exposed nature of the West Coast North Island means weather is often a limiting factor for access. Many recreational fishers on the West Coast are also members of fishing clubs. Fisheries New Zealand is aware of 43 fishing clubs that are known to be active in the SNA 8 QMA.
- 702. Snapper in SNA 8 also support an important commercial fishery, one which has changed over time. Fishing effort in SNA 8 began to increase through the late 1800s. In the 1900s, a trawl fishery began as a small fleet operating from sheltered harbours with annual landings not exceeding 1,000 tonnes. In the 1950s, larger Auckland based trawlers entered the fishery. Landings from the trawl fishery gradually increased and, together with the introduction of foreign vessels during the 1960s, were exceeding 2,000 tonnes per year by 1973.
- 703. During the 1970s there was a rapid increase in landings to over 3,000 tonnes as a result of the transfer of trawl fishing effort from the east to the West Coast and the introduction of pair trawling in 1973. It is estimated that total landings, including a combination of pair trawling and Japanese fishing operations, increased to a recorded peak of about 7,600 tonnes in 1976. It is likely there was also additional unreported catch being taken at this time.
- 704. After the establishment of the Exclusive Economic Zone (EEZ) in 1978, foreign fishing was excluded from SNA 8. Landings declined back to around 1,800 tonnes by 1985-86 and remained below that level until 2005, when a stock assessment showed the fishery was at 8-12% of the unfished biomass. In response, cuts to the TACC were made and a stringent deemed value regime was introduced in order to initiate a rebuild of the fishery. As abundance has increased, and because the TACC has remained constant, commercial operators have described increasing pressure as snapper have become more prevalent and it has become harder to avoid catching beyond their available annual catch entitlement (ACE).
- 705. The West Coast North Island inshore commercial fishing fleet is primarily made up of small to mid-size trawl vessels, with a small number of Danish seine, bottom longline and set net operators also present. The fishery is characterised as being 'mixed', meaning vessels catching SNA 8 also overlap with a number of other important inshore species. Commercial fishing

- operations account for this multi-species environment and manage their fishing activity across a range of target and by-catch species as part of their annual catch plans.
- 706. Reported fishing effort data show commercial fishing is widely distributed across SNA 8 with some areas of concentration, particularly in northern parts of the QMA such as off Te Oneroa-a-Tōhe / Ninety Mile Beach.

1.1.2 Biology

- 707. Snapper is a long-lived species that may live up to 60 years or more, growing up to 105 cm, and has a very low natural mortality. Based on these biological characteristics (high longevity and low natural mortality), the Harvest Strategy Standard (HSS) Operational Guidelines consider snapper to be a 'low productivity' stock.
- 708. Snapper spawning usually occurs in November and December, with large schools of snapper congregating and moving onto spawning grounds, often near the entrances of the West Coast harbours. The spawning season may extend to January-March in some areas and years before the fish disperse offshore.
- 709. Growth rate varies geographically and from year to year, but not between sexes. Males and females are thought to reach sexual maturity around three to four years of age and between 20 and 28 centimetres long. Females release numerous batches of eggs throughout the spring and summer months.
- 710. Snapper are one of the most abundant demersal generalist predators found in the inshore waters of northern New Zealand, and as such are likely to be an important part of the coastal marine ecosystem. Snapper compete with other species, so overlap in diet is likely with a number of other demersal predators (e.g. tarakihi, gurnard, trevally, rig, and eagle ray). The diet of snapper is diverse and opportunistic, and they feed largely on crustaceans, polychaetes, echinoderms, molluscs and other fish. As snapper increase in size, harder bodied and larger diet items increase in importance. It is not well understood what impact the increased biomass of snapper in SNA 8 will have on other species within their habitat, through predation and competition for resources.
- 711. There is some evidence to suggest that snapper have the ability to influence the environment that they occupy. On some rocky reefs (most notably inside marine reserves), the recovery of kina barrens has been attributed to growing numbers of large predators (including snapper). Fisheries New Zealand is not aware of reports of kina barrens within SNA 8.
- 712. SNA 8 is considered to be made up of a single biological stock. However, there is some information that reciprocal movements of fish between the southern portion of SNA 8 and SNA 7 exist.

1.2 Status of the stock

- 713. Stock status of SNA 8 in the current fishing year (2020–21) was determined relative to the estimated unfished spawning biomass SB_0 . The spawning biomass is believed to have increased considerably over the last 10 years. Current spawning biomass was estimated at 54% of the unfished level with a 97% probability of being above the default target (40% adult spawning biomass SB_0) biomass level.
- 714. The probability of the stock being below the hard (10% *SB*₀) and soft (20% *SB*₀) limits is negligible (Table 2). The fishing mortality (the proportion of the available biomass taken by fishing) has declined over the last 10 years, which corresponds to the relatively stable catch and the increase in spawning biomass. Current (2021) fishing mortality is estimated to be below the rate associated with the target biomass level.

Table 2: Estimates of current (2021 = FY 2020–21) and virgin spawning biomass (tonnes) (median and the 95% confidence interval⁶⁹) and probabilities of current biomass being above the default target and soft and hard limits.

	Unfished Spawning Biomass (SB ₀)	Biomass (SB ₂₀₂₁)	biomass as a	Biomass exceeding the targe of limit reference points (SB_{202}) SB_0		target and
				Default target (40%)		Hard Limit (10%)
Base case model	99 319 t	53 689 t	54.1%	96.7%	100%	100%
	(95 129–104 419 t)	(37 876-68 059 t)	(0.39-0.663)			

Projections into the future

- 715. Ten-year stock projections (to the 2030–31 fishing year) were conducted using the Base Case model assuming long-term average recruitment (the average across the full series of recruitment data) after 2022. Projections under recent recruitment (the average over the most recent 10 years of recruitment data) showed substantially more optimistic biomass trajectories (Fig 3). For the purposes of supporting the developing management options, the long-term average recruitment projections have been used. This is a conservative approach that mitigates the risk that recruitment does not sustain current high levels into the next five and ten year periods.
- 716. Projections were modelled under 4 scenarios. Projection 1 was based on predicted catch in SNA 8 for 2022.
- 717. Projections 2-4 used annual commercial catch at the proposed TACCs, customary catch (100 tonnes), and other mortality caused by fishing (approximately 10% of the TACCs), while annual recreational catch varied as stock biomass varied. The scenarios modelled are shown in Table 3 and Figures 2,3 and 4.

Table 3: Proposed TAC, TACC and allowances (tonnes) modelled.

	TAC	TACC	Māori customary	Recreational	Other mortality
Projection 1	2,665	1,300	43	1,205	130
Projection 2	3,437	1,950	100	1,205	195
Projection 3	3,794	2,275	100	1,205	227
Projection 4	4,152	2,600	100	1,205	260

- 718. The projections indicate that under long-term average recruitment, the stock biomass will continue to increase during the initial five-year projection period under all scenarios. This is due, in part, to the contribution of the exceptionally large 2016 year class recruiting to the fishery. These recruitments have the potential to support higher catches over the next 10 years, although catch levels beyond the next five years would need to be determined based on ongoing monitoring and updated assessment.
- 719. If the current level of total catch is maintained, the biomass in 2026 is projected to increase from 54% of the unfished biomass in 2021 to reach 63% of the unfished level (SB2026/ SB_0 = 0.63, C.I. 0.49–0.77) with a 98% or better probability of being above 40% of the unfished biomass, and 84% probability of being above 50%. The highest allowable catch scenario (4,152 tonnes) results in a smaller increase in biomass by 2026 to reach 57% of the unfished level with a probability of 98% of being above 40% of unfished level and 84% of being above 50% SB_0 .

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⁶⁹ From the Monte Carlo Markov Chain (MCMC) simulations.

720. At the end of 10 years, the projections predict that the biomass will decline to some degree under all options, but retains a 90% or better probability of being above the current HHS target of 40% of the unfished level in 2031 and a better than 45% probability of being above 50%.

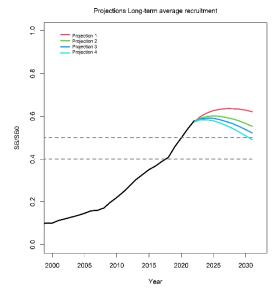


Figure 2: Projected biomass using longterm average recruitment under Option scenarios

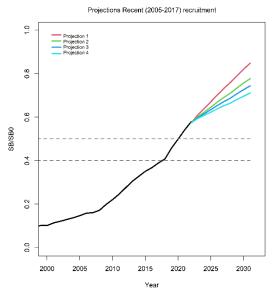


Figure 3: Projected biomass using shortterm average recruitment under Option scenarios

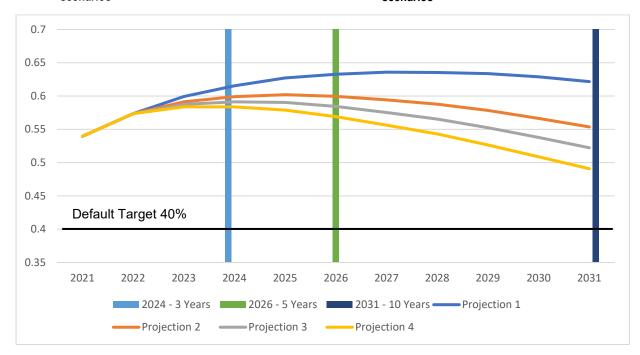


Figure 4: Projected biomass using long-term average recruitment over 3, 5 and 10 years

2 Catch information and current settings within the TAC

2.1 Commercial

- 721. SNA 8 is a valuable and core species in the West Coast inshore trawl fishery and is the predominant species within the inshore environment. It is taken both as target species and as bycatch alongside trevally, gurnard, tarakihi, John dory, and school shark.
- 722. While the TACC has been slightly exceeded six times in the last ten fishing years (Figure 5), catch is typically constrained closely to the TACC due to the deemed value settings implemented to support the rebuild of the fishery. An over-catch of snapper can drastically impact the economic viability of fishing operations in SNA 8. As the abundance of SNA 8 has increased over time, commercial operators have reported this has become an increasingly challenging factor in the West Coast North Island mixed species trawl fishery.
- 723. Because of high snapper abundance, commercial operators say they have had to change their behaviour and gear configurations to try to avoid catching too much snapper and exceeding their available ACE. As snapper in SNA 8 is an unavoidable bycatch when targeting other species that occupy the same habitat, fishers must manage the snapper component of their catch to enable them to utilise other stocks. Fishers have reported that the level of snapper bycatch influences where the vessels fish within SNA 8, with effort focussing in areas where snapper bycatch is known to be lower. Some trawlers in the fishery have also resorted to using a lower headline 70 on their trawl nets in order to reduce snapper bycatch while targeting gurnard.

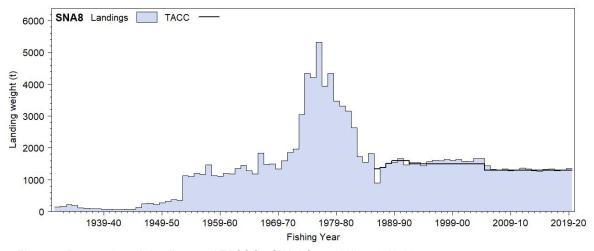


Figure 5: Reported catch landings and TACC for SNA 8 from 1931 to 2019-20.

724. Landings in the last 10 years show 81% of the commercial SNA 8 catch has been taken using trawl (Figure 6). A relatively small core fleet is responsible for the majority of SNA 8 catch, with 13 vessels taking approximately 80% of landed SNA 8, and two of those vessels catching approximately 40%.

122 • Review of sustainability measures for the 2021 October round: SNA 8

⁷⁰ The line where the top edge of a net is attached, also referred to as a headrope. Low headline trawl nets are used to increase selectively when targeting slow moving species that swim near the seabed particularly demersal fish.

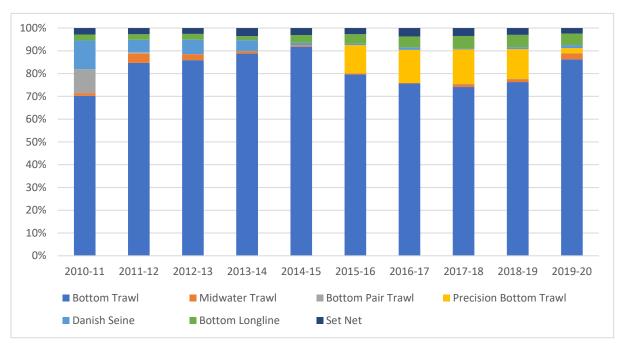


Figure 6: SNA 8 catch proportions by method from 2010-11 to 2019-20.

725. The majority of snapper is caught in the northern area of SNA 8. Between 2010-11 and 2019-20 (the last 10 fishing years), approximately 27% of snapper was taken from statistical area 047 which is west of Te Oneroa-a-Tōhe / Ninety Mile Beach. Statistical area 045 (Figure 7), west of the Kaipara Harbour, accounted for 23% of snapper caught (Figure 8). Fishers have reported that the reason for the increased fishing effort in the north is the lack of safe harbour for vessels in bad weather further south. Fishers have reported that the proportion of snapper bycatch in other areas of SNA 8 lead to difficulties in targeting other species (e.g. trevally and gurnard) that are associated with the inshore mixed trawl fishery.

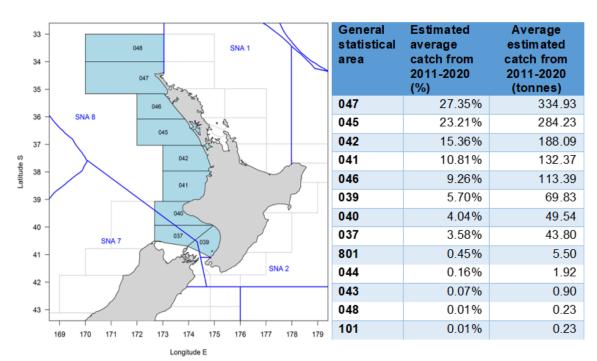


Figure 7: Map of the SNA 8 fish stock area and constituent Statistical Areas.

Figure 8: SNA 8 average estimated commercial Catch by Statistical area 2011 – 2020.

- 726. In the last ten fishing years, approximately 15% of snapper caught was recorded as being the target species at the time. All other snapper was reported as being taken as bycatch. This is likely a function of fishers attempting to avoid snapper and targeting other species to maximise overall catch with the SNA 8 ACE they have available.
- 727. Over time the area swept by trawl (the trawl footprint) per year in SNA 8 has declined (Figure 9). Fishers have reported that this is a result of measures introduced by the Hector's and Maui Dolphin Threat Management Plan (Figure 10) and the increasing abundance of snapper.

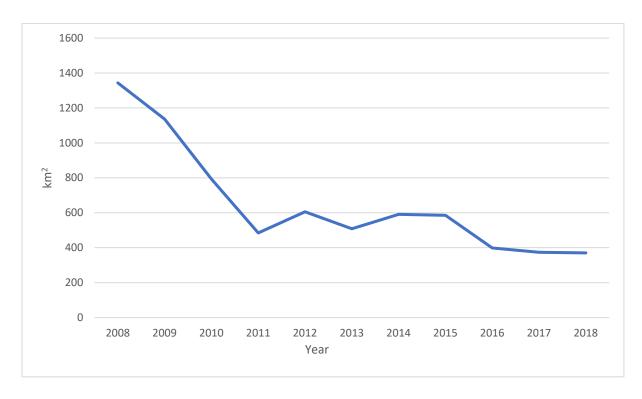


Figure 9. Aggregate swept area (km²) estimated from SNA 8 Inshore Trawl fisheries, by fishing year for 2008-2018.

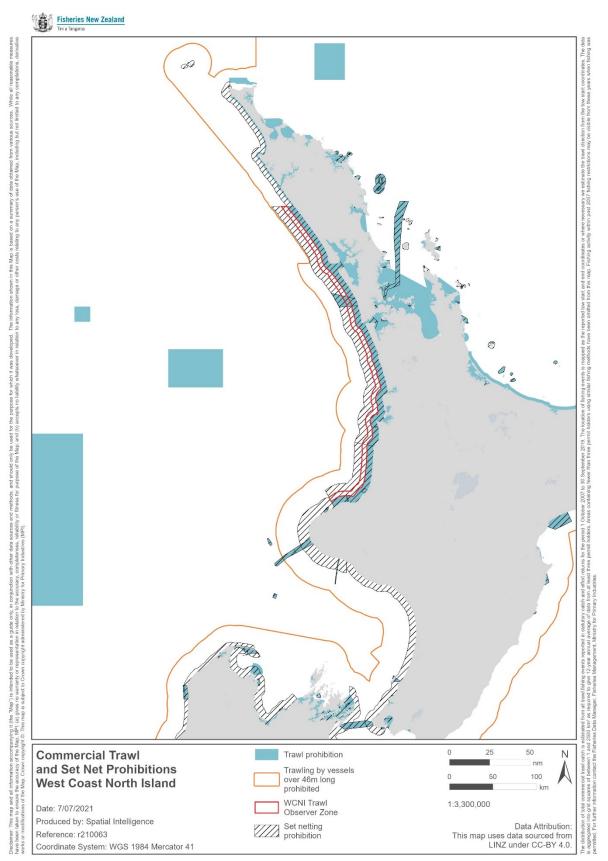


Figure 10. Commercial Trawl and Set Net Prohibitions West Coast North Island.

2.2 Customary Māori

- 728. The allowance for customary fishing is currently 43 tonnes. This was reduced from 50 tonnes in 2005. At the time, it was acknowledged that information on customary fishing in SNA 8 was incomplete. The numbers of customary permits issued for SNA 8 is relatively low, with an average of 19 permits issued per year in the last ten years.
- 729. The information on Māori customary harvest is limited. It is likely that Māori customary fishers utilise the provisions under recreational fishing regulations to meet their needs. There is a significant portion of the QMA in which rohe moana have not been defined (Figure 11), meaning that the Fisheries (Kaimoana Customary Fishing) Regulations 1998 reporting provisions do not apply. Customary fishing authorisations in areas of the SNA 8 QMA not operating under the Kaimoana Regulations, if issued, would be under the customary provisions within the Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on catch. As such customary harvest records held by Fisheries New Zealand are likely incomplete.
- 730. The customary regulations provide a mechanism to enable the use of Pātaka Kai. This is where customary fishers can utilise customary authorisations in order to establish and supply a store of kaimoana for the purpose of distributing fish to the community over time. Fishing for the purposes of supplying a Pātaka Kai can be undertaken by commercial fishing vessels, provided the vessel operator is doing so under an authorisation issued by a kaitiaki of the area in which the fish is taken. Customary fish taken by commercial vessels must be stored, labelled and reported separately from the rest of the catch.
- 731. Te Atiawa (Taranaki) is an example of an iwi who have operated a Pātaka Kai system for the purpose of providing kaimoana to whānau/ngā uri o Taranaki lwi since 2014. Fisheries New Zealand is aware that other iwi within SNA 8 are exploring whether a form of Pātaka Kai meets their needs and should be considered. As snapper are one of the most abundant species on the West Coast of the North Island, it is likely that if more Pātaka Kai are to be utilised within SNA 8, then the amount of snapper taken under the customary allowance will increase.

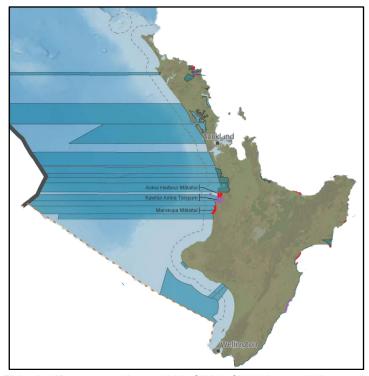


Figure 11: Customary Fisheries Management Areas within SNA 8. Shaded areas indicate rohe moana boundaries under the Fisheries (Kaimoana Customary Fishing) Regulations 1998.

2.3 Recreational

- 732. SNA 8 is the second largest snapper fishery and one of the most popular recreational fisheries in New Zealand. Fishing clubs and recreational representatives in the region have reported that catch rates were impacted by low abundance when the fishery was below the management target, but have recognised the improvement in the fishery as the stock has recovered.
- 733. The best available information Fisheries New Zealand has on recreational catch is from the National Panel Survey of Marine Recreational Fishers (NPS). The most recent estimate of recreational harvest from the 2017-18 NPS showed a harvest of 892 tonnes (Figure 12). This was an increase from the 2011-12 NPS, which showed a harvest of 612 tonnes in SNA 8 (Figure 12).

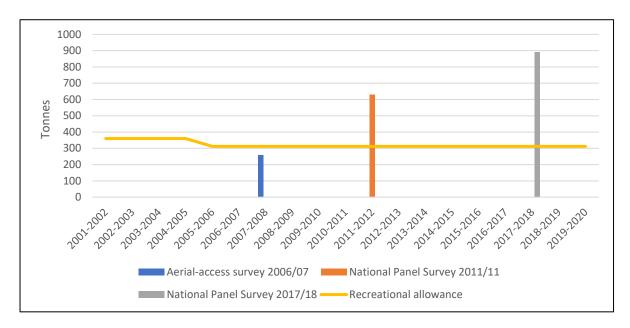


Figure 12: Estimated Recreational Harvest in SNA 8 from Aerial-access survey 2006-07 and National Panel Surveys 2011-12 and 2017-18.

- 734. Both coastal and harbour recreational fisheries exist within SNA 8. Fisheries New Zealand understands that approximately 25% of recreational SNA 8 is caught within harbours. Coastal access (outside of harbours) is considered to have been constrained by weather conditions in the past. Fishers have reported that the coastal fishery has become more accessible in recent years. This is due primarily to the availability of larger recreational vessels, the use of different types of fishing platforms, e.g. jet ski or personal watercraft (PWC), and better information about weather and bar crossing conditions.
- 735. Figure 13 shows the areas the NPS uses to characterise recreational fishing activity. Figure 14 shows the estimated recreational catch in each of the areas for the 2011-12 and 2017-18 surveys. Results show that the most SNA 8 catch is taken by recreational fishers in survey areas 20 (south of the Manukau Harbour entrance) and 19 (Taranaki Coast).

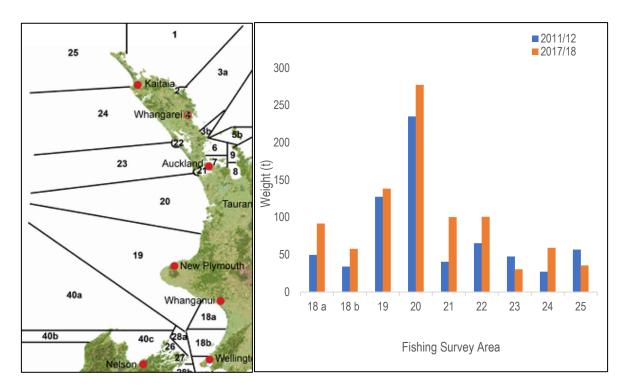


Figure 13: National Panel Survey fishing areas. Figure 14: National Panel Survey estimated recreational catch (in tonnes) by fishing areas: 2011-12 (blue bars) and 2017-18 (orange bars) surveys.

736. Within SNA 8, there are currently 48 amateur charter operators registered, with 52 charter vessels. Table 4 shows the number of charter vessels at registered base ports in SNA 8. Any operator of a vessel that takes fare-paying passengers on board for the purpose of recreational fishing is required to be registered and to report fishing activity and catch information.

Table 4: Number of Amateur Charter Vessels by base port.

ACV Base Port	Number of Charter Vessels
Auckland, Auckland	31
Helensville, Kaipara	3
Hobson Bay, Auckland	1
Hoteo, Kaipara	1
Kawhia, Kawhia	6
New Plymouth, New Plymouth	1
Patea, Wanganui	1
Port Taranaki, New Plymouth	2
Raglan, Raglan	4
Ruawai, Kaipara	1
Wanganui, Wanganui	1

2.4 All other mortality caused by fishing

- 737. An allowance for other sources of mortality is intended to account for any mortality to a fish stock that occurs due to fishing activity but is not otherwise accounted for in the TAC. The current allowance is 130 tonnes.
- 738. Potential sources for other mortality for SNA 8 include illegal discards, injury from fishing gear, black market activity and illegal take.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 739. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest 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.
- 740. Engagement with Iwi on the SNA 8 sustainability review began in November 2020 and the review has been discussed with the Te Hiku o Te Ika (Far North), the Mid North, the Ngā Hapū o Te Uru o Tainui (West Coast/Waikato) and the Te Tai Hauāuru (Taranaki to Kāpiti) Iwi Fisheries Forums.
- 741. Te Hiku o Te Ika (Far North), the Mid North, the Ngā Hapū o Te Uru o Tainui (West Coast/Waikato) all expressed concern that the fishery could decline and proposed an alternative option of no increase to the TAC, TACC and allowances.
- 742. Iwi forums within SNA 8 provided the following input:
 - There were concerns that the fishery could go back to historical lows. It has taken 40 years to recover and forum members stated they do not want to see the stock fished down again.
 - There were concerns that, if the recreational bag limit was reduced as part of the review, it
 would affect harbour fishers who do not have access to the larger snapper found in the
 coastal fishery, and that this would impact local communities.
 - It was felt the current customary allowance is too low to meet the aspirations of tangata whenua, particularly as more iwi explore establishing Pātaka Kai using commercial vessels in some rohe.
 - Regarding the impact of preferential allocation (28N rights), concern was raised over smaller scale fishers still not having access to the ACE they need, even if any increase was made to the TACC. A particular focus was on local Māori fishers who cannot enter the fishery, or struggle to sustain their operations, under the current SNA 8 ACE environment.
 - Concern was also expressed that the discharge of all 28N rights would have the effect of reducing the proportion of settlement quota shares, which they consider to be inconsistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

Mid-North Forum - provided feedback on the consultation verbally at forum hui with Fisheries New Zealand officials in attendance.

- The Mid-North forum expressed support for the review of SNA 8 with respect to setting appropriate allowances however does not support increases to TACCs for any stocks.
- Forum members had concerns that the current stock assessment of SNA 8 does not take into account Mātauranga Māori.

Te Hiku o Te Ika Far North Forum - provided feedback on the consultation verbally at forum hui with Fisheries New Zealand officials in attendance.

- The forum do not support an increase in the TAC, TACC, and allowances.
- There were concerns around localised depletion off the coast of Te Oneroa-a-Tōhe / Ninety Mile Beach.
- The Te Hiku o Te Ika forum raised that there is a disproportionate concentration of fishing
 effort in their rohe. Because trawl restrictions under the Hector's and Māui Dolphin Threat
 Management Plan end south of Ahipara, commercial vessels fish in areas close to shore

- along the coast of their rohe. Forum members believe that despite the wider stock being in good shape, large scale harvest of snapper (and other species) in their area is leading to localised depletion and affecting their ability to utilise and derive benefit from the recovery of the fishery.
- This also led to concerns being raised around the size of the SNA 8 QMA, which did not support managing to deliver localised outcomes that support iwi aspirations for their rohe.
- There was also concern expressed around the open access nature of the QMS and the
 fact that any permit holder can operate in the Te Hiku o Te Ika rohe moana, but the
 benefits are taken elsewhere and do not come back to Te Hiku o Te Ika. This was of
 particular concern with vessels coming around from the East Coast, fishing along Te
 Oneroa-a-Tōhe, and then returning to ports outside of the area.

Ngā Hapū o Te Uru o Tainui - provided feedback on the consultation verbally at forum hui with Fisheries New Zealand officials in attendance and also supplied a written response to consultation.

- Forum members do not support an increase in the TAC, TACC, and allowances.
- There was concern that additional trawling from an increase in the catch settings will negatively impact benthic organisms and bycatch species.
- There are also concerns that the information on associated fish stocks such as gurnard and tarakihi is limited and the interdependence of species is not well understood.
- The forum recommend that the government abolish existing 28N rights so that local Māori commercial fishers would have access to any increases in the TACC.

3.2 Kaitiakitanga

- 743. The Te Hiku o Te Ika, the Mid North, the Ngā Hapū o Te Uru o Tainui and the Te Tai Hauāuru Iwi Fisheries Forums all have members with rohe that overlap with SNA 8.
- 744. Snapper is listed as taonga species in the fisheries plans of Te Hiku o Te Ika, Ngā Hapū o Te Uru o Tainui and Te Tai Hauāuru. As a newer forum, the Mid-North has not yet developed a fisheries plan.
- 745. Fisheries New Zealand considers that the management options presented in this consultation document are in keeping with the objectives of relevant Iwi Fisheries Plans, which generally relate to the maintenance of healthy and sustainable fisheries. Fisheries New Zealand notes that Te Hiku o Te Ika (Far North), the Mid North, and the Ngā Hapū o Te Uru o Tainui (West Coast/Waikato) who developed the Iwi Fisheries Plans disagree with the proposed options.
- 746. Mātaitai reserves, taiāpure and temporary closures are customary management tools that also provide for kaitiakitanga. You are required to take into account closures under 186A (temporary closures) and mātaitai when making your decision. There are two mātaitai reserves and one taiāpure within SNA 8 (Table 5). Outside of the broad prohibition of commercial fishing activity within mātaitai reserves, none of these customary management areas have any specific restrictions on the taking of snapper.
- 747. Fisheries New Zealand considers all options proposed in this paper will see the biomass of SNA 8 increase over the next five years and will maintain or improve snapper availability in the customary fisheries areas within SNA 8.

Table 5: Customary fisheries areas within SNA 8.

Name	Management type
Aotea Harbour Mātaitai Marokopa Mātaitai	Mātaitai Reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.
Kawhia Aotea Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations set for commercial, recreational and customary fishing.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

748. Key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish and invertebrate bycatch, benthic impacts and habitats of particular significance for fisheries management.

4.1.1 Marine Mammals

- 749. Historically, trawl fisheries in the areas that encompass SNA 8 have been responsible for incidental capture of fur seals and dolphin species.
- 750. SNA 8 includes the only habitat that Māui dolphin are found in. The Hector's and Māui dolphin Threat Management Plan (TMP) guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins. Extensive set netting and trawl prohibitions are in place to manage the risks of commercial and recreational fishing to Māui dolphins along the West Coast North Island (Cape Reinga to Wellington).
- 751. In October 2020, as part of a revised TMP, the previous Minister of Fisheries implemented extensive new measures to further reduce fishing-related threats to Māui dolphins. The new measures provide a high degree of certainty that the current risk fishing has to Māui dolphin mortality is close to zero. The measures included:
 - creating a new commercial and recreational set-net closure out to 4 nm offshore between Cape Reinga and Maunganui Bluff;
 - extending the commercial and recreational set-net closure between Maunganui Bluff and the Waiwhakaiho River (New Plymouth) from 7 nm to 12 nm offshore;
 - extending the commercial and recreational set-net closure between the Waiwhakaiho River (New Plymouth) and Hawera from 2 nm to 7 nm offshore;
 - creating a new commercial and recreational set-net closure out to 4 nm offshore between Hawera and Wellington; and
 - extending the existing trawl closure between Maunganui Bluff and Pariokariwa Point further south to the Waiwhakaiho River (New Plymouth), and to 4 nm offshore from Maunganui Bluff to the Waiwhakaiho River.
- 752. New regulations also include a fishing-related mortality limit (FRML) of one dolphin (*Cephalorhynchus spp.*) within the Māui dolphin habitat zone that extends from Cape Reinga to Cape Egmont. To support this, on-board cameras or observers are used to monitor potential interactions with commercial trawl or set net vessels operating in the coastal area.
- 753. Any increase to the TACC for SNA 8 will need to be closely monitored to assess changes in fishing effort (number of events and distribution) by methods that pose a risk to Māui dolphins. Reviews of the existing fisheries restrictions may be necessary if new information changes the assessment that the risk of fishing-related mortality is no longer close to zero. Industry will need to be very mindful of an increase in effort and risk within the Māui dolphin habitat zone and whether that increases the potential of triggering the FRML.

4.1.2 Seabirds

- 754. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action for Seabirds (NPOA Seabirds 2020).
- 755. Seabirds can accidentally get caught during commercial fishing. Commercial fishers must file daily reports about what (if any) seabirds and marine protected species they have caught. Fisheries New Zealand is now releasing these reports quarterly (from the 2019/20 fishing year).

- 756. The Spatially Explicit Fisheries Risk Assessment ranks bird species according to their risk from commercial fisheries. The 2020 assessment identified black petrel as the most at-risk seabird, followed by five taxa in the second-highest category: Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross and Gibson's albatross. Approximately 21 seabirds per year have been reported captured in the fisheries associated with SNA 8 since 2010. Approximately 52% of those captures occurred in the trawl fishery. The seabirds most caught in SNA 8 include flesh-footed shearwater, white capped albatross and black petrel.
- 757. All options proposed include an increase to the TACC. It is likely that if fishing effort increases in SNA 8 because of an increased TACC, then incidental capture of seabirds will also increase. It is unlikely that the long-term viability of any seabird species will be at risk under the proposed options. Fisheries New Zealand will monitor the impacts of any changes to the SNA 8 fishery as a result of this review.

4.1.3 Fish bycatch

- 758. Snapper is predominately taken in a 'mixed' multispecies inshore trawl fishery. The core species taken with SNA 8 are trevally, gurnard, tarakihi and John dory. All options propose increases to the TACC and allowances. The increased ability to utilise SNA 8 may lead to increased fishing effort in SNA 8. Industry has indicated that it is unlikely to see a significant increase in effort as changes in gear configuration and fisher behaviour to avoid snapper would revert back to standard operations, so snapper catch rates would go up with similar effort, however, this is uncertain.
- 759. In areas where commercial fishing, and particularly bottom trawling is prevalent, it is likely that biological diversity is negatively affected. However large areas of SNA 8 are not trawled, including areas where trawling is prohibited, or areas where the seabed is unsuitable for trawling to occur such as reef structures.

4.1.4 Benthic impacts

- 760. SNA 8 is mainly caught by trawl. At least 90% of trawls occur at depths less than 100 metres. Trawling is likely to have effects on benthic community structure and function and there may be consequences for benthic productivity. All options propose an increase to catch settings and allowances.
- 761. In order to catch an increased SNA 8 TACC it is likely that the fishing practices and behaviour of fishers will change. One outcome of a significant increase to the TACC could be an increase in the amount of trawl fishing activity (number of tows) as well as the overall trawl footprint. This may lead to new areas being fished, or intensification of fishing in areas that have traditionally had less effort. Industry has reported that the trawl footprint is unlikely to grow and that increased SNA 8 catch can largely be taken in the same locations vessels currently operate. This is reportedly because vessels are currently taking active steps to avoid catching snapper and if they reverted back to a traditional approach the snapper catch rate will increase without the need for significantly more fishing effort.
- 762. During pre-consultation engagement, it was noted that some commercial trawlers have changed fishing behaviour and gear set up to actively avoid snapper and target gurnard. The resulting lowered headline and concerted effort to keep the net on the benthos to actively target gurnard may result in greater levels of bottom contact. One outcome of an increase in available snapper for commercial fishers, could be a decrease in trawl effort targeting species "hard" on the seabed, however this is also uncertain.
- 763. Recreational fishing representatives have reported better recreational snapper fishing in areas where trawlers are prohibited; this was attributed to better seabed habitat to support snapper, and snapper food sources.

- 764. Trawlers are currently prohibited from significant areas within SNA 8. This includes harbours and estuaries, and Māui dolphin habitat protected under the Hector's and Māui dolphin Threat Management Plan. This protects large areas of inshore marine space from impacts from trawling.
- 765. Fisheries New Zealand considers that the proposed options may result in increased impacts on the benthic environment if trawl fishing effort and the associated trawl footprint increases. This impact could reduce biological diversity in SNA 8. However, Fisheries New Zealand will continue to monitor changes in the fishery (including trawl footprints) that occur as a result of this review. If sustainability concerns are detected through this monitoring, then management measures can be introduced to mitigate these risks.

4.1.5 Habitats of particular significance for fisheries management

- 766. Snapper are one of the most abundant demersal generalist predators found in the inshore waters of northern New Zealand and occupy nearly every coastal marine habitat less than 200 m deep.
- 767. Habitats of particular significance for fisheries management include areas likely to be important for snapper spawning. This includes the coastal areas adjacent to harbour mouths on the West Coast throughout SNA 8, particularly the Manukau and Kaipara Harbours.
- 768. For juvenile snapper, it is likely that certain habitats, or locations, are critical to successful recruitment and maintaining the stock's productivity. After first settling out of the water column, juvenile snapper (10–70 mm fork length) associate strongly with three-dimensional structured habitats in estuaries, harbours, and sheltered coastal areas (such as beds of seagrass and horse mussels). The reason for this association is currently unclear, but the provision of food and shelter are likely explanations.
- 769. Some potential nursery habitats appear to have a significant contribution to the stock and are likely to be habitats of particular significance for the management of SNA 8. For example, a 2009 study showed that Kaipara Harbour contributed to more than 75% of the recruits to the SNA 8 fishery in 2003. These habitats are subjected to land-based stressors such as pollution and sedimentation, which may affect the survival of juvenile snapper and hence recruitment to the SNA 8 fishery. It should, however, be noted that recruitment over the last decade has been exceptionally good, suggesting that environmental factors affecting egg and larval survival in the ocean have had greater influence on the number of fertilised eggs surviving to adulthood. The strong recruitment could also be supported by the improvement of harbour habitats as a result of riparian fencing and planting, as has occurred in the Kaipara, Raglan and Kawhia areas.
- 770. Fisheries New Zealand considers that the options proposed are unlikely to pose a threat to the areas identified as potential habitats of particular significance. This is because of the existing measures that protect the harbour and estuary benthic habitats.
- 771. The following table summarises the identified habitats of significance, the threats faced, and the existing protection measures.

Table 6: Habitats of significance within SNA 8.

Fish Stock	SNA 8
Habitats of significance	Kaipara Harbour, Manukau Harbour, and probably other harbours in SNA 8 that are utilised by SNA 8 juveniles.
Attributes of habitat	Large areas of shallow flats, especially areas with emergent benthic fauna/flora that provide: • Feeding opportunities. • Refuge from predation.
Reasons for particular significance	 SNA 8 is an important inshore stock. Juvenile snapper density is much higher within biogenic habitats. A high proportion of SNA 8 recruits are known to come from the Kaipara Harbour especially. It is likely that recruitment failure would result in a major decline of stock productivity.
Risks/Threats	 Sedimentation from land-based practices. Eutrophication ⁷¹from land-based practices. Possible future development of electricity generating turbines altering tidal energy flux. Note: Current/historical proposals for such development have not progressed. Additional aquaculture facilities over seagrass beds. Commercial fishing using bottom-impacting methods. Recreational scallop dredging. Adverse effects from non-indigenous/invasive species such as the Asian date mussel and Japanese mantis shrimp.
Existing protection	 Trawl, Danish seine, and commercial scallop dredging are prohibited in all estuaries and harbours in SNA 8. The Kaipara Harbour is closed to recreational fishing for scallops (hence no recreational dredging).

4.2 Sustainability measures (section 11 of the Act)

772. 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 plans.

4.2.1 Effects of fishing on any stock and the aquatic environment

- 773. Snapper is predominately taken in a 'mixed' multispecies inshore trawl fishery. The core species taken with SNA 8 are trevally, red gurnard, tarakihi and John dory. Red gurnard (GUR 1) is being reviewed as part of this sustainability round. GUR 1 and SNA 8 are both part of the West Coast inshore trawl fishery. Proposed options for GUR 1 are to decrease the TACC and set a TAC and allowances for the first time.
- 774. A possible outcome of the TACC increases proposed under the SNA 8 review is that there will be an increase in the amount of GUR 1 caught as bycatch of the snapper target fishery. There is the possibility that this could lead to GUR 1 catch increasing beyond sustainable levels and, depending on the decisions in the GUR 1 review, the TACC being exceeded. Fisheries New Zealand will closely monitor how both the SNA 8 and GUR 1 fisheries respond to decisions

⁷¹ Excessive nutrients in a body of water, frequently due to run-off from the land, which causes a dense growth of algae.

- made as part of their respective reviews and if necessary management responses can be implemented.
- 775. One such management measure is deemed values, which are the primary tool used to prevent fishers exceeding commercial catch limits. Stocks that exceed their catch limits are monitored by Fisheries New Zealand, and if a TACC is being over caught, this could trigger a deemed value rate review for GUR 1. This may result in the SNA 8 fishery being constrained by GUR 1 ACE availability.
- 776. Fisheries New Zealand is developing a management and monitoring plan for SNA 8 and the West Coast North Island inshore fishery. As part of the proposed management plan, future reviews of West Coast fishery could consider taking a multi stock management approach.
- 777. All options in the paper are for significant increases to the TAC ranging from 72% to 133%. The relationship between the TAC and fishing effort is not linear, however it is expected that fishing effort, particularly in the commercial sector, will increase with the proposed options. A range of existing controls have already been implemented to address the effects of fishing. Generally, these controls are considered adequate to address the effects of fishing on the stock and the aquatic environment, however ongoing monitoring will ensure that any new risks can be identified and responded to in a timely manner.

4.2.2 Existing controls that apply to the stock or area concerned

- 778. The SNA 8 TAC, TACC and allowances are supported by a number of management controls (some of which are not specifically related to snapper) that collectively aim to ensure the sustainability of the stock and provide for utilisation, across the fishing sectors, within accepted limits
- 779. The most appropriate sustainability measure to be set or varied will depend on the precise nature of the issue being addressed. For SNA 8 there are a large number of existing controls. These include, but are not limited to, method restrictions, closed areas, and size limits. Given the current information and the status of the stock, Fisheries New Zealand is not proposing additional fishing controls as part of this review. However, Fisheries New Zealand will monitor changes to the SNA 8 fishery to determine if future measures may be required.
- 780. This could include, as an example, exploration of whether further measures are required to address localized depletion effects from concentrated fishing effort in certain areas such as off Te Oneroa a Tohe / Ninety Mile Beach.

4.2.3 Natural variability of the SNA 8

781. The variability of stocks is a factor to consider when setting catch limits. Highly variable species have different management requirements. Snapper are not considered variable, and the stock assessment factored this into the model as part of the biological characteristics of the fishery.

4.2.4 Draft National Inshore Finfish Fisheries Plan

- 782. Snapper will be managed under the National Inshore Finfish Fisheries Plan (the Plan) once finalised. The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020.
- 783. The Plan is aimed at progressing New Zealand towards more ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group. The Plan, alongside the Fisheries Act 1996 and HSS, guide the way Fisheries New Zealand manages fish stocks such as SNA 8 under the QMS.

784. Snapper fall under Group 1, which recognises stocks that provide the greatest benefit and are highly desirable to all sectors. They are managed to provide for utilisation, while mitigating the increased risk to their sustainability as a consequence of high levels of fishing pressure. The status of Group 1 stocks is determined using fully quantitative stock assessments to provide high levels of information.

4.2.5 Regional Plans

- 785. There are six Regional Councils⁷² that have coastline within the boundaries of SNA 8. Each of these regions has multiple plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems and habitats.
- 786. Fisheries New Zealand considers that the proposed management options presented are in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

5 Submissions

Submissions received

- 787. Fisheries New Zealand received 8854 submissions in total on the SNA 8 proposals.
- 788. LegaSea provided a submission template on their website and encouraged their members and the public to submit using it. The template provided a form type submission, with the ability for submitters to provide individualised comments. Fisheries New Zealand received 8743 template submissions.
- 789. There are several complex issues submitted on as part of the review of SNA 8. However, submissions can be broadly characterised as falling under the following key themes.
 - A. Those who do not support the proposed options. This was generally for reasons related to the impact of bottom trawling on the benthic environment, the uncertainty around the level of impact increases to the TACC will have on other fish caught within the SNA 8 fishery as well as non-fish (protected species) bycatch and doubts about the reliability of the stock assessment.
 - B. Those who support the options. These placed weight on the new SNA 8 stock assessment information.

Table 7: Options and general themes with number of submissions in support.

Options	Number of submissions in support	Other options	Number of submissions in support
Option 1	274	No increase to the TACC	8341
Option 2	17	Decrease the TACC	103
Option 3	10	Smaller increase	5
Option 4	21	Other	83

136 ● Review of sustainability measures for the 2021 October round: SNA 8

⁷² Regional Councils that have coastline within SNA 8: Northland Regional Council, Auckland Council, Waikato Regional Council, Taranaki Regional Council, Horizons Regional Council (Manawatu-Wanganui Region) and Greater Wellington Regional Council.

Table 8: Summary of Submissions and responses received on SNA 8.

Option 1					
TAC: 3,065 t	TACC: 1,600 t	Customary: 100 t	Recre	ational: 1,205 t	Other mortality: 160 t
support: - Counties Sport - NZ Recreation: - Our Seas Our - Royal New Zea Animals (SPCA) - The Big Fishing - Wellington Rec	al Fishing Council (NZ Future aland Society for the F		Individual submissions in support: 268 (includes 239 via LegaSea's form submission)		
Option 2	TAGG 4.050.1	4004	_		011 111 100 1
TAC: 3,437 t TACC: 1,950 t Customary: 100 t Responses from representative bodies and organisations in support: N/A				ational: 1,205 t Other mortality: 182 t Individual submissions in support: 17 (includes 16 via LegaSea's form submission)	
Option 3					
TAC: 3,794 t	TACC: 2,275 t	Customary: 100 t	Recre	ational: 1,205 t	Other mortality: 214 t
Responses from representative bodies and organisations in support: - Iwi Collective Partnership (ICP) - Sealord Ltd				Individual submissions in support: 4 (includes 4 via LegaSea's form submission)	
and other mortal - Te Ohu Kaimo	ies Ltd Board				
Option 4					
TAC: 4,152 t	TACC: 2,600 t	Customary: 100 t	Recre	ational: 1,205 t	Other mortality: 247 t
support: - Brown and Hay - Egmont Seafor - Fisheries Insho	ore NZ (FINZ) Partnership (ICP) isheries Ltd		issions in support: 15 LegaSea's form submission)		

Other – Support no increase to the TACC									
TAC: 1,785 t	TACC: 1,300 t	Customary: 43 t	Recreational: 312 t		Other mortality: 130 t				
support: - Ngā Hapū o Te - Brooks Seafoo NGOTU, Maroko - Council of Outo - Environment a - Environmental - Guardians of K - LegaSea, NZ S	Divers Inc ences Society Fishing Club	Individual submissions in support: 8329 (includes 8281 via LegaSea's form submission that supported 'Option Zero" or no increase to any catch limits)							
Other – Support decreases to the current TACC									
Responses from representative bodies and organisations in support: - Liveable Communities (Auckland) Inc - Mana Cruising Club				Individual submissions in support: 101 (includes 96 via LegaSea's form submission)					
Other – Support smaller catch limit increases than those proposed									
support:	Responses from representative bodies and organisations in support: Raglan Seafoods Ltd			Individual submissions in support: 4					
Other – Includes responses outside of those above, and responses that were unclear/did not specify a preferred option									
Responses from representative bodies and organisations in this category: - Ngati Kahu O Torongare / Te Parawhau Hapu Iwi Trust - Northern Branch of Forest and Bird - Royal Forest & Bird Protection Society (Forest & Bird) - Sea Shepherd NZ			his	Individual submissions in this category: 79 (includes 77 via LegaSea's form submission)					

6 Options and analysis

- 790. Section 13 of the Act sets out the factors you must consider in setting or varying the TAC. In the case of SNA8, a fully quantitative stock assessment provides estimates of the current biomass, the unfished biomass, and the biomass that will produce the MSY. A description of your statutory considerations are found in the introduction section of this document.
- 791. You are varying the TAC under section 13 (2)(a), which maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. You have wide discretion on how you vary the TAC, the current stock status of SNA 8 is above the accepted default management target 40% SB₀ which produces MSY. All proposed options will maintain the fishery above 57% SB₀ over the next five fishing years, and above 49% SB₀ out to 10 years (albeit with less certainty).

792. After making a decision on setting the TAC you are required to make allowances for the Māori Customary, Recreational and Other sources of mortality caused by fishing, before the TACC is set. Options relating to allowances have been proposed by Fisheries New Zealand, however you can set the allowances as you see fit, taking account of statutory obligations and judicial guidance on allocation.

6.1 Biomass target

- 793. The 2021 stock assessment shows that the SNA 8 stock has increased in size to surpass the default HSS biomass target of 40% of unfished biomass. The status of the stock is estimated at $54\% B_0$.
- 794. The HSS includes a default target biomass level of 40% SB_0 for stocks with low productivity where an operational ('real world') spawning biomass that can support harvest of the maximum sustainable yield (SB_{MSY}) has not been fully evaluated. The Inshore Fisheries Assessment Working Group accepted 40% SB_0 as an appropriate SB_{MSY} proxy for SNA 8.
- 795. The 2021 assessment does not provide a 'real world' estimate of SB_{MSY} . A 'real world' estimate SB_{MSY} is a function of an adopted harvest strategy, which includes information about the fishery, what management controls are in place and how it is fished. To determine an agreed management target based on a 'real world' SB_{MSY} , discussions with tangata whenua and stakeholders need to occur in the context of the long-term management of SNA 8.
- 796. There are benefits to managing a stock at a higher target, particularly a shared fishery like SNA 8. From a sustainability perspective it broadens the age structure of the population to include a higher number of older, bigger fish, and offers greater protection against environmental change that may impact spawning success. From a utilisation perspective, there are benefits in terms of higher yields and increased availability including mitigating some of the impacts of localised depletion, as well as providing larger fish which provides for greater recreational value.
- 797. All options proposed are anticipated to maintain the SNA 8 stock above 40% default target and have a high likelihood of maintaining the stock above 50% out to 5 years. Fisheries New Zealand considers there is merit in exploring whether the default target is appropriate, or if a higher biomass target should be considered in the future.
- 798. Fisheries New Zealand proposes that determining a target can be achieved through the development of a SNA 8 management framework, in partnership with tangata whenua and consultation stakeholders. The proposed approach of updating the stock assessment in three years will provide a check in point allowing time for this devleopment work to occur. Once a target has been established, the review subsequent to the 2024 stock assessment update would provide the opportunity to update catch settings in line with the target and the broader aspirations for the fishery.
- 799. In the interim period Fisheries New Zealand consider that that you should consider the likelihood of a future target being greater than 40% when deciding on a TAC. A more cautious approach to proposed increases may be appropriate while a target is discussed more fully with stakeholders.

6.2 Māori Customary Allowance

800. Under all options Fisheries New Zealand is proposing a 57 tonne increase to the customary allowance. This equates to an increase of 133%. Information on current levels of customary catch is uncertain, however Fisheries New Zealand considers the proposed increase is appropriate to provide for customary catch given the increased abundance and therefore availability of the stock and considering feedback through engagement with Iwi Fisheries

Forums within SNA 8.

801. Most submissions received were in support of the proposed Māori Customary allowance.

6.3 Recreational Allowance

- 802. The current allowance for recreational fishing is 312 tonnes and was set in 2005 when the stock was in a depleted state. Fisheries New Zealand is proposing to increase the recreational allowance from 312 tonnes to 1205 tonnes for all options. This is a 286% increase of 893 tonnes. This proposal recognises the high value that recreational fishers place on SNA 8. The proposed allowance is based on the projected recreational catch for 2022 from the stock assessment. Recreational take is known to fluctuate with abundance and modelling from the stock assessment shows that, under all proposed options, catch would increase slightly above the proposed allowance and then decrease back down as the stock biomass gradually decreases.
- 803. Most submissions received were in support of the recreational allowance being increased. Te Ohu Kaimoana noted in their response to consultation document that all of the options being presented provide for the recreational allowance to increase to the level of predicted catch based on catch estimates and biomass increase. If this is to be the case, Te Ohu Kaimoana consider that the future management regime focuses on ensuring the integrity of the TAC under the new settings.
- 804. FINZ submits that the continued lack or reporting from recreational fishers undermines the management system. FINZ further raised that Fisheries New Zealand's description of the recreational allowance in the consultation document "Modelling from the stock assessment shows that, under the proposed options, catch would increase slightly above the proposed allowance and then decrease back down below the allowance as more fish are taken from the fishery." is tacit approval of recreational fishers being allowed to catch beyond their allocation and identifies the need for the management framework to ensure shared responsibility for what is considered a shared fishery.

6.4 Other sources of mortality caused by fishing

- 805. Fisheries New Zealand proposed in the consultation document an increase to the allowance for all other mortality caused by fishing for all options. The increases proposed are amounts equal to around 9 -10% of the TACC.
- 806. In 2018, the then Minister of Fisheries, as part of decisions relating to the 2018 October sustainability round, decided to set an allowance for all other sources of mortality caused by fishing at an equivalent of 10% of the TACC for predominantly trawl caught fisheries. This is considered an appropriate approach unless evidence suggests an alternative setting would be more suitable to the fishery being reviewed.
- 807. Fisheries New Zealand acknowledges there may be rationale for setting a lower allowance for all other mortality caused by fishing.
- 808. Factors to consider include less juvenile snapper being caught by commercial trawl vessels as a result of the Hector's and Maui Dolphin Threat Management Plan measures moving trawlers into deeper water. Juvenile snapper are known to inhabit coastal and harbour waters and fishers are required to return to the sea any snapper less than the regulated minimum legal size (MLS). A proportion of returned snapper are anticipated to die, particularly when taken by traditional bottom trawl fishing gear.
- 809. Additionally, increased monitoring of the fishery occurring through observer and camera coverage provides confidence in fisher reports through additional verification.

- 810. Fisheries New Zealand received multiple submissions including from Te Ohu Kaimoana, Sanford Limited, and FINZ, in support of reducing the allowance for other sources of mortality caused by fishing. Te Ohu Kaimoana proposed an alternate option the same as the proposed Option 3 with a reduction in the allowance for other sources of mortality caused by fishing (and hence a lower TAC).
- 811. Submitters stated that with better reporting and monitoring in the fishery an allowance closer to 7% of the TACC is more appropriate. Egmont Seafood Limited proposed 5% of the TACC.
- 812. The 2021 stock assessment model used the assumption that other sources of mortality caused by fishing was 10% of the TACC to determine the status of the stock and the projections that the proposed options are based on. The Plenary working group agreed that the basis for this assumption should be revisited. It noted that it is important to identify whether there are any regulations or changes in fishing behaviour that could have resulted in changes.
- 813. Fisheries New Zealand recommends retaining the allowance at the 10% level for all options in this review. However it is proposed the setting of the other sources of mortality caused by fishing allowance is considered as part of the development of a SNA 8 management plan and is revisited as part of the next SNA 8 stock assessment, planned for 2024.

6.5 Option 1

- 814. Under this Option, a further review would be scheduled in three years when the stock assessment could be updated with new information and further discussions on levels of utilisation including an increase to the TACC could occur. This would align with submissions suggesting a staged or incremental approach to increasing SNA 8 utilisation would be more responsible than making large changes in one go, and that monitoring how the fishery responds to changes is critical to ensuring a repeat of past declines does not occur. It allows a more planned approach to potential expansion of fishing in the West Coast North Island inshore fishery as Fisheries New Zealand develops a management strategy.
- 815. Option 1 is an increase to the TAC of 1,280 tonnes, (a 72% increase from the current setting). The 2021 stock assessment, which constitutes the best available information on the status of the stock, indicates that this level of increase is considered sustainable, maintaining the stock well above the target of 40% and likely seeing the stock continue to increase in abundance towards or above 60% over the next 5 years.
- 816. Fisheries New Zealand considers this option to be a cautious approach which places a high degree of weight on uncertainty associated with how the West Coast inshore fishery, which snapper is a key species that has been depleted for some time. This option responds to concerns that an increase in commercial fishing could have negative impacts on the habitat that supports the fishery.
- 817. This option provides a significant increase to the allowance for recreational fishing, to align with estimated levels of current catch, increases the customary allowance to support future aspirations of tangata whenua, but provides a relatively low level of increased utilisation for the commercial sector, despite information indicating greater increases would be sustainable.
- 818. Choosing this option would respond to and prioritise concerns raised by tangata whenua and recreational fishers that the scale of the alternative proposed changes to the TAC are too large and may impact future management of SNA 8. It also provides the least risk to other by-catch and protected species which interact with the SNA 8 fishery, and may be impacted by increases in fishing effort or changes to fisher behaviour. Further, it poses the least risk to a

- significant increase in environmental impacts from fishing activity such as bottom trawling, as it is not anticipated that the TACC increase would significantly alter the extent of fishing activity.
- 819. Option 1 would likely exacerbate the current challenges faced by commercial fishers who are forced to take steps to avoid catching snapper above their available ACE. The increase to the TACC proposed under Option 1 would see abundance continue to increase and would be unlikely to provide enough of a utilisation opportunity to account for this.
- 820. The proposed update of the SNA 8 stock assessment in 2024 would provide new information to conduct a further review and provide for additional utilisation at that time, if the information showed it was sustainable to do so.
- 821. Projections using long term average recruitment indicate that the SNA 8 biomass is likely to increase from 54% B_0 to above 60% B_0 over the next five years. Option 1 was not projected using the stock assessment model, the catch settings in Option 1 are anticipated to result in a biomass between Projections 1 and 2 (Table 3 and Figures 2 and 4). If current high levels of recruitment continue, the stock shows a steeper trajectory towards even higher abundance levels (Figure 2).
- 822. Under Option 1, the TACC would be increased by 300 tonnes, equating to a 23% increase. Based on the reported SNA 8 port price, this would generate a predicted commercial fishing revenue change of \$1.48 million per annum. Option 1 provides the least increase for utilisation. Projections from the stock assessment indicate that the biomass will continue to grow and, with the low proposed TACC increase, will likely impact the ability of fishers to target associated fish stocks. Under Option 1 the TACC is 1087 tonnes less than Option 4, 729 tonnes less than Option 3, and 372 tonnes less than Option 2.
- 823. A total of 274 submissions were received supporting Option 1, including the New Zealand Recreational Fishing Council, Raglan Sport Fishing Club, Mana Cruising Club, Wellington Recreational Marine Fishers Association. Submissions recommend a cautious approach to increasing the TACC.
- **6.6 Option 2** (Fisheries New Zealand's preferred option)

TAC: 3,437 t (↑1652) TACC: 1,950 t (↑650) Customary: 100 t (↑57) Recreational: 1205 t (↑893) Other mortality: 182 t (↑52)

- 824. Option 2 is an increase to the TAC of 1,652 tonnes (a 93% increase from the current setting). The 2021 stock assessment, which constitutes the best available information on the status of the stock, indicates that this level of increase is considered sustainable, maintaining the stock well above the target of 40% and likely seeing the stock continue to increase in abundance to around 60% over the next 5 years.
- 825. Fisheries New Zealand considers this option delivers an appropriate balance between providing for increased utilisation, while recognising uncertainty around how the fishery may respond to a significant increase in the TAC and risk with respect to how associated and interdependent species may be impacted by changes in fishing practices and/or fisher behaviour within SNA 8.
- 826. This option provides a greater level of utilisation than Option 1. It provides a significant increase to the allowance for recreational fishing, to align with estimated levels of current catch, increases the customary allowance to support future aspirations of tangata whenua, and provides a more moderate level of increased utilisation for the commercial sector. It is acknowledged that Option 2 is still a cautious approach as the stock assessment indicates this level of utilisation will continue to support abundance well above the 40% target.
- 827. Choosing this option would acknowledge concerns raised by tangata whenua and recreational fishers that the scale of the alternative proposed changes to the TAC are too large and may

impact future management of SNA 8. The scale of the proposed TACC increase may create some risk to other by-catch and protected species which interact with the SNA 8 fishery, and may be impacted by increases in fishing effort or changes to fisher behaviour. There is some risk of an increase in environmental impacts from fishing activity such as bottom trawling, as it is anticipated that the TACC increase would be large enough to alter fishing practices.

- 828. Like Option 1, under Option 2 a further review would be scheduled in three years when the stock assessment could be updated with new information and further discussions around utilisation could occur. This also aligns with submissions suggesting a staged or incremental approach to increasing SNA 8 utilisation would be more responsible than making large changes in one go, and that monitoring how the fishery responds to changes is critical to ensuring a repeat of past declines does not occur. It would also allow time for the establishment of a biomass target, setting catch limits at a level that preserves higher abundance while an appropriate target is being explored.
- 829. Under Option 2, projections using long term average recruitment indicate that the SNA 8 biomass is likely to increase from 54% B_0 to above 60% B_0 (95% CI:0.44 to 0.73) over the next five years. There is a 92% probability that under a TAC of 3,437 tonnes the 2026 biomass will be above 50% B_0 . If current high levels of recruitment continue, the stock shows a steeper trajectory towards even higher abundance levels (Figure 2).
- 830. The proposed update of the SNA 8 stock assessment in 2024 would provide new information to conduct a further review and provide for additional utilisation at that time, if the information showed it was sustainable to do so.
- 831. Under Option 2, the TACC would be increased by 650 tonnes equating to a 50% increase. Based on the reported SNA 8 port price, this would generate a predicted commercial fishing revenue change of \$3.2 million per annum. Option 2 is a moderate increase for the purpose of utilisation, while recognising uncertainty and environmental risk. Under Option 2 the TACC would be 650 tonnes less than Option 4, and 325 tonnes less than Option 3.
- 832. Seventeen submissions were received in support of Option 2.

6.7 Option 3

TAC: 3,794 t (↑2009) TACC: 2,275 t (↑975) Customary: 100 t (↑57) Recreational: 1205 t (↑893) Other mortality: 214 t (↑84)

- 833. Option 3 is an increase to the TAC of 2,009 tonnes (a 133% increase from the current setting). The 2021 stock assessment, which constitutes the best available information on the status of the stock, indicates that this level of increase is considered sustainable, maintaining the stock well above the target of 40% and likely seeing the stock continue to increase in abundance to around 58% over the next 5 years.
- 834. Fisheries New Zealand considers this option responds to an opportunity for increased utilisation, and places less weight on the uncertainty around how the fishery may respond to a significant increase in the TAC and risk with respect to how associated and interdependent species may be impacted by changes in fishing practices and/or fisher behaviour within SNA 8.
- 835. This option provides a greater opportunity for utilisation than Options 1 and 2. It provides a significant increase to the allowance for recreational fishing, to align with estimated levels of current catch, increases the customary allowance to support future aspirations of tangata whenua, and provides a more high level of increased utilisation for the commercial sector. It is acknowledged that Option 3 is still a sustainable approach as the stock assessment indicates this level of utilisation will continue to support abundance well above the 40% target.

- 836. Choosing this option would acknowledge the concerns of commercial fishers and quota holders that abundance of SNA 8 has grown considerably, and that there is a real opportunity to utilise the available SNA 8 supported by the 2021 stock assessment. This option while providing a significant increase to key quota holders may also address some of the ACE availability issues faced by smaller fishing business.
- 837. The scale of the proposed TACC increase may create some risk to other by-catch and protected species which interact with the SNA 8 fishery and may be impacted by increases in fishing effort or changes to fisher behaviour. There is some risk of an increase in environmental impacts from fishing activity such as bottom trawling, as it is anticipated that the TACC increase would be large enough to alter fishing practices.
- 838. Like previous options, under Option 3 a further review would be scheduled in three years when the stock assessment could be updated with new information and further discussions around utilisation could occur. A review in three years will provide an opportunity to respond to concerns raised by stakeholders who are concerned that an increase in fishing will have a detrimental effect to the environment and SNA 8 stock.
- 839. Under Option 3, projections using long term average recruitment indicate that the SNA 8 biomass is likely to increase from 54% B_0 to 58% B_0 (95% CI:0.43 to 0.71) over the next five years. There is an 89% probability that under a TAC of 3,794 tonnes the 2026 biomass will be above 50% B_0 . If current high levels of recruitment continue, the stock shows a steeper trajectory towards even higher abundance levels (Figure 2).
- 840. The proposed update of the SNA 8 stock assessment in 2024 would provide new information to conduct a further review and provide for additional utilisation at that time, if the information showed it was sustainable to do so.
- 841. Under Option 3, the TACC would be increased by 975 tonnes equating to a 75% increase. Based on the reported SNA 8 port price, this would generate a predicted commercial fishing revenue change of \$4.8 million per annum. Option 3 is a large increase for the purpose of utilisation, while recognising some uncertainty and environmental risk. Under Option 3 the TACC would be 325 tonnes less than Option 4.
- 842. Ten submissions were received in support of Option 3.

6.8 **Option 4**

TAC: 4,152 t (↑2367) TACC: 2,600 t (↑1300) Customary: 100 t (↑57) Recreational: 1205 t (↑893) Other mortality: 247 t (↑117)

- 843. Option 4 is an increase to the TAC of 2,367 tonnes, a 133% increase from the current setting. Despite being the most significant increase, the 2021 stock assessment, which constitutes the best available information on the status of the stock, indicates that this level of additional utilisation is considered sustainable, maintaining the stock above the target of 40% and likely seeing the stock continue to maintain abundance at around 55% over the next 5 years, but with a decline back towards 50% out to 10 years (Figure 4).
- 844. Option 4 recognises the strong recovery of the stock and represents the least cautious option, with less focus on uncertainty and how the fishery may respond to a significant increase in the TAC. It poses the greatest risk with respect to how associated and interdependent species may be impacted by changes in fishing practices and/or fisher behaviour within SNA 8.
- 845. This option provides a greater opportunity for utilisation than all other options. It provides a significant increase to the allowance for recreational fishing, to align with estimated levels of current catch, increases the customary allowance to support future aspirations of tangata whenua, and also provides a large increase in utilisation for the commercial sector.

- 846. Choosing this option would focus on providing for increased utilisation despite concerns raised by tangata whenua and recreational fishers that the scale of the proposed changes to the TAC is too large and may impact future management of SNA 8. The scale of the proposed TACC increase will likely increase impacts on other by-catch and protected species which interact with the SNA 8 fishery. These species may be impacted by increases in fishing effort and/or changes to fisher behaviour. There is a risk of increased environmental impacts from fishing activity such as bottom trawling, as it is anticipated that the large TACC increase would significantly alter fishing practices and overall fishing effort.
- 847. Like with the other options, under Option 4 a further review would be scheduled in three years when the stock assessment could be updated with new information. This would be an opportunity to ensure that the scale of an Option 4 decision had not had an unforeseen negative impact on the stock. Close monitoring of how the fishery responds to such an increase would also be needed throughout the intervening three years.
- 848. Option 4 prioritises responding directly to the stock assessment information and immediately providing for a large-scale increase in utilisation. This aligns with submissions which focus on using stock assessment information to directly inform management and catch limits.
- 849. Under Option 4, projections using long term average recruitment indicate that the SNA 8 biomass is likely to increase from 54% B_0 to 57% (95% CI:0.41 to 0.71) over the next five years. There is an 84% probability that under a TAC of 4,152 tonnes the 2026 biomass will be above 50% B_0 .
- 850. The proposed update of the SNA 8 stock assessment in 2024 would provide new information to conduct a further review and provide for additional utilisation at that time, if the information showed it was sustainable to do so.
- 851. Under Option 4, the TACC would be increased by 1,300 tonnes equating to a 100% increase. Based on the reported SNA 8 port price, this would generate a predicted commercial fishing revenue change of \$6.41 million per annum. Option 4 places the greatest weight on the opportunity for utilisation. It is the least cautious approach; however, it is supported by projections from the stock assessment that the biomass will remain well above the current default target. Fisheries New Zealand acknowledges feedback that Option 4 is a significant increase to the TACC and may lead to an increase of the trawl footprint and a corresponding negative impact on the benthic environment.
- 852. Fisheries New Zealand received 21 submissions supporting Option 4. Submitters included FINZ, Sanford ltd, Egmont Seafoods.

6.9 Other options proposed by submitters

853. Fisheries New Zealand received a range of alternative options proposed by submitters. These included banning commercial fishing, and reducing current limits and allowances. Most submissions received supported the NZSFC/ LegaSea submission which proposed no increase to the SNA 8 TACC.

Option Zero

- 854. Fisheries New Zealand received 8281 submissions supporting an alternative option put forward by Legasea in their submission form as "Option Zero". Option Zero aligns with the combined written submission received by the New Zealand Sports Fishing Council (NZSFC), New Zealand Angling and Casting Association (NZACA), New Zealand Underwater Association and LegaSea, which proposes that:
 - a. There is no increase to the Total Allowable Commercial Catch (TACC).
 - b. The tonnage set aside to allow for Māori customary fishing interests is increased by 57 tonnes, to 100 tonnes.

- c. The tonnage set aside to allow for recreational fishing interests is increased by 893 tonnes, to 1205 tonnes.
- d. The tonnage set aside to allow for other mortality caused by fishing is retained at 130 tonnes or 10% of the TACC.
- e. The SNA 8 stock is reviewed again in 3 years' time based on an updated stock assessment and at that stage there may be potential for greater utilisation.
- f. The trawl exclusion zone is extended to 4 nm from Maunganui Bluff (south of Hokianga Harbour) to Tiriparepa/Scott Point (Top of Te Oneroa a Tohe/90 Mile Beach).
- 855. Fisheries New Zealand did not include Option Zero as an alternative option in this advice because of the high level of information available that indicates an increase in the TACC is sustainable. However, Fisheries New Zealand notes the concerns expressed by stakeholders and consider some of the concerns will be addressed through future management of the fishery.

6.10 Future Management

- 856. As part of the engagement and consultation process, tangata whenua, and commercial and recreational stakeholder representatives were invited to work alongside Fisheries New Zealand to determine how best to monitor and manage the fishery. Fisheries New Zealand received strong feedback from the representatives that a robust monitoring and management plan for SNA 8 and the West Coast North Island inshore fishery was a critical factor for the successful ongong sustainable management of SNA 8.
- 857. In response to this, Fisheries New Zealand suggests the best approach would be to develop a SNA 8 monitoring and management framework with stakeholders over the next three years that would include:
 - Exploring and confirming an appropriate management target
 - Setting reference points for the fishery⁷³
 - Information needs and ongoing research planning
 - Monitoring including camera and onboard observer deployment
 - Scheduling of stock assessments and subsequent reviews
 - Determining if decision rules are appropriate to guide future management decisions
 - Local area management considerations (how best to promote development across the range of the stock given the different characteristics/growth rates, balance of uses between stakeholders and ecosystem considerations).
- 858. Alongside this strategy the Medium Term Research Plan has projects are currently planned which will provide new information to inform fishery managers, tangata whenua, and stakeholders. If these projects are completed as anticpated the results will be available to inform an updated stock assessment to support the proposed review of SNA 8 in 2024.
- 859. These projects include:
 - West Coast North Island Trawl Survey 2022
 - Snapper Catch at Age project 2021-22
 - CPUE Assessment (to be determined)
 - National panel survey of recreational fishers 2022-23
 - Snapper 8 stock assessment. 2023-24 and 2027-28.

146 • Review of sustainability measures for the 2021 October round: SNA 8

⁷³ Reference points are the benchmarks that fisheries managers use to compare the current status of a stock or fishery to a desirable (or undesirable) state

6.11 Other matters raised

860. Many points were raised by the form submissions. The following table shows the standard points raised within the SNA 8 form submission, including how many submissions supported each. Many of these statements are outside the scope of the TAC setting process (Table 9).

Table 9: Statements in LegaSea's submission form for SNA 8, and number of submissions in support of each.

Legasea Template Statements	Number of Submissions that agreed with statement
No more trawling on the North Island's west coast.	7600
I am concerned that it has taken 33 years to rebuild west coast snapper to abundant levels.	7958
I support LegaSea in advocating for no increase in commercial catches of west coast snapper.	8116
I want David Parker, Minister of Oceans and Fisheries, to take an ecosystem based approach and not increase commercial catches of west coast snapper.	7910
I support the Minister to conduct another review of west coast snapper in 3 years time.	6681
I want David Parker to make a conservative snapper decision so depleted species such as gurnard, trevally, tarakihi, john dory and kahawai can rebuild to healthy levels.	7824
I believe bottom trawling is bad for the marine environment.	8247
I believe that an increase in bottom trawling will threaten biodiversity and the future success of snapper and other species on the west coast.	8161
I support the Minister to extend the 4 nautical mile trawl exclusion zone offshore to all of the west coast snapper zone.	7579
I am concerned that not enough information is being collected to better understand the bycatch associated with bottom trawling.	7600

Trawl exclusion

- 861. A total of 7579 submissions were received requesting that bottom trawling be excluded 4 nautical miles from shore along the entire coastline of the SNA 8 QMA. Submitters included Raglan Sports Fishing Club, and NZSFC.
- 862. The Te Hiku o Te Ika Far North Forum has also expressed strong concern around the localised depletion off the coast of Te Oneroa-a-Tōhe / Ninety Mile Beach. The Te Hiku o Te Ika forum raised that there is a disproportionate concentration of fishing effort in their rohe and that trawlers operating close to shore were having a direct impact on their ability to access kaimoana within their rohe moana.
- 863. Sanford Limited submitted that localised depletion is where a concentration of fishers (or vessels) are catching too many fish from too small an area in too short a period of time. Sanford outlined they think low recreational and customary catches along Ninety Mile Beach is very unlikely to be a symptom of localised depletion as the commercial catch effort in this area is not concentrated. Notwithstanding, this illustrates there is a role for Fisheries New Zealand to provide information (and catch and spatial data) that can inform these discussions and respond

- to the concerns of treaty partners. Sanford notes that their fishing vessels will sometimes overnight and shelter close by Ahipara to dodge bad weather.
- 864. Given that more than a quarter of all SNA 8 catch is taken from within area 047 off Te Oneroa a Tohe / Ninety Mile Beach, there is the possibility that this is having an impact on abundance at a local scale. Further an increase that provides for further utilisation may further intensify fishing in this area. Monitoring of fishing activity following decisions on catch settings may necessitate further discussions with lwi and commercial stakeholders to identify and respond to localised depletion issues. Further trawl restrictions in the area could be considered, either as voluntary measures, or as regulated interventions.

Preferential allocation rights (28N rights)

- 865. There are 932.4 tonnes of preferential allocation, known as '28 N' rights, associated with the SNA 8 stock. A total of 16 SNA 8 quota holders have preferential rights, with two holders having 96% of the rights.
- 866. 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 28N rights holders in this case the tonnage held may increase, but the percentage share of other quota holders in the fishery decreases. 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.
- 867. Notwithstanding their automatic consequence for quota holders, the existence of 28N rights is not a reason for or against setting or varying the TAC, TACC, and allowances.

7 Deemed Value Rates

- 868. In conjunction with setting SNA 8 commercial catch limits, Fisheries New Zealand is proposing that the deemed value rates be adjusted, to better reflect the current state of the fishery. Fisheries New Zealand consulted on the following deemed value rate options:
 - Deemed value rate Option 1
 Special differential deemed value rates commence once catch exceeds Annual Catch Entitlement (ACE) by 10% and increase at 10% intervals.
 - Deemed value rate Option 2
 Standard differential rates which commence when catch exceeds ACE by more than 20%. Catch more than ACE holdings is charged at the annual deemed value rate up to the 20% level.
- 869. Nine submissions were received commenting on SNA 8 deemed values. All submitters indicated a that they wanted a change from the current deemed value rates.
- 870. Sanford Ltd supported Option 1. Ocean Pearl Fisheries Ltd and Sealord did not specify an option but indicated issues with current deemed values.
- 871. The following submitters supported Deemed Value Option 2. Te Ohu Kaimoana, stated that the ACE price is significantly exceeding the market price driven by deemed value settings, producing negative economic returns in the fishery. FINZ submitted that the current regime is based on a rebuilding stock and that the new deemed value settings need to reflect the status of the stock. Brown and Hayman Fisheries Ltd and Egmont Seafoods indicated that the fishery is now healthy and the deemed value rates should reflect this.

Recommendation

- 872. The current deemed value regime was set in 2012, at a time when the stock was heavily depleted. Highly punitive special differential deemed value rates (with rates for maximum excess equalling 400% of the annual rate) were set at the time in order to ensure commercial catch was constrained to the reduced catch limits, set to initiate a recovery of the fishery. These were some of the strictest deemed value settings in New Zealand fisheries.
- 873. Fisheries New Zealand considers it is now appropriate to implement alternative deemed value settings for SNA 8 which better reflect the current state of the fishery.
- 874. Fisheries New Zealand considers a return to a standardised differential deemed value regime, implemented in line with the guidelines of the deemed value working group, is an appropriate approach in light of the 2021 SNA 8 stock assessment indicating that abundance is now highly likely above the target level.
- 875. While the new rates proposed in are far less punitive than the current regime, Fisheries New Zealand considers that they will still incentivise fishers to land catch and obtain ACE as required. This is because it will be uneconomic to fishers to incur SNA 8 deemed values.
- 876. Fisheries New Zealand recommends Deemed value rate Option 2. Under this option the Interim Deemed Value Rate is decreased by \$1.37/kg and standard differential rates which commence when catch exceeds ACE by more than 20% apply. Catch more than ACE holdings is charged at the annual deemed value rate up to the 20% level.
- 877. The recommendation is based on the 2019/20 port price index of SNA 8 which was \$4.93/kg. The recommended decrease will align the SNA 8 deemed value regime with similar stocks that are not in a rebuilding phase.
- 878. The recommended deemed value rates for SNA 8 are shown in Table 10.

Table 10: Current and proposed deemed value rates for SNA 8.

Current	lusta viva	Annual	Differe	ntial rates (\$/kg) for exc	ess catch (%	6 of ACE)			
	Interim	100-105%	105- 110%	110- 120%	120- 130%	130- 140%	140%- 150%	150- 160%	160% +	
	5.40	6.00	7.00	9.00	12.00	16.00	18.00	20.00	22.00	
	Intorim	Annual	Differe	ntial rates (kg) for exc	ess catch (%	6 of ACE)			
Option 1 ⁷⁴	Interim	menin	100-110%	110- 120%	120- 130%	130- 140%	140- 150%	150%- 160%	160- 170%	170% - 180%
	4.03	4.48	4.93	5.38	5.82	6.27	6.72	7.17	7.62	
0 (1 074	Interim	Annual	Differe	ntial rates (kg) for exc	ess catch (%	6 of ACE)			
Option 2 ⁷⁴ (recommended)	menni	100-120%	120- 140%	140- 160%	160- 180%	180- 200%	200% +			
	4.03	4.48	5.38	6.27	7.17	8.06	8.96			

879. Following decisions from this review, Fisheries New Zealand will continue to monitor levels of deemed value payments and catch over time and respond if risks are identified. Deemed value rates for stocks can be reviewed as part of the April or October sustainability rounds and can be independent of a broader sustainability review of a stock.

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⁷⁴ The differential deemed value rates for Option 1 and Option 2 were subject to rounding errors in Fisheries New Zealand's consultation document for SNA 8. The differential rates presented in this table have been amended to correct those errors, and now reflect the correct differential rates for Option 1 and Option 2 in line with the excess catch (% of ACE) values presented in the table.

8 Conclusions and recommendations

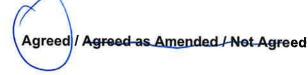
- 880. Results of the stock assessment demonstrate that SNA 8 has rebuilt from historical low levels and is now very likely to be above the Harvest Strategy Standard management target of 40% of unfished biomass. This is the default target that is expected to achieve the maximum sustainable yield from the SNA 8 stock.
- 881. All options proposed in this advice are projected to maintain the fishery above 57% SB_0 over the next five fishing years, and above 49% SB_0 out to 10 years (albeit with less certainty).
- 882. Fisheries New Zealand considers Options 2 and 3 provide a balance between providing for utilisation and recognising there are uncertainties associated with how the West Coast North Island fishery, and the habitats that support it, will respond to increased snapper catch.
- 883. Fisheries New Zealand prefers Option 2, with a plan to update the SNA 8 stock assessment and conduct a further review in 2024. At this point there would be potential for further increases if supported by new information. This is a conservative approach and places weight on the high value placed on SNA 8 across the sectors. Option 2 also responds to concern expressed through engagement and consultation regarding the scale of increases within the proposed options and how this will impact on other species within the WCNI inshore mixed species complex.
- 884. An incremental approach to increasing utilisation will allow careful monitoring of how the SNA 8 and other fish stocks caught with snapper respond. It will also allow time, before the next stock assessment, to develop an ongoing monitoring and management framework for the fishery.
- 885. Alternatively, if you consider it a priority to respond to the opportunity for utilisation in SNA 8, Fisheries New Zealand recommends Option 3. Choosing this option would acknowledge the concerns of commercial fishers and quota holders that abundance of SNA 8 has grown considerably, and that there is a real opportunity to utilise SNA 8 at levels supported by the 2021 stock assessment. The increase to the TACC may also address some of the ACE availability issues faced by smaller fishing business such as those identified through lwi forum feedback.
- 886. Fisheries New Zealand is proposing that the deemed value rates be adjusted, to better reflect the current state of the fishery. Fisheries New Zealand recommends Deemed Value Rate Option 2.

9 Decision for SNA 8

Option 1

Agree to set the SNA 8 TAC at 3,065 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests to 100 tonnes;
- ii. Increase the allowance for recreational fishing interests to 1205 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing to 160 tonnes.
- iv. Increase the SNA 8 TACC from 1,300 to 1,600 tonnes.





Option 2 (Fisheries New Zealand's preferred option)

Agree to set the SNA 8 TAC at 3,437 tonnes and within the TAC:

- Increase the allowance for Māori customary non-commercial fishing interests to 100 tonnes;
- ii. Increase the allowance for recreational fishing interests to 1205 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing to 182 tonnes.
- iv. Increase the SNA 8 TACC from 1,300 to 1,950 tonnes.

Agreed / Agreed as Amended / Not Agreed



<u>OR</u>

Option 3

Agree to set the SNA 8 TAC at 3,794 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests to 100 tonnes;
- ii. Increase the allowance for recreational fishing interests to 1205 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing to 214 tonnes.
- iv. Increase the SNA 8 TACC from 1,300 to 2,275 tonnes.

Agreed / Agreed as Amended / Not Agreed



OR

Option 4

Agree to set the SNA 8 TAC at 4,152 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests to 100 tonnes;
- ii. Increase the allowance for recreational fishing interests to 1205 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing to 247 tonnes.
- iv. Increase the SNA 8 TACC from 1,300 to 2,600 tonnes.

Agreed / Agreed as Amended / Not Agreed



AND

Agree to decrease the deemed value rates for snapper 8 (SNA 8) to the values outlined below:

•		Annual	Differential rates (\$/kg) for excess catch (% of ACE)									
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+					
SNA 8	4.03	4.48	5.38	6.27	7.17	8.06	8.96					



<u>AND</u>

Monitoring and Management Plan for the SNA 8

Fisheries New Zealand to develop a SNA 8 planning framework, to monitor and manage SNA 8 and the West Coast North Island inshore fishery.

Noted

Hon David Parker Minister for Oceans and Fisheries

21 / 09 / 2021

Hāpuku and Bass (HPB 1, HPB 2) – Northland and Auckland, Bay of Plenty and East Coast North Island

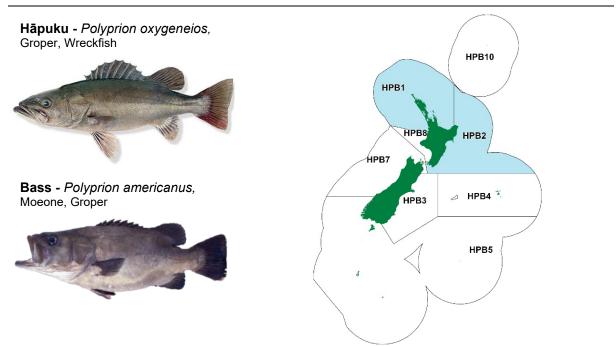


Figure 1: Quota Management Areas (QMAs) for hāpuku and bass, with HPB 1 and HPB 2 highlighted.

Table 1: Summary of options proposed for HPB 1 & 2 from 1 October 2021. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

					HPB 1					
			Allowances			Recreat	ional Measures			
Option	TAC	TACC	Customary Māori	Pograptional		Daily Limits	Additional regulations			
Current settings	N/A	480.8	N/A	N/A	N/A	5 per person	Included in the combined daily limit of 5 with kingfish with a maximum of 3 kingfish			
Option 1	379	280 \(\sqrt (200.8 t)	10	14	75	3 per person	Remain in the combined daily limit of 5 with kingfish, but include a maximum of 3 hāpuku/bass			
Option 2	289	210 \(\sqrt (270.8 t)	10	11	58	2 per	Remove from the combined daily limit of 5 with kingfish and:			
Option 3	215	140 ↓ (340.8 t)	10	7	58	person	-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3			
					HPB 2					
				Allowance	s	Recreat	Recreational Measures			
Option	TAC	TACC	Customary Māori	Other mortality	Recreational	Daily Limits	Additional regulations			
Current settings	N/A	266.2	N/A	N/A	N/A	5 per person	Included in the combined daily limit of 5 with kingfish with a maximum of 3 kingfish			
Option 1	233	160 ↓ (106.2 t)	10	8	55	3 per person	Remain in the combined daily limit of 5 with kingfish, but include a maximum of 3 hāpuku/bass			
Option 2	174	120 ↓ (146.2 t)	10	6	38	2 per	Remove from the combined daily limit of 5 with kingfish and:			
Option 3	132	80 ↓ (186.2 t)	10	4	38	person	-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3			

on No	No								
HPB 1		HPB 2							
25		24							
Option 1	0	Option 1	0						
Option 2	1	Option 2	5						
Option 3	14	Option 3	10						
Other	10	Other	9						
	HPB 1 25 Option 1 Option 2 Option 3	HPB 1 25 Option 1	HPB 1 HPB 2 25 24 Option 1 0 Option 1 Option 2 1 Option 2 Option 3 14 Option 3						

1 Why are we proposing a review?

- 887. The review of HPB 1 and HPB 2 addresses a potential sustainability concern with the current management settings. HPB 1 and HPB 2 are shared fisheries highly valued by customary Māori, recreational, and commercial fishers. Collective concern has been raised about the health of these stocks, with reports of declining abundance in areas where hāpuku and bass are commonly targeted.
- 888. Despite research efforts, scientific information on hāpuku and bass is limited. Action has recently been taken to require individual species reporting of hāpuku and bass by commercial fishers, with this change expected to provide more robust data to inform future research and management.
- 889. Fisheries New Zealand has engaged lwi Fisheries Forums and held multi-stakeholder meetings in the areas covering HPB 1 and HPB 2 to gather on the ground knowledge from tangata whenua and commercial and recreational fishers regarding hāpuku and bass and to listen to suggestions for improved management.
- 890. Fisheries New Zealand is now proposing to set a TAC for HPB 1 and HPB 2, noting that currently only a TACC is set. This will include the setting of allowances for customary and recreational fishers, as well as other sources of mortality caused by fishing.
- 891. Given the collective concern expressed for the sustainability of these stocks, evidence of declining catch and limited science information, Fisheries New Zealand proposes that a decrease to the TACC is also warranted.
- 892. Along with advising you on catch settings, changes are also recommended for recreational daily limits, including consideration of an accumulation limit to restrict catch over a period of more than one day. This would ensure recreational catch is maintained within the proposed allowance and recognises that HPB 1 and HPB 2 are important shared fisheries and that actions to provide for the sustainability of these stocks should be shared across sectors.

1.1 About the stock

1.1.1 Fishery characteristics

- 893. HPB 1 and HPB 2 are important shared fisheries that are highly valued by customary, commercial, and recreational fishers.
- 894. In the early 2000s, almost all commercial catch of HPB 1 and HPB 2 was reported as bycatch. However, in recent years, the proportion of targeted catch has increased to approximately 80% in HPB 1 and 50% in HPB 2. Hāpuku and bass are caught as bycatch in commercial fisheries targeting bluenose, tarakihi and ling (HPB 1 and HPB 2) and to a lesser extent snapper and school shark (HPB 1).

895. Commercially, these stocks are mainly caught via bottom longline and Dahn line (approximately 90% targeted catch). In the last four fishing years, setnets have accounted for approximately 10% of the targeted catch in HPB 2.

1.1.2 Biology

- 896. Hāpuku (*Polyprion oxygeneios*) and bass (*Polyprion americanus*) are widely distributed around New Zealand, generally over rough ground, from the central shelf (100 m) to an estimated lower depth limit of 300 m for hāpuku and 500 m for bass.
- 897. Hāpuku mature between 10 and 13 years and may live in excess of 60 years. Estimates from southwest Australia indicate that bass are also long-lived, with males reaching a maximum age of 55 years and females a maximum age of 78 years⁷⁵. Female bass mature at 14 years and male bass mature at 11 years.
- 898. Hāpuku aggregate around pinnacles, reefs, and ledges, and can be rapidly depleted from these areas by fishing with long recovery times suggesting a high level of site fidelity (except during the spawning season). Bass are known to associate with inshore and oceanic rocky reefs, pinnacles, cliffs and canyons, both individually and as loose aggregations.
- 899. For hāpuku, spawning occurs over winter months (May-August). Evidence from northerly migrations of pre-spawning hāpuku from Southland (and other observations from the Cook Strait hāpuku and bass fisheries) indicate that the Cook Strait may be a key spawning area for hāpuku, although the exact location is unknown.
- 900. Hāpuku and bass prey on a wide variety of fish and invertebrates, including red cod, tarakihi, blue cod, hoki and squid. In the Cook Strait, hāpuku are preyed upon by sperm whales, although probably neither heavily nor selectively.

1.1.3 Management Background

- 901. Hāpuku and bass in HPB 1 and HPB 2 are low knowledge stocks, which means that scientific information is limited to inform management.
- 902. Since the early 2000s fishers have expressed concerns about the health of these stocks and reported declining abundance in areas where they were commonly targeted. In response to these concerns, Fisheries New Zealand invested in several research projects over the last two decades. Attempts to improve scientific information have unfortunately been unsuccessful. This is largely due to the commercial catch of the two species (hāpuku and bass) being reported together under the combined species code HPB and ongoing uncertainties associated with hāpuku and bass movements and stock structure.
- 903. The latest amendment to the electronic reporting requirements removes the code HPB as an option for reporting catch estimates and leaving only codes HAP (hāpuku) and BAS (bass) to use. This change provides species specific estimated catch data, that will be beneficial for future research and management decisions. Species level reporting information will also be important if future consideration is given to splitting the stocks into hāpuku and bass specific management areas.
- 904. All commercial fishers must use these new reporting requirements by 1 December 2021 and can start reporting from 1 September 2021.

1.2 Status of the stocks

905. HPB stocks are low knowledge stocks with no reliable estimates of biomass or yield. For stocks in which MSY is not able to be reliably estimated using available information, section 13(2A) of

Fisheries New Zealand

⁷⁵ Wakefield, C. Newman, S. Boddington, D. (2013) Exceptional longevity, slow growth and late maturation infer high inherent vulnerability to exploitation for bass groper *Polyprion americanus*

- the Act specifies that decisions to set or vary the TAC must not be inconsistent with the objective of moving the stock to a level at or above MSY.
- 906. The 2021 Fisheries Assessment Plenary states that it is not known if current catches or the TACCs are sustainable or at levels that will allow the stocks to move towards a size that will support the maximum sustainable yield.
- 907. These stocks are currently monitored using trends in catch. Monitoring methods used for other species such as trawl surveys and catch per unit effort (CPUE) data have been unsuccessful in producing a series of relative abundance that can be used to assess the status of both species. This is because there has been difficulty in gathering the data required to effectively manage these stocks; due to being combined as hāpuku and bass (HPB) and due to uncertainties regarding settlement habitat and movements from juvenile to maturity and spawning.
- 908. Tagging studies have indicated considerable mixing of hāpuku between Otago, South Canterbury and the Cook Strait indicating that current fish stock boundaries (based on QMAs) may be inappropriate for the management of Cook Strait and South Island hāpuku.

2 Catch information and current settings within the TAC

2.1 Commercial

- 909. Commercial catch of hāpuku and bass has been trending downwards since the mid-2000s and the last time the TACC was reached was 2005/06 (HPB 2) and 2006/07 (HPB 1) (Figure 2).
- 910. The average annual commercial catch of HPB 1 is 280 t (58% of the TACC) and the average annual commercial catch of HPB 2 is 160 t (60% of the TACC). Average annual commercial catch has been calculated as the average from the past five fishing years with the 2019/20 fishing year data excluded due to the unknown effects of COVID-19 on fishing practices.

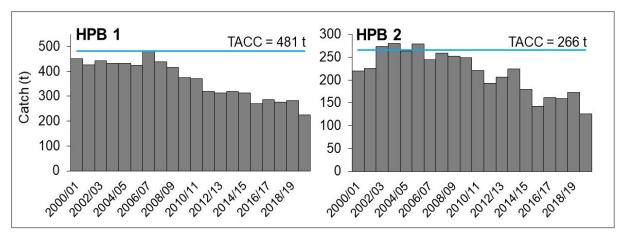


Figure 2: Annual commercial catch (in tonnes) of hāpuku and bass from 2000/01 to 2019/20 in HPB 1 (left) and HPB 2 (right) with the TACC indicated by the blue line. Note the different scaling on the X axes of both graphs.

2.2 Customary Māori

- 911. There is currently no customary Māori allowance set for HPB 1 or HPB 2 and customary catch information for these stocks is highly uncertain. Information supplied from customary fishing permit authorisations is limited with very few permits for HPB 1 or HPB 2 having been reported as issued. Since 1999:
 - Three permits have been issued for customary use in HPB 1. One of the three permits reported harvesting half the amount permitted. There was no reported harvest from the other two permits.

- Twelve permits have been issued for HPB 2. Three of the 12 permits reported harvesting the numbers authorised, three did not report what was harvested and six reported harvesting less than what was permitted.
- 912. Fisheries New Zealand recognises 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 and therefore customary catch may be occurring under the Fisheries (Amateur Fishing) Regulations 2013, for which there is no requirement to report catch.

2.3 Recreational

- 913. There is currently no recreational allowance set for HPB 1 or HPB 2. Recreational daily limits for hāpuku and bass are included in a combined daily limit of five with kingfish. Within this combined daily limit, a fisher may only take a maximum of three kingfish.
- 914. The best available information on current recreational catch is from the 2017/18 National Panel Survey of Marine Recreational Fishers (NPS) and amateur charter vessel returns. The 2017/18 NPS estimated the recreational harvest of hāpuku/bass was 73.1 tonnes in HPB 1 and 54.7 tonnes in HPB 2.
- 915. The 2017/18 NPS estimates of recreational harvest include amateur charter vessel (ACV) catch, but Fisheries New Zealand also has separate information for ACV catch from ACV returns. ACV returns record the number of fish caught and how many were retained and have been reported since 2010/11.
- 916. Figure 3 provides 10 years of estimated ACV catch data. Annual ACV catch was estimated using the mean weight of 5.96 kg (taken from the 2017/18 NPS) multiplied by the number of fish caught per year. From this information, Fisheries New Zealand estimates annual ACV catch to be on average 7.5 tonnes in HPB 1 and 8.5 tonnes in HPB 2 and represents 10% and 15% respectfully of total recreational catch in HPB 1 and HPB 2.

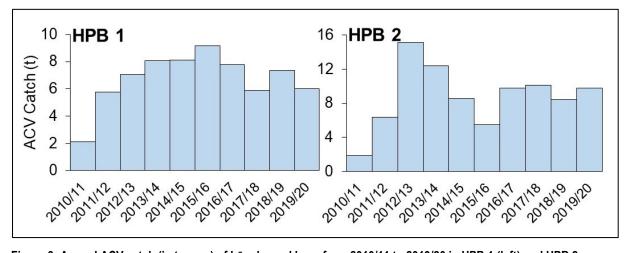


Figure 3: Annual ACV catch (in tonnes) of hāpuku and bass from 2010/11 to 2019/20 in HPB 1 (left) and HPB 2 (right). Note the different scaling on the X axes of both graphs.

2.4 All other mortality caused by fishing

- 917. The other sources of fishing mortality allowance accounts for any mortality that occurs due to fishing activity that is not otherwise accounted for in the TAC. There is currently no allowance set for all other mortality caused by fishing for HPB 1 or HPB 2.
- 918. Potential sources for other mortality for HPB 1 and HPB 2 could include, unreported and illegal catch, mortality associated with injury from contact with (but not capture by) fishing gear, and

- mortality associated with the accidental loss or damage of fishing gear and orca or shark depredation.
- 919. The main fishing methods for HPB 1 and HPB 2 are bottom longline and Dahn line. These methods are more selective and less likely to create unknown mortality events in comparison with trawl caught fish. Therefore, allowances for other mortality caused by fishing that equate to 5% of the TACC are considered appropriate for HPB 1 and HPB 2.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 920. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 921. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
- 922. HPB 1 covers the rohe of Te Hiku o Te Ika, Mid-North, Ngā Hāpu o Te Uru o Tainui, the Hauraki Iwi Collective and Mai I Ngā Kuri a Wharei ki Tihirau Iwi Fisheries Forums. Hāpuku and bass have been identified as a taonga species by the Te Hiku o Te Ika and Mai I Nga Kuri a Wharei ki Tihirau forums in their respective Iwi Fisheries Forum Plans.
- 923. HPB 2 covers the rohe of Ngāti Porou and Mai Paritau tae atu ki Turakirae Fisheries Forum. Neither of these forums have lwi Fisheries Forum Plans in place. In the absence of an lwi Fisheries Forum Plan it should be noted that iwi may still consider hāpuku and bass taonga species.
- 924. Many forum members voiced concerns that the low abundance of hāpuku in shallow depth fishing grounds is preventing access for customary fishers. Historically, hāpuku was harvested by Māori close to shore and the absence of this taonga species is considered an indicator of the poor health of the fishery and that management action is necessary.
- 925. A summary of lwi Fisheries Forums input on HPB 1 and HPB 2 is detailed in Table 2.

Table 2: Summary of Iwi Fisheries Forum Input

lwi Fisheries Forum	Input into HPB 1 and HPB 2								
Mid North Iwi Fisheries Forum	 Support Option 3 for HPB 1 Requested a plan for regular monitoring of the stock, so that management will be able to adapt to the changes in the fishery. 								
Te Hiku o Te Ika Iwi Fisheries Forum	 Support Option 2 for HPB 1 Suggested Fisheries New Zealand investigate reducing the QMAs into smaller units. 								
Ngā Hāpu o Te Uru o Tainui	Support a decrease to HPB 1 catch limits, but no preferred option.								
Mai Paritu tae atu ki Turakirae	 Support Option 3 with the removal of the accumulation limit from the recreational changes. 								
	 Currently meeting their customary needs through the Fisheries (Amateur Fishing) Regulations 2013. Concerned that they would require customary permits should an accumulation limit be introduced. 								

- Advised that more concentrated management efforts should be placed in localised areas of the rohe for HPB 2. These areas included, Flat Point, Riversdale, Porangahau and Ritchie Banks
- Noted the importance of having better recreational catch data to inform hāpuku/bass management. Introducing some form of reporting would be better than the infrequent surveys currently conducted.

3.2 Kaitiakitanga

- 926. Fisheries New Zealand considers that the proposed management options are in keeping with the objectives of the lwi Fisheries Forum Plans which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 927. Customary tools utilised under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaitai, taiāpure and temporary closures.
- 928. There are 14 mātaitai reserves, five taiāpure and five temporary closures (Table 3) that fall within HPB 1 and HPB 2. It is not anticipated that the options proposed would negatively impact the availability of hāpuku and bass in these areas, however any positive impacts are unknown.

Table 3: Customary fisheries management areas in HPB 1 and HPB 2.

QMA	Customary Area	Management Type				
	Maketu Taiāpure	Taiāpure				
HPB 1	Waikare Inlet Taiāpure	All types of fishing are permitted within a				
	Kawhia Aotea Taiāpure	Taiāpure. The management committee can				
HPB 2	Porangahau Taiāpure	recommend regulations for commercial, recreational and customary fishing.				
пго 2	Palliser Bay Taiāpure	recreational and customary lishing.				
	Te Mata and Waipatukahu Temporary Closure - shellfish	S186A Temporary Closures				
HPB 1	Umupuia Beach Temporary Closure - shellfish	Section 186A temporary closures are used to				
пгві	Marsden Bank and Mair Bank Temporary closure - shellfish	restrict or prohibit fishing of any species of				
	Maunganui Bay – all fish species except kina	fish, aquatic life or seaweed or the use of any				
HPB 2	Waimārama Temporary Closure - blackfoot pāua	fishing method.				
	Te Kopa o Rongokānapa Mātaitai					
	Raukokere Mātaitai					
	Te Rae o Kohi Mātaitai					
HPB 1	Te Maunga o Mauao Mātaitai					
	Te Puna Mātaitai					
	Aotea Harbour Mātaitai	Mātaitai Reserve				
	Marokopa Mātaitai	Commercial fishing is not permitted within				
	Te Kopa o Rongokānapa Mātaitai	 mātaitai reserves unless regulations state otherwise. 				
	Hakihea Mātaitai					
	Toka Tamure Mātaitai					
HPB 2	Horokaka Mātaitai					
	Te Hoe Mātaitai					
	Moremore Mātaitai (a)					
	Moremore Mātaitai (b)					

4 Environmental and Sustainability Considerations

4.1 **Environmental principles (section 9 of the Act)**

929. Fisheries New Zealand considers it highly unlikely that the options proposed in this paper will lead to increased environmental risk as options proposed involve either maintaining or decreasing current catch.

4.1.1 Marine mammals

- 930. HPB 1 and HPB 2 extend to parts of the West Coast of the North Island, an area associated with multiple marine mammal species including the critically endangered Māui dolphin. The Hector's and Māui Dolphins Threat Management Plan (TMP) guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins.
- 931. Bottom longline and Dahn line fisheries pose a low risk of dolphin capture. Since the 2008/09 fishing year to the present day, there have been no reported interactions with marine mammals (including dolphins) in HPB 1 and HPB 2 target fisheries, but low observer coverage of bottom longline fisheries makes the frequency of interactions uncertain.
- 932. Fisheries New Zealand notes that, in recent years, the use of setnets has increased in HPB 2 (Wairarapa and Hawke's Bay) and now accounts for approximately 10% of targeted catch.
- 933. Nationwide, the majority of marine mammal interactions reported within HPB fisheries have involved New Zealand fur seal captures in setnet fisheries. Alongside the risk to marine mammals during active fishing events, setnets can also become tangled on rocky reefs and continue to fish and trap animals as ghost fishing gear.
- 934. As options proposed involve either maintaining or decreasing current catch levels, it is not expected that risks to marine mammals will increase.

4.1.2 Seabirds

- 935. The management of seabird interactions within New Zealand's commercial fisheries, including the reduction of incidental captures of seabirds, is guided by the National Plan of Action for Seabirds (NPOA Seabirds 2020).
- 936. The seabird species considered most at risk from bottom longline fisheries targeting hāpuku and bass are black petrels and flesh-footed shearwaters. Total fishery related deaths of seabirds in HPB bottom longline (BLL) fisheries was estimated as 154 for the period between 2014-15 and 2016-17⁷⁶. Although low observed coverage (estimated 3% of fishing events observed in the hapuku and bass BLL fishery in 2017/18 fishing year) makes the frequency of interactions uncertain.
- 937. As options proposed involve either maintaining or decreasing current catch levels for both fishstocks, they are not expected to increase seabird captures.

4.1.3 Fish bycatch

938. The species most commonly caught alongside hāpuku and bass as bycatch in HPB 1 and HPB 2 bottom longline and Dahn line fisheries are school shark and bluenose (in HPB 1 and HPB 2), tarakihi (in HPB 1) and ling (in HPB 2).

939. Bluenose in the North and Central (east) management areas (BNS 1 and BNS 2) and East Coast tarakihi (including TAR 1(east) and TAR 2) stocks are currently undergoing rebuilds due to low abundance. Options proposed present a low risk to the rebuild of these stocks as the options are unlikely to result in increased fishing effort that could lead to increased bycatch of these stocks.

⁷⁶ Richard, Y., & Abraham, E. (2020). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2016–17. New Zealand Aquatic Environment and Biodiversity Report No. 237. 61 p.

4.1.4 Benthic impacts

- 940. Bottom longline and Dahn line methods generally pose a low risk to the benthic environment with approximately 56 kg of coral, sponges and bryozoans reported as bycatch across all HPB fisheries since 2008/09 to the present day.
- 941. Small to moderate quantities of hāpuku and bass are also caught as bycatch in trawl fisheries targeting tarakihi (approximately 14% of total catch in HPB 2 and 3% of total catch in HPB 1). Mobile bottom contact fishing methods e.g. trawling pose a higher risk to the benthic environment than static bottom contact fishing methods such as bottom longlining.
- 942. As options proposed involve either maintaining or decreasing current catch levels for both fish stocks, they are not expected to increase benthic impacts.

4.1.5 Habitats of particular significance for fisheries management

- 943. Fisheries New Zealand considers that habitats of particular significance for fisheries management (HPSFM) are areas of critical importance in supporting the productivity of harvested species. In considering potential threats faced by the habitat and the need for protection, habitat areas are expected to be localised, ecologically important, and sensitive.
- 944. The Cook Strait has been suggested as a hotspot for spawning hāpuku (Figure 4), justified by observations reported by Beentjes & Francis (1999) of northerly migrations of pre-spawning hāpuku from Southland (and other observations from the Cook Strait hāpuku fishery) (Paul, 2005). Although the exact location is unknown, it is thought to be south of Brothers Islands (Johnston 1983). The attributes of this habitat are not thought to be under threat from any development activities (Table 4).

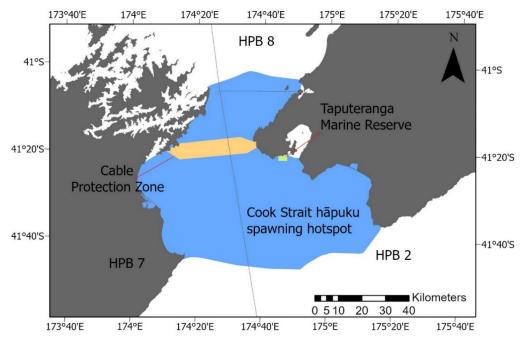


Figure 4: Estimated distribution of Cook Strait spawning hāpuku⁷⁷ (blue area on map) covering three HPB QMAs (HPB 2, 7 and 8), the Cook Strait Submarine Protection Zone (CPZ) and Taupteranga Marine Reserve.

945. Current environmental protection in the Cook Strait which could be relevant to this habitat includes the Cook Strait Submarine Protection Zone (CPZ) that extends from Oteranga Bay (North Island) to Fighting Bay (South Island). Within this zone, all fishing and anchoring is illegal except for some fishing activities that are permitted within 200 m of the shore. The Taputeranga Marine Reserve on Wellington's south coast may also be relevant to this habitat.

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⁷⁷ Annual distribution of spawning hāpuku estimated from scientific observed records, research bottom trawl records and literature sources. Feature layer by MPI Geospatial Management. Credits: Michael Manning, NIWA.

- The reserve is protected under the Marine Reserves Act 1971 and fishing or gathering of marine life of any kind is prohibited.
- 946. Aside from the Cook Strait hotspot for spawning hāpuku, there is a gap in current knowledge as to specific spawning grounds for hāpuku and bass. Closing spawning areas to fishing during the spawning season was a management measure suggested in one public submission (A. Fulford) and by stakeholders present at meetings in April and May 2021, hence this is an important area for future research. Locating spawning grounds could help define what environmental characteristics make them favourable for hāpuku and bass spawning.
- 947. As options proposed involve either maintaining current catch levels or decreasing fishing effort, they are not expected to increase the impact on any habitats of particular significance in HPB 1 and HPB 2.

Table 4: Attributes, reasons for significance and risks/threats to the Cook Strait hapuku spawning area.

Stock	HPB 2
Habitat	Cook Strait (exact location unknown) but thought to be south of Brothers Islands.
Attributes of habitat	 Key spawning area (May - August). Likely due to current/ circulation patterns and oceanographic features. The stock is data deficient and the exact location is unknown.
Reasons for particular significance	 Spawning is of critical importance in supporting the productivity of a harvested species. This is the only identified spawning ground for hāpuku in New Zealand waters to date. Spawning site fidelity is unknown for hāpuku, but this site could be used by hāpuku from three or possibly four management areas (HPB 2, 8, 7 and potentially 3). Effects of damage to spawning habitat might not be apparent in the population for many years due to the species being long-lived.
Risks/Threats	 No known development activities are happening or planned. Oceanographic features could be impacted by extractive processes e.g. mining but these activities are unlikely in this area due to exceptionally fast tidal flows and strong unpredictable currents. Oceanographic features could be impacted by cable laying but there is an existing cable protection zone therefore it is unlikely cable laying will occur. Oceanographic features and current/circulation patterns could be impacted by future development of tidal power which would affect flow regimes in the area. A recent Sustainable Seas project investigated the viability of generating electricity from the strong tidal currents within Cook Strait. Long term - current/circulation patterns could be impacted by climate change (ocean warming, changes to wind patterns)

- 948. As part of their submission, the Environmental Defence Society (EDS) requested that Fisheries New Zealand submit additional sustainability measures for your consideration. They state that areas of important reef habitat within the Hauraki Gulf require protection to achieve the purpose of the Act, noting that sections 11(3)(c) and 9(c) of the Act provide the Minister with powers to set area-specific measures to protect habitat of particular significance for fisheries management.
- 949. Including additional sustainability measures under Sections 11(3)(c) and 9(c) of the Act are outside the scope of what has been consulted on during this sustainability round. However, Fisheries New Zealand is progressing a number of recommendations made by the Prime Minister's Chief Science Advisor's report into the Future of commercial Fishing in Aotearoa New Zealand (2021), including creating a framework for prioritisation and protection of HPSFM.

162 • Review of sustainability measures for the 2021 October round: HPB 1 & HPB 2

4.2 Sustainability measures (section 11 of the Act)

950. 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 plans.

4.2.1 Draft National Inshore Finfish Fisheries Plan

- 951. Hāpuku and bass will be managed under the National Inshore Finfish Fisheries Plan (the Plan) once finalised. The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020.
- 952. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 953. Hāpuku and bass fall under Group 2, which recognises that Fisheries New Zealand intend to manage these stocks to provide for moderate levels of use with moderate levels of information to monitor stock status.

4.2.2 Hauraki Gulf Marine Park Act (HGMPA)

- 954. The Hauraki Gulf Marine Park (HGMP) falls within the quota management area of HPB 1. Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 are applicable to the management of this fishery.
- 955. As this review aims to address a potential sustainability risk with the HPB 1 fishery, Fisheries New Zealand considers that the proposed options are consistent with obligations under sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000.
- 956. In addition to the Hauraki Marine Park Act 2000, *Revitalising the Gulf: Government action on the Sea Change Plan* may affect future management and monitoring of hāpuku and bass within the Hauraki Gulf Marine Park as well as, further management and protection measures that are addressed in the Hauraki Gulf Draft Fisheries Plan.

4.2.3 Regional Plans

- 957. There are four Regional Councils that have coastline within HPB 1 and HPB 2 boundaries respectively. Each of these regional councils have multiple plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems and habitats.
- 958. Fisheries New Zealand considers that the proposed management options presented are in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

5 Submissions

959. There were 25 submissions on the proposed changes to HPB 1 and 24 submissions on the proposed changes to HPB 2 (Table 5). All submissions supported a decrease to current catch levels (Option 2 or Option 3). Generally, the majority were in favour of Option 3 for both stocks (56% support in HPB 1 and 42% support in HPB 2).

Table 5: Written submissions and responses received for HPB 1 and HPB 2 (in alphabetical order).

								Ор	tion Su	pport
Submitter		HPB 1		HPB :	2		ational sures			
	1	2	3	1	2	3	1	2&3	Other	Comments
A. Flavell-Johnson									✓	Supports any decrease but does not specify a preferred option.
A. Fulford									✓	Supports a TACC of zero and suggests recreational daily bag limit of one HPB per fisher and closing the fishery during spawning season.
A. Turnwald		✓	Or ✓		~	Or ✓		✓		Suggests additional input controls for recreational fishers of maximum 2 hooks per line.
B. Chambers									✓	Does not specify an option. States than any new catch limits would be unsustainable fishing.
B. Herdman									✓	Supports modified Option 3 for HPB 1 with TACC reduced to 100 t and no accumulation limit. Interested in advancing discussion regarding a possible boat limit.
B. Price									✓	Supports slowly increasing biomass back to higher levels (80% <i>B</i> ₀)
Counties Sports Fishing Club			~			✓		✓		Interested in advancing discussion regarding a possible boat limit.
Environmental Defence Society (EDS)			✓			✓		✓		Supports Option 3 as an interim measure for both stocks while a stock assessment is completed. Submit that areas of reef habitat within the Hauraki Gulf require protection.
Environment and Conservation Organisations of New Zealand (ECO)			~			√		✓		Suggest quota should be divided between the two species: hāpuku and bass.
Fisheries Inshore New Zealand (FINZ)			✓		✓			✓		Intend to establish a cross sector management and monitoring plan for HPB 1 & 2 using a collaborative model to support enduring management action beyond TAC decisions.
lwi Collective Partnership (ICP)			✓		✓			✓		Supports Te Ohu Kaimoana's approach.
J. Skeates			✓			✓		✓		
K. Mason									√	Supports any decrease but does not specify a preferred option
LegaSea Joint submission with NZ Sportfishing Council (NZSFC), NZ Underwater Association (NZUA) and NZ Angling and Casting Association (NZACA)			✓			✓		~		Supports Option 3 for both stocks. Proposes an additional package of measures which includes some temporary spatial closures on areas of reef where hāpuku and bass aggregate, the subdivision of QMAs and a ban of bulk harvesting methods on deep reefs and limiting recreational fishers to 2 hooks per line.

⁷⁹ The same recreational measures for HPB 1 and HPB 2 are proposed for Option 2 and Option 3.

LegaSea Hawke's Bay				✓	✓		In addition to Option 3, support a ban on set netting for commercial and recreational fishers on reefs and water deeper than 50 m.
M. Optimum						✓	Requested that TAC review be redone because they believe the consultation was unlawful
M. Richardson						✓	Disagreed with options proposed. Suggested a 50% reduction to current catch rates (this is effectively Option 3).
New Zealand Recreational Fishing Council		✓		✓	✓		
Ngāti Wai Holdings Ltd and Ngātiwai Fishing Ltd		✓				√	Supports a modified Option 3 for HPB 1 with recreational daily limit of one HPB per fisher.
O. Clark		✓		✓	✓		
Royal Forest & Bird Protection Society (Forest & Bird)		✓		✓	✓		Supports Option 3 as an interim response while research is conducted to assess stock status.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)		✓		✓	✓		
Sanford Ltd		✓	✓		\checkmark		
S. Newland	✓		✓		✓		Option 2 with addition of daily boat limit (for all recreational/charter vessels) of six HPB.
Te Ohu Kaimoana, Endorsed by: - Maruehi Fisheries Ltd, - Ngāti Mutunga o Wharekauri Asset Holding Company Ltd, - Tama Asset Holding Company Ltd (TAHCL), - Taranaki lwi Fisheries Ltd, - Te Kupenga o Maniapoto		√	✓		✓		Support Option 3 for HPB 1 and Option 2 for HPB 2. Recognise that a TAC reduction may not address localised depletion and support effective stakeholder-led initiatives that promote tiaki and huahake responsibilities.
T. Hewitt						✓	Does not specify an option. States that any new catch limits would be unsustainable fishing.

6 Options and analysis

- 960. Three options for HPB 1 and HPB 2 are proposed for the TAC, TACC and allowances for customary Māori, recreational and all other sources of mortality caused by fishing. The options for HPB 1 and HPB 2 are grouped together as Fisheries New Zealand believes the same rationale applies to both stocks.
- 961. Fisheries New Zealand is not recommending the status quo as an option because initial stakeholder feedback suggests this is inappropriate given the level of concern regarding the sustainability of the fishery. For stocks that do not already have a TAC or allowances set, it is Fisheries New Zealand's policy to propose that you set these upon review of a stock.
- 962. When setting a TAC for stocks such as HPB 1 and HPB 2 where the maximum sustainable yield is not able to be estimated reliably, s 13(2A) of the Act is relevant. In order to satisfy s 13(2A) you must ensure that your TAC decisions for HPB 1 and HPB 2 are 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.

963. TACC options are based on average annual commercial catch for the past five fishing years with the 2019/20 fishing year data excluded due to the unknown effects of COVID-19 on fishing practices.

6.1 Implementing changes to recreational controls

- 964. These options are presented differently to other stocks in this round with changes to recreational controls also incorporated. In addition to your decision to set a TAC and vary the TACC for HPB 1 and HPB 2, you are being asked to consider reducing the recreational daily limits for these stocks, while also introducing an accumulation limit under some options. An accumulation limit is the maximum number of hāpuku/bass that a person can accumulate and possess over a period of more than one day.
- 965. Any decision to set a TAC and vary the TACC for HPB 1 and HPB 2 will be implemented via *Gazette* notice and will have affect from 1 October 2021. Any decision to change recreational controls, as described above, will require an amendment to the *Fisheries (Amateur Fishing) Regulations 2013*. This requires an Order in Council, which is subject to cabinet and regulation drafting procedures, as well as consultation.
- 966. The setting of a recreational allowance is closely linked to controls that are aimed at managing recreational catch, and hence Fisheries New Zealand has sought to address recreational controls as part of this review. This has also been done in a way that would satisfy requirements for consultation on such regulatory amendments.
- 967. The different decision-making mechanisms does mean that changes to recreational controls are not able to be implemented at the same time as your TAC and TACC decisions and further steps in the decision-making and regulatory process are needed. Given this, you are being asked to agree to progressing the regulatory process for changing recreational controls for HPB 1 and HPB 2 (according to the option you choose).

6.2 HPB 1 and HPB 2 Option 1

Stock	TAC	TACC	Customary allowance	Other mortality allowance	Recreational allowance	Daily Limit	Additional regulations	
HPB 1	379	280 ↓ (200.8 t)	10	14	75	3 per	3 per person Remain in the combined daily limit of 5 with kingfish, but include a maximum of 3 hāpuku/bass	
HPB 2	233	160 ↓ (106.2 t)	10	8	55	person		

- 968. Option 1 takes the approach of setting the TACs for HPB 1 and HPB 2 in a way that reflects best estimates of current removals.
- 969. Option 1 proposes to set a TAC for HPB 1 of 379 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing consistent with best available information. The TACC under Option 1 will be reduced from 480.8 tonnes to 280 tonnes, a level consistent with the average annual commercial catch.
- 970. Option 1 proposes to set a TAC for HPB 2 of 233 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing consistent with best available information. The TACC under Option 1 will be reduced from 266.2 tonnes to 160 tonnes, a level consistent with the average annual commercial catch.
- 971. Information on customary harvest of HPB 1 and HPB 2 is limited. It is possible that customary harvest of HPB 1 and HPB 2 has been covered by recreational catch within the existing daily

- limits. A customary Māori allowance of 10 tonnes is proposed under all options for HPB 1 and HPB 2 to accommodate customary harvest.
- 972. Recreational allowances of 75 tonnes in HPB 1 and 55 tonnes in HPB 2 are proposed to be consistent with the best available estimates of current recreational catch. The 2017/18 NPS estimated recreational catch of hāpuku and bass as 73.1 tonnes in HPB 1 and 54.7 tonnes in HPB 2.
- 973. The main fishing methods for HPB 1 and HPB 2 are bottom longline and Dahn line. These methods are more selective and less likely to create unknown mortality events in comparison with trawl caught fish. An allowance of 14 tonnes for HPB 1 and 8 tonnes for HPB 2 is proposed for other mortality caused by fishing and equates to 5% of the respective TACCs.
- 974. Reducing the TACC to 280 tonnes in HPB 1 and 160 tonnes in HPB 2 recognises that the commercial catch of both fish stocks has been lower than the TACC for more than a decade, and the assessment within the Plenary which indicates that it is unknown whether the current TACCs are sustainable. Setting the TACC for both HPB 1 and HPB 2 at levels consistent with average commercial catch provides for a level of utilisation comparable to recent years but prevents further increases in catch.
- 975. Under Option 1, Fisheries New Zealand also proposes amending the recreational daily limit from five hāpuku/bass to three hāpuku/bass in the combined daily bag limit with kingfish (with a maximum of three kingfish). The 2017/18 NPS suggests that the majority of HPB catch is represented by three or fewer HPB being retained by fishers per day and thus this amendment is consistent with maintaining catch at current levels.
- 976. Out of the options proposed, Option 1 places the greatest short-term weight on utilisation and carries the highest sustainability risk. This option is unlikely to result in increases in stock biomass, as it simply maintains catch at current levels, while limiting the potential for any additional utilisation.
- 977. No submissions were received in support of Option 1 for HPB 1 or HPB 2. The New Zealand Recreational Fishing Council opposed Option 1 using the rationale that it only legitimises existing catch levels and greater steps are required to have a meaningful impact on stock biomass. Environmental Defence Society (EDS) considered that Option 1 is not consistent with the purpose and principles of the Act and the requirements of s 13(2A)(ii). S. Newland and M. Richardson also expressed concern that Option 1 would be mismanagement of the fishery.
- 978. Option 1 is not recommended by Fisheries New Zealand as there is a greater level of uncertainty with this option with respect to meeting the requirements of s 13(2A) of the Act. Namely, it is not clear whether the TAC for Option 1 would be consistent with the objective of maintaining the stock at or above a level that can produce *MSY*, noting that catch is continuing to decline under recent catch levels.

6.3 HPB 1 and HPB 2 Option 2

Stock	TAC	TACC	Customary allowance	Other mortality allowance	Recreational allowance	Daily Limit	Additional regulations	
HPB 1	289	210 \(\sqrt) (270.8 t)	10	11	58	2 per	Remove from the combined daily limit of 5 with kingfish and:	
HPB 2	174	120 ↓ (146.2 t)	10	6	38	person	-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3	

979. Option 2 for HPB 1 proposes a TAC of 289 tonnes be set and includes allowances for customary fishing and other mortality caused by fishing that are consistent with Option 1. This

- option proposes to set the recreational allowance at 58 tonnes and to decrease the TACC to 210 tonnes, representing a 25% decrease to average annual commercial catch.
- 980. Option 2 for HPB 2 proposes a TAC of 174 tonnes be set and includes allowances for customary fishing and other mortality caused by fishing that are consistent with Option 1. This option proposes to set the recreational allowance at 38 tonnes and to decrease the TACC to 120 tonnes, representing a 25% decrease to average annual commercial catch.
- 981. The proposed recreational allowances under Option 2, provide for recreational utilisation only in part, meaning they are below the 2017/18 NPS estimate of recreational catch for HPB 1 and HPB 2. Setting the recreational allowance below the current estimate recognises that HPB 1 and HPB 2 are important shared fisheries and that a decrease in catch for sustainability concerns should be shared across sectors.
- 982. Reducing the TACC to 210 tonnes in HPB 1 and 120 tonnes in HPB 2 recognises that the annual commercial catch for both fish stocks has been trending downwards since the mid-2000s and that the average annual commercial catch in both management areas is approximately 60% of the respective TACCs. It also recognises the concerns for the fishery that have been voiced by tangata whenua and commercial and recreational fishers.
- 983. Given the low-productivity nature of hāpuku and bass and the fact that catch has been declining for over a decade, a 25% decrease to average annual commercial catch adopts a cautious approach based on the uncertainty of whether current catch levels are sustainable.
- 984. In addition to setting the TAC and varying the TACC, it is proposed that the recreational daily limit be decreased to two per person in order to ensure that recreational catch remains within the proposed allowance. Some recreational clubs have already adopted a voluntary recreational bag limit of two per fisher, this option supports their efforts and extends them across the recreational community.
- 985. Fisheries New Zealand has estimated that a recreational bag limit of two fish per person, per day, would decrease recreational harvest by approximately 17 tonnes in both HPB 1 and HPB 2, representing a 23% and a 31% decrease respectively. This would therefore bring catch down to be within the recreational allowance proposed under Option 2.
- 986. Option 2 also proposes decoupling hāpuku and bass from the combined daily bag limit with kingfish and introducing an additional control in the form of an accumulation limit. An accumulation limit of three hāpuku/bass per person is proposed under these options. This addition is to further manage recreational catch to better align with the recreational allowance while acknowledging the initial feedback received, and the sustainability concern expressed.
- 987. Te Hiku o Te Ika Iwi Fisheries Forum supported Option 2 for HPB 1.
- 988. One submission supported Option 2 for HPB 1 and five submissions supported Option 2 for HPB 2. One submission (A. Turnwald) indicated support for either Option 2 or Option 3 noting that a reduction to the TACC was required.
- 989. S. Newland supported Option 2 for HPB 1 and HPB 2 noting that a reduction to the TACCs of both fish stocks is supported by the commercial sector and that this will not impact individual commercial operators to the extent that they are put out of business.
- 990. FINZ, Te Ohu Kaimoana (and endorsing submissions), the Iwi Collective Partnership, and Sanford Limited supported Option 2 for HPB 2. The rationale given by FINZ for the different positions taken between HPB 1 and HPB 2 relates to the different nature of the fisheries, specifically that:
 - HPB 2 has not seen the same extent of increased targeted commercial catch compared to HPB 1
 - Recreational pressure is higher in HPB 1 in comparison to HPB 2.

- The extent of spatial overlap in HPB 2 is less pronounced between sectors meaning there is less cumulative pressure on features where the fish aggregate.
- 991. Te Ohu Kaimoana states that there is less pressure on HPB 2 in comparison to HPB 1 and that a 25% reduction to average annual commercial catch would be enough to address sustainability concerns in HPB 2.
- 992. Fisheries New Zealand appreciates that there are differences in the nature of commercial operations in HPB 1 and HPB 2. However, best available information indicates that sustainability concerns are relatively similar for HPB 1 and HPB 2. Declining trends in catch and concern received from pre-consultation engagement with stakeholders and feedback received from tangata whenua are the same for both QMAs. As such, Fisheries New Zealand believes that choosing different options for HPB 1 and HPB 2 is not justified.
- 993. Option 2 places more weight on sustainability concerns than Option 1 and would have a lesser economic impact on commercial fishers in the immediate future than Option 3. Option 2 is more likely to have a positive impact on stock biomass than Option 1 as it decreases current catch levels, however stock biomass will likely increase more slowly under Option 2 than Option 3.

6.4 Option 3 (Fisheries New Zealand's preferred option)

Stock	TAC	TACC	Customary allowance	Other mortality allowance	Recreational allowance	Daily Limit	Additional regulations	
HPB 1	215	140 ↓ (340.8 t)	10	7	58	2 per person	Remove from the combined daily limit of 5 with kingfish and:	
HPB 2	132	80 ↓ (186.2 t)	10	4	38		-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3	

- 994. Option 3 for HPB 1 proposes a TAC of 215 tonnes be set and includes allowances for customary fishing and other mortality caused by fishing that are consistent with Options 1 and 2. This option proposes recreational settings that are consistent with Option 2 and proposes to decrease the TACC to 140 tonnes, representing a 50% decrease to average annual commercial catch.
- 995. Option 3 for HPB 2 proposes a TAC of 132 tonnes be set and includes allowances for customary fishing and other mortality caused by fishing that are consistent with Options 1 and 2. This option proposes recreational settings that are consistent with Option 2 and proposes to decrease the TACC to 80 tonnes, representing a 50% decrease to average annual commercial catch.
- 996. Option 3 for both HPB 1 and HPB 2 proposes to treat the recreational settings the same as that for Option 2. This results in a recreational fishing allowance of 58 tonnes for HPB 1 and 38 tonnes for HPB 2 and proposes a decrease to the recreational bag limit from a maximum daily limit of five per fisher to a maximum daily limit of two per fisher (decoupled from kingfish) and introduce an accumulation limit of three.
- 997. Reducing the TACC to 140 tonnes in HPB 1 and 80 tonnes in HPB 2 recognises that annual catch has been trending downwards since the mid-2000s and that average annual commercial catch is 60% of the TACC. It also recognises the concerns that have been voiced by commercial and recreational fishers and tangata whenua.
- 998. This option places the most emphasis on the declining trends of catch and concern outlined in submissions and through pre-consultation engagement. This option holds the least amount of sustainability risk for both stocks with the intent to constrain catch while further monitoring and other management options are explored.
- 999. The Mid North Iwi Fisheries Forum supported Option 3 for HPB 1.

- 1000. Mai Paritu tae atu ki Turakirae Forum supported Option 3 for HPB 2 but did not support the accumulation limit as it was felt that it would impact those who fish over multiple days to collect for whanau and hui, but not under customary permit.
- 1001. Fourteen submissions supported Option 3 for HPB 1 and 10 submissions supported Option 3 for HPB 2. One submission (A. Turnwald) indicated support for either Option 2 or Option 3 noting that a reduction to the TACC was required.
- 1002. New Zealand Recreational Fishing Council, Counties Sports Fishing Club, O. Clark and J. Skeates support Option 3 for HPB 1 and HPB 2 with rationales given including the paucity of knowledge regarding the species (J. Skeates), and regarding fishing pressure and biological characteristics that make hāpuku and bass susceptible to overfishing (Counties Sports Fishing Club and O. Clark).
- 1003. LegaSea (joint submission with NZ Sportfishing Council, NZ Underwater Association and NZ Angling and Casting Association) support Option 3 for both HPB 1 and HPB 2 with the addition of a package of reforms they have suggested (see Section 6.7). Fisheries New Zealand notes that in the package of reforms, the accumulation limit suggested by NZSFC is four fish as opposed to the limit of three proposed in Option 3.
- 1004. LegaSea HB supported Option 3 for HPB 2 noting that it places the most emphasis on the declining trend and represents the concerns raised from all sectors in pre-consultation engagement meetings.
- 1005. FINZ, Te Ohu Kaimoana (and endorsing submissions), the Iwi Collective Partnership and Sanford Limited both supported Option 3 for HPB 1 recognising the fact that there is limited scientific information available to determine stock status and the cross-sector concern about the sustainability of the stock. They recommend that proactive precautionary action is taken to ensure the long-term viability of the fishery.
- 1006. Submissions received from EDS, SPCA, ECO and Forest & Bird supported Option 3 for HPB 1 and HPB 2 as an interim measure under the understanding that both stocks will be subject to review once a stock assessment has been completed. These submissions raised concerns about the lack of scientific data available to manage the fishery and emphasised the need to pursue research objectives that will help to determine stock status and the ecological impact of localised depletions.
- 1007. Fisheries New Zealand recognises that there is a paucity of data available to guide HPB fish stock management (see Section 1.1.3). On 1 September 2021, HPB will be removed as an option for reporting catch estimates and leaving only codes HAP (hāpuku) and BAS (bass). It will take some time to generate species-specific estimated catch data on hāpuku and bass, but this change will ultimately be beneficial for future research and management decisions.
- 1008. The project HPB 2021-01 proposed for the 2021/22 fishing year has the objective of designing a longline survey to estimate the age structure of New Zealand hāpuku. This project will investigate the use of catch at age sampling as a method of generating data that can be used to determine the stock status of hāpuku and bass separately.
- 1009. Option 3 places the greatest weight on sustainability concerns and generated cross sector support from submitters for HPB 1 (with lower levels of support for HPB 2 received by commercial fishers). Considering the biological attributes of hāpuku and bass that make them susceptible to overfishing, namely that they are long-lived species with low productivity, it is reasonable to expect that stock biomass will take time to increase.
- 1010. The catch settings proposed under Option 3 provide the best chance of the stocks recovering more quickly, and of fishers receiving the long-term benefits of a rebuild. For these reasons, Fisheries New Zealand is recommending Option 3 for both HPB 1 and HPB 2.

6.5 Other options proposed by submitters

- 1011. Three public submissions requested that a commercial bycatch only TACC be set and stated that the current options do not effectively cater to a bycatch only fishery. One of these submissions recommended that commercial fishing of hāpuku and bass should be banned.
- 1012. Ngātiwai Holdings, Ngātiwai Fishing Limited and A. Fulford would like the recreational daily limit reduced to one per person per day as a different option. No rationale was expressed for these submissions. LegaSea (joint submission with NZ Sportfishing Council, NZ Underwater Association and NZ Angling and Casting Association) mentioned that their policy may consider incorporating a one per person daily limit for HPB.
- 1013. Considering the decline in catch for HPB 1 and HPB 2, decreasing the daily limit to 1 HPB per person per day, would further restrict recreational catch and still provide for sustenance and sports fishing. This option will not however, provide for accidental bycatch. Given that hāpuku and bass are retrieved from considerable depths, should either species be caught accidentally, the likelihood of survival when returned to the water is minimal.

6.6 Economic considerations

- 1014. Since the 2019/20 fishing year, port prices have increased for both HPB 1 and HPB 2 and the average ACE price has remained relatively constant. The current port prices for HPB 1 and HPB 2 are \$8.14 and \$6.82 respectively. The average price paid by fishers for ACE for the past five fishing years was \$1.22 kg in HPB 1 and \$1.59 kg in HPB 2.
- 1015. The commercial financial considerations associated the options proposed are difficult to calculate when the TACC has historically not been fully utilised. The economic impacts associated with Option 1 for HPB 1 and HPB 2 are likely to be minimal as TACCs have not been fully utilised for over a decade.
- 1016. Under Option 2, based on the 2019/20 port prices and actual catch data, the estimated loss in commercial fishing revenue would be \$570,500 in HPB 1 and \$272,800 in HPB 2. The cost is the annual loss in revenue (not profits) and does not take into account regional or flow on impacts, or the long-term benefits of rebuilding the stock.
- 1017. Under Option 3, the estimated loss in commercial fishing revenue would be \$1,141,000 in HPB 1 and \$545,600 in HPB 2.

6.7 Future management

- 1018. Fisheries New Zealand considers that an important first step is to set an appropriate TAC and allowances for HPB 1 and HPB 2, whilst considering options to reduce current catch levels by adjusting the TACC and recreational controls. These options are focused towards action that can be taken almost immediately while future controls are considered.
- 1019. Working collaboratively with tangata whenua and stakeholders to form tangible ideas of future management of HPB 1 and HPB 2 was the foundation of this review and has been well received by all sectors. Maintaining this collaborative approach moving forward will be essential to provide for active participation in further management options and continued support for future controls.
- 1020. There are several additional management tools already being investigated by Fisheries New Zealand that include, but are not limited to, the suggestions indicated in the submissions (Table 6). Further research techniques and data collection will also be explored.

Table 6: Additional management measures for HPB 1 and HPB 2 suggested by submitters as part of the October 2021 sustainability consultation.

Management measure	Rationale (if provided)	Submissions		
Boat limits	Further reduction in effort and catch is essential for rebuild.	Counties Sports fishing club A.Turnwald S.Newland B.Herdman		
Two hooks per line	Multiple hook dropper rigs means that the recreational daily limit is easily exceeded.	LegaSea (joint submission), A.Turnwald		
Charter vessels having to source ACE to cover catch	Would address perceived under-reporting of charter vessel catch.	B.Herdman		
Subdivide QMAs into smaller areas	Different areas within the QMAs experience different fishing and environmental issues. Smaller areas will benefit local management of the fisheries and the ability to monitor more concisely	Te Hiku o Te Ika iwi fisheries forum LegaSea (joint submission)		
Split the HPB TAC between hāpuku and bass	Both species would be managed separately under the QMS.	ECO		
Spatial and seasonal closures	There is cross sector willingness to support some temporary spatial closures to improve abundance of these stocks. There is a need to identify habitats of particular significance for hāpuku and bass, assess the risk to these habitats and whether they require protection.	FINZ LegaSea (joint submission) EDS R.Chambers and T.Hewitt		
Ban setnets on reef structures in depths greater than 50 m (where hāpuku and bass typically aggregate)	Lost set nets continue 'ghost fishing' on reefs and increase plastic waste in sensitive marine environments.	LegaSea (joint submission) LegaSea HB		
Improving recreational catch monitoring	Regular reporting would be more favourable than the infrequent national panel surveys currently conducted. Use available technology and/or uniquely identifiable, individually allocated "tags" to monitor hāpuku/bass recreational harvest.	Mai Paritu tae atu ki Turakirae forum S. Newland		

6.8 Preferential allocation rights (28N Rights)

- 1021. Fisheries New Zealand notes that there are 1.1 tonnes and 30.2 tonnes of preferential allocation rights (28N rights) in HPB 1 and HPB 2, respectively. 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.
- 1022. 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. As the options in this paper suggest reducing the TACC, 28N rights for HPB 1 and HPB 2 are not expected to be triggered as a result of this sustainability round.

7 Deemed values

- 1023. The current deemed value rates for HPB 1 and HPB 2 are shown in Table 7. The deemed value rates for all HPB stocks have remained unchanged since 2015.
- 1024. The current annual deemed value rates of HPB 1 and HPB 2 are set above the average ACE price, which is consistent with the objective to incentivise fishers to balance catch against ACE. Reducing the TACC may result in the need for the deemed values to be revaluated in the future depending on changes in fishing behaviour and the ACE market. Deemed values are monitored on an annual basis and can be updated if information suggests this is needed.
- 1025. No submissions responded to the current deemed value rates. LegaSea (joint submission) requested that Fisheries New Zealand continue to ensure that appropriate deemed value rates apply.

Table 7: Current deemed value rates (\$/kg) for HPB 1 and HPB 2.

	Differential rates (\$/kg) of excess catch (% of ACE)						
Stock	Interim	Annual 100- 120%	120-140%	140-160%	160-180%	180-200	200%+
HPB 1	2.66	2.95	3.54	4.13	4.72	5.31	5.90
HPB 2	2.27	2.52	3.02	3.53	4.03	4.54	5.04

8 Conclusions and recommendations

- 1026. The best available information to guide HPB 1 and HPB 2 management is catch history, which shows that commercial catch has been trending downwards since the mid-2000s and both fish stocks are substantially under caught relative to respective TACCs. All submissions recognised the sustainability risk posed by the current catch settings and many acknowledged the concerning lack of data available to guide management.
- 1027. For these reasons, and on the basis that hāpuku and bass are both long-lived species with low productivity, Fisheries New Zealand believes a cautious approach is required and recommends Option 3 for HPB 1 and HPB 2 as an interim measure, whilst further monitoring and management options are explored. Using the best available information, this option would not be inconsistent with the objective of maintaining the stock at or above, or moving the stock towards a level that can produce the maximum sustainable yield.
- 1028. Conducting pre-consultation stakeholder engagement was a valuable exercise that informed the proposed options and emphasised a sense of shared responsibility for these highly valued fisheries. Fisheries New Zealand intends to continue with this approach and investigate ideas for further monitoring and management of hāpuku and bass alongside tangata whenua and stakeholders.

Decision for HPB 1 9

Option 1

Agree to set the HPB 1 TAC at 379 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes;
- Set the allowance for recreational fishing interests at 75 tonnes;
- Set the allowance for all other sources of mortality to the stock caused by fishing at 14 ij. iii. tonnes;
- Decrease the HPB 1 TACC from 480.8 to 280 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



<u>OR</u>

Option 2

Agree to set the HPB 1 TAC at 289 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes;
- Set the allowance for recreational fishing interests at 58 tonnes;
- Set the allowance for all other sources of mortality to the stock caused by fishing at 11 ii. iii.
- Decrease the HPB 1 TACC from 480.8 to 210 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



OR

Option 3 (Fisheries New Zealand's preferred option)

Agree to set the HPB 1 TAC at 215 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes; i.
- Set the allowance for recreational fishing interests at 58 tonnes;
- Set the allowance for all other sources of mortality to the stock caused by fishing at 7 tonnes; ii.
- iii. Decrease the HPB 1 TACC from 480.8 to 140 tonnes.

Agreed / Agreed as Amended / Not Agreed



10 Decision for HPB 2

Option 1

Agree to set the HPB 2 TAC at 233 tonnes and within the TAC:

- i. Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes;
- ii. Set the allowance for recreational fishing interests at 55 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 8 tonnes;
- iv. Decrease the HPB 2 TACC from 266.2 to 160 tonnes.

Agreed / Agreed as Amended / Not Agreed



<u>OR</u>

Option 2

Agree to set the HPB 2 TAC at 174 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes;
- ii. Set the allowance for recreational fishing interests at 38 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 6 tonnes;
- iv. Decrease the HPB 2 TACC from 266.2 to 120 tonnes.

Agreed / Agreed as Amended / Not Agreed



<u>OR</u>

Option 3 (Fisheries New Zealand's preferred option)

Agree to set the HPB 2 TAC at 132 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 10 tonnes;
- ii. Set the allowance for recreational fishing interests at 38 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes;
- iv. Decrease the HPB 2 TACC from 266.2 to 80 tonnes.

Agreed / Agreed as Amended / Not Agreed

11 Recreational changes for both HPB 1 and HPB 2

Option 1

Agree to progressing the regulatory process for a change on recreational limits for HPB 1 and HPB 2, including:

Change the daily limit of HPB to 3 per person per day;

ii. Remain in the combined daily limit of 5 with kingfish with a maximum of 3 kingfish.

Agreed / Agreed as Amended / Not Agreed



OR

Option 2 and 3 (Fisheries New Zealand's preferred option)

Agree to progressing the regulatory process for a change on recreational limits for HPB 1 and HPB 2, including:

i. Change the daily limit of HPB to 2 per person per day;

ii. Remove from the combined daily limit of 5 with kingfish;

iii. Introduce an accumulation limit of 3 HPB for trips over a period of more than one day.

Agreed / Agreed as Amended / Not Agreed

Del

Hon David Parker Minister for Oceans and Fisheries

0 1 9 1 2021

Chelidonichthys kumu, gurnard, Kumukumu



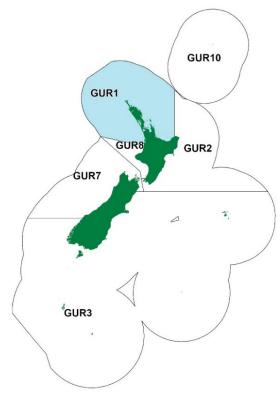


Figure 1: Quota Management Areas (QMAs) for red gurnard, with GUR 1 highlighted in blue. A red gurnard is pictured on the left.

Table 1: Summary of options proposed for GUR 1 from 1 October 2021. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

				Allowances			
Option	TAC	TACC	TACC		Recreational	tional All other mortality caused by fishing	
Current settings	N/A	2,288		N/A	N/A	N/A	
Option 1	2,328	2,045 🔱	(243 t)	40	100	143	
Option 2	1,317	1,100 🔱	(1,188 t)	40	100	77	
Option 3	996	800 🔱 (1	,488 t)	40	100	56	
New option incorpor	rated following	consultation	No				
Total submissions r	eceived		33				
Number of submissions received in support of each option			Option 1		3		
			Option 2)	1		
			Option 3	3	16		
			Other		1380		

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 $^{^{\}rm 80}$ Three submissions in 'Other' supported a modified version of Option 2.

Why are we proposing a review?

- 1029. The review of GUR 1 addresses a potential sustainability concern with the current management settings. There is currently no TAC set for GUR 1 nor allowances, and the sustainability of the full TACC is unknown, as there is no estimate of biomass nor MSY. The current TACC could pose a sustainability risk if fully caught, particularly given the variability in red gurnard recruitment.
- 1030. Since its introduction into the QMS in 1986, the TACC for GUR 1 has always been under caught. GUR 1 landings averaged about 50% of the TACC per annum between 1986 and 2015, but a slight decline in landings more recently has seen this figure drop to 35% between 2016 and 2020. The reason for this decline is unknown.
- 1031. Fisheries New Zealand is proposing that a TAC and allowances for recreational take, customary take, and other sources of mortality caused by fishing be set, and that the TACC be reduced to address the potential sustainability risk posed by the current settings.

1.1 About the stock

1.1.1 Fishery characteristics

- 1032. By virtue of its wide distribution in harbours and shallow coastal waters, GUR 1 is a shared fishery that is important to commercial, recreational, and customary fishers. It is sometimes targeted but is also caught as welcome bycatch by commercial fishers targeting trevally (TRE), snapper (SNA), John dory (JDO), and tarakihi (TAR).
- 1033. The majority (60-70%) of the total GUR 1 commercial catch is taken from the West Coast substock (GUR 1W). Catch of GUR 1 is taken mostly by bottom trawl, with smaller amounts taken by Danish seine and bottom longline methods. There is no commercial minimum legal size.
- 1034. Most GUR 1 recreational catch is taken by rod and line from trailer boats. Recreational fishers in GUR 1 may take up to 20 red gurnard as part of the combined daily bag limit of 20 finfish. The minimum legal size for red gurnard taken by recreational fishers is 25 cm.

1.1.2 Biology

- 1035. Red gurnard is a fast growing, moderately short-lived species with a maximum age of 16 years. They reach sexual maturity at 2-3 years old at a length of about 23 cm. Due to their fast growth rate and short lifespan, variation in red gurnard recruitment tends to result in large fluctuations in stock biomass.
- 1036. In New Zealand, they are widely distributed from Cape Reinga to Stewart Island. This demersal⁸¹ species occurs at depths of 20-180 m but is most commonly found on sandy and muddy substrates in less than 60 m. GUR 1 is likely comprised of three biological stocks: West Coast (GUR 1W), East Northland and Hauraki Gulf (GUR 1E), and Bay of Plenty (GUR 1BP).

1.2 Status of the stock

- 1037. The status of the GUR 1 stock is assessed for each of the three sub-stocks. Assessment of stock status is guided by the Harvest Strategy Standard (HSS), a policy statement that details best practice for setting fishery and stock target and limit reference points against which the stock is measured. The reference points chosen depend on the type(s), amounts, and quality of data available for that fishery or stock, as well as the biological characteristics of the species.
- 1038. For stocks with estimates of current biomass and the biomass that supports MSY, the recommended target and limit reference points are based on biomass (e.g., a default target of 40% B₀). But for many stocks, including GUR 1, these biomass estimates are not available. Fisheries New Zealand therefore considers that the setting of the TAC for GUR 1 would be

⁸¹ Fish that live and feed on or near the bottom of the seabed.

- guided by section 13(2A) of the Act, which the HSS interprets as enabling the use of alternative approaches that are consistent with MSY concepts.
- 1039. Accordingly, the HSS and its Operational Guidelines provide guidance on other MSYcompatible reference points that can be used, including conceptual proxies for B_{MSY}^{82} , F_{MSY}^{83} , and MSY, in the absence of adequate information to directly estimate these reference points themselves. This is the approach used for the sub-stocks in GUR 1.
- 1040. GUR 1 sub-stocks are assessed using partial quantitative stock assessments based on standardised catch per unit effort (CPUE) analyses for bottom trawl fisheries in each area. This CPUE analyses is a series of relative abundance that has been accepted by the Inshore Finfish Working Group. Gurnard abundance tends to fluctuate in cycles, according to recruitment, and the period 1995/96-2011/12 was chosen as a B_{MSY} proxy because it included at least one cycle of abundance and high catch. The soft and hard limits are established as 50% and 25% of the target, which is the HSS default. Partial quantitative stock assessments do not allow forward projections under alternative catches.
- 1041. The Inshore Finfish Working Group is responsible for reviewing, guiding and accepting all science designed to support fisheries management decisions for inshore fish stocks. Based on the 2017 standardised CPUE assessments, which includes data through to the 2015/16 fishing year, the Working Group concluded that the GUR 1W sub-stock was very likely (>90%) to be at or above the target, while the GUR 1E and GUR 1BP sub-stocks were about as likely as not (40–60%) to be at or above the target. The GUR 1W sub-stock was very unlikely (<10%) to be below the soft and hard limits, while the GUR 1E and BP sub-stocks were unlikely (<40%) to be below the soft limit and very unlikely (<10%) to be below the hard limit. This suggests that catch levels for all three sub-stocks were sustainable at that time, although the western sub-stock was faring better than the two eastern ones.

GUR 1W

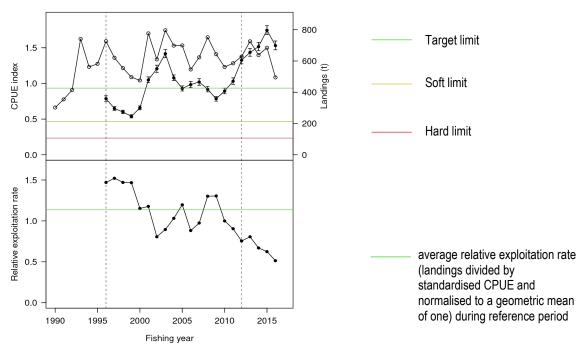


Figure 2: Top panel: landings (open circles) and standardised CPUE (combined model using tow by tow data from 1995–96, ±2 standard error). Bottom panel: annual relative exploitation rate for red gurnard in the GUR 1 west coast sub-stock.

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 $^{^{82}}$ B_{MSY} . The average stock biomass that results from taking an average catch of MSY under various types of harvest strategies. 83 F_{MSY} . The fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the MSY and an average biomass corresponding to B_{MSY} . Usually expressed as an instantaneous rate.

GUR 1E

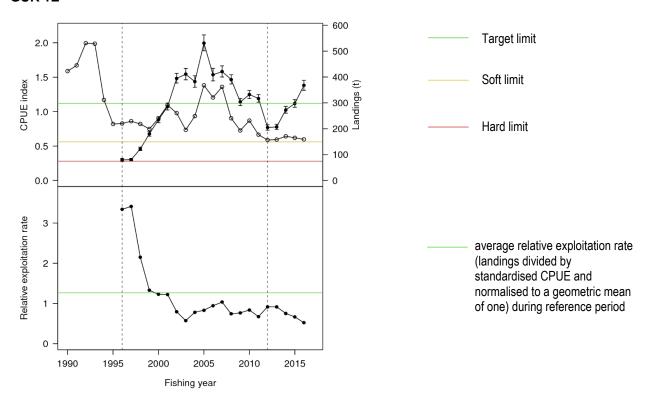


Figure 3: Top panel: landings (open circles) and standardised CPUE (combined model using tow by tow data from 1995–96, ±2 standard error). Bottom panel: annual relative exploitation rate for red gurnard in the GUR 1 East Coast sub-stock.

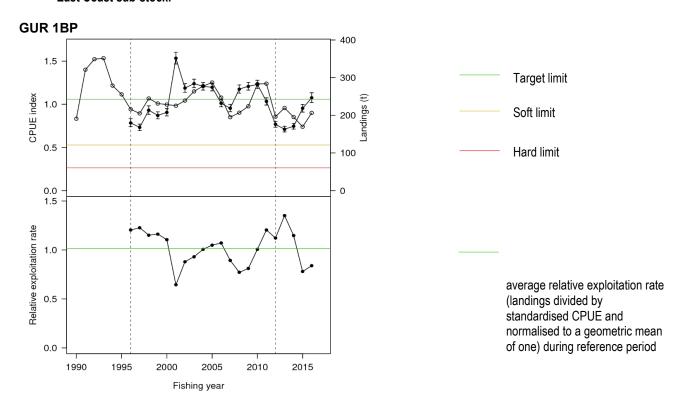


Figure 4: Top panel: landings (open circles) and standardised CPUE (combined model using tow by tow data from 1995–96, ±2 standard error). Bottom panel: annual relative exploitation rate for red gurnard in the Bay of Plenty.

- 1042. More recent monitoring information provided by trawl surveys conducted within the GUR 1 substock ranges indicate potentially concerning signals in GUR 1 with respect to pre-recruit biomass:
 - The West Coast North Island (WCNI) trawl survey was reinstated in 2017 after a 19-year hiatus. The relative biomass series for the core area of the survey covers the GUR 1W sub-stock. Recent results from the WCNI trawl survey indicate substantially lower total biomass of red gurnard in 2018, 2019, and 2020 when compared to the earlier estimates in the series (Figure 5). Analysis of the pre-recruit and recruited biomass time series suggest that much of the recent decline in total biomass is attributable to a decline in pre-recruit biomass, potentially signifying poor recruitment to come in the GUR 1W sub-stock.
 - Trawl surveys conducted in the Hauraki Gulf and Bay of Plenty in 2019 and 2020, respectively, generated relative biomass estimates for red gurnard in the East Coast substocks. As there is only one recent (post-2000) relative biomass estimate for each of the two eastern sub-stocks, no recent trends may be inferred for these two sub-stocks (Figures 6 and 7). Pre-recruit biomass estimates appear to be on the lower side for both stocks when compared to the rest of their respective time series.

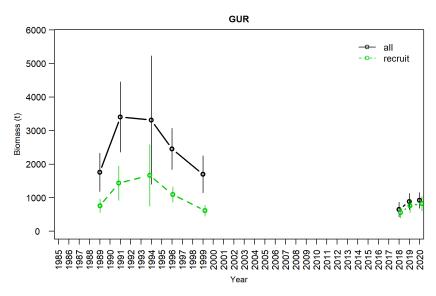


Figure 5: Biomass trends with 95% confidence intervals for recruited (>30cm) (dashed green line) and all (solid black line) GUR within the core area of the West Coast North Island trawl surveys.

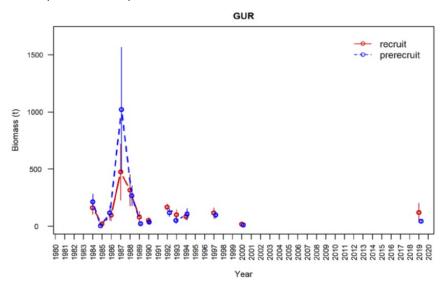


Figure 6: Biomass trends with 95% confidence intervals for pre-recruit (dashed blue line) and recruited (solid red line) GUR for the Hauraki Gulf surveys.

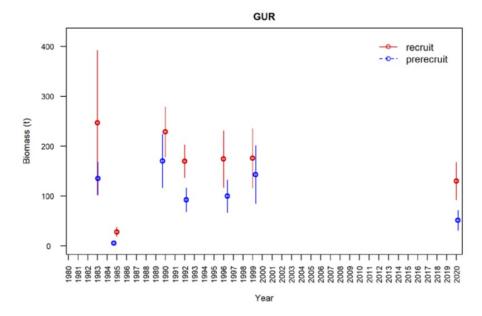


Figure 7: Biomass trends with 95% confidence intervals for pre-recruit (dashed blue line) and recruited (solid red line) GUR for the Bay of Plenty surveys.

2 Catch information and current settings within the TAC

2.1 Commercial

1043. The TACC (Table 1) for GUR 1 has never been fully caught. Average annual landings of GUR 1 were about 50% of the TACC between 1986 and 2015. Since the 2009 fishing year, landings have been declining. A more substantial decline between 2016 and 2020 has seen average annual landings drop to 35% of the TACC (Figure 8). The reason for this decline is unknown and, without updated CPUE analyses, Fisheries New Zealand is unable to determine what the decline may signify with respect to the current status of the stock.

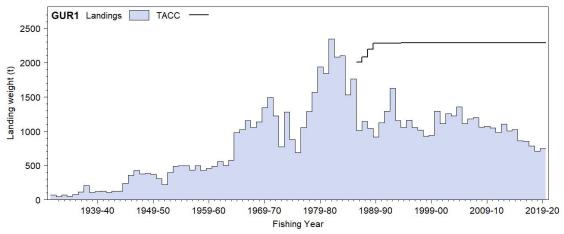


Figure 8: Commercial landings of GUR 1 against the TACC.

- 1044. The majority (60-70%) of the total GUR 1 commercial catch is taken from the West Coast substock (GUR 1W). The remaining GUR 1 commercial catch is usually split fairly evenly between the East Northland and Hauraki Gulf (GUR 1E) and Bay of Plenty (GUR 1BP) sub-stocks.
- 1045. CPUE analyses and discussions with fishers undertaken for the SNA 8 stock assessment have identified that operators fishing on the West Coast North Island have modified their gear and trawl speeds to avoid SNA 8 in recent years. This is largely due to a lack of available SNA 8

annual catch entitlement (ACE) and subsequent attempts to minimise SNA bycatch. These gear modifications, including lower headline heights and slower trawl speeds, result in increased red gurnard catches relative to those from trawl gear that has been optimised for targeting snapper. This is because red gurnard tend to swim closer to the bottom and do not swim up in the water column in response to trawl disturbance as snapper do.

2.2 Customary Māori

- 1046. The customary allowance for GUR 1 has never been set. Fisheries New Zealand holds insufficient information to estimate current customary catch. The Fisheries (Kaimoana Customary Fishing) Regulations 1998 have not been implemented in all of GUR 1. In the areas where they have not been implemented, there is no requirement for customary fishers to report their catch. It is also likely that tangata whenua are using recreational catch to meet their needs in GUR 1.
- 1047. Fisheries New Zealand's records show that 56 customary authorisations were granted for the take of GUR 1 between 2001 and 2019, but the quantities taken are not known.

2.3 Recreational

1048. The recreational allowance for GUR 1 has never been set, although GUR 1 is a fishery valued by recreational fishers. The National Panel Survey of Marine Recreational Fishers (NPS) provides the best available information on recreational harvest. The 2017/18 NPS estimated GUR 1 recreational harvest to be 86 tonnes (Table 2). This is a decrease from the estimate of recreational harvest produced for the 2011/12 fishing year, although there is some uncertainty associated with these estimates.

Table 2: Recreational harvest estimates for GUR 1.

Year	Method	Number of fish	Total weight (t)	CV (t) 84
2011/12	Panel survey	241,957	103	±15
2017/18	Panel Survey	168,798	86	±13

2.4 All other mortality caused by fishing

- 1049. An allowance for other sources of mortality is intended to account for any mortality to a fish stock that occurs due to fishing activity but is not otherwise accounted for in the TAC. There is no allowance for all other mortality caused by fishing in the current management settings for GUR 1.
- 1050. Potential sources of other mortality caused by fishing for GUR 1 could include: illegal and unreported commercial bycatch; mortality associated with injury from red gurnard contacted but not captured by trawl and Danish seine nets; mortality associated with recreational catch and release of red gurnard, especially those below the minimum legal size; and mortality associated with the accidental loss or damage of fishing gear.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

1051. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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

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⁸⁴ The coefficient of variation (CV) measures the extent of variability in relation to the mean (It is the ratio of the standard deviation to the mean).

- of their interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 1052. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries. Fisheries New Zealand consulted with the northern forums with a potential interest in GUR 1: Te Hiku o Te Ika, the Mid-North, Ngā Hapū o Te Uru o Tainui, and Mai i ngā Kuri a Whārei ki Tihirau.
- 1053. Te Hiku o Te Ika and the Mid-North forums support Option 3. Te Hiku o Te Ika also expressed concern about the impacts of trawling on gurnard habitat.
- 1054. Ngā Hapū o Te Uru o Tainui does not support a decrease to the GUR 1 TACC if an increase is made to the SNA 8 TACC because of concern this could cause deemed value issues for fishers.

3.2 Kaitiakitanga

- 1055. GUR 1 is listed as taonga species in the fisheries plans of Mai i ngā Kuri a Whārei ki Tihirau, Ngā Hapū o Te Uru o Tainui, and Te Hiku o Te Ika. As newer forums, the Mid-North and Hauraki Collective have not yet developed fisheries plans for their respective forums.
- 1056. This review seeks to address a potential sustainability risk with the current management settings. The options proposed are therefore consistent with management objectives of the lwi Fisheries Forum Plans, which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries (Table 3).

Table 3: Relevant management objectives from lwi Fisheries Forum Fisheries Plans.

lwi Fisheries Forum	Relevant Fisheries Plan Management Objectives			
Te Hiku o Te Ika	Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and hapū			
Ngā Hapū o Te Uru o Tainui	The fishery and its environment are healthy and sustainable.			
	Ngā Hapū o Te Uru o Tainui kaitiaki are able to participate in and influence fisheries decision-making.			
Mai i ngā Kuri a Whārei ki Tihirau	The fisheries environment is healthy and supports a sustainable fishery			

- 1057. Customary tools utilised under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries. To best fit local customary practices, mātaitai, taiāpure and temporary closures (under section 186A) may be established.
- 1058. Table 4 lists the customary fisheries areas that fall within GUR 1. As the options proposed aim to address a potential sustainability risk with GUR 1 by reducing the TACC, it is expected that these areas would benefit from the review.

Table 4: Customary fisheries areas within GUR 1.

Area	Management Type		
Aotea Harbour Marokopa Raukokere Te Kopa o Rongokānapa Te Maunga o Mauao Te Puna Te Rae o Kohi	Mātaitai Reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.		
Kawhia Aotea	Taiāpure		

4 Environmental and Sustainability Considerations

4.1 Environmental Considerations

- 1059. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish bycatch, benthic impacts, and habitats of particular significance for fisheries management.
- 1060. The proposals in this paper aim to address a potential sustainability risk with GUR 1 by setting a TAC and allowances and addressing the level of under catch evident in the current TACC. A TACC that is aligned with industry's demonstrated catching capability is unlikely to lead to any changes in fishing behaviour, meaning new or increased impacts on bycatch species, protected species, the benthic environment, or habitats of particular significance are unlikely.
- 1061. However, any change in the TACC of one stock caught in a multispecies fishery, like gurnard caught in the Fisheries Management Area (FMA) 9 mixed trawl fishery, may impact fishers' ability to take their ACE for the other stocks caught in that fishery. This could prompt fishers to change their behaviour, and any significant change in fishing behaviour— such as the area/depth fished, gear configuration, and species targeted— has the potential to create new or increased risks and impacts on bycatch species, protected species, the benthic environment, or habitats of particular significance.
- 1062. Increased observer coverage and cameras onboard some vessels will enhance Fisheries New Zealand's abilities to monitor environmental interactions along the upper West Coast of the North Island.

4.1.1 Marine mammals

- 1063. Marine mammal interactions by vessels taking GUR 1 are relatively rare. Of the vessels that take GUR 1, those using the bottom trawl method have reported the highest number of interactions. In the last three full fishing years, bottom trawl vessels targeting red gurnard, snapper, John dory, tarakihi, or trevally in GUR 1 have reported five marine mammal interactions: three captures of dead New Zealand fur seals, one capture of an uninjured bottlenose dolphin, and one capture of a dead pilot whale.
- 1064. The options proposed in this paper are not expected to increase marine mammal captures in GUR 1.

4.1.2 Seabirds

- 1065. The Spatially Explicit Fisheries Risk Assessment ranks bird species according to their risk from commercial fisheries. The 2020 assessment identified black petrel as the most at-risk seabird, followed by five taxa in the second-highest category: Salvin's albatross, Westland petrel, fleshfooted shearwater, southern Buller's albatross and Gibson's albatross. The seabirds most commonly caught by vessels catching GUR 1 include flesh-footed shearwaters, black petrels, and sooty shearwaters.
- 1066. The options proposed in this paper are not expected to increase seabird captures in GUR 1.

4.1.3 Fish bycatch

1067. GUR 1 is taken primarily in multispecies fisheries alongside snapper, trevally, tarakihi, and John dory. As the options proposed in this paper suggest reduced TACCs, an increase in fish bycatch as a result of this review is unlikely. The increases proposed in the SNA 8 review, however, may lead to greater fishing effort and consequently greater bycatch of other species in the FMA 9 bottom trawl multispecies fishery.

4.1.4 Benthic impacts

1068. All three of the main methods used to take GUR 1 may impact benthic habitats. Vessels using the bottom trawl, bottom long line, and Danish seining methods within GUR 1 report catches of corals, bryozoans, and sponges. The options proposed in this paper are not expected to increase benthic impacts within GUR 1.

4.1.5 Habitats of particular significance for fisheries management

1069. The broad distribution and long spawning period of red gurnard makes it difficult to pinpoint specific areas of particular significance to the species. Two habitats that may be considered habitats of particular significance for red gurnard in GUR 1 are listed in Table 5 below.

Table 5: Summary of information on habitats of particular significance for GUR 1.

Fish Stock	GUR 1
Habitat	Spawning migration area in the Hauraki Gulf, between the inner gulf and Craddock Channel (between Little Barrier and Great Barrier Island).
Attributes of habitat	 In the 1970s, Elder (1976)⁸⁵ found evidence of a seasonal spawning migration offshore between inner Hauraki Gulf areas and Craddock Channel in the outer Gulf. Catch rates, particularly for females, suggested a seasonal spawning migration during the spring and summer months. A corresponding post-spawning migration of spent fish occurring in the reverse direction was also documented. This movement from shallow to deeper water is likely to be related to water temperature.
Reasons for particular significance	Successful spawning is critical to supporting the productivity of the stock.
Risks/Threats	 Mobile bottom contact fishing is permitted in the outer Hauraki Gulf, including in Craddock Channel. These methods contact the seafloor, disturbing benthic habitats. What makes Craddock Channel particularly favourable for red gurnard spawning is unknown, so the extent to which mobile bottom contact fishing may impact their spawning here is unclear. Changes in water temperature and water circulation.
Protections in Place	 Mobile bottom contact fishing (bottom trawling, dredging, and Danish seining) are prohibited in the inner Hauraki Gulf. Vessels greater than 46 m are prohibited from trawling anywhere in FMA 1.
Habitat	Shallow harbours and estuaries during the summer months, particularly along the upper West Coast of the North Island.
Attributes of habitat	Juveniles that had recently settled have been found in shallow harbours and estuaries during the summer months of February and March, particularly along the upper West Coast of the North Island. These have only been found in low numbers.
Reasons for particular significance	 May provide sheltered habitat for juvenile red gurnard. May provide refuge from predation.
Risks/Threats	 The condition of many shallow harbours and estuaries has been compromised by non-fishing activities, including agricultural and urban runoff and sedimentation. Recreational dredging in some northern harbours may compromise benthic habitats that provide protection for juvenile fish and food sources. Changes in water temperature and water circulation.

⁸⁵ Elder, R.D. (1976). Studies on age and growth, reproduction, and population dynamics of red gurnard, *Chelidonichthys kumu* (Leeson and Garnot), in the Hauraki Gulf, New Zealand. *Fisheries Research Bulletin*, No.12. 77 p.

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All harbours and estuaries in GUR 1 are protected from commercial trawling, Danish seining, and dredging. Additionally, the Kaipara Harbour was also closed to recreational scallop fishing in 2018, which has essentially ceased recreational dredging. The new National Policy Statement on Freshwater Management and the National Environmental Standards for Freshwater, which came into effect on 3 September 2020, should lead to improved water quality in shallow harbours and estuaries.

- 1070. While not directly implemented to protect GUR 1 habitats, there are 12 marine reserves that fall within the GUR 1 QMA. Commercial and recreational take from these areas is prohibited. All 12 have been in place for at least 10 years. Marine reserves are administered by the Department of Conservation.
- 1071. In Revitalising the Gulf Government action on the Sea Change Plan, the government has committed to establishing an additional 11 new High Protection Areas and 5 Seafloor Protection Areas, as well as two additional marine protection areas adjacent to existing no-take marine reserves, within the Hauraki Gulf Marine Park (HGMP). Public consultation on these proposals is proposed to begin in mid-2022.
- 1072. The options proposed in this paper are not expected to increase the threat to habitats of significance within GUR 1.

4.2 Sustainability measures (section 11 of the Act)

- 1073. 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.
- 1074. The proposals in this paper aim to address a potential sustainability risk with the current management settings for GUR 1 and should therefore be beneficial to the sustainability of the stock.
- 1075. Options presented are consistent with the following relevant plans and strategies:

4.2.1 Draft National Inshore Finfish Fisheries Plan

- 1076. GUR 1 will be managed under the National Inshore Finfish Fisheries Plan (the Plan), once finalised. The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020.
- 1077. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 1078. GUR 1 has been assigned to Group 2, which recognises that Fisheries New Zealand intends to manage this stock to provide for moderate levels of use. Group 2 stocks are monitored with partial quantitative assessments compared against trends over time.

4.2.2 Regional Plans

- 1079. There are 4 Regional Councils that have coastline within GUR 1 boundaries. Each of these regional councils has multiple plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 1080. Fisheries New Zealand considers that the proposed management options presented are in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

4.2.3 Hauraki Gulf Marine Park Act 2000 (HGMPA)

- 1081. The HGMP falls within the GUR 1 QMA. Therefore, sections 7 (recognition of national significance of Hauraki Gulf) and 8 (management of Hauraki Gulf) of the apply to the management of this fishery.
- 1082. As this review aims to address a potential sustainability risk with the GUR 1 management settings, Fisheries New Zealand considers that the proposed options are consistent with obligations under sections 7 and 8 of the HGMPA.
- 1083. In addition to the HGMPA, the recently released *Revitalising the Gulf: Government action on the Sea Change Plan* may affect future management and monitoring of red gurnard within the HGMP. Actions proposed under that plan include the development of a section 11A fisheries plan and new marine protection for the HGMP.

5 Submissions

- 1084. A total of 33 submissions were received on GUR 1. Of these, 16 supported Option 3, one supported Option 2 and three supported Option 1. Thirteen submitters supported other options, including three submitters that opted for a modified Option 2 with a reduced recreational allowance, and two submitters who supported a more precautionary option proposed by recreational fishing advocacy group LegaSea (Table 6).
- 1085. In addition, 7,824 SNA 8 form submissions expressed support for a conservative SNA 8 decision so that depleted species including gurnard, trevally, tarakihi, John dory and kahawai can rebuild to healthy levels. Of the SNA 8 form submissions, 7,600 stated concern that not enough information is being collected to better understand the bycatch associated with bottom trawling. Because these submissions were submitted in relation to the SNA 8 proposal, they are not included in Table 6 below. Instead, they are summarised within the final advice chapter for the SNA 8 stock.

Table 6: Written submissions and responses received for GUR 1 (in alphabetical order).

Submitter	Option Support					
Oublinite	1	2	3	Other		
A. Flavell-Johnson				✓	Supports decrease but did not indicate which option.	
A. Schmid				✓	No increase in commercial or recreational catch limits for any stocks.	
A. Turnwald	✓				Reducing the TACC has no scientific merit. Also, the dolphin TMP should provide sufficient protection to help the stock recover.	
Brooks Seafood Ltd & Awaroa Fisheries Ltd (A. Brooks & L. Lawrence) Members of Ngā Hapū o Te Uru o Tainui customary Fisheries forum and supported by various iwi and maraes. Endorsed by: - Marokopa paa - Waikato Tainui, Te Arataura				✓	28N rights should be cancelled.	
B. Dunn			✓			
B. Gillies			✓			
B. Price				✓	Supports slowly increasing biomass back to higher levels (80% B_0)	

C. Inder		✓		
C. Lee		✓		Cautious approach needed.
C. Nicklin		✓		Cautious approach needed.
Counties Sports Fishing Club		✓		
Environment and Conservation Organisations of New Zealand (ECO)	V			
Environmental Defence Society (EDS)		✓		Option 3 as interim measure
Fisheries Inshore New Zealand (FINZ)	✓			Supports setting allowances. Oppose changes to TACC until the updated CPUE analyses are available.
G. Grant		✓		
G. McKay		✓		Cautious approach needed.
lwi Collective Partnership (ICP)			✓	Supports modified option 2 approach proposed by Te Ohu Kaimoana.
J. Steele		✓		Cautious approach needed.
K. Mason			✓	Supports all decreases in catch limits but did not indicate a preferred option.
Kevin		✓		Cautious approach needed.
LegaSea Joint submission with NZ Sportfishing Council (NZSFC), NZ Underwater Association (NZUA) and NZ Angling and Casting Association (NZACA)			✓	Set the TAC at 800t, make allowances 40t for customary, 100 t for recreational, set the TACC at 600t and an allowance of 60 t (10% of TACC) for other sources of mortality.
M. Langdon		✓		Cautious approach needed.
M. Optimum			✓	Requested that TAC review be redone because they believe the consultation was unlawful.
M. Nicklin		✓		Cautious approach needed.
New Zealand Recreational Fishing Council (NZRFC)		✓		
Ngātiwai Group			✓	Supports modified option 2 proposed by Te Ohu Kaimoana.
P. Nicklin		✓		Cautious approach needed.
R. Davidson			✓	Proposes that catch limits should not be decreased at this time.
R. Takerei, Marokopa paa			✓	28N rights should be cancelled.
Royal Forest & Bird Protection Society (Forest & Bird)			✓	Supports LegaSea proposal to set the TAC at 800t, make allowances 40t for customary, 100 t for recreational, set the TACC at 600t and an allowance of 60 t (10% of TACC) for other sources of fishing mortality.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)		✓		
Sanford Ltd	✓			

Te Ohu Kaimoana, Endorsed by:			
- Tama Asset Holding Company Ltd, - Taranaki Iwi Fisheries Ltd, - Te Kupenga o Maniapoto, Maruehi Fisheries Ltd, - Ngāti Mutunga o Wharekauri Asset Holding Company Ltd.		✓	Supports a modified Option 2, with a recreational allowance of 83t and hence a TAC of 1300 t.

6 Options and analysis

- 1086. A TAC and allowances have not been set for GUR 1. Three options are proposed for the TAC, TACC, and allowances for GUR 1.
- 1087. Option 1 sets a TAC, makes allowances, and reduces the TACC by a small amount. Option 2 addresses a potential sustainability risk associated with the current management settings by setting a TAC and allowances and bringing the TACC in line with industry's demonstrated catch capabilities. Option 3 provides a more precautionary option that responds to the more recent decline in commercial landings by setting a TAC and allowances and setting a TACC that will constrain catch, based on recent landings.
- 1088. All three options proposed a customary allowance of 40 tonnes for discussion in the consultation document. None of the submissions contested the proposed 40 tonne customary allowance.
- 1089. Each option includes a proposed recreational allowance based on the best available information on recreational harvest, which is provided by the 2017/18 NPS. Fisheries New Zealand proposed a recreational allowance be set at 100 tonnes, based on the recreational harvest of 86 tonnes ± 13 tonnes estimated from the 2017/18 panel survey (and rounded up to 100 for simplicity). The majority of submitters supported this proposed allowance, although 4 submitters believed that this was too high and that the allowance should be set at either 86 or 83 tonnes. This is discussed further under section 6.4.
- 1090. Each option includes a proposed allowance for other mortality caused by fishing at an amount that equates to approximately 7% of the TACC for GUR 1. The majority of submitters supported this allowance; however, two submitters believed that this allowance was too low because it deviates from the approach of setting the allowance at 10% of the TACC for inshore stocks caught predominantly by trawl. This is discussed further under section 6.4.

6.1 Option 1

TAC: 2,328 t TACC: 2,045 t (▶ 243) Customary: 40 t Recreational: 100 t Other mortality: 143 t	TAC : 2,328 t	TACC: 2,045 t (↓ 243)	Customary: 40 t	Recreational: 100 t	Other mortality: 143 t
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- 1091. Setting the TAC at 2,328 tonnes, creating allowances for recreational, customary, and other mortality caused by fishing, and reducing the TACC by 243 tonnes preserves most of the potential catch in the current management settings. This option will have the least impact on the commercial sector and ensures the sector has the flexibility to increase its catch.
- 1092. This flexibility may be particularly valuable to fishers operating in the GUR 1W sub-stock, as the outcome of the SNA 8 review and the recent expansion of the trawl exclusion zone will both influence behaviour in the FMA 9 mixed trawl fishery. How fishers respond to these management changes remains to be seen, and it may be prudent to refrain from making significant changes to the management settings of GUR 1 until the effects of these changes on the FMA 9 mixed trawl fishery are better understood.
- 1093. Setting a TAC and maintaining the TACC at a level well above demonstrated catch would provide the commercial sector with the opportunity to take catch well in excess of that which the

- most recent CPUE updates indicated was sustainable. This option could therefore present a sustainability risk to GUR 1, although, without a *MSY* estimate or updated CPUE analyses covering the recent decline in landings, Fisheries New Zealand cannot estimate the magnitude of this risk. Fisheries New Zealand considers that there is a risk and suggests that this option would be inconsistent with your obligations under section 13(2A) of the Fisheries Act 1996.
- 1094. Only three of the 33 submissions received supported this option. Many submitters opposed this option, believing that, given the declining trends in landings and lack of explanation for these trends, a precautionary approach was warranted.
- 1095. Those that supported this option, including Sanford and Fisheries Inshore New Zealand (FINZ), believe that Fisheries New Zealand should set allowances now but refrain from decreasing the TACC beyond what is proposed for the allowances until the next GUR 1 CPUE update is available (currently anticipated in 2023).
- 1096. Another submitter favouring this option suggested that the trawl prohibitions resulting from the Hector's and Māui's Dolphins Threat Management Plan (TMP) may provide sufficient protection for the GUR 1 stock to recover without reducing the TACC.
- 1097. Following the release of the first TMP in 2007, existing trawling prohibitions were extended in 2008 to protect Māui's dolphins (Figure 9). A further extension of the existing area closed to trawling off the West Coast of the North Island was enacted on 1 October 2020 (Figure 10).

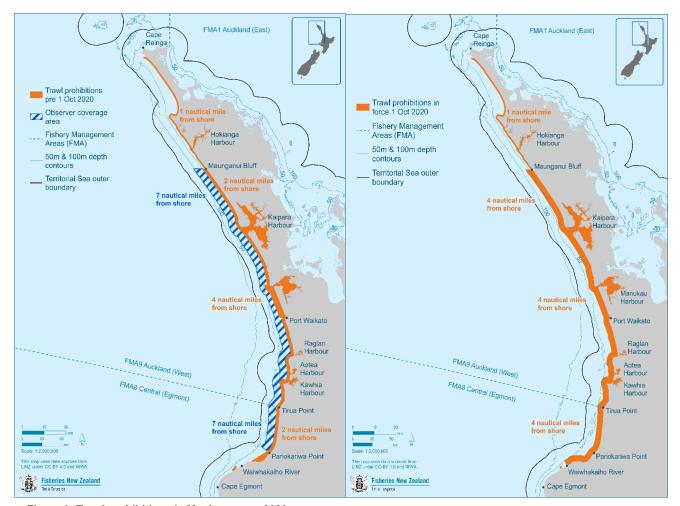


Figure 9: Trawl prohibitions in Māui zone pre 2020.

Figure 10: Trawl prohibitions in Māui zone post October 1, 2020.

- 1098. The best information Fisheries New Zealand holds (from the WCNI trawl survey) shows that the portion of the overall GUR 1W biomass found within the Māui dolphin zone is negligible, so it is unlikely that these closures will provide significant protection to red gurnard at a stock level.
- 1099. However, Fisheries New Zealand would like to emphasize that whether or not the stock is in need of recovery is not known at this time. Only one of the options presented in the consultation document (Option 3) would constrain catch below recent levels and responds to the recent decline in landings.

6.2 Option 2 (Fisheries New Zealand's preferred option)

TAC: 1,317 t TACC: 1,100 t (♥ 1,188) Customary: 40 t Recreational: 100 t Other mortali	: 77 t
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- 1100. Option 2 sets the TAC at 1,317 tonnes, makes allowances for customary (40 tonnes) and recreational interests (100 tonnes) and other mortality caused by fishing (77 tonnes), and reduces the TACC to 1,100 tonnes. This option brings the TACC closer to the average annual landings of 1,072 tonnes since GUR 1 was introduced into the QMS. It also closely approximates the most recent peak in landings, when 1,103 tonnes were landed in the 2012/13 fishing year.
- 1101. This option removes most of the uncaught TACC evident in the current management settings. It reduces the potential sustainability risk associated with fully catching the current TACC by bringing the commercial catch limit in line with the demonstrated level of commercial take.
- 1102. This option uses the CPUE updates in 2016, which did not raise any sustainability concerns with catch levels at that time, to inform setting of a TAC. Fisheries New Zealand considers that this is the best available information as it has been accepted by the Inshore Finfish Working Group.
- 1103. This option does not respond to the more recent decline in GUR 1 landings seen over the past five years, which may or may not indicate a decline in GUR 1 abundance. Updated CPUE analyses, anticipated in 2023, should provide an indication of whether or not this decline in catch is indicative of a decline in abundance.
- 1104. Based on recent catch patterns, this option is unlikely to constrain catch of GUR 1 and is not expected to result in economic costs to fishers, beyond any associated changes to ACE price. However, changes to the management settings for SNA 8 could potentially result in different fishing patterns in FMA 9. In this eventuality, catch levels in the GUR 1W sub-stock may change, potentially resulting in this option a having a constraining effect on GUR 1 catch.
- 1105. This was the preferred option of ECO. A modified version with a recreational allowance reduced to 83 tonnes was proposed by Te Ohu Kaimoana and supported by both Ngātiwai Group and the lwi Collective Partnership. This is discussed further under section 6.4 below.

6.3 Option 3

TAC: 996 t TACC: 800 t (↓ 1,488) Cus	mary: 40 t Recreational: 100 t Other mortality: 56 t
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- 1106. Option 3 sets the TAC at 996 tonnes, makes allowances for customary (40 tonnes) and recreational interests (100 tonnes) and other mortality caused by fishing (56 tonnes), and reduces the TACC to 800 tonnes.
- 1107. This option presents a more cautious management approach that responds to the recent decline in GUR 1 landings over the past five years, during which the average landings have been 792 tonnes. It also places greater weight on the concerning signals from the recent trawl surveys. Based on recent trends in landings, a TACC of 800 tonnes would actively constrain commercial catch in some years.

- 1108. Given red gurnard's fast growth and relatively short lifespan, it is possible that GUR 1 biomass could change substantially between the last CPUE update and the next CPUE update, and that the recent decline in landings is already indicating a potential sustainability risk to the stock. In this case, setting a lower TAC and implementing a substantial reduction to the existing TACC would not be inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, the level that can produce *MSY*.
- 1109. Because red gurnard tend to have large environmentally driven cycles in abundance, it is possible that, in years where recruitment is good, Option 3 would be overly conservative. This could result in situations where the GUR 1 TACC limits commercial fishers' ability to take the TACC of other co-occurring species, even in the absence of a sustainability risk to the GUR 1 stock. Fisheries using less selective methods, such as the bottom trawl fishery in FMA 9, would be most affected by an unnecessarily constraining TACC. More frequent monitoring and review of the GUR 1 TACC would enable fisheries management to be more responsive to changes in GUR 1 abundance.
- 1110. Sixteen submissions supported this approach. Several submitters referenced the uncertainty around reasons for declining commercial catches and the lack of information on current stock status. Ten submitters stated that this limited knowledge necessitated a precautionary management approach. One submitter noted the need for more frequent reviews and monitoring.
- 1111. Submitters that opposed this option believed that dramatic changes to the TACC should not be made until the updated CPUE data is reviewed in 2023.

6.4 Other options proposed by submitters

LegaSea, NZSFC, NZACA, and NZUA Joint Proposal

- 1112. The joint submission from LegaSea, the NZSFC, the NZACA, and the NZUA proposed an alternative, more precautionary option for GUR 1 that would set the TAC at 800 tonnes, provide a customary allowance of 40 tonnes and a recreational allowance of 100 tonnes, and reduce the TACC to 600 tonnes (a 74% reduction) and set an allowance of 60 tonnes for other sources of fishing mortality, based on an amount that equates to 10% of the TACC. This option was also supported by Forest & Bird, who noted that we shouldn't be managing catch at the level of average catches in a declining fishery.
- 1113. Fisheries New Zealand's view is that there is currently not enough information at this stage to justify setting such a low TAC. While there have been some concerning signals in recent monitoring, the most recent stock assessment did not indicate that catches were unsustainable at the time of the assessment. Fisheries New Zealand considers that such a low TAC would need to be supported by an updated assessment.
- 1114. LegaSea's joint submission also proposed an allowance for other sources of mortality at approximately 10% of the proposed TACC. This allowance would be consistent with the previous Minister of Fisheries' position that an allowance of 10% of the TACC should be made for other sources of mortality caused by fishing for inshore stocks caught predominantly by trawl.
- 1115. Fisheries New Zealand notes that this approach is applied in situations where there is an absence of information to suggest an alternative approach is more appropriate. In the case of GUR 1, Fisheries New Zealand considers it has additional information on commercial catch and effort in GUR 1 which justifies a deviation from the standard 10% for inshore stocks caught predominantly by trawl:
 - Enhanced monitoring, through a combination of observer coverage and cameras, on the West Coast North Island means Fisheries New Zealand has greater confidence in the catch and effort reported for the western sub-stock.

• A substantial portion (~20-30%) of GUR 1 is taken by the more selective methods of bottom longlining and Danish seining, which are less likely to cause incidental mortality. The two eastern sub-stocks are taken mainly by these methods.

Te Ohu Kaimoana's Modified Option 2

- 1116. The submission from Te Ohu Kaimoana proposed a modified option 2 with a TAC of 1,300 tonnes and a reduced recreational allowance of 83 tonnes. This option was supported in submissions from the lwi Collective Partnership and Ngātiwai Group.
- 1117. Fisheries New Zealand considers that the purpose of a recreational allowance is to adequately provide for recreational take within the management settings of a stock. The most recent NPS estimated recreational harvest of GUR 1 to be 86 tonnes ± 13 tonnes. To ensure that the allowance adequately provides for recreational take, Fisheries New Zealand has proposed an allowance that represents the largest possible estimate when potential error is taken into account.
- 1118. Fisheries New Zealand acknowledges that, in choosing the larger number and opting to round it 100, it is recommending an allowance slightly in excess of estimated recreational take in 2017/18. However, considering that the 2011/12 NPS estimate was 103 tonnes ± 15 tonnes and that recreational harvest can fluctuate substantially year-to-year, Fisheries New Zealand believes that a 100 tonne allowance is reasonable.

6.5 Economic considerations

Revenue Impacts

- 1119. Option 1 sets a TAC and makes allowances and reduces the TACC by 243 tonnes. The remaining TACC of 2,045 tonnes is still much higher than the average commercial landings of 792 tonnes over the past five years and 1,072 tonnes since the stock was introduced to the QMS. This option is therefore not expected to result in any reduction in revenue.
- 1120. Option 2 sets a 1,100 tonne TACC, which is slightly above the average annual landings of 1,072 tonnes since GUR 1 was introduced to the QMS and just below a recent (2012/13) maximum in landings of 1,103 tonnes. This option is therefore not expected to result in any reduction in revenue.
- 1121. Option 3 sets a TACC of 800 tonnes, which has the potential to actively constrain catch in some years based on average annual landings. However, this TACC would not have constrained catch in the most recent three years, during which the average landings were 747 tonnes. It is also possible that if any changes are made to the SNA 8 settings this may result in effort shifting back to targeting SNA 8, which could offset the potential for this setting to constrain catch.
- 1122. The reduction in revenue associated with option 3 can be expected to fall somewhere within the range of \$0-\$797,000, based on the recent port price of \$2.93/kg. Fisheries New Zealand notes that the port price only reflects an average price across a QMA that fishers receive; it is not a true representation of revenue.

Impacts on ACE Market

1123. As the options proposed reflect current levels of catch in the most recent years, it is unlikely that reductions in the TACC would significantly impact on ACE prices. With approximately 31% of available ACE utilised over the last five complete fishing years, it is reasonable to expect that the ACE market would be able to withstand reductions in the TACC without major changes in the ACE price.

Implications for Multispecies Fisheries

1124. Because GUR 1 is caught in multispecies fisheries, it is possible that the GUR 1 TACC could either limit commercial fishers' ability to take the TACC of other co-occurring species or result in increased deemed value payments if fishers are unable to avoid red gurnard or source ACE to

- cover red gurnard bycatch. In either eventuality, further reductions in revenue would be expected.
- 1125. Ngā Hapū o Te Uru o Tainui expressed concern that a GUR 1 TACC decrease alongside a SNA 8 TACC increase would result in greater deemed value payments. FINZ shares these concerns.

6.6 Other matters raised

Ecosystem-based fisheries management

- 1126. Many of those providing submissions on GUR 1 and on SNA 8 emphasized the need for a more ecosystem-based approach to fisheries management. Citing the multispecies nature of trawl fisheries on the West Coast, many submitters raised concerns about how an increase in the SNA 8 TACC would impact on associated species like gurnard (GUR 1), John dory (JDO 1), tarakihi (TAR), trevally (TRE 7), and school shark (SCH). They emphasized the need to take a more multispecies approach to sustainability reviews, taking into consideration how adjusting the TACC of one species caught in the mixed fishery will impact other species caught in the fishery.
- 1127. The review of SNA 8 could have implications for the GUR 1W sub-stock. An increase in the TAC and TACC for SNA 8 could lead to greater fishing effort in SNA 8 and, consequently, increased catches of GUR 1W. Alternatively, fishers may simply modify their behaviour to increase targeting of SNA 8, in which case fewer gurnard may be caught due to changes in areas fished and/or gear configurations.
- 1128. Feedback received from tangata whenua and stakeholders as part of the review process for SNA 8 indicated a need for a comprehensive monitoring and management plan for SNA 8 and associated fish stocks in the WCNI trawl fishery. Fisheries New Zealand acknowledges this need and is developing an appropriate plan.
- 1129. The proposed monitoring plan for SNA 8 should include other species frequently caught in the FMA 9 mixed species trawl fishery, including gurnard. The first step will be to obtain an updated characterisation of the WCNI trawl fishery.

Bottom Trawling

- 1130. Four submitters highlighted the environmental impacts of bottom trawling in their submissions, noting that bottom trawling destroys benthic habitats and contributes to climate change and ocean acidification. Fisheries New Zealand notes that, at this stage, trawling links to ocean acidification are uncertain. A number of suggestions to reduce bottom trawling impacts were proposed:
 - LegaSea proposed extending the 4 nm Māui dolphin trawl prohibition zone further north along the West Coast of the North Island from Maunganui Bluff (the current boundary) to Tiriparepa/Scott Point, north of Te Oneroa a Tohe/90 Mile Beach.
 - EDS suggested banning trawling within the 100 m depth contour.
 - Forest & Bird recommended freezing the trawl footprint, protecting all seamounts and associated features in GUR 1, and implementing both a move-on rule and a phase out date.
- 1131. Fisheries New Zealand acknowledges these concerns but notes that they are not specific to the GUR 1 sustainability review, which aims to respond to a potential sustainability risk associated with current management settings of GUR 1.
- 1132. In Revitalising the Gulf Government action on the Sea Change Plan, Fisheries New Zealand committed to striking a better balance between bottom contact fishing and benthic protection within the HGMP by using an evidence-based approach to designate areas— "corridors" within the park where bottom trawling and Danish seining can continue to occur with less of an impact on benthic biodiversity. Fisheries New Zealand will be working with mana whenua and stakeholders on a research project to collaboratively design potential trawl corridor scenarios

within the HGMP over the next 8 months. This model could be used as a future example of how to approach trawl impacts in the future – including within the wider GUR 1 QMA.

Manage to higher biomass

1133. Two submissions raised concerns regarding the adequacy of managing to a default target of 40% biomass. Fisheries New Zealand acknowledges these concerns but notes that, in the case of GUR 1, the management target is actually set to a B_{MSY} -compatible proxy based on the mean CPUE of the bottom trawl fisheries in each of the respective sub-stocks over a reference period, 1995–96 to 2011–12. There is no estimate of current or reference biomass for GUR 1, but biomass is known to fluctuate in cycles according to variation in recruitment.

Divide GUR 1 QMA

- 1134. The joint proposal from LegaSea, NZSFC, NZACA, and NZUA proposed dividing the GUR 1 QMA at North Cape to create separate QMAs for the GUR 1 sub-stocks on the east and the west coasts.
- 1135. Separate QMAs for the east and west coasts would better align with the biological stock boundaries of the sub-stocks in the GUR 1 QMA and, in doing so, would enable the setting of management controls more specific to the status of that stock. This could also facilitate a transition to multispecies management in FMA 9 mixed trawl fishery.
- 1136. Under section 25 of the Act, you have the ability to alter QMA boundaries either via the support of quota holders representing at least 75% of the quota holdings (s 25A), or where it is necessary to ensure sustainability.
- 1137. In his decisions on the 2018 Sustainability Round, the previous Minister of Fisheries directed Fisheries New Zealand to explore options for adjusting the management boundaries of JDO 1 and to look at adjusting management boundaries for FLA 1, both of which also have QMAs that cover FMAs 1 and 9. Fisheries New Zealand can add GUR 1 to these considerations as well, if desired.

Alternative Explanations for Declining Landings

- 1138. Several submitters proposed alternative explanations for the recent decline in GUR 1 landings. Three submitters suggested that the decline in landings is a consequence of fleet consolidation following the introduction of the Quota Management System (QMS).
- 1139. Fisheries New Zealand agrees that there was a decline in landings post-QMS introduction but notes that the initial decrease seen in the late 1980s was not the beginning of a continuous decline. Introduction into the QMS 35 years ago may explain why landings are at a lower level than pre-QMS, however, in the last five fishing years the drop in landings can mostly be attributed to the West Coast sub-stock GUR 1W (which accounts for 60-70% of GUR 1 landings), and the number of trawlers in the West Coast fishery has not decreased in that time (and has actually increased by two in the most recent year).
- 1140. There has been a more gradual decline in landings in GUR 1E over the past 10 years but catch from that area accounts for a much lower proportion of GUR 1 catch. Changes in the fleet operating in GUR 1E are therefore unlikely to be the key driver of the recent drop from 50% to 35% of GUR 1 TACC caught.

28N Rights

- 1141. Several submissions requested that 28N rights (preferential allocation) in GUR 1 be cancelled and one requested compensation.
- 1142. 28N rights holders are entitled under the Fisheries Act 1996 to have their rights redeemed as quota following an increase in the TACC. When 28N rights are triggered, quota shares are reallocated from other quota holders in the fishery to the 28N rights holders in this case the tonnage held may increase, but the percentage share of other quota holders in the fishery

- decreases. 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.
- 1143. As 28N rights arise for each fish stock, the Ministry for Primary Industries (MPI) has a legal obligation to follow the conditions and formulas for redemption of 28N rights as set out in section 23 of the Act. Changes to the legislation would be required to alter these provisions.
- 1144. Fisheries New Zealand notes that, while there are 63.9 tonnes of 28N rights associated with the GUR 1 stock, the options in this paper will not trigger 28N rights because all options include a reduction to the current TACC.

7 Deemed values

1145. The deemed value rates for GUR 1 are provided in Table 7 below. As the current deemed value rates of GUR 1 are set slightly above the average ACE transfer price of \$1.01 per kg of GUR 1 and well below the average port price of \$2.93 per kg, no changes are proposed to the deemed value rates at this time. Fisheries New Zealand acknowledges that if the TACC is reduced, subsequent changes in fishing behaviour and the ACE market may result in the need for the deemed value to be re-evaluated in the future.

Table 7: Deemed value rates for GUR 1.

	Interim Rate	Annual Differential Rates (\$/kg) for excess catch (% of ACE)						
	(\$/kg)	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
Status quo	1.53	1.70	2.04	2.38	2.72	3.06	3.40	

1146. No submissions responded to the deemed value rates.

8 Conclusions and recommendations

- 1147. Fisheries New Zealand recommends that you set a TAC and make allowances for customary take, recreational take, and other sources of mortality caused by fishing, and that you reduce the TACC, with our preferred option being Option 2.
- 1148. There is currently no TAC nor allowances set for GUR 1. Since introduction into the QMS, GUR 1 commercial catch levels have fluctuated around 50% of the current TACC. In the most recent five fishing years, catch levels have declined to an average of 35% of the TACC, despite gear modifications being implemented in the West Coast trawl fishery which lead to increased catches of red gurnard. The relationship between this recent decline in landings and the status of the stock is unknown, as CPUE analyses are only available through the 2015/16 fishing year.
- 1149. The most recent assessment through the 2015/16 fishing year did not indicate sustainability concerns for any of the three GUR 1 sub-stocks, suggesting that catches at that time were sustainable. Annual landings at that time were approximately 50% of the TACC. The potential to catch twice as much as that which CPUE analyses indicated was sustainable could pose a sustainability risk to GUR 1.
- 1150. Red gurnard stocks exhibit environmentally driven abundance cycles characterised by sizable biomass fluctuations. Recent trawl survey results show GUR 1 may be entering a period of lower recruitment, which would heighten the sustainability risk posed by the current settings.
- 1151. Option 2 will enable you to set appropriate allowances and to bring the TACC into line with industry's demonstrated capability. In doing so, Option 2 uses the best available information for the stock and, among other factors, takes into consideration the stock's biological characteristics.
- 1152. This option would set a TAC which, based on the most recent assessment, Fisheries New Zealand considers would satisfy your obligations under section 13(2A) to set a TAC that is not inconsistent with the objective of maintaining the GUR 1 stock at or above a level that can produce *MSY*. It enables you to reduce the potential sustainability risk associated with the

current management settings while also allowing time for the CPUE analyses to be updated before reacting to more recent trends in catch. In the meantime, Fisheries New Zealand will monitor how effort and catch in the FMA 9 trawl fishery change in response to your decision on SNA 8 and evaluate the effects on the GUR 1W sub-stock.

9 **Decision for GUR 1**

Option 1

Agree to set the GUR 1 TAC at 2,328 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 40 tonnes;
- ii. Set the allowance for recreational fishing interests at 100 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing to 143 tonnes:
- ίV. Decrease the GUR 1 TACC from 2,288 tonnes to 2,045 tonnes.

reed Agreed as Amended Not Agreed

OR

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the GUR 1 TAC at 1,317 tonnes and within the TAC:

- i. Set the allowance for Māori customary non-commercial fishing interests at 40 tonnes;
- ii. Set the allowance for recreational fishing interests at 100 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing to 77

iv. Decrease the GUR 1 TACC from 2,288 to 1,100 tonnes

Agreed as Amended Not Agreed

for 1 year only

OR

Option 3

Agree to set the GUR 1 TAC at 996 tonnes and within the TAC

Set the allowance for Māori customary non-commercial fishing interests at 40 tonnes;

ii. Set the allowance for recreational fishing interests at 100 tonnes;

iii. Set the allowance for all other sources of mortality to the stock caused by fishing to 56 tonnes;

iv. Decrease the GUR 1 TACC from 2,288 to 800 tonnes.

Agreed as Amended / Not Agreed

Hon David Parker Minister for Oceans and Fisheries

Plan advin me how I cont would split GURI into

as exita west coast spirit

QUAS. I have approved I yew catch as

Fisheries New Zealand

Review of sestainability measures for the 2021 October round: GUR 1 • 199

Chelidonichthys kumu, Kumukumu, pūwhaiau

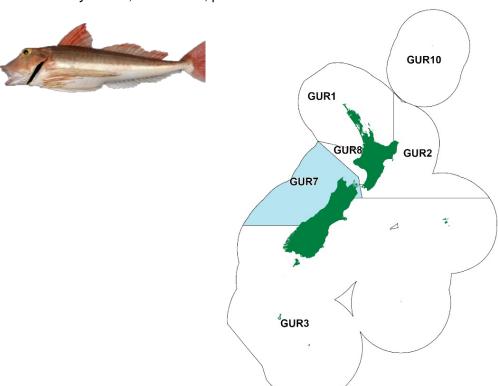


Figure 1: Quota Management Areas (QMAs) for red gurnard, with GUR 7 highlighted in blue. A red gurnard is pictured on the left.

Table 1: Summary of options proposed for GUR 7 from 1 October 2021. 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)	1 294.65	1 180		15	38	61.65
Option 2	1 422 1 (127.35 t)	1 298 🛧 ((118 t)	17 1 (2 t)	42 1 (4 t)	65 1 (3.35 t)
New option incorp	porated following cons	sultation	No			
Total submissions	s received		16			
Number of submissions received in support of		Option 1		9		
each option					3	
			Other		4	

1 Why are we proposing a review?

- 1153. The TAC and TACC for red gurnard in GUR 7 were increased by approximately 10% in 2020. Since then, trawl survey biomass estimates and analysis of commercial catch data indicate the GUR 7 stock has continued to increase in abundance.
- 1154. Fisheries New Zealand is advising on options to either retain the status quo or to increase the TAC, allowances, and the TACC to provide a utilisation opportunity for this stock currently experiencing a period of high productivity.

1.1 About the stock

1.1.1 Fishery characteristics

- 1155. GUR 7 is a valuable commercial species, particularly for the fresh fish market. Historically, it has been taken primarily as bycatch in the inshore mixed trawl fishery when targeting flatfish. However, there has been a large increase in targeting GUR 7 in the last five years. The majority of GUR 7 are caught in Golden and Tasman Bays, and along the West Coast of the South Island.
- 1156. Commercial fishers must use a trawl net with a minimum size of 100 mm. However, most commercial fishers are now using lighter gear (dyneema rope) and larger mesh size (120-150 mm). Gear technology developments in the GUR 7 and mixed trawl fishery in QMA 7 continue to improve selectivity and reduce negative impacts of fishing on the environment.
- 1157. GUR 7 is also a popular recreational and customary fish species given its wide distribution in harbours and shallow waters. Amateur fishers are subject to rules requiring a minimum fish length size of 25 cm, a maximum daily limit (per fisher) of 20 fish, and a minimum setnet mesh size of 100 mm. Amateur gear technology also continues to improve with the use of drones to target and release hooks and lines to specific fishing marks.
- 1158. Stock boundaries are uncertain for red gurnard, but for stock assessments GUR 7 is treated as a single management unit. Scientific advice for GUR 7 is primarily based on the biomass series for the recruited portion of the total West Coast South Island (WCSI) research trawl survey, which is carried out every two years in March (most recently March 2021).

1.1.2 Biology

- 1159. Red gurnard is a common inshore species found throughout New Zealand. The species occurs at depths of 20-180 m but is usually found on sandy and muddy substrates in less than 60 m. The diet comprises mainly of crustaceans, especially small crabs and shrimps.
- 1160. Red gurnard has a long spawning period that extends through spring and summer with a peak in early summer. Spawning grounds appear to be widespread. Egg and larval development take place in surface waters, and there is a period of at least eight days after hatching before feeding starts. Small juveniles are often found in shallow harbours but are rarely caught in commercial trawls.
- 1161. Sexual maturity is usually attained at 2-3 years of age, and at a size of about 23 cm. Growth rates vary with location, and females grow faster and are usually larger than males. Maximum age is about 16 years and maximum size is about 55 cm. Overall, red gurnard is considered a highly productive species.
- 1162. Changes in water temperature, circulation and wind patterns from climate change are likely to influence red gurnard biological characteristics (e.g., growth, spawning and recruitment). The current period of high productivity suggests recent environmental conditions with elevated sea temperatures have been favourable for GUR 7.

1.2 Status of the stock

1163. According to the 2021 Fisheries Assessment Plenary (the Plenary), the stock status of GUR 7 was estimated to be very likely (>90% probability) to be at or above target, based on the 2019 biomass indices (Figure 2). 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. GUR 7 is managed under section 13(2) of the Act as its MSY can be reliably estimated. Since GUR 7 is very likely at or above target section 13(2)(c) applies.

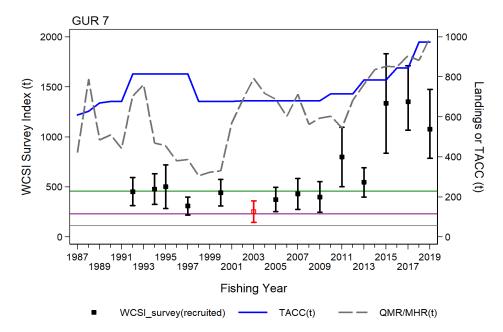


Figure 2: Comparison of GUR WCSI trawl survey indices (for recruited >30cm fish) with commercial landings (grey dashed line) and TACC for GUR 7 (blue line). The management target B_{MSY} proxy (green line); the soft limit (purple line).

1164. GUR 7 appears to be experiencing a recruitment pulse (consecutive years of good recruitment) as the preliminary 2021 WCSI research trawl survey relative biomass index is the highest in the series (Figure 3). The 2015, 2017 and 2019 indices are also high and above the long-term mean. The trawl survey series is considered to be a reliable index of abundance for GUR 7.

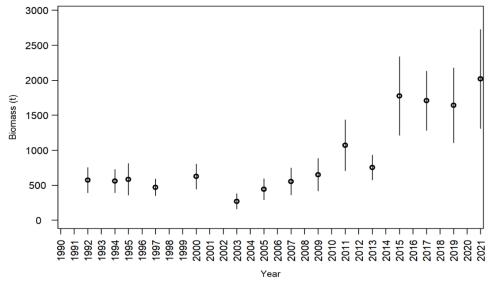


Figure 3: Preliminary GUR 7 biomass estimates from the 2021 WCSI trawl survey.

1165. There is no quantitative stock projection for GUR 7. However, the current abundance is at historically high levels and is unlikely to decline below target in the next 3-5 years.

2 Catch information and current settings within the TAC

2.1 Commercial

1166. GUR 7 landings declined from 761 tonnes in 1992–93, to 309 tonnes in 1997–98, but then increased to 793 tonnes by 2002–03. Landings then generally declined to 2010–11, before increasing to 1182 tonnes in 2019–20, slightly exceeding the TACC (Figure 2). Industry representatives have advised that commercial fishers currently find it difficult to avoid catching red gurnard in GUR 7 and that its abundance has increased significantly over the last few years.

2.2 Customary Māori

- 1167. The current level of customary take for finfish in QMA 7 is uncertain. Under the Fisheries (South Island Customary Fishing) Regulations 1999, small amounts of red gurnard (Kumukumu, pūwhaiau) has been reported as taken in GUR 7. The small amount of customary reporting may reflect that tangata whenua are using recreational fishing regulations for their harvest. In GUR 7, 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.
- 1168. The customary allowance for GUR 7 was last reviewed in 2020 but has not changed since 2017. At that time the allowance was increased from 10 tonnes to 15 tonnes, recognising input from Te Waka a Māui me Ōna Toka Iwi that the customary allowance should provide for pātaka (a place where fish is stored for customary purposes).

2.3 Recreational

1169. Red gurnard is a popular recreational fish species and the recreational allowance is currently set at 38 tonnes. The latest National Panel Survey of Marine Recreational Fishers (NPS) (2017/18) results estimate red gurnard harvest in GUR 7 has increased approximately 200% since the previous survey in 2011/12. This is likely to primarily be due to increased red gurnard abundance over this time as overall the number of fishers decreased 3% from the previous survey.

Table 2: Latest recreational harvest estimates for GUR 7.

Fish stock	2011/12 Estimated harvest (tonnes)	CV (tonnes)	2017/18 Estimated harvest (tonnes)	CV (tonnes)
GUR 7	12.48	± 3	37.59	± 6.8

1170. The NPS estimates do not include recreational harvest taken under s111 general approvals. The average take under s111 over the last five fishing years is about 107 kg annually with a maximum of 218 kg taken in 2020.

2.4 All other mortality caused by fishing

- 1171. Other mortality caused by fishing in GUR 7 includes mortality from fish escaping fishing gear and illegal discarding. In 2018, the previous Minister of Fisheries indicated a preference for standardising other mortality caused by fishing for inshore trawl fish stocks, with the amount equating to a minimum of 10% of the stocks respective TACC unless there is evidence to suggest otherwise.
- 1172. In 2020, the previous Minister of Fisheries considered that the improvements in commercial fishing practices in Fisheries Management Area 7 (FMA 7) (e.g., use of lighter gear and larger

mesh size) meant that an allowance of 5% of the TACC for other mortality caused by fishing is appropriate for the mixed trawl fishery in FMA 7 (including GUR 7) in this area.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 1173. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions. Iwi Fisheries Forums may also be used as entities to consult other iwi with an interest in fisheries.
- 1174. Te Waka a Māui me Ōna Toka Iwi Forum 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. Their Iwi Fisheries Forum Plan is titled Te Waipounamu Iwi Forum Fisheries Plan.
- 1175. At the July 2021 hui, Fisheries New Zealand sought from forum members their input into the review and proposed management settings for GUR 7. Forum members acknowledged that GUR 7 was abundant and recommended being cautious for all taonga species.

3.2 Kaitiakitanga

- 1176. Red gurnard is identified as a taonga species in Te Waipounamu lwi 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 2: South Island lwi 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.
- 1177. Customary tools utilised under the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaitai, taiāpure and temporary closures (Section 186B). There is one taiāpure and seven mātaitai reserves within GUR 7 (Table 3).

Table 3: Customary fisheries areas within QMA 7.

Name	Management type Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational and customary fishing.			
Whakapuaka (Delaware Bay)				
Okuru/Mussel Point				
Tauperikaka				
Mahitahi/Bruce Bay	Mātaitai Reserve			
Manakaiaua/Hunts Beach	Commercial fishing is not permitted within mātaitai			
Okarito Lagoon	reserves unless regulations state otherwise.			
Te Tai Tapu (Anatori)				
Te Tai Tapu (Kaihoka)				

1178. Fisheries New Zealand considers the option to increase the TAC proposed in this paper is unlikely to impact on, or be impacted by, the customary fisheries areas in GUR 7 given the large scale of the QMA and the widespread distribution of red gurnard. Furthermore, commercial fishing is prohibited in mātaitai. There are no regulations relating to red gurnard in the Whakapuaka Taiāpure, or bylaws relating to red gurnard in any of the mātaitai.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 1179. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish and invertebrate bycatch, benthic impacts and habitats of particular significance for fisheries management.
- 1180. The options included in this paper are to either maintain the status quo or to provide for a utilisation opportunity. Increasing the TAC is not considered to increase fishing effort in the GUR 7 fishery but rather reflects existing fishing effort and the abundance and catchability of GUR 7. It is unlikely to significantly increase existing impacts from fishing. Furthermore, gear technology developments in this fleet continue to improve selectivity and reduce negative impacts of fishing on the environment, thereby, contributing to maintaining biological diversity of the aquatic environment, and associated or dependent species above a level that ensures their long-term viability. The abundance of red gurnard suggests fishing is not having an adverse effect on habitat of particular significance for red gurnard in GUR 7.

4.1.1 Marine Mammals

- 1181. In general, trawl fisheries have been assessed as posing a substantially lesser risk to dolphins than commercial set-net fisheries. The Hector's and Māui dolphin Threat Management Plan guides management approaches for addressing both non-fishing and fishing related impacts on Hector's and Māui dolphins. The risk to the dolphins from trawling around the South Island, including GUR 7, is largely managed under the current trawl restrictions.
- 1182. Sea lions are generally not found as far north as FMA 7.
- 1183. Regardless, sometimes marine mammals are accidentally caught during commercial fishing. Commercial fishers must file daily reports about what they have caught. Fisheries New Zealand is now releasing these reports quarterly (from the 2019/20 fishing year) on our webpage. Since the first quarter of 2019/20 to the second quarter of 2020/21 the following marine mammals have been caught dead in FMA 7: 22 fur seals, and 1 pilot whale. It is important to note, in some cases Fisheries New Zealand has made assumptions about the likely fishing method. As FMA 7 includes reporting from the deepwater fleet, not all reported catches relate to the Inshore fleet.
- 1184. Observer coverage is negligible for GUR 7, with observer effort prioritised to monitor protected species interactions in fisheries considered to be higher risk. This means that non-fish protected species reporting cannot be independently verified in this fishery (i.e., by Fisheries New Zealand on-board Observers).

4.1.2 Seabirds

- 1185. The most recent Spatially Explicit Fisheries Risk Assessment (2020) ranks black petrel as the most at risk seabird, followed by the Salvin's albatross, Westland petrel, flesh-footed shearwater, southern Buller's albatross, and Gibson's albatross.
- 1186. Seabird interactions with New Zealand's commercial fisheries are managed under the National Plan of Action for seabirds (NPOA Seabirds 2020). The NPOA has a focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, and will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact on the health of seabird populations.

- 1187. Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade, more recently for the inshore fleet, to ensure 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.
- 1188. While there is no legal requirement that fishers have a PSRMP, >90% of the full-time vessels that operate in the FMA 7 mixed trawl fishery have, and follow, one. Captures of all birds combined in New Zealand show a decreasing trend between 2002–03 and 2016–17, except white-chinned petrel (Fisheries New Zealand, 2020).
- 1189. Like marine mammals, seabirds can accidentally get caught during commercial fishing and commercial fishers must file daily reports about what they have caught. Since the first quarter of 2019/20 to the second quarter of 2020/21 40 seabirds have been caught dead in FMA 7 (including albatrosses, petrel and shearwaters). Again, as FMA 7 includes reporting from the deepwater fleet, not all reported catches relate to the Inshore fleet. Observer coverage is negligible for GUR 7 and reports on seabirds captures reporting cannot be independently verified in this fishery.

4.1.3 Fish bycatch

1190. Fish and invertebrate bycatch information in the FMA 7 mixed trawl fishery is primarily from research trawl surveys. Research trawl surveys along the West Coast of the South Island and in Tasman and Golden Bays have captured more than 50 finfish species including spiny dogfish, red cod, barracoota, tarakihi, hake and Jack Mackerel. Invertebrates captured included sponges, mussels, octopus and arrow squid.

4.1.4 Benthic impacts

- 1191. Trawling can directly impact on biological diversity of the benthic environment. For example, Tasman and Golden bays in FMA 7 have historically been intensively fished, including by trawling. However, with the implementation of the QMS the inshore fleet has consolidated, and gear technology has improved to create efficiencies and mitigate environmental impacts.
- 1192. In FMA 7 there are several marine reserves (covering approximately 21,243 ha in total) and two mātaitai that exclude commercial fishing (Te Tai Tapu (Anatori) Mātaitai and Te Tai Tapu (Kaihoka) Mātaitai) that are providing protection from benthic impact fishing methods.
- 1193. Research on the effects of bottom trawling and dredging has occurred in Tasman and Golden bays including a gradient analysis to investigate the importance of the different factors affecting epifaunal and infaunal communities in the bays. Trawling and dredging have been identified as important factors in explaining the variance in some community structure.
- 1194. Other factors, such as sedimentation from land-use practices are also considered to be important in the bays. Separation Point, off Abel Tasman National Park, is a 146 km² area that extends around the Point and has been closed to commercial trawling and dredging since 1980 to protect the area from benthic fishing. However, despite this closure a recent survey has found the bryozoan beds have largely disappeared. Preliminary assessment by NIWA suggests sedimentation from land, particularly the effects of ex-Cyclone Gita in February 2018, is the likely cause. Final research results are expected within the next few months and will confirm the scope of lost bryozoan beds and potentially the source of the land-based sediments.

4.1.5 Habitats of particular significance for fisheries management

1195. The broad distribution and long spawning period of red gurnard makes it difficult to pinpoint specific areas of particular significance to red gurnard in GUR 7. Red gurnard's preferred habitat does occur in Tasman and Golden bays (Table 4). However, given that GUR 7 appears to be experiencing a recruitment pulse it does not appear that there are habitats of particular significance to GUR 7 that required any further protection at this time.

Table 4: Summary of information on habitats of particular significance for GUR 7.

Fish Stock	GUR 7					
Habitat	Spawning: Spawning areas are widespread throughout much of New Zealand, including in GUR 7. Most commonly in shallow coastal waters (inner and central shelf) over muddy or sandy bottoms. Egg and larval development occurs in surface waters and it takes about 8 days before the larvae start to feed. High catches of red gurnard in Tasman and Golden bays suggest the bays are a nursery area which might supply the West Coast of the South Island.					
	Juvenile: Information suggests they inhabit ground that is unable to be trawled (e.g. rough or weed covered ground) in shallow embayments.					
Attributes of habitat	Juvenile habitats are likely to provide shelter and protection from predation and harvesting, and suitable food while growth and development proceeds.					
Reasons for particular significance	 Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery. 					
Risks/Threats	 Changes in water temperature and water circulation could impact spawning and egg/larval development. Land-based impacts on habitats with benthic structure and aquatic plants that provide juvenile habitat. 					
Existing protection	 Although not specific to GUR 7, within the management area of GUR 7 there are several habitats that are possibly of particular significance to other species that are currently protected by regulatory and non-regulatory measures (voluntary). These areas are similar habitat to those frequented by red gurnard such as shallow coastal areas and embayments including: The voluntary closure to all commercial set net and trawl fishing in the area extending from Cape Farewell to Pakawau Bridge. The closure was 					
	established in 2006 to protect rig pupping (birthing) grounds, which is likely to cover similar habitat to GUR 7 spawning habitat.					
	 Snapper spawning areas in Golden and Tasman Bays. There is both seasonal and year-round closures associated with method restrictions which cover shallow, muddy habitat frequented by red gurnard for spawning. 					

- 1196. Fisheries New Zealand considers adverse effects from fishing on GUR 7 habitats are low for this species, because:
 - · red gurnard spawning habitat is widespread,
 - habitat that supports juvenile development is in areas that are unlikely to be impacted by fishing in GUR 7; and,
 - existing regulatory and non-regulatory measures (voluntary) are providing indirect protection to red gurnard habitat in GUR 7 over large areas (discussed above).
- 1197. The greatest threats to red gurnard recruitment are likely to be from climate change, particularly changes in water temperature and water circulation. However, GUR 7 recruitment over the last decade has been exceptionally good, suggesting that environmental factors affecting egg and larval survival in the ocean have been favourable and have had a positive influence on the number of fertilised eggs surviving to adulthood.
- 1198. Another threat to GUR 7 habitat is land-based impacts on spawning and juvenile habitat. Fisheries New Zealand has recently established a new team to work closer with Councils to identify and support mitigation of land-based impacts (e.g., sedimentation, nutrient runoff) on marine habitats through coastal planning processes. Furthermore, the new National Policy

Statement on Freshwater Management and the National Environmental Standards for Freshwater aim to stop further degradation, show material improvements within five years, and restore our waterways to health within a generation.

1199. At Fisheries New Zealand-facilitated multi-sector workshops (established to consider the management of SNA 7), participants have identified that research is required to develop a standard for both identifying and managing habitats of significance in the region. Later this year a Fisheries New Zealand research project and associated analysis is scheduled to identify important habitats in the top of the South Island.

4.2 Sustainability measures (section 11 of the Act)

1200. 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 plans.

4.2.1 Draft National Inshore Finfish Fisheries Plan

- 1201. Although not yet approved under section 11 A of the Act, GUR 7 will be managed under the National Inshore Finfish Fisheries Plan (the Plan). The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020.
- 1202. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 1203. GUR 7 falls into Group 2, which recognises the need to manage it to provide for moderate levels of use with moderate levels of information to monitor its stock status (i.e., a partial quantitative assessment based on trends in relative abundance and B_{MSY} proxy target levels based on accepted reference periods).

4.2.2 Regional Plans

- 1204. Under the Resource Management Act 1991, there are several regional plans in place within GUR 7 to address the cumulative effects of activities in the coastal marine area, and the adverse impacts from land-based activities on the marine environment.
- 1205. Fishers are subject to the provisions in the plans (for example, small scale restrictions on fishing methods in the Marlborough Sounds⁸⁶) which you shall have regard to under section 11 of the Act. Fisheries New Zealand considers that the small scale of the restrictions in relation to the large area of GUR 7 means these rules do not, in general, stop fishers taking their catch from other areas within GUR 7.

5 Submissions

1206. Sixteen submissions and responses were received on the proposed changes to GUR 7 (Table 5). Submissions varied depending on sector with most recreational, environmental, and animal protection interests preferring the status quo, and one has suggested an alternative option. Te Ohu Kaimoana, commercial iwi organisations and Industry support Option 2.

208 • Review of sustainability measures for the 2021 October round: GUR 7

⁸⁶ A prohibition on dredge and trawl fishing methods in numerous marine sites of ecological significance.

Table 5: Written submissions and responses received for GUR 7 (in alphabetical order).

Submitter	Option Support						
Jubilittei	1 2 Other		Other				
A. Flavell-Johnson			✓	Opposes any increase to TAC's but supports all decreases.			
A. Schmid			✓	No increase to recreational or commercial limits.			
B. Price			✓	Supports slowly increasing biomass back to higher levels (80% B_0).			
C. Stewart	✓			Supports Option 1. Notes any increase in commercial quota should be matched with recreational allowances.			
Environment and Conservation Organisations of New Zealand (ECO)	✓			Supports Option 1 and a full stock assessment using trawl survey information.			
Fish Mainland	√			Supports Option 1 and considers the recreational allowance is inadequate and that the trawl survey biomass estimates are too preliminary at this time.			
K. Mason	✓			Does not support increased in any catch limits (supports decreases). Considers default target biomass is arbitrar and that caution is needed.			
L. Brewer	✓						
Maruehi Fisheries Ltd.		✓					
NZ Recreational Fishing Council (NZRFC)			✓	Request an alternative option. Otherwise support Option 1 given the preliminary nature of the trawl survey results.			
P. Williamson	✓						
R. Satherley	✓						
Royal Forest & Bird Protection Society (Forest & Bird)	✓			Supports Option 1 on a precautionary basis until bottom trawling is phased out.			
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)	✓						
Southern Inshore Fisheries Management Company (SIF), Endorsed by: - Fisheries Inshore New Zealand (FINZ)		√		Agrees with Option 2 but considers, based on current catch trends, that a 15% increase would be more appropriate.			
Te Ohu Kaimoana, Endorsed by: - Iwi Collective Partnership (ICP) - Ngāti Mutunga o Wharekauri Asset Holding Company Ltd - Ngātiwai Trust Board - Tama Asset Holding Company Ltd - Taranaki Iwi Fisheries Ltd - Te Kupenga o Maniapoto		√		Supports Option 2 to increase the TAC. Considers that current settings will constrain catch given the increase in biomass.			

6 Options and analysis

1207. As GUR 7 is very likely to be at or above target, both options provided below meet the requirements of section 13(2)(c) of the Act to set a TAC that enables the level of any stock whose current level is above that which can produce *MSY* to be altered in a way and rate that will result in the stock moving towards or above a level that can provide *MSY*, having regard to the interdependence of stocks.

6.1 Option 1 (Status quo)

TAC: 1 294.65 t	TACC: 1 180 t	Customary: 15 t	Recreational: 38 t	Other mortality: 61.65 t
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- 1208. Option 1 retains the current TAC and other settings. It acknowledges the estimated increase in relative abundance from the WCSI research trawl survey is preliminary (e.g., it has not been peer reviewed). It also takes into account that the trawl survey was only carried out five months after the 2020 TACC increase and the impact of that increase will not have been realised yet.
- 1209. Option 1 defers reviewing GUR 7 until next year when the interdependencies with other stocks can be more explicitly considered in a wider multi-species mixed trawl review. It does not provide for any increase in utilisation of red gurnard in GUR 7, which appears to be going through a recruitment pulse, and it may significantly constrain commercial catch of this and other species caught together in this mixed trawl fishery.
- 1210. Most recreational fishers and environmental interests support Option 1. Some requested caution for several reasons including that the 2020 TAC increase may not have been realised yet, allocation between recreational and commercial sectors, and concern about the impact of trawling on associated species and the benthos. Others would prefer we monitor the stock longer before increasing the TAC for any stocks.

6.2 Option 2 (Fisheries New Zealand's preferred option)

TAC: 1 422 t (127.35) TACC: 1 2	298 t (1 18) Customary : 17 t (1 2)	Recreational: 42 t (14)	Other mortality: 65 t (3.35)
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- 1211. Option 2 provides an increase to the TAC of 127 tonnes, increases customary and recreational allowances by two and four tonnes, respectively, increases other mortality caused by fishing by 3.35 tonnes, and increases the TACC by 118 tonnes (10%).
- 1212. Option 2 takes into account that the preliminary estimates from the WCSI research trawl survey are robust and unlikely to change as they are part of a long time series with consistent methodology.
- 1213. Option 2 assumes that with an increase in abundance of red gurnard the success and levels of harvest of customary and recreational fishers will also likely increase. The latest National Panel Survey of Marine Recreational Fishers was completed in 2017/18 and we have no newer information on recreational catch. However, there is a strong trend in increased recreational catch in the 2017/18 survey relative to the previous survey, for those stocks where abundance is increasing (e.g., GUR 7 and SNA 7).
- 1214. This option provides benefits in terms of the overall value of GUR 7, in particular for an increased utilisation opportunity for commercial fishers in line with the increase in abundance. This applies not only in relation to GUR 7, but also in relation to catch of other stocks caught together with red gurnard in the Fisheries Management Area 7 (FMA 7) mixed trawl fishery.
- 1215. Based on the 2019/20 reported port price, the proposed increase in TACC generates a further \$257,240 per year in commercial fishing revenue. It is important to note that port price is an average of what commercial fishers receive across a QMA, 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 retailer.

- 1216. Option 2 is consistent with the Te Waipounamu lwi Fisheries Forum 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 lwi. Te Waka a Māui me Ōna Toka lwi Forum noted that red gurnard is abundant and recommended management be cautious for taonga species. Fisheries New Zealand considers the incremental increase (of 10%) is cautious with a view to complete a multi-species review the of mixed trawl fishery in FMA 7 in 2022 once stocks status assessments are completed for several stocks in the mixed trawl fishery.
- 1217. Option 2 would maintain the other mortality caused by fishing allowance at an amount equal to 5% of the TACC, which is consistent with the previous Minister of Fisheries decision in 2020. This decision noted the improvements in commercial fishing practices in FMA 7 (e.g., use of lighter gear and larger mesh size).
- 1218. SIF, Te Ohu Kaimoana and other commercial iwi interests support Option 2 in reflection to red gurnards abundance in GUR 7. SIF states it has adopted a precautionary approach to sustainability reviews based on the results of the biennial research trawl surveys and current catch trends. It is encouraged to see the continued increase in abundance for GUR 7, which is consistent with the trend in recruitment to the fishery.
- 1219. Fisheries New Zealand notes several submitters raised concerns about the impact of fishing on the environment (discussed in section 4 above) from the proposed increase in TACC under Option 2. Fisheries New Zealand does not expect an increase in trawl footprint or interactions with associated or dependent species from the proposed increase to TAC and TACC. The proposed increase reflects the abundance of red gurnard and its associated catchability rather than increased fishing effort. Although, Fisheries New Zealand acknowledges it may result in more targeted tows.

6.3 Other options proposed by submitters

- 1220. New Zealand Recreational Fishing Council suggested an alternative option to increase the TACC by 70 tonnes rather than the proposed 118 tonnes and increase the recreational allowance by 7 tonnes rather than the proposed 4 tonnes. Conversely, Te Ohu Kaimoana considers continual reallocation to the recreational sector has the effect of reducing the value that Iwi can generate from settlement quota (this is addressed in section 5.1 of the introduction and legal overview chapter). Te Ohu Kaimoana considers that recreational interests were provided for when GUR 7 was reviewed in 2020.
- 1221. Fisheries New Zealand considers the proposed recreational increase under Option 2 (4 tonnes) reflects best estimates for recreational harvest of red gurnard in GUR 7. The latest National Panel Survey of Marine Recreational Fishers was completed in 2017/18 and estimated recreational harvest of red gurnard in FMA 7 was approximately 37.6 tonnes (± 6.8 tonnes). Fisheries New Zealand has no newer information on recreational catch. However, there is a strong trend in increased recreational catch in that survey relative to the previous survey for those stocks where abundance is increasing (e.g., GUR 7 and SNA 7). The proposed 4 tonnes increase provided for in Option 2 assumes that with an increase in abundance of red gurnard the success and levels of harvest of recreational fishers will also likely increase.
- 1222. No new amateur fishing restrictions have been proposed to constrain recreational catch within this estimate. Fisheries New Zealand will continue to use best available information to estimate recreational harvest in the absence of recreational reporting.

6.4 Other matters raised

1223. Te Ohu Kaimoana notes customary allowances should be based on engagement with Iwi and kaitiaki. While an increase in the customary allowance was proposed through consultation, further input into the customary allowance was provided for during discussion on the option at the July hui with Te Waka a Māui me Ōna Toka Iwi Forum.

- 1224. Several submitters suggested other options for consideration including increasing quota on the West Coast only. This is not an option as the TACC is applied to a FMA 7 as a whole and there is no regulatory mechanism to constrain catch to a discrete area within an FMA. Many recreational submitters also raised concerns about increasing the TACC and allocation between sectors. Discussion on how allowances are set within the TAC is provided in section 5.1 of the introduction and legal overview chapter.
- 1225. One submitter raised concerns that the West Coast trawl survey, which informs the management of some fisheries in FMA 7, is biased and another submitter misunderstood that it only surveyed the West Coast portion of the fishery. It is important to note that the biennial research trawl survey is commissioned by Fisheries New Zealand and completed by NIWA. While this research is cost recovered from commercial fishing levies it is independent from the commercial fishing sector and robust. The survey covers several strata along the West Coast and in Tasman and Golden bays.
- 1226. SIF notes that the 2021 trawl survey results suggest that the increase in TACC in 2020 has not jeopardised the biomass and justifies a request for a further precautionary increase to the TACC of 15%. Fisheries New Zealand will consider this request in conjunction with a multispecies review in 2022 for the mixed trawl fishery in FMA 7. However, it is important to note that the trawl survey was only carried out five months after the 2020 TACC increase and the impact of that increase will not have been realised yet.
- 1227. SIF also requests that Fisheries New Zealand use the projections from previous surveys to allow for the TACC to be altered in line with biomass and recruitment pulses rather than set at present catch levels. Fisheries New Zealand notes a research project is scheduled for 2021/22 to develop a management procedure for several FMA 7 fish stocks based on the WCSI trawl survey indices of abundance. The intended outcomes of this research are decision rules robust to uncertainty that calculate appropriate TACs at respective levels of relative biomass.
- 1228. Environment and Conservation Organisations of NZ Inc. supports a full stock assessment being undertaken for GUR 7. As mentioned, GUR 7 is proposed as a Group 2 stock under the draft National Inshore Finfish Plan. Under that Plan, Group 2 are considered appropriately monitored with moderate levels of information (i.e., a partial quantitative assessment compared against trends over time). At this stage, Fisheries New Zealand is satisfied that GUR 7 is appropriately ranked as a Group 2 stock and that a full stock assessment is not required to monitor the stock status of this stock.

7 Deemed values

1229. The average price paid by fishers during the 2019/20 fishing year for one kilogram of GUR 7 ACE was approximately \$0.60 per kg. The 2019/20 port price index of GUR 7 was \$2.18 per kg. As the current deemed value rates of GUR 7 (Table 6) are set above the average ACE price, Fisheries New Zealand is not proposing a change in the deemed values for GUR 7.

Table 6: Standard deemed value rates (\$/kg) for GUR 7.

	Interim Rate	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
	(\$/kg)	100-120%	120-140%	140-160%	160-180%	180-200%	200%+
Status quo	1.53	1.70	2.04	2.38	2.72	3.06	3.40

8 Conclusions and recommendations

- 1230. The stock status of GUR 7 is estimated to be very likely (>90% probability) to be at or above target, based on the 2019 biomass indices. Furthermore, recent (March 2021) preliminary research trawl survey results are the highest in the time series, suggesting there is a utilisation opportunity for this fishery.
- 1231. Fisheries New Zealand received 16 submissions on the proposed changes to GUR 7. Submissions varied depending on sector with most recreational, environmental, and animal

- protection interests preferring the status quo, and one has suggested an alternative option. Te Ohu Kaimoana, commercial iwi organisations and Industry support Option 2.
- 1232. Option 1 (status quo) places the greatest weight on the estimated increase in relative abundance from the WCSI trawl survey being preliminary (e.g., it has not been peer reviewed). The trawl survey was only carried out five months after the 2020 TACC increase and the impact of that increase will not have been realised yet. However, it does not provide for any increase in utilisation of red gurnard in GUR 7 which appears to be going through a recruitment pulse. It may also significantly constrain commercial catch of this and other species caught together in this mixed trawl fishery.
- 1233. Option 2 provides benefits in terms of the overall value of GUR 7. It takes into account that the preliminary estimates from the WCSI trawl survey are robust and unlikely to change as they are part of a long time series with consistent methodology. Option 2 also assumes that with an increase in abundance of red gurnard the success and levels of harvest of customary and recreational fishers will also likely increase. It also provides for a utilisation opportunity for commercial fishers in line with the increase in abundance.
- 1234. Fisheries New Zealand does not expect an increase in trawl footprint or interactions with associated or dependent species from the proposed increase to TAC and TACC. The proposed increase reflects the abundance of red gurnard and its catchability rather than increased fishing effort. Therefore, Fisheries New Zealand's preferred option is Option 2 for GUR 7.

9 Decision for GUR 7

Option 1

Agree to set the GUR 7 TAC at 1 294.65 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 61.65 tonnes:
- iv. Retain the GUR 7 TACC at 1 180 tonnes.

Agreed / Agreed as Amended / Not Agreed



<u>OR</u>

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the GUR 7 TAC at 1 422 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 15 tonnes to 17 tonnes;
- ii. Increase the allowance for recreational fishing interests from 38 tonnes to 42 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 61.65 tonnes to 65 tonnes;
- iv. Increase the GUR 7 TACC from 1 180 tonnes to 1 298 tonnes.

Agreed Agreed as Amended / Not Agreed

M

Hon David Parker Minister for Oceans and Fisheries

1019 12021

Haliotis iris and Haliotis australis, black-foot and yellow-foot pāua



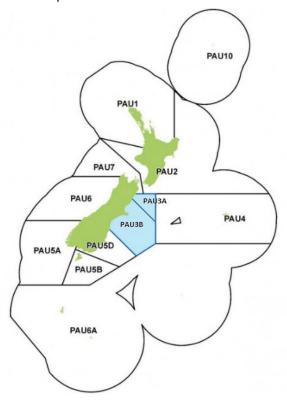


Figure 1: Quota Management Areas (QMAs) for Pāua, with PAU 3A and PAU 3B highlighted.

Table 1: Summary of options proposed for PAU 3A and PAU 3B from 1 October 2021. 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
PAU 3A Option 1	40.5	23		7.5	5	5
Option 2	24.5	12	-	7.5	2.5	2.5
PAU 3B Option 1	80	46	,	15	9	10
Total submissions r	eceived		7			
Number of submiss	ions received	in support of	PAU 3A C	Option 1	3	
each option			PAU 3A C	Option 2	4	
			Other		0	
			PAU 3B C	Option 1	4	
			Other		387	

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⁸⁷ Three submissions supported a modified Option 1 with a slightly lower TAC.

1 Why are we proposing a review?

- 1235. The PAU 3 QMA will be subdivided into two smaller stocks PAU 3A (Kaikōura) and PAU 3B (Canterbury) for the 1 October 2021 fishing year. This subdivision will support finer scale management of this key regional fishery that was significantly affected by the November 2016 Kaikōura earthquakes.
- 1236. Fisheries New Zealand is proposing options for setting an initial TAC, allowances (customary, recreational, and other sources of mortality caused by fishing), and a TACC for the new PAU 3A and PAU B stocks.
- 1237. Interim and annual deemed values are proposed for each new stock based on current PAU 3 value rates.
- 1238. The northern Kaikōura portion of the PAU 3 QMA (*i.e.*, PAU 3A) is currently closed to fishing under section 11 of the Fisheries Act 1996 (the Act). Therefore, fishing against the proposed PAU 3A TAC will only occur pending a separate decision to reopen the Kaikōura pāua fishery. Fisheries New Zealand is concurrently providing you with separate advice on this decision (following recommendations from the Kaikōura Marine Guardians and input and participation of tangata whenua).

1.1 About the stock

1.1.1 Fishery characteristics

- 1239. The PAU 3A fishery extends along the Kaikōura coastline between Clarence Point in the north and the Conway River in the south, including the Kaikōura Peninsula. PAU 3B extends from the Conway River to the Waitaki River in the south, with Motunau and Banks Peninsula being key areas for fishing pāua.
- 1240. These are shared fisheries with pāua highly valued by Māori, recreational fishers, and the commercial fishing industry alike. Black-foot pāua (*Haliotis iris*) make up most of the pāua catch, while yellow-foot pāua (*Haliotis australis*) are only caught in small numbers. All pāua is harvested by hand-gathering mainly by free-diving from a boat or directly from shore. The use of underwater breathing apparatus is prohibited in this fishery. All sectors harvest from the same general areas where large pāua are abundant and accessible.

1.1.2 Earthquake closure

- 1241. The November 2016 Kaikōura earthquakes caused extensive coastal and seabed uplift of up to six metres along 110 kilometres of PAU 3 coastline north of the Conway River. The coastal marine environment and pāua biomass and habitats were significantly affected with large mortality of both juveniles and adults. Of particular significance was the loss of intertidal and shallow subtidal rocky reef habitats that support initial settlement of pāua and juvenile life stages. Research estimates the uplift led to a loss of about 20% of the pre-earthquake fished areas for pāua along the Kaikōura coastline.
- 1242. In order to protect the surviving pāua populations, a closure was immediately introduced between Cape Campbell/Marfells Beach and the Conway River, including the Kaikōura Peninsula (Figure 2). The closed area incorporates the northern portion of the PAU 3 QMA (as well as the southern portion of the PAU 7 QMA) and prohibits the harvest of pāua and other shellfish (apart from rock lobster, scampi, and octopus) and seaweed. The coastline south of the Conway River was unaffected by the earthquakes and remained open to pāua fishing.
- 1243. In addition, the TACC for the PAU 3 fishery was reduced by 50% from 91.6 tonnes to 45.8 tonnes (2017) and the recreational daily limit was decreased from 10 to five paua (2019). These measures were necessary to reflect the significant loss of paua biomass and habitats

- along the Kaikōura coastline and address the subsequent displacement of fishing effort into the open unaffected Canterbury areas.
- 1244. Ongoing research shows there are encouraging signs of pāua recovery since the closure with an overall sustained increase in biomass at an area wide level. There is evidence that the full pāua lifecycle is now intact with an increase in abundance of post-earthquake recruits, as well as the build-up of large pāua (>120 mm) in shallow open habitats that are easily accessible from shore. These dense aggregations were not common before the earthquakes and will provide a rapid and easy catch for shore-based fishers. While most remaining areas have shown a net increase in pāua biomass, some continue to be affected by erosion and gravel deposition.

1.1.3 Proposed reopening of the Kaikōura closed area

- 1245. The Kaikōura Marine Guardians (Guardians) is a statutory advisory committee established under the Kaikōura (Te Tai o Marokura) Marine Management Act 2014. The Guardians' role is to provide advice to Ministers regarding the Kaikōura Marine Area on any biosecurity, conservation, or fisheries related matters. This area extends between the Clarence Point and the Conway River, and is included within the wider Kaikōura closed area.
- 1246. In February 2021, the Guardians provided you with advice on reopening the Kaikōura Marine Area to pāua fishing later this year. They recommend reopening under a cautious and adaptive approach to ensure the pāua fishery continues to rebuild while providing for utilisation opportunities. To achieve this, the Guardians support the measures in the fishing industry's PAU 3 Fisheries Plan (which you approved under section 11A of the Act in April 2021), and propose close monitoring of the fishery along with measures to ensure the recreational fishery is sustainable (including a short initial opening period, reduced daily limit, and a slightly larger minimum size limit).
- 1247. Fisheries New Zealand has recently completed a separate consultation process on the Guardians' proposal (including providing for input and participation of tangata whenua) and is concurrently providing separate advice on reopening the Kaikōura fishery for your consideration.

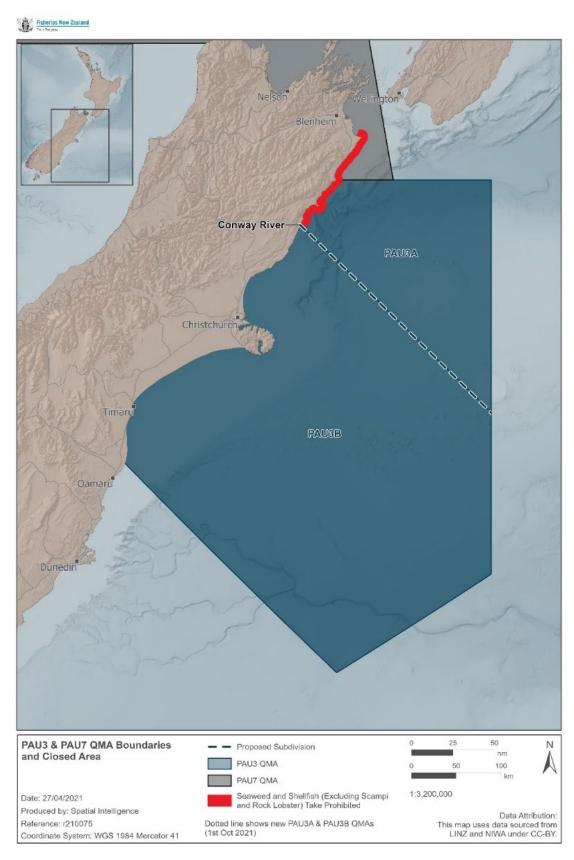


Figure 2: Locations of the soon to be established PAU 3A and PAU 3B QMAs. Kaikōura Closed Area is shown (red).

1.1.4 Biology

- 1248. Pāua inhabit reefs within intertidal and shallow subtidal coastal habitats. Recently settled juveniles are found in boulder and cobble habitats of 0-5 m depth, while adults typically move out into more deeper waters of up to 7-10 m. This shellfish is relatively sedentary in nature and can form large localised aggregations.
- 1249. Pāua are broadcast spawners and spawning is understood to occur annually. Habitat-related factors such as wave exposure, habitat structure, availability of food, and population density all influence the settlement, growth, and recruitment of pāua.
- 1250. Due to their sedentary nature, high levels of localised fishing pressure may make pāua susceptible to overfishing and depletion. Overfishing of a localised population can affect spawning success and may hinder overall productivity of the stock.

1.2 Status of the stocks

- 1251. In accordance with Fisheries New Zealand's Harvest Strategy Standard for New Zealand fisheries, a target biomass of 40% B_0 (*i.e.*, 40% of the unfished biomass, B_0) is to be applied as a proxy for B_{MSY} for the new PAU 3A and PAU 3B stocks. A soft limit of 20% B_0 and hard limit of 10% B_0 will also apply.
- 1252. The best available information on stock status comes from the last PAU 3 stock assessment (reported in the 2021 Fisheries Assessment Plenary) in conjunction with what we know about the areas that have been affected by the earthquakes, and past and current commercial, customary, and recreational catch information.
- 1253. The last stock status assessment for PAU 3 was undertaken in 2014 and used commercial catch per unit effort (CPUE) as an index of stock abundance. This assessment estimated the spawning stock biomass at that time was 52% (45-60%) of B_0 and very likely to be at or above the target of 40% B_0 (>60%). There was an overall declining trend in spawning stock biomass, but this had become much slower in recent years. The Shellfish Fisheries Working Group (2021) concluded that given the effects of the Kaikōura earthquakes on both pāua biomass and habitats, it is unclear how representative the 2014 biomass estimates from this assessment are for the current PAU 3 stock.
- 1254. A new stock assessment was due to begin in 2017 but was postponed following the earthquakes. In the interim, a comprehensive research programme was commissioned to monitor the recovery of pāua and other affected fisheries in the closed area. This includes an ongoing biomass survey in PAU 3A to monitor abundance and recruitment⁸⁸ in the earthquake-affected areas. Ongoing fine scale commercial catch and effort information continues to be collected from the open Canterbury coastline within PAU 3B. Together, this provides the best available stock assessment information to set a TAC for each new stock.
- 1255. New stock assessments for the PAU 3A and PAU 3B stocks will be scheduled as part of the Fisheries New Zealand's research planning process. PAU 3B is planned for next year, and PAU 3A will be reviewed in the next 2-4 years once fishing resumes. In the meantime, ongoing monitoring of pāua abundance along the Kaikōura coastline is scheduled to next occur in November this year and early March onwards next year. This survey will be used to assess the effects of fishing by all sectors if the closed area is reopened and will inform the future management of these two stocks, including TACs levels.

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⁸⁸ McCowan, T.A. & Neubauer, P. (May 2021). Pāua abundance trends and populations monitoring in areas affected by the November 2016 Kaikōura earthquake. New Zealand Fisheries Assessment Report 2021/26.23 pg.

2 Catch information and current settings within the TAC

- 1256. The PAU 3 fishery was last reviewed in October 2017 (post-earthquakes) and a TAC and allowances for Māori customary, recreational, and other sources of mortality caused by fishing were set for the first time.
- 1257. A cautious TAC of 79.3 tonnes was set on the basis that all paua fishing would be restricted to the Canterbury region in the short-term and to address overfishing concerns that could have arisen if pre-earthquake catch levels were taken from the unaffected open areas.

2.1 Commercial

- 1258. Commercial fishers in PAU 3 gather pāua by hand while freediving. The commercial sector accounts for most of the harvest in the PAU 3 fishery.
- 1259. The TACC was reduced by 50% from 91.6 tonnes to 45.8 tonnes in 2017 under the PAU 3 TAC. This acknowledged the Kaikōura closed area and subsequent displacement of fishing effort into the unaffected Canterbury areas.
- 1260. Prior to the 2016 earthquakes, commercial catches predominately came from the Kaikōura coastline and Motunau/Banks Peninsula. Annual commercial catches were generally evenly distributed between these two fishing areas with about 45 tonnes being caught from each area.
- 1261. Commercial catches are now taken entirely from the open Canterbury areas. The PAU 3 TACC is fully caught each year (Figure 3).

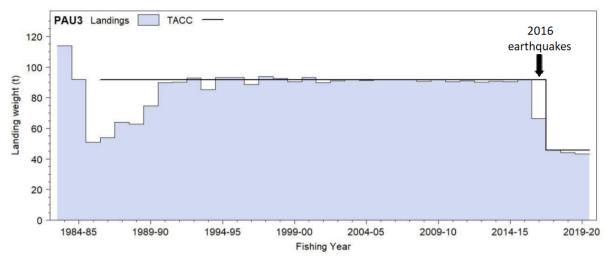


Figure 3: Reported commercial landings and TACC for PAU 3.

2.2 Māori Customary

- 1262. A Māori customary allowance of 15 tonnes was set in 2017 under the PAU 3 TAC.
- 1263. Customary take in this fishery is managed under the Fisheries (South Island Customary Fishing) Regulations 1999. Estimates of customary take before the 2016 earthquakes ranged from seven to 13 tonnes (based on tāngata tiaki authorisations). Customary take after 2016 initially declined given the immediate loss of significant pāua abundance along the Kaikōura coastline, but increased in 2019-20 in response to feeding local communities during the Covid-19 event.
- 1264. Fisheries New Zealand does not hold finer scale information on where customary fishing within PAU 3 occurs. Customary take is anticipated to increase as fishers take advantage of a rebuilding fishery within the earthquake-affected areas. Many tangata whenua also harvest

pāua under their recreational allowance and these are not included in records of customary catch.

2.3 Recreational

- 1265. A recreational allowance of 8.5 tonnes was set in 2017 under the PAU 3 TAC.
- 1266. The best available information for recreational catch comes from the 2011-12 and 2017-2018 National Panel Surveys of Marine Recreational Fishers. These surveys estimated recreational take of 17 tonnes and nine tonnes for 2011-12 and 2017-2018, respectively. The lower estimate of recreational take reflects the closure of the Kaikōura coastline to fishing.
- 1267. The 2011-12 survey also estimated that recreational catch along the Kaikōura coastline (Clarence Point and Conway River) was 10.3 tonnes and 6.6 tonnes from the remaining areas within the PAU 3 QMA.
- 1268. For the purpose of the 2014 stock assessment, the Shellfish Fisheries Working Group agreed to assume that recreational catch rose linearly from five tonnes in 1974 to 17 tonnes in 2013. The recreational allowance was set at 50% of the 2011-12 estimate of recreational take to reflect the closed area and subsequent displacement of fishing effort into the unaffected Canterbury areas.
- 1269. The recreational daily limit within PAU 3 was 10 pāua per person prior to the Kaikōura (Te Tai ō Marokura) Marine Management Act 2014, at which time it was reduced to six in the Kaikōura Marine Area (remaining at 10 for the rest of PAU 3). Following the 2016 earthquakes, the recreational daily limit across PAU 3 was reduced to five pāua per person (*i.e.*, 50%) to limit harvest to the 8.5 tonnes recreational allowance set for PAU 3.

2.4 All other mortality caused by fishing

- 1270. An allowance of all other mortality caused by fishing of 10 tonnes was set in 2017 under the PAU 3 TAC.
- 1271. The 2014 stock assessment assumed an illegal take of about 15 tonnes for the PAU 3 fishery, but this was considered highly uncertain. Research suggests that incidental mortality associated with commercial fishing is low at about 0.3% of landed catch. There is also some associated mortality in the recreational fishery, which is likely to occur at a higher rate than the estimate for the commercial fishery.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 1272. Input and participation into the sustainability decision-making process is provided through Iwi Fisheries Fora, which have been established for that purpose. Each Iwi Fisheries Forum can develop 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 1273. Te Waka a Māui me Ōna Toka Iwi Forum is Te Waipounamu (South Island) Iwi Fisheries Forum it includes all nine tangata whenua Iwi of Te Waipounamu: Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngāi Tahu. Te Rūnanga o Kaikōura is one of 18 Papatipu Rūnanga of Ngāi Tahu and represents the hapū of Ngāti Kuri that extend along the Kaikōura coastline.

1274. Fisheries New Zealand has met with both Te Waka a Māui me Ōna Toka Iwi Forum and Te Rūnanga o Kaikōura and provided information on the upcoming PAU 3 QMA subdivision and the need to set new sustainability measures for the new PAU 3A and PAU 3B stocks. They are supportive of the subdivision and the TAC setting process. They did not state a clear preference in terms of Option 1 or Option 2 for PAU 3A, but provided information on customary harvest and other matters to support the TAC setting process for PAU 3A and PAU 3B.

3.2 Kaitiakitanga

- 1275. The Act defines kaitiakitanga as "the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori", where tikanga Māori refers to Māori customary values and practices.
- 1276. The Te Waipounamu lwi Forum Fisheries Plan includes the new PAU 3A and PAU 3B stocks and identifies paua as a taonga species. The Forum Fisheries Plan contains objectives to support and provide for the interests of South Island iwi, including the following that 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.
- 1277. Fisheries New Zealand considers that the options presented here will contribute towards the achievement of the management objectives outlined in this Plan and ensure that the fishery remains sustainable and that environmental impacts are minimised.
- 1278. Customary tools utilised under the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaitai, taiāpure and temporary closures (Section 186B). Customary fisheries areas within PAU 3A and PAU 3B are shown in Tables 2 and 3.

Table 2: Customary Fisheries Areas in PAU 3A.

Area	Management Type				
Te Taumanu o Te Waka a Māui Taiāpure	Taiāpure				
Oaro-Haumuri Taiāpure	All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational and customary fishing.				
Te Waha o te Marangai Mātaitai	Mātaitai Reserve				
Mangamaunu Mātaitai	Commercial fishing is not permitted within mātaitai reserves				
Oaro Mātaitai	unless regulations state otherwise.				
Kaikōura/Wakatu Quay	186B Temporary closure of fisheries				

Table 3: Customary Fisheries Areas in PAU 3B.

Area	Management Type
Akaroa Harbour Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational and customary fishing.
Lyttelton Harbour/Whakaraupo Mātaitai	
Rapaki Bay Mātaitai	
Koukourārata Mātaitai	
Wairewa/Lake Forsyth Mātaitai	
Te Kaio Mātaitai	Mātaitai Reserve
Opihi Mātaitai	Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.
Waitarakao Mātaitai	amoss regulations state outrorwise.
Te Ahi Tarakihi Mātaitai	
Waihao Mātaitai	
Tuhawaiki Mātaitai	

1279. Pāua fishing within the above customary management areas will continue to be managed by the tāngata tiaki and taiāpure management committees, and this includes commercial and recreational fishing. Proposed TACs will be set levels that will not affect pāua recruitment within these areas.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

1280. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish bycatch, benthic impacts, and habitats of particular significance for fisheries management.

4.1.1 Marine Mammals

1281. Pāua fishing by all sectors is highly selective and restricted by hand-gathering within the intertidal and shallow subtidal areas. There are no marine mammal interactions associated with the PAU 3A and PAU 3B stocks.

4.1.2 Seabirds

1282. Pāua fishing by all sectors is highly selective and restricted to hand-gathering. There are no recorded seabird interactions associated with the PAU 3A and PAU 3B stocks.

4.1.3 Fish bycatch

1283. All fishing is targeted and restricted to hand-gathering only. Fishing information indicates there are no fish and invertebrate bycatch interactions associated with the PAU 3A and PAU 3B stocks.

4.1.4 Benthic impacts

1284. Fisheries New Zealand considers it highly unlikely that the method of hand-gathering would have a demonstratable adverse effect on benthic habitats.

4.1.5 Habitats of particular significance for fisheries management

1285. Pāua inhabit reefs within the intertidal and shallow subtidal coastal habitats along the Kaikōura and Canterbury coastline. All fishing is targeted and restricted to hand-gathering only. Fisheries New Zealand considers that the options presented here are unlikely to pose a threat to the areas identified as potential habitats of significance.

1286. Table 4 summarises information on habitat of particular significance in PAU 3A and PAU 3B.

Table 4: Summary of information on habitats of particular significance for PAU 3A and PAU 3B.

Fish Stocks	PAU 3A and PAU 3B
Habitat	Spawning: Pāua are broadcast spawners and fertilization success depends on proximity and density of mature adults.
	Juveniles: Crustose coralline algae is the favoured habitat for newly settled juveniles before moving into cryptic habitats.
	Adults: Pāua move into deeper waters with the onset of maturity where they become largely sedentary and live in aggregations in rocky crevice and boulder habitats.
Attributes of habitat	 Intertidal and subtidal rocky reefs are critical habitats for all life stages of pāua. These typically consist of rock, cobble, and boulder substrates interspersed by rock pools and open areas. These reefs include a wide range of kelps and other seaweed communities that provide shade, cover, and food source. The Kaikōura earthquakes caused significant loss of these communities along the coastline.
Reasons for particular significance	Successful spawning and development through juvenile and adult stages is critical to supporting the productivity of each stock.
Risks/Threats	 The Kaikōura earthquakes caused significant uplift along the coastline and was estimated to have caused about 20% loss of pre-earthquake fished areas. The effects of subsequent land-based erosion and gravel deposition onto reefs caused further loss of habitats and will continue to be affected for many years to come. This means that pāua recovery will be variable across the fishery. These reefs are critical habitats for settlement of the early juvenile pāua phase and subsequent survival of both juvenile and adult populations. This was demonstrated by the high levels of mortality across all life stages in response to the Kaikōura earthquakes. The earthquakes caused significant loss of intertidal and subtidal seaweed communities that continue to impact on the surviving pāua populations through loss of shade, cover, and food source.
Existing protection	 Pāua fishing has negligible effect on habitats. Steps have been taken to reduce the effects of land-based gravel deposition along the coastline with the placement of concrete barriers and walls where hillsides are close to the coastline.

4.2 Sustainability measures (section 11 of the Act)

1287. 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 plans.

4.2.1 PAU 3 Fisheries Plan

- 1288. In April 2021 you approved a PAU 3 Fisheries Plan for the commercial sector under section 11A of the Act. The Plan was developed by PauaMAC 3, representing commercial interests within the PAU 3 fishery, to manage commercial fishing under an 'adaptive rebuild programme'. This Plan recognises the distinct nature of the two sub-fisheries post-earthquakes.
- 1289. The Plan includes a commercial harvest strategy for the fishery under a range of measures, such as a conservative level of utilisation and catch spreading arrangements, larger minimum harvest size, harvest control rules, and fine scale catch reporting and monitoring. This approach is intended to enable responsive adjustments in commercial fishing during and between years.
- 1290. Section 11(2A)(b) of the Act states that before setting or varying any sustainability measure under this Part or making any decision or recommendation under this Act to regulate or control fishing, the Minister must take into account.....any relevant fisheries plan approved under this Part. You may make a decision that is different to what is set out in this Plan, provided that in making the decision, its content is considered.
- 1291. The proposed management options presented here are consistent with the PAU 3 Fisheries Plan in adopting a cautious and adaptive approach to managing both stocks. Option 1 proposed in this paper is the preferred option under the fisheries plan for both PAU 3A and PAU 3B.

4.2.2 The Kaikōura (Te Tai o Marokura) Marine Management Act 2014

- 1292. A Kaikōura Marine Strategy⁸⁹ was developed in 2012 by Te Korowai ō Te Tai-o-Marokura, a Kaikōura community-based stakeholder group, to protect the marine environment in Kaikōura. Key elements of this strategy were implemented through the Kaikōura (Te Tai ō Marokura) Marine Management Act 2014. The purpose of the Act is to recognise the local, national, and international importance of the coast and sea around Kaikōura as a consequence of its unique coastal and marine environment and distinctive biological diversity and cultural heritage. The Act aims to integrate and establish marine protection and fisheries measures in the Kaikōura marine environment.
- 1293. Fisheries New Zealand considers that the proposed management options presented here are in keeping with the Act. The Kaikōura Marine Guardians in their recommendations to you regarding the reopening of the Kaikōura pāua fishery support the proposals for PAU 3A set out within industry's PAU 3 Fisheries Plan (which most closely aligns to Option 1 in this paper for PAU 3A).

4.2.3 Regional Plans

- 1294. Environment Canterbury has responsibilities for the coastline within the PAU 3A and PAU 3B QMA boundaries. Its Regional Coastal Environmental Plan manages coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 1295. Fisheries New Zealand considers that the management options presented are here in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

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_Marine Strategy lo res.pdf

⁸⁹

5 Submissions

1296. There were eight submissions on the proposed TACs, allowances (customary, recreational and other sources of mortality caused by fishing), and TACCs for the new PAU 3A and PAU 3B stocks (Tables 5 and 6).

5.1 PAU 3A (Kaikōura)

1297. All submissions support setting a new TAC for the Kaikōura pāua fishery, but responses were mixed in terms of the preferred option - three supported Option 1 and four supported Option 2.

Table 5: Written submissions and responses received for PAU 3A (in alphabetical order).

Submitter				Option Support
Gubillittei	1	2	Other	
Environment and Conservation Organisations of NZ (ECO)		✓		Fishery requires a more cautious TAC to acknowledge the ongoing impact of gravel movement reducing pāua habitat and burying pāua.
Fish Mainland		✓		Need a precautionary and adaptive approach to reopening the fishery.
Pāua 3 Industry Association Inc Endorsed by: PāuaMac5 Inc	✓			Reflects an adaptive rebuild under the PAU3 Fisheries Plan to provide a conservative approach to recommence fishing. Allows for a good level of utilisation without approaching maximum sustainable yield and allows the effects of fishing to be measured.
PāuaMac5 Inc	√			Endorses submission from the Pāua 3 Industry Association Inc, but also provided their own rationale for Option 1. Contends that research and survey information should continue for at least five years and this should be used in an annual review to determine management measures for the following years.
Pāua Industry Council (PIC) Endorsed by: Fisheries Inshore New Zealand (FINZ)	✓			Provides a level of utilisation that reflects rebuilding of the pāua population and adopts a cautious approach in response to the patchy, ongoing recovery of pāua habitats. The proposed TACC is consistent with the approved PAU3 Fisheries Plan and reflects a 50% level of pre-earthquake commercial catch levels. The proposed TACC enables sufficient information to be collected on the effects of fishing, which will not be provided under a lower catch level. The industry will implement a range of measures such as a larger minimum harvest size to provide additional confidence of a sustainable harvest level. Supports the proposed allowances for customary and recreational fishing, but notes that the latter does not constrain catches and so this needs to be supported by an appropriate daily bag, MLS, and accumulation limits. Contend the PAU 3 Fisheries Plan is a mandatory relevant document when setting a TAC. Supports the proposed deemed values.
NZ Recreational Fishing Council (NZRFC)		✓		Provides a more cautious approach and assumes the fishery can now only support a very small catch. There is a need to monitor recreational catches.
Te Ohu Kaimoana,		✓		Provides a more cautious approach. Subsequent assessments can initiate further review of the TAC if appropriate.

5.2 PAU 3B (Canterbury)

1298. All responses were generally in support of the proposed option. However, three industry submissions support a slightly smaller TAC to include a lower customary allowance of 7.5 tonnes (instead of 15 tonnes).

Table 6: Written submissions and responses received for PAU 3B (in alphabetical order).

Submitter			Option Support
Oublinite	1	Other	
Environment and Conservation Organisations of NZ (ECO)	✓		The new fishery will need its own stock assessment.
Fish Mainland	✓		
Pāua 3 Industry Association Inc Endorsed by: PāuaMac5 Inc		√	Supports a customary allowance set at 7.5 tonnes. The proposed TAC is consistent with the PAU 3 Fisheries Plan and reflects catches taken from the largely unaffected Canterbury coastline.
PāuaMac5 Inc		✓	Endorses the submission from the Pāua 3 Industry Association Inc. Provided same rationale for the supported option.
Pāua Industry Council (PIC) Endorsed by: Fisheries Inshore New Zealand (FINZ)		√	Supports a lower customary allowance of 7.5 tonnes, as considers an error was made in the consultation document. The proposed TACC is consistent with the approved PAU3 Fisheries Plan and reflects likely catch levels post-earthquake. There is no evidence that the proposed TAC and allowances will be unsustainable. Contend the PAU 3 Fisheries Plan is a mandatory relevant document when setting a TAC. Supports the proposed deemed values
NZ Recreational Fishing Council (NZRFC)	✓		Any future increase in harvest levels must be reflected in a corresponding increase in recreational daily bag limit.
Te Ohu Kaimoana,	✓		Subsequent assessments can initiate further review of the TAC if appropriate. Believes Fisheries New Zealand should engage directly with Ngai Tahu to set an appropriate customary allowance.

6 Options and analysis

6.1 PAU 3A (Kaikōura)

6.1.1 Option 1 (Fisheries New Zealand's preferred option)

- 1299. A TAC for the new PAU 3A stock is to be set for the first time. Section 13(2) of the Act requires you to set the TAC that maintains the stock at or above a level that can produce B_{MSY} , having regard to the interdependence and biological characteristics of the stock, and any environmental conditions affecting the stock. The last stock assessment for the wider PAU 3 fishery was conducted in 2014 and considered the fishery was very likely to be at or above this target level. However, given the effects of the earthquakes and absence of fishing along the Kaikōura coastline over the past four years, it is unclear how representative estimates from this assessment apply to the wider stock, and as such, no estimates can be made for B_{MSY} for the smaller PAU 3A stock at this time.
- 1300. In light of this uncertainty, section 13(2A) applies to setting a TAC for the PAU 3A. It requires that you set a TAC using best available information and is not inconsistent with the objective of maintaining the stock at or above or moving the stock towards or above the target level.

- 1301. The proposed TAC under Option 1 is based on a 50% level of likely past catch levels from the Kaikōura coastline before the 2016 earthquakes, which were considered sustainable at that time (*i.e.*, spawning biomass was considered to be *very likely* to be at or above the target of 40% *B*₀). The 50% reduction reflects the significant effect of the coastal and seabed uplift on pāua biomass and habitats, but takes into account the evidence of a subsequent sustained increase in abundance at a fishery wide level and successful post-earthquake recruitment. The TAC balances the opportunity to provide for an initial limited harvest by all sectors against the need to be cautious to ensure rebuilding of the stock is not compromised in the long-term.
- 1302. The pāua industry supports this approach within the context of a conservative commercial harvest strategy. It is the preferred option under the approved PAU 3 Fisheries Plan, which you must take into account when setting sustainability measures such as the TAC, and is also supported by the Kaikōura Marine Guardians.
- 1303. Option 1 (and also Option 2) is consistent with Te Waipounamu lwi Fisheries Forum Plan management objectives within the context of the Kaikōura fishery; particularly:
 - **Objective 1:** To create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and whanau;
 - **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.
- 1304. Past customary and recreational fishing occurred within those same areas significantly impacted by the earthquakes and this is reflected within the proposed allowances.
- 1305. Customary harvest has continued since the earthquakes, particularly within the five customary management areas. The proposed allowance recognises the significant loss of pāua biomass and habitat and adopts the 50% reduction of the 2017 customary allowance. Nevertheless, it provides for increased customary harvest within the context of a rebuilding fishery and was developed following engagement and support from tangata whenua.
- 1306. The proposed recreational allowance is based on the estimated harvest level of 10.3 tonnes taken from the Kaikōura coastline prior to the earthquakes (2011-12), with a 50% reduction applied. This allowance takes into account that the daily limit for pāua of 10 per day was reduced by 50% following the earthquakes and would now be 5 pāua per day (if the fishery was reopened).
- 1307. The proposed allowance for other sources of mortality caused by fishing uses a similar approach to that used when the PAU 3 TAC was set in 2017 with a 50% reduction applied.
- 1308. The proposed TACC of 23 tonnes represents a 50% reduction on commercial catch levels from the Kaikōura coastline before the 2016 earthquakes. Industry submissions including the Pāua Industry Council and Pāua 3 Industry Association Inc. support this TACC and (as above) note that the Act requires you to take into account the approved PAU 3 Fisheries Plan when setting the TAC/TACC for this fishery.
- 1309. The industry highlights that the PAU3 Fisheries Plan implements an adaptive rebuild programme based on this TACC level (*Strategy 2.3*), supported by a conservative commercial harvest strategy to protect spawning biomass (*Strategy 2.4*). Voluntary measures under the plan include a larger minimum harvest size (135-145 mm MLS), catch spreading arrangements to avoid localised depletion, fine scale catch, effort and location reporting, and reducing or halting fishing in areas where overfishing is identified. They consider this combination of measures would allow industry to take immediate action if there are indications of localised overfishing through commercial harvest.
- 1310. The industry contends the TACC will be set at a level that enables commercial fishers to collect sufficient catch and effort information to monitor trends in pāua stock size, spatial extent, and long-term sustainable yield (alongside other research on pāua abundance). This will be important to guide future management decisions as the fishery rebuilds.

- 1311. Fisheries New Zealand agrees that the PAU 3 Fisheries Plan must be taken into account when setting the TAC and other sustainability measures. A decision that is different to what is set out in this plan can be made providing its content is considered. The plan proposes a TACC of 23 tonnes, and as noted includes measures that will enable commercial fishers to take immediate steps to reduce effort if fishing is shown to be of concern in any local areas within PAU 3A.
- 1312. Overall, Fisheries New Zealand prefers Option 1 to set an initial TAC for the PAU 3A stock. Research indicates the pāua fishery is rebuilding in the absence of fishing and this enables harvest opportunities consistent with the Act (*i.e.*, sustainable utilisation).
- 1313. Option 1 is consistent with section 13(2A) as it recognises the uncertainty of information on stock status in relation to the target level and adopts a cautious approach when setting a TAC. Ongoing research (independent pāua surveys and commercial fishing information) would confirm how the fishery responds to fishing and Fisheries New Zealand would reassess the proposed TAC within the context of the fishery rebuild and make future responsive adjustments as necessary. This includes pre- and post-fishing surveys within the next six months to assess the effects of reopening the fishery on pāua abundance across the Kaikōura coastline.

6.1.2 Option 2

TAC: 24.5 t	TACC: 12 t	Customary: 7.5 t	Recreational: 2.5 t	Other mortality: 2.5 t
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- 1314. Option 2 proposes a TAC that is 50% lower relative to Option 1, and only 25% of the estimated catch levels along the Kaikōura coastline prior to the 2016 earthquakes.
- 1315. Environment and Conservation Organisations of NZ Inc., Fish Mainland, NZ Recreational Fishing Council, and Te Ohu Kaimoana support this option, as it provides the most cautious approach enabling very limited fishing to resume and reflect the dynamic and changing nature of the fishery.
- 1316. The proposed customary allowance is the same as Option 1 to anticipate future customary harvest levels within the context of a rebuilding fishery.
- 1317. The proposed recreational allowance is 50% lower than Option 1, and only 25% of the estimated harvest level of 10.3 tonnes taken from the Kaikōura coastline prior to the earthquakes (2011-12). Additional measures would be required (beyond the 50% reduction in the daily recreational limit implemented following the earthquakes) to constrain recreational catch to this level and would be a consideration in advice being provided on the potential reopening of the Kaikōura pāua fishery if this option were approved.
- 1318. The proposed allowance for other sources of mortality caused by fishing also adopts this same approach.
- 1319. The proposed TACC of 12 tonnes represents a 75% reduction on past commercial catch levels from the Kaikōura coastline before the 2016 earthquakes, and half of the TACC proposed under the PAU 3 Fisheries Plan. The Pāua Industry Council, Pāua 3 Industry Association Inc, and PauaMac5 Inc. contend that this option unnecessarily restricts harvest opportunities in light of their commercial harvest strategy and supporting actions to reduce or halt fishing where overfishing is identified. They submit that a lower TACC would prevent using commercial fishing information to effectively monitor the effects of fishing and guide future management settings.
- 1320. Fisheries New Zealand considers that Option 2 is a valid option for you to consider (or an intermediate option between Options 1 and 2) and is consistent with setting a TAC under section 13(2A) of the Act. It provides greater certainty of rebuilding the fishery and a faster recovery towards the target biomass (noting that this cannot currently be estimated for this fishery), but limits harvest levels to very low levels.

- 1321. On balance, Fisheries New Zealand prefers Option 1 to Option 2. Option 2 would unnecessarily constrain harvest opportunities in light of the recovery, and ongoing assessment and monitoring of the pāua fishery alongside industry's proposed conservative harvest strategy under the approved PAU 3 Fisheries Plan. In combination, these measures would provide sufficient protection to the fishery to ensure localised overfishing does not occur.
- 1322. Fisheries New Zealand notes that the PAU 3A fishery will be reviewed on an ongoing basis, including the 2021-22 fishing year, as new information becomes available and appropriate management measures will be taken as appropriate. This includes reviewing the TAC, TACC, and supporting allowances to provide for additional harvest opportunities.

6.2 PAU 3B (Canterbury)

6.2.1 Option 1 (Fisheries New Zealand's preferred option)

TAC: 80 t TACC: 46	Customary: 15	Recreational: 9	Other mortality: 10
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- 1323. A TAC for the new PAU 3B stock is to be set for the first time and the same requirements and considerations discussed above apply to this stock. As noted earlier, the 2014 stock assessment for the wider PAU 3 fishery suggested it was very likely to be at or above this target level, but no estimates can be made for B_{MSY} for the smaller PAU 3B stock at this time. As such, section 13(2A) applies to setting a TAC.
- 1324. A single option is proposed to set a TAC at 80 tonnes and is the same as the PAU 3 TAC set in 2017 (*i.e.*, noting the Kaikōura coastline was closed to pāua fishing at that time). This option reflects best available information on current catch levels from the Canterbury coastline. Over the past 15 years, this level of catch has been considered to be sustainable.
- 1325. The option is consistent with Te Waipounamu lwi Fisheries Forum Plan management objectives within the context of the Canterbury fishery; particularly:
 - **Objective 1**: To create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and whanau;
 - **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.
- 1326. The proposed allowances for customary, recreational, and other sources of mortality caused by fishing adopt the same approach as above and provides for recent levels of harvest.
- 1327. All submissions support the proposed TAC, allowances and TACC. Industry submissions highlight that this option aligns with the PAU 3 Fisheries Plan's recommended approach (*Strategy 1.2*) to set an initial TACC of 46 tonnes equivalent to the current PAU 3 TAC settings. As discussed above, all commercial fishing will be managed under an adaptive rebuild programme to require fishers to implement appropriate actions if risks to the sustainability of the stock are identified. This may include reducing or halting fishing effort in areas were overfishing is a concern.
- 1328. Unlike the PAU 3A stock, commercial fishing under the existing PAU 3 TACC of 46 tonnes continues along the open unaffected canterbury coastline. No sustainability concerns have been identified about this level of catch and commercial fishing information continues to monitor the fishery. The proposed TACC sets catch levels at these current levels.
- 1329. Commercial fishing information will continue to provide the basis to monitor the stock and this will be used for a new PAU 3B stock assessment next year. The industry's commercial harvest strategy will enable steps to be immediately taken if catches become unsustainable. This ongoing monitoring and review will enable Fisheries New Zealand to assess the proposed TAC and make future responsive adjustments as necessary.

6.3 Other options proposed by submitters

- 1330. Industry and Te Ohu Kaimoana submissions contend that the consultation document included an error in the proposed allowance for customary harvest for PAU 3B and that this allowance should be set at 7.5 tonnes, rather than 15 tonnes as stated. They are of the view that the TAC should be set at 72.5 tonnes to incorporate this change.
- 1331. Fisheries New Zealand disagrees with this view and notes that the proposed 15 tonnes allowance for the customary harvest is the same as the PAU 3 TAC set to in 2016 to reflect likely customary catch along the open unaffected coastline (i.e. PAU 3B). Therefore, the proposed allowance recognises likely catch and was developed following engagement and support from tangata whenua.
- 1332. No other options were proposed by submitters.

6.4 Economic considerations

- 1333. Based on information provided by the pāua industry, the PAU 3A fishery under Option 1 (23 tonne TACC) would add an estimated NZ\$1.7m to New Zealand's export earnings 90. Under Option 2 (12 tonne TACC), export earnings would be about NZ\$850,000.
- 1334. In addition, reopening the Kaikōura coastline to fishing has the potential to inject additional economic activity into the region over and above any commercial fishing earnings through the provision of accommodation, food, petrol, etc. for both commercial and recreational fishers alike.
- 1335. For the PAU 3B fishery, the proposed TACC (46 tonnes) would add an estimated NZ\$2.4m in export earnings.

6.5 Other matters raised

1336. No other matters were raised in submissions that are relevant to you setting sustainability measures for the new PAU 3A and PAU 3B stocks.

7 Deemed values

1337. The establishment of the new PAU 3A and PAU 3B stocks on 1 October 2021 requires you to set new interim and annual deemed value rates under section 75 under the Act. These are proposed below and are based on the current PAU 3 deemed value rates without any adjustments.

Table 7: Proposed deemed value rates (\$/kg) for PAU 3A and PAU 3B.

		A	catch (% of AC	E)			
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200+%
PAU 3A	59.40	66.00	79.20	92.40	105.60	118.80	132.00
PAU 3B	59.40	66.00	79.20	92.40	105.60	118.80	132.00

1338. The Pāua Industry Council support the proposed deemed values. All other submissions did not provide specific comments.

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 $^{^{90}}$ Based on an average export price of about NZ\$75,000 per whole wet weight tonne of pāua.

8 Conclusions and recommendations

- 1339. The 2016 earthquakes caused a significant impact on coastal and seabed habitats along the Kaikōura coastline. Pāua biomass and habitats were particularly affected and this led to the closure of the fishery over the past four years. Ongoing research and monitoring demonstrates pāua recovery at an area-wide level and that it is now appropriate to consider limited harvest opportunities while enabling the fishery to continue to rebuild.
- 1340. The changed nature of the PAU 3 fishery into two distinct sub-fisheries has led to the establishment of two new QMAs PAU 3A (Kaikōura) and PAU 3B (Canterbury), which will take effect on 1 October 2021. This subdivision will support finer scale management of this key regional fishery.
- 1341. Fisheries New Zealand consulted on proposed options for setting an initial TAC, allowances (customary, recreational and other sources of mortality caused by fishing), and a TACC for each stock.
- 1342. Fisheries New Zealand received seven submissions on the proposed options. Feedback is mixed on the appropriate TAC for PAU 3A (under Option 1 and Option 2). All submitters support the proposed TAC for PAU 3B, although industry suggests a lower customary allowance.
- 1343. Fisheries New Zealand prefers Option 1 for PAU 3A to provide limited harvest opportunities within the context of an approved PAU 3 Fisheries Plan and a cautious and adaptive management approach for all sectors. This TAC level will enable the collection of commercial fishing information to monitor trends in pāua stock size, spatial extent, and long-term sustainable yield to guide future management decisions as the fishery rebuilds. Option 2, or an intermediate option between Option 1 and 2 for PAU 3A is also open for you to consider. Irrespective of the option chosen there will be intensive ongoing research and monitoring of pāua biomass and effects of fishing in PAU 3A through Fisheries New Zealand's research programme.
- 1344. The proposed PAU 3B TAC will enable the Canterbury fishery to continue under existing harvest levels.

Decision for PAU 3A (Kaikōura) 9

Option 1 (Fisheries New Zealand's preferred option)

Agree to set the PAU 3A TAC at 40.5 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes;
- Set the allowance for recreational fishing interests at 5 tonnes; ii.
- Set the allowance for all other sources of mortality to the stock caused by fishing at 5 tonnes; iii.
- Set the TACC at 23 tonnes. iv.

Agreed Agreed as Amended / Not Agreed

OR

Option 2

Agree to set the PAU 3B TAC at 24.5 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes;
- Set the allowance for recreational fishing interests at 2.5 tonnes;
- Set the allowance for all other sources of mortality to the stock caused by fishing at ii. iii. 2.5 tonnes;
- Set the TACC at 12 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

Decision for PAU 3B (Canterbury)

Option 1 (Fisheries New Zealand's preferred option)

Agree to set the PAU 3B TAC at 80 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 15 tonnes;
- Set the allowance for recreational fishing interests at 9 tonnes;
- Set the allowance for all other sources of mortality to the stock caused by fishing at ii. iii. 10 tonnes;
- Set the TACC at 46 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

Decisions for PAU 3A and PAU 3B Deemed Values

Agree to set new deemed value rates for paua (PAU 3A) and (PAU 3B) as outlined below.

		A	Annual differential rates (\$/kg) for excess catch (% of ACE)							
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200+%			
	59.40	66.00	79.20	92.40	105.60	118.80	132.00			
PAU 3A	59.40	00.00	10.20	10	405.00	118.80	132.00			
PAU 3B	59.40	66.00	79.20	92.40	105.60	110.00	102.00			

Agreed as Amended / I

Hon David Parker Minister for Oceans and Fisheries

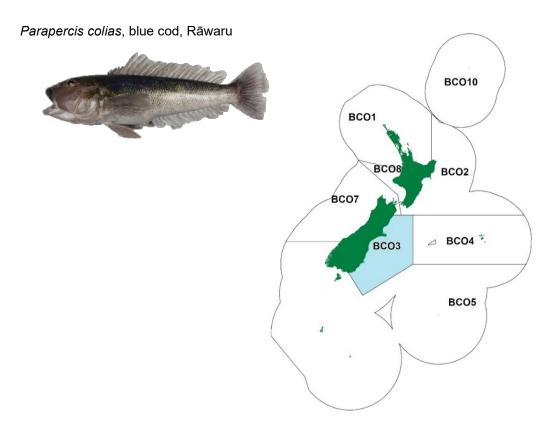


Figure 1: Quota Management Areas (QMAs) for blue cod (BCO), with BCO 3 highlighted in blue. A blue cod is pictured on the left.

Table 1: Summary of options proposed for BCO 3 from 1 October 2021. 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 settings (Status quo)	N/A	162.73	2	N/A	N/A	N/A
Option 1 (Set a TAC & allowances)	277.732	162.73	2	20	83	12
Option 2	243	130 🔱	(32.732)	20	83	10
Option 3 (LegaSea)	243	110 🔱	(52.732)	20	104	9
New option incorporated follow	ving consul	tation	Yes – Le	egaSea have pr	oposed Option 3	
Total submissions received			1,350			
Number of submissions receiv	ed in suppo	ort of	Option 1		7	
each option			Option 2	2	8	
			Option 3	3	2	
			Option 3	3 Form	1282	
			Other		51	

1 Why are we proposing a review?

- 1345. No TAC or allowances were set when BCO 3 was put in the QMS in 1986 under historical legislation which only provided for setting a TACC. The fishery has not been formally reviewed since then.
- 1346. Setting a TAC and allowances for BCO 3 is identified as a priority in the National Blue Cod Strategy.
- 1347. A potting survey series used to monitor recreational fishing shows a significant downward trend over the last 20 years. There is overlap with commercial fishing for some of these areas.

1.1 About the stock

1.1.1 Fishery characteristics

- 1348. BCO 3 is an important domestic commercial fishery, and a key recreational and customary fishery. It is the largest recreational blue cod fishery with recreational catch estimated at approximately 100 tonnes at the time of the last National Panel Survey of Marine Recreational Fishers in 2017–18.
- 1349. While the BCO 3 fishery spans the length of the South Island East Coast, it comprises a series of discrete populations of blue cod, determined by suitable habitat. Each of these populations has its own unique management issues varying with the size of the area and the type and intensity of fishing pressure⁹¹. For example, the southern fishery (south of the Waitaki River) can sustainably support significantly higher fishing intensity than the northern areas which the available science suggests are under significant pressure.
- 1350. Accordingly, in 2020 under the National Blue Cod Strategy, the recreational daily limit for different areas was reduced using a traffic light system⁹², the minimum legal size was increased in most QMAs to 33 cm, and both recreational and commercial cod pots were required to have a larger minimum mesh size of 54 mm to allow undersize blue cod to escape. These measures were in response to declining trends in potting surveys and other information used to monitor the fishery.
- 1351. The traffic light system has resulted in BCO 3 having four different daily limits covering five separate management areas (as well as a daily limit of two blue cod within the four taiāpure areas within BCO 3). Under this system the area from the Hurunui River south to the Rakaia River has been designated 'red', also with a recreational daily limit of two blue cod. Because of the low numbers and small size of blue cod in the red area, commercial targeting of blue cod has not occurred in recent years. Fisheries New Zealand is working with commercial fishers to ensure this continues to be the case. There was a small bycatch from the inshore trawl fishery of 817 kg in red areas last fishing year. A map of the Traffic Light System is attached as Appendix 1 to the end of this chapter.

1.1.2 Biology

Fisheries New Zealand

1352. Blue cod is a bottom dwelling species endemic to New Zealand. It can be caught from a few metres depth to about 150 m across a range of habitats including reef edges, shingle/gravel, biogenic reefs, or sandy bottoms close to rocky outcrops. It is most common south of Cook Strait. Blue cod is categorised as a low productivity species and is relatively long lived with a maximum age of 32 years. Importantly, blue cod exhibit a constrained home range and are, therefore, susceptible to localised depletion.

Review of sustainability measures for October 2021: BCO 3 ● 235

⁹¹ This varies by population site and could be from receational fishing pressure, charter tourism, commercial pressure or all

⁹² The traffic light system assigns a colour rating to fine scale areas in the South Island and the Chatham Islands. The rating can be changed as available information suggests stock health is improving or declining.

1.2 Status of the stock

- 1353. Because of its low productivity, the default target recommended for blue cod under the Harvest Strategy Standard using potting survey data is an F_{MSY} of $F_{45\%SPR}^{93}$. This is the fishing mortality corresponding to a spawning biomass of 45% B_0 . The Inshore Fisheries Working Group concluded the commercial stock status in relation to the target B_{MSY} proxy ($F_{45\%SPR}$) is currently unknown. This is because the standardised commercial catch per unit effort (CPUE) series previously used to monitor the southern fish stock is now considered unreliable as it did not account for a change in pot mesh size (38 mm to 48 mm) in 2009. The status in relation to whether overfishing across the whole of BCO 3 is occurring is also unknown.
- 1354. The 2021 Plenary report concluded, however, that the biomass was unlikely (<40%) to be below the soft limit (*SPR*_{22.5%}) and very unlikely (<10%) to be below the hard limit (*SPR*_{11.25%}).
- 1355. The potting surveys undertaken at Kaikoura, Motunau, Banks Peninsula, north Otago and south Otago are primarily designed to monitor the recreational fishery. They are generally carried out every four years and provide data that can be used to assess local abundance, size, age, and sex structure of these geographically separate blue cod populations.
- 1356. The surveys can also provide a measure of the response of blue cod populations to changes in fishing pressure and management initiatives such as changes to the daily limit, minimum legal size, and area closures. In the case of the north Otago and south Otago series, where most of the commercial catch is taken, there is good overlap between the survey areas and the commercial target potting fishery.
- 1357. The surveys generally show a 15 to 20-year decline in relative abundance across all potting survey areas in BCO 3; by as much as 50% in some areas. The north Otago and south Otago potting surveys each have two indices of relative abundance based on the random survey design, both of which have exhibited substantial declines between 2013 and 2018, particularly for south Otago (Figure 2). Earlier fixed station surveys also showed a decline for north Otago.

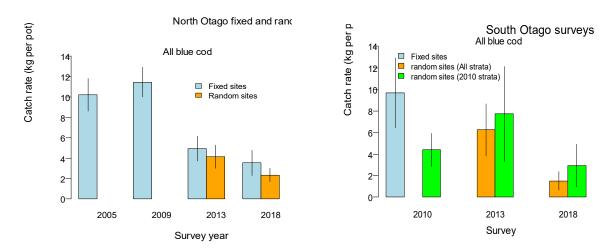


Figure 2: Historical Stock Status Trajectory and Current Status. North Otago and south Otago fixed-site and random-site potting survey catch rates of all blue cod by survey year. Error bars are 95% confidence intervals. Note that the fixed site and random site surveys are not directly comparable.

1358. Fishing mortality can be assessed from these surveys, based on the age structure of blue cod. This suggests fishing mortality may be greater than the target ($F_{45\%SPR}$) in most areas surveyed. For the north Otago survey area fishing mortality estimates suggest a spawning biomass of 30% B_0 and 34% B_0 for the south Otago survey area.

⁹³ F_{45%SPR} or percentage spawner per recruit ratio. An SPR ratio estimate indicates the expected contribution to the spawning biomass over the lifetime of an average recruit.

- 1359. The Inshore Fisheries Working Group concluded that the information used in these estimates was too uncertain to draw conclusions on status relative to both the management target and the overfishing threshold which were, therefore, designated as unknown. A key reason for the uncertainty is that the estimates were based on data from a single survey in each area.
- 1360. The Working Group did, however, consider that the estimates of 30% B_0 and 34% B_0 were sufficiently above the soft and hard limits of 22.5% B_0 and 11 25% B_0 to be confident that the stock was not breaching these limits in the southern fishery.

2 Catch information

2.1 Commercial

1361. Since 2002 commercial catches in BCO 3 have been at, or, have exceeded the TACC (Figure 3).

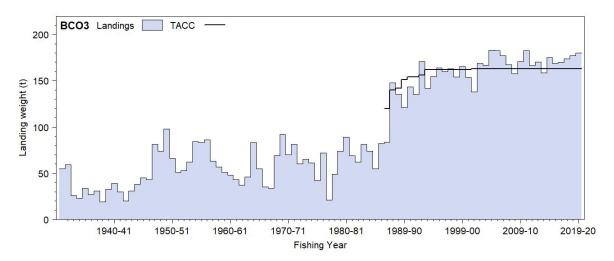


Figure 3: Annual Commercial Landings for BCO 3 (in tonnes).

1362. While recreational fishing occurs across the length of BCO 3 (from Kaikoura to the Catlins), the majority (72%) of commercial catch is taken below the Waitaki River in statistical areas 024 (Otago) and 026 (Catlins - Figure 4). The majority of commercially landed blue cod in BCO 3 is caught by target cod potting (67%) or bycatch (22%) from the flatfish, red cod and tarakihi bottom trawl target fisheries spread throughout the QMA.

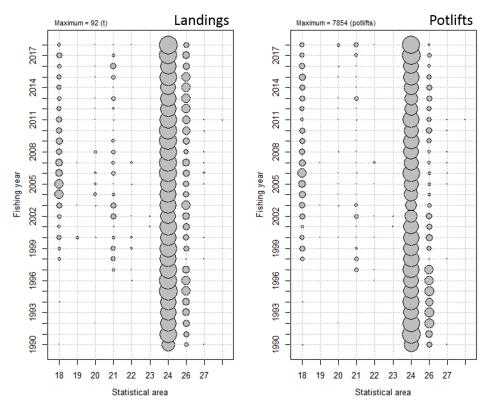


Figure 4: Distribution of landings and number of potlifts for the cod potting method by statistical area and fishing year from trips which landed BCO 3. Circles are proportional within each panel: [landings] largest circle = 92 t in 2011 for 024; [number potlifts] largest circle = 7854 pots in 2006 for 024.

2.2 Customary Māori

1363. Customary Māori catch in BCO 3 is managed under the Fisheries (South Island Customary Fishing) Regulations 1999. Little customary catch has been reported under these regulations which indicates tāngata whenua have been meeting their needs through the recreational allowance, and have adopted a cautious approach to managing catch, given their concerns about the fishery. As the previous recreational blue cod daily limit of 30 was reduced to 15 or less last year, Fisheries New Zealand expects that the reported customary catch may increase from this year-on.

2.3 Recreational

- 1364. Blue cod is the third most common recreational species caught in New Zealand. The National Panel Survey of Marine Recreational Fishers (NPS) conducted in 2017–18 estimated a total catch of 292 tonnes (nearly 600 000 fish) for the species, nationally. With 34% of the total blue cod recreational catch, BCO 3 had the largest recreational catch of any QMA.
- 1365. The NPS in 2017/18 estimated recreational catch of BCO 3 at 99 tonnes, while the 2011/12 panel survey gave an estimate of 101 tonnes. Added to this, recreational catch under section 111⁹⁴ approvals were five tonnes, suggesting an estimated 104 tonnes of recreational catch at that time.

Table 2: Recreational harvest estimates for BCO 3.

Year	Method	Number of fish	Total weight (t)	CV (t)
2011/12	Panel Survey	212 184	101	±20 tonnes
2017/18	Panel Survey	202 765	99	±18 tonnes

⁹⁴ Section 111 of the Fisheries Act 1996 enables commercial fishers to take a recreational catch for their own consumption.

- 1366. Fisheries New Zealand notes that since the National Panel Survey was undertaken (2017/18), there have been reductions in daily limits for blue cod across BCO 3. These changes are expected to have reduced recreational harvest in BCO 3. Further, the minimum size has also been increased and this may also reduce the level of harvest in the short term.
- 1367. The allowance proposed under both options in this paper for recreational fishing is, therefore, proposed to be lower (by 20%) than the 2017/18 estimate to take this into account. Noting there is no quantitative data yet available, the next National Panel Survey of recreational fishing scheduled for 2022/23 will allow an opportunity to assess new estimates of recreational harvest and the appropriateness of this allowance.

2.4 All other mortality caused by fishing

- 1368. Other mortality caused by fishing is uncertain, particularly since the minimum legal size has been increased (which could lead to increased mortality from recreational fishers returning undersize fish) and anecdotal reports of blue cod used as bait. This may be offset by the recent increase in cod pot mesh size (48 mm to 54 mm), as part of the National Blue Cod Strategy, which is expected to assist escapement of undersized blue cod.
- 1369. The allowance for all other mortality to the stock caused by fishing is proposed to be set at an amount equating to 5% of the combined total estimate of recreational catch and the TACC. This is the same as used for BCO 4 when the TAC was set for that fishery last year.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 1370. Input and participation into the sustainability decision-making process is provided through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions.
- 1371. Te Waka a Māui me Ōna Toka lwi Forum (the forum) is the South Island iwi fisheries forum it includes all nine tāngata whenua lwi of Te Wai Pounamu.
- 1372. At the 19 March 2021 hui, Fisheries New Zealand sought the forum's input into the BCO 3 review. The forum advised that Ngai Tahu is the iwi with mana moana over BCO 3 and undertook to provide feedback by the end of April. This feedback was that a review of BCO 3 was a high priority, and that a 20 tonne allowance should be used for Māori customary non-commercial harvest in the consultation document.

3.2 Kaitiakitanga

- 1373. 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 tāngata whenua exercise kaitiakitanga in respect of fish stocks.
- 1374. Rawaru (blue cod) is identified as a taonga species in the Te Waipounamu lwi 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.
- 1375. Fisheries New Zealand considers that this review contributes to all these Management objectives.
- 1376. Customary tools utilised under the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaitai, taiāpure and temporary closures (Section 186B). Table 3 lists the customary fisheries areas that fall within BCO 3.

Table 3: Customary fisheries areas within BCO 3.

Location	Management Type		
East Otago Taiāpure Akaroa Harbour Taiāpure Oaro-Haumuri Taiāpure Te Taumanu o Te Waka a Mäui Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations to manage commercial, recreational and customary fishing.		
Waikawa Harbour/Tumu Toka Mātaitai Puna-wai-Toriki Mātaitai Otakou Mātaitai Moeraki Mātaitai Tuhawaiki Mātaitai Te Ahi Tarakihi Mātaitai Waitarakao Mātaitai Te Kaio Mātaitai Koukourarata Mātaitai Lyttelton Harbour/Whakaraupō Mātaitai Rāpaki Bay Mātaitai Kahutara Mātaitai Te Waha o te Marangai Mātaitai Mangamaunu Mātaitai	Mātaitai Reserve Commercial fishing is not permitted within mātaitai reserves unless bylawss state otherwise.		
Waiopuka Rahui	Section 186B Temporary Closure of fisheries		

1377. 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.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

1378. Over two thirds of BCO 3 commercial catches are taken by target cod-potting which has very little interaction with other species. Most of the remaining BCO 3 catch is taken in the inshore bottom trawl fishery operating along the East Coast of the South Island, largely directed at flatfish, red cod and tarakihi. Given the trawling would occur whether blue cod was a bycatch or not, environmental interactions associated with targeting these species is discussed when those target fisheries are reviewed. A review of species caught in the trawl fishery off the south East Coast was carried out last year. The options proposed in this paper will not increase, and may decrease, any environmental interactions arising from the BCO 3 fishery. There are no specific associated or dependent species for blue cod. Given there are minimal impacts from target cod potting, there is understood to be little impact on biological diversity.

4.1.1 Marine mammals

1379. There have been no recorded interactions with marine mammals in this fishery, given the primary method is potting and fishers are largely in attendance with little chance of entanglement.

4.1.2 Seabirds

1380. There have been no recorded interactions with seabirds in this fishery, given the primary method is potting, with pots usually set too deep for seabirds to enter.

4.1.3 Fish bycatch

1381. Bycatch species sometimes taken include conger eel, octopus, sea perch, wrasse and blue moki.

4.1.4 Benthic impacts

- 1382. Given the primary method is potting, benthic impacts or interactions are considered minimal. Pots are usually only set for an hour or so.
- 1383. Some blue cod are caught as a bycatch of trawling, and a majority of form submissions sought either the removal of bottom trawling from within the red zone, removal from the 12 nautical mile inshore fishery or a complete ban on bottom trawling.
- 1384. Fisheries New Zealand has considered the impacts of trawling from this fishery and concluded where blue cod are caught by trawl it is as bycatch while targeting another species. Trawling for the target species would occur whether blue cod was caught or not. The issue of impacts of trawling is best addressed through management of the trawl target species and through wider consideration of this fishing method. To this end Fisheries New Zealand has recently provided you with a paper (B21-0313) on the effects of the benthic impacts of trawling.

4.1.5 Habitats of particular significance for fisheries management

1385. Blue cod occupy a wide number of benthic substrates over a wide latitudinal and depth range. Their broad distribution in inshore waters makes it difficult to identify specific areas of particular significance to the species. Some general habitats that could be regarded as particularly significant to BCO 3 are discussed in Table 4 below.

Table 4: Summary of information on habitats of significance for BCO 3.

Fish Stock	BCO 3						
Habitat	Spawning: Spawning areas are widespread throughout much of New Zealand, including in BCO 3. Running ripe cod are found throughout the fishery, however, some consider blue cod might spawn towards the edge of the continental shelf.						
	Juvenile: Information suggests they inhabit ground that is complex such as shell or rubble, or cryptic habitat with epifauna (bryozoans, sponges, etc) is important for juveniles to escape predation and improve survival.						
Attributes of habitat	Juvenile habitats are likely to provide shelter and protection from predation and harvesting, and suitable food while growth and development proceeds.						
Reasons for particular significance	Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery.						
Risks/Threats	 Changes in water temperature and water circulation could impact spawning and egg/larval development. Land-based impacts on habitats with benthic structure and aquatic plants that provide juvenile habitat. Benthic impacting activities, such as trawling and dredging, could disrupt complex habitat. 						

4.2 Sustainability measures (section 11 of the Act)

1386. 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 plans. Existing controls are the minimum legal size was increased in to 33 cm, both recreational and commercial cod pots were required to have a larger minimum mesh size of 54 mm to allow undersize blue cod to escape, recreational daily limits are 10 in Kaikoura (6 in the Kaikōura (Te Tai o Marokura) Marine Management Area), two in Canterbury, 10 in north Otago and 15 in south Otago.

4.2.1 National Blue Cod Strategy

- 1387. Concerns about overfishing, the biological characteristics of blue cod, and the high value of blue cod to all fishing sectors (Māori customary, commercial and recreational) led to the development of the National Blue Cod Strategy. Management objectives for the fishery are set out in the strategy and prioritise research and assessment of BCO 3 and setting a TAC and allowances (as recommended in this paper). The strategy is a Fisheries New Zealand policy document endorsed by the previous Minister of Fisheries in 2019.
- 1388. Recent measures already implemented in BCO 3 under the strategy include introducing the traffic light system of recreational daily limits to manage localised depletion. This has reduced daily limits to 15, 10 or two, depending on the degree of depletion within an area (previously the daily limit was up to 30). An increased minimum legal size of 33 cm and standardised cod pot mesh size of a minimum 54 mm for both recreational and commercial fishers have also been implemented under the strategy.

4.2.2 Draft National Inshore Finfish Fisheries Plan

- 1389. BCO 3 will also be managed under the National Inshore Finfish Fisheries Plan once finalised. The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020. The Plan is a Fisheries New Zealand policy document.
- 1390. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 1391. Within the Plan BCO 3 is a Group 2 stock. Group 2 stocks provide moderate levels of benefit to fishers, which vary between sectors and regions. They are managed to provide for moderate levels of use, with moderate levels of information to monitor their status. These stocks are monitored with partial quantitative stock assessments, compared against trends over time. The monitoring and assessment regime does not provide future population (biomass) projections.

4.2.3 The Kaikōura (Te Tai o Marokura) Marine Management Act 2014

1392. The Kaikōura Marine Strategy was developed under the Kaikōura (Te Tai ō Marokura) Marine Management Act 2014 and aims to integrate and establish marine protection and fisheries measures in the Kaikōura marine environment.

- 1393. Fisheries New Zealand considers that the proposed management options presented here are in keeping with this Strategy.
- 1394. The Kaikoura Marine Guardians were approached for input, however, no specific comments were made.

4.2.4 Regional Plans

- 1395. There are three Regional Councils that have coastline within the BCO 3 boundaries. Each of these has multiple plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 1396. There are no provisions within these documents that relate directly to blue cod, however, Fisheries New Zealand considers that the management options presented are in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

5 Submissions

- 1397. A total of 1 350 submissions were received. Of these 1 323 were "form" submissions on behalf of *LegaSea* which advocated for a 33% decrease in the TACC. Forty-two form submissions were unclear as to which option the submitter intended to support. Of the other individual or organisation submissions, seven supported Option 1; eight supported Option 2 and 12 supported other options.
- 1398. Option 1 was supported by commercial fishers who contend that increasing blue cod bycatch in offshore northern Canterbury, the consistent over-catch of the TACC and recent good recruitment all indicate an improving fishery as a result of the new recreational daily limits and the increase in pot mesh size. Option 2 received a similar level of support.
- 1399. Most recreational fishers submitted alternative options supporting larger reductions (33% to 50%) in the TACC. These submitters considered that to ensure sustainability you should make a cautious decision by reducing the TAC.
- 1400. Most of these submissions, including the *LegaSea* form submissions, were also concerned about the effect of the Traffic Light System on their fishing access⁹⁵, the lack of constraint on commercial bycatch of blue cod by trawlers and the environmental effects of trawling in general there was a consistent call to ban trawling within 12 nautical miles of the coastline. Submissions also called for an increase in the daily recreational limit in the Canterbury red zone from two up to six. Many of these issues are not directly related to your consideration when setting a TAC and allowances but are under active consideration through other processes. They are discussed under the "other matters raised" section of this paper.

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⁹⁵ Note: Fisheries New Zealand is currently progressing a fix for this issue within the Technical Regulations package. This should come into force in October 2022.

Table 5: Written submissions and responses received for BCO 3 (in alphabetical order).

Submitter	Option Support				
Submitter	1 2 Other		Other		
A. Flavell			✓	Supports all decreases in catch limits generally. Did not indicate a preferred option for BCO 3.	
A. Cooper (Harbour Fish)	✓			Excellent recruitment recently	
A. Dawson (Harbour Fish)	✓			With changes to Recreational catch and mesh size, fishery in good shape	
B. Musgrave			✓	Concerned about transit rules for recreational fishers	
B. Price			✓	Supports slowly increasing biomass back to higher levels (80% B_0)	
D. Cooper (Harbour Fish)	✓			Management changes from the National Blue cod Strategy plus recent strong Recruitment already improving fishery	
Environment & Conservation Organisations of New Zealand (ECO)		✓		Greater monitoring of BCO needed	
Fish Mainland		✓		Supports Option 2 but, doesn't support a reduction to recreational allowance	
H. Van Oyen		✓		Reduction proposed for Commercial is small compared to recent reduction in recreational catch and unfair.	
Hartley Family			✓	Supports a 100 t allowance for recreational	
J. Elliot			✓	Ban trawling. Wants a return to abundance	
Kaikoura Boating and Recreational Fishing Club			✓	Given magnitude of recreational daily limit reductions, request a 50% reduction in TACC	
Kapiro Residents Association			✓	50% cut in the Option 2 proposed TAC	
K. Mason			✓	Supports all decreases in catch limits generally. Did not indicate a preferred option for BCO 3.	
LegaSea Joint submission with NZ Sportfishing Council (NZSFC), NZ Underwater Association (NZUA) and NZ Angling and Casting Association (NZACA)			√	Cut the TACC by 33%, ban inshore trawling, allow for existing annual recreational catch, review unfair rules applying to daily catch limits.	
Liveable Communities (Auckland) Inc			✓	100 t TACC	
M. Trewern			✓	Over-catching TACC by 10% so increase TACC	
New Zealand Recreational Fishing Council (NZRFC)		✓		Option 2 is supported as a more cautious approach	
Ocean Fisheries Ltd	√			Bycatch is increasing indicating fishery is in good health	
Pegasus Bay Gamefishing Club, Sumner Boating and Fishing Club.			✓	Supports LegaSea Submission	
P. Cleall	✓			Commercial catches have been maintained over the last several years and are sustainable	
Royal Forest & Bird Protection Society (Forest & Bird)		✓		Noted concerns with potting catch rates, CPUE reliability, and the stocks vulnerability to potential localised depletion	
Royal Society for the Prevention of Cruelty to Animals Inc (SPCA)		✓		Support the inclusion of animal welfare into fisheries management	

Southern Inshore Fisheries (SIF) Endorsed by: Fisheries Inshore New Zealand (FINZ)	✓		Commercial fishery is stable
Tautuku Fishing Club		✓	Opposes any reduction in in the recreational allowance
Te Ohu Kaimoana Endorsed by: - Iwi Collective Partnership (ICP) - Ngāti Mutunga o Wharekauri Asset Holding Company Ltd - Ngātiwai Trust Board - Maruehi Fisheries Ltd - Tama Asset Holding Company Ltd (TAHCL) - Taranaki Iwi Fisheries Ltd - Te Kupenga o Maniapoto		√	Support further and more precise monitoring to better estimate the actual reduction that will have been achieved, especially in the areas where localized depletion is occurring.
W. Parata (Harbour Fish)	✓		Measures taken in 2020 should retain health of the fishery

6 Options and analysis

6.1 Option 1

TAC: 277.732 t	TACC: 162.732 t	Customary: 20 t	Recreational: 83 t	Other mortality: 12 t	

6.1.1 TAC

- 1401. The *status quo* is a stand-alone TACC of 162.732 tonnes. This TACC was set under the Fisheries Act 1983 prior to the requirement for a TAC and allowances under the Fisheries Act 1996.
- 1402. As this is the first time a TAC is to be set for this fishery, and in the absence of a stock assessment, the Option 1 proposed TAC is the sum of all known current fishing extractions from the fishery. The allowances have been estimated using the available science, and from discussions with tangata whenua and fishers.
- 1403. The Inshore Fisheries Working Group concluded that the stock status of BCO 3 in relation to the target is unknown. Whether overfishing is occurring is also unknown. Given that the estimated spawner per recruit ratios are based on data from a single survey in each area, the working group concluded that this information has high levels of uncertainty.
- 1404. Option 1 takes into account that the working group has concluded BCO 3 is unlikely to be below the soft or hard limits set for the fishery. In addition, the measures put in place for the fishery in 2020, including increases in commercial pot mesh size, are anticipated to increase survivorship of undersize cod and improve the productivity of the fishery.
- 1405. Option 1 carries greater sustainability risk and is less likely to move the stock towards or above a level that can produce *MSY*, as required under the Act. However, as noted, the stock status of BCO 3 in relation to the target is unknown.

6.1.2 Allowances

Māori Customary

1406. Little Māori customary non-commercial catch has been reported to-date. Given the reduced recreational blue cod daily limits now in place, however, Fisheries New Zealand expects that the reported customary catch will increase. Iwi have suggested a figure of 20 tonnes is

reflective of their needs and likely take. Based on this information an allowance for customary catch of 20 tonnes is proposed. Submissions received on the Māori customary allowance were all in support.

Recreational

- 1407. Fisheries New Zealand consulted on an allowance for recreational fishing of 83 tonnes. As noted, the most reliable estimate of recreational harvest comes from 2017/18 National Panel Survey. After combining the NPS 2017/18 estimate and the average of the s.111 landings, this equates to 104 tonnes. Since the 2017/18 National Panel Survey was undertaken, however, the traffic light system has differentially reduced the recreational daily limit across BCO 3. Further, the recreational minimum size limit has been increased from 30 cm to 33 cm.
- 1408. Data on the impact of these changes on overall recreational catch in BCO 3 will not be available until after the next National Panel Survey scheduled for 2022/23 but is expected to reduce the recreational take. In the interim, to account for the effect of the daily limit decreases and minimum size increase, it is proposed to assume recreational catch will have decreased by approximately 20%, relative to the last survey. This is based on a series of boat ramp interviews carried out by Fisheries New Zealand and anecdotal feedback from Fisheries Officers on the likely impact of the changes on overall recreational catch. Thus, the estimate of recreational harvest is proposed to be 83 tonnes until a more informed review can be undertaken.
- 1409. Many recreational submitters considered this unfair and supported an allowance of 104 tonnes. Fish Mainland, the Hartley Family, the Pegasus Bay Gamefishing Club, the Sumner Boating and Fishing Club and the Tautuku Fishing Club all submitted the recreational fishing allowance be consistent with the National Panel Survey estimate, plus s.111 take, of 104 tonnes.
- 1410. Similarly, the LegaSea submission, supported by 1 282 form submissions, proposes a 104 tonnes recreational allowance while also seeking fairness in access to the fishery. They submit you must allow for recreational interests, not just their catch.
- 1411. The Pegasus Bay Gamefishing Club and Sumner Boating and Fishing Club submit that the 2020 daily limit reductions will reduce the recreational take by an average of 60% over the area of BCO 3 and, 93% in the "red" traffic light area in Canterbury where they submit 22% of the TACC is caught by inshore trawl. They submit that there needs to be equity in the reduction of catch between recreational and commercial interests.
- 1412. Many recreational submissions from the Canterbury region want to see their access to the fishery improved by increasing the daily limit from two to five or six. They considered the significant cuts to the recreational daily limits in the red zone to be unfair without a concomitant restriction for commercial activity within this same area.
- 1413. Fisheries New Zealand notes that how recreational fishers respond to the new daily limits will vary. They may maintain their catch levels by increasing the frequency of trips or travel to areas where the daily limit is larger. This will not be able to be determined until the results of the National Panel Survey are available in 2023. In the interim there is considerable uncertainty in total recreational catch for BCO 3.
- 1414. We also note that, contrary to the submissions from the Pegasus Bay Gamefishing Club and Sumner Boating and Fishing Club, there is no target commercial blue cod fishing within the red area. Furthermore, there were only 39 trawl events that caught a bycatch of blue cod within the red zone in BCO 3 during the 2019-20 fishing year, catching a total of only 817 kg of blue cod, being 0.5% of the year's catch. The 22% of trawling bycatch does not come from within the "red" traffic light area but is spread over the length and breadth of the BCO 3 QMA (and generally in offshore areas).

1415. As noted, many of the issues raised are not directly related to your consideration when setting a TAC and allowances but are under active consideration through other processes. They are discussed under the "other matters raised" section of this paper.

All other mortality to the stock caused by fishing

- 1416. The *all other mortality caused by fishing* estimate takes into account the use of blue cod as bait and uncertainty regarding survival of blue cod that are returned to the sea. This includes fishing practices that do not quickly return undersize blue cod to the water and result in poor survivability and also predation of returned fish, especially by mollymawks and albatross.
- 1417. An observed decrease in the average size of blue cod in the surveyed recreational areas coupled with an increase in recreational minimum legal size indicates there may be a significant increase in the number of undersize recreational fish returned to the water. On the other hand, the recent increase in cod pot mesh size is expected to have facilitated escapement of undersized blue cod.
- 1418. The Kaikoura Boating and Recreational Fishing Club submitted that because of the effects on the environment from trawling, release mortality and bird predation, the impacts of global warming and increasing impacts from land management practices, other sources of fishing mortality be increased by 18 tonnes to 30 tonnes.
- 1419. *LegaSea* submits that, accounting for trawling as well as potting, 8% of the TACC should be used rather than 5%.
- 1420. Overall, while noting the information in these submissions, the changes in commercial fishing practices such as the use of 125 mm mesh in trawl nets and the increase in cod pot mesh size will have decreased mortality within the commercial sector. We consider an allowance set at 5% of the recreational allowance and the remaining commercial catch (TACC) to be appropriate. Given Māori customary catch is comparatively small, can be irregular depending on circumstances, and all sizes of cod can be retained, this category of removals has not been included in the calculation for this estimate.

6.1.3 Total Allowable Commercial Catch

- 1421. Under Option 1 there is no change to the TACC. As noted above, the Inshore Fisheries Working Group concluded that the stock status in relation to target is unknown. Whether overfishing is occurring is also unknown. Given that the estimated spawner per recruit ratios are based on data from a single survey in each area, the working group concluded that this information has high levels of uncertainty.
- 1422. The Southern Inshore Fisheries Management Company submits in support of Option 1 that, given more data is required to reduce the uncertainties from the most recent analyses, the decision should be that the TACC remain as it is until more analysis is done and presented to the working group.
- 1423. They also note that from 1 July 2020 the minimum mesh size for blue cod pots in BCO 3 was increased from 48 mm to 54 mm (some of the fleet had begun transitioning their pots in 2018/19). The larger sized mesh was shown to reduce the capture portion of undersize blue cod (<33 cm) from 11% to 2% while causing minimal change to the legal catch proportions. Therefore, the change is anticipated to promote both productivity and recruitment of the fishery, plus an anticipated recruitment pulse after two years ⁹⁶. As noted above, there is anecdotal information that improved numbers of undersize blue cod are being observed.
- 1424. Harbour Fish submit they pot 35 40 tonnes of blue cod in Otago every year. They submit that the initiatives under the National Blue Cod Strategy have already had a cumulative positive effect. This has coincided with some strong recruitment pulses into the fishery. Further, with

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⁹⁶ Review of Blue Cod (BCO 4) pot mesh size. June 2017. MPI Decision Paper 2017/19.

- the commercial pot mesh size increase, no sublegal fish are removed from the water. Most fish that remain in the pot are 35–37 cm.
- 1425. Ocean Fisheries Ltd operate three inshore trawlers based from the Port of Lyttelton. They submit they have no way of targeting blue cod, it is an unavoidable bycatch. They consider there has been a significant increase in the catch of blue cod offshore from Canterbury in recent years. They submit the fishery is in good health and it is more a matter of where the species is now distributed, perhaps due to temperature or land-based pollution. Given the TACC is over caught every year, and their bycatch is increasing, they contend it would be more appropriate to increase the TACC.
- 1426. Fisheries New Zealand notes that despite the potential presence of healthy blue cod populations around the deeper water canyon in front of Pegasus Bay, as well as Waitaki Canyon and Karitane Canyon, in all monitored inshore areas there has been a significant decline in the rest of the fishery.

6.2 Option 2 (Fisheries New Zealand's preferred option)

TAC: 243 t TACC: 130 t (↓ 32.732)	Customary: 20 t	Recreational: 83 t	Other mortality: 10 t	
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6.2.1 Total Allowable Catch

- 1427. Option 2 is a more cautious approach that puts more emphasis on the uncertainty of the assessment, i.e. that the status in relation to the management target and whether overfishing is occurring are both unknown. It also puts weight on the declining abundance suggested by the five potting surveys. Over the series these surveys indicate a significant decline in the abundance of blue cod in the survey areas and that these areas could be overfished.
- 1428. In particular, the majority of the commercial catch is taken from Statistical Areas 024 and 026 where the commercial fishery has significant overlap with the potting survey areas. The north Otago and south Otago potting surveys each have two indices of relative abundance based on the random survey design, both of which have exhibited substantial declines between 2013 and 2018.
- 1429. The 2018 north Otago random-site survey spawner-biomass-per-recruit ratio was 30%, indicating that the level of exploitation ($F_{30\%SPR}$) of north Otago blue cod stocks was above the F_{MSY} target reference point of $F_{45\%SPR}$, and that overfishing was occurring 97 . The 2018 south Otago random-site survey spawner-biomass-per-recruit ratio was 34%, indicating that the level of exploitation ($F_{34\%SPR}$) of south Otago blue cod stocks was also above the F_{MSY} target reference point of $F_{45\%SPR}$, and that overfishing was occurring. In addition, the sex ratio for north and south Otago was 87% male and 68% male respectively. A preponderance of males is thought to indicate high fishing intensity.
- 1430. Accordingly, Option 2 sets a lower TAC than Option 1 by 12.5%.
- 1431. Based on the available information, ECO, Forest and Bird, the SPCA and the majority of form submissions support a precautionary approach to this fishery. They see this as a more responsible course of action.

6.2.2 Allowances

1432. Option 2 sets the same allowances as Option 1.

6.2.3 Total Allowable Commercial Catch

1433. As discussed above, Fisheries New Zealand notes the overlap with the commercial target potting fishery in north Otago and south Otago where most of the cod pot target fishery is

⁹⁷ This means that at the 2018 levels of fishing mortality, over the lifetime of an average recruit, the expected contribution to the spawning biomass is reduced to 30% of the contribution in the absence of fishing.

caught, and that the surveys and reports referred to within this paper indicate these shared fishery areas could also be overfished. To address the risk that over-fishing is occurring, and the fishery remains below target and/or reaches the soft limit, this option would reduce the TACC from 162.732 to 130 tonnes or 20%.

1434. The degree of overlap between the potting surveys and the extent of the commercial fisheries and the stock needs further investigation. In addition, there is uncertainty around the errors and interpretation of the CPUE data and hence the conclusions drawn about the state of the fishery. In this regard, Fisheries New Zealand's Medium Term Research Plan for inshore finfish has further potting surveys for north and south Otago scheduled for 2022/23.

6.3 LegaSea Option (New)

TAC: 243 t TACC: 110 t (♥ 52.732) Customary: 20 t Recreational: 104 t Other mortality: 9 t

6.3.1 Total Allowable Catch

- 1435. *Legasea*, supported by the Pegasus Bay Gamefishing Club, the Sumner Boating and Fishing Club and 1 281 form submissions, have proposed a third option, being; cut the commercial catch limit by 33%, allow for existing annual recreational catch, review unfair rules applying to daily catch limits, and ban inshore trawling.
- 1436. There are four parts to this 'option', however, only the first two parts are directly relevant considerations for your TAC setting decision (the other two are discussed further under "other matters raised' and other parts of this paper). In terms of the first two, submitters consider that in the absence of any reliable information to inform current biomass, and to meet your statutory obligation to ensure sustainability, you must make a cautious decision by setting a conservative TAC, setting aside sufficient allowances to account for mortality caused by non-commercial fishing and other fishing activities, and then allocating the remainder as the TACC.
- 1437. The cautious TAC *LegaSea* have chosen is that proposed under Option 2, being 243 tonnes. Within this TAC they propose an unchanged 20 tonne for Māori customary catch, but a higher allowance of 104 tonnes for recreational interests, being the estimated catch prior to the introduction of the National Blue Cod Strategy and area based daily limits.
- 1438. While they accept the new daily limits will restrict their ability to catch 104 tonnes (or even the 83 tonnes consulted on), they submit you have a statutory obligation to 'allow for' recreational interests, not just their catch. They consider that the Court has confirmed that "people providing for their wellbeing, particularly their social wellbeing, is an important element of recreational interests", and therefore, you have to both set aside an allowance that covers the expected mortality from recreational fishing, while also ensuring that the allowance, and abundance, provides sufficient opportunity for people to provide for their wellbeing.
- 1439. We note that you have discretion in terms of how catch within a TAC is allocated between sectors, however, as set out in the introduction and legal overview section of this decision document (under Heading 5.1), the Supreme Court in *Kahawai*⁹⁸ has held that section 21 does not require that non-commercial fishing interests be given any substantive priority over commercial interests, and that, "in particular, the allowance for recreational interests is to be made keeping commercial interests in mind". ⁹⁹
- 1440. LegaSea also submit the other sources of mortality caused by fishing allowance should be based on 8% of the TACC. This approach does not include mortality from recreational fishing which Fisheries New Zealand anticipates will increase with high grading and mortality associated with the return of under size blue cod. Having established the allowances, the

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⁹⁸ New Zealand Recreational Fishing Council Inc v Sanford Ltd [2009] NZSC 54, [2009] 3 NZLR 438 [Kahawai].

⁹⁹ At [61].

- remainder is the TACC minus the allowance for *other sources of mortality from fishing*, being 110 tonnes and nine tonnes.
- 1441. Fisheries New Zealand accepts there are some uncertainties with the information available for this fishery at this time, and a cautious approach is appropriate on those grounds. However, we do not consider the available science supports the size of reduction to the TACC proposed in the *LegaSea* and some other submissions.
- 1442. In terms of the proposed recreational allowance of 104 tonnes under this option, Fisheries New Zealand prefers an allowance of 83 tonnes for the reasons described under Option 1 and Option 2. However, taking into account the submissions, it is open to you consider a higher recreational allowance within a reasonable range of expected recreational catch, i.e. from the 83 tonnes proposed for consultation to the 104 tonnes put forward by these submitters. The allowance could be reviewed again, if required, once the panel survey results are available.
- 1443. Overall, we consider the large number of submissions received from recreational fishers are primarily being driven by the current status of the two northern Canterbury populations and the associated access issues for recreational fishers. These are best addressed by ongoing application of the traffic light system under the National Blue Cod Strategy, and the separate process to adjust recreational fishing rules in these areas noted under 'other matters raised'.

6.4 Other options proposed by submitters

- 1444. The Kaikoura Boating and Fishing Club proposes a TAC of 214 tonnes, with 20 tonnes Māori customary, 83 tonnes recreational, 30 tonnes other sources of fishing mortality and an 81 tonne TACC. They submit that a 50% decrease in the TACC more accurately reflects an equivalent decrease as occurred with recreational access as a result of decreased daily limits in 2020.
- 1445. Fisheries New Zealand does not agree that deceases in recreational daily limits are comparable to TACC reductions in the way suggested by this submission.
- 1446. The Kapiro Residents Association propose a 50% cut across the TAC submitting this is required to provide genuine sustainability and that there is a requirement to provide sustainability. They cite you have a legal duty to ensure sustainability and are also required to avoid, remedy or mitigate the adverse effects of fishing on the environment and that this is a non-discretionary power. They submit Options 1 & 2 fail to provide environmentally responsible stewardship of blue cod in BCO 3 and that the options fail to meet Objective 10 and Objective 12 of Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy).
- 1447. As identified throughout this paper, Fisheries New Zealand considers both Option 1 and 2 meet the requirements and obligations cited in this submission.

6.5 Economic considerations

1448. Option 1 would not result in any change. Option 2, based on a port price of \$7.36/kg, could result in a loss of commercial fishing revenue of \$241K spread across quota holders and fishers. The cost is the annual loss in revenue (not profits) and does not take into account regional or flow on impacts, nor the longer-term benefits of rebuilding the stock. Option 3 would result in a loss of commercial fishing revenue of \$373K, spread across fishers and quota holders. Based on the port price, the current landed value of the fishery is \$1.2M.

6.6 Other matters raised

1449. in addition to submissions on the TAC settings allowances and the TACC for BCO 3, many submissions were received on other matters. The two most prominent issues were the effects of trawling on the marine environment and issues surrounding the red zone in northern Canterbury. As noted, these are outside the scope of this paper. However, these are under active consideration as set out below.

- 1450. Many submissions were concerned that trawlers can fish within the red zone without restrictions while recreational fishers have a daily limit of two blue cod. Several submissions stated or implied that 22% of the BCO 3 catch was as a trawl bycatch within the red zone. This is not correct. Analysis of trawl events within the red zone show within the last fishing year (2019/20) 39 separate trawl events caught 817 kg of blue cod or 0.5% of last year's catch.
- 1451. As noted, we consider the impacts of trawling from this fishery is best addressed through management of the trawl target species and through wider consideration of this fishing method. Where blue cod are caught by trawl it is as bycatch while targeting another species and trawling for the target species would occur whether blue cod was caught or not. Fisheries New Zealand has also recently provided you with a paper (B21-0313) on the effects of the benthic impacts of trawling.
- 1452. Several submissions also requested improved monitoring of the fishery. CPUE analysis of the southern fishery has been previously relied on and would have assisted in understanding how the fishery was performing in relation to the target biomass. Errors in the CPUE will be rectified by re-analysing the existing data through new research projects Fisheries New Zealand will commission.
- 1453. Submitters from Canterbury and Otago expressed concern about not being able to transition in possession of fish legally caught in one zone, across a zone with a lesser daily limit. Fisheries New Zealand is proposing to consult later this year on potential changes to recreational rules in Canterbury and Otago that will help address some of the issues raised by these submitters. Under these proposals recreational fishers will be able to bring to shore a greater number of blue cod where these are taken from healthier blue cod stocks found offshore. Currently they are unable to do this.
- 1454. Many northern Canterbury fishers sought an increase to the bag limit within the red zone. Unfortunately, preliminary results from the most recent potting surveys from Motunau 2020 and interim data from Banks Peninsula 2021 do not support a daily limit increase in these areas at this time. These 'red' areas in inshore Canterbury remain depleted and overfished (despite there being no commercial target fishing, and very little commercial bycatch). On this basis, Fisheries New Zealand considers the zoning of these two areas as red, with a daily limit of two, is a fishery rebuilding measure appropriate given the status of these blue cod populations.
- 1455. The Royal Society for the Prevention of Cruelty to Animals Inc submitted in support of animal welfare issues in fisheries and fisheries management. They submit fish feel pain and are recognised as sentient under the Animal Welfare Act (1999). They would like to see animal welfare as a standard component of fishing, fisheries management and policy decision making.
- 1456. Various submissions made suggestions that might improve the management of the fishery including:
 - Increasing the minimum legal size to 35 cm.
 - Splitting the QMA into two or more QMAs so that both recreational and commercial take could more accurately reflect the characteristics of a particular local population.
 - Increasing the biomass target from B₄₀ to B₅₀ to ensure populations were large enough to perform their ecological roles and services. This could also improve the reproductive capacity of the stock.
- 1457. These suggestions will be considered by a blue cod technical working group established under the Blue Cod Management Strategy to assist management of the fishery.
- 1458. Many points were raised by the form submissions. The following table shows the standard points raised within the form submission, and how many submissions supported each. Many of these statements are outside the scope of the TAC setting process (Table 6).

Table 6: Statements in LegaSea's submission form for BCO 3, and number of submissions in support of each.

Legasea Template Statements	Number of submissions that agreed with statement
I want David Parker, Minister of Oceans and Fisheries, to make a precautionary decision for Blue cod 3 so future generations have access to an abundant fishery.	1197
I support LegaSea in advocating for Option 3.	1236
I am concerned that bottom trawling continues in areas where recreational fishing is limited to 2 blue cod per person, per day.	1223
I am concerned about the impacts of bottom trawling on the seabed and other marine life.	1251
I want the Minister to ban bottom trawling within 12 nautical miles of the South Island's east coast.	1240
I am concerned that fishing effort displaced from the Canterbury region is having a detrimental effect on fishing in other areas especially Kaikoura and Moeraki.	1138
I believe the rules applying to recreational fishing are unfair and need to be reviewed.	1119
I understand that the weather limits the number of days people can fish off the east coast of the South Island.	1110
I agree that it is not reasonable or safe for people to travel 60 km offshore to return with just 2 blue cod.	1124
I agree that the red zone around Canterbury needs to be changed to orange to allow people to take a maximum of 6 blue cod for a day's fishing.	1032
I want David Parker to approve a transit rule so people fishing offshore can return home with a legal blue cod catch.	1054
I support a rule change to encourage maximum use of blue cod catch by permitting filleting of blue cod at sea so the carcass can be used as crayfish bait, just as commercial fishers can do.	1043
I am concerned not enough information is being collected to better understand the stock status of Blue cod 3.	1200

7 Deemed values

- 1459. The BCO 3 commercial fishery has been overcaught by an average of 6% over the previous 10 years (11% last fishing year). Both the port price and the ACE price have also increased over this period.
- 1460. The Commercial Catch Balancing Forum, at the December 2020 meeting, agreed BCO 3 had met the criteria of catch exceeding available ACE. Industry members felt it would be appropriate to consider increasing the deemed value rates for BCO 3 with the same stringent ramping, noting that the interim and 100-110% rates were the key to get the setting correct.
- 1461. Fisheries New Zealand notes that 22% of catch is taken as bycatch of the inshore trawl fishery while ACE is often secured early in the fishing year for the target potting fishery.

- 1462. The average price paid by fishers during the 2019/20 fishing year for one kilogram of BCO 3 ACE was \$3.71. The 2019/20 port price index of BCO 3 was \$7.36/kg. Fisheries New Zealand notes that most of the larger actual transfers were made at \$4.00/kg. The deemed value rates for BCO 3, including the proposed rates for 1 October 2021, are shown in Table 7.
- 1463. Ocean Fisheries submit that, in their experience, bycatch of blue cod has significantly increased and as the TACC has consistently been exceeded, ACE will continue to be impossible to obtain to cover BCO 3 bycatch.
- 1464. KBRFC submit that, given the continued recent commercial over catch of BCO 3, the proposed new deemed value rate be substantially increased as a more serious deterrent to overfishing.
- 1465. Te Ohu Kaimoana do not support the ramping of the differential rates applied to BCO 3.
- 1466. Most ACE is held in the southern part of the fishery and used within the target cod potting fishery. Therefore, Fisheries New Zealand agrees ACE may not be easily available for covering BCO 3 bycatch from the north of the fishery and, consequently, the value of BCO 3 ACE may increase.
- 1467. Fisheries New Zealand is confident that increasing the basic annual deemed value rate and applying the standard differential deemed value rate schedule will create sufficient incentives for catch not to exceed ACE.
- 1468. Fisheries New Zealand also notes an objective of the Commercial Balancing Forum was to establish consistency between BCO 3 and BCO 7. Taking submissions into account Fisheries New Zealand has revised the proposed deemed value rates to be consistent with the new rates being recommended for BCO 7 this year and that you set the deemed value rates for BCO 3 as shown in Table 7. These are the same as recommended for BCO 7 but with the standard differential deemed value rate schedule applied rather than the stock-specific schedule that was consulted on.

Table 7: Current and recommended deemed value rates (\$/kg) for BCO 3.

Stock	Interim	Annual 100-	Differential rates (\$/kg) for excess catch (% of ACE)					
	menin	120%	120-140%	140-160%	160-180%	180-200%	>200%	
Current BCO 3 rates	3.38	3.75	4.50	5.25	6.00	6.75	7.50	
Recommended rates	4.05	4.50	5.40	6.30	7.20	8.10	9.00	

8 Conclusions and recommendations

- 1469. The available science, as set out throughout this paper, indicates that most of the monitored inshore BCO 3 populations are being overfished, some northern populations seriously, and abundance is declining. This indicates a cautious approach to setting a TAC may be justified.
- 1470. While Option 1 carries the greater risk, the relevant science working group has concluded BCO 3 is unlikely to be below the soft or hard limits set for the fishery. In addition, the measures put in place for the fishery in 2020, including increases in commercial pot mesh size, are anticipated to increase survivorship of undersize cod and improve the productivity of the fishery.
- 1471. If overfishing is occurring, Option 1 may not meet the requirements of section 13 (2) of the Act, to set a TAC that moves the stock towards or above a level that can produce *MSY*.
- 1472. Option 2 is more cautious and takes more account of the uncertainty in the information. It places weight on the information indicating declining abundance across the five potting surveys. Over the series these surveys indicate a significant decline in the abundance of blue cod in the survey areas. Option 2 results in a reduction to both the commercial TACC and recreational allowance of 20%.

- 1473. *LegaSea* and others have proposed a new Option 3 that supports a 33% cut in the TACC to 110 tonnes and setting a recreational allowance of 104 tonnes. Fisheries New Zealand does not consider the available information justifies a reduction of this magnitude to the TACC. While Fisheries New Zealand prefers the allowances set out in Options 1 and 2, we note you have discretion when setting allowances.
- 1474. Fisheries New Zealand notes more robust information about both the commercial and recreational fisheries will be available in 2023.

Decision for Blue cod (BCO 3)

Option 1

Agree to set the BCO 3 TAC at 277.732 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
- Set the allowance for recreational fishing interests at 83 tonnes; ii.
- Set the allowance for all other sources of mortality to the stock caused by fishing at 12 iii. tonnes:
- Retain the BCO 3 TACC at 162.732 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



OR

Option 2 (Fisheries New Zealand's preferred option)

Agree to set the BCO 3 TAC at 243 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
- Set the allowance for recreational fishing interests at 83 tonnes; ii.
- Set the allowance for all other sources of mortality to the stock caused by fishing at 10 iii. tonnes:
- Decrease the BCO 3 TACC from 162.732 to 130 tonnes. iv.





OR

Option 3 (LegaSea)

Agree to set the BCO 3 TAC at 243 tonnes and within the TAC:

- Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes; i.
- Set the allowance for recreational fishing interests at 104 tonnes; ii.
- Set the allowance for all other sources of mortality to the stock caused by fishing at 9 tonnes; iii.
- Decrease the BCO 3 TACC from 162.732 to 110 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed



AND

Deemed Value

Agree to change the deemed value rates for blue cod (BCO 3) as set out below:

		Annual 100-	Differential rates (\$/kg) for excess catch (% of ACE)						
Stock	Interim	120%	120-140%	140-160%	160-180%	180-200%	>200%		
Recommended rates for BCO 3	4.05	4.50	5.40	6.30	7.20	8.10	9.00		

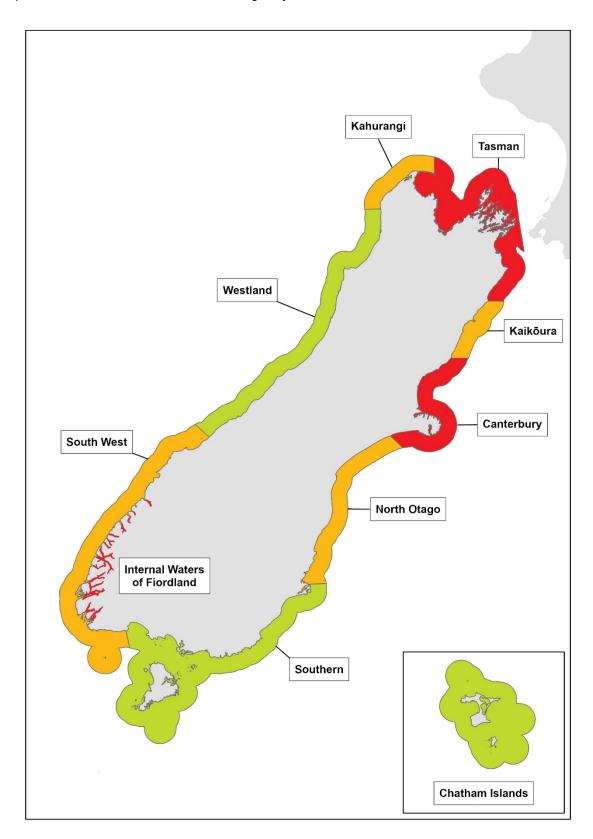
Agreed / Agreed as Amended / Not

Hon David Parker Minister for Oceans and Fisheries

Review of sustainability measures for October 2021: BCO 3 • 255

Blue cod (BCO 3) Appendix 1

Map of the South Island Blue Cod Traffic Light System.



(Galeorhinus galeus), Tupere, Tope, Makohuarau

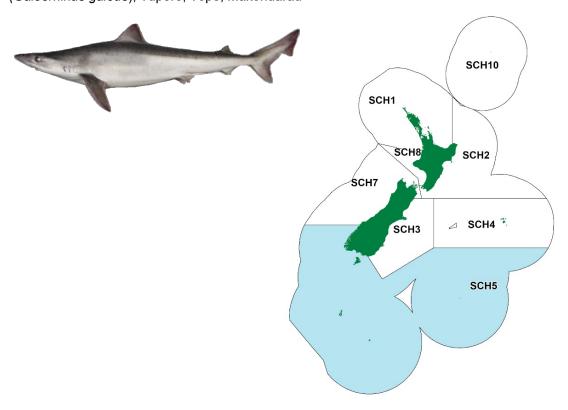


Figure 1: Quota Management Areas (QMAs) for school shark, with SCH 5 highlighted in blue. A school shark is pictured on the left.

Table 1: Summary of options proposed for SCH 5 from 1 October 2021. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

				Allowances				
Option	TAC	TAC TACC		Customary Māori	Recreational	All other mortality caused by fishing		
Status quo	794	743		7	7	37		
Option 1	558 ↓ (236 t)	520 🔱 (22	.3 t)	7	5 ↓ (2 t)	26 🔱 (11 t)		
Option 2	636 ↓ (158 t)	594 🔱 (14	9 t)	7	5 ↓ (2 t)	30 ↓ (7 t)		
New option incorporated following consultation			Yes (C	Option 2)				
Total submissions	s received		13					
Number of submissions received in support of			Status	quo	0100			
each option			Option	11	1 6			
			Other		7			

 $^{^{100}}$ Two submissions noted support of status quo if their preferred option was not provided and one supported status quo if another lesser reduction than Option 1 was not provided.

1 Why are we proposing a review?

- 1475. A recent re-assessment of SCH 5 has determined that the stock status of SCH 5 is unlikely (<40%) to be at or above target and about as likely as not (40-60%) to be below the soft limit. Overfishing is very likely (>90%) to be occurring. Fisheries New Zealand is undertaking this review to address this sustainability concern.
- 1476. Fisheries New Zealand is advising on two options to decrease the TAC, allowances (recreational and other sources of mortality caused by fishing), and the TACC for SCH 5.

1.1 About the stock

1.1.1 Fishery characteristics

- 1477. SCH 5 supports the largest school shark target fishery in New Zealand. In this fishery school shark are mostly caught using setnet (81%), with some minor targeting of rig. About 10% are taken by bottom longline, primarily targeting school shark, hāpuku/bass and ling, and 8% by bottom trawl primarily targeting squid, stargazer and ling.
- 1478. School shark are likely a single biological stock in New Zealand. However, fisheries characterisations and catch per unit effort (CPUE) analyses monitor school shark at a quota management area scale, with SCH 5 and the lower part of SCH 3 a combined monitoring unit using standardised setnet CPUE.
- 1479. This review focuses on SCH 5, which is considered a priority for review due to the high proportion of large, productive, female school shark taken in the fishery. In SCH 3 a wider range of sizes of school shark is taken by setnet and bottom trawl methods. Research trawl surveys have also shown that school shark in SCH 5 are larger than those in other areas on average.

1.1.2 Biology

- 1480. School shark are found in cold and temperate waters around New Zealand's coastline and on offshore rises and plateaux. Their diet consists of both benthic and pelagic fish, octopus and squid, crustaceans, annelids and juvenile gastropods. School shark aggregate inshore during warmer months and disperse offshore during autumn and winter. It is thought that mating likely occurs in deeper water with gestation around 12 months. Females breed approximately every 2-3 years. Litter size increases with the size of the mother and can range from 6-52 pups.
- 1481. Growth rates have not been estimated for New Zealand school shark, but in other areas (Australia and South America) school sharks are slow growing and long-lived. Maximum age is likely to be at least 50 years based on the results of a long-term tagging programme in Australia. Age-at-maturity is estimated at 12–17 years for males and 13–15 years for females. Overall, they have low productivity (i.e., a combination of late maturity, slow growth and low fecundity), which can make them vulnerable to overfishing.

1.2 Status of the stock

1482. In 2021, the Fisheries Assessment Plenary (the Plenary) accepted a new setnet combined series (standardised CPUE) as a valid measure of relative biomass for SCH 5. The Plenary assessment determined that the stock status for SCH 5¹⁰¹ is unlikely (<40%) to be at or above target and about as likely as not (40-60%) to be below the soft limit. Overfishing is very likely (>90%) to be occurring. Notably, CPUE has declined by as much as 50% since 2005 as relative fishing intensity has approximately doubled. SCH 5 is managed under section 13(2) of the Act as it is considered that the current level of the stock relative to that which can produce the MSY can be reliably estimated.

 $^{^{\}rm 101}$ And the lower part of SCH 3.

1483. The target for this fishery is an interim B_{MSY} -compatible proxy¹⁰² and is based on the mean CPUE from 1989-90 to 1998-99 for the set net combined series. This period was chosen because CPUE was stable, followed by a decline in CPUE as catches increased after 1999. The combined setnet index was favoured over the bottom trawl index as it covers a broad spatial area and size composition, while the bottom trawl index only includes shallow waters on the East Coast south of Banks Peninsula and around Foveaux Strait, and is based on sub-adult fish. The Plenary adopted the default Harvest Strategy Standard (HSS) definitions for the soft and hard Limits of 50% and 25% of the target, respectively (Figure 2). The upper limit for fishing mortality is based on the mean relative exploitation rate for the same period as the interim B_{MSY} -compatible proxy.

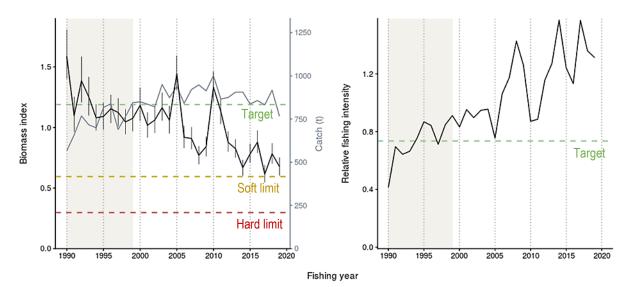


Figure 2: Standardised CPUE (setnet series) solid black line. Trajectory of total landed SCH from the sub-stock area (grey line). The reference period (1989–90 to 1998–99) is shaded.

Figure 3: Annual relative exploitation rate for school shark in SCH 3S/5. The interim fishing mortality rate-compatible target is shown with the green dashed line.

- 1484. The Plenary concluded that the stock is very likely (>90%) to remain below target and that overfishing will continue at current catch levels.
- 1485. The new stock assessment shows (retrospectively) that overfishing of SCH 5 may have been occurring for some time (Figure 3). The next assessment of the stock is scheduled for 2024, with the CPUE series update scheduled for 2023/24.

2 Catch information and current settings within the TAC

2.1 Commercial

- 1486. Commercial regulations set a minimum setnet mesh size for school shark of 150 mm (6 inches). Under Schedule 6 of the Fisheries Act 1996, commercial fishers may return school shark if they are likely to survive on return, and the return takes places as soon as practicable after the fish is taken. Most Schedule 6 returns reported are from deepwater trawl vessels likely to be targeting squid.
- 1487. SCH 5 catch fluctuated around the TACC from the early 1990s until about 2014-15 when a downward trend started to develop (Figure 4). On average over the last six years approximately 88.5% of the TACC has been caught. Catch in the 2019-20 fishing year was approximately 656 tonnes, or about 88% of the TACC. Some commercial fishers have raised concerns in the last two years that increased effort is required to catch their Annual Catch Entitlement (ACE). However, others are focusing their fishing effort in new areas and achieving greater success.

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 $^{^{102}}$ MSY-compatible reference points include B_{MSY} , F_{MSY} and MSY itself, as well as any analytical and conceptual proxies for each of these.

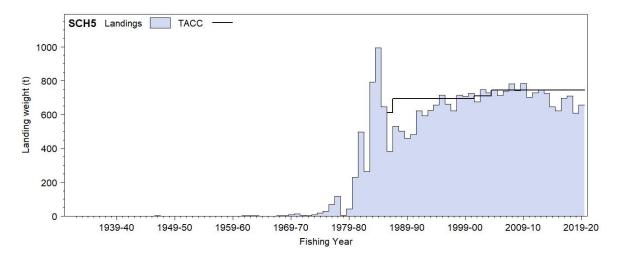


Figure 4: Reported commercial landings and TACC for SCH 5.

2.2 Customary Māori

1488. Māori fishers made extensive use of school shark in pre-European times for food, oil, and skin. Customary reporting within SCH 5 is under the Fisheries (South Island Customary Fishing) Regulations 1999. The current allowance for customary fishing (seven tonnes) was set based on the best estimate of customary catch at that time. Customary take of SCH 5 is low (with none reported in the last year), however, it is intermittent and depends on when significant occasions occur in the area.

2.3 Recreational

- 1489. Although school shark is a listed gamefish and is regularly caught by recreational fishers, it is not considered to be a particularly desirable target species. Rod and line fishing methods followed by kontiki are the most popular amateur fishing methods to harvest school shark in New Zealand.
- 1490. Recreational fishing surveys suggest that the amateur take of school shark appears to be declining nationwide. The recreational take in Fisheries Management Area 5 (FMA 5) is significantly less than most other regions. Fishers can take up to five school shark as part of their combined daily bag limit in the Southland area. The latest National Panel Survey of Marine Recreational Fishers (2017/18) results are consistent with this view with low numbers estimated (Table 2).

Table 2: Summary of the National Panel Survey of Marine Recreational Fishers results from QMA 5 for school shark.

Fish stock	2011/12 Estimated harvest (numbers)	2017/18 Estimated harvest (numbers)
SCH 5	443	349

1491. The National Panel Survey estimates do not include recreational harvest taken under general approvals given under section 111 ¹⁰³ of the Fisheries Act 1996. The average take under section 111 over the last five fishing years is 212 kg annually (fluctuating up to 366 kg per year).

2.4 All other mortality caused by fishing

¹⁰³ All fish on board a commercial vessel is deemed to have been taken for sale unless approval is given by the chief executive of MPI for the fish to be otherwise on board.

1492. Other mortality caused by fishing in SCH 5 includes mortality associated from fish escaping fishing gear or illegal discarding. The other mortality allowance is currently set at an amount that equates to 5% of the TACC. We consider this remains appropriate for this setnet fishery.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

- 1493. 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 Forum Fisheries 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 interest in fisheries. Particular regard must be given to kaitiakitanga when making sustainability decisions. Iwi Fisheries Forums may also be used as entities to consult other Iwi with an interest in fisheries.
- 1494. Te Waka a Māui me Ōna Toka Iwi Forum 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. They have developed the Te Waipounamu Iwi Forum Fisheries Plan.
- 1495. At the July 2021 Te Waka a Māui me Ōna Toka Iwi Forum hui, Fisheries New Zealand sought input from forum members into the management settings for SCH 5. Forum members deferred input to whanau quota holders and the input already received from the Murihiku Customary Fisheries Forum. That forum, held at Oraka Aparima Marae on 29 May 2021, included the tangata whenua for the SCH 5 takiwa (area). Representatives acknowledged the proposed TACC decrease would have an impact on commercial fishers but supported the review. They noted they would like to retain the current customary allowance (seven tonnes) to use as a sustainability tool by managing customary permits to a lower level of take.

3.2 Kaitiakitanga

- 1496. School shark (Makohuarau) is identified as taonga species in the Te Waipounamu lwi 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 2: South Island lwi 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.
- 1497. Customary tools utilised under the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries Act 1996, provide for tangata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaitai, taiāpure and temporary closures (Section 186B).
- 1498. There are seven mātaitai reserves that fall within SCH 5 (Table 3).

Table 3: Customary management areas within SCH 5.

Name	Management type		
Te Waka a Te Wera Mātaitai			
Pikomamaku Mātaitai	Mātaitai Reserve		
Kaikuka Mātaitai	Commercial fishing is not permitted within		
Horomamae Mātaitai	mātaitai reserves unless regulations state		
Waitutu Mātaitai	otherwise.		
Oreti Mātaitai			
Motupōhue Mātaitai			

1499. Fisheries New Zealand considers the options to decrease the TAC proposed in this paper are unlikely to impact on, or be impacted by, the customary management areas in SCH 5. Commercial fishing is not permitted in mātaitai reserves. The migratory nature of school shark and the large area of SCH 5 also means that the TACC can be caught elsewhere in the QMA. Furthermore, options 1 and 2 are aimed at increasing school shark biomass in SCH 5, including in customary management areas.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

- 1500. The key environmental interactions with this fishery, which must be taken into account when considering sustainability measures, concern marine mammals, seabirds, fish and invertebrate bycatch, benthic impacts and habitats of particular significance for fisheries management.
- 1501. Overall, Fisheries New Zealand considers the use of setnetting method and existing management measures both regulatory and non-regulatory (discussed below) mitigate the environmental impacts from fishing for school shark in SCH 5.
- 1502. There are no known school shark habitats of particular significance for fisheries management, and options 1 and 2 propose a decrease to current commercial catch. Existing management measures are likely contributing to maintaining biological diversity of the aquatic environment and maintaining associated or dependent species above a level that ensures their long-term viability.

4.1.1 Marine Mammals

- 1503. In general, commercial setnet fisheries have been assessed as posing a substantially greater risk of catching dolphins than trawl fisheries.
- 1504. The Hector's and Māui Dolphins Threat Management Plan (TMP) guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins. Since 2008, commercial and recreational setnetting prohibitions have been in place to manage the risk of setnetting to Hector's dolphins in FMA 5.
- 1505. As part of the previous Minister of Fisheries' 2020 decisions on the review of the plan, the area closed to setnetting at Te Waewae Bay within SCH 5 was extended. A new management approach is being considered for Hector's dolphin captures in the South Island areas not closed to setnet or trawl fishing.
- 1506. For SCH 5, the residual risk of fishing-related marine mammal mortality from commercial and recreational setnetting is likely to be low. Setnetting is banned in most areas to four nautical miles (nm) offshore, extending from Slope Point in the Catlins to Sand Hill Point east of Fiordland. In Te Waewae Bay the setnet ban includes the entirety of the Bay between Sand Hill Point and Wakaputa Point and offshore to 10 nm. Exemptions allow setnetting in harbours, estuaries, and inlets.

- 1507. Despite these measures, sometimes marine mammals are accidentally caught during commercial fishing. Commercial fishers must file daily reports about what they have caught. Fisheries New Zealand is now releasing these reports quarterly on our webpage. A summary of dead captures since the first quarter of 2019/20 to the second quarter of 2020/21 shows that 1 bottlenose dolphin, 2 fur seals, and 6 seals and sealions have been caught by setnetting method in FMA 5.
- 1508. It is important to note in some cases Fisheries New Zealand has made assumptions about the most likely fishing method and these reports may not have been independently verified (for example, by an on-board Fisheries New Zealand Observer). Observer coverage in the Southland setnet fishery has been given greater priority in recent years with the majority of setnet trips carrying observers. Even so, not all reporting in this fishery can be verified as there is not 100% observer coverage.

4.1.2 Seabirds

- 1509. Seabird interactions with New Zealand's commercial fisheries are managed under the National Plan of Action for Seabirds (NPOA Seabirds 2020). With its focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, this will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact on the health of seabird populations.
- 1510. Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade, more recently for inshore vessels, to ensure vessels have, and follow, a Protected Species Risk Management Plan. A Protected Species Risk Management Plan specifies the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures.
- 1511. While there is no legal requirement that fishers have a Protected Species Risk Management Plan, all four vessels that operate in the SCH 5 setnet fishery have, and follow, one. Under these plans there are various voluntary measures in place, such as a voluntary setnet closure within a 4 nm radius of Whenua Hou (Codfish Island) as well as other spatial closures and measures designed to avoid seabird interactions.
- 1512. Like marine mammals, seabirds do accidentally get caught during commercial fishing.

 Generally, target sets for school shark tend to be in deeper water and less likely to capture surface or shallow diving seabirds. In 2019, there was one Hoiho (yellow-eyed penguin) capture, and more recently there was two shag captures (using setnetting method) in FMA 5.

 Again, while observer coverage is relatively high in the Southland setnet fishery, it is not 100%. Therefore, not all reports on seabird captures can be independently verified in this fishery.

4.1.3 Fish bycatch

1513. Setnetting is the primary fishing method used to target school shark in SCH 5. Setnetting can be indiscriminate in terms of species capture, but highly selective in terms of fish size. Small fish will pass through the nets, while larger fish will generally be captured by snagging fins on the gear. As target school shark setnets have a larger mesh size (minimum of 150 mm), fish bycatch is likely to be a mix of species of a similar size and depth profile as school shark (e.g., elephant fish, red gurnard, hāpuku, blue cod).

4.1.4 Benthic impacts

1514. Setnetting consists of the use of light gear settling on the seafloor or within the water column. While the benthos may be snagged in the net mesh it is considered the impact will be relatively small. Many corals in New Zealand are protected under the Wildlife Act 1953 and commercial fishers are required to report any incidental capture of specific corals. In the quarterly reports provided on Fisheries New Zealand's website 0.2 kg of black coral has be reported as caught in FMA 5 by setnetting method in the first quarter of 2019/20.

4.1.5 Habitats of particular significance for fisheries management

1515. Fisheries New Zealand does not have sufficient information to conclusively identify significant areas of habitat that require protection for school shark in SCH 5. The SCH 5 setnet fishery is known to target mature fish and there is no known nursery ground in SCH 5. A summary of habitats of particular significance to SCH 5 are discussed in Table 4 below.

Table 4: Summary of information on habitats of particular significance for SCH 5.

Fish Stock	SCH 5
Habitat	Juveniles: There are no known nursery grounds within SCH 5. Nursery grounds for school shark are generally considered to be along shallow, often sandy, coastlines or in harbours and estuaries. Likely areas include Hauraki Gulf, Kaipara Harbour, Tasman and Golden Bays, Pegasus Bay, Canterbury Bight, and West Coast South Island.
	Adults: Habitat utilised by adult school shark appears to be general and widespread.
Attributes of habitat	Habitat that is important for juvenile school shark to develop and successfully recruit into the fishery are shallow, often sandy, coastlines or in harbours and estuaries. This suggests shelter, food and water temperature may be important attributes of school sharks preferred nursery habitat.
Reasons for particular significance	Successful pupping and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery.
Risks/Threats	 Benthic disturbance of nursery grounds. Land-based inputs into coastal areas. Changes in sea surface temperature.

- 1516. Given the wide distribution (they are found in temperate waters world-wide), highly migratory nature of school shark in New Zealand (moving between North and South Islands), and that embryos are internally gestated the greatest threat to school shark nursery areas is disturbance from multiple stressors (e.g. direct and indirect impacts from fishing and/or land-based effects, and changes in sea surface temperature). In New Zealand, most harbours are closed to bottom impact fishing methods. Furthermore, existing temporal and spatial fishing restrictions are also in place in coastal waters to mitigate the impact of fishing on the environment.
- 1517. The impact from land-based inputs such as sedimentation or the impact of resuspension of sedimentation from turbidity (e.g., storm events) on nursery areas is unknown. Fisheries New Zealand has recently established a new team to work closer with Councils to consider and mitigate land-based effects on habitats of significance to fisheries management.
- 1518. A recent study on climate change and the seafood sector has identified that an increase in water temperature might displace pupping and nursery grounds southward. If this was to occur, future regulatory tools will be considered to protect particularly significant habitats of importance to school shark in SCH 5.

4.2 Sustainability measures (section 11 of the Act)

1519. 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 plans.

4.2.1 Draft National Inshore Finfish Fisheries Plan

- 1520. Although not yet approved under section 11A, SCH 5 will be managed under the National Inshore Finfish Fisheries Plan (the Plan). The Plan outlines the management objectives and strategies for finfish fisheries for the next five years and was consulted on in early 2020.
- 1521. The Plan is aimed at progressing New Zealand towards ecosystem-based fisheries management. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group
- 1522. SCH 5 falls into Group 2, which recognises it should be managed to provide for moderate levels of use with moderate levels of information to monitor its stock status (e.g., a partial quantitative assessment compared against trends over time).

4.2.2 Fiordland (Te Moana o Atawhenua) Marine Management Act 2005

1523. The Fiordland (Te Moana o Atawhenua) Marine Area was established under the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005. This 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 (provided in section 5).

4.2.3 National Plan of Action for Sharks

- 1524. As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), school shark is included in the National Plan of Action for Sharks (NPOA Sharks 2013). The Plan takes into account the biological characteristics of sharks in terms of their vulnerability to fishing pressure.
- 1525. One of the goals of the NPOA Sharks is to maintain the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework, including maintaining those species in the QMS at or above its management target.

4.2.4 Regional Coastal Plan - Environment Southland

1526. The Environment Southland – Regional Coastal Plan has been fully operative since March 2013 and covers SCH 5. The provisions of the plan, which you shall have regard to under section 11 of the Act, has some rules related to non-boating activities, including fishing. Fishers are subject to the rules in the plan (including small scale restrictions on fishing in certain areas). Fisheries New Zealand considers that the large area of SCH 5 means these rules do not, in general, stop fishers undertaking their fishing activities in other areas within SCH 5.

5 Submissions

1527. There were 13 submissions and responses on the proposed changes to SCH 5 (Table 5). The responses were mixed; however, all sectors support a decrease to the TAC to varying degrees. Six supported the consulted 30% decrease and four supported a smaller decrease within the range of 15%-25%. Two individuals supported any decrease in catch limits for all stocks generally.

Table 5: Written submissions and responses received for SCH 5 (in alphabetical order).

	Option Support					
Submitter	Status quo	1 (-30%)	Other			
A. Flavell-Johnson			✓	Opposes any increase to TAC's but supports all decreases.		
B. Price			✓	Supports slowly increasing biomass back to higher levels $(80\% \ B_0)$.		

Environment and Conservation Organisations of New Zealand (ECO)	✓		Supports Option 2 and further research into the stock.
Fiordland Marine Guardians	✓		Support Option 2 as it is future focused and the goal to rebuild the fishery aligns with their vision for Fiordland Marine Area.
Galeos Fishing Company Ltd		✓	Supports a reduction but to a lesser extent. Noting, four families rely on its operation and provided information on fishing practices that might be influencing changes to CPUE.
Jacob Fishing Limited and N&H White Ltd		✓	Supports a reduction but would prefer a 20% reduction rather than 30%.
K. Mason		✓	Supports any decreases to catch limits of all stocks.
NZ Recreational Fishing Council (NZRFC)	✓		Supports Option 2 to move the stock back toward sustainable targets.
Riverton Fishermens Company Ltd		✓	Support decrease but would prefer 20-25% rather than 30%.
Royal Forest & Bird Protection Society (Forest & Bird)	✓		Supports Option 2. Notes QMA 5 is an important area of biodiversity and extra care should be taken in this region.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)	√		
Southern Inshore Fisheries Management Company (SIF), Endorsed by: Fisheries Inshore New Zealand (FINZ)		√	Propose a 3rd option that reduces the TACC by 15% until the next CPUE update due in 2023/24 to inform the performance of the fishery.
Te Ohu Kaimoana, Endorsed by: - Iwi Collective Partnership (ICP) - Maruehi Fisheries Ltd			
 Ngāti Mutunga o Wharekauri Asset Holding Company Ltd Ngātiwai Trust Board Tama Asset Holding Company Ltd (TAHCL) 	✓		Support Option 2. Acknowledge that the proposed decrease in TACC will have a substantial economic impact on the fishers and the community that rely on the catch of SCH 5.
- Taranaki lwi Fisheries Ltd - Te Kupenga o Maniapoto			

6 Options and analysis

- 1528. The target for this fishery is an interim B_{MSY} -compatible proxy and the default HSS definitions for the soft and hard limits are 50% and 25% of the target. SCH 5 has recently been assessed to be about as likely as not to be below the soft limit (see Figure 2).
- 1529. For stocks such as SCH 5 where the level of the stock that can produce *MSY* can be reliably estimated, the TAC is generally set or varied under section 13(2) of the Act. Section 13(2)(b)(i) of the Act provides that you (the Minister) shall set a TAC that enables the level of any stock whose current level is below that which can produce *MSY* to be altered in a way and at a rate that will result in the stock being restored to or above a level that can produce *MSY*, having regard to the interdependence of stocks. Section 13(2)(b)(ii) of the Act provides that when altering the level of the stock that it be within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock.

- 1530. The HSS specifies that when a stock is below the soft limit (SCH 5 is about as likely as not to be below) a formal, time-constrained rebuilding plan must be implemented and that the stock 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.
- 1531. As the target for SCH 5 is assessed using a partial quantitative stock assessment, we are unable to quantitatively determine rebuild timeframes such as T_{min} as specified by the HSS, the period appropriate to the stock or how quickly a particular TAC will move the stock towards the target level.
- 1532. Based on the biological characteristics of school shark, however, (i.e., long lived with low productivity) it is reasonable to consider that a rebuild period will be long and slow. Noting that formal analyses are not available at this time, Fisheries New Zealand considers that an appropriate rebuild period for school shark is likely to be a minimum of 20 years. Analyses to better support consideration of a period appropriate to SCH 5 will be undertaken in the future, but in the interim we propose this as the appropriate period given the best available information.
- 1533. We are unable to quantitatively determined how quickly the TAC options in this paper will restore the stock to the level that can produce *MSY*. However, the lower TAC proposed under Option 1 is more likely to do so within the period appropriate to the stock (i.e., a minimum of 20 years) than Option 2. As described below, Fisheries New Zealand does not consider the status quo to be an appropriate option that will restore the stock in manner required under the Act.

6.1 Status quo

- 1534. The status quo was presented during consultation to provide stakeholders an opportunity to present any new information for your consideration. However, it was made clear in the consultation document that the status quo posed the greatest risk to the sustainability of school shark in SCH 5 and did not recognise the current status of the stock (about as likely or not to be below the soft limit) or school sharks vulnerability to overfishing (which is very likely to be occurring for SCH 5).
- 1535. No parties specifically supported this option. While SIF supported a decrease in the TAC it supported the status quo if an alternative intermediary option (i.e., Option 2) was not provided.
- 1536. Taking into account the current status of the stock, the vulnerability of school shark to overfishing and that no new information relating to stock status was provided in feedback to consultation, Fisheries New Zealand does not consider the status quo meets the requirements of section 13(2) of the Act. Nor is it consistent with the HSS, which requires that when a stock is below the soft limit a formal, time-constrained rebuilding plan must be implemented.

6.2 Option 1 (Fisheries New Zealand's preferred option)

TAC: 558 t (▶ 236) **TACC:** 520 t (▶ 223) **Customary:** 7 t **Recreational:** 5 t (▶ 2) **Other mortality:** 26 t (▶ 11)

- 1537. Option 1 decreases the TAC by 236 tonnes (30%), the recreational allowance by two tonnes (28% reflecting the most recent recreational catch estimates), and the TACC by 223 tonnes (30%). It also decreases the other mortality allowance to maintain it at 5% of the TACC (a decrease of 11 tonnes). This option maintains the customary allowance at seven tonnes. Because this fishery has not been fully caught for a several years this option decreases the TAC and TACC by 18.5% of actual catch based on the last five complete fishing years.
- 1538. Option 1 places the greatest weight on the sustainability concerns for this fishery and school shark's vulnerability to overfishing. The recent stock assessment determined overfishing is very likely to be occurring in SCH 5. The SCH 5 fishery takes a high proportion of large female school sharks and research trawl surveys have also shown that school shark in SCH 5 are

- larger than most other areas. Overfishing of this stock may have a particular impact on pupping numbers, the productivity of SCH 5, and school shark in other areas.
- 1539. The TAC under this option is more likely to restore SCH 5 to or above a level that can produce *MSY* within the period appropriate to the stock (which we consider to be a minimum of 20 years) than Option 2 (noting this is currently unable to be quantitatively assessed).
- 1540. It is important to note a CPUE update is scheduled for 2023/24 and further stock status assessments scheduled for 2024. If the current trends of decreasing relative abundance and increasing relative fishing intensity continue, or fail to be reversed, further reductions in the TAC will be required.
- 1541. Option 1 would contribute to the achievement of the Te Waipounamu lwi Forum Fisheries Plan management objectives, particularly Objective 3 to develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits. It should be noted that that this species is longer lived and has low natural mortality so fish will remain in the fishery to be utilised over the long-term. Maintaining the customary allowance at seven tonnes also recognises Objective 2, that lwi are able to exercise kaitiakitanga.
- 1542. Option 1 has the greatest likelihood of achieving the NPOA Sharks' goal of maintaining the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework, including maintaining those species in the QMS at or above its management target.
- 1543. Option 1 does, however, have a cost to the commercial sector in a region that is heavily reliant on fishing and associated industries. An estimated reduction of \$271,255 in commercial fishing revenue based on SCH 5 2019/20 port prices, is expected for Option 1. This figure is estimated from last year's total catch (656 tonnes) not the TACC (743 tonnes) and does not take into account wider and downstream economic impacts. However, this financial impact needs to be weighed against the expectation of a rebuilt stock that would provide higher annual yields, lower risks to the stock and lower fishing costs in the long-term. Given that school shark are considered to be a New Zealand wide population and tend, in this area, to consist of the highest proportions of larger individuals the measures taken to move this management unit back toward target may also benefit school shark in other areas outside SCH 5.
- 1544. Te Ohu Kaimoana, Fiordland Marine Guardians, recreational fishers, environmental and animal protection interests all support Option 1. Feedback from submitters and responders has been based on the stock's low productivity and taking a cautious approach while acknowledging the short-term revenue impact on those that rely on the catch from this fishery. Option 1 is future focused and aligns with Fiordland Marine Guardian's vison for the Fiordland Marine Area. It also has the greatest likelihood of maintaining the high biological diversity of the area and moving the stock to sustainable targets.

6.3 Option 2 (new option)

TAC: 636 t (**▶** 158) **TACC:** 594 (**▶** 149) **Customary:** 7 t **Recreational:** 5 t (**▶** 2) **Other mortality:** 30 t (**▶** 7)

- 1545. Option 2 is a new option developed in response to feedback from commercial fishers. Option 2 proposes to decrease the TAC by 158 tonnes (20%), the recreational allowance by 2 tonnes (28% reflecting the most recent recreational catch estimates), and the TACC by 149 tonnes (20%). It also decreases the other mortality allowance to maintain it at 5% of the TACC (a decrease of 7 tonnes). This option maintains the customary allowance at 7 tonnes. Again, because this fishery has not been fully caught for a several years this option decreases the TAC and TACC by 8.5% of actual catch based on the last 5 full fishing years.
- 1546. SCH 5 set netters and SIF (representing quota holders and commercial fishermen) all support a decrease in the TAC for SCH 5. However, they have raised concerns about the proposed 30% reduction under Option 1 and offered a range of alternatives between 15%-25%. They also

noted the impact of this level of decrease on the families that this fishery supports. While fishers are experiencing different decreases in CPUE they have provided additional information to explain how changes in fishing practices may be contributing to the changes in CPUE rather than it necessarily being solely an indicator of abundance. However, it is important to note that CPUE has been low for many years and the changing fishing dynamics are likely to be influencing changes in the overall CPUE only marginally, given the current stock status and that overfishing has likely been occurring for some time.

- 1547. Over recent years, fishing companies have had a change of skippers on their boats as some of the more experienced fishers focus on other matters. It is likely the new skippers are still building up their knowledge of the fishery and fishing different to their predecessors. Market incentives have also changed with prices being higher for smaller school shark with fishers changing to smaller mesh size (7 inch rather than 9 inch) to target smaller fish in response. In some cases, the size mix has changed significantly with over 70% of one company's catch now consisting of smaller fish when previously larger fish made up most of the catch.
- 1548. SIF also note this year's catch has increased significantly (catch reports show this year 705 tonnes have been taken to June compared with 539 tonnes to the same time last year 104) and that they are seeing signs of improvement in the fishery. This is not considered a behavioural change associated with this review as fishers were not aware of the review of SCH 5 until June 2021. Some fishers believe the fishing restrictions to protect marine mammals are likely to be contributing to this. The restrictions exclude setnetting in most areas to 4 nm offshore, extending from Slope Point in the Catlins to Sand Hill Point east of Fiordland. In Te Waewae Bay the setnet ban includes the entirety of the Bay between Sand Hill Point and Wakaputa Point and offshore to 10 nm.
- 1549. Option 2 would have a lesser impact on commercial fishers in a region that is reliant on fishing and associated industries for employment opportunities until a new CPUE update is completed in 2023/24. Option 2 has an estimated short-term revenue loss to the commercial sector of \$123,995 based on SCH 5 2019/20 port prices. Again, this figure is estimated from last year's total catch (656 tonnes) not the actual TACC (743 tonnes) and does not take into account wider and downstream economic impacts, nor the longer-term benefits of a stock rebuild.
- 1550. As noted, school shark are long lived and have low productivity (i.e., a combination of late maturity, slow growth and low fecundity). While we are unable to quantitatively determined how quickly the TAC options is this paper will restore the stock to the level that can produce *MSY*, we expect that the smaller reductions in catch proposed under this option will result in a slower rebuilding of the stock that is less likely to restore SCH 5 to or above a level that can produce *MSY*, within the period appropriate to the stock, and less certainty that it will rebuild.

6.4 Other matters raised

- 1551. One commercial fisher has raised concerns about the reduction to SCH 5 only, when school shark is considered one biological stock. They consider that all school shark stocks should be reduced back to 2001 TAC settings and seek a review of all other school shark fisheries management units rather than targeting one fishery. All school shark stocks were assessed in 2021 and the results did not indicate that TAC reviews were necessary for most other stocks. Fisheries New Zealand will, however, continue to monitor SCH 3 closely given the lower part of SCH 3 is part of the same stock assessment unit as SCH 5.
- 1552. Another commercial fisher noted the occurrence of damaged fish believed to be from hooks from the longline fishery. As noted, under Schedule 6 of the Act, commercial fishers may return school shark if they are likely to survive on return with the majority reported from deepwater trawl vessels likely to be targeting squid. Fisheries New Zealand will contact this fisher to gather more information and investigate this matter further.

11

¹⁰⁴ This equates to approximately 95% of the TACC compared with 72% of the TACC for the same time (June) the previous year.

- 1553. Forest and Bird noted support for ongoing high observer coverage for this fishery. Fisheries New Zealand will take this view into account when allocating observer coverage across all fisheries.
- 1554. SPCA raised concerns about school shark being listed as a gamefish and the prolonged pain, injury and distress to fish from sports fishing. Fisheries New Zealand notes that recreational take of school shark in SCH 5 is significantly less than most other regions. Reclassifying school shark is outside the scope of this paper.

7 Deemed values

1555. Fisheries New Zealand did not propose a change in the deemed values for school shark in SCH 5 during consultation. SIF advised during consultation that it agrees that deemed values should be maintained at current levels. The deemed value rates for SCH 5 are shown in Table 6.

Table 6: Standard deemed value rates (\$/kg) for SCH 5.

	Interim Rate	Annual Differential Rates (\$/kg) for excess catch (% of ACE) 100-120% 120-140% 140-160% 160-180% 180-200% 200%+								
	(\$/kg)									
Status quo	1.13	1.25	1.50	1.75	2.00	2.25	2.50			

1556. The average price paid by fishers during the 2019/20 fishing year for one kilogram of SCH 5 ACE was approximately \$0.68 per kg. The 2019/20 port price index of SCH 5 was \$1.99 per kg. As the current deemed value rates of SCH 5 are set above the average ACE price, no changes are proposed to the deemed value rates at this time.

8 Conclusions and recommendations

- 1557. The most recent stock status assessment of SCH 5 determined that the stock is unlikely (<40%) to be at or above target and about as likely as not (40-60%) to be below the soft limit. Overfishing is very likely (>90%) to be occurring.
- 1558. For stocks such as SCH 5 where the level of the stock that can produce MSY can be reliably estimated, the TAC is generally set or varied under section 13(2)(b) of the Act, which requires that stock be restored to or above a level that can produce MSY, having regard to the interdependence of stocks. Also, when altering the level of the stock it must be within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock.
- 1559. The HSS specifies that when a stock is below the soft limit (SCH 5 is about as likely as not to be below) a formal, time-constrained rebuilding plan must be implemented and that the stock 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.
- 1560. As the target for SCH 5 is assessed using a partial quantitative stock assessment, we are unable to quantitatively determine rebuild timeframes such as T_{min} as specified by the HSS, the period appropriate to the stock or how quickly a particular TAC will move the stock towards the target level. Based on the biological characteristics of school shark Fisheries New Zealand considers that an appropriate rebuild period for school shark is likely to be a minimum of 20 years.
- 1561. Fisheries New Zealand received 13 submissions or responses on the proposed changes to SCH 5. The responses were mixed; however, all sectors support a decrease to the TAC to varying degrees. Six supported the consulted 30% decrease (including Te Ohu Kaimoana, Fiordland Marine Guardians, recreational fishers, environmental and animal protection interests) and four supported a smaller decrease within the range of 15%-25%. Two individuals supported any decrease in catch limits for all stocks generally.

- 1562. In response to the feedback received from consultation, Fisheries New Zealand has presented you with two options to consider. The status quo is not presented as an option in this paper because of the current stock status, school shark's vulnerability to overfishing and that no new information relating to stock status was provided during consultation. Fisheries New Zealand does not consider the status quo meets the requirements of section 13(2) of the Act.
- 1563. Option 1 places the greatest weight on the sustainability concerns for this fishery and school shark's vulnerability to overfishing. It decreases the TAC by 236 tonnes and the TACC by 223 tonnes. It also takes into account the stock's low productivity and takes a more cautious approach. It also aligns with Fiordland Marine Guardian's vison for the Fiordland Marine Area. Option 1 has the greatest likelihood of continuing to maintain the high biological diversity of the area and moving the stock back towards its management target. However, it also has the greatest short-term revenue impact on fishers and associated industries in a region reliant on the primary sectors.
- 1564. Option 2 was developed after consultation and in response to feedback from commercial fishers. It decreases the TAC by 158 tonnes and the TACC by 149 tonnes. This option takes into account that there has been a significant increase in catch this year from previous years (to-date) and that the fishing dynamics are changing in this fishery. This option lessens the short-term revenue loss for commercial fishers until a new CPUE update is completed in 2023/24.
- 1565. Fisheries New Zealand is unable to quantitatively determined how quickly the TAC options is this paper will restore the stock to the level that can produce *MSY*. However, the lower TAC proposed under Option 1 is more likely to do so within the period appropriate to the stock (i.e., a minimum of 20 years) than Option 2.
- 1566. Regardless of which option you consider is most appropriate, Fisheries New Zealand will continue to monitor the stock closely and to reassess it periodically. If the current trends of decreasing abundance and increasing relative fishing mortality continue, or fail to be reversed, further reductions in TAC and TACC will be required.
- 1567. Fisheries New Zealand's preferred option is Option 1.

Decision for SCH 5 9

Option 1 (Fisheries New Zealand's preferred option)

Agree to set the SCH 5 TAC at 558 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 7 tonnes;
- Decrease the allowance for recreational fishing interests from 7 tonnes to 5 tonnes; ii.
- Decrease the allowance for all other sources of mortality to the stock caused by fishing from iii. 37 tonnes to 26 tonnes;
- Decrease the SCH 5 TACC from 743 tonnes to 520 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2

Agree to set the SCH 5 TAC at 636 tonnes and within the TAC:

- Retain the allowance for Māori customary non-commercial fishing interests at 7 tonnes;
- Decrease the allowance for recreational fishing interests from 7 tonnes to 5 tonnes; ii.
- Decrease the allowance for all other sources of mortality to the stock caused by fishing from iii. 37 tonnes to 30 tonnes;
- Decrease the SCH 5 TACC from 743 tonnes to 594 tonnes. ίv.

Agreed / Agreed as Amended / Not Agreed

Hon David Parker Minister for Oceans and Fisheries