



Fisheries New Zealand

Tini a Tangaroa

Review of Sustainability Measures for the 2022 April round

Fisheries New Zealand Decision Paper

ISBN No: 978-1-99-102635-4 (online)

2 March 2022

Disclaimer

While every effort has been made to ensure the information in this publication is accurate, Fisheries New Zealand does not accept any responsibility or liability for error of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information.

This publication is available on the Ministry for Primary Industries website at <http://www.mpi.govt.nz/news-and-resources/publications/>

© Crown Copyright – Fisheries New Zealand

Contents

Page

Introduction and legal overview

1	Introduction	1
2	Overview of powers and obligations under the Fisheries Act 1996	2
3	Relevant Standards, Guidelines and Strategies	6
4	Input and consultation	8
5	General themes	10

Deepwater stocks

	Southern blue whiting (SBW 6B)	12
	Redbait (RBT 7)	24

Inshore stocks

	Hapuku/ bass (HPB 7 & HPB 8)	38
	Scallop (SCA CS)	67
	Scallop (SCA 1)	110

Public submissions received

see separate document

1 Introduction

1. This paper seeks your decisions in relation to the April 2022 Sustainability Review. You are asked to make decisions on sustainability measures and allowances for selected 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 7 & 8).

Section 11 controls

- Closures under section 11 of the Act.

3. Your decisions on catch limits, allowances and deemed values for fish stocks with an April Fishing Year will take effect on 1 April 2022. For stocks with an October fishing year the changes will take effect on 1 October 2022. Any decision to change recreational controls 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.
4. The fish stocks proposed for changes as part of the April 2022 Sustainability Review are listed below in Table 1.

Table 1: Summary of stocks reviewed for catch limits, allowances and deemed values as part of the 1 April 2022 sustainability round.

Stocks with an April fishing year	
Deepwater stocks	Inshore stocks
<ul style="list-style-type: none"> • Southern blue whiting (SBW 6B – Sub-Antarctic, Bounty Platform) 	<ul style="list-style-type: none"> • Spiny rock lobster (CRA 1, 7 & 8 -- Northland, Otago, Southern) • Scallop (SCA 1 & CS – Northland and Coromandel)
Stocks with an October fishing year	
Deepwater stocks	Inshore stocks
<ul style="list-style-type: none"> • Redbait (RBT 7 – west coast North and South Island) 	<ul style="list-style-type: none"> • Hāpuku / Bass (HPB 7 & 8 – West Coast South Island and Central (West) Coast North Island)

5. This decision document provides you with Fisheries New Zealand's (FNZ) final advice on proposals for the selected fish stocks excluding rock lobster stocks. The final advice on proposals for rock lobster stocks is provided to you in a separate document that FNZ has developed with the National Rock Lobster Management Group (NRLMG). This document contains all the legal context for making decisions on sustainability measures for all stocks in this round, including rock lobster (Appendix three).
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 proposals, primarily through Iwi Fisheries Forums, which have been set up for this purpose. We have identified species and areas over which these groups have expressed kaitiakitanga, to which you must have particular regard when making these decisions.
8. The submissions have been summarised where relevant for each stock. However, should you wish to view full submissions on the April 2022 sustainability round proposals, these have been provided separately to your office (titled: "*Public Submissions Received for the 2022 April 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.

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

Section 7: Recognition of national significance of Hauraki Gulf	Section 8: Management of Hauraki Gulf
<p>(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.</p> <p>(2) The life-supporting capacity of the environment of the Gulf and its islands includes the capacity—</p>	<p>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—</p> <p>(a) the protection and, where appropriate, the enhancement of the life-supporting capacity of the environment of the Hauraki Gulf, its islands, and catchments:</p> <p>(b) the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments:</p>

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

<p>(a) to provide for—</p> <p>(i) the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and its islands; and</p> <p>(ii) the social, economic, recreational, and cultural well-being of people and communities:</p> <p>(b) to use the resources of the Gulf by the people and communities of the Gulf and New Zealand for economic activities and recreation:</p> <p>(c) to maintain the soil, air, water, and ecosystems of the Gulf.</p>	<p>(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:</p> <p>(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:</p> <p>(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:</p> <p>(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.</p>
--	---

2.4 Statutory Considerations

19. Table 4 provides an overview of your 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.

Decisions you may make	Requirements – things you must do when making decisions
Part 3 Sustainability Measures	
<p>Section 11</p> <p>You may set or vary sustainability measures for any stock</p> <p>S11(3) Sustainability measures may relate to (but are not limited to):</p> <ul style="list-style-type: none"> • Catch limits • Size, sex or biological state • Areas • Fishing methods • Fishing seasons 	<p>(1) after taking into account:</p> <p>(a) effects of fishing on any stock and aquatic environment; and</p> <p>(b) existing controls under this Act that apply to the stock or area concerned; and</p> <p>(c) the natural variability of the stock concerned.</p> <p>(2) before setting or varying any sustainability measure, you must have regard to:</p> <p>(a) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; and</p> <p>(b) any management strategy or plan under the Conservation Act 1987; and</p> <p>(c) sections 7-8 of the Hauraki Gulf Marine Park Act 2000; and</p> <p>(ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and</p> <p>(d) a planning document lodged with you by a customary marine title group under s 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 – that apply to the coastal marine area and are considered by you to be relevant.</p> <p>(2A) before setting or varying any sustainability measure, you must take into account:</p> <p>(a) any conservation or fisheries services; and</p> <p>(b) any relevant fisheries plan approved under section 11A; and</p> <p>(c) any decisions not to require conservation or fisheries services.</p>
<p>Section 11A</p> <p>You may approve, amend or revoke fisheries plans</p>	<p>Fisheries plans may include:</p> <p>(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;</p> <p>(d) conservation or fisheries services; or</p> <p>(e) contingency strategies to deal with foreseeable variations in circumstances.</p> <p>To date national fisheries plans have been approved only for deepwater and highly migratory species, the Foveaux Strait oyster fishery and PAU 4 (Chatham Islands).</p>
<p>Section 13</p>	<p>(2) You must set (and may vary – s(4)) a TAC that:</p>

Decisions you may make	Requirements – things you must do when making decisions
<p>You must set and may vary, a TAC for stocks in the Quota Management System (QMS)</p>	<p>(a) maintains the stock at or above a level that can produce the maximum sustainable yield (<i>MSY</i>), having regard to the interdependence of stocks; or</p> <p>(b) enables the level of any stock below a level that can produce <i>MSY</i> to be altered:</p> <p>(i) in a way and at a rate that will restore the stock to a level that can produce <i>MSY</i> having regard to the interdependence of stocks; and</p> <p>(ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and environmental conditions affecting it, or</p> <p>(c) enables the level of any stock above that which can produce <i>MSY</i> to be altered in a way and at a rate to move the stock toward or above that which can produce <i>MSY</i> having regard to the interdependence of stocks.</p> <p>(2A) If you consider that the stock level to produce <i>MSY</i> is not able to be estimated reliably using best available information, you must:</p> <p>(a) not use this as a reason to postpone or fail to set a TAC; and</p> <p>(b) have regard to the interdependence of stocks, biological characteristics of the stock and any environmental conditions affecting the stock; and</p> <p>(c) set a TAC</p> <p>(i) using the best available information; and</p> <p>(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 <i>MSY</i>.</p> <p>(3) In considering the way and rate at which a stock is moved toward or above a level that can produce <i>MSY</i> you must have regard to such social, cultural and economic factors as you consider relevant.</p> <p>(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).</p>
Part 4 Quota Management System	
<p>Section 20</p> <p>You must set and may vary TACC for quota management stocks. A TACC must not be set unless the TAC has been set for the stock.</p>	<p>Section 21 You must take the following into account when setting or varying TACC:</p> <p>(1) In setting or varying TACC you must have regard to the TAC and must allow for</p> <p>(a)(i) Māori customary interests; and</p> <p>(a)(ii) Recreational interests; and</p> <p>(b) all other mortality to the stock caused by fishing.</p> <p>(2) Before setting or varying TACC you must consult representatives of classes of people that have an interest</p> <p>(3) After setting or varying a TACC you must give the parties listed under (2) reasons in writing for your decision</p> <p>(4) When allowing for Māori customary interests you must take into account</p> <p>(a) any mātaihai reserve in the Quota Management Area (QMA) declared under s186;</p> <p>(b) any area closure or method restrictions/prohibitions imposed under s186A.</p> <p>(5) When allowing for recreational interests you must take into account any regulations that prohibit or restrict fishing under s311.</p>

Decisions you may make	Requirements – things you must do when making decisions
<p>Section 75</p> <p>You must set and may vary interim and annual deemed value rates for each quota management stock</p>	<p>(2) In setting deemed values you:</p> <ul style="list-style-type: none"> (a) must take into account the need to provide incentive for fishers to acquire or maintain sufficient ACE (b) may have regard to: <ul style="list-style-type: none"> (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. <p>(3) You must set annual deemed values that are greater than interim deemed values for that stock</p> <p>(4) Different deemed values may be set for different levels of excess catch</p> <p>(5) Different deemed values may be set for the Chatham Islands</p> <p>(6) When setting deemed value rates, you must not:</p> <ul style="list-style-type: none"> (a) have regard to the personal circumstances of individuals or class of person (b) set separate deemed values in individual cases.

3 Relevant Standards, Guidelines and Strategies

3.1 Maximum Sustainable Yield

20. 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*).
21. 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.
22. 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.
23. 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

24. 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.

25. 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).
26. The HSS outlines FNZ's approach to relevant sections of the Act and, as such, forms a core input to FNZ's advice to the Minister on the management of fisheries, particularly the setting of TACs under sections 13 and 14.²
27. 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.³ 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.
28. 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	<i>Differs depending on productivity of the stock</i> 40% unfishable biomass (B_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 ⁴ . T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing.

3.3 Deemed Value Guidelines

29. 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

² 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.

³ Royal Forest and Bird Protection Society of New Zealand v Minister of Fisheries [2021] NZHC 1427 at [152]-[153].

⁴ 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%.

guidelines serve only as a guide and do not preclude you from taking into account relevant information on a case by case basis. Section 75 allows the you to have regard to any other matters you consider relevant.

3.4 Relevant Strategies and Plans

30. 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 Plan⁵
 - Regional plans (local environmental and coastal plans)
 - 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)
31. 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 management of fisheries including 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.
32. FNZ is working with the Department of Conservation and other agencies on implementation plans for the strategy. As part of those plans, we will identify areas of focus for FNZ in delivering Government biodiversity objectives including progression to a more integrated ecosystem-based approach to managing fisheries. In that context, this advice contains information on biodiversity impacts, ecosystem function and habitat protection associated with adjustments to catch limits consistent with your legislative obligations and the intent of Te Mana o te Taiao.

4 Input and consultation

4.1 Input and participation of tangata whenua

33. 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.
34. Input and participation into the sustainability decision-making process is provided primarily through Iwi Fisheries Forums, which have been established for that purpose. In late October and early November 2021 Iwi Fisheries Forums were invited to have input into the selection of

⁵ The Plan has not been approved yet and may still be subject to change. Therefore, under section 11(2A), you are not required to take it into account.

stocks for review. Tangata whenua also had an opportunity to provide additional input into the proposals to set or vary sustainability measures during the consultation period.

35. 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

36. Public consultation on the April 2022 sustainability round commenced on 14 December 2021.
37. FNZ notified Treaty Partners and stakeholders that consultation documents were available for the stocks under review and directed them to a relevant consultation page on FNZ'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.
38. Submissions officially closed at 5.00 pm on 8 February 2022, allowing a period of eight weeks in total (including the Christmas break) for people to submit on the proposed changes.⁶
39. 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 April 2022 Sustainability Round.

Fish stock(s) reviewed	Total submissions	Submissions by main interest group of submitters ¹				
		Commercial fishing	Recreational fishing	Conservation/ Environmental	Tangata whenua and iwi representatives	Other ⁷
Total	180	61	39	8	17	60
Rock lobster	75	41	8	5	13	17
Scallop	121	19	34	3	15	59
Hapuku/ Bass	31	15	6	1	8	8
Redbait	14	10	0	2	7	2
Southern blue whiting	14	10	0	2	7	2
Other stocks not consulted on	3	1	0	0	0	2

¹Main 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).

⁵Others, include the general people, and other sectors not directly involved in the fishing industry.

40. FNZ received a total of 180 submissions or responses. Many of these submissions and responses were received from stakeholders on behalf of large representative bodies and organisations:
- Te Ohu Kaimoana, the Iwi 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).
 - Several eNGOs made submissions including the Environmental and Conservation Organisations of NZ (ECO), Forest and Bird NZ and the Environmental Defence Society (EDS).

⁶ Fisheries New Zealand continued to accept and count all submissions received after the deadline until 5.00 pm on 11 February 2022. Extensions were also provided for submitters upon request and within reason.

5 General themes

5.1 Managing recreational catch

41. Te Ohu Kaimoana and other commercial groups are concerned about the reliability of recreational catch and effort information. The responses suggested that any reductions in catch, which are required to ensure the sustainability of a fishery, need to be shared equally by both the recreational and commercial sectors. They note that, because recreational take is so poorly understood, management focuses on constraining commercial catch rather than understanding total harvest.
42. They also note that parallel regulatory changes are required for the recreational sector to contribute to a TAC decrease and a corresponding reduction in the recreational allowance. Simply changing the recreational allowance does not constrain the recreational sector. Regulatory changes such as adjustments to bag limits and accumulation limits need to occur alongside TAC adjustments.
43. FNZ recognises the need to manage recreational catch alongside setting TACCs, particularly for shared fisheries where there is high recreational interest. FNZ is running a review of hapuku/ bass (HPB7 & HPB 8) where 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 support sharing the responsibility but consider that the approach should be used more broadly across stocks.

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

44. Submissions from environmental groups emphasised the need for ecosystem-based fisheries management (EBFM) to be clearly reflected in our approach to managing multispecies fisheries. FNZ understands this need and has tried to provide clear links between the reviews of interdependent stocks so that decisions on their management settings are better informed and take the wider ecosystem into account.
45. 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 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. FNZ is working towards aligning with the recommendations set out in this report.
46. Relevant information on habitats of particular significance for fisheries management is provided with advice for each stock. FNZ considers progress is being made towards the development of effective and consistent guidance for defining, identifying and managing HPSFM.
47. It is important to note that FNZ is not asking for your decisions in relation to protection or mitigation measures for any HPSFM. FNZ has provided more detail as to what is known about HPSFM in the 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, FNZ will initiate separate processes for mitigating and addressing those risks which may result in future decisions being warranted.

5.3 Public concerns about the impacts of dredging

48. There is widespread concern around the impacts of dredging on the seabed and wider marine environment. It is well known that fishing with mobile bottom-contact gears, such as dredges, has impacts on benthic populations, communities, and their habitats. A total of 52 submissions for SCA 1 and 25 submissions for SCA CS supported a ban on dredging, both recreational and

commercial. New Zealand Sports Fishing Council and LegaSea have also put forward campaigns to ban both recreational and commercial scallop dredging.

49. Removing scallop dredging was a feature of the Sea Change Hauraki Gulf Marine Spatial plan and the recently released Government Response Strategy to Sea Change, through the draft Fisheries Plan. This committed to removing recreational dredging from the marine park and freezing commercial dredge fishing to within the current footprint, while implementing improved monitoring and management approaches.
50. While it is not a consideration for your decision on these sustainability measures, it is noted for context that the impact of scallop dredging is also being considered through the Resource Management Act (RMA) appeals on the Proposed Northland Regional Plan.⁸ Regional Plan rules are being sought to provide spatial protection measures, prevent damage to the seafloor and prohibit the temporary or permanent damage or destruction or removal of fish, aquatic life or seaweed in areas of the Inner Bay of Islands and down to Mimiwhangata.
51. Your decision on SCA 1 is likely to be relevant to the issues being raised in Northland and the relief sought by the appellants in relation to “Area B” Ipipiri moana mara tipu rohe in the inner Bay of Islands. In that area commercial scallop take is already prohibited under Fisheries Act measures while recreational scallop take is permitted. Any resolution of the Northland appeal or decision of the court will likely occur after your decision on SCA 1.
52. Currently, a viable alternative harvesting method to dredging does not exist for commercial fisheries and, for that reason, the prohibition of commercial dredging is not proposed. If the TACC were to be increased in the future to provide for commercial utilisation, the method of harvest would be considered in the setting of a sustainable TACC at that time. The operation and management of commercial scallop fisheries, including the ongoing use of dredging, will be part of the longer-term management consideration for the fishery.
53. FNZ considers there are opportunities for innovation and development in this area to work towards methods that reduce adverse effects and lower the impact on the benthic and marine environment. In line with this, FNZ is currently consulting on enabling the use of Underwater Breathing Apparatus for fishers to commercially harvest scallops and is being consulted on separately as part of a package of fisheries regulatory changes. FNZ recognises the need to ensure the marine environment is adequately managed to mitigate fishing impacts, which includes ensuring that the effects of dredging are appropriately managed. Within our advice on SCA 1 and SCA CS, we have outlined what is known about the impacts of dredging and how it is managed. Where relevant, we have also responded to submitters’ more specific concerns about dredging and provided our analysis for you to consider.

⁸ Refer B21-0632 and Ocean Status item dated 25 February 2022.

Southern blue whiting (SBW 6B) – Bounty Platform

Micromesistius australis

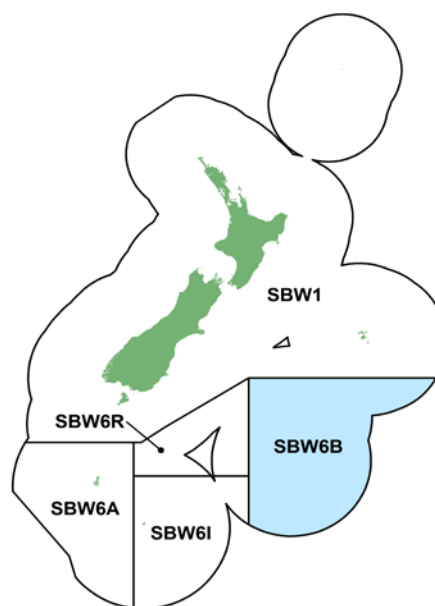


Figure 1: Quota Management Areas (QMAs) for southern blue whiting, with SBW 6B highlighted in blue. A southern blue whiting is pictured on the left.

Table 1: Summary of options proposed for southern blue whiting (SBW 6B) from 1 April 2022. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (<i>Status quo</i>)	2,888	2,830	0	0	58
Option 2	2,309 ↓ (579 t)	2,264 ↓ (566 t)	0	0	45 ↓ (13 t)
Option 3	2,021 ↓ (867 t)	1,981 ↓ (849 t)	0	0	40 ↓ (18 t)
New option incorporated following consultation		No			
Total submissions received		12			
Number of submissions received in support of each option		Option 1		9	
		Option 2		0	
		Option 3		2	
		Other		2	

1. Why are we proposing a review?

54. Fisheries New Zealand (FNZ) has initiated a review of the sustainability measures for southern blue whiting (SBW) in Quota Management Area (QMA) SBW 6B (Bounty Platform) for the 1 April 2022 fishing year (Figure 1).
55. The best available information indicates that there has not been significant recruitment into the fishery since 2012. On that basis, FNZ consulted on two options to reduce the Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC) to ensure the fishery remains sustainable (Table 1).

1.1 About the stock

1.1.1 Fishery characteristics

56. The southern blue whiting fishery at the Bounty Platform targets spawning aggregations of fish from mid-August to early September. These aggregations tend to move in an anticlockwise direction around the Bounty Islands. Southern blue whiting is characterised by highly variable recruitment, often referred to as year class strength. Very strong year classes are observed infrequently and are separated by longer periods of average or below average recruitment. The year classes from strong recruitment events can dominate the population and persist in the catch for over 20 years. The 2002 year class was very strong and comprised 40% of the commercial catch proportion-at-age in 2020.

1.1.2 Biology

57. Southern blue whiting (*Micromesistius australis*) is a relatively productive species that is generally confined to depths of 250 m to 600 m in New Zealand's sub-Antarctic waters. They grow quickly, reaching a length of approximately 20 cm length within the first year and 30 cm after two years. Fish in the spawning fishery range between 35 cm and 50 cm in length and are aged to be between 3 years and a maximum of 20-25 years old. Females are larger than males. Growth slows after five years and almost ceases after ten years.
58. Southern blue whiting reach maturity between two and four years of age. At this age, they recruit to the spawning grounds (and the commercial fishery) for the first time. The age of first spawning is observed to be delayed in the strong year classes, which show signs of a density dependent response to high abundance, through slower growth and a higher age at maturity. Strong year classes have slower individual growth rates because a larger number of fish are competing for the same resources.
59. Catch on the Bounty Platform is dominated by the 2002, 2007, and 2012 year-classes. The cause of recruitment fluctuations is poorly understood, but strong year classes can produce large increases in available southern blue whiting biomass.

1.2 Status of the stock

60. The current reference points for southern blue whiting are the default targets and limits set out within the Harvest Strategy Standard for New Zealand Fisheries.⁹ The management target of 40% B₀¹⁰ is considered to be a conservative proxy for BMSY for a species with the life history characteristics of southern blue whiting.
61. A management strategy evaluation (MSE)¹¹ was completed for SBW 6B in December 2016 which used simulation modelling to test the fishing mortality level that would be most appropriate to maintain the stock at (or recover it to) BMSY and to maintain the stock above 20% B₀ at least 90% of the time. The MSE resulted in a Harvest Control Rule which estimates the annual sustainable yield (and recommended catch limit) based on the biomass estimate from annual acoustic surveys.
62. Because a successful acoustic survey has not been completed since 2017, more emphasis is put on monitoring large recruitment events in this fish stock. The best available information is that the majority of fish caught by the SBW 6B fishery in recent years have come from three strong year classes; 2002, 2007 and 2012. Fish age information from the SBW 6B fishery suggests that there has not been a significant recruitment event between 2012 and 2021.

⁹ [Harvest Strategy Standard for New Zealand Fisheries](#) 2008

¹⁰ Virgin biomass, unfished biomass

¹¹ A MSE is a tool that is used to simulate the workings of a fisheries system to identify potential harvest strategies to achieve pre-agreed management objectives.

63. Results from age analysis¹² between 2015 – 2019 indicates that the fishery is being supported by these older year classes. This presents a risk to sustainability given we have not seen strong recruitment to the fishery since 2012.
64. There is an indication of potential new recruitment from fish samples taken from the fishery in the last three years. In 2019, small fish (between 17 cm and 21 cm in length) were caught and subsequently aged as two-year old fish. This year class did not appear in sampling in 2020 but reappeared in 2021. This pulse of fish (now distributed around 30 cm in length) is the first potential signal of a stronger year class recruiting into the fishery since 2012. However, as the data is from limited sampling and has not been fully analysed, the strength of the potential recruitment is unknown.

2 Catch information and current settings within the TAC

2.1 Commercial

65. Catch in SBW 6B peaked at nearly 59,000 tonnes in 1991/92 (Figure 2). Since then, catches have varied around 2,000 tonnes to 5,000 tonnes, until a large year class recruited to the fishery in 2008/09. The total catch subsequently increased to almost 15,500 tonnes in 2009/10. Since that peak, the biomass and catches have declined. Subsequently the TAC was also reduced.
66. Current information suggests that there has been a prolonged period without a large recruitment event, indicating the need for caution in the management of this fishery. The current TACC is 2,830 tonnes (the previous TACC of 3,145 tonnes was reduced by 10% in 2020 because of similar concerns about recruitment). Landings have not been above 1,500 tonnes since 2017/18.

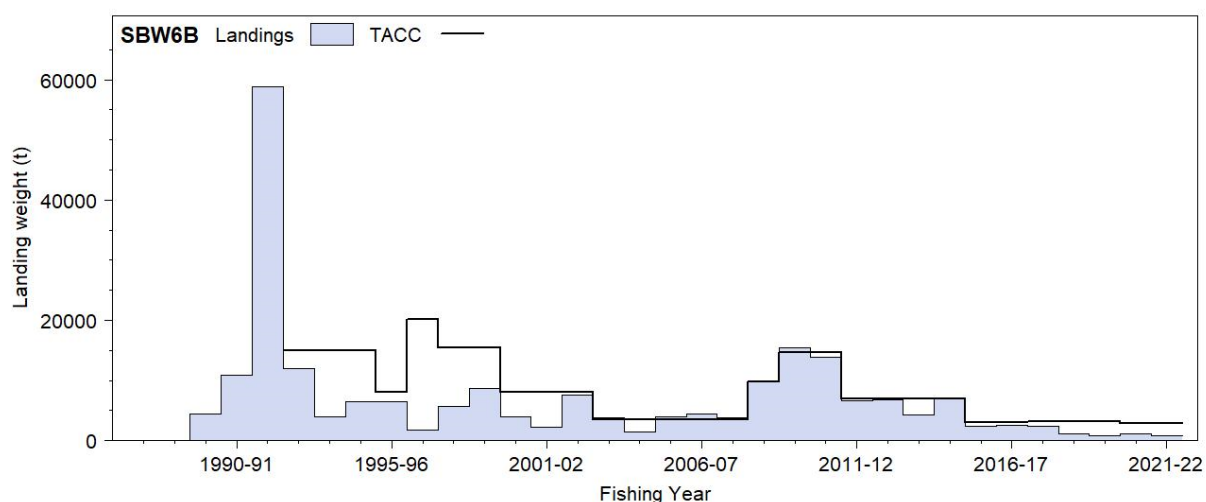


Figure 2: Reported commercial landings and TACC for the Bounty Platform fishery (SBW 6B) since 1988.

2.2 Customary Māori

67. There is no known customary non-commercial fishing for southern blue whiting. The best available information for Māori customary take is from reporting under the Fisheries (South Island Customary Fishing) Regulations 1999. No permits have been issued under these

¹² Large et al (2021) Review and summary of the time series of input data available for the assessment of southern blue whiting

regulations and no southern blue whiting has been reported as customary catch. No section 186/186B measures (mātaimai, taiāpure, other closures) apply to SBW 6B.

2.3 Recreational

68. There has been no recreational take of southern blue whiting reported in SBW 6B. This is likely because the fishery operates at depths of 250 m to 600 m in sub-Antarctic waters, 700 kms to the southeast of Stewart Island.

2.4 All other mortality caused by fishing

69. The allowance for other sources of mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing activity, including incidental mortality from fishing methods, or illegal fishing. FNZ proposed maintaining the allowance for other sources of fishing related mortality at 2% of the TAC

3 Treaty of Waitangi obligations

3.1 Input and participation of tāngata whenua

70. 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 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.
71. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries. Not all Iwi Fisheries Forums have an interest in this southern deepwater fish stock. The proposal to review the southern blue whiting Bounty Platform stock was signalled at the 10 November 2021 Te Waka a Māui me Ōna Toka Iwi Fisheries Forum meeting as this fishery is within its rohe. The forum supports a decrease to the SBW 6B TACC and a 5% customary allowance for all deepwater stocks.

3.2 Kaitiakitanga

72. The Te Waka a Māui me Ōna Toka Iwi Forum consider all fish species taonga. The Te Waipounamu Iwi Forum Fisheries Plan contains objectives to support and provide for the interests of South Island iwi which includes SBW 6B. Two objectives are relevant to the management options proposed for SBW 6B:
- i. **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
 - ii. **Management Objective 5:** to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

73. The key environmental principles with the SBW 6B fishery, which must be taken into account when considering sustainability measures concern (a) associated or dependent species should be maintained above a level that ensures their long-term viability (in particular marine

mammals, seabirds, fish and invertebrate bycatch) (b) biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing) and (c) habitats of particular significance for fisheries management should be protected.

74. All options proposed (other than the status quo) result in a reduction to the SBW 6B TAC. With current catch levels being below the proposed TACC changes, it is unlikely that fishing effort in SBW 6B is to be constrained by any of the options. Therefore it is unlikely that any of the proposed changes will affect the level of environmental interactions.
75. The environmental interactions of the SBW 6B fishery with associated or dependent species and the wider aquatic environment are described below.

4.1.1 Marine Mammals

76. The SBW 6B fishery overlaps with the foraging range of New Zealand fur seals which breed on the Bounty Islands. Observer coverage of the SBW 6B fishery has been very high since 2012/13 (~100%). In the four years since 2017, an average of seven fur seals have been caught annually in SBW 6B. The capture rate is high at 34 fur seals per 100 tows.
77. There is little information on the recent population size and trend of New Zealand fur seals at the Bounty Islands. The last fur seal abundance survey at the Bounty Islands, in 1994, estimated that the total fur seal population on the Bounty Islands was 21,500 individuals¹³.
78. The Department of Conservation classify the New Zealand fur seal population as 'Not Threatened – least concern'. The total fur seal population in New Zealand was estimated to be over 200,000 animals in the last survey in 2001.¹⁴
79. To minimise the risk of marine mammal captures, Deepwater Group Limited¹⁵ developed Marine Mammal Operational Procedures (MMOP) for all trawlers greater than 28 m in length. The MMOP describes a range of procedures that a crew should follow to reduce the risk of marine mammal captures. FNZ monitors and audits vessel performance against the MMOP via the FNZ Observer Programme.

4.1.2 Seabirds

80. The National Plan of Action 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. Southern blue whiting trawl was estimated as 'low risk' to seabirds¹⁶.
81. Observer coverage has been very high in the SBW 6B fishery between 2012/13 and 2019/20 (~100%). Seabird interactions have occurred at a low rate over this period with an average of ~ two seabirds caught annually. The species caught over this period were Salvin's albatross and grey petrels.
82. Salvin's albatross populations are at high risk from commercial fishing vessels in New Zealand, mostly from inshore trawl and hoki trawl fishing effort. Salvin's albatross have a threat classification of Threatened – Nationally Critical (data poor, range restricted).
83. Grey petrel populations are at low risk from commercial fisheries in New Zealand. Grey petrels have a threat classification of At Risk – Naturally Uncommon (range restricted, secure overseas).

¹³ Taylor RH (1996) Distribution, abundance and pup production of the New Zealand fur seal (*Arctocephalus forsteri* Lesson) at the Bounty Islands

¹⁴ Accessible at: <http://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/nz-fur-seal/>

¹⁵ Deepwater Group is the industry representative body which represents 87% of SBW 6B quota holders.

¹⁶ Richard, Y.; Abraham, E.; Berkenbusch, K. (2020). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2016–17

84. To reduce the risk of catching seabirds, all vessels in SBW 6B must deploy bird bafflers and/or tori lines. In addition to the regulated mitigation requirements, non-regulatory measures include industry-developed vessel-specific plans which set out practices that should be used onboard vessels to reduce the risk of seabird interactions such as offal management and removing 'stickers' from trawl nets. FNZ has processes in place to audit performance against these seabird mitigation measures. Annual performance is reported in the [Deepwater Fisheries Annual Review Report](#).

4.1.3 Fish bycatch

85. Southern blue whiting account for more than 99% of the total estimated catch in the southern blue whiting target fishery (including all stocks), with very low levels of bycatch of other fish species.¹⁷ Three species in the QMS (hoki, hake and ling) account for nearly 60% of the total observed bycatch with smaller amounts of porbeagle shark, Jack mackerel, rattails, Ray's bream and silverside.

4.1.4 Benthic impacts and management measures

86. Trawling for southern blue whiting in SBW 6B 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. The general substrate of the Bounty Platform is bryozoan shell (calcareous) sand, and mud (foraminiferal ooze) with areas of coral and sponge habitats along with various species of molluscs, echinoderms, crustaceans, and other invertebrate species.
87. Contact of trawl gear with the seabed can lead to bycatch of benthic organisms including corals, sponges, and sea anemones. Southern blue whiting is generally targeted over a relatively restricted area in SBW 6B using mainly mid-water trawl gear. Whilst this fishing method can interact with the seabed and the associated benthic environment, it is generally conducted high enough in the water column to avoid contact with the seabed.
88. 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. The incidental bycatch of benthic organisms by the southern blue whiting fleet is closely monitored by high observer coverage and reported annually. Based on observer data, sessile benthic invertebrates are rarely caught.
89. The impact of southern blue whiting tows on the benthic environment (in all stocks) is monitored by assessing the trawl footprint. The trawl footprint includes all bottom trawl and midwater trawl effort within one metre of the seafloor. It is mapped annually in waters shallower than 1,600 m. Between 1990 and 2019 the southern blue whiting trawl footprint, including all stocks was 1.7% of the fishable area in the New Zealand EEZ. In the 2018/2019 fishing year the total southern blue whiting trawl footprint was estimated to be 757 km² or 0.2% of the fishable area.¹⁸ The impact is mitigated by the spatial concentration of the fishery where vessels typically trawl along previously trawled tow lines.
90. Management measures to address the effects of trawl activity in New Zealand include closing areas to trawling. In 2001, 18 seamounts were closed to fishing including Bollons Seamount which is within the SBW 6B QMA. This is a closed area of seabed (79,860 km² in size) that was chosen as the only representative seamount in the eastern sub-Antarctic and has never been trawled.
91. In addition to seamount closures, the implementation of Benthic Protection Areas (BPAs) in 2007 effectively closed approximately 30% of the NZ EEZ to bottom trawling. There are two BPAs in SBW 6B; the Bounty Heritage which closes the 12 nautical mile territorial sea around the Bounty Islands to trawling, and the Antipodes Transect which closes 57,166 km² to trawling

¹⁷ Anderson, O.F. (2017) Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2013–14.

¹⁸ Baird and Mules (2021) Extent of bottom contact by commercial trawling and dredging in New Zealand waters, 1989–90 to 2018–19.

south of the SBW 6B fishery. Within the area covered by the Bounty Heritage BPA, the Moutere Hauriri/Bounty Islands Marine Reserve was created in 2014, which covers 58% of the territorial sea around the Bounty Islands.

4.1.5 Habitats of particular significance for fisheries management

Table 2: Summary of information on habitats of particular significance for fisheries management for stock.

Fish Stock	SBW 6B
Habitat of particular significance	Bounty Platform
Attributes of habitat	<ul style="list-style-type: none"> Bounty Platform substrate and water column approximately 750 km east/south east of the South Island.
Reasons for particular significance	<ul style="list-style-type: none"> Spawning is of critical importance in supporting the productivity of fish stocks Spawning ground for southern blue whiting SBW 6B fish stock at Bounty Platform from mid-August to early September. Spawning takes place at this location potentially due to favourable current/circulation patterns and oceanographic features, although there is not conclusive evidence.
Risks/Threats	<ul style="list-style-type: none"> No offshore development activities are known or planned. Oceanographic features could be impacted by extractive processes (e.g. mining) but this is unlikely in this area. Oceanographic features could be impacted by cable laying but laying of new cables unlikely in FMA 6. 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 this habitat favourable for southern blue whiting spawning, so it is also unknown to what extent fishing activity may impact the habitat.
Existing protection measures	<ul style="list-style-type: none"> Bollons Seamount closed to all fishing in 2001. Moutere Hauriri/Bounty Islands Marine Reserve created 2014. Bounty Heritage and Antipodes Transect, Benthic Protected Areas, created in 2007.

4.2 Sustainability measures (section 11 of the Act)

92. A sustainability concern exists because a strong year class has not recruited into the southern blue whiting Bounty Platform fish stock since 2012. Reducing the current TAC and TACC is a precautionary approach that will not have any adverse effects on the aquatic environment.

4.2.1 National Fisheries Plan

93. The [National Fisheries Plan for Deepwater and Middle-depth fisheries 2019](#) (National Deepwater Plan 2019) is a formally approved s11A plan which the Minister must take into account when making sustainability decisions. It sets out a series of Management Objectives for deepwater fisheries, the most relevant to SBW 6B 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.

94. Southern blue whiting is managed as a Tier 1 species within the National Deepwater Plan 2019 because they are considered high volume and/or high value fisheries. Tier 1 species are subject to regular reviews and close monitoring. [A species-specific chapter](#) for southern blue whiting

was completed in 2011 and is scheduled to be updated in 2022. The proposed options in this paper are consistent with the objectives of the Southern Blue Whiting Fisheries Plan.

5 Submissions

95. In total there were 13 submissions and responses on the proposed changes to SBW 6B (Table 3). Nine groups responded in support of Option 1 (*status quo*). No submissions supported option 2. Two groups supported Option 3 and two submissions did not support any of the three options proposed.

Table 3: Written submissions and responses received for SBW 6B (in alphabetical order).

Submitter	Option Support				
	1	2	3	Other	
Deepwater Group Limited Endorsed by - Fisheries Inshore New Zealand Ltd	✓				
Forest and Bird			✓		
K. Wealleans				✓	Supports a reduction to catch limits and suggests more research required.
Iwi Collective Partnership	✓				
R. Potter				✓	Supports a ban across New Zealand on fishing when the species is spawning
Sealord Group Ltd	✓				
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc (SPCA)			✓		
Te Ohu Kaimoana Endorsed by - Tama Asset Holding Company Ltd - Whanganui Iwi Fisheries Ltd - Te Atiawa (Taranaki) Ltd - Maruehi Fisheries Ltd	✓				

6 Options and analysis

96. When setting a TAC for stocks such as SBW 6B 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 decision for SBW 6B is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.
97. As per s 13(2A)(a), the absence of, or any uncertainty in, the best available information must not be used as a reason to postpone or fail to set a TAC for SBW 6B.

6.1 Option 1 – *status quo*

TAC: 2,888 (t) –	TACC: 2,830 (t) –	Customary: 0 –	Recreational: 0 –	Other mortality: 58 (t) –
------------------	-------------------	----------------	-------------------	---------------------------

98. Option 1 is the status quo. It retains the existing catch limits and allowances for 2022/23. Retaining the status quo does not address the sustainability concern that a strong year class has not recruited into the southern blue whiting Bounty Platform fish stock since 2012.
99. Option 1 provides the maximum utilisation opportunity noting that catch has not been at the level of the TACC for a number of years. The status quo was supported by eight of the 13 responses.
100. Deepwater Group Ltd (DWG) commented that other than low catch levels, there is insufficient evidence to support a reduction to the TACC. They also noted that the recent indication of recruitment is a positive sign and that the planned completion of a management strategy evaluation in 2022 for SBW 6B will provide requisite information that could support future management decisions.
101. DWG and Sealord Group Ltd note that the lack of catch and effort in SBW 6B is not necessarily an artefact of a lack of fish, rather it is an artefact of the application of fishing effort to other fisheries. The seasonal timing of the SBW 6B spawning fishery is between the end of the hoki season and Campbell Plateau southern blue whiting season, which influences whether fishing companies will decide to put effort into SBW 6B. For these reasons, catch volumes and/or fishing effort are not useful indicators of spawning stock abundance.
102. The Iwi Collective Partnership expressed concern that the best available information indicates that there has not been significant recruitment into the fishery since 2012. However, they also note that there is no evidence to support an additional TACC reduction to the 10% reduction implemented in 2020.
103. Te Ohu Kaimoana notes that a reduction to the TACC will not likely cause fishing patterns to change and that landings over recent years have not increased the risk to sustainability of the fishery. Te Ohu Kaimoana's views were endorsed by Tama Asset Holding Company Ltd, Te Atiawa (Taranaki) Ltd, and Whanganui Iwi Fisheries Ltd.
104. Te Ohu Kaimoana also recommend the allowance for customary non-commercial fishing be set at one tonne in order to make provision for customary non-commercial utilisation within a pātaka system.
105. FNZ recognises that fishing effort and catch in this area is driven by many external factors. The biomass of SBW 6B has not been estimated since 2017 because acoustic surveys have not been successful. Because of this it is important to take a precautionary approach until more robust information is available.

6.2 Option 2 (*Fisheries New Zealand preferred option*)

TAC: 2,309 (579t) ↓	TACC: 2,264 (566t) ↓	Customary: 0 –	Recreational: 0 –	Other mortality: 45 (13t) ↓
---------------------	----------------------	----------------	-------------------	-----------------------------

106. Option 2 reduces the TAC by 578 tonnes to 2,309 tonnes, reduces the TACC by 566 tonnes to 2,264 tonnes and reduces the allowance for other mortality caused by fishing by 13 tonnes to 45 tonnes. The allowance for all other mortality caused by fishing would remain at approximately 2% of the TAC under this option. FNZ proposed retaining a zero allowance for Māori customary take and recreational take under this option.
107. This option would reduce the potential sustainability risk associated with current management settings. The biomass of southern blue whiting at the Bounty Platform is likely to be reducing as the three strong year classes in the fishery are fished and naturally die off. This option addresses concerns about the lack of strong recruitment into the fishery by ensuring that catch does not increase to the level of the TAC and TACC under the status quo.

- 108. Option 2 reduces the TACC by 20%. Note that in the four years since 2017/18, catch has not been taken at the level of the TACC, with the average catch in SBW 6B around 924 tonnes each year.
- 109. Although there were no responses or submissions which specifically mentioned or supported Option 2, four submissions supported a decrease to the catch limits.
- 110. Option 2 is FNZ's preferred option. This option takes a precautionary approach given that there has not been substantial recruitment into the stock since 2012 while providing for some continued utilisation of the stock. Although there is an indication of new recruitment, the data has not been fully verified through a peer review process.

6.3 Option 3

TAC: 2,021 (867t)↓	TACC: 1,981 (849t)↓	Customary: 0 –	Recreational: 0 –	Other mortality: 40 (18t)↓
--------------------	---------------------	----------------	-------------------	----------------------------

- 111. Option 3 reduces the TAC by 867 tonnes to 2,021 tonnes, reduces the TACC by 849 tonnes to 1,981 tonnes and reduces the allowance for other mortality caused by fishing by 18 tonnes to 40 tonnes. The allowance for all other mortality caused by fishing would remain at approximately 2% of the TAC under this option. FNZ proposed retaining a zero allowance for Māori customary take and recreational take under this option.
- 112. This option would reduce the TACC by 30%, and is a more precautionary approach to the potential sustainability risk associated with current management settings than either Option 1 or Option 2. It further alleviates concerns that a strong recruitment event has not taken place in the last decade.
- 113. The SPCA supported Option 3, stating that a precautionary approach would be the most appropriate management action for SBW 6B. They noted that there was no available estimate of current biomass and the uncertainty of whether catch limits were sustainable.
- 114. Forest and Bird is concerned that there has been no significant recruitment in SBW 6B since 2012 and although Option 3 is unlikely to constrain catch, it is the option with the least risk. Forest and Bird also note that FNZ should have proposed a TACC that would constrain catch of the stock to ensure sustainability.
- 115. FNZ acknowledges the feedback provided by these groups and agrees that with no robust estimate of the current biomass of SBW 6B, a precautionary approach is appropriate. However, a proposed option to constrain catch may result in the fishery becoming economically unviable and is not considered a necessary action at this time.

6.4 Other options proposed by submitters

- 116. Two further submissions proposed alternative options. Karen Wealleans suggested that catch limits be reduced and that more research is required. Richard Potter proposed that fishing be banned when fish are spawning.

6.5 Economic considerations

- 117. Under Option 2, the TACC would decrease by approximately 25% from 2,830 tonnes to 2,264 tonnes. On the basis of the Free On Board (FOB)¹⁹ export value of southern blue whiting surimi during the 2021 calendar year of NZ \$3,880/tonne, this decrease would result in a potential decrease in revenue of approximately \$406,681 per year²⁰ if the entire current TACC was caught.

¹⁹ 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.

²⁰ This is based on an average unit value for SBW surimi of \$3.88 kg during the 2021 calendar year and a conversion factor for surimi of 5.4.

118. Under Option 3, the TACC would decrease by 30% from 2,830 tonnes to 1,981 tonnes. On the basis of the FOB export value of southern blue whiting surimi during the 2021 calendar year of NZ \$3,880/tonne, this decrease would result in a potential decrease in revenue of approximately \$610,022 per year if the entire current TACC was caught.
119. In the four years since 2017/18, catch has not been taken at the level of the TACC, with the mean annual catch in SBW 6B around 924 tonnes. If this level of catch continues the actual loss in export value is likely negligible.

6.6 Deemed values

120. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's Annual Catch Entitlement (ACE) holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
121. 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. The deemed value rates for SBW 6B are shown in Table 4. FNZ does not recommend changes to the deemed value rates because current deemed value settings lie between ACE and port price, so should incentivise appropriate catch balancing.

Table 4: Standard deemed value rates (\$/kg) for SBW 6B.

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		Annual					
		100-110%	110-130%	130-150%	150-170%	170-190%	>190%
<i>Status quo</i>	0.41	0.46	0.60	0.60	0.92	0.92	0.92

122. The average price paid by fishers over the last five fishing years for one kilogram of SBW 6B ACE was \$0.11. The port price index of SBW 6B since 2011/12 is \$0.56.

7 Conclusions and recommendations

123. Given that there has not been substantial recruitment into the southern blue whiting Bounty Platform stock since 2012 and biomass has not been able to be estimated since 2017, FNZ recommends Option 2 which reduces the TAC and TACC for SBW 6B by approximately 20% whilst still allowing for utilisation. This is consistent with section 13 (2A), that the level of the stock that can produce MSY is not able to be reliably estimated using this information; and as per s 13(2A)(a), that the absence of, or any uncertainty in, the best available information must not be used as a reason to postpone or fail to set a TAC for SBW 6B.
124. Recent observer data suggests that there may be recruitment into the fishery in coming years. However, the data has not been fully analysed yet and the strength of this recruitment is unknown. Given the unknown strength of the recruitment, FNZ recommends taking a precautionary approach.
125. FNZ does not recommend an increase the customary allowance at this time, as there is no reported or known customary take of southern blue whiting in SBW 6B. As such, allowances under Option 2 would remain at zero for customary Māori and recreational take. The allocation for other sources of fishing related mortality would continue to be 2% of the TACC.

8 Decision for SBW 6B

Option 1 (*Status Quo*)

Agree to set the SBW 6B TAC at 2,888 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 58 tonnes;
- iv. Retain the TACC at 2,830 tonnes.

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

OR

Option 2 (*Fisheries New Zealand preferred option*)

Agree to set the SBW 6B TAC at 2,309 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 58 to 45 tonnes;
- iv. Decrease the SBW 6B TACC from 2,830 to 2,264 tonnes.

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

OR

Option 3

Agree to set the SBW 6B TAC at 2,021 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 58 to 40 tonnes;
- iv. Decrease the SBW 6B TACC from 2,830 to 1,981 tonnes.

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



Hon David Parker
Minister for Oceans and Fisheries

13 / 2 / 2022

Redbait (RBT 7) – West Coast South Island

Emmelichthys nitidus,

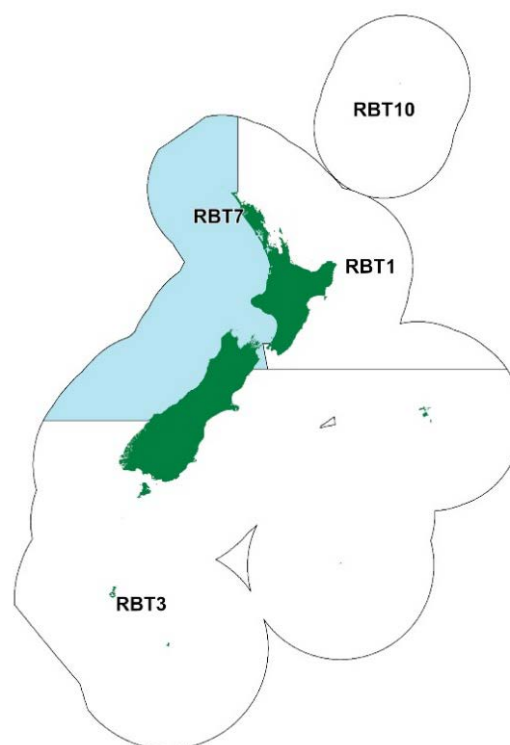


Figure 1: Quota Management Areas (QMAs) for redbait, with RBT 7 highlighted. A redbait is pictured on the left.

Table 1: Summary of options proposed for RBT 7 from 1 October 2022. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option 1 (<i>Status quo</i>)	2,991	2,841	0	0	150
Option 2	842 ↓(2,149 t)	800 ↓(2,041 t)	0	0	42 ↓(108 t)
Option 3	421 ↓(2,570 t)	400 ↓(2,441 t)	0	0	21 ↓(129 t)
Option 4	105 ↓(2,886 t)	100 ↓(2,741 t)	0	0	5 ↓(145 t)
New option incorporated following consultation		No			
Total submissions received		14			
Number of submissions received in support of each option		Option 1		3	
		Option 2		1	
		Option 3		0	
		Option 4		2	
		Other		8	

1 Why are we proposing a review?

126. Redbait is a low value non-target commercial species that occurs throughout the New Zealand Exclusive Economic Zone (EEZ).

127. Redbait was introduced into the Quota Management System (QMS) in the 2009/10 fishing year and the Total Allowable Catch (TAC) for RBT 7 was set at 2,991 tonnes based on the previous catch history. This TAC has not been adjusted since. The TAC includes an allowance of 150 tonnes for other mortality caused by fishing, zero allowance allocated for customary and recreational fishing, and a 2,841 tonne Total Allowable Commercial Catch (TACC).
128. There is no information about stock structure or recruitment patterns and no estimates of fishery parameters, abundance, biomass, or yield estimates for redbait fishstocks.
129. Eighty five percent of the estimated catch of redbait in RBT 7 since the 2001/02 fishing year has been non-target catch from Jack mackerel target tows (from JMA 7 QMA - the same area as RBT 7). Redbait target fishing in RBT 7 has been minimal and only occurred between 2004/05-2012/13.
130. The average annual landings of redbait in RBT 7 from the five-year period prior to redbait entering the QMS (2004/05-2008/09), compared to the most recent five fishing years (2016/17-2020/21) have reduced by 96%. Comparing these same periods for JMA 7, the average number of tows per year has decreased by only 39%.
131. As the percentage reduction in the landings of redbait from RBT 7 is greater than percentage reduction in JMA 7 fishing effort, Fisheries New Zealand (FNZ) considers that there may be a sustainability risk associated with current management settings for RBT 7.

1.1 About the stock

1.1.1 Fishery characteristics

132. Within the New Zealand EEZ redbait is mainly taken as bycatch in the Jack mackerel target trawl fishery, but it is also widely taken as bycatch in trawl tows in the barracouta, squid, and hoki target fisheries.
133. A target fishery for redbait developed in the mid-2000s. Reported total landings of redbait across all stocks ranged from 2,184 tonnes to 4,307 tonnes during the 2000s but declined in 2009/10 and 2010/11 to nearly 1,000 tonnes.
134. Redbait in RBT 7 is primarily caught as non-target catch in the Jack mackerel trawl fishery on the West coast of the South Island. Targeted fishing for redbait in RBT 7 has been minimal and only occurred between 2004/05 -2012/13. The annual estimated greenweight of redbait caught for the redbait target fishery in RBT 7 during this period ranged between 31 tonnes and 213 tonnes per fishing year.

1.1.2 Biology

135. Redbait is a schooling species that is closely related to rubyfish. It is widely distributed around New Zealand in depths from 85 m to 500 m. Juveniles are found at the surface, while adults are found near the seabed in deeper waters.
136. There is limited information about growth and development of redbait in New Zealand. In Australia, offshore studies suggest regional differences. For example, in Tasmania the maximum reported size of redbait is 316 mm fork length (FL) with a maximum age of 7 years, whereas in east Victoria the maximum reported size is 335 mm FL and the maximum age is estimated to be 10 years. Spawning in Tasmania is thought to last 2-3 months during spring, with an estimated 50% of redbait being sexually mature at 240 mm FL or 2-3 years of age.
137. Research data from New Zealand show that the maximum size of redbait is around 420 mm FL, which is larger than most other regions where length of this species has been recorded (except South Africa).
138. Spawning locations of redbait in the New Zealand EEZ are not known. However, internationally, redbait have been identified as spawning on the Tasmanian shelf break (Neira et al. 2008) and on seamounts in the South Indian Ocean (Roschin 1985).
139. Little is known about the diet of redbait, especially in New Zealand. However, a study from South Africa has indicated that small redbait largely feed on planktonic crustaceans and larger redbait feed on cephalopods, shrimp, and small fish (Meyer and Smale 1991). Diet studies

have shown that redbait are the primary component of the diet of southern bluefin tuna in the coastal waters of Tasmania (Young et al 1997).

1.2 Status of the stock

140. There is no information about stock structure, recruitment patterns, or other biological characteristics that would indicate stock boundaries. Redbait has been mainly caught as non-target catch in the Jack mackerel trawl fisheries (i.e. 85% in RBT 7 since 2001/02 fishing year), so the management boundaries that are used for Jack mackerel are also used for RBT 7.
141. There are no estimates of fishery parameters, abundance or biomass and no yield estimates for any redbait fishstock. It is not known whether redbait stocks are at, above, or below a level that can produce the Maximum Sustainable Yield (MSY). Therefore, decisions for RBT 7 will be made under section 13(2A) of the Fisheries Act 1996 (FA 1996) – if the Minister considers that the current level of the stock or the level of the stock that can produce the maximum sustainable yield is not able to be estimated reliably using the best available information, the Minister must not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a TAC. The Minister must set a total allowable catch using the best available information that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. Due to there being no information about stock structure or biomass for RBT 7 the best available information to assess the status of the stock is catch and the associated effort.

2 Catch information and current settings within the TAC

2.1 Commercial

142. The landings of redbait in RBT 7 have declined from over 1,500 tonnes per fishing year between 2001/02 – 2008/09 to less than 500 tonnes per fishing year between 2011/12 – 2020/21. The average annual landings of redbait in RBT 7 over the past five fishing years has been 64 tonnes (Figure 2).

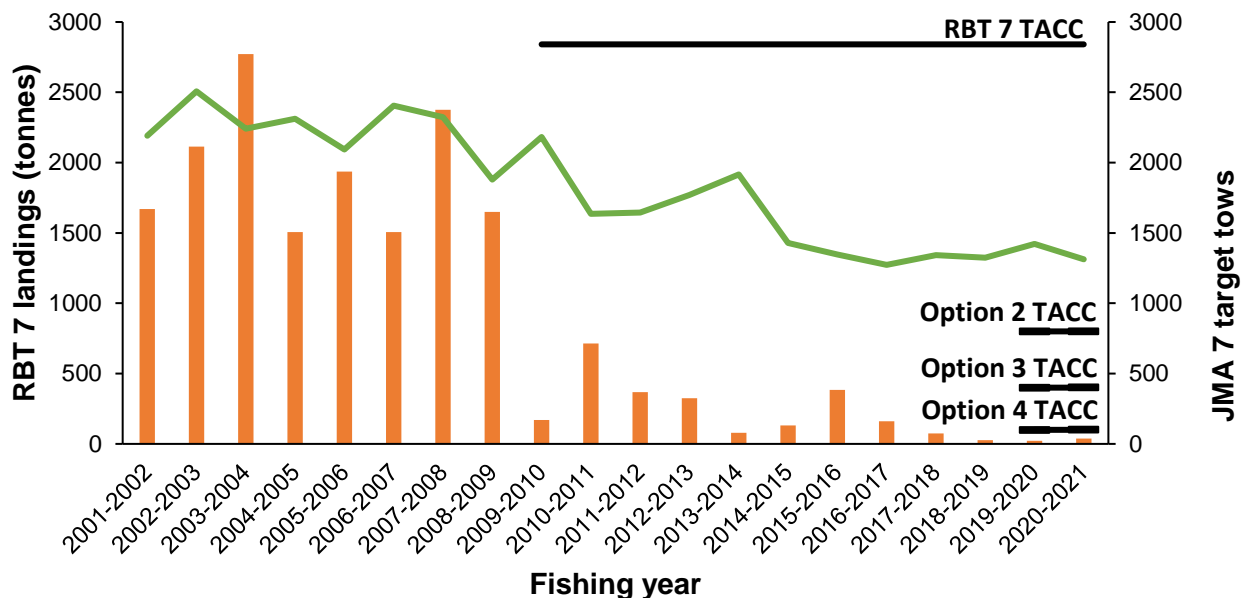


Figure 2: Total landings of redbait per fishing year for RBT 7 since 2001/02 fishing year (orange), the total number of Jack mackerel targeted tows in JMA 7 per fishing year (green) and the RBT 7 TACC (for years after redbait entered the QMS) and proposed TACCs under options 2, 3 and 4 (black).

143. Eighty five percent of the reported estimated redbait catch in RBT 7 since the 2001/02 fishing year has been caught as non-target catch in Jack mackerel target tows.

144. The trend in RBT 7 landings does not reflect changes in Jack mackerel targeted effort in JMA 7 (Figure 3) and there is no evidence to support that this is due to changes in the behaviour of fishers. No additional information was provided in submissions that indicated a change in fisher behaviour.

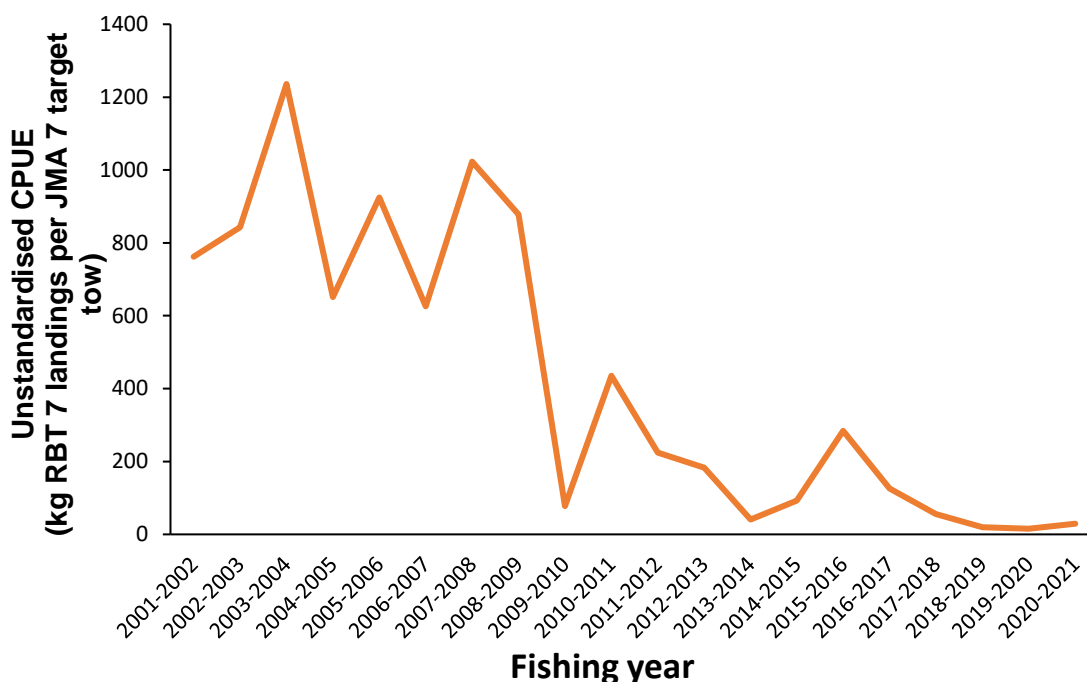


Figure 3: Unstandardised CPUE – kg RBT 7 landings per JMA 7 target tow for each fishing year since 2001/02. It should be noted that 85% of the reported estimated redbait catch in RBT 7 since the 2001/02 fishing year has been caught as non-target catch in Jack mackerel target tows.

145. When comparing the five-year period prior to redbait entering the QMS (2004/05-2008/09) to the most recent five fishing years (2016/17-2020/21), the average number of Jack mackerel target tows in JMA 7 has decreased by 39%, however, the average annual landings of redbait in RBT 7 have decreased by 96%.

2.2 Customary Māori

146. There is no known customary non-commercial fishery for redbait and no customary catch of redbait has been reported in the period 1998/99 – present. Furthermore, no submissions provided any information on customary catch of redbait or stated support for altering the customary allowance and only one Iwi Fisheries Forum indicated support for a customary allowance increase for RBT 7 in their feedback (Section 3.1). It is not proposed to increase the customary allowance at this time, due to there being no evidence of any customary catch of redbait. It should also be noted that even though the customary allowance for this stock is set at zero, this does not preclude take of fish for customary purposes in accordance with customary fishing regulations.

2.3 Recreational

147. There is no information to suggest there is recreational catch of redbait in RBT 7. The current recreational allowance is set at zero tonnes, and it is not proposed to increase it at this time. [The National Panel Survey of Marine Recreational Fishers \(NPS\) report in 2017/18](#) did not list redbait as a separate species for reporting catch data.

2.4 All other mortality caused by fishing

148. Taylor (2009) described that, prior to redbait entering the QMS, up to 345 tonnes of redbait was reported as discarded annually between 1988–89 and 2008-09, however during this period annual discards were usually less than 200 tonnes.
149. The current allocation for other sources of mortality caused by fishing equates to 5% of the TAC and this was set when redbait entered the QMS in 2009.
150. The observer coverage in the Jack mackerel fishery is high (78-86% between 2017/18-2019/20 fishing years). Therefore, we can be confident there is not significant additional mortality caused by fishing occurring. Based on this we are not proposing a change to this 5% of the TAC allocation for other sources of mortality caused by fishing.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tāngata whenua

151. 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 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
152. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
153. In October/November 2021, a two-page document with information on the proposal to amend the TAC for redbait in RBT 7 was made available to Iwi Fisheries Forums that were holding hui with rohe in RBT 7 area, and input sought. Te Waka a Māui me Ōna Toka has stated that they support a decrease in the TAC and a customary allowance equivalent to 5% of the TACC. No other feedback relating to the proposal to amend the TAC for RBT 7 has been received from Iwi Fisheries Forums. As outlined in section 5.2, FNZ is not proposing to increase the customary allowance at this time, as there is no reported or known customary take of redbait in in RBT 7. However, it should be noted that even though the customary allowance for this stock is set at zero, this does not preclude take of fish for customary purposes in accordance with customary fishing regulations.

3.2 Kaitiakitanga

154. Redbait are not named specifically as a taonga species by Iwi Fisheries Forum Plans. The RBT 7 fish stock includes the rohe of the following Iwi Fisheries Forums: Te Hiku o Te Ika (Far North), Mid-North, Nga Hapu o Te Uru o Tainui (Waikato), Te Tai Hauāuru (Taranaki/ Whanganui/ Manawatu/ Horowhenua/ Kapiti), Te Tau Ihu (Top of the South Island) and Te Waka a Māui me Ōna Toka (The South Island and Stewart Island)
155. FNZ considers the proposals for RBT 7 to be generally consistent with the objectives of these Iwi Fisheries Forum Plans, in particular those that relate to improving the management of fisheries resources to ensure sustainability for future generations, ensuring 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.
156. There are no customary fisheries management tools such as mātaimai, taiāpure or section 186A temporary closures relevant to these proposals.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

157. The key environmental principles associated with the RBT 7 fishery, which must be taken into account when considering sustainability measures concern (a) associated or dependent species should be maintained above a level that ensures their long-term viability (in particular marine mammals, seabirds, fish and invertebrate bycatch) (b) biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing) and (c) habitats of particular significance for fisheries management should be protected.
158. All options proposed (other than the *status quo*) result in a reduction to the RBT 7 TAC. As redbait is not targeted in RBT 7 and the options proposed are unlikely to constrain the current level of fishing effort for Jack mackerel in JMA 7, these options are unlikely to result in a change in the level of environmental interactions. However, as 85% of the redbait caught in RBT 7 since 2001/02 fishing year was caught by Jack mackerel targeted fishing, the environmental interactions of the Jack mackerel fishery are described below.
159. To determine total protected species captures in a fishery, statistical methods are used to estimate total interactions from observed fishing to unobserved fishing.

4.1.1 Marine Mammals

160. Statistical models to estimate total interactions from observed fishing to unobserved fishing for New Zealand fur seal captures have been completed using data up to the 2017/18 fishing year. For the five fishing years up to 2017/18 in the whole of the New Zealand EEZ, Jack mackerel targeted tows had an estimated average capture of five fur seals per year. During the five fishing years up to 2020/21 in the whole of the New Zealand EEZ, fishers reported five captures of fur seals for Jack mackerel targeted tows.
161. For the five fishing years up to 2018/19 in the whole of the New Zealand EEZ, Jack mackerel targeted tows had an average observed capture of four common dolphins per year (with no observed captures in the most recent three of those fishing years), and average observer coverage of 83% during those years. The only other observed marine mammal captures for Jack mackerel targeted tows during these fishing years was a single long-beaked common dolphin during the 2017/18 fishing year.
162. During the five fishing years up to 2020/21 in the whole of the New Zealand EEZ, fishers reported an average of three captures per year of common dolphins for Jack mackerel targeted tows.
163. 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. FNZ monitors and audits vessel performance against the MMOP via the Observer Programme.

4.1.2 Seabirds

164. Statistical models to estimate total interactions from observed fishing to unobserved fishing for seabird captures have been completed using data up to the 2018/19 fishing year. For the five fishing years up to 2018/19 in the whole of the New Zealand EEZ, Jack mackerel targeted tows had an estimated average capture of nine seabirds per year. Of these nine estimated seabird captures per year, four are estimated to be captures of albatross species.
165. The 2019 seabird risk assessment (Richard et al 2019) estimates that the highest proportion of risk from Jack mackerel fishing to a seabird species which is defined as being at a medium to very high risk from commercial fishing is for the Southern Buller's albatross. Jack mackerel targeted tows contributed 0.4% risk from commercial fishing to this species.
166. In 2020, [the National Plan of Action \(NPOA\) for Seabirds](#), which sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of

seabirds was approved. The NPOA Seabirds' (2020) vision is that New Zealanders work towards zero fishing-related seabird mortalities.

167. 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 the use of bird bafflers, tori lines, managing fish waste discharge and effective cleaning of nets between tows. FNZ has processes in place to audit performance against these seabird mitigation measures.

4.1.3 Fish bycatch

168. Non-target catch in Jack mackerel fisheries is statistically modelled based on observer reported data from 2002/03-2013/14. Jack mackerel species (*Trachurus* spp.) accounted for 75% of catch (Anderson et al 2017). The remaining catch was primarily barracouta (13%), blue mackerel (3%), frostoffish (3%) and redbait (2%); all of which are managed under the QMS. An update of estimated non-target catch for Jack mackerel trawl fisheries to include data up to the 2018/19 fishing year is planned to be carried out in 2022.

4.1.4 Benthic impacts

169. Trawling for Jack mackerel in JMA 7 is primarily conducted by mid-water trawling. Whilst this fishing method can interact with the seabed and the associated benthic environment, it is generally conducted in the water column to avoid contact with the seabed. This means it is rare for benthic organisms to be caught in Jack mackerel targeted tows.
170. The nature and extent of any benthic 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.
171. The trawl footprint for all Jack mackerel target effort is mapped and monitored annually by FNZ. In 2018/19, 0.07% of the New Zealand EEZ and 0.2% of the fishable area (shallower than 1,600 metres and open to bottom trawling) of the EEZ was contacted by (all effort within 1m of the bottom) trawl fishing for Jack mackerel (Figure 4) (Baird and Mules 2021).
172. FNZ monitors the trawl footprint of this fishery annually and the cumulative fishable area contacted by trawl fishing for Jack mackerel between 1989/90-2018/19 was 1.1% of the NZ EEZ (Figure 4).

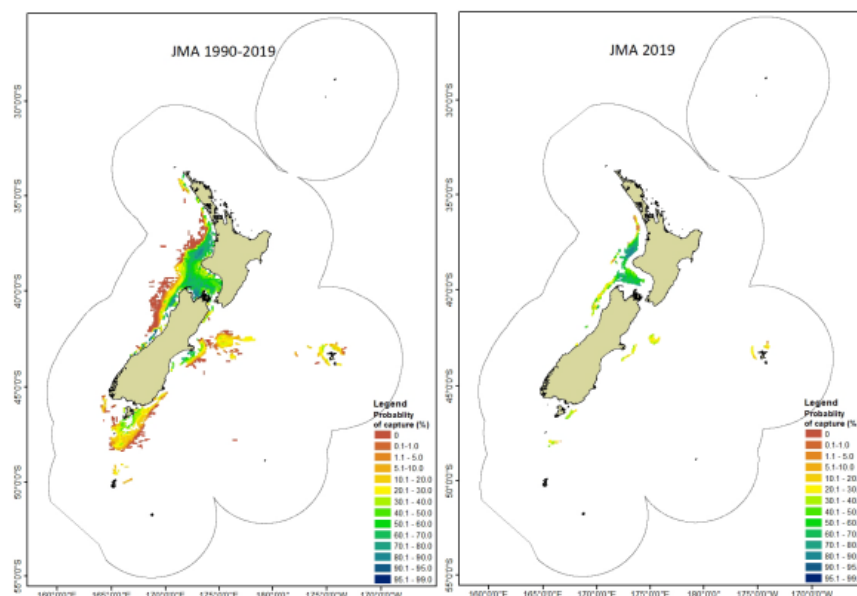


Figure 4: Distribution of the 1990–2019 (left) and the 2019 trawl footprints (right) for jack mackerel, displayed by 25-km² contacted cell, relative to the probability of Jack mackerel catch.

4.1.5 Habitats of particular significance for fisheries management

173. There is a lack of data from the New Zealand EEZ on redbait reproduction (including spawning grounds), early life history, age and growth, migration patterns, trophic interactions, and climatic and oceanographic interactions. Whilst there is some data relating to these topics for this species in other geographic locations (Australia, South Africa and the Indian ocean), defining specific habitats of particular significance for fisheries management for redbait in RBT 7 based on this data would be highly speculative.
174. Future research to determine some of these parameters would aid in defining specific habitats of particular significance for fisheries management for redbait. Based on observations from international studies, a potential area of research that could define redbait specific habitats of particular significance for fisheries management, could be whether redbait preferably use underwater topographic features as spawning grounds within the New Zealand EEZ.

4.2 Sustainability measures (section 11 of the Act)

4.2.1 National Fisheries Plan for Deepwater and Middle-depths Fisheries

175. Redbait in RBT 7 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). The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to RBT 7 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 11: Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed.

5 Submissions

176. In total there were 14 submissions and responses received for RBT 7. Ten of these supported a decrease in the RBT 7 TAC, with two supporting Option 4 - the largest decrease, one supporting option 2 and seven not specifying a preferred option. Three responses supported Option 1 – the status quo and one response did not mention the TAC or a preferred option but outlined support for a ban across New Zealand on fishing species when they are spawning. Six responses also stated they supported a review of the deemed values (see Section 6.7).

Table 2: Written submissions and responses received for RBT 7 (in alphabetical order).

Submitter	Option Support					
	1	2	3	4	Other	
Forest and Bird				✓		
Iwi Collective Partnership		✓				
Karen Wealleans					✓	Supports a TAC decrease
Maruehi Fisheries Ltd					✓	Supports a TAC decrease and a review of deemed values
Richard Potter					✓	Proposes a ban across New Zealand on fishing species when they are spawning
Sealord Group Ltd	✓					
Southern Inshore Fisheries Mgt Co Ltd <i>Endorsed by</i>	✓					

- Fisheries Inshore New Zealand						
SPCA				✓		
Te Ohu Kaimoana <i>Endorsed by:</i> - <i>Te Atiawa (Taranaki) Ltd</i> - <i>Taranaki Iwi Fisheries Ltd</i> - <i>Tama Asset Holding Company Ltd</i> - <i>Whanganui Iwi Fisheries Ltd</i>					✓	Supports a TAC decrease and a review of deemed values

6 Options and analysis

6.1 Option 1 – Status quo

TAC: 2,991	TACC: 2,841	Customary: 0	Recreational: 0	Other mortality: 150
------------	-------------	--------------	-----------------	----------------------

177. Option 1 is maintaining *the status quo*.
178. There is no information about stock structure or recruitment patterns and no estimates of fishery parameters, abundance, biomass, or yield estimates for RBT 7. Therefore, there is a limited amount of available information (i.e. catch and effort data) to inform whether a change in management settings is required.
179. However, a potential sustainability concern has been raised due to an observed reduction in the landings of redbait in RBT 7. Maintaining the *status quo* does not address this concern. Information principle 10(c) FA 1996 requires decision makers be cautious when information is uncertain, unreliable, or inadequate and information principle 10(d) FA 1996 states that 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. Section 13(2A)(a) FA 1996 states the absence of, or any uncertainty in, information should not be used as a reason for postponing or failing to set a TAC for the stock.
180. Fisheries Inshore New Zealand, Sealord Group Ltd, and Southern Inshore Fisheries Management Company were in support of option 1. They outlined that there is a paucity of information available on stock structure and recruitment patterns and no estimates of fishery parameters, abundance, biomass, or yield estimates for RBT 7. It is their view that as it cannot be defined whether the reduced landings from RBT 7 is due to a sustainability concern, then the status quo should be maintained until more research can be conducted. These submissions also proposed an alternative explanation for the reductions in landings in RBT 7 other than a sustainability concern. This was that redbait could have moved from RBT 7 to RBT 3 as a result of ocean temperature changes, as the reduction in RBT 7 landings was correlated with increases in RBT 3 landings. These responses also highlighted concerns that if this was the case and the redbait were to move back to RBT 7 high deemed values could be incurred if the TAC had been reduced.
181. FNZ recognises the hypothesis that redbait could have moved from RBT 7 to RBT 3 as a result of ocean temperature changes. However, as this hypothesis is based on observed correlations in landing patterns from the redbait stocks and ocean temperatures, the evidence supporting this hypothesis is no more definitive than the evidence that there could be a sustainability concern for RBT 7.

6.2 Option 2

TAC: 842 ↓(2,149 t)	TACC: 800 ↓(2,041 t)	Customary: 0 –	Recreational: 0 –	Other mortality: 42 ↓(108 t)
---------------------	----------------------	----------------	-------------------	------------------------------

182. Option 2 reduces the TAC by 2,149 tonnes to 842 tonnes, reduces the allowance for other mortality caused by fishing by 108 tonnes to 42 tonnes and reduces the TACC by 2,041 tonnes to 800 tonnes.
183. This would reduce the potential sustainability risk associated with current management settings, however due to limited stock assessment information, it is unknown whether catch at this TAC and TACC would be sustainable. Of the three options which reduce the TAC this option provides the least certainty that the potential sustainability risk associated with current management settings will be mitigated.
184. The RBT 7 landings have not been higher than the TACC proposed under this option (800 tonnes) since the 2008/09 fishing year. Therefore, commercial fisheries that catch redbait in the RBT 7 QMA as non-target catch (e.g. Jack mackerel fishery) are very unlikely to be constrained by the catch limits proposed under this option.
185. There was one response from the Iwi Collective Partnership that specifically supported this option. They noted that the percentage reduction in the landings of redbait from RBT 7 is greater than percentage reduction in JMA 7 fishing effort, but also that all options other than the status quo involve drastic reductions to the TACC. It should also be noted that seven of the 14 responses did support a decrease to the TAC without stating a preferred option.

6.3 Option 3 – Fisheries New Zealand preferred option

TAC: 421 ↓(2,570 t)	TACC: 400 ↓(2,441 t)	Customary: 0 –	Recreational: 0 –	Other mortality: 21 ↓(129 t)
---------------------	----------------------	----------------	-------------------	------------------------------

186. Option 3 reduces the TAC by 2,570 tonnes to 421 tonnes, reduces the allowance for other mortality caused by fishing by 129 tonnes to 21 tonnes and reduces the TACC by 2,441 tonnes to 400 tonnes.
187. This would reduce the potential sustainability risk associated with current management settings, however due to limited stock assessment information it is unknown whether catch at this TAC level would be sustainable. This option sits between the two other options which reduce the TAC in terms of the certainty that the potential sustainability risk associated with current management settings will be mitigated.
188. The RBT 7 landings have not been higher than the TACC proposed under this option (400 tonnes) since the 2010/11 fishing year. Therefore, commercial fisheries that catch redbait in the RBT 7 QMA as non-target catch (e.g. Jack mackerel fishery) are unlikely to be constrained by the catch limits proposed under this option.
189. There were no responses that specifically supported this option; however, seven of the 14 responses did support a decrease to the TAC without stating a preferred option.

6.4 Option 4

TAC: 105 ↓(2,886 t)	TACC: 100 ↓(2,741 t)	Customary: 0 –	Recreational: 0 –	Other mortality: 5 ↓(145 t)
---------------------	----------------------	----------------	-------------------	-----------------------------

190. Option 4 reduces the TAC by 2,886 tonnes to 105 tonnes, reduces the allowance for other mortality caused by fishing by 145 tonnes to 5 tonnes and reduces the TACC by 2,741 tonnes to 100 tonnes.
191. This would reduce the potential sustainability risk associated with current management settings, however due to limited stock assessment information it is unknown whether catch at this TAC level would be sustainable. Of the three options which reduce the TAC this option provides the most certainty that the potential sustainability risk associated with current management settings will be mitigated.

192. The RBT 7 landings have not been higher than the TACC proposed under this option (100 tonnes) since the 2015/16 fishing year. There is the potential for commercial fisheries that catch redbait in the RBT 7 QMA as non-target catch (e.g. Jack mackerel fishery) to be constrained by the catch limits proposed under this option if the fishing effort in these fisheries increases or if there is an increase in the redbait biomass in RBT 7.
193. Forest & Bird and the SPCA supported this option. These responses outlined that due to the lack of information on stock structure and biomass estimates for RBT 7 a conservative approach should be taken that assumes there is a sustainability concern, and so the largest TAC reduction should be made. These responses also highlighted that there was not only a concern for the sustainability of redbait in RBT 7, but also associated and dependent species such as tuna, gannets and marine mammals. It should also be noted that whilst there were only two responses that specifically supported this option, seven of the 14 responses did support a decrease to the TAC without stating a preferred option.
194. FNZ recognises that there is a lack of information on stock structure and biomass and that trends in the RBT 7 landings and JMA 7 effort could indicate that there is a sustainability concern. However, as there is this lack of information on redbait stock structure and biomass, other explanations for the decline in RBT 7 landings need to be considered when making a decision (e.g. the movement of redbait from RBT 7 to RBT 3 as suggested in some of the submissions).

6.5 Other options proposed by submitters

195. Richard Potter's submission included a proposed ban across New Zealand on fishing species when they are spawning. Redbait has been exclusively a non-target species in RBT 7 for the past eight fishing years. Therefore, there is no reason to restrict targeted fishing for redbait in RBT 7 during the redbait spawning period, as this is unlikely occur at any point during the year.

6.6 Economic considerations

196. The economic impacts associated with the proposed options are likely to be negligible. This is because redbait is a low value non-target species in RBT 7 and the options proposed are unlikely to result in a change fishing behaviour for any fishery.

6.7 Deemed values

197. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's Annual Catch Entitlement (ACE) holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
198. [The Deemed Value Guidelines](#) set out the operational policy FNZ uses to inform the development of advice to the Minister on the setting of deemed values.
199. The current basic annual deemed value rate for RBT 7 is \$0.50 per kg. Data on the average transfer price per kilogram ACE is unavailable for RBT 7. The average price paid by fishers during the 2020/21 fishing year for one kilogram of RBT 3 ACE was \$0.21, however there are differences between these stocks with the biggest difference being that RBT 3 is redbait a target fishery. The 2020/21 port price index of RBT 7 was \$0.39 per kg, this price has not changed since it was introduced into the QMS.
200. Seven of the 14 responses highlighted that the deemed values are currently set above the market price and that this does not create the right incentive for accurate reporting as the deemed values should be set between ACE and market price. As a result of this FNZ is proposing a change to the deemed value rates (Table 3).

Table 3: Current and proposed deemed value rates for RBT 7.

Stock	Interim rate (\$/kg)	Differential annual rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
Current RBT 7 rates	0.45	0.50	0.60	0.70	0.80	0.90	1.00
Proposed RBT 7 rates	0.25	0.30	0.40	0.50	0.60	0.70	0.80

7 Conclusions and recommendations

201. FNZ recommends Option 3 as we consider it reflects a cautious approach given the uncertainty in the best available information and it is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.
202. The landings of redbait have declined disproportionately to JMA effort in RBT 7, which could indicate there is a sustainability concern. Three respondents have put forward an alternative explanation for this, that redbait have moved from RBT 7 to RBT 3 due to ocean temperature fluctuations. However, this hypothesis is based on observed correlations in landing patterns from the redbait stocks and ocean temperatures. So, whilst this alternative explanation could be the case, the evidence for the movement of redbait from RBT 7 to RBT 3 is no more definitive than the evidence that there could be a sustainability concern for RBT 7. Furthermore, 10 of the 14 responses supported a TAC decrease based on the observed trends in RBT 7 landings and JMA effort.
203. Seven of the 14 responses highlighted that the deemed values are currently set above the market price and that this does not create the right incentive for accurate reporting as the deemed values should be set between ACE and market price. As a result of this FNZ is also proposing a change to the deemed value rates for RBT 7.

9 Decision for RBT 7

Option 1 – Status quo

Agree to set the RBT 7 TAC at 2,991 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 150 tonnes;
- iv. Retain the RBT 7 TACC at 2,841 tonnes.

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

OR

Option 2

Agree to set the RBT 7 TAC at 842 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 150 to 42 tonnes;
- iv. Decrease the RBT 7 TACC from 2,841 to 800 tonnes.

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

OR

Option 3 (Fisheries New Zealand preferred option)

Agree to set the RBT 7 TAC at 421 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 150 to 21 tonnes;
- iv. Decrease the RBT 7 TACC from 2,841 to 400 tonnes.

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

OR

Option 4

Agree to set the RBT 7 TAC at 105 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 150 to 5 tonnes;
- iv. Decrease the RBT 7 TACC from 2,841 to 100 tonnes.

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



AND

Agree to decrease the RBT 7 deemed value rates to those outlined below:

Stock	Interim rate (\$/kg)	Differential annual rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
Option 1: Proposed RBT 7 rates	0.25	0.30	0.40	0.50	0.60	0.70	0.80

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



Hon David Parker
Minister for Oceans and Fisheries

14 / 3 / 2022

Hāpuku and Bass (HPB 7, HPB 8) – West Coast and Top of the South Island, and Central (West) Coast North Island.

Hāpuku - *Polyprion oxygeneios*,
Groper, Wreckfish



Bass - *Polyprion americanus*,
Moeone, Groper

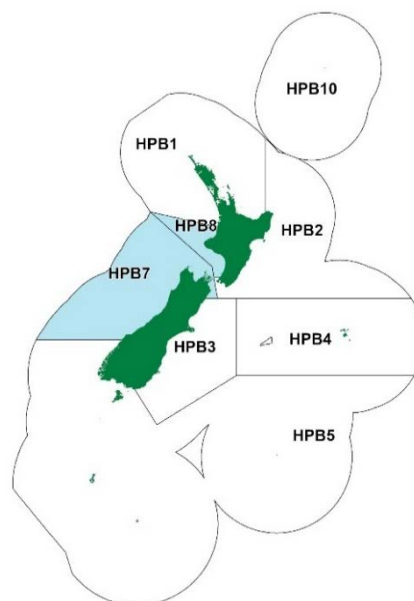


Figure 1: Quota Management Areas (QMAs) for hāpuku and bass, with HPB 7 and HPB 8 highlighted.

Table 1: Summary of options proposed for HPB 7 & 8 from 1 October 2022. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

HPB 7							
Option	TAC	TACC	Allowances			Recreational Measures	
			Customary Māori	Other mortality	Recreational	Daily Limits	Additional regulations
Current settings	N/A	235.5	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	164	110 ↓ (125.5 t)	20	6	28	2 per person Remove from the combined daily limit of 5 with kingfish and: -Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3	
Option 2	136	83 ↓ (152.5 t)	20	5	28		
Option 3 (NEW)	150	97 ↓ (138.5)	20	5	28		
HPB 8							
Option	TAC	TACC	Allowances			Recreational Measures	
			Customary Māori	Other mortality	Recreational	Daily Limits	Additional regulations
Current settings	N/A	80.1	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	87	65 ↓ (15.1 t)	10	4	8	2 per person	Remove from the combined daily limit of 5 with kingfish and: -Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3
Option 2	76	55 ↓ (25.1 t)	10	3	8		

New option incorporated following consultation	Yes (Option 3 for HPB 7)			
	HPB 7		HPB 8	
Total submissions received	27		28	
Number of submissions received in Support of each option	Option 1	1	Option 1	1
	Option 2	13	Option 2	13
	Other	13	Other	14

1 Why are we proposing a review?

204. This review of HPB 7 and HPB 8 was initiated in response to sustainability risks associated with the current management settings. HPB 7 and HPB 8 are shared fisheries highly valued by customary Māori, recreational, and commercial fishers. Concern has been raised about the health of these stocks following declines in commercial landings and reports of localised depletion from some stakeholders.
205. Despite research efforts, HPB stocks are low knowledge stocks with no reliable estimates of biomass or yield. Changes are underway that will improve scientific information including additional research and species-specific reporting of commercial landings. However, FNZ considers that waiting for further research and delaying management action could pose a risk to stock sustainability.
206. FNZ has engaged Iwi Fisheries Forums and held multi-stakeholder meetings to gather on the water knowledge from tāngata whenua and commercial and recreational fishers. Feedback varied between HPB 7 and HPB 8 and, along with differences in catch history and existing Total Allowable Commercial Catches (TACCs), feedback received has guided our approach to the Total Allowable Catch (TAC) proposals for both fishstocks.
207. FNZ is proposing to set a TAC for HPB 7 and HPB 8, 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.
208. Given the evidence of declining catch, limited science information and the biological vulnerability of hāpuku and bass to overfishing²¹, FNZ proposes that a decrease to the TACCs is warranted.
209. Along with advising you on these proposed 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 help to constrain recreational catch within the proposed allowances, recognising that HPB 7 and HPB 8 are important shared fisheries and that actions to provide for the sustainability of these stocks should be shared across sectors.
210. HPB 7 and HPB 8 share a border with HPB 2 in the Cook Strait and currently all three stocks have different deemed value rates. To incentivise accurate reporting, FNZ is also proposing to adjust the deemed value rates of HPB 7 and HPB 8 to align with the current deemed value rates for HPB 2.

1.1 About the stocks

1.1.1 Fishery characteristics

²¹ Hāpuku and bass are considered biologically vulnerable to overfishing because they are long-lived species that are slow to reach maturity, as such they are not able to sustain high rates of fishing mortality.

211. HPB 7 and HPB 8 are important shared fisheries that are highly valued by customary, commercial, and recreational fishers.
212. In the early 2000s, hāpuku and bass were mostly caught as bycatch in trawl fisheries targeting hoki and barracouta (in HPB 7) and tarakihi (in HPB 8). In the early 2010s, the proportion of targeted catch increased to 50% in HPB 7 and 30% in HPB 8. More recently, the proportion of targeted catch has decreased in HPB 7 to approximately 15% in 2020/21 and increased in HPB 8 to approximately 45% in 2020/21.
213. Commercially, hāpuku and bass in HPB 7 and HPB 8 are mainly targeted via bottom longline and Dahn line²² (>95% of the targeted catch). In the last three fishing years, commercial fishers in both QMAs appear to have switched from using bottom longlines to using Dahn lines to target hāpuku and bass. This could be because Dahn lines pose very little risk to seabirds and do not require a streamer line²³.
214. Hāpuku and bass are caught as bycatch in commercial longline fisheries targeting school shark and bluenose (HPB 7 and HPB 8), ling (HPB 7) and in trawl fisheries targeting barracouta and tarakihi (HPB 7 and HPB 8).

1.1.2 Biology

215. Hāpuku (*Polyprion oxygeneios*) and bass (*Polyprion americanus*) are widely distributed around New Zealand, generally over rough ground, from the central shelf (100 m depth) to an estimated lower depth limit of 300 m for hāpuku and 500 m for bass.
216. Accounts exist that suggest hāpuku were once more abundant in shallower coastal waters than they are at present. As early as 1913, fishers reported declining catches of hāpuku at inshore fishing grounds but catches in deeper waters remained good²⁴. Historically, hāpuku were caught by Māori close to the shore²⁵ and tāngata whenua have noted the absence of this taonga species.
217. 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 years²⁶. Female bass mature at 14 years and male bass mature at 11 years. Low productivity²⁷ species such as hāpuku and bass can be vulnerable to overfishing.
218. 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.
219. 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 (see Section 8.5), although the exact location is unknown. The spawning behaviour of bass is unknown.
220. Hāpuku and bass are upper trophic level predators that prey on a wide variety of fish and invertebrates. Hāpuku caught on the Chatham Rise and in Southland had stomachs dominated by fish, while squid were of secondary importance. Of the 13 species of fish that could be

²² A Dahn line is a weighted line to which hooks are attached to the bottom portion that is placed vertically for the purposes of taking fish.

²³ <https://www.gazette.govt.nz/notice/id/2021-go3770>

²⁴ Johnson D, Haworth J (2004) Hooked: the story of the New Zealand fishing industry. Hazard Press, New Zealand

²⁵ Lockerbie, L (1940) Excavations at Kings Rock, Otago, with a discussion of the fish-hook barb as an ancient feature of Polynesian culture. The Journal of the Polynesian Society 49, No. 195.

²⁶ Wakefield et al. (2013) Exceptional longevity, slow growth and late maturation infer high inherent vulnerability to exploitation for bass *Polyprion americanus*.

²⁷ Productivity is a function of the biology of a species and the environment in which it lives. Species with low productivity are less able to sustain high rates of fishing mortality than high productivity species. Generally, species with low productivity are less resilient and take more time to rebuild from a depleted state than species with high productivity.

identified, red cod was the most frequently observed (18%) followed by rough-head whiptail (3%) giant stargazer (2%) and silver conger (2%)²⁸. Other feeding records from the Cook Strait have found that fish, squid and crustaceans, particularly the squat lobster, *Munida gregaria*, and natant (shrimp-like) decapods are important prey for hāpuku.

221. In the Cook Strait, hāpuku are preyed upon by sperm whales²⁹, although probably neither heavily nor selectively. Commercial fishers who attended the pre-consultation stakeholder meeting for HPB 8 noted that fishing activity on the shelf is sometimes interrupted by whales feeding on catch although the extent to which hāpuku contribute to the diet of large predators is unknown.

1.1.3 Management Background

222. Hāpuku and bass were introduced to the Quota Management System (QMS) in 1986 as a combined species (HPB) with a fishing year from 1 October – 30 September. Hāpuku and bass were reported together until September 2021 when reporting requirements were amended to require species specific reporting of hāpuku (HAP) and bass (BAS). Historically, commercial reporting of catch has been at the combined species level, preventing species-specific estimated catch data and limiting scientific information.
223. In response to concerns raised by tāngata whenua and stakeholders about the sustainability of Northern HPB stocks (HPB 1 & 2), on 1 October 2021 you decided to reduce the TACCs of HPB 1 and HPB 2 to 140 tonnes and 80 tonnes respectively, representing a 50% decrease to average annual commercial landings. You also decided to progress the regulatory process to change the recreational daily limit of five³⁰ to two hāpuku/bass per fisher with an accumulation limit of three hāpuku/bass³¹.
224. QMA boundaries in the Cook Strait separate hāpuku and bass into three stocks: HPB 2, HPB 7 and HPB 8 (Figure 1). Tagging studies have indicated considerable mixing of hāpuku between Otago, South Canterbury (HPB 3) and the Cook Strait (HPB 2, 7 & 8)³² and current QMA boundaries do not reflect biological stocks.
225. FNZ considers that the reduction of catch limits in HPB 2 enacted on 1 October 2021 could have the effect of displacing fishing effort into HPB 7 and HPB 8 (where the TACCs are under-caught) leading to additional pressure on hāpuku and bass in these areas (unlike HPB 3 where the TACC is consistently reached).
226. In recent engagement, sustainability concerns were voiced by tāngata whenua, recreational fishers, and some commercial fishers in HPB 7, although the extent of the concern was mixed. In HPB 8, most sectors reported that the fishery was in a good state on the whole, with some reports of localised depletion in inshore areas. There was widespread agreement amongst attendees that the current recreational daily limit of five hāpuku/bass per fisher is too high given the perceived increase in recreational pressure in recent years.
227. Beyond TAC decisions, FNZ recognises that a wider suite of tools is required to improve the state of the stocks. The options proposed here are focused on action that can be taken almost immediately while future controls are also considered.

1.2 Status of the stocks

228. HPB stocks are low knowledge stocks with no reliable estimates of biomass or yield. For stocks in which the maximum sustainable yield (MSY) is not able to be reliably estimated using the best available information, section 13(2A) of the Act specifies that decisions to set or vary the

²⁸ Stevens et al. (2011) Feeding habits of New Zealand fishes: A literature review and summary of research trawl database records 1960 to 2000.

²⁹ Gomez-Villota, F. (2007) Sperm whale diet in New Zealand. Unpublished MAppSc thesis, Auckland University of Technology, 231 pp.

³⁰ HPB is included in the combined daily limit of 5 with kingfish with a maximum of 3 kingfish.

³¹ <https://www.mpi.govt.nz/dmsdocument/47620-The-Decision-letter-Minister-for-Oceans-and-Fisheries>

³² Beentjes, M.P. and Francis, M. (1999). Movements of hāpuku (*Polyprion oxygenios*) determined from tagging. *New Zealand Journal of Marine and Freshwater Research* 33(1):1-12.

TAC must not be inconsistent with the objective of maintaining the stock at or above, or moving the stock towards a level at or above, the level that can produce the MSY.

229. The [May 2021 Fisheries Assessment Plenary Report](#) (Plenary) states that it is not known if current catches or TACCs are sustainable or at levels that will allow the stocks to move towards a size that will support the maximum sustainable yield.
230. The best available information used to monitor hāpuku and bass stocks are trends in catch. Monitoring methods used for other stocks, such as trawl surveys and catch per unit effort (CPUE) data, have been unsuccessful in producing a series of relative abundance estimates that can be used to assess the status of both species.
231. In the case of stocks such as hāpuku and bass where fish aggregate around localised seafloor structures, fishers can maintain good catch rates even when abundance is declining. Fisheries exhibiting these characteristics are referred to as “hyperstable fisheries” and the use of fishery dependent data (e.g. commercial CPUE standardisations) may lead to an unreliable assessment of stock status. Combined species reporting of hāpuku and bass as HPB has also limited data on the relative abundance of either species.

2 Catch information and current settings

2.1 HPB 7 commercial catch³³

232. Commercial catch history of HPB 7 is shown in Figure 2. Since the introduction of hāpuku and bass to the QMS, commercial landings increased throughout the 1990s to reach the TACC in the early 2000s. Landings remained relatively steady in the 2000s until a downwards trend began in 2012/13. Recent average commercial landings of HPB 7 are 109 tonnes, approximately 46% of the TACC (calculated as the average annual landings 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).

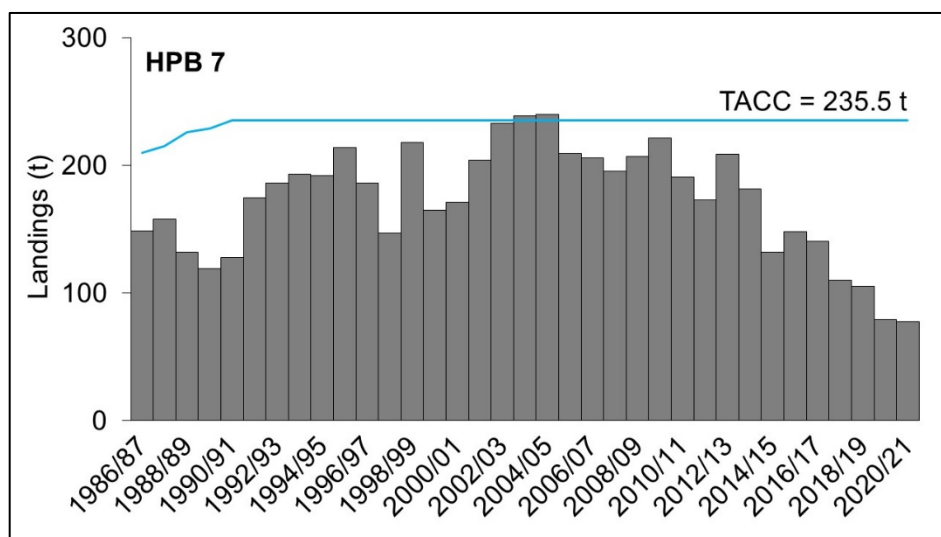


Figure 2: Annual commercial landings (in tonnes) of hāpuku and bass from 1986/87 to 2020/21 in HPB 7 with the current TACC of 235.5 tonnes indicated by the blue line.

233. There are various factors that can influence whether a TACC is fully utilised, and fishers are not obliged to catch their entitlement in full. Lower commercial landings can be related to a change in abundance but also to market factors (e.g., annual catch entitlement (ACE) availability,

³³ Commercial landings or landings refers to the true weight of the landed catch. Estimated catch refers to an estimate of the catch taken at sea. It is an approximation and historically, due to a limit on the number of species that could be recorded, prone to underestimation. Catch history is the historical record of landed values.

market demand). The port price paid for HPB 7 has fluctuated between \$3.30/kg and \$4.70/kg over the past decade, with a general increasing trend since 2014/15. This indicates that port prices are unlikely to be contributing to the decline in landings.

234. The downwards trend in landings appears to be driven by a decrease in targeted catch of hāpuku and bass. The estimated catch of hāpuku and bass caught as bycatch has fluctuated around 52 tonnes annually for the past decade but the estimated targeted catch of hāpuku and bass has decreased from approximately 66 tonnes in 2015/16 to approximately 9 tonnes in 2020/21 (Figure 3). The number of hooks set annually in fishing events where hāpuku and bass were caught and recorded as the target species has also decreased over the same time period, from approximately 500,000 to 35,000.
235. The substantial decrease in the number of hooks set in the target fishery is partly due to commercial fishers switching from using bottom longlines to using Dahn lines. The average number of hooks set of Dahn lines is approximately ten times lower than bottom long lines. One submission received suggested that switching to Dahn lines would reduce HPB landings because fewer hooks are deployed. Average HPB catch per fishing event in 2020/21 was approximately 63 kg for BLL events and approximately 78 kg for Dahn line events indicating that the switch in fishing methods is unlikely to be contributing to the decline in landings.

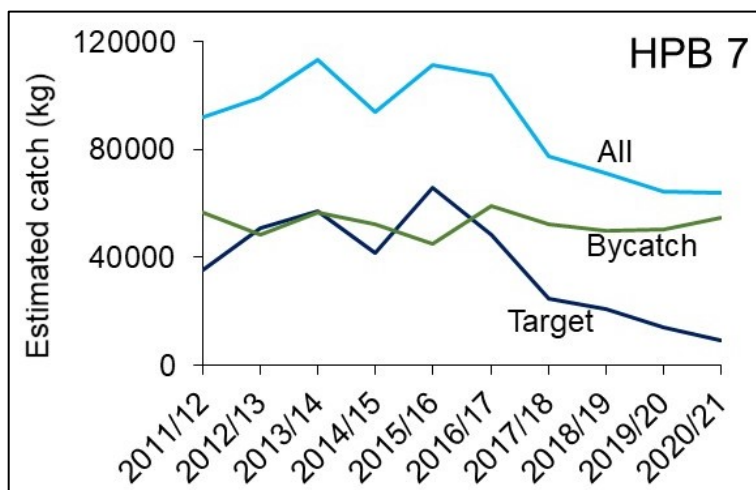


Figure 3: Estimated catch (kg) of hāpuku and bass from 2011/12 to 2020/21 in HPB 7 where hāpuku and bass were recorded as the target (dark blue line), as bycatch (green line) and the total estimated catch (light blue line).

236. Reasons for the decrease in landings in the HPB 7 target fishery are likely complex. Some commercial fishers who attended the pre-consultation stakeholder meeting for HPB 7 reported low abundance and low returns as reasons for decreased targeting of hāpuku and bass, with some fishers transferring their efforts to more lucrative stocks, such as rock lobster. The introduction of electronic reporting and stricter enforcement of maritime rules relating to the inshore skipper's certification were also noted by commercial fishers as reasons for decreasing effort and changing fisher behaviour.
237. Hāpuku and bass fetch good prices on the market and are highly valued by consumers. Furthermore, there is available ACE and deemed values³⁴ paid for HPB 7 over the past decade have been extremely low (total annual deemed values charged for HPB 7 < \$2200). Hence, it seems unlikely that the decline in landings is driven entirely by market factors and likely that decreasing abundance of hāpuku and bass is playing a role in decreasing effort in the target fishery, although the extent of that role is unknown.

³⁴ Commercial fishers who catch more fish than their annual catch entitlement (ACE) may be charged the "deemed value" of the extra catch.

2.2 HPB 8 commercial catch

238. Commercial catch history of HPB 8 is shown in Figure 4. Since the introduction of hāpuku and bass to the QMS, commercial landings increased to approximately the level of the TACC in the mid-90s. Landings remained relatively steady throughout the two decades that followed and long-term average annual landings³⁵ are approximately 62 tonnes or 75% of the TACC. In the last three fishing years, landings have dropped to <50 tonnes and recent average commercial landings³⁶ of HPB 8 are 55 tonnes, approximately 69% of the TACC.

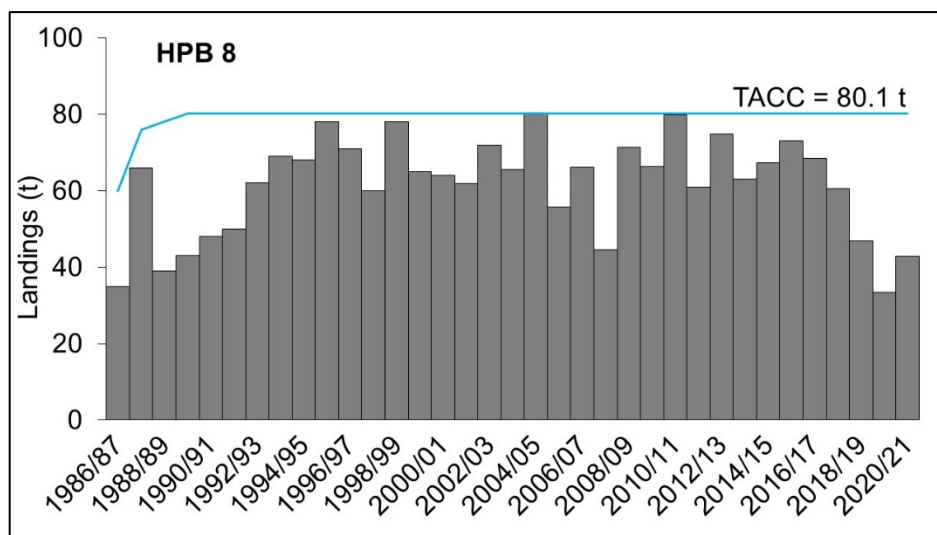


Figure 4: Annual commercial landings (in tonnes) of hāpuku and bass from 1986/87 to 2020/21 in HPB 8 with the current TACC of 80.1 tonnes indicated by the blue line.

239. Similarly to HPB 7, port prices are unlikely to be contributing to the recent lower landings. The port price paid for HPB 8 has fluctuated between \$4/kg and \$6/kg for the past decade reaching a high of \$6.32 in the 2020/21 fishing year.

240. In contrast to HPB 7, there are some indications that recent lower annual commercial landings of HPB 8 are the result of a decrease in hāpuku and bass caught as bycatch. The estimated annual targeted catch has fluctuated between 10 and 20 tonnes over the past decade, averaging approximately 15 tonnes (Figure 5) whereas estimates of hāpuku and bass caught annually as bycatch have decreased from approximately 36 tonnes in 2016/17 to approximately 18 tonnes in 2020/21.

³⁵ Defined here as the average annual landings over the last 10 fishing years excluding the 2019/20 fishing year.

³⁶ Recent average landings are calculated as the average annual landings 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.

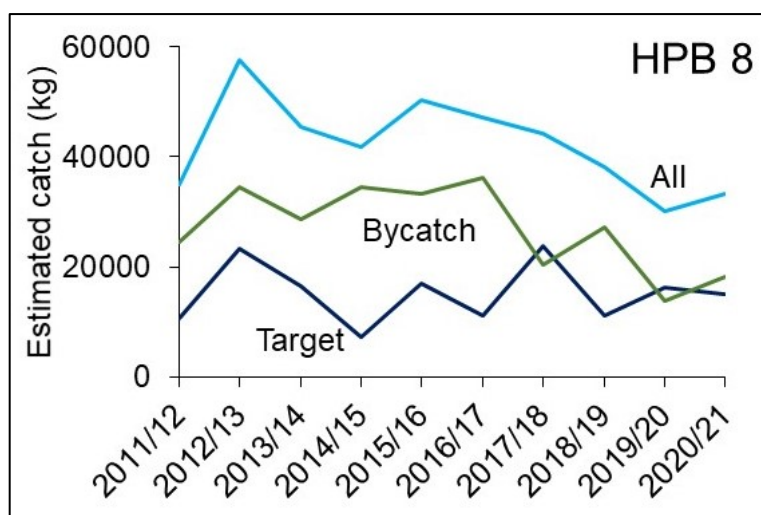


Figure 5: Estimated catch (kg) of hāpuku and bass from 2011/12 to 2020/21 in HPB 8 where hāpuku and bass were recorded as the target (dark blue line), as bycatch (green line) and the total estimated catch (light blue line).

241. Hāpuku and bass in HPB 8 are mainly caught as bycatch in bottom longline fisheries targeting school shark, bluenose and ling. Commercial fishers who attended pre-consultation stakeholder meetings noted that there has been a decrease in school shark availability in recent years and the amount of hāpuku and bass caught as bycatch in the school shark target fishery decreased from 23 tonnes in 2016/17 to 10 tonnes in 2020/21. This indicates that declining effort in associated fisheries may be contributing to the decline in HPB landings, although this doesn't remove the possibility that decreasing abundance of hāpuku and bass may also be contributing to the decline in landings.

2.3 Customary Māori

242. There is currently no customary Māori allowance set for HPB 7 or HPB 8 and customary catch information for these stocks is highly uncertain. Information supplied from customary fishing permit authorisations indicates that since 1999:

- a. Seven permits have been issued for customary use in HPB 7. None of these permits recorded the amount harvested.
- b. No permits have been issued for customary use in HPB 8.

243. FNZ recognises that this information is incomplete and unlikely to reflect current customary use. The small amount of customary reporting may reflect that tāngata whenua are using recreational fishing regulations for their harvest. Also, tāngata whenua north of Kahurangi Point and in the Marlborough Sounds and Tasman/Golden Bays area (HPB 7) and in areas of Taranaki and the Kāpiti Coast (HPB 8) are still operating under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which do not require that customary permits or catches be reported.

2.4 Recreational

244. Hāpuku and bass are popular recreational species typically taken by rod and line from trailer boats and larger vessels. Technological improvements in fishing gear and access to larger boats has allowed recreational fishers to access hāpuku and bass in deep waters that were once only accessible to commercial vessels.

245. There is currently no recreational allowance set for HPB 7 or HPB 8. However, under the Fisheries (Amateur Fishing) Regulations 2013 hāpuku and bass are included with kingfish in a combined daily limit of five. Within this combined daily limit, a fisher may only take a maximum of three kingfish but could take up to five hāpuku/bass if no kingfish are taken.

246. The best available information on recreational catch is from the 2017/18 National Panel Survey of Marine Recreational Fishers (NPS). The NPS estimated the 2017/18 recreational harvest of hāpuku/bass was 35.4 tonnes (CV³⁷ = 0.35) in HPB 7 and 6.2 tonnes (CV = 0.49) in HPB 8. Approximately 90% of daily bag sizes in HPB 7 included three or fewer hāpuku/bass, and approximately 90% of daily bag sizes in HPB 8 included two or fewer hāpuku/bass.
247. The NPS estimates do not include recreational harvest taken under s 111 general approvals aboard commercial vessels. The average annual catch taken under s 111 over the last five fishing years (excluding the 2019/20 fishing year) is 212 kg in HPB 7 and 83 kg in HPB 8.
248. The NPS estimates of recreational harvest include amateur charter vessel (ACV) catch, but FNZ 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.
249. Figure 6 provides 10 years of estimated ACV catch data. Annual ACV catch was estimated using the mean weight per HPB of 5.96 kg (taken from the 2017/18 NPS) multiplied by the number of fish caught per year. FNZ estimates the average ACV catch³⁸ as 4.5 tonnes in HPB 7 and 0.7 tonnes in HPB 8, representing 13% and 11% of total recreational catch estimates in HPB 7 and HPB 8 respectively. Annual ACV catch in HPB 7 shows a similar downwards trend to commercial landings, decreasing from 9.4 tonnes in 2012/13 to 1.9 tonnes in 2020/21. Annual ACV catch in HPB 8 has been highly variable for the last five fishing years.

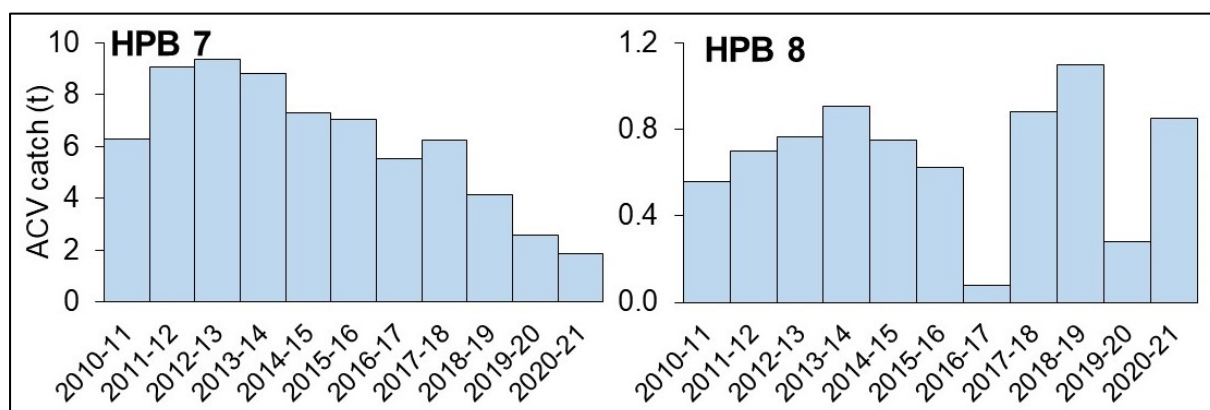


Figure 6: Annual ACV catch (in tonnes) of hāpuku and bass from 2010/11 to 2019/20 in HPB 7 (left) and HPB 8 (right). Note the different scaling on the X axes of both graphs.

2.5 All other mortality caused by fishing

250. 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 TAC or allowance for all other mortality caused by fishing set for HPB 7 or HPB 8.
251. Potential sources for other mortality for HPB 7 and HPB 8 could include, unreported and illegal catch, mortality associated with injury from contact with (but not capture by) fishing gear, mortality associated with the accidental loss or damage of fishing gear, and orca or shark depredation from set lines.
252. Low observer coverage in HPB 7 (3.3% average for the past 5 fishing years) and in HPB 8 (0.92% average for the past 5 fishing years) lends uncertainty to estimates of other sources of mortality caused by fishing³⁹. However, the main fishing methods (being bottom longline and Dahn line) are more selective and less likely to create unknown mortality events in comparison

³⁷ CV stands for the coefficient of variation – the ratio of the standard deviation to the mean. It shows the extent of variability in relation to the mean value. The higher the CV, the higher the dispersion.

³⁸ Average ACV catch is calculated as the average annual 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.

³⁹ Observer coverage in bottom longline and Dahn line fisheries is measured as percentage of total hooks observed.

with trawl caught fish. Therefore, allowances for other mortality caused by fishing that equate to 5% of the TACC are considered appropriate for HPB 7 and HPB 8.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tāngata whenua

253. Input and participation into the sustainability decision-making process is provided through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum has developed an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interests in fisheries. Particular regard should be given to kaitiakitanga when making sustainability decisions.
254. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.
255. Te Waka a Māui me Ōna Toka Iwi Forum is the Te Wai Pounamu (South Island) Iwi fisheries forum — it includes all nine tāngata 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.
256. The Te Tai Hauāuru Forum (Taranaki to Tītahi Bay) covers the area that makes up HPB 8. It includes: Te Rūnanga o Ngāti Tama, Te Rūnanga o Ngāti Mutunga, Te Ātiawa Settlements Trust, Taranaki Iwi Trust, Nga Hapū o Ngāruahine Incorporated, Te Rūnanga o Ngāti Ruanui Trust, Te Kaahui o Rauru (Ngā Rauru), Te Rūnanga o Ngāti Apa (North Island), Te Ātihaunui a Pāpārangi, Ati Awa ki Whakarongotai Charitable Trust, Muaupoko Tribal Authority Inc, Raukawa ki te Tonga Trust/Te Rūnanga o Raukawa, Te Patiki Holdings Trust Board (Ngāti Hauti), Tanenuiarangi Manawatu Incorporated (Rangitāne o Manawatu).
257. A summary of Iwi Fisheries Forums input on HPB 7 and HPB 8 is detailed in Table 2.

Table 2: Summary of Iwi Fisheries Forum Input.

Iwi Fisheries Forum	Input into HPB 7 and HPB 8.
Te Waka a Māui me Ōna Toka Iwi (Early input into advice paper)	<ul style="list-style-type: none"> The latest Te Waka a Māui me Ōna Toka Iwi Forum was held on 10 November, before the consultation paper was made public. At the 10 November hui, forum members were very concerned about the state of the HPB stocks and the downward trend in commercial landings and increasing recreational pressure. The forum expressed support for a decrease to the TACC and a recreational daily limit of one HPB per fisher. They suggested this daily limit be implemented across the South Island and not just in HPB 7. They advised a customary allowance of 20 tonnes for HPB 7 would accommodate customary harvest. The forum requested that the recreational sector report landings for HPB 2, HPB 7 and HPB 8.
Te Tai Hauāuru Forum (Early input into advice paper)	<ul style="list-style-type: none"> The latest Te Tai Hauāuru Forum hui was held on 15 October, before the consultation paper was made public. At this forum hui, FNZ discussed the sustainability round but did not receive any feedback specific to HPB 8.

<p>Ngati Toa and Ngati Koata Iwi (Supplied a written response to consultation)</p>	<ul style="list-style-type: none"> • Stated that six iwi hāpuku fishing grounds, mainly in HPB 2 and HPB 8, have been cleaned out by recreational fishers. • Requested that the recreational daily limit in HPB 2, HPB 7 and HPB 8 be reduced to one HPB per fisher. • Requested that the recreational sector report landings for HPB 2, HPB 7 and HPB 8. • Stated that Iwi will report Customary landings when recreational landings are reported. • Requested that the proposed HPB 7 and HPB 8 ACE (or equivalent) review goes back to Iwi Forums for further consultation. • Requested that the methodology of setting HPB 7 and HPB 8 ACE (or equivalent), be reviewed.
--	--

3.2 Kaitiakitanga

258. Te Waka a Māui me Ōna Toka Iwi Forum has an Iwi Forum Fisheries Plan titled The Te Wai Pounamu Iwi Forum Fisheries Plan that identifies hāpuku as a taonga species. The Forum Fisheries Plan contains objectives to support and provide for the interests of South Island iwi.
259. The Te Tai Hauāuru Forum does not specifically identify taonga species in its Iwi Forum Fisheries Plan, however it should be noted that iwi may still consider hāpuku and bass taonga species.
260. FNZ considers that the proposed management options are in keeping with the objectives of the Iwi Forum Fisheries Plans which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries.
261. Customary tools utilised under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Fisheries Act 1996, provide for tāngata whenua to manage local fisheries in ways that best fits local customary practices in the form of mātaimai, taiāpure and temporary closures.
262. There are a number of customary fisheries management areas within HPB 7 and HPB 8. These include eight mātaimai reserves and one taiāpure (Table 3). 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 7 and HPB 8.

QMA	Customary Area	Management type
HPB 7	Whakapuaka (Delaware Bay)	<p>Taiāpure <i>All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational and customary fishing.</i></p>
HPB 7	<p>Okuru/Mussel Point Tauperikaka Mahitahi/Bruce Bay Manakaiāua/Hunts Beach Okarito Lagoon Te Tai Tapu (Anatori) Te Tai Tapu (Kaihoka)</p>	<p>Mātaimai Reserve <i>Commercial fishing is not permitted within mātaimai reserves unless regulations state otherwise.</i></p>
HPB 8	Marokopa	

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

263. The key environmental principles, which must be taken into account when considering sustainability measures for HPB 7 and HPB 8 concern (a) associated or dependent species should be maintained above a level that ensures their long-term viability (in particular marine mammals, seabirds, fish and invertebrate bycatch) (b) biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing) and (c) habitats of particular significance for fisheries management should be protected.
264. It is important to note in some cases FNZ has made assumptions about environmental interactions based on fisher reported data that may not have been independently verified (for example, by an on-board FNZ Observer). Observer coverage of the HPB 7 and HPB 8 fisheries in recent years has been less than 5%.

4.1.1 Marine Mammals

265. HPB 8 extends from Porirua Bay to the North Taranaki Bight on the west coast of the North Island, an area associated with the critically endangered Māui dolphin and HPB 7 is home to several subpopulations of Hector's dolphins. 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.
266. 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 7 and HPB 8 target fisheries, but low observer coverage of bottom longline fisheries makes the frequency of interactions uncertain.
267. As the options proposed involve lowering the TACCs of both fish stocks, they are not expected to lead to an increase in marine mammal interactions.

4.1.2 Seabirds

268. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries ([NPOA-Seabirds](#)).
269. Since the 2008/09 fishing year to the present day, there have been 21 seabird captures reported in HPB 7 and HPB 8 target fisheries with five of those captures identified as sooty shearwaters. Although low observer coverage (less than 5% in recent years) lends uncertainty to this estimate.
270. In the last three fishing years, commercial fishers in HPB 7 and HPB 8 appear to have switched from using bottom longlines to using Dahn lines to target hāpuku and bass. Dahn lines pose very little risk to seabirds as baited hooks are placed close to the weight and therefore rapidly sink out of the reach of seabirds. If this transfer of methods from bottom longlines to Dahn lines continues, it may result in fewer seabird captures in hāpuku and bass target fisheries in the future.
271. As the options proposed involve lowering the TACCs of both fish stocks, they are not expected to increase seabird captures.

4.1.3 Fish bycatch

272. The species most commonly caught alongside hāpuku and bass as bycatch in HPB 7 and HPB 8 bottom longline and Dahn line target fisheries are school shark, ling, spiny dogfish, northern spiny dogfish and, to a lesser extent, bluenose.

273. For most of the species listed above there are no specific sustainability concerns with the exception of bluenose. Bluenose stocks nationwide that are currently being rebuilt due to low abundance. Options proposed present a low risk to the rebuild of bluenose stocks as the options are unlikely to result in increased fishing effort that could lead to increased bycatch of these stocks.

4.1.4 Benthic impacts

274. Bottom longline and Dahn line methods generally pose a low risk to the benthic environment with approximately 66 kg of coral, sponges and bryozoans reported as bycatch across all HPB fisheries since 2008/09 to the present day.
275. As the options proposed involve lowering the TACCs of both fish stocks, they are not expected to increase benthic impacts.

4.1.5 Habitats of particular significance for fisheries management

276. FNZ considers that habitats of particular significance for fisheries management (HPSFM) are areas of critical importance in supporting the productivity of harvested species.
277. There is no available information on egg and larval transport for hāpuku. Juvenile hāpuku have a long pelagic phase lasting over 2 years, and potentially school in association with drifting seaweed. The long pelagic phase may allow hāpuku to migrate large distances although trans-oceanic dispersal is unknown. At 40 – 50 cm (3-4 years), they settle on the benthos and occupy water <200 m⁴⁰, although specific juvenile habitats are unknown. In interviews with fishers, small juveniles were reported from most regions but often localised in extent.^{41 42}
278. The Cook Strait has been suggested as a hotspot for spawning hāpuku (Figure 7), justified by observations of northerly migrations of pre-spawning hāpuku from Southland (and other observations from the Cook Strait hāpuku fishery)⁴³. Although the exact location is unknown, it is thought to be south of Brothers Islands.⁴⁴ The attributes of this habitat are not thought to be under threat from any development activities and are unlikely to be threatened by fishing (Table 4).

⁴⁰Francis et al. (1999) Age and growth estimates for New Zealand hapuku, *Polyprion oxygeneios*.

⁴¹ Paul, (2005) Seasonal fishing patterns in the commercial fishery for groper in New Zealand, with notes on reproduction and apparent migration in *Polyprion oxygeneios* and *P. americanus*: results of a questionnaire sent to commercial fishers.

⁴² Morrison et al (2014) Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research.

⁴³ Beentjes & Francis (1999) Movement of hapuku (*Polyprion oxygeneios*) determined from tagging studies.

⁴⁴ Johnston (1983) The Southern Cook Strait groper fishery.

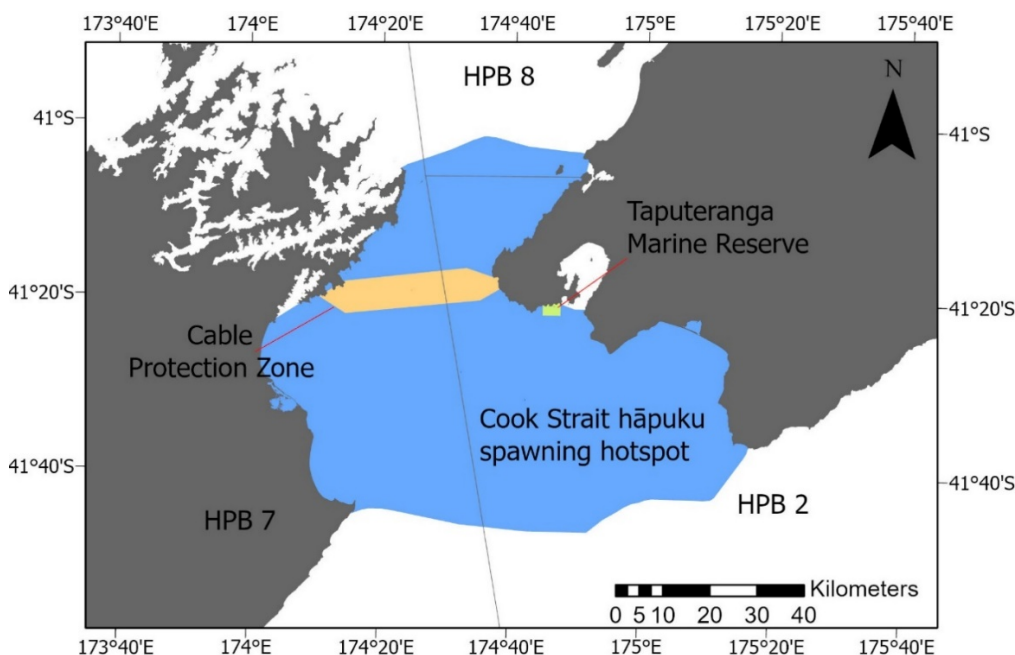


Figure 7: Estimated distribution of Cook Strait spawning hāpuku⁴⁵ (blue area on map) covering three HPB QMAs (HPB 2, 7 and 8).

279. Current environmental protection in the Cook Strait which could be relevant to this habitat includes the Cook Strait Submarine Protection Zone (CPZ), which 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 spawning habitat. The reserve is protected under the Marine Reserves Act 1971 and fishing or gathering of marine life of any kind is prohibited.
280. As the options proposed involve lowering the TACCs of both fish stocks, they are not expected to increase the impact on any habitats of particular significance in HPB 7 and HPB 8.

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

Stocks	HPB 7 and HPB 8
Habitat	<ul style="list-style-type: none"> Water column in an area of the Cook Strait (exact location unknown) but thought to be south of Brothers Islands.
Attributes of habitat	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> No known development activities are happening or planned.

⁴⁵ 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.

	<ul style="list-style-type: none"> • 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).
--	---

4.2 Sustainability measures (section 11 of the Act)

281. Section 11 of the Act sets out various matters that you must take into account or have regard to before setting or varying any sustainability measure (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 Plan⁴⁶

282. 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.

283. 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.

284. Hāpuku and bass fall under Group 2, which recognises that FNZ intend to manage these stocks to provide for moderate levels of use with moderate levels of information to monitor stock status.

4.2.2 Regional Plans

285. Before setting or varying any sustainability measure, you must have regard to any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991. There are seven Regional Councils that have coastline within HPB 7 and HPB 8 boundaries. Each of these regional councils have multiple plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems and habitats.

286. FNZ 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

287. There were 27 submissions on the proposed changes to HPB 7 and 28 submissions on the proposed changes to HPB 8 (Table 5). Submissions were mostly divided between support for Option 2 (48% support in HPB 7 and 46% support in HPB 8 and Other (48% support in HPB 7 and 50% support in HPB 8). The submissions received supporting 'Other' were divided between those that disagreed with any reduction to the TACCs and those that considered that the proposed settings did not go far enough to protect the stocks. There were no submissions received in support of Option 3 for HPB 7 as this option was added by FNZ following consultation.

⁴⁶ The Plan has not been approved yet and may still be subject to change. Therefore, under section 11(2A), you are not required to take it into account.

Table 5: Written submissions and responses received for HPB 7 and HPB 8 (in alphabetical order).

Submitter	Option Support						Comments
	HPB 7			HPB 8			
	1	2	Other	1	2	Other	
A. Caldwell-Smith		✓			✓		
B. Pritchard			✓			✓	Notes the proposed options do not go far enough to protect the stocks.
B. Tierney			✓			✓	Disagrees with any reduction to the TACCs of either fish stock.
D. Pavlovich		✓			✓		
Imersion Fishing Ltd			✓			✓	Disagrees with any reduction to the TACCs of either fish stock.
Iwi Collective Partnership (ICP)				✓			
J. Caldwell-Smith		✓			✓		
K. Tierney			✓			✓	Disagrees with any reduction to the TACCs of either fish stock.
K. Wealleans			✓			✓	Does not specify an option. States a reduction to quota and more research are required.
L. Williamson		✓			✓		Notes that a serious reduction to catch limits is required.
N. Pavlovich		✓			✓		
NZ Sportfishing Council (NZSFC) joint submission with LegaSea, NZ Underwater Association (NZUA) and NZ Angling and Casting Association (NZACA), Endorsed by: - Cape Egmont Boat Club - New Plymouth Sportfishing and Underwater Club - Raglan Sport Fishing Club			✓			✓	Propose more conservative TACs for both fish stocks and a recreational accumulation limit of 4 HPB.
P. Adams						✓	Suggests a TAC of 100 t for HPB 8 with a TACC of 70 t. Supports proposed recreational measures.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (SPCA)		✓			✓		Supports Option 2 for both stocks but notes a wider suite of tools is required to ensure sustainability.
S. Hydes			✓			✓	Disagrees with any reduction to the TACCs of either fish stock. Suggests quota be shelved.
Southern Inshore Fisheries Management Co. Endorsed by:			✓			✓	Disagrees with any reduction to the TACCs of either fish stock.

- Fisheries Inshore New Zealand (FINZ)							
T. Hewitt			✓			✓	Does not specify an option but states that the fishery has collapsed.
Te Ohu Kaimoana, Endorsed by: - Maruehi Fisheries Ltd, - Tama Asset Holding Company Ltd (TAHCL), - Taranaki Iwi Fisheries Ltd, - Te Atiawa Holdings Ltd, - Whanganui Iwi Fisheries Ltd			✓			✓	Supports Option 2 for both stocks but notes further management action is required to address localised depletion.
V. Pavlovich			✓			✓	
Westfleet Fishing Ltd	✓						Notes the decrease in HPB caught as bycatch and lack of continuous good catches of HPB.

6 Options and analysis

288. Three options for HPB 7 and two options for HPB 8 are proposed for the TAC, TACC and allowances for customary Māori, recreational and all other sources of mortality caused by fishing.
289. When setting a TAC for stocks such as HPB 7 and HPB 8 where the maximum sustainable yield is not able to be estimated reliably using the best available information, s 13(2A) of the Act is relevant. In order to satisfy s 13(2A) you must ensure that your TAC decisions for HPB 7 and HPB 8 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.
290. FNZ is not recommending the status quo as an option for HPB 7 or HPB 8 because there is high uncertainty as to whether the status quo would be consistent with the objective set out above. For stocks that do not already have a TAC or allowances set, it is FNZ's policy to propose that you set these upon review of a stock.

6.1 Implementing changes to recreational controls

291. In addition to your decision to set a TAC and vary the TACC for HPB 7 and HPB 8, you are being asked to consider reducing the recreational daily limits for these stocks, while also introducing an accumulation limit. 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.
292. Any decision to set a TAC and vary the TACC for HPB 7 and HPB 8 will be implemented via *Gazette* notice and will come into effect on 1 October 2022. 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.
293. The setting of a recreational allowance is closely linked to controls that are aimed at managing recreational catch, and hence FNZ 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.
294. The different decision-making mechanisms does mean that changes to recreational controls may be implemented at a different time to your TAC and TACC decisions. Given this, you are being asked to agree to progressing the regulatory process for changing recreational controls for HPB 7 and HPB 8.

6.2 HPB 7 Options and Analysis

295. FNZ is proposing three options for the HPB 7 TAC, all of which are lower than the existing TACC of 235.5 tonnes. The best available information for HPB 7 is catch history. Commercial landings have been declining for a decade and the existing TACC has not been reached since 2004/05.
296. This information, coupled with the biological vulnerability of hāpuku and bass, has led FNZ to consider that a TAC below the existing TACC would be consistent 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.

HPB 7							
Option	TAC	TACC	Allowances			Recreational Measures	
			Customary Māori	Other mortality	Recreational	Daily Limits	Additional regulations
Current settings	N/A	235.5	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	164	110 ↓ (125.5 t)	20	6	28		
Option 2	136	83 ↓ (152.5 t)	20	5	28	2 per person	Remove from the combined daily limit of 5 with kingfish and:
Option 3 (NEW – added post consultation)	150	97 ↓ (138.5)	20	5	28		-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3

297. Option 1 proposes to set a TAC for HPB 7 of 164 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing. The TACC under Option 1 would be reduced from 235.5 tonnes to 110 tonnes, a level that would provide for recent average commercial landings.
298. Option 2 proposes to set a TAC for HPB 7 of 136 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing. The TACC under Option 2 would be reduced from 235.5 tonnes to 83 tonnes, a 25% decrease to recent average commercial landings.
299. Option 3 is an option developed by FNZ after consultation as an intermediate option between Options 1 and 2 to recognise stakeholder concerns regarding uncertainty as to whether the decline in landings is driven by declining abundance of hāpuku and bass. Option 3 proposes to set a TAC for HPB 7 of 150 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing. The TACC under Option 3 would be reduced from 235.5 tonnes to 97 tonnes, a 12% decrease to recent average commercial landings.
300. All options propose a decrease to current catch limits and are considered consistent 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. Option 1 provides for a level of utilisation that is slightly lower than existing levels and removes some of the risk to the stock that could result from an expansion in catch. Option 2 places more weight on an assumption that recent declines in commercial landings are abundance driven and adopts a cautious approach based on the biological vulnerability of hāpuku and bass. Option 3 has a lesser impact on utilisation than Option 2 whilst also recognising the sustainability risk by reducing current catch. Option 3

gives slightly less certainty of a positive impact on stock biomass than Option 2 but also recognises the uncertainty around factors influencing the decline in landings.

Customary Māori allowance

301. There is little information available to guide the setting of the customary Māori allowance in HPB 7. The small amount of customary reporting may reflect that tāngata whenua in some areas of HPB 7 are still operating under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which do not require that customary permits or catches be reported.
302. Following input and participation with Te Waka a Māui me Ōna Toka Iwi Forum, a customary Māori allowance of 20 tonnes is proposed under all options to accommodate customary harvest.

Recreational allowance

303. Under all options, FNZ is proposing a recreational allowance of 28 tonnes. The proposed recreational allowance provides for recreational utilisation only in part, and additional recreational controls are proposed to ensure recreational harvest remains within the proposed allowance. Setting the recreational allowance below the current estimated recreational catch recognises that HPB 7 is an important shared fishery and that a decrease in catch for sustainability concerns should be shared across sectors.

Other sources of fishing mortality allowance

304. The main fishing methods for HPB 7 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.
305. For inshore stocks predominantly taken by trawl, we generally propose that the other sources of fishing mortality allowance be set at a level that equates to 10 percent of the TACC. Given the more selective methods used in HPB 7, an other sources of fishing mortality allowance that equates to 5 percent is considered appropriate. Therefore, under Option 1, an allowance of 6 tonnes is proposed and under Option 2 and Option 3, an allowance of 5 tonnes is proposed.

Total allowable commercial catch

306. All options propose a reduction to the current TACC recognising that commercial landings of HPB 7 have 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.
307. Option 1 proposes to reduce the TACC from 235.5 tonnes to 110 tonnes, a level consistent with recent average commercial landings. Option 2 proposes to reduce the TACC from 235.5 tonnes to 83 tonnes, a 25% decrease to recent average commercial landings. Option 3 proposes to reduce the TACC from 235.5 tonnes to 97 tonnes, a 12% decrease to recent average commercial landings.

Recreational settings

308. In addition to setting the TAC and varying the TACC, it is proposed that the recreational daily limit be decreased to ensure that recreational catch remains within the proposed allowance. FNZ proposes decoupling hāpuku/bass from the combined daily limit with kingfish and introducing a recreational daily limit of two hāpuku/bass per fisher. This would decrease the current recreational harvest of 35 tonnes by approximately 7 tonnes, representing a 20% decrease to current recreational catch.
309. Decreasing the current recreational catch recognises the increased recreational pressure on the fishery, input from tāngata whenua and pre-consultation engagement with commercial and recreational stakeholders that indicated that a recreational daily limit of two hāpuku/bass per fisher would be widely supported. Some recreational fishing clubs have already adopted a voluntary daily limit of two hāpuku/bass per fisher. Decreasing the daily limit for all recreational fishers supports these efforts and extends them across the recreational community.

310. 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. Considering that hāpuku and bass are frequently targeted by recreational fishers at offshore locations on multi day trips, an accumulation limit is proposed as an additional measure to manage recreational catch within the proposed recreational allowance. An accumulation limit of three hāpuku/bass per person is proposed under all options.

Submissions

311. One submission supported Option 1 for HPB 7 and thirteen submissions supported Option 2 for HPB 7. Of the thirteen submissions supporting Option 2, five submissions were from members of the public who provided no rationale (A. Caldwell-Smith, D. Pavlovich, J. Caldwell-Smith, N. Pavlovich, V. Pavlovich). No submissions supported Option 3 because this option was added following consultation.
312. Westfleet Fishing Limited supported Option 1 for HPB 7 noting that they no longer target HPB due to the lack of continuous good catches. They also noted a decrease in HPB caught as bycatch by the ling bottom longline fishery.
313. Te Ohu Kaimoana (and endorsing submissions) supported Option 2 for HPB 7 under the rationale that a reduction in catch is required to ensure the sustainability of the fishery. They note that customary access to the fishery is being limited by inshore depletion and that management action beyond catch limit adjustments are required to address sustainability concerns.
314. SPCA and L. Williamson supported Option 2 for HPB 7 acknowledging that a cautious approach is required in the absence of robust data to guide management.
315. Six submissions (Southern Inshore Fisheries Management Co. and endorsing submissions, Imersion Fishing Limited, B. Tierney, K. Tierney and S. Hydes) did not support any options for HPB 7 proposed by FNZ with rationales given including that science and data are poor and do not support such severe reductions to the TACCs. It is their view that it cannot be determined whether a reduction to commercial landings is due to a sustainability concern and that TAC reviews need to be based on scientific evidence. In respect to HPB stocks they state that evidence should come from the project HPB2021-01 that aims to design a bottom longline survey to determine the age structure of New Zealand hāpuku.
316. Whilst the project HPB2021-01 is an important step towards improving scientific information, FNZ notes that it will not result in an assessment of stock status. Rather, if successful, it will determine the sampling design that should be used in future projects. Assuming the project is successful in designing a feasible survey, the earliest that survey could take place would be 2023/24 enabling a review of catch settings in 2025. FNZ considers that waiting for further research and delaying management action until this time could pose a risk to stock sustainability.
317. FNZ notes that, in such circumstances where there is limited information to inform the setting of a TAC, s 13(2A) of the Fisheries Act 1996 applies and you must not use the absence of, or uncertainty in, the best available information as a reason for postponing or failing to set a TAC. The six submissions listed above did not suggest any alternative TAC settings or proposed changes to options to be considered by FNZ.
318. FNZ also notes the information principles set out in s 10 of the Fisheries Act 1996: (a) your decision should be based on the best available information; (b) you should consider uncertainty in the information available and (c) you should be cautious when information is uncertain, unreliable or inadequate.
319. In response to commercial stakeholder concerns around the uncertainty in the information available to inform TAC proposals, FNZ believes there is justification for an intermediate option for HPB 7 between Options 1 and 2. The intermediate option developed after consultation (Option 3) has a lesser impact on utilisation than Option 2 whilst also recognising the

sustainability risk by reducing current catch. This is FNZ's preferred option for HPB 7 and is being recommended on the understanding that FNZ will undertake a further review of HPB 7 when improved scientific information becomes available and will continue to closely monitor the stock.

6.3 HPB 8 Options and analysis

320. FNZ consulted on two options for the HPB 8 TAC, both of which involve a decrease to current catch limits. The best available information for HPB 8 is catch history. There has been an overall declining trend in commercial landings since 2015/16 and the existing TACC has not been reached since 2010/11.
321. In contrast to HPB 7, differences in catch history and existing TACCs have led FNZ to consider one option for the TAC that is slightly higher than the existing TACC and one option that is slightly lower than the existing TACC would be consistent 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.

HPB 8							
Option	TAC	TACC	Allowances			Recreational Measures	
			Customary Māori	Other mortality	Recreational	Daily Limits	Additional regulations
Current settings	N/A	80.1	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	87	65 ↓ (15.1 t)	10	4	8	2 per person	Remove from the combined daily limit of 5 with kingfish and:
Option 2	76	55 ↓ (25.1 t)	10	3	8		-Introduce daily limit of 2 hāpuku/bass -Introduce accumulation limit of 3

322. Option 1 proposes to set a TAC for HPB 8 of 87 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing. The TACC under Option 1 would be reduced from 80.1 tonnes to 65 tonnes, a level that would provide for long term average commercial landings.
323. Option 2 proposes to set a TAC for HPB 8 of 76 tonnes and includes allowances for customary fishing, recreational fishing and other sources of mortality caused by fishing. The TACC under Option 2 would be reduced from 80.1 tonnes to 55 tonnes, a level that would provide for recent average commercial landings.
324. Option 1 proposes a decrease to current catch limits but sets the TAC slightly above the existing TACC of 80.1 tonnes recognising that the existing TACC is already conservative in comparison to other HPB stocks. This option provides for a level of utilisation consistent with long term removals acknowledging that lower commercial landings recorded in recent fishing years may be driven by a decrease in effort in associated fisheries where hāpuku and bass are caught as bycatch. It also recognises feedback from pre-consultation stakeholder meetings in which general satisfaction with the performance of the fishery was communicated by fishers from all sectors.
325. Option 2 proposes a decrease to current catch limits but sets the TAC slightly below the existing TACC of 80.1 tonnes. Option 2 provides for a level of utilisation comparable to more recent catch trends and would prevent further increases catch. This option places more weight on an assumption that recent declines in commercial landings are abundance driven and adopts a cautious approach based on the biological vulnerability of hāpuku and bass.

Customary Māori allowance

326. There is little information available to guide the setting of the customary Māori allowance in HPB 8. It is possible that customary harvest of HPB 8 has been covered by recreational catch with the existing daily limits. A customary Māori allowance of 10 tonnes is proposed under both options to accommodate customary harvest.

Recreational allowance

327. Under both options, FNZ is proposing a recreational allowance of 8 tonnes. The 2017/18 NPS estimates that the recreational harvest of hāpuku and bass in HPB 8 is 6.2 tonnes. FNZ considers that this figure likely underestimates recreational catch (noting the large variation around this estimate) and considers that 10 tonnes is more likely to reflect recreational harvest. The proposed recreational allowance provides for recreational utilisation only in part, and additional recreational controls are proposed to ensure recreational harvest remains within the proposed allowance.

Other sources of fishing mortality allowance

328. The main fishing methods for HPB 8 are bottom longline and Dahn line. As explained above for HPB 7 (Section 7.1), these methods are less likely to create unknown mortality events in comparison with trawl caught fish and an allowance for other sources of fishing mortality that equates to 5 percent of the TACC is considered appropriate. Therefore, under Option 1, an allowance of 4 tonnes is proposed and under Option 2, an allowance of 3 tonnes is proposed.

Total allowable commercial catch

329. Both options propose a reduction to the current TACC recognising that commercial landings of HPB 8 have 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.
330. Option 1 proposes to reduce the TACC from 80.1 tonnes to 65 tonnes, a level consistent with the long-term average commercial landings. Option 2 proposes to reduce the TACC from 80.1 tonnes to 55 tonnes, a level consistent with recent average commercial landings.

Recreational settings

331. To ensure recreational harvest remains within the proposed allowance, FNZ proposes decoupling hāpuku/bass from the combined daily bag limit with kingfish and introducing a daily limit of two hāpuku/bass per fisher. This would decrease the current recreational harvest of 10 tonnes by approximately 2 tonnes, representing a 20% decrease to current recreational catch.
332. As with HPB 7, FNZ also proposes an accumulation limit of three hāpuku/bass per person in HPB 8 under both options.

Submissions

333. One submission supported Option 1 for HPB 8 and thirteen submissions supported Option 2 for HPB 8. Of the thirteen submissions supporting Option 2, five submissions were from members of the public who provided no rationale (A. Caldwell-Smith, D. Pavlovich, J. Caldwell-Smith, N. Pavlovich, V. Pavlovich).
334. Iwi Collective Partnership supported Option 1 acknowledging that HPB 8 is a low knowledge stock but also noting that the decline in commercial landings in recent years is partly due to reduced commercial effort.
335. Te Ohu Kaimoana (and endorsing submissions), SPCA and L. Williamson supported Option 2 for HPB 8 using the same rationale detailed in Section 6.2.
336. Six submissions (Southern Inshore Fisheries Management Co. and endorsing submissions, Imersion Fishing Limited, B. Tierney, K. Tierney and S. Hydes) did not support any options for HPB 7 proposed by FNZ using the same rationales detailed in Section 6. 2. They did not suggest any alternative TAC settings or proposed changes to options to be considered by FNZ.

337. As detailed in Section 6.2 in such circumstances where there is limited information to inform the setting of a TAC, s 13(2A) of the Fisheries Act 1996 applies and you must not use the absence of, or uncertainty in, the best available information as a reason for postponing or failing to set a TAC.

6.4 Other options proposed by submitters

338. One submission (P. Adams) suggested that the HPB 8 TAC be set to 100 tonnes with a 70 tonne TACC. They do not think the stock is declining and state that they are catching acceptable numbers of HPB and would like to be able to catch more in the future. No allowances were specified but P. Adams stated that the recreational catch was underestimated and that a reduction in recreational catch is required.
339. FNZ considers that setting a TACC of 70 t would result in a similar TAC proposal to Option 1 which provides for a level of utilisation consistent with long term removals.
340. NZSFC joint submission (and endorsing submissions) proposed a variation of Option 2 for HPB 7. They proposed a TAC of 129 tonnes, allowances for customary, recreational and other mortality of 20 tonnes, 28 tonnes and 4 tonnes respectively, with a TACC of 77 tonnes. As with the FNZ Option 2, the TACC proposed represents a 25% decrease to recent average commercial landings. Differences in TAC settings are driven primarily by the NZSFC joint submission inclusion of the 2019/20 fishing year data in calculations of average commercial landings for the past 5 years.
341. FNZ takes the approach that the 2019/20 fishing year should be excluded in calculations of recent average commercial landings due to the unknown impacts of COVID-19 on fisher behaviour. As such, FNZ considers that the variation proposed by the NZSFC joint submission is not substantially different to Option 2 for HPB 7.
342. NZSFC joint submission (and endorsing submissions) also proposed an alternative option for HPB 8 based on a 25% decrease to recent average commercial landings. They propose a TAC of 56 tonnes, allowances for customary, recreational and other mortality of 8 tonnes, 8 tonnes and 2 tonnes respectively, with a TACC of 38 tonnes.
343. The option for HPB 8 proposed by the NZSFC joint submission is more cautious than the options proposed by FNZ and does not recognise the differences in catch history between the two QMAs and existing catch settings. FNZ considers that the options proposed are enough to address sustainability concerns in HPB 8 but FNZ will continue to monitor the fishery closely and undertake a further review of HPB 8 when improved scientific information becomes available.
344. Ngati Toa and Ngati Koata Iwi proposed that the recreational daily limit be reduced to 1 HPB per fisher noting that a daily recreational limit of 2 HPB was too generous given the state of the fishery. They recommended that a recreational daily limit of 1 HPB be applied until recreational catch data improves, and scientific information verifies that the fishery has recovered to the extent that a recreational daily limit of 2 HPB is sustainable.
345. FNZ has considered input from Te Waka a Māui me Ōna Toka Iwi forum and further response to the proposed options from Ngati Toa and Ngati Koata Iwi however, a recreational daily limit of 1 HPB will not provide for accidental bycatch. Given that hāpuku and bass are often targeted by recreational fishers using multiple hooks on the same line, there is a high chance of exceeding a 1 HPB recreational daily limit. Hāpuku and bass are retrieved from considerable depth and the likelihood of survival when returned to the water is minimal.
346. Additional input controls such as limiting the number of hooks used by recreational fishers to two hooks per line would support a recreational daily limit of 2 HPB and may be considered as part of future management action.

347. NZSFC joint submission (and endorsing submissions) submit that there should be an accumulation limit of 4 HPB in HPB 7 and HPB 8 rather than the 3 HPB proposed by FNZ. They submit that fishing for HPB often entails rare, expensive trips in offshore areas hence an accumulation limit of 4 HPB is reasonable.
348. FNZ considers that if fishing for hāpuku and bass requires expensive, offshore trips to access the resource then the lack of availability of hāpuku and bass in shallower, inshore areas is leading to inequity among recreational fishers (and a lack of customary access as submitted by Te Ohu Kaimoana and endorsing submissions). An accumulation limit of 3 HPB is a reasonable limit that provides for recreational utilisation whilst helping to manage sustainability risk and providing for higher biomass that will benefit all fishers in the future.

6.5 Preferential allocation rights (28 N Rights)

349. FNZ notes that there are 1.3 tonnes of preferential allocation rights (28N rights) in HPB 7. 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.
350. 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. Reducing the TACC for HPB 7, as proposed in this paper, will not trigger 28N rights.

6.6 Economic considerations

351. Since the 2010/11 fishing year, the average ACE price has remained relatively constant. The port prices for HPB 7 and HPB 8 have been increasing slightly since the mid-2010s.
352. The current port prices for HPB 7 and HPB 8 are \$4.36/kg and \$5.84/kg respectively. The average price paid by fishers for ACE for the past five fishing years, was \$1.23/kg in HPB 7 and \$0.94/kg in HPB 8.
353. For HPB 7, the economic impacts associated with Option 1 are likely to be minimal as TACCs have not been fully utilised for over a decade. Under Option 2, based on the recent average commercial landings of HPB 7 (110 t) and the current port price (\$4.36) the present estimated commercial revenue of \$479,600 would decrease by \$117,720.
354. For HPB 8, Option 1 presents some potential for expansion from current catch levels but the overall decrease to the TACC will reduce the overall utilisation potential for the industry, albeit to a lesser extent than Option 2.
355. FNZ acknowledges that the current TACCs provide an opportunity for further utilisation and economic growth, and this may be important to some fishers who are considering changing fishing behaviour, such as to offset losses caused by the Hector's and Māui dolphin Threat Management Plan (TMP) decisions.
356. Ngati Toa and Ngati Koata Iwi and three submissions (Imersion Fishing Limited, B. Tierney, K. Tierney) stated that the economic impacts of reductions on smaller fishers have not been sufficiently represented by this review. They state that compliance costs and overheads are harder for small operators to meet and that TACC reductions proposed by this review will put them out of business. They note that only a few small operators who provide fresh fish to the Wellington and Marlborough markets and local communities will suffer as a result of TACC reductions.
357. The QMS generates ACE based on the proportion of quota shares held and the TACC. If the TACC is reduced, then the same proportion of shares will generate less ACE. At some level of reductions to the TACC, a previously economically viable quota package may become unviable.

6.7 Other considerations

Adjusting the QMA boundaries

358. Submissions that addressed the QMA boundaries suggested a variety of options including the creation of a Cook Strait fishery, incorporating parts of HPB 2, 7 & 8 (B. Tierney, K. Tierney) and there was the acknowledgement that some QMAs are too large. Smaller areas will benefit from local management of the fisheries and the ability to monitor more concisely.

Spatial and seasonal closures

359. NZSFC joint submission (and endorsing submissions) proposed that bottom fishing be prohibited on hāpuku and bass spawning grounds, particularly in the Cook Strait area identified in Section 4.1.5. FNZ notes that the exact location of this potential spawning area is unknown prohibiting robust analysis to consider protecting this particular spawning ground.

Improving recreational catch monitoring

360. NZSFC joint submission (and endorsing submissions) suggested that hāpuku and bass be reported as separate species in the National Panel Survey of Marine Recreational Fishers (NPS) to improve knowledge of the distribution of the two species.
361. The next NPS of recreational fishing is scheduled for 2022/23. The suggestion from NZSFC joint submission (and endorsing submissions) will be communicated to the science team to see if the suggestion is feasible for the next survey.
362. Ngati Toa and Ngati Koata Iwi requested that the recreational sector report landings for HPB 2, HPB 7 and HPB 8 to provide better information and enable FNZ to make better informed fisheries management decisions.
363. Recreational fishers are not currently required to report catch however, in some areas, recreational fishers are supportive of voluntary self-reporting. A recreational reporting app is being developed by Fish Mainland and supported by FNZ through Sustainable Food and Fibre Futures (SFFF) funding, primarily for the South Island blue cod fishery. Once developed and implemented, there may be scope to expand to other stocks in the area, this is something that could be considered in the future.

6.8 Deemed values

364. The current deemed value rates for HPB 7 and HPB 8 are shown in Table 6. The deemed value rates for all HPB stocks have remained unchanged since 2015.

Table 6: Current deemed value rates (\$/kg) for HPB 7 and HPB 8.

Stock	Interim	Annual 100-120%	Differential rates (\$/kg) of excess catch (% of ACE)				
			120-140%	140-160%	160-180%	180-200	200%+
Current							
HPB 2	2.27	2.52	3.02	3.53	4.03	4.54	5.04
HPB 7	2.55	2.83	3.396	3.962	4.528	5.094	5.66
HPB 8	1.96	2.18	2.616	3.052	3.488	3.924	4.36
Proposed							
HPB 7	2.27	2.52	3.02	3.53	4.03	4.54	5.04
HPB 8	2.27	2.52	3.02	3.53	4.03	4.54	5.04

365. The current annual deemed value rates of HPB 7 and HPB 8 are currently set above their average ACE prices. However, FNZ recognises that the options proposed here involve TACC reductions, which could lead to subsequent changes in fishing behaviour and the ACE market.
366. Fishing frequently occurs over the boundaries between HPB 2, HPB 7 and HPB 8, and each of these QMAs currently have slightly different deemed value schedules. While these differences

have not posed an issue in recent years given that the stocks have been under-caught (generally not incurring deemed value payments), there is a potential risk that if the catch limits of HPB 7 and HPB 8 are constrained, the differences in these deemed value schedules could lead to 'trucking' behaviour⁴⁷ or misreporting of catches.

367. To incentivise accurate reporting, FNZ is proposing that you bring the deemed value rates of HPB 7 and HPB 8 in line with the current deemed value rates for HPB 2 (Table 6). These proposed adjustments would keep the annual deemed value rates of HPB 7 and HPB 8 above their respective average ACE prices, which is consistent with the objective to incentivise fishers to balance catch against ACE.
368. Te Ohu Kaimoana supported the proposed deemed value settings for HPB 7 and HPB 8.
369. Southern Inshore Fisheries Management Co. (and endorsing submissions) do not support the proposed deemed value changes for HPB 7 and HPB 8 under the rationale that the potential for misreporting is not an appropriate framework for changing deemed value rates.

7 Conclusions and recommendations

370. The best available information to guide HPB 7 and HPB 8 management is catch history, which shows that commercial catch has been trending downwards in HPB 7 for the past decade and in HPB 8 since 2015/16. Both fish stocks are under caught relative to respective TACCs which have not been reached since 2004/05 in HPB 7 and 2010/11 in HPB 8.
371. Six submissions highlighted alternative factors that could be causing the decline in commercial landings including decreasing effort and changing fisher behaviour. Whilst these factors likely contribute to the decline in landings in part, evidence for changing fisher behaviour is no more definitive than evidence for a sustainability concern. Furthermore, hāpuku and bass are both long-lived species with low productivity that are vulnerable to overfishing. Therefore FNZ believes a cautious approach is required and recommends Option 3 for HPB 7 and Option 2 HPB 8 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.
372. FNZ is also recommending that you agree to progressing the regulatory process for a change on recreational limits for HPB 7 and HPB 8.
373. FNZ is also recommending that you agree to the proposed deemed value settings for HPB 7 and HPB 8.

⁴⁷ Trucking behaviour refers to the misreporting of catch in order to pay lower deemed values that apply to an adjacent or nearby QMA.

8 Decision for HPB 7

Option 1

Agree to set the HPB 7 TAC at 164 tonnes and within the TAC:

- i. Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
- ii. Set the allowance for recreational fishing interests at 28 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 6 tonnes;
- iv. Decrease the HPB 7 TACC from 235.5 to 110 tonnes.

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

OR

Option 2

Agree to set the HPB 7 TAC at 136 tonnes and within the TAC:

- i. Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
- ii. Set the allowance for recreational fishing interests at 28 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 5 tonnes;
- iv. Decrease the HPB 7 TACC from 235.5 to 83 tonnes.

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

OR

Option 3 (FNZ preferred option)

Agree to set the HPB 7 TAC at 150 tonnes and within the TAC:

- i. Set the allowance for Māori customary non-commercial fishing interests at 20 tonnes;
- ii. Set the allowance for recreational fishing interests at 28 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 5 tonnes;
- iv. Decrease the HPB 7 TACC from 235.5 to 97 tonnes.

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



9 Decision for HPB 8

Option 1

Agree to set the HPB 8 TAC at 87 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 8 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes;
- iv. Decrease the HPB 7 TACC from 80.1 to 65 tonnes.

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

OR

Option 2 (FNZ preferred option)

Agree to set the HPB 8 TAC at 76 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 8 tonnes;
- iii. Set the allowance for all other sources of mortality to the stock caused by fishing at 3 tonnes;
- iv. Decrease the HPB 8 TACC from 80.1 to 55 tonnes.

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



10 Recreational changes for both HPB 7 and HPB 8

Option 1 and 2

Agree to progressing the regulatory process for a change on recreational limits for HPB 7 and HPB 8, 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~~



11 Deemed value options for HPB 7 and HPB 8

Agree to adjust the deemed value rates for HPB 7 and HPB 8 to the values outlined below:

Stock	Interim	Annual 100-120%	Differential rates (\$/kg) of excess catch (% of ACE)				
			120-140%	140-160%	160-180%	180-200	200%+
HPB 7	2.27	2.52	3.02	3.53	4.03	4.54	5.04
HPB 8	2.27	2.52	3.02	3.53	4.03	4.54	5.04

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



Hon David Parker
Minister for Oceans and Fisheries

13 / 2 / 2022

New Zealand Scallop (SCA CS) – Hauraki Gulf, Coromandel & Western Bay of Plenty

Pecten novaezelandiae, kuakua/tipa

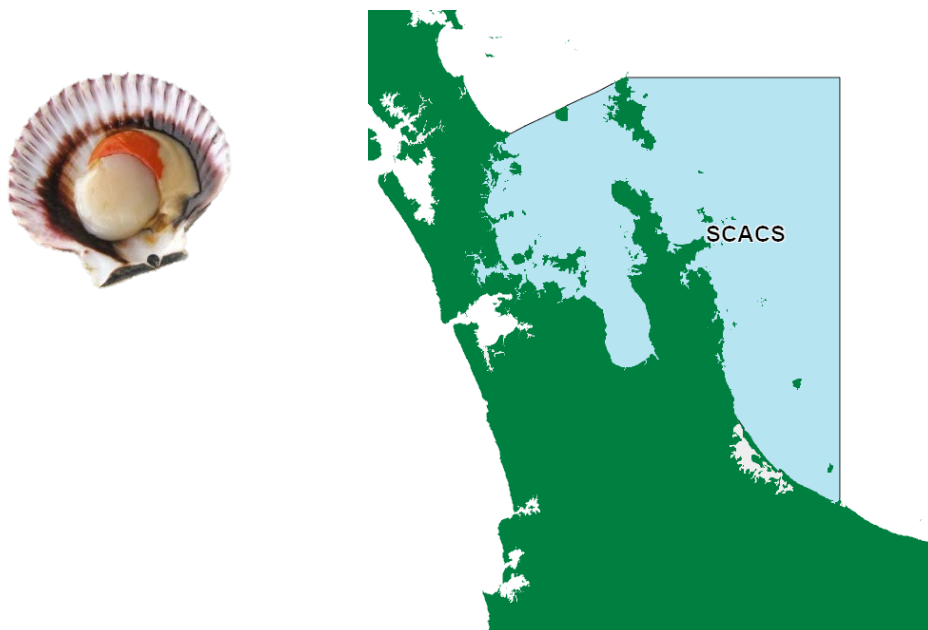


Figure 1: Quota Management Area (QMA) for Coromandel Scallops (SCA CS) highlighted in blue.

Table 1: Summary of options proposed for SCA CS from 1 April 2022. The preferred option of Fisheries New Zealand is highlighted in blue. Figures are all in tonnes meatweight.

Option	SCA CS					Management
	TAC	TACC	Allowances			
			Customary Māori	Recreational	Other mortality	
Current settings	81	50	10	10	11	
Option 1	81	50	10	10	11	Full closure (s11)
Option 1A	11 ↓ (70 t)	0 ↓ (50 t)	10	0 ↓ (10 t)	1 ↓ (10 t)	Full closure (s11) and TAC, TACC and allowances
Option 2	19 ↓ (62 t)	5 ↓ (45 t)	10	3 ↓ (7 t)	1 ↓ (10 t)	Partial Spatial closure (s11) and TAC, TACC and allowances
Option 3	14 ↓ (67 t)	0 ↓ (50 t)	10	3 ↓ (10 t)	1 ↓ (10 t)	TAC, TACC and allowances Recreational dredging prohibited
New option incorporated following consultation						Yes, Modified Option 1 (Option 1A)
Total submissions received						48
Number of submissions received in support of Option 1						30
Number of submissions received in support of Option 2						1
Number of submissions received in support of Option 3						5
Number of submissions received in support of an alternative option						12

1 Why are we proposing a review?

374. The scallop stock within the Coromandel (SCA CS) supports a shared fishery that is highly valued by tangata whenua and stakeholders. This value represents not only the economic return from commercially landed and sold scallops, but also the role that scallops play in the ecosystem and in providing for cultural and social benefits. SCA CS is the largest commercial scallop fishery in New Zealand, and it supports localised commercial fishing, processing, and retail industries.
375. In response to concerns regarding the state of northern scallop fisheries, in 2021 FNZ commissioned the National Institute of Water and Atmospheric Research (NIWA) to conduct extensive scallop biomass surveys. The results from these surveys suggest that there is a sustainability risk to the scallop populations in SCA CS and that the current management measures, including the catch limits and allowances, are no longer appropriate to ensure the sustainability of the fishery.
376. The survey information shows that, in most surveyed recreationally and commercially fished areas, the 2021 biomass estimates are lower than those from the previous survey, conducted in 2012. While it is acknowledged that there is a lack of data on how the biomass may have fluctuated over the years between the 2012 and 2021 surveys, it is noted that commercial landings show a general decline since 2012 (recognising that factors other than abundance can influence landings). The current low biomass levels are a cause for concern.
377. In some areas, the biomass is at low levels not experienced since the late 1990s when the fishery was significantly impacted by disease and the spread of *Chaetopterus* parchment worm. At this time the health of the scallop population was significantly impacted, and fishing operations were affected. There are no current reports of disease or organisms impacting scallops in the North Island scallop fisheries, and the current decline in biomass is likely attributed to other factors.
378. Some areas within SCA CS have low scallop biomass despite having had no commercial fishing activity in recent years. These areas include the beds around Waiheke Island in the Hauraki Gulf and beds in the Bay of Plenty. Both these areas had previously been accessed by commercial fishers, however, declines in these beds over time have seen them no longer being utilised. Despite this lack of fishing activity, the beds do not appear to have recovered and may in fact have further declined since fishing stopped. In these areas, and on many other beds, FNZ has received anecdotal reports of habitat degradation, including increased levels of silt and sedimentation at some sites, which may be contributing to the lack of recovery.
379. Some scallop beds appear to have received no significant recruitment for several years. The lack of recovery in certain beds may be connected to a reduction in reproductive input from beds in other areas, however the relationship between scallop beds within SCA CS is not currently well understood. Results from a preliminary genetics study⁴⁸ suggest that at least one large scallop bed, located in the central Hauraki Gulf (see red box in Figure A1) and thought to support recruitment into other commercial beds, has declined considerably. Recognising the importance of understanding the 'source and sink'⁴⁹ relationships of beds in SCA CS, and to support improved future management, FNZ has included more comprehensive research into connectivity between scallop beds across northern New Zealand in the 2022/23 Fisheries New Zealand Research Services Plan.
380. FNZ is also concerned that the current low levels of biomass in many SCA CS beds could compromise spawning success across the fishery. Research has shown that the density of scallop beds and the proximity to other scallops are important factors for successful spawning

⁴⁸ Silva, C N S (2015) Spatial and temporal genetic structure of the New Zealand scallop *Pecten novaezelandiae*: A multidisciplinary perspective. PhD thesis, Victoria University of Wellington. 158 p

⁴⁹ Some scallop beds are reliant on local spat production whereas other beds receive spat produced by scallops in other areas.

and recruitment⁵⁰. The critical levels of scallop density⁵¹ required to support positive recruitment in scallop fisheries, and specifically SCA CS, are not known, however, the principle that higher density improves reproductive chances for scallops is accepted. At the low levels of abundance currently observed, FNZ considers that supporting ongoing reproductive success, particularly where a recovery is required, contributes to a preference to take a cautious approach to managing the SCA CS scallop fishery.

381. Alongside the commissioned NIWA surveys and management process undertaken by FNZ, and in response to their own concerns regarding the abundance of scallops, tangata whenua within SCA CS have implemented a number of customary rāhui over traditional scallop harvest areas within their respective rohe moana.
382. In 2021 you approved temporary closures to the harvest of scallops, under section 186A of the Fisheries Act 1996 (the Act), on the east coast of the Coromandel and around Waiheke Island. These closures have reduced the area available to harvest scallops and as a result some customary, recreational and commercial fishing has likely been displaced. Recently, FNZ received an application from Ngāti Manuhiri for a section 186A temporary closure to harvesting of scallops over a further large area within the Hauraki Gulf. The application seeks to address iwi and community concerns about the local scallop populations, the impacts of dredging activity and likely displacement from other closures.
383. These rāhui and temporary closure applications reflect the widespread iwi and community concern that exists within the region with respect to scallop populations.
384. Worldwide, and in New Zealand, scallop populations are known to be highly variable, with “boom and bust” cycles occurring in all main fisheries. These cycles are largely related to fluctuations in recruitment and are likely influenced by environmental conditions. Factors such as the effects of sedimentation from land use, water quality and effects of fishing (both direct and indirect) are also likely to be contributing factors.
385. FNZ considers that, while not covering all the areas where scallops are present within SCA CS, the fishery-independent biomass surveys provide the best available information for reflecting the state of the scallop population within SCA CS. The surveys are also the best available basis for determining sustainable catch levels. It is however acknowledged that there are currently no accepted target and limit reference points for the SCA CS stock and the biomass that will support the maximum sustainable yield (MSY) is not able to be estimated reliably using the best available information.
386. FNZ considers that the SCA CS fishery is not responding to the current management approach, despite additional voluntary management measures applied by commercial fishers, including a Catch Per Unit Effort Limit Rule management procedure (CPUE limit rule)⁵², daily bin limits and a reduced fishing season. The CPUE limit rule used by fishers is designed to limit harvesting to areas with sufficient abundance to support it, and to protect discrete beds/areas within SCA CS from over harvest. Nonetheless, FNZ is concerned that the decline in biomass (across the core surveyed and fished areas) suggests that current catch limits are not sustainable. While management reference points for SCA CS are not available, FNZ is concerned that the stock is not being maintained at or above the level than can produce MSY and that the fishery is at risk of further decline.
387. FNZ considers action is required to respond to the observed low estimates of biomass and abundance of the SCA CS stock and to ensure the ongoing reproductive potential of the population is maintained.

⁵⁰ Williams, James Richard 2005 Reproductive ecology of the scallop *Pecten novaezelandiae*. PhD, University of Auckland <http://hdl.handle.net/2292/52304>

⁵¹ The ‘density’ of scallops refers to how many scallops are present in a given area e.g. a density of 0.1 per m² means 1 scallop for every 10 square meters

⁵² The approach aims to ensure that scallop beds will not be fished below a specified level of CPUE. Once a specified lower CPUE limit has been reached in an area of the fishery, fishing within that area ceases for the remainder of the season. The specified CPUE levels relate to the density of scallops on the beds.

388. Given the level of concern, a status quo option has not been presented. All options proposed would make significant changes to current management settings and are expected to support a rebuild of SCA CS.

1.1 About the stock

1.1.1 Fishery characteristics

389. Scallops are considered a 'shared' species, highly valued by tangata whenua and all stakeholders, while also being an important part of the marine ecosystem. Worldwide, and in New Zealand, scallop populations are highly variable, with "boom and bust" cycles occurring in all main fisheries. These cycles are likely driven by environmental conditions.
390. Scallop beds in the North Island were impacted by the arrival of "black gill" and *Chaetopterus* parchment worm in the late 1990s and early 2000s. The impact of this event can be seen in commercial catch history and survey biomass estimates. After a period of reduced fishing, both stocks recovered well in most areas with peaks in recruitment occurring in the years following. Surveys conducted by NIWA in 2021 have revealed that some scallop beds within SCA CS have returned to low levels of abundance, similar to when black gill and *Chaetopterus* were present.
391. All scallops taken commercially, and some recreational scallop catch, is taken using the method of bottom dredging. Dredge fishing involves direct contact with and disturbance of the sea floor and is known to have negative impacts on scallop growth, populations, and the condition of the habitat that supports them.
392. Sediment from land use, terrestrial runoff and the quality of the water coming off the land have been identified as factors leading to decline in scallop abundance and degradation of habitat, particularly in coastal areas. Laboratory studies have demonstrated that suspended sediments disrupt feeding, decrease growth, and increase mortality in scallops.^{53 54 55}
393. Scallop fisheries are highly regulated, with catch limits, minimum size limits, and spatial, seasonal, and method restrictions in place. Generally, all sectors are able to fish within the overall SCA CS area, however, specific key areas have been set aside for recreational scallop fishing and commercial access is prohibited in those areas.
394. Scallops are regularly taken under customary authorisations and are identified as a taonga species by the Te Hiku o te Ika, Mid-North, and Mai i ngā Kuri a Whārei ki Tihirau Iwi Fisheries Forums.
395. Scallops are amongst the top three shellfish species harvested by recreational fishers. The most common method for recreational harvest is diving/hand gathering, however, there is also known to be recreational dredging activity in the northern scallop fisheries. This recreational dredging activity is unconstrained⁵⁶ and can be concentrated in popular and easily accessible areas known to hold scallops. Concentration of recreational scallop harvest in easily accessed areas or during peak seasons can result in localised depletion of scallop beds, however take is constrained by the controls that are in place (size and bag limits etc).

⁵³ Stevens, P M (1987) Response of excised gill tissue from the New Zealand scallop *Pecten novaezelandiae* to suspended silt. New Zealand Journal of Marine and Freshwater Research 21: 605–614

⁵⁴ Cranford, P J; Gordon, D C (1992) The influence of dilute clay suspensions on sea scallop (*Placopecten magellanicus*) feeding activity and tissue growth. Netherlands Journal of Sea Research 30: 107–120.

⁵⁵ Nicholls, P; Hewitt, J; Halliday, J (2003) Effects of suspended sediment concentrations on suspension and deposit feeding marine macrofauna. NIWA Client Report HAM2003-077 prepared for Auckland Regional Council under NIWA Project ARC03267.

ARC Technical Publication No. 211. 43 p.

⁵⁶ There is no limit on the size, number or specifications of recreational dredges or how much dredging is undertaken in order to harvest a legal daily recreational limit.

- 396. The commercial fishery supplies scallops to the domestic market with no scallops currently being exported. Overall, the commercial sector is responsible for most of the scallop catch.
- 397. All northern commercial scallops are caught using ‘Victorian box dredges.’ Commercial fishers report that this dredge design suits the northern fishery conditions, which includes corrugated seabed environments.
- 398. In SCA CS, commercial fishing is centred around six major beds (Barrier, Colville, Hauraki Gulf, Mercury, Bay of Plenty, and Waiheke), however there has also been some commercial fishing activity in other areas.
- 399. Recreational scallop fishing is widespread in SCA CS with popular areas including beds in the Little Barrier Island, Kawau Bay, Inner Hauraki Gulf/Firth of Thames, eastern Coromandel, and Mercury Island areas.

1.1.2 SCA CS Management

- 400. Scallop populations are highly variable from year to year and are listed in Schedule 2 of the Act to recognise this variability. For Schedule 2 stocks, you may increase the Total Allowable Catch (TAC) within a fishing year after considering information about a stock’s abundance and having regard to other matters in section 11 of the Act. Historically, this was the basis for managing SCA CS, with a “baseline” TAC set and in-season increases based on survey information about current abundance within that year. The in-season TAC was based on the sustainable yield⁵⁷ available that year – known as the Current Annual Yield (CAY)⁵⁸. If the TAC was increased, allowances could be altered, and additional Annual Catch Entitlement (ACE) generated for commercial fishing. The TAC and allowances would revert to the TAC at the start of the next fishing year.
- 401. This approach was considered to enable MSY to be achieved on average over time and allowed some utilisation to be available at almost any level of abundance. This approach required that a biomass survey was conducted each year. Historically, the commercial scallop fishing industry participated in these surveys and provided the survey vessel, with applicable costs recovered back from quota owners. However, there have been no biomass surveys or in-season increases in TAC settings for SCA CS since 2012. Instead, SCA CS has been managed to a higher TAC and Total Allowable Commercial Catch (TACC). This was informed by the discovery of a large scallop bed in the Hauraki Gulf and the introduction of the industry voluntary CPUE limit rule management procedure.
- 402. The current TACC for the SCA CS fishery is 50 tonnes and well above the TACC of 22 tonnes set prior to 2012 when the CAY and in-season review approach was actively being employed. The Coromandel Scallop Fishermen’s Association (CSFA) currently manages the commercial fishery at fine spatial scale with a voluntary CPUE limit rule based approach. This additional management operates within the limits of the TACC and has rules that are intended to protect individual scallop beds within the wider QMA from overfishing. While this fine scale voluntary management approach is likely to distribute fishing activity across the available beds, and prevent concentration of fishing in certain areas, it is not known if the current CPUE limit rule is effective at maintaining sustainable stock levels.
- 403. The commercial fishery also has other voluntary measures in place over and above the current management framework. These include limiting the total number of bins caught per day, operating a shortened fishing season from that prescribed in regulation and restricted weekly fishing days to reduce overlap with recreational fishers.

⁵⁷ The amount of scallops that can be removed while ensuring the remaining population is viable.

⁵⁸ The current annual yield (CAY) is calculated yearly, and it incorporates fluctuations of scallop populations by applying a fixed reference level of fish mortality to the current fishable biomass. CAY provides a time varying estimate of the Maximum Sustainable Yield (MSY) but remains a constant proportion of the fish population.

1.1.3 Biology

404. Endemic to New Zealand, scallops (*Pecten novaezelandiae*), or kuakua/tipa, are suspension feeding bivalves found in a variety of coastal habitats around New Zealand – particularly in semi-enclosed areas where circulating currents are thought to retain larvae.
405. Scallops are functional hermaphrodites, meaning that they possess both male and female reproductive organs and can produce the associated eggs and sperm. They generally reach sexual maturity at approximately 70 mm shell length and usually mature by the end of their first year. Scallops, however, contribute little to the spawning pool until the end of their second year as year 1 scallops contain around 500,000 eggs each while year 4 and 5 scallops can contain over 40 million eggs each.
406. Scallops may spawn sporadically from August to February, but spawn prolifically over the summer months.
407. Like other broadcast spawners, high density beds and close proximity (to other scallops) are considered to be important for successful fertilisation of the eggs that are released and ongoing recruitment. However, the critical density of scallops necessary for successful spawning in SCA CS is not known.
408. Fertilisation is followed by a planktonic larval stage lasting about three weeks before attaching to substrate. Spat detach and begin the free-living stage of their life cycle when they reach around 5 mm.
409. Scallop populations are highly variable from one year to the next due to the variability in annual recruitment. This is a result of their high fecundity, variability in larval and adult mortality, as well as growth rates in adults. This variability in populations is more noticeable in areas of high fishing mortality and where fisheries are supported by one or two year classes.
410. Scallop populations fluctuate naturally and are susceptible to environmental degradation. Potential stressors to scallops, other than fishing, include:
 - stressors resulting from human activity, such as nutrient enrichment and sediment loading.
 - environmental stressors, such as changes in salinity, pH levels, climate change, and temperature; and biological stressors, such as harmful algal blooms and diseases/parasite events.

1.2 Status of the stock

411. In 2021, FNZ commissioned NIWA to conduct comprehensive surveys of all major commercial and recreational non-commercial scallop beds.

1.2.1 Northern North Island scallop surveys

412. The 2021 survey sites (Table 2 and Figure A2) are consistent with those from the most recent previous survey (2012), and additional analysis has been conducted allowing comparison of the most recent survey with historical results.
413. The sites do not cover all areas in SCA CS where scallops are present, and it is known there are other sites with scallop beds within SCA CS. However, the surveys do represent all the main scallop beds that have been fished historically.
414. The objectives of the surveys in SCA CS were to determine the distribution, abundance, and biomass of scallops within the areas surveyed and the dredge efficiency⁵⁹ of commercial

⁵⁹ Dredge efficiency describes the proportion of scallops on the beds and in the path of the dredge that is retained by the dredge. A higher dredge efficiency means more of the available scallops are caught and reduces the estimated biomass

scallop harvesting. The surveys do not provide an estimate of overall abundance within SCA CS; however, they do provide the best available information on the beds surveyed and changes in the surveyed biomass in the stock over time.

415. The results of the surveys were reviewed by the FNZ Shellfish Working Group in July 2021. Additional time series and updated dredge efficiency data were presented in October 2021. SCA CS survey time series for individual scallop beds can be found in the Appendix (Figures A3 to A5).

Table 2: 2021 survey sites in the Coromandel (SCA CS) scallop fishery.

Commercial	Non-commercial
Barrier	Kawau – Bostaquet Bay
Colville	Iris Shoal
Hauraki Gulf	Mercury – Mercury Cove
Mercury	Mercury – Opito Bay
Plenty	
Waiheke	

1.2.2 Survey results

416. The survey results show that in many areas the 2021 biomass is substantially lower than in the previous survey in 2012 (Table 3), and towards the lower end of the observed historical range of estimates (Figure 2).
417. Overall, the 2021 biomass is low relative to previous survey results and remains close to lowest recorded levels. The reasons for the low biomass levels are not currently known, but it is likely a result of a combination of fishing and non-fishing related stressors.
418. The final results of the survey are currently in the process of being published and will be released as a publicly available Fisheries Assessment Report in mid to late 2022. These results are summarised in Table 3. These figures have been updated following new analysis by NIWA which has estimated that the dredge efficiency is higher than previously considered. This updated dredge efficiency data was also applied to the historical survey results to ensure comparability. The update results in a lower survey biomass estimate but has minimal effect on comparing observed changes in biomass levels, as the efficiency is also applied to the historical data.
419. As noted above, there have been no biomass surveys or in-season increases in catch allowances for SCA CS since 2012. Instead SCA CS was managed to a higher TACC (100 tonnes) and the voluntary CPUE limit rule management procedure. This was informed by the discovery of a large scallop bed in the Hauraki Gulf in 2011. In 2013 commercial fishers reported that the large bed had died off. The TACC was reduced to 50 tonnes in 2016 as part of a review of the TAC. This decision was made based on the information that the biomass of SCA CS had decreased with the loss of the Hauraki bed. FNZ considered 50 tonnes was sustainable based on average catch at this time. As catch rates declined there was little incentive for fishers to commission a survey unless they are reasonably assured of an in-season increase to their seasonal catch limits.

compared with the previous lower efficiency estimate. A dredge efficiency of 1 means that the dredge catches 100% of the scallops in its path.

Table 3: Comparison of 2012 and 2021 median biomass estimates (meatweight tonnes) in commercially fished scallop beds in Coromandel (SCA CS) using updated dredge efficiency at all densities (critical density 0).

Stock	Location	Biomass 2012	Biomass 2021
Coromandel (SCA CS)	Barrier	42	31
	Colville	15	9
	Hauraki Gulf	776	52
	Mercury	165	96
	Plenty	59	49
	Waiheke	24	8
	<i>Extra (Colville Channel/ Great Barrier Island)</i>		

420. Note that the ‘*Extra (Colville Channel/Great Barrier Island)*’ location, in blue in Table 3 above, is a new site surveyed in 2021 at the request of the commercial fishing industry, who had reported catch in this area.

1.2.3 Coromandel (SCA CS) core commercially fished locations

421. The information provided in this section is only for Mercury, Little Barrier, Colville, and Waiheke, which are the four core commercially fished locations. Graphs for the other locations are shown in the Appendix (Figures A3 and A4).

422. The time series of commercially fishable recruited scallop biomass between 1990 and 2021 are shown in Figure 2. Note that the time series differ depending on the critical densities used to estimate the biomass. The top row shows biomass estimated at all scallop densities (critical density = 0), while the lower row shows biomass estimated only where scallop densities were at or above 1 scallop per 10 square meters (critical density = 0.1). A critical density of 0.1 approximately represents a 70 kg/hr catch rate, a level at which the scallop fishers have set as a “move on” limit under their voluntary CPUE limit rule.

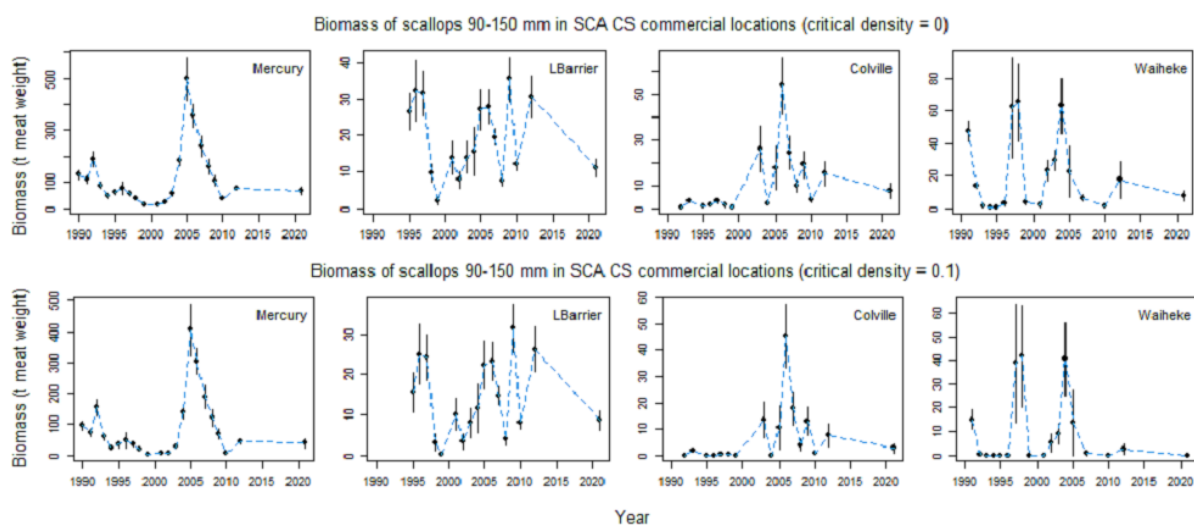


Figure 2: Time series of commercially fishable recruited scallop biomass between 1990 and 2021 in core commercially fished scallop locations. Top row shows biomass of scallops at all densities, bottom row shows biomass of scallops above a critical density of 0.1.m².

423. Scallop biomass across the four locations in 2021 is generally below 2012 levels and is at levels that are either similar to, or lower than, historical lows.
424. SCA CS trends in recruitment (densities of juvenile scallops smaller than 70 mm and pre-recruit scallops of 70-89 mm) by location in commercial areas are shown in Figure 3. Recruitment gives an indication of the number of small scallops likely to enter the fishery over the next few years.

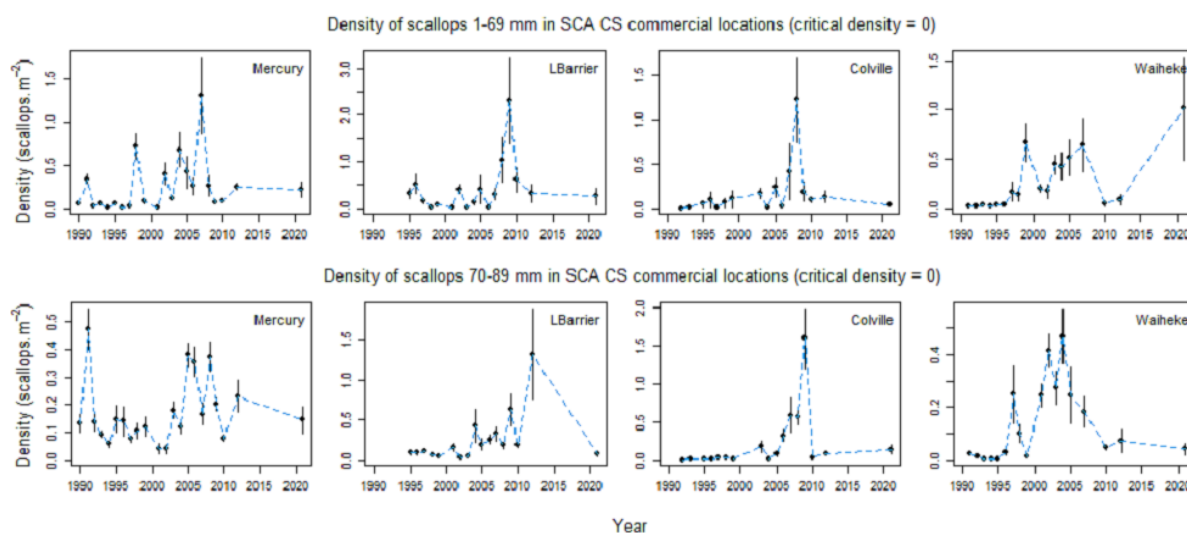


Figure 3: Time series of juvenile (top) and pre-recruit (bottom) scallop density between 1990 and 2021 in core commercially fished scallop locations.

425. Juvenile recruitment in 2021 is notably high at Waiheke. Pre-recruit density in Waiheke in 2021 is very low compared to the mid-2000s peak. Recruitment for both juvenile and pre-recruits has decreased since the last survey at Mercury and Little Barrier. In Colville, juvenile recruitment has decreased too, but has increased in pre-recruits.

1.2.4 Coromandel (SCA CS) core non-commercially fished locations

426. The information provided in this section is only for Kawau and Mercury, which are the two core non-commercially fished locations in SCA CS. Graphs for the other locations are shown in the Appendix (Figure A5).
427. The time series of juvenile, pre-recruit and recruited scallop densities between 1990 and 2021 can be found in Figure 4.

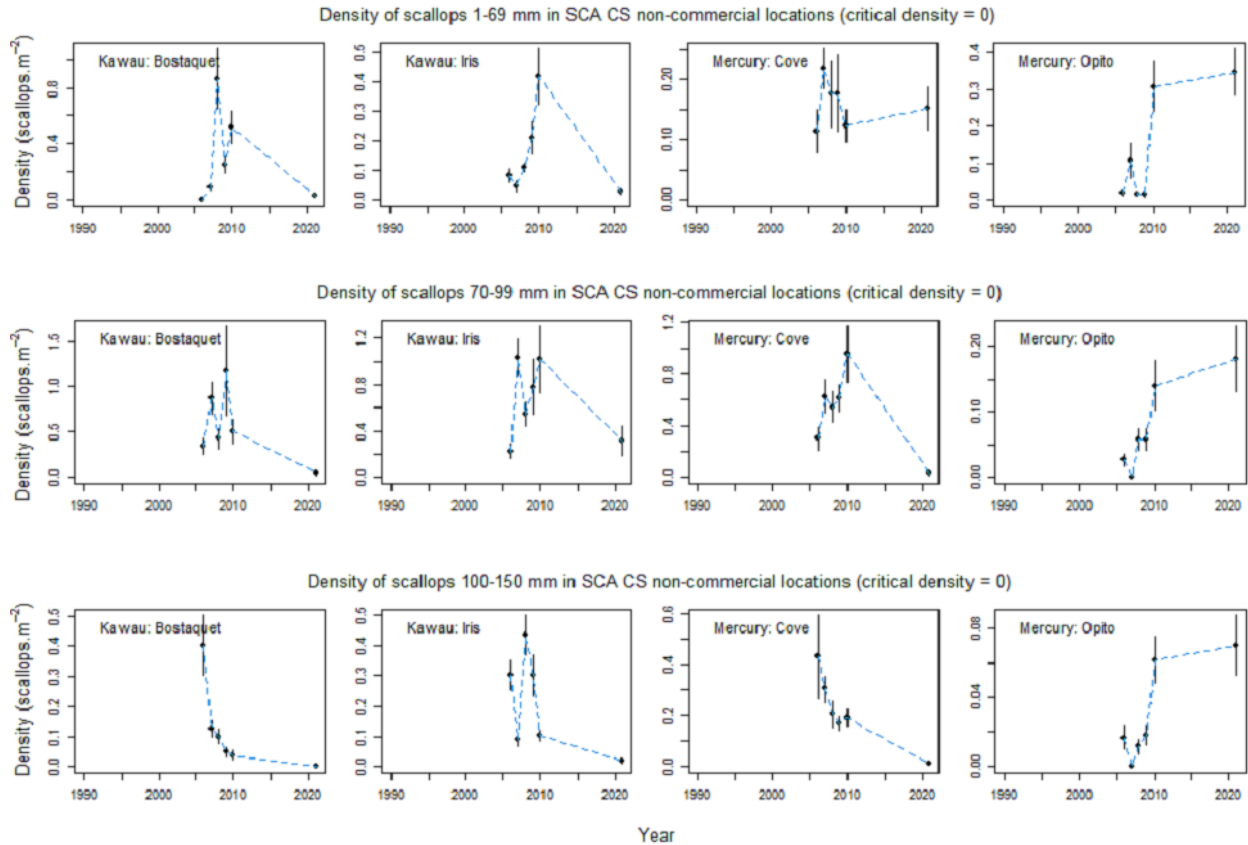


Figure 4: Time series of juvenile (top), pre-recruit (centre), and recruited (bottom) scallop density between 1990 and 2021 in core non-commercially fished scallop locations.

428. Juvenile, pre-recruit, and recruited scallop densities across the two beds in Kawau have declined considerably since the last survey and are at levels that are similar to, or lower than, historical lows. Juvenile, pre-recruit and recruited scallop densities have increased slightly in Opito Bay. While juvenile densities have increased slightly in Mercury Cove, both pre-recruit and recruited scallops have declined to very low levels.
429. Across these four historically important recreational scallop beds, apart from Opito Bay, the densities of scallops likely to recruit into the fishery in the coming season and already recruited are low and below previous estimates. It should be noted that recreational scallop harvesting in Opito Bay has been subject to a voluntary closure since December 2020 and a temporary closure under section 186A since September 2021.

1.2.5 Additional yield estimates analysis

430. To determine sustainable yields to guide management settings for 2022, additional analysis of the current and historic survey data was sought from NIWA in late 2021. Due to time constraints the analysis was not presented to the Shellfish Working Group, which is the normal process for review and approval of scientific information. However, the analysis has been reviewed and approved by the Fisheries New Zealand Science Team.
431. The analysis took into account that the yield for scallops is sensitive both to the direct impacts of fishing such as reductions in growth and increased mortality of adult scallops, and also to indirect effects such as additional juvenile mortality related to reduced habitat suitability in

areas that have been repeatedly dredged⁶⁰ ⁶¹. A review of New Zealand's scallop stock assessment data and methods reiterated the importance of including incidental fishing mortality in yield analysis⁶².

432. Yields calculated using absolute biomass (scallops at all densities) are provided only to enable comparisons with yield estimates from previous years. Setting catch limits based on yields calculated using absolute biomass risks overfishing in the higher-density areas and could lead to unsustainable harvest levels.
433. Instead, yields were calculated using critical densities that relate to viable commercial fishing catch rates and represent maximum yields that could be landed by the fishery. In the absence of biological reference levels (relating to MSY), FNZ considers the higher critical density (meaning more scallops per unit area and hence higher catch rates) provides for a cautious approach to estimating abundance and yield. Yields were estimated at maximum harvest rates of 10 to 25% of the available biomass.
434. Table 4 shows a range of biomass and yield estimates from the biomass surveys in 2021. The estimates are shown for three different critical densities (0, 0.07, 0.1) and four different target harvest rates (10, 15, 20, and 25%). Critical scallop densities of 0.1 and 0.07 m⁻² are reported to approximately equate to catch rates of 70 kg and 50 kg of scallops per hour, catch rates at which the industry have identified they use to initiate "move on" and "bed closure" measures within a season. Given that the SCA CS beds are generally at low biomass levels and the likely near-future recruitment is low, FNZ considers that a cautious approach be adopted, using the estimates for critical density of 0.1 (representing exploitable biomass) and target harvest rates of 10 to 15% of the exploitable biomass.
435. Using those critical densities with a target harvest rate of 15%, the sustainable Current Annual Yield estimates for the SCA CS surveyed beds add up to 13 tonnes. A more cautious target harvest rate of 10% with the same densities and area add up to 9 tonnes – Table 4 highlighted blue yield values (SCA CS Total). However, depending on the target harvest rate, 7 to 5 tonnes (15% and 10% harvest rates) from the Mercury area is not available given the section 186A closure in place over that area (for the next 2 years at least).
436. This leaves a yield of 4 to 6 tonnes for the commercial fishery, not accounting for possible yield from areas not surveyed. FNZ is proposing, under Option 2, a TACC of 5 tonnes based on this yield, with fishing spatially restricted to the two designated areas (Figure 6) where reduced levels of ongoing commercial harvest are considered likely to be sustainable - Table 4 highlighted blue yield estimates (Barrier and Colville Channel).
437. FNZ notes that yields were estimated from the 2021 survey, however, fishing occurred during the 2021-22 season (July to December). The total catch was greater than the yield estimated, and this may have impacted the current population after the survey.
438. Evidence from the 2021 survey suggests relatively weak recruitment apart from Waiheke. However, scallops less than 90mm will grow and recruit into the fishery by the start of the 2022 season and throughout the fishing year. Without a survey in 2022, FNZ considers that the low levels of expected recruitment support a cautious approach to setting limits for 2022-23.
439. FNZ notes that substantial scallop population declines have been observed in many locations in SCA CS (see Table 3), and a priority for future research is to determine appropriate target and limit reference points for New Zealand scallops.

⁶⁰ Talman, S G; Norkko, A; Thrush, S F; Hewitt, J E (2004) Habitat structure and the survival of juvenile scallops *Pecten novaezelandiae*: comparing predation in habitats with varying complexity. *Marine Ecology Progress Series* 269: 197–207.

⁶¹ Cryer, M; Parkinson, D M (2006) Biomass surveys and stock assessments for the Coromandel and Northland scallop fisheries, 2005. *New Zealand Fisheries Assessment Report 2006/34*. 53 p.

⁶² Smith, S; Hart, D; Haddon, M (2016) Review of New Zealand's scallop fishery stock assessment data and methods. *New Zealand Fisheries Science Review* 2016/1. 25 p.

Table 4: SCA CS projected biomass and yield estimates (tonnes meat of recruited scallops 90 mm shell length or larger) by location and total for the 2021 fishing season. Yields were calculated by applying target harvest rates in the range 10–25% (Y10–Y25) to the projected median biomass occurring at three different critical density thresholds: 1) absolute biomass (critical density = 0); 2) exploitable biomass above the CPUE hard limit (critical density = 0.07); and 3) exploitable biomass above the CPUE soft limit (critical density = 0.10). Bq2.5 and Bq97.5 are the 2.5% and 97.5% quantiles of the estimated biomass. 'Plenty' comprises the Waihi and Tauranga locations. Estimates for the 'Colville Channel' location represent those within additional strata surveyed in 2021, with the majority of the biomass occurring in stratum 31.

Critical density (scallops m-2)				Biomass (tonnes, meatweight)					Yield (% of biomass)			
	Location	Area (km ²)	Stations (n)	Bmean	Bcv	Bmedian	Bq2.5	Bq97.5	Y10	Y15	Y20	Y25
0	Barrier	26.2	20	32	0.22	31	19	47	3	5	6	8
	Colville	48.6	12	9	0.38	9	3	16	1	1	2	2
	HGulf	537.1	20	55	0.49	52	17	116	5	8	10	13
	Mercury	127.4	64	98	0.23	96	59	146	10	14	19	24
	Plenty	190.1	26	50	0.21	49	32	73	5	7	10	12
	Waiheke	49.8	10	9	0.45	8	2	17	1	1	2	2
	Colville Channel	59	14	60	0.36	58	23	107	6	9	12	15
	SCA CS total	1038.3	166	312	0.17	308	222	424	31	46	62	77
0.07	Barrier	26.2	20	20	0.29	20	10	32	2	3	4	5
	Colville	48.6	12	5	0.51	4	1	10	0	1	1	1
	HGulf	537.1	20	9	1.09	7	0	32	1	1	1	2
	Mercury	127.4	64	59	0.33	57	25	101	6	8	11	14
	Plenty	190.1	26	5	0.89	4	0	15	0	1	1	1
	Waiheke	49.8	10	0	1.25	0	0	2	0	0	0	0
	Colville Channel	59	14	31	0.53	30	4	68	3	5	6	8
	SCA CS total	1038.3	166	128	0.27	125	71	201	13	19	25	31
0.1	Barrier	26.2	20	17	0.3	17	9	29	2	3	3	4
	Colville	48.6	12	3	0.64	3	0	8	0	0	1	1
	HGulf	537.1	20	2	2.04	0	0	12	0	0	0	0
	Mercury	127.4	64	48	0.38	46	17	89	5	7	9	12
	Plenty	190.1	26	3	0.94	3	0	10	0	0	1	1
	Waiheke	49.8	10	0	10.4	0	0	0	0	0	0	0
	Colville Channel	59	14	23	0.61	22	1	56	2	3	4	5
	SCA CS total	1038.3	166	97	0.31	93	47	165	9	13	19	23

2 Catch information and current settings within the TAC

2.1 Commercial

440. Commercial fishing in SCA CS operates to a restricted season, which runs from 15 July to 21 December each year with commercial fishers operating five days a week during the season. A minimum legal size (MLS) of 90mm shell length applies in SCA CS. This is lower than the commercial MLS in SCA 1 (Northland) and the recreational MLS, both of which are 100mm. This reduced MLS was introduced in 1995 as part of a management plan developed between Coromandel Scallop Fishers Association and non-commercial fishers. The aim of the 90 mm size limit was to enable the commercial fishery to obtain sustainable yields while reducing the dredge related mortality of scallops between 90 and 100 mm that otherwise would be returned to the sea and possibly die.
441. Commercial scallop fishing is excluded from several harbour, estuary and embayment areas as defined in Regulation 22 of the Fisheries (Auckland and Kermadec) Commercial Fishing Regulations 1986 (see Figure A6 in Appendix).
442. Further to the legislated requirements, commercial fishers in SCA CS operate as a collective and employ additional voluntary measures around scallop harvesting. These include the CPUE limit rule discussed, daily bin limits for individual vessels and a reduced fishing season from that available under the regulations. Fishers in SCA CS are required by regulation to not fish on Friday and Saturday. In addition to this they also mainly limit fishing to weekdays to reduce overlap with the recreational sector.
443. From 1992, up to and including the 2012 fishing year, the SCA CS TACC was set at 22 tonnes, before being increased to 100 tonnes in 2013. Information that formed the basis for the decision to increase the TACC included the discovery of a significant bed of scallops in 2011 (Hauraki bed – see red box, Figure A1), which was surveyed as part of the SCA CS biomass survey in 2012. In 2016, the TACC was reduced to 50 tonnes. This decision was based on information that commercial fishers had not fished the new scallop bed since 2013 and reported that it was no longer there (this was supported by fine-scale fishing data).
444. The causes that contributed to the disappearance of the Hauraki bed are not known. The bed contributed to the fishery in 2011-12 and 2012-13. The 2012 survey of the Hauraki bed estimated that it contained 984 tonnes (meatweight), with large numbers of scallops greater than 90mm. Commercial landings for 2011-12 and 2012-13 were 50 tonnes and 73 tonnes respectively. It is likely that the bed contained large numbers of older scallops in a few year classes. Beds with few year classes are known to be highly variable and there are international examples of such beds experiencing natural die off events. It is likely that the fishing activity in 2011-12 and 2012-13 would have had some impact on this bed, however, given the low level of catch relative to the estimated overall abundance, the extent of these impacts is not well understood.
445. From 2017-18 to 2020-21, landings decreased with an estimated 10 tonnes (meatweight) landed in 2020-2021. In the 2021-22 fishing season 22 tonnes were landed, with a large proportion taken from a previously unfished scallop bed in the Colville channel. Most landings in this fishery are reported to be from beds around Little Barrier and Mercury Islands. Figure 5 displays the historical commercial landings and catch limits for the SCA CS fishery up to 2020/21.
446. It should be noted that landings are not necessarily indicative of abundance as landings can be influenced by operational factors, including processing capacity, scallop quality, and the CPUE limit rule management procedure. These factors were raised by the CSFA in their submission.
447. In September 2021, you approved a section 186A temporary closure over the eastern coromandel scallop beds. This area has historically supplied approximately 50% of the SCA CS commercial fishery.

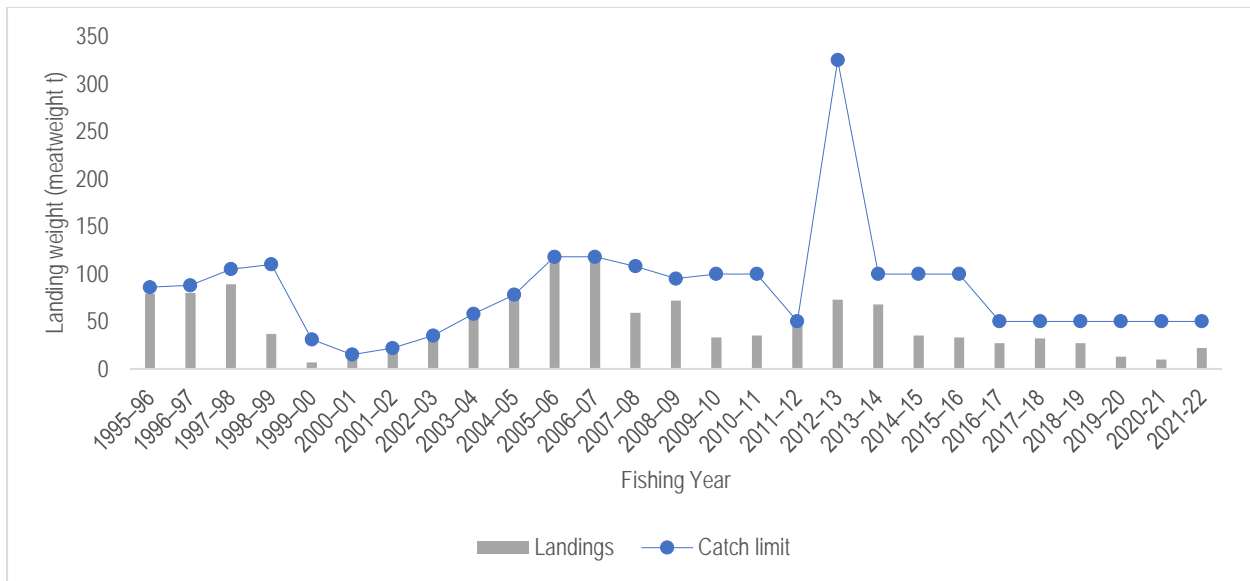


Figure 5: Landings and catch limits for SCA CS (Coromandel) from 1995–98 to 2020–21. Catch limit refers to TACC, and weight refers to meatweight.

2.2 Customary Māori

448. Scallops are an important traditional food for Māori and continue to be gathered under provisions for customary fishing.
449. While scallops are a common species for which customary authorisations are issued, there is limited quantitative information available on the level of customary take of scallops from SCA CS. It is likely that Māori customary fishers also utilise the provisions under recreational fishing regulations.
450. FNZ has been informed by tangata whenua throughout SCA CS that in order to protect local scallop populations, the issuing of customary authorisations has been reduced or in some cases ceased as the abundance of scallops has declined.
451. Significant parts of SCA CS are not currently covered under the Fisheries (Kaimoana Customary Fishing) Regulations 1998. Customary fishing authorisations in some parts of the SCA CS, if issued, would be under the Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on catch. As such, customary harvest records held by FNZ are likely to be incomplete.

2.3 Recreational

452. There is significant recreational interest in scallops throughout SCA CS. These areas are mostly in enclosed bays and harbours. Many of these coastal areas are set aside in regulations as areas where only non-commercial scallop fishing is allowed. Figure A6 shows recreational only scallop areas in SCA CS. However, non-commercial scallop fishing can be undertaken throughout the SCA CS area.
453. Harvesting of scallops was reported from larger boats/launches, off land and, most commonly, by trailer boats, from which an estimated 66% of scallops were taken nationally in 2017/18.
454. The best available information on current recreational catch is from the 2017/18 National Panel Survey of Marine Recreational Fishers (NPS), which provides a snapshot of the level of recreational take in that fishing year. Scallops were reported to be harvested using dredging and/or by hand gathering from either the shore or while diving. The 2017/18 NPS estimated

468,843 scallops were harvested for that year across all scallop areas in New Zealand by hand gathering while diving, the popular method of choice.

455. A total estimated weight of 62 tonnes (green weight) of scallops was harvested for the 2017-2018 fishing year in New Zealand. Of the overall national scallop take, 93% came from within Fisheries Management Area 1 (FMA 1), which includes the scallop beds in SCA CS. Within FMA 1, approximately 60% of recreational scallop catch is taken from SCA CS. The predominant fishing method in SCA CS is hand-gathering while diving. The NPS reported 37 tonnes (green weight) from SCA CS (approximately 5 tonnes meatweight).

2.4 All other mortality caused by fishing

456. When setting a TAC, you must make an allowance within the TAC for all other mortality caused by fishing. This allowance is intended to provide for unrecorded mortality of fish associated with fishing activity, including incidental mortality from fishing methods, or illegal fishing.
457. Incidental damage to uncaught or undersize scallops can occur during dredging.
458. The box dredges used in the SCA CS commercial fishery have been found to be more efficient in the sandy conditions prevalent in the northern region than the ring-bag dredges used elsewhere in New Zealand. However, scallops encountered by box dredges have shown modest reductions in growth rate, compared with scallops collected by divers, and quite high levels of mortality (about 20–30%). This could potentially be as high as 50% for scallops that are returned to the water. Experiments and modelling suggest that dredging also reduces habitat diversity and increases juvenile mortality in dredged areas.
459. Other sources of mortality caused by fishing are also likely to occur from recreational dredging and the illegal take or ‘poaching’ of scallops. FNZ does not have reliable estimates of these other sources of fishing related mortality.
460. All proposed options in this document will lead to a reduction in commercial fishing effort and harvest. Recreational take and the impacts of recreational dredging are also anticipated to reduce under the options proposed. As such an associated reduction in other sources of mortality is also expected.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

461. 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 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.
462. To facilitate input and participation, FNZ engaged with tangata whenua at Iwi Fisheries Forums on preliminary survey results and the proposed options. The results of the scallop surveys and the proposed management options, including the potential for a full closure of SCA CS, has been discussed with the Mid-North and Mai i ngā Kuri a Whārei ki Tihirau forums.
463. Members of the Mid-North and Mai i ngā Kuri a Whārei ki Tihirau forums acknowledged the poor state of Northern scallop fisheries and expressed support for changes to management measures in SCA CS (Table 5). Some Mid-North forum members indicated they are considering traditional rāhui as an interim measure before any sustainability decisions are made.

Table 5: Input provided by Iwi Fisheries Forums on the Coromandel (SCA CS) scallop fishery.

Iwi Fisheries Forum	Input
Mid-North	The Mid-North Iwi Fisheries Forum supports Option 1. A full closure of the fishery to allow the stock to recover. Forum members proposed that Fisheries New Zealand works with tangata whenua to develop a future management strategy for both Northland Scallops (SCA 1) and Coromandel Scallops (SCA CS).
Mai i ngā Kuri a Whārei ki Tihirau	Forum members expressed concern that the fishery was in a situation where closure was being considered. Forum members supported a closure, however, did not endorse a specific option.

3.2 Kaitiakitanga

464. SCA CS covers the rohe of Mid-North, and Mai i Ngā Kuri a Whareki ki Tihirau Iwi Fisheries Forums, both of which identify scallops as a taonga species in their respective Iwi Forum Fisheries Plans.
465. FNZ considers that the proposed management options are in keeping with the objectives of the Iwi Fisheries Forum Plans which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries.
466. There are six customary fisheries management areas within SCA CS. These include one mātaimai reserve, one taiāpure and four temporary closures implemented under section 186A of the Act (Table 6). While many of the customary fisheries management areas may contain scallops in low abundance and density, only the Eastern Coromandel section 186A closure area is known to support scallops in abundance high enough to support any level of sustained utilisation. The Eastern Coromandel section 186A closure was put in place to protect scallops.
467. In September 2021 Ngāti Hei placed a customary rāhui over the Opito Bay area. Subsequently, in February 2021, the Ngāti Hei Trust formally requested a 2-year temporary closure of the scallop fishery over waters of the east Coromandel coast, extended to the waters from Anarake Point to Ruahiwihiwi Point, as well as encompassing offshore waters around the Cuvier, Great Mercury, and Aldermen Islands.
468. You approved a closure to scallop harvesting for a period of two years, pursuant to section 186A of the Act. This closure came into effect on 11 September 2021 and is being monitored by FNZ and MPI Fisheries compliance (Figure A6).
469. This closure restricts access to the Mercury Islands and surrounding scallop beds. This area has historically contributed approximately 50% of the SCA CS commercial fishery. As a result, there is likely to be some displacement of commercial and recreational scallop fishing activity while the temporary closure is in place.
470. In January 2021, Ngāti Pāoa requested a temporary closure to the harvest of scallops, mussels, rock lobster, and pāua from Waiheke Island. This request was associated with a customary rāhui placed over Oneroa Beach area in the same month. The 186A application included the area from the foreshore to 1 nautical mile offshore. You decided to approve the application and temporarily close the waters around Waiheke Island to the take of scallops, mussels, rock lobster, and pāua between 1 December 2021 to 30 November 2023.
471. FNZ has also recently received an application from Ngāti Manuhiri for a section 186A temporary closure of scallop harvesting within a large area of the Hauraki Gulf. Of note, the application area includes the Barrier and Colville areas which are proposed to remain open to fishing under Option 2 (see figure 6). Ngāti Manuhiri has expressed concerns about the status

of the scallop population, the impacts of dredging and displacement of fishing from other closure areas into their rohe moana. FNZ will be working with Ngāti Manuhiri to process the application. Public consultation on this application has not commenced. Following public consultation, if Ngāti Manuhiri wish to proceed with the application, you will be provided with advice and asked to make a decision on whether to approve a temporary closure of the application area, including those areas that would be open should you choose to implement Option 2 below.

Table 6: Customary fishing areas within the Coromandel (SCA CS) scallop fishery.

Customary Area	Management Type
Maketu Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing
Umupuia Beach Temporary Closure	S186A Temporary Closures Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method
Te Mata and Waipatukahu Temporary Closure	
East Coromandel Temporary Closure	
Waiheke Island	Mātaitai Reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.
Te Maunga o Mauoa Mātaitai	

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

472. The key environmental principles with respect to the SCA CS fishery, which must be taken into account when considering sustainability measures, are:

- (a) associated or dependent species should be maintained above a level that ensures their long-term viability (in particular marine mammals, seabirds, fish and invertebrate bycatch)
- (b) biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing) and
- (c) habitats of particular significance for fisheries management should be protected.

4.1.1 Marine mammals and seabirds

473. There are no known captures of marine mammals or seabirds in New Zealand scallop fisheries.

4.1.2 Fish bycatch

474. In SCA CS, a photographic survey approach was used in 2006⁶³ to provisionally examine bycatch groups, and a more quantitative and comprehensive study was conducted using bycatch data collected in the 2009 dredge survey⁶⁴. Survey catches were quantified by volume

⁶³ Tuck, I; Parkinson, D; Dey, K; Oldman, J; Wadhwa, S (2006). Information on benthic impacts in support of the Coromandel Scallops Fishery Plan. Final Research Report prepared by NIWA for Ministry of Fisheries Research Project ZBD2005-15 Objective 1-6. p. (Unpublished report held by Ministry for Primary Industries, Wellington.)

⁶⁴ Williams, J R; Parkinson, D M (2010) Biomass survey and stock assessment for the Coromandel scallop fishery, 2010. New Zealand Fisheries Assessment Report 2010/37.

of different component categories. Over the whole 2009 survey, scallops formed the largest live component of the total catch volume (26%), followed by assorted seaweed (11%), starfish (4%), other live bivalves (4%), coralline turfing algae (1%) plus other live components not exceeding 0.5%. Dead shell (identifiable and hash) formed the largest overall component (45%), and rock, sand, and gravel formed 8%. Categories considered to be sensitive to dredging were caught relatively rarely.

475. The effects of scallop dredging on the benthos are well-studied, with New Zealand studies showing that with increasing fishing intensity there are decreases in the density and diversity of benthic communities and, especially, the density of emergent epifauna that provide structured habitat for other fauna. The results of these studies are summarised in the Aquatic Environment and Biodiversity Annual Review⁶⁵, and are consistent with the global literature.

4.1.3 Benthic impacts

476. Fishing with mobile bottom contact gear, such as dredges, has impacts on benthic populations, communities, and their habitats. The effects are not uniform but depend on factors such as the specific features of the seafloor, the natural disturbance regime, the species present, the type of gear and the frequency it is used. A description of the effects of scallop dredging are provided in Table 7.
477. There is widespread concern around the impacts of dredging on the seabed and wider marine environment. There have also been several public campaigns put forward to ban both recreational and commercial scallop dredging. Submitters noted concerns regarding the environmental effects of dredging and suggested that a more holistic approach to managing SCA CS was required to address these concerns.
478. Removing scallop dredging was a feature of the Sea Change Hauraki Gulf Marine Spatial plan and the recently released Government Response strategy to Sea Change, through the draft Fisheries Plan. This committed to removing recreational dredging from the marine park and freezing commercial dredge fishing to within the current footprint, while implementing improved monitoring and management approaches.
479. While FNZ recognises that environmental factors, such as sedimentation and water quality, are also likely to affect scallop growth and mortality rates, as an agency it does not have a direct role in managing such environmental impacts. However, FNZ is engaging with local authorities to ensure fisheries-related concerns arising from terrestrial activities are addressed. A Coastal Planning Team has been established to engage with local authorities as FNZ moves further towards a more holistic ecosystem-based approach to managing fisheries.
480. All proposed options will see a reduction in dredging in the short to medium term.

⁶⁵ Aquatic Environment and Biodiversity Annual Review (Ministry for Primary Industries 2018)
<https://www.mpi.govt.nz/dmsdocument/34854-aquatic-environment-and-biodiversity-annual-review-aebar-2018-a-summary-of-environmental-interactions-between-the-seafood-sector-and-the-aquatic-environment>

4.1.1 Habitats of particular significance for fisheries management

481. Information on habitats of particular significance for fisheries management in SCA CS is given in Table 7.

Table 7: Summary of information on habitats of particular significance for fisheries management for stock.

Fish Stock	SCA CS
Habitat of particular significance	<p>Specific habitats of particular significance for scallops in SCA CS have not been identified at this time. However, certain features of the habitats with which scallops are associated are known to influence scallop productivity by affecting the recruitment, growth, and mortality of scallops, and therefore may in the future be useful in terms of identifying habitats of significance.</p> <p>Figure A1 (in the Appendix) shows the main scallop beds that have been surveyed from 1990 – 2021.</p>
Attributes of habitat	<ul style="list-style-type: none"> • Scallops are found in a variety of coastal habitats, but particularly in semi-enclosed areas where circulating currents are thought to retain larvae. • Scallops inhabit waters of up to about 60 m deep but are more common in depths of 10 to 50 m on substrates of shell gravel, sand or, in some cases, silt. • Scallops are typically patchily distributed at a range of spatial scales. Some scallop beds are persistent, and others are short lived. The extent to which the various beds or populations are reproductively or functionally separate is not known. • Scallop larvae spend about three weeks in the plankton. They then attach to algae or some other filamentous material with fine byssus threads. This indicates that an important attribute of habitat is the presence of suitable settlement surfaces for larvae. When the spat reach about 5 mm they detach and take up the free-living habit of adults, usually lying in depressions on the seabed and often covered by a layer of silt.
Reasons for particular significance	<ul style="list-style-type: none"> • Scallops grow relatively fast, have high mortality, and variable recruitment. The rates of these processes probably vary in relation to environmental conditions (e.g., temperature, water flow, turbidity, and salinity), ecological resources (e.g., food, oxygen, and habitat), and with intra- and inter-specific interactions (e.g., competition, predation, parasitism, and mutualism), and the combination of these factors determines the species distribution and abundance⁶⁶ • Scallops are a key component of the inshore coastal ecosystem, acting both as consumers of primary producers and as prey for many predators. Scallops themselves can also provide structural habitat for other epifauna (e.g., sponges, ascidians, and algae).
Risks/Threats	<ul style="list-style-type: none"> • It is well known that fishing with mobile bottom contact gears such as dredges has impacts on benthic populations, communities, and their habitats^{67 68}. The effects are not uniform but depend on at least: 'the specific features of the seafloor habitats, including the natural disturbance regime, the species present, the type of gear used, the methods and timing of deployment of the gear and the frequency with which a site is impacted by specific gears; and the history of human activities, especially past fishing, in the area of concern'⁶⁹.

⁶⁶ Begon, M; Harper, J L; Townsend, C R (1990) Ecology: Individuals, Populations and Communities. Blackwell Science, Cambridge. 945 p.

⁶⁷ Kaiser, M J; Clarke, K R; Hinz, H; Austen, M C V; Somerfield, P J; Karakassis, I (2006) Global analysis of the response and recovery of benthic biota to fishing. Marine Ecology Progress Series 311: 1–14.

⁶⁸ Rice, J (2006) Impacts of mobile bottom gears on seafloor habitats, species, and communities: a review and synthesis of selected international reviews. Canadian Science Advisory Secretariat Research Document 2006/057. 35 p.

⁶⁹ Department of Fisheries and Oceans (2006) Impacts of trawl gear and scallop dredges on benthic habitats, populations and communities. DFO Canadian Science Advisory Secretariat Science Advisory Report 2006/025. 13 p.

-
- The effects of scallop dredging on the benthos are relatively well studied and include several New Zealand studies carried out in areas of the northern fisheries (SCA 1 and SCA CS)^{70 71 72} and the Golden/Tasman Bays region of the southern fishery (SCA 7)⁷³. The results of these studies are that, generally, with increasing fishing intensity there are decreases in the density and diversity of benthic communities and, especially, the density of emergent epifauna that provide structured habitat for other fauna.
 - It is also likely that fine sediments introduced from runoff from land can have adverse effects on filter-feeding bivalves, including scallops.
-

Existing protection measures • While specific habitats of significance have not been identified, there are scallop populations in many estuaries and harbours in SCA CS, and these are protected from benthic effects of commercial dredging, trawling and Danish seining which are prohibited, (see Figure A6 in Appendix)

4.2 Sustainability measures (section 11 of the Act)

482. Section 11(1) of the Act allows you to set or vary any sustainability measure for one or more stocks or areas, after taking into account any effects of fishing on any stock and the aquatic environment, any existing controls that apply to the stock or area concerned, and the natural variability of the stock concerned. Scallop populations are known to vary over time and in response to environmental changes and can also be affected by fishing pressures. The proposals to close some or all scallop beds to harvesting seek to address the risk that fishing will further exacerbate conditions that have led to declining populations and prevent the recovery of SCA CS.
483. Section 11(2) states that before setting or varying any sustainability measure, you must have regard to any provisions of: any regional policy statements, regional plans, or proposed regional plans under the Resource Management Act 1991; any management strategy or plan under the Conservation Act 1987; sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000; any regulations under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and any planning documents lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011. There are no specific matters under the above provisions that are relevant to the proposals for SCA CS.
484. Section 11 (2A) requires you to take into account:
- (a) any conservation services or fisheries services; and
 - (b) any relevant fisheries plan approved under this Part-see discussion of section 11A below; and
 - (c) any decisions not to require conservation services or fisheries services.
485. Services of particular relevance to the decisions in this paper relate to research used to monitor stock abundance, such as the biomass surveys of SCA CS in 2021. To date fisheries plans have been approved only for deepwater, shellfish and highly migratory species and there are

⁷⁰ Thrush, S F; Hewitt, J E; Cummings, V J; Dayton, P K (1995) The impact of habitat disturbance by scallop dredging on marine benthic communities: what can be predicted from the results of experiments? *Marine Ecology Progress Series* 129: 141–150.

⁷¹ Thrush, S F; Hewitt, J E; Cummings, V J; Dayton, P K; Cryer, M; Turner, S J; Funnell, G A; Budd, R G; Milburn, C J; Wilkinson, M R (1998) Disturbance of the marine benthic habitat by commercial fishing - Impacts at the scale of the fishery. *Ecological Applications* 8: 866–879.

⁷² Cryer, M; O'Shea, S; Gordon, D P; Kelly, M; Drury, J D; Morrison, M A; Hill, A; Saunders, H; Shankar, U; Wilkinson, M; Foster, G (2000) Distribution and structure of benthic invertebrate communities between North Cape and Cape Reinga. Final Research Report by NIWA for Ministry of Fisheries Research Project ENV9805 Objectives 1–4. (Unpublished report held by Fisheries New Zealand, Wellington.)

⁷³ Tuck, I; Hewitt, J; Handley, S; Lundquist, C (2017). Assessing the effects of fishing on soft sediment habitat, fauna and processes. New Zealand Aquatic Environment and Biodiversity Report No. 178. 147 p.

no relevant approved fisheries plans for SCA CS. The management of the SCA CS fishery is guided by the non-binding policy guidance in MPI's Harvest Strategy Standard (see below).

486. Section 11(3) outlines a non-exhaustive list of sustainability measures that you may set for a stock. Sustainability measures may relate to the TAC for any stock, areas from which any fish, aquatic life, or seaweed of any stock may be taken. You may implement any sustainability measures by notice in the Gazette (as proposed in this paper) or by recommending the making of regulations.
487. MPI proposes that the sustainability measures be set by notice in the Gazette.
488. Section 13 of the Act provides for the setting of a TAC for SCA CS and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (HSS). The 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 QMS. It is intended to provide guidance on 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.
489. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

4.2.1 Hauraki Gulf Marine Park Act (HGMPA)

490. Section 11(2)(c) of the Fisheries Act 1996 requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when varying the TAC relating to stocks with boundaries intersecting with the Park.
491. SCA CS boundaries overlap within the Hauraki Gulf Marine Park. Therefore, sections 7 (recognition of national significance of Hauraki Gulf) and 8 (management of Hauraki Gulf) of the Hauraki Gulf Marine Park Act 2000 (HGMPA) apply to the management of these fisheries.
492. As this review aims to address a potential sustainability risk with the SCA CS management settings, FNZ considers that the proposed options are consistent with obligations under sections 7 and 8 of the HGMPA.
493. The Hauraki Gulf Forum, established under the HGMPA, provided a submission in support of Option 1, which would see a full closure of scallop fisheries within the SCA CS portion of the Hauraki Gulf Marine Park (see Appendix Figure A6). The submission also noted that a closure under section 11 of the Act for the whole SCA CS fishery would 'bring a welcome level of simplicity to an increasingly complex map of temporary closures and restrictions in the Hauraki Gulf'.
494. 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 scallops 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

495. FNZ received 49 submissions from individuals and representative groups. The majority of submissions received through consultation were in support of a full closure in SCA CS. Of the 49 submissions received, 30 submissions were in support of Option 1.
496. Te Ohu Kaimoana did not specify support for proposed options but encouraged FNZ to work with tangata whenua to find a holistic solution to consider all the impacts scallop populations face, including land-use impacts and disease.

497. Industry submissions disagreed with the proposed options for SCA CS. Fisheries Inshore New Zealand (FINZ) submitted that for both stocks a full closure is irrational and raises concerns regarding the proposal not to change the customary allowance. FINZ consider Options 2 and 3 for SCA CS are inequitable and that other sectors should bear more responsibility.
498. Industry submissions (and other sector stakeholder submissions) considered the TAC should be adjusted if the fishery is closed under section 11. In response to this feedback, FNZ has added Option 1A. Under Option 1A the TAC, TACC and allowances are reviewed with proposed settings to reflect a closure of the fishery to commercial and recreational take.
499. The Coromandel Scallop Fishermen’s Association (CSFA) provided a comprehensive submission. Their view was that the consultation document contained flawed or incorrect information and that the proposals fail to consider the voluntary management currently used by fishers. They also consider an alternative TACC of 22 tonnes, in line with the historical setting, as more appropriate. The CSFA propose a range of management changes, including fine scale area-based management and the development of a SCA CS section 11A fisheries plan.
500. FNZ considers that the voluntary management approach does not mitigate the current risk to sustainability for the SCA CS stock. The CSFA proposed TACC of 22 tonnes far exceeds the calculated yield from the 2021 survey used to inform Option 2 (5 tonnes). FNZ considers the proposed management changes, including fine scale management, have merit and align with comments in submissions from across all sectors. While the options proposed by FNZ are considered appropriate in the short to medium term to respond to the current sustainability concerns identified, FNZ will also be seeking to engage with the CSFA, tangata whenua and other stakeholders on the longer-term management approach for the SCA CS stock.
501. Submissions have been summarised in Table 8 below and a full list of submissions is available in the Appendix (Table A1).

Table 8: Summary of Submissions

Option 1 – Full Closure Under s11 Sustainability Measure				
TAC: 81 tonnes	TACC: 50 tonnes	Customary: 10 tonnes	Recreational: 10 tonnes	Other mortality: 11 tonnes
Responses from representative bodies and organisations in support: 7			Individual submissions in support: 23	
<ul style="list-style-type: none"> • The Mussel Reef Restoration Trust • NZ Sport Fishing Council, New Zealand Angling & Casting Association, New Zealand Underwater Association and LegaSea • Great Barrier Local Board • Environmental Defence Society • Forest & Bird • Iwi Collective Partnership • Ngatiwai Trust Board 			8 of the submissions from individuals in support of Option 1 also submitted that dredging should be prohibited.	

Option 1A – (Alternative Option) Full Closure Under s11 Sustainability Measure with changes to TAC/TACC and allowances

TAC: 11 tonnes TACC: 0 tonnes Customary: 10 tonnes Recreational: 0 tonnes Other mortality: 1 tonne

Responses from representative bodies and organisations in support: **N/A**

Individual submissions in support: **N/A**

- Coromandel Scallop Fishermen’s Association
- Fisheries Inshore New Zealand
- NZ Sport Fishing Council, New Zealand Angling & Casting Association, New Zealand Underwater
- Environmental Defence Society

The above from representative bodies and organisations submitted that under Option 1 the TAC, TACC and allowances should be reviewed.

Option 2 – Partial Closure Under s11 Sustainability Measure

TAC: 19 tonnes TACC: 5 tonnes Customary: 10 tonnes Recreational: 3 tonnes Other mortality: 1 tonne

Responses from representative bodies and organisations in support: **0**

Individual submissions in support: **1**

FNZ did not receive submissions from representative bodies or organisations in support of Option 2.

1 of the submissions from individuals in support of Option 2 also submitted that dredging should be prohibited.

Coromandel Scallop Fishermen’s Association (CSFA) propose an alternate Option 2 with an increased TACC of 22 tonnes and

Fisheries Inshore New Zealand supported the CSFA submission

Option 3 – Changes to TAC/TACC and allowances

TAC: 14 tonnes TACC: 0 tonnes Customary: 10 tonnes Recreational: 0 tonnes Other mortality: 1 tonne

Responses from representative bodies and organisations in support:

Individual submissions in support: **5**

NA

3 of the submissions from individuals in support of Option 3 also submitted that dredging should be prohibited.

Other

Responses from representative bodies and organisations in support: 5

- Te Ohu Kaimoana
- Coromandel Scallop Fishermen's Association
- Fisheries Inshore New Zealand
- Whitianga & Coromandel Peninsula Commercial Fishermen's Association

Individual submissions in support: 8

7 of the submissions from individuals in support of Option 3 also submitted that dredging should be prohibited.

Submissions included alternative options including ban on scuba diving. Reducing recreational daily limits.

6 Management Options

502. There are a range of management tools available under the Act that may be used to manage the impacts of fishing pressure on scallop abundance, including catch limits and method and/or spatial restrictions. FNZ has sought views on the use of some of these tools as part of the longer-term package of measures to manage the fishery. In the interim, FNZ considers closure options and associated measures as proposed in this paper provide the appropriate mechanism to protect remaining scallop beds and provide the opportunity for recovery.
503. Under section 11 of the Act you may set or vary the sustainability measures for a stock after taking into account any effects of fishing on any stock and the aquatic environment, any existing controls on fishing (see Table 9 below), and the natural variability of the stock.
504. Section 13 of the Act sets out the factors you must consider in setting or varying the TAC. When setting a TAC for stocks such as SCA CS where the MSY is not able to be estimated reliably, s 13(2A) of the Act is relevant. You must not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock. In determining the TAC for a stock, you must have regard to the interdependence of stocks, the biological characteristics, and any environmental conditions affecting the stock. You must set a TAC for SCA CS using the best available information and that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield. In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield, you must have regard to such social, cultural, and economic factors as you consider relevant.
505. For SCA CS, the management approach applied historically relied on setting a TACC catch limit which was considered to ensure sustainability under most levels of biomass and to provide for in-season increases to the TAC, ACE, and allowances should there be evidence of increased stock abundance within the fishing year. Surveys estimated biomass within the year and the Current Annual Yield was determined for that year as the basis for an increase. That approach was considered to be not inconsistent with the s13 obligations.
506. Considering the interdependence of stocks, scallops are considered to be a key component of the inshore coastal ecosystem, acting both as consumers of primary producers and as prey for many predators. Scallops themselves can also provide structural habitat for other epifauna (e.g., sponges, ascidians, and algae). In terms of biology, scallops are short-lived and highly fecund, with the potential for 'boom and bust' cycles of abundance, in the absence of fishing. The Act recognises this by enabling responsive management of scallop stocks using in-season

adjustments if abundance is high. You must also consider environmental conditions affecting scallops. Sediment and other inputs from land into the coastal marine areas occupied by scallops are likely to contribute to impacts on scallop populations. There is also evidence of adverse effects on the environment from scallop dredging. Also, coastal ocean dynamics and nutrients can affect scallops via the availability of planktonic organisms as food and the dispersal of scallop eggs and larvae to favourable settlement sites. It is possible that a combination of environmental factors is influencing the SCA CS population and resulting in low recruitment and abundance.

Table 9: Existing controls under the Act that apply to SCA CS.

Recreational	
SCA CS	<ul style="list-style-type: none"> • The recreational fishing season runs from 1 September – 31 March. • MLS of 100 millimetres in shell length. • Daily bag limit is 20 scallops per person. • Divers operating from a vessel can take scallops for up to two nominated safety people on board the vessel, in addition to daily catch limits for the divers. • Scallops must be brought ashore in a measurable state (i.e., not shucked). An exception applies for scallops consumed immediately on board a vessel.
Commercial	
SCA CS	<ul style="list-style-type: none"> • The commercial fishing season in SCA CS runs from 15 July – 21 December with commercial fishers operating on weekdays only during the season. • There are significant spatial restrictions for commercial scallop fishers. • No commercial fisher is permitted to dredge for scallops from the SCA CS fishery between sunset and sunrise. • No commercial fisher shall take any scallops from the Coromandel scallop fishery during the period commencing 1 hour after sunset on any Thursday and ending 1 hour before sunrise on the following Sunday. • The regulated commercial MLS of scallops in SCA CS is 90 millimetres in shell length. Scallops must remain unshelled until they are delivered either to the first point of sale after being taken or to a processing factory. • No commercial fisher fishing for scallops is permitted to use more than 1 dredge with a bar or bit that is more than 2.5 m long or more than 2 dredges, either of which has a bar or bit that is more than 1.4 m long.

6.1 Option 1

Full closure under a Section 11 Sustainability measure				
TAC: 81	TACC: 50	Customary: 10	Recreational: 10	Other mortality: 11

507. Option 1 proposes a full closure to the commercial and recreational harvest of scallops in SCA CS as a sustainability measure under section 11 of the Act. It responds to the substantial reduction in scallop abundance and densities observed across most beds in SCA CS since the 2012 survey. This option will provide protection for all scallop beds in SCA CS from the direct and indirect impacts of fishing activity and provides the greatest chance for a recovery to greater abundance. Note that the current catch limits would remain under this option.
508. It is proposed the closure is implemented for an indefinite period; however, it is anticipated that FNZ will seek new information on the abundance and biomass of scallops in SCA CS within 3 years. If new information indicates that the stocks have recovered, FNZ will review whether the closure is still required. The future management approach to the utilisation of scallops within SCA CS will also be considered during the closure period to ensure any reopening of the fishery could occur in a manner that will ensure the ongoing sustainability of the stock.

509. This option carries the least sustainability risk and is the most cautious response to sustainability concerns. It addresses the impacts of fishing affecting the scallop fisheries and will allow for scallop populations and their environments to remain undisturbed for the closure period.
510. It is acknowledged that Option 1 will impact all scallop fishers in SCA CS significantly, with both recreational and commercial fishers completely excluded from the fishery. There will also be significant impacts to associated industries, which are currently built around the SCA CS fisheries. The social and economic impact of this option is discussed further below.
511. A closure under section 11 of the Act would not extend to customary fishing authorised under section 50 of the Fisheries (Amateur Fishing) Regulations 2013 (fish, aquatic life, or seaweed taken under authorisation for hui or tangi). It would also still allow for tangata kaitiaki/tiaki to authorise the taking of fisheries resources under regulation 11 of the Fisheries (Kaimoana Customary Fishing) Regulations 1998 (power to authorise the taking of fisheries resources for customary food gathering).
512. Under Option 1 it is proposed no change is made to the TAC, TACC, and allowances as access to the fishery will be prohibited through the section 11 closure. FNZ will continue to monitor the fishery and, if new information indicates fishing can occur sustainably, the management measures and TAC settings will be reviewed prior to re-opening the fishery.
513. Under Option 1 quota holders will continue to pay levies due to the existing TACC remaining in place, but will be unable to harvest or sell scallops from SCA CS. Commercial fishers and commercial representatives have submitted that the TAC should be reviewed and reduced to 0 if you choose Option 1. See Option 1A below.

6.2 Option 1A

Full closure under a Section 11 Sustainability measure and changes to TAC, TACC and allowances				
TAC: 11 ↓ (70 t)	TACC: 0 ↓ (50 t)	Customary: 10 –	Recreational: 0 ↓ (10 t)	Other mortality: 1 ↓ (10 t)

514. Option 1A is a new Option included after feedback received during public consultation.
515. Many submissions regarding Option 1 included the view that the TAC, TACC and allowances should be reduced to recognise that no fishing would occur, and that the TAC should be set to reflect the state of the fishery. Submitters in support of a lower TAC for Option 1 included the Coromandel Scallop Fishermen's Association, Fisheries Inshore New Zealand, LegaSea and the NZ Sports Fishing Council (NZSFC) and the Environmental Defence Society. Submitters representing commercial fishers raised concerns that under Option 1 quota holders will continue to be levied but will not be able to harvest and sell scallops. The combined submission from NZSFC, New Zealand Angling and Casting Association, New Zealand Underwater Association and Legasea consider that you should set a sustainable TAC as part of this review.
516. FNZ considers that you can introduce a section 11 closure to SCA CS without making changes to the TAC, TACC and allowances. However, in response to the submissions received across sectors FNZ has included Option 1A for your consideration. FNZ prefers Option 1A over Option 1.
517. Like Option 1, Option 1A proposes a full closure to the commercial and recreational harvest of scallops in SCA CS as a sustainability measure under section 11 of the Act, to protect scallop beds from the direct and indirect impacts of fishing activity and provide the greatest chance of recovery to greater abundance.
518. However, in addition, this option would reduce the TAC to 11 tonnes. The TACC and recreational allowance will be reduced to 0 tonnes to reflect that no commercial or recreational fishing will be taking place while the closure is in effect. The customary allowance remains unchanged at 10 tonnes to recognise that customary fishing will not be prohibited under a section 11 closure. It is however noted that customary take may decline. This reflects feedback

from iwi and kaitiaki in the region regarding their own local management of access to scallop fisheries, and the decision of many to issue no or limited customary authorisations for scallops. A nominal allowance for other mortality caused by fishing would be set at 1 tonne to account for any mortality associated with illegal or ‘poaching’ activity.

519. Setting the TACC at 0 tonne will ensure that an appropriate TAC, TACC, and allowances would need to be set at a time in the future should the s 11 closure be lifted.

6.3 Option 2 – (Fisheries New Zealand preferred option)

Full closure under a Section 11 Sustainability measure, except for the defined areas around Little Barrier Island and Colville Channel..			
TAC: 19 ↓ (62 t)	TACC: 5 ↓ (45 t)	Customary: 10 –	Recreational: 3 ↓ (7 t) Other mortality: 1 ↓ (10 t)

520. Under Option 2, SCA CS will be closed to scallop fishing except for within two defined areas, one around Little Barrier Island and one in the Colville Channel. In these areas both commercial and recreational take will continue to be permitted. As there is not currently a viable alternative to dredging for commercial scallop fisheries, dredging (both commercial and recreational) would be permitted to continue in these areas. It is noted that the areas proposed to remain open would significantly reduce the area in which fishing can occur, with the areas representing 1.2% of the total QMA.
521. The proposed permitted fishing areas are shown in Figure 6. The areas include the survey sites from the 2021 NIWA scallop survey. The survey showed that scallop abundance in these areas is at levels that could sustain some level of ongoing harvest. The yield estimate analysis requested from NIWA was used to determine a TACC that reflects available yield in these areas. These areas have also shown ongoing resilience to fishing pressure. FNZ expects the protection provided by the closure of the rest of the SCA CS QMA will, through the production of scallop spat, assist in strengthening the scallop beds in the proposed fishing areas so they can support the ongoing fishing that will be allowed to occur.
522. FNZ acknowledges there will likely be some displacement of fishing into these areas as they will be the only available beds from which to harvest scallops both commercially and recreationally. However, this is not considered to be a sustainability risk due to controls that will be in place for both sectors. The reduced TACC will limit the amount of commercial fishing in these areas to less than what is currently occurring. While there may be some increase in targeted recreational fishing in these areas, recreational catch is also not expected to increase substantially given the existing controls. A large influx of recreational effort is not expected due to the areas being less accessible as a result of being further from shore than other areas and hence weather affects access. Commercial fishers will continue to report catch as required by law and will be monitored as part of FNZ’s digital monitoring programme. The current deemed value rates are considered to constrain catch to the proposed TACC.
523. The TAC for SCA CS would be reduced from 81 tonnes to 19 tonnes. This reflects the likely sustainable yield from the overall current biomass in SCA CS at Little Barrier and Colville Channel.
524. Lying approximately 16 nautical miles off the north Auckland coast, the Little Barrier scallop bed has been consistently fished throughout the history of the commercial fishery in SCA CS. It is also a popular recreational fishery for those who are able to access it. In the last 10 years it has accounted for approximately 50% of the commercial catch. FNZ considers that the bed appears to be resilient to commercial fishing as well as a level of recreational take. The 2021 survey indicated that at a conservative exploitation rate of 10-15% of the bed’s biomass there would be 2-3 tonnes meat weight of available yield.
525. The Colville Channel Bed has not been commercially fished historically. The 2021 survey was the first time the bed has been surveyed. The 2021 survey indicates that there were 2-3 tonnes

of yield with an exploitation rate of 10-15% within the survey area. Commercial fishers reported to FNZ that the scallop bed was distributed wider than the survey area.

526. This option would not respond to the possible yield available from the areas of SCA CS that were not surveyed but would ensure that those areas have the potential to recover along with other areas closed to fishing.
527. Within the TAC, the recreational allowance would be reduced from 10 tonnes to 3 tonnes to reflect that access will be limited to the two designated open areas, and that these areas are limited in their accessibility to the recreational sector. No changes would be made to the current customary allowance, recognising that the closure will not impact on the ability to take scallops under customary authorisation. Other sources of fishing mortality would be reduced from 11 to 1 tonne to reflect the reduced level of fishing activity that will occur under the proposed settings. FNZ considers these catch settings are sustainable based on the 2021 survey results.
528. The TACC would be changed from 50 tonnes to 5 tonnes. This option recognises the sustainable catch that is estimated to be available from the two beds. The proposed 5 tonne TACC is informed by using a cautious level of yield (harvest rate of between 10% and 15%) from the biomass estimated using the updated dredge efficiency and a scallop density that equates to the catch rate at which commercial fishers have agreed to move on. FNZ recognises there is some risk that all 5 tonnes could be taken from one area and officials will seek to engage with the industry on a plan to spread fishing activity. It is also noted that commercial scallop fishing would be monitored using fine scale data available under electronic reporting (ER) and geospatial position reporting (GPR). If this concentration is occurring beyond the individual yield levels for each open area, additional specific management actions may be required.
529. The proposed TACC also takes into account the loss of yield and fishing areas resulting from the temporary closure under section 186A of the Act which is currently in place over the Mercury area scallop beds. It is possible that tangata whenua may seek further restrictions under customary management tools, and these may impact the open fishing areas in the future.
530. This option will have a significant impact on recreational fishing, with many recreational fishers excluded from accessing scallops in SCA CS due to the location and accessibility of the open areas. It will also significantly impact commercial fishing operations, with a substantial reduction in the TACC and constraint on available fishing areas. A 5 t TACC represents less than a quarter of the catch from the current season and may not provide sufficient catch for the fishery to be economically viable. The reduced catch will also have flow on impacts to associated industries. The economic impacts are discussed below.
531. This option seeks to strike a balance between ongoing utilisation and enduring sustainability through the partial closure of the fishery, while providing for a reduced level of fishing activity. Yield from the areas with the greatest surveyed biomass would be available while still protecting the more vulnerable scallop beds and areas not surveyed from the effects of fishing and providing for their recovery.
532. FNZ notes the section 186A temporary closure application received from Ngāti Manuhiri covers both of the areas proposed to remain open under Option 2. A result of this application is that, if you chose to implement Option 2 as a section 11 sustainability measure, you may then be asked to decide on whether to close the open areas below under a section 186A temporary closure for customary fisheries purposes.

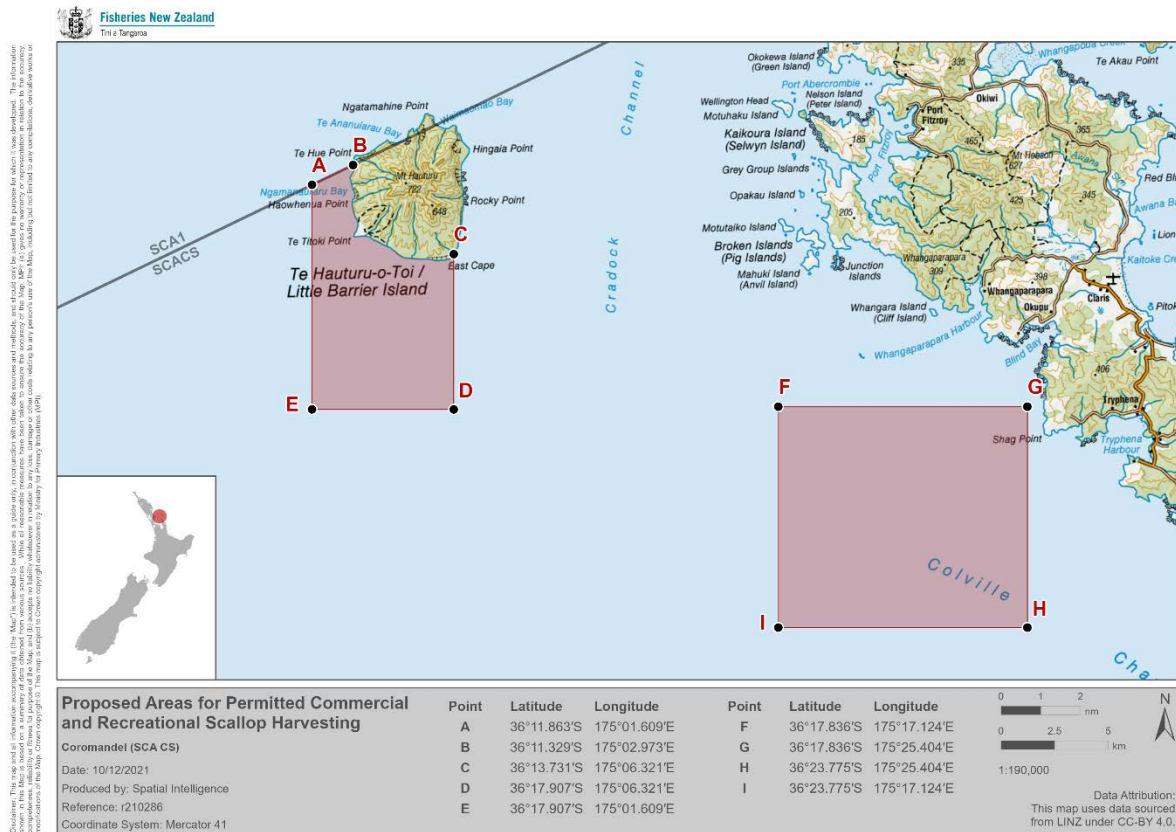


Figure 6: Areas outlining Little Barrier and Colville Channel in the Coromandel (SCA CS) fishery where scallop fishing will be permitted under a partial closure.

6.4 Option 3

Changes to TAC, TACC and allowances. Recreational dredge ban in SCA CS under a Section 11 sustainability measure.					
TAC: 14 ↓ (67 t)	TACC: 0 ↓ (50 t)	Customary: 10 -	Recreational: 3 ↓ (7 t)	Other mortality: 1 ↓ (10 t)	

- 533. Option 3 relies on the TAC, TACC, and recreational dredging restrictions as the main tools for reducing impacts on the fishery, without applying a spatial closure.
- 534. Under Option 3, the TAC would be reduced to 14 tonnes, the TACC set to 0 tonnes, the customary allowance retained at 10 tonnes, the recreational allowance set to 3 tonnes, and recreational dredging would be prohibited. The allowance for other mortality would be reduced from 11 to 1 tonne to reflect the reduction in fishing related mortality from removing commercial fishing and recreational dredging. The customary allowance remains unchanged to provide for the exercise of customary harvest activities.
- 535. This option provides for non-commercial utilisation (by diving) and for commercial utilisation if new information indicates a level of catch would be sustainable within a level of dredging considered to be acceptable. FNZ considers that Option 3 will protect SCA CS and allow for the recovery of the stocks to provide for future commercial utilisation.
- 536. Setting the TACC for SCA CS at 0 tonnes meatweight under Option 3 would prevent commercial scallop fishing in SCA CS without first obtaining information about the stock's abundance in a given year and carrying out an in-season TAC increase. Historically, in-season increases have been informed by a pre-season survey and CAY estimate. Commercial fishers will be able to utilise the fishery if information indicates that there is sustainable yield available. An in-season TAC increase requires a public consultation process and Ministerial decision.

537. Option 3 places weight on the information available that the commercial fishery has the greatest fishing impact on scallop populations. Commercial fishing historically is responsible for most of the scallop harvest in SCA CS and the method of dredging is known to have negative impacts on scallop populations and the habitats that support them. Option 3 would allow those beds traditionally harvested by commercial fishers to rebuild to abundance levels that will support the long-term sustainability of the SCA CS fisheries. Increased abundance in these typically larger, deeper beds is expected to also provide support for the recovery of other beds through increased supply of spat, however, the exact nature and extent of this effect is not fully understood
538. Currently, a viable alternative harvesting method to dredging does not exist for commercial fisheries and, for that reason, the prohibition of commercial dredging is not proposed. If the TACC were to be increased in the future to provide for commercial utilisation, the method of harvest would be considered in the setting of a sustainable TACC at that time. The operation and management of commercial scallop fisheries, including the ongoing use of dredging, will be part of the longer-term management considerations for the fishery. FNZ considers there are opportunities for innovation and development in this area, to work towards methods that have lower environmental impacts
539. Option 3 proposes to reduce the allowance for recreational fishing and place a ban on recreational dredging using a section 11 sustainability measure. This would recognise that recreational fishing also has impacts on scallop beds and would remove any further benthic impacts on recreational beds and promote a recovery of these areas.
540. While the overall level of recreational access is in effect unconstrained, recreational take is impacted by availability. When abundance is lower, fewer scallops are taken because additional effort is required. The current recreational controls manage the overall impacts by limiting the number (20 per person per day) and size of scallops (minimum 100mm shell length) each person can take, and the season in which they can be taken. The size limit for scallops is set to provide the opportunity for scallops to spawn prior to being eligible for harvest.
541. Option 3 would have substantial impact on commercial fishing unless in-season increases were made. Obtaining reliable new information on the available biomass and yield in any fishing year through a survey or other approved method will add considerable cost to the operation of the commercial scallop fleet. The uncertainty of being able to fish could result in vessels shifting to other stocks and areas adding costs as well and meaning that suitable vessels and operators might not be available to fish should an in-season increase be granted in the future. Should vessels and operators move away or cease fishing, there would be impacts on associated operations that currently support the fishery.
542. Maori customary fishing would not be affected as permits could be issued to authorise both quantities and methods for customary fishing of scallops.
543. Recreational fishing would be affected by the proposed ban on dredging, although dredging is used to take a relatively small part of the recreational catch (estimated in 2017-18 to have been 14%). Hand gathering/diving (with extra provision for a skipper and safety person daily limit) is a viable alternative for recreational fishing, and the impact of Option 3 on recreational fishers is considered to be low. It is acknowledged that, for a small number of recreational fishers, dredging is the only means by which they can collect scallops and these fishers would be affected by Option 3.
544. This option is the least cautious of the three options. Option 3 and does not propose any spatial controls and provides a mechanism through in-season TAC increases for commercial fishers to harvest scallops if new information indicates that it is sustainable.
545. As with all options, FNZ will monitor the fishery to ensure that the management measures put in place are leading to an appropriate level of recovery within the fishery.

6.5 Other options proposed by submitters

546. The Coromandel Scallop Fishermen's Association (CSFA) submitted an alternative option with a TAC of 36 t, TACC of 22 t, Maori customary allowance of 10t, recreational allowance of 3t and an allowance of 1 t for all other mortality caused by fishing.
547. This level of yield is not supported by the available survey data unless using the highest harvest rate of 25% and the absolute biomass calculated using a critical density of 0. These metrics are considered to be risky in the face of information that many beds are at a low ebb. The CSFA proposal notes that the TACC of 22 t includes accounting for biomass in areas not surveyed, although how this biomass was accounted for is not explained apart from noting that 13% of the landings in 2021 were taken from these areas. FNZ does not consider this option to be sustainable and likely to support the recovery of the SCA CS stock.
548. The CFAS submission notes that the CPUE limit rule management procedure being applied mitigates risk of effort being displaced. FNZ notes that while this would be so in beds remaining open compared to unrestricted fishing within the TACC, it would not eliminate risk especially in higher density beds likely to be targeted.
549. The CSFA submission also set out a range of measures to deliver improved management, possibly within a specific section 11A fishery plan. While these options were not consulted and not within the decision making for this process, they will be appropriate for consideration in future development of management approaches. These proposals are discussed further under the "Other considerations" section below.

6.6 Economic considerations

550. All of the proposed options are likely to have significant impacts on fishers and associated parties both in the SCA CS area and the wider seafood sector in New Zealand. While these impacts will be felt most by commercial operators, the proposed reduction of recreational access and utilisation are also likely to have economic impacts on the recreational fishing business sector.
551. It is also noted that with the significant reductions in available commercial catch (either full exclusion or limited to 5 tonne TACC), the supply of scallops to the New Zealand public will be limited. This is further exacerbated by the proposals for the SCA 1 fishery and there is the potential that the ability for the public to access and enjoy New Zealand-caught scallops will be completely removed. This will have a social, cultural and economic impact.
552. Scallop fisheries in SCA CS support a number of people and businesses associated with the commercial and recreational fishery. This includes but is not limited to:
- 20 Quota holders of whom 4 each hold more than 10% of the shares.
 - 4 Permit holders using 4 vessels which reported landing SCA CS in 2021.
 - Seafood processing facilities and licensed fish receivers.
 - Suppliers of fishing equipment and others in the marine industry.
 - Dive shops providing services to recreational fishers.
 - Provisioning of vessels (fuel, maintenance, food, ice etc.).
 - Local businesses and communities including through restaurants, seafood suppliers, hotels and events such as seafood festivals.
553. Also, under a closure or TACC of 0 tonnes, fishers/vessel operators would likely consider moving into a different fishery. This would require some conversion of the vessel to allow for alternative fishing gear to be used and purchase of that gear. The costs of conversion can be considerable, along with costs of obtaining quota or ACE for different species. Should these

conversions occur, the fishers have noted the changes would affect the availability of vessels in the event the fishery re-opened.

554. Under Option 1, the TACC would not be reduced, however, the fishery would be closed under s11 of the Act. This would prohibit any commercial harvest of scallops thus reducing the maximum landed catch under the possible ACE (50 000kgs) in 2021 to 0 tonnes – a 100% reduction. This would also be the case under Option 3 (unless an in-season increase was provided). Based on the 2020/21 port price of \$15.90/kg, this would result in an approximate potential decrease in annual revenue of \$795,000 (Table 10). However, only about 22 tonnes was landed in 2021 with a port price value of \$349,800.
555. Under Option 2, the TACC would decrease by 90% from 50 tonnes to 5 tonnes. Based on the 2020/21 port price of \$15.90, this would result in an approximate potential maximum decrease in revenue of \$715,500 (Table 10). Based on the 2021 landings, the revenue would be \$79,000 representing a decrease in revenue of approximately \$302,100.
556. FNZ recognises that port prices are useful to indicate the relative impact of options but might not reflect the full impacts and changes in revenue.
557. The CSFA submits that the port price in the consultation paper is too low and that the wholesale port price of \$75/kg weight is more accurate. This is not the official port price of \$15.90/kg.
558. CSFA submits that there are more economic and other impacts beyond commercial revenue. FNZ acknowledges there will be additional social cultural and economic impacts as a result of the options proposed however a comprehensive impact evaluation as suggested by the submitter has not been conducted.

Table 10: Predicted changes to commercial revenue for the proposed options, based on estimated average port price in 2020/21 of \$15.9/kg for Coromandel (SCA CS) scallops.

Stock	Option	Change from current TACC (tonnes)	Predicted revenue changes (\$p.a.)
SCA CS	Options 1 & 3	50 ↓ (Full commercial closures – s11 or 0 tonne TACC)	\$795,000. ↓
	Option 2	45 ↓	\$715,500 ↓

6.7 Other considerations

559. Several other options and ideas were submitted, however, as they were not consulted on, they are not part of this decision-making process. However, these ideas can be included within further consideration of future management approaches.
560. There was broad support from submitters for banning dredging, with several submitters suggesting that all dredging be banned.
561. Some submitters suggested that –
- The TAC change is not enough, and a more holistic approach should be developed.
 - Diving with dive cylinders/tanks (SCUBA) should also be banned i.e. only free diving permitted.
 - There should be no harvesting of any species during the spawning season.
 - The skipper and diver safety person allowances (20 scallops each per day) should be removed, and a shorter fishing season introduced.

562. The CSFA submission details several management measures to be considered and potentially implemented in a fisheries plan under section 11A of the Act. These proposals include fine-scale spatial monitoring and management of all sectors aligned with the industry CPUE limit rule areas. FNZ considers these proposals to have merit and could be worked through as part of the longer-term scallop management approach.
563. CSFA also commits to exploring alternative harvesting methods, if commercially viable and safe for operators, to promote a low impact wild harvest. CSFA proposes to develop and promote aquaculture opportunities with Hauraki Iwi and others, noting alignment with Government's response to Sea Change being to support aquaculture in the Gulf.
564. These are positive initiatives from industry and should provide for constructive developments with tangata whenua and stakeholders.

6.8 Deemed values

565. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's ACE holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
566. [The Deemed Value Guidelines](#) set out the operational policy FNZ uses to inform the development of advice provided to you on the setting of deemed values.
567. The deemed value rates for SCA CS are shown in Table 11.

Table 11: Deemed value rates for SCA CS.

Stock	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
SCA CS	33.30	37.00	44.40	51.80	59.20	66.60	74.00

568. FNZ considers that under all proposed options the current deemed value rates are set appropriately. Under Options 2 the current deemed value rates will incentivise fishers to land catch and where required obtain ACE. FNZ is not proposing to adjust the deemed value rate for SCA CS as part of this sustainability review.
569. Following decisions from this review, FNZ 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.

7 Conclusions and recommendations

570. The recent surveys of the abundance and biomass of the SCA CS fishery in 2021 have highlighted that there are concerns for the ongoing sustainability of scallop populations within the area.
571. FNZ concludes that the best available information suggests that the SCA CS populations are at low abundance and low density as evidenced in the survey results for most survey and fished areas. These factors may adversely affect scallop spawning success and subsequent recruitment.
572. While it is likely there are a number of contributing factors for the current low abundance of scallops, including uncertain environmental effects and other effects not related to fishing, FNZ considers it is clear that ongoing fishing at current levels and under the current management settings poses a risk of further decline in this important shared fishery.

573. FNZ considers that the SCA CS fishery is not responding to the current management approach, despite additional voluntary management measures applied by commercial fishers, including the CPUE limit rule, daily bin limits and a reduced fishing season. FNZ is concerned that the decline in biomass (across the core surveyed and fished areas) suggests that current catch limits are not sustainable. While management reference points for SCA CS are not available, FNZ is concerned that the stock is not being maintained at or above the level that can produce MSY.
574. In addition, there are concerns regarding the impact of scallop dredging on scallops, their habitat, and on the benthic environment more generally. FNZ considers that to ensure the recovery of the SCA CS population protection of the scallop population and habitat is necessary.
575. Given the available information, FNZ considers that a cautious approach to managing the recovery of this stock is appropriate to provide the best opportunity for the SCA CS populations to improve, while further development of management approaches and harvesting technology are undertaken.
576. FNZ concludes that all options presented satisfy your obligations under s 13 of the Act, will protect scallops and their habitat from the effects of dredging, and are likely to ensure sustainability by providing the opportunity for the scallop populations to improve their status. However, FNZ recommends that Option 2 provides for the appropriate balance between providing for utilisation and ensuring sustainability.
577. Under Option 2, SCA CS will be closed to scallop fishing except for within two defined areas, one around Little Barrier Island and one in the Colville Channel. In these areas both commercial and recreational take will continue to be permitted. For the reason that there is not currently a viable alternative to dredging for commercial scallop fisheries, both commercial and recreational dredging will be permitted to continue in these areas.
578. The proposed fishing areas include the survey sites from the 2021 survey, which showed that scallop abundance in the proposed fishing areas is at levels that could sustain some level of ongoing harvest. The yield estimate from these areas was used as the basis for the proposed TACC of 5 tonnes.
579. This option would not respond to the possible yield available from the areas of SCA CS that were not surveyed but would ensure that those areas have the potential to recover along with other areas closed to fishing. These proposed fishing areas have also shown ongoing resilience to fishing pressure. FNZ expects the protection provided by the closure of the rest of the SCA CS QMA will, through the production of scallop spat and recovery of habitat to support improved abundance, assist in strengthening the scallop beds in the proposed fishing areas so they can support the ongoing fishing that will be allowed to occur.
580. The proposed TACC under Option 2 considers the loss of yield and fishing areas resulting from the temporary closure under section 186A of the Act which is currently in place over the Mercury area scallop beds. It is possible that tangata whenua may seek further restrictions under customary management tools, and these may impact the open fishing areas in the future. A further section 186A temporary closure application has been received from Ngāti Manuhiri and covers both of the areas proposed to remain open under Option 2. If you chose to implement Option 2 as a section 11 sustainability measure, you may then be asked to decide on whether to close the open areas under section 186A for customary fisheries purposes.
581. While it is expected that some concentration of fishing will occur as a result of fishers being displaced from other areas, this is not considered to be a sustainability risk given the reduced TACC and existing controls on recreational take. Additionally, for recreational fishers both proposed areas are not easily accessed due to weather and distance constraints. Commercial fishers will continue to report catch as required by law and will be monitored as part of FNZ's digital monitoring programme. The current deemed value rates are considered to constrain catch to the proposed TACC.

582. Option 2 will have an impact on fishing, especially on commercial fishing, with a substantial reduction in the TACC and constraint on fishing areas. The proposed 5 tonne TACC represents less than a quarter of the catch from the current season and may not provide sufficient catch for the fishery to be economically viable. The reduced catch will also have flow on impacts to associated industries and communities.
583. Providing for ongoing utilisation will help to encourage participation of all sectors in the development of future improved approaches to the sustainable utilisation of the fishery.
584. Should you wish to take a more cautious approach, FNZ also considers that Option 1A, a full closure, would be appropriate and would provide the best opportunity for recovery of the SCA CS fishery. It is however noted that the impacts of a full closure will be more significant and will essentially shut down the scallop fishery for an indefinite period.

8 Decision for Coromandel Scallops SCA CS

Option 1

Agree to close the SCA CS Quota Management Area to fishing under a section 11 sustainability measure.

AND

Agree to retain the SCA CS TAC at 81 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes.
- ii. Retain the allowance for recreational fishing interests at 10 tonnes.
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 11 tonnes.
- iv. Retain the SCA CS TACC at 50 tonnes.

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

OR

Option 1A

Agree to close the SCA CS QMA to fishing under a section 11 sustainability measure.

AND

Agree to set the SCA CS TAC at 11 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes.
- ii. Reduce the allowance for recreational fishing interests from 10 to 0 tonnes.
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 11 to 1 tonnes.
- iv. Reduce the SCA CS TACC from 50 to 0 tonnes.

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

OR

Option 2 (Fisheries New Zealand preferred option)

Agree To close the SCA CS QMA to fishing, except for the defined areas around Little Barrier Island and Colville Channel under a section 11 sustainability measure.

AND

Agree to set the SCA CS TAC at 19 tonnes and within the TAC:

- a* i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes.
- ii. Reduce the allowance for recreational fishing interests to 3 tonnes.
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 11 to 1 tonne.
- iv. Reduce the SCA CS TACC from 50 to 5 tonnes.

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

OR

subject to information on limitations on fishing methods

DJP

Option 3

Agree to set the SCA CS TAC at 14 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes.
- ii. Reduce the allowance for recreational fishing interests from 10 to 3 tonnes.
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 11 to 1 tonne.
- iv. Reduce the SCA CS TACC from 50 to 0 tonnes.

AND

Agree to prohibit recreational dredging in the SCA CS QMA under a section 11 sustainability measure.

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



Hon David Parker
Minister for Oceans and Fisheries

14 / 2 / 2022

n see note on p 102

Appendix

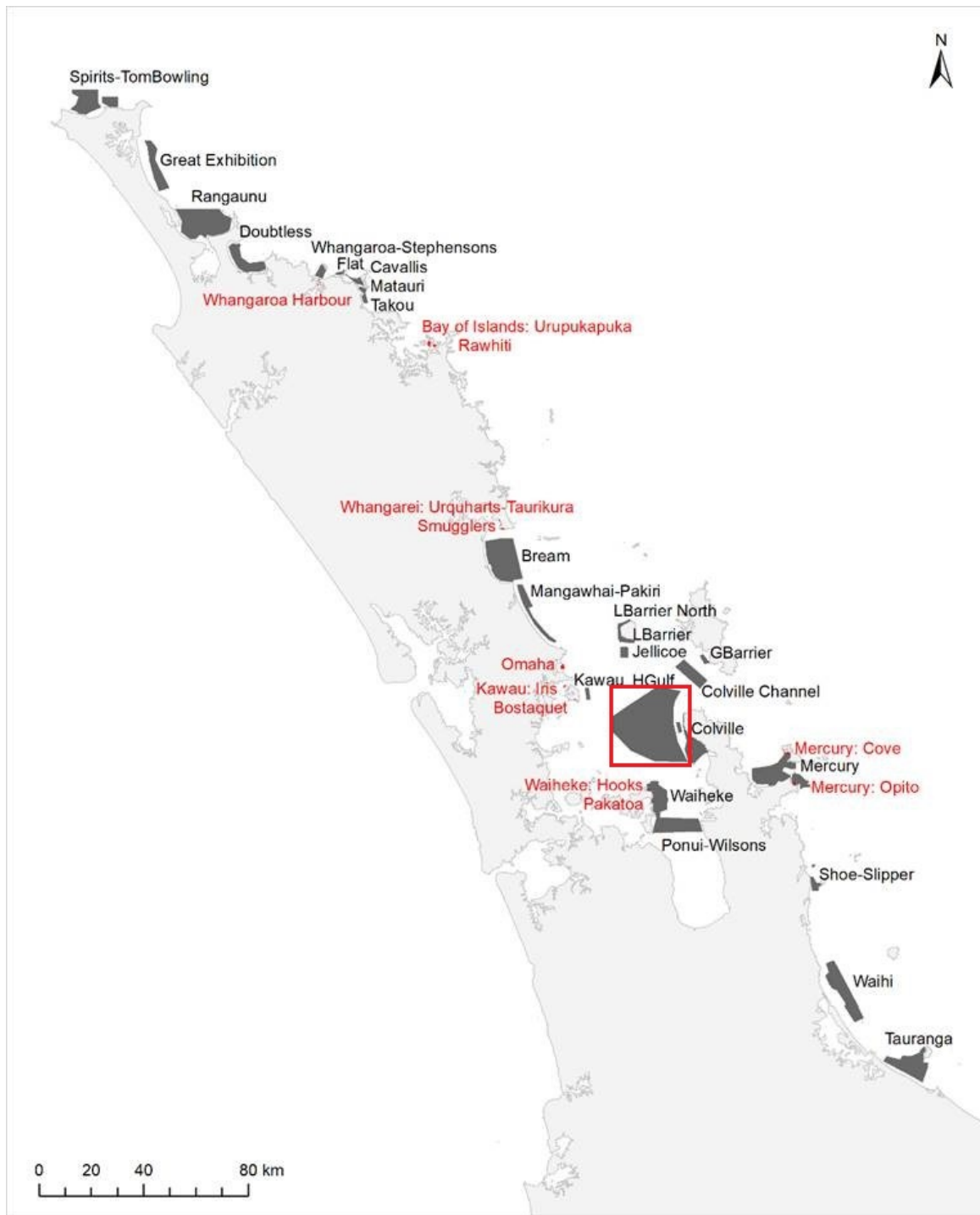


Figure A1: Historical commercial (black) and non-commercial (red) sites from scallop surveys conducted between 1990 and 2021. The red box shows the approximate location of the large scallop bed that was discovered but then largely died off.

Disclaimer: This map and all information accompanying it (the "Map") is intended to be used as a guide only, in conjunction with other data sources and methods, and should not be used for the purpose for which it was developed. The information shown in this Map is based on a summary of data obtained from various sources. While all reasonable measures have been taken to ensure the accuracy of the Map, MPI (a) gives no warranty or representation in relation to the accuracy, completeness, reliability or fitness for purpose of the Map, and (b) accepts no liability whatsoever in relation to any loss, damage or other costs resulting to any person's use of the Map, including but not limited to any compilations, derivative works or modifications of the Map. Crown copyright ©. This map is subject to Crown copyright administered by Ministry for Primary Industries (MPI).

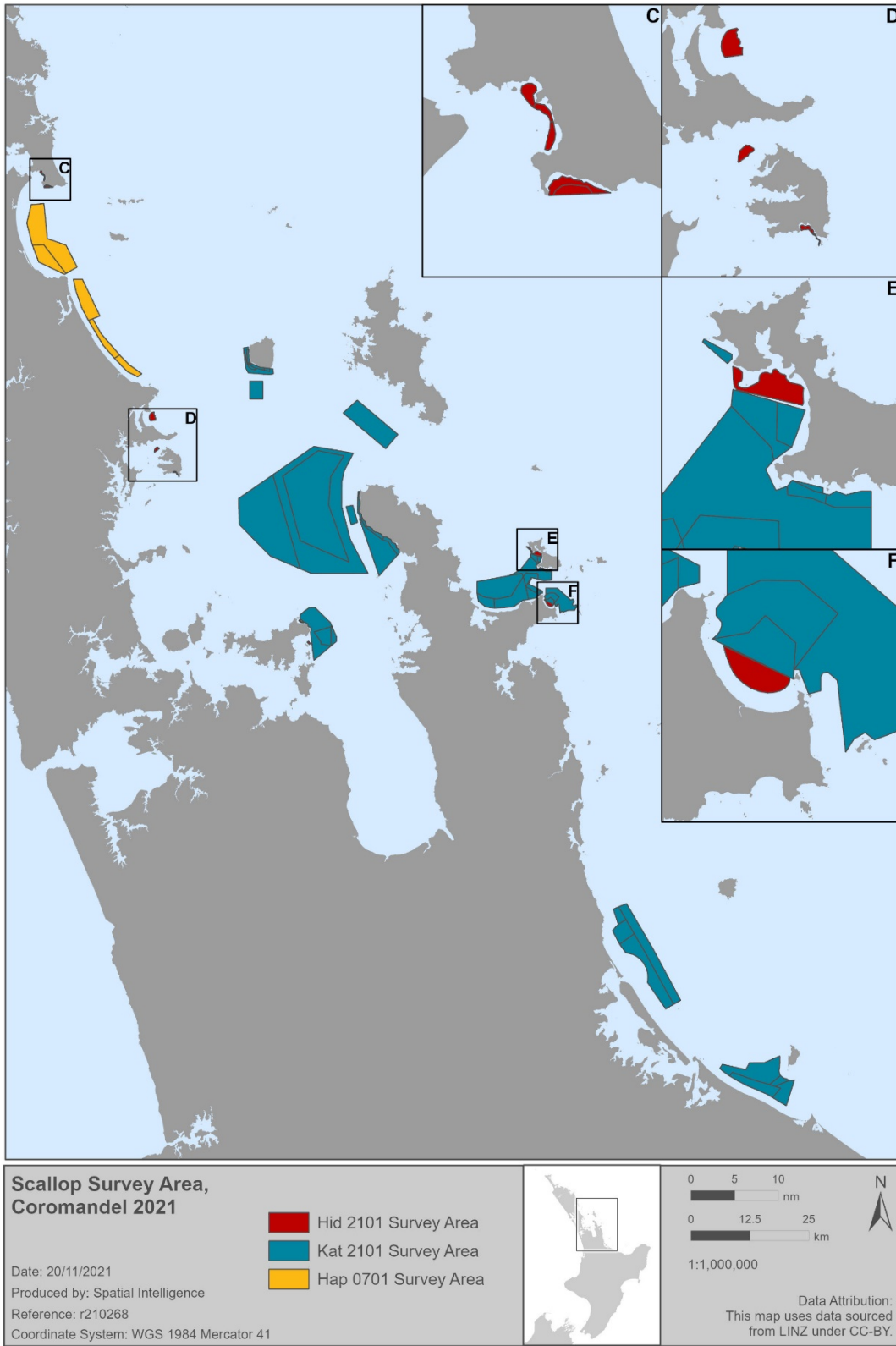


Figure A2. 2021 scallop survey areas in the Coromandel (SCA CS) scallop fishery.

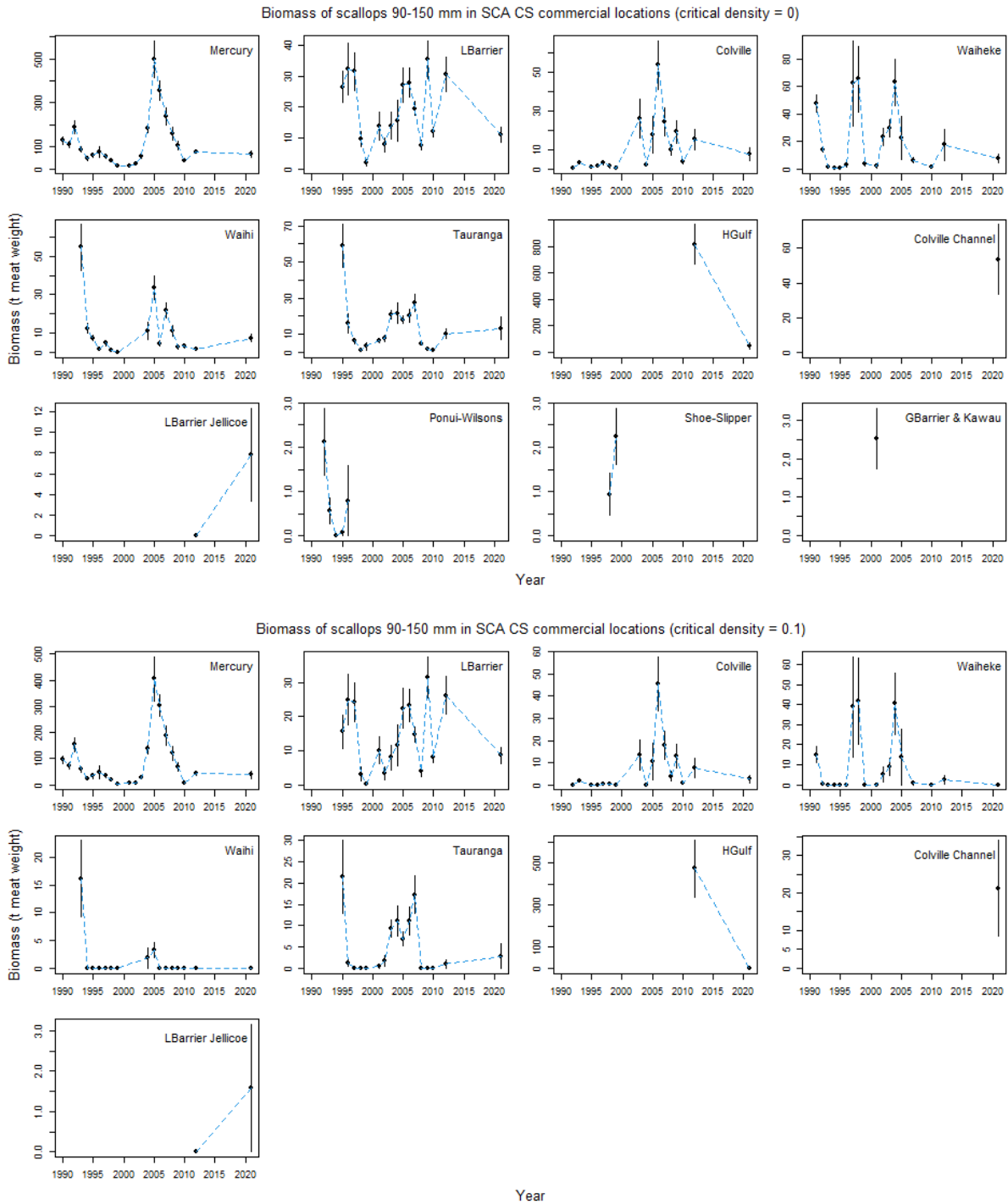


Figure A3. Time series of absolute (top) and commercially fishable (bottom) recruited biomass (t meat weight of scallops 90 mm or larger) between 1990 and 2021 in Coromandel (SCA CS) commercial scallop locations. Estimates were generated by reanalysing the raw survey data, using the subset of strata and dredge efficiency estimated from paired dive-dredge sampling in 2021. Commercially fishable biomass (bottom) is the biomass that occurs in areas of scallop density greater than or equal to a critical density of 0.1 recruited scallops.m⁻², which calculations suggest equates to the SCA CS fishery CPUE soft limit of 70 kg.h⁻¹ (green weight of scallops 90 mm or larger per hour of dredging).

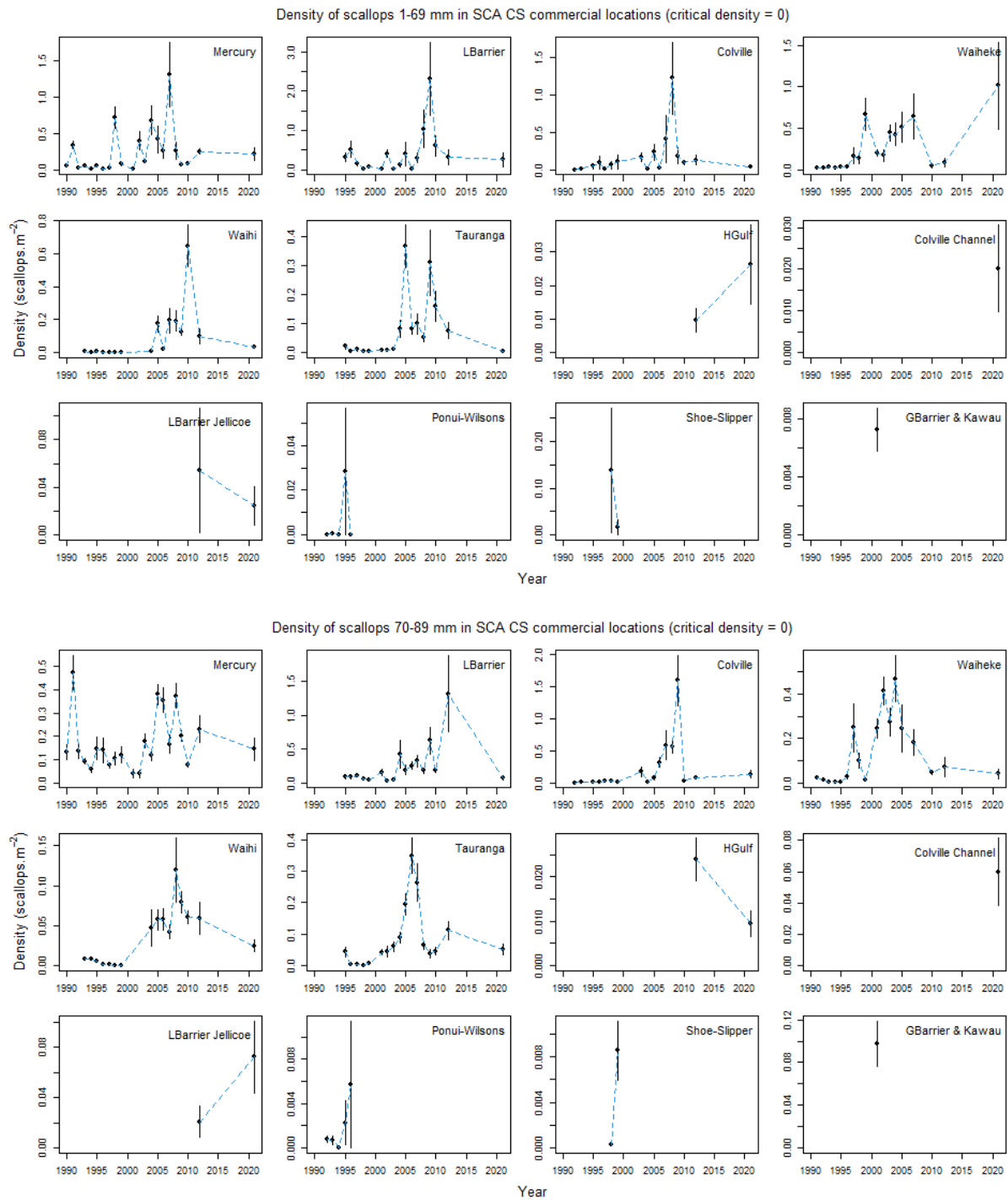


Figure A4. Time series of pre-recruit scallop density between 1990 and 2021 in Coromandel (SCA CS) commercial scallop locations. Top: pre-recruit scallops 1–69 mm shell length. Bottom: pre-recruit scallops 70–89 mm. Estimates were generated by reanalysing the raw survey data and dredge efficiency estimated from paired dive-dredge sampling in 2021.

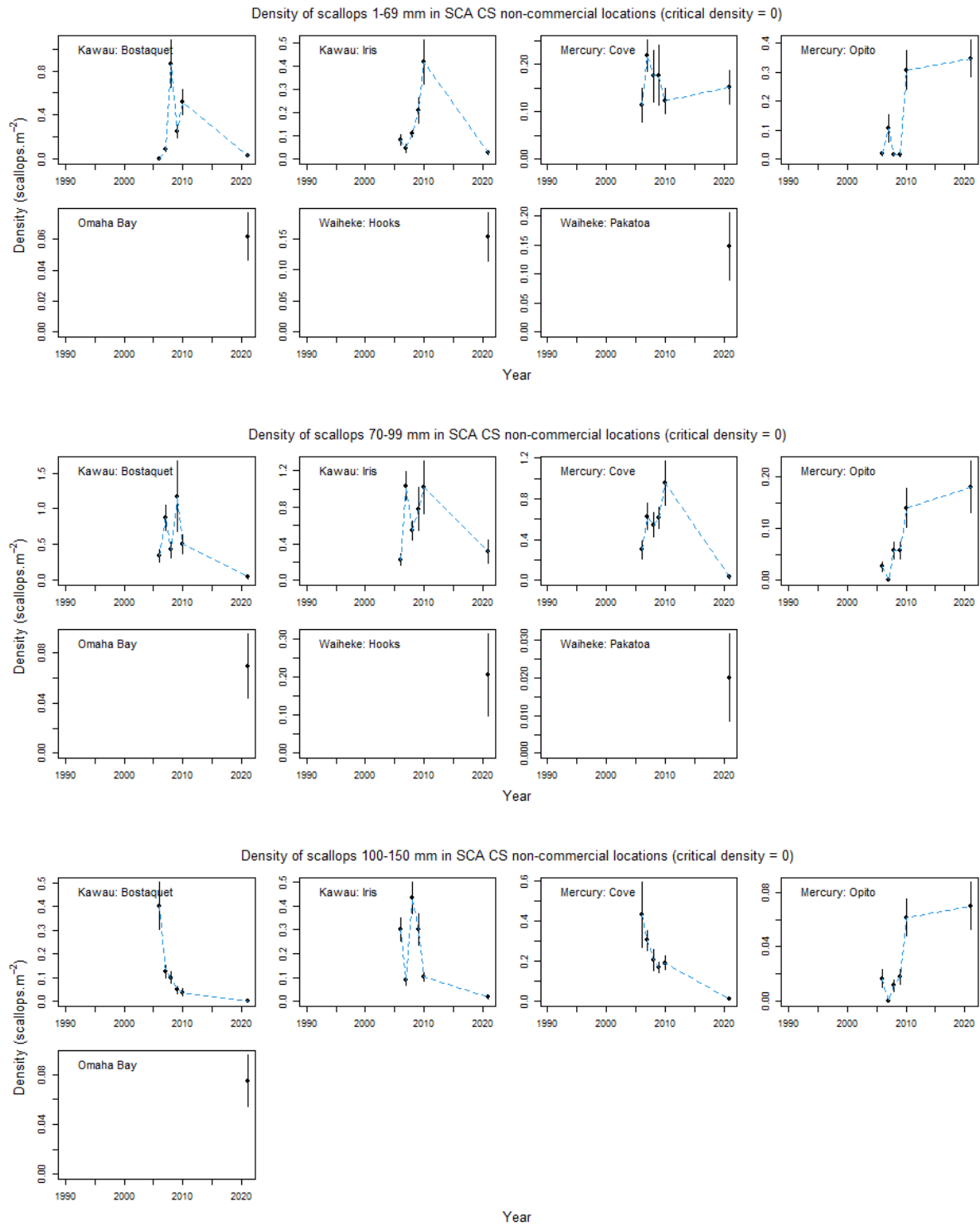


Figure A5. Time series of scallop density between 1990 and 2021 in Coromandel (SCA CS) non-commercial scallop locations. Top: Juvenile scallops (1–69 mm). Centre: pre-recruit scallops (70–99 mm). Bottom: Recruited scallops (100–150 mm). Estimates were generated by reanalysing the raw survey data using a subset of strata.

Disclaimer: This map and all information accompanying it (the "Map") is intended to be used as a guide only. In conjunction with other data sources and methods, and should only be used for the purposes for which it was developed. The information shown in this Map is based on a summary of data obtained from various sources. While all reasonable measures have been taken to ensure the accuracy of the Map, MPI (a) gives no warranty or representation in relation to the accuracy, completeness, reliability or fitness for purpose of the Map, and (b) accepts no liability whatsoever in relation to any loss, damage or other costs relating to any person's use of the Map, including but not limited to any compilations, derivative works or modifications of the Map. Crown copyright ©. This map is subject to Crown copyright administered by Ministry for Primary Industries (MPI).

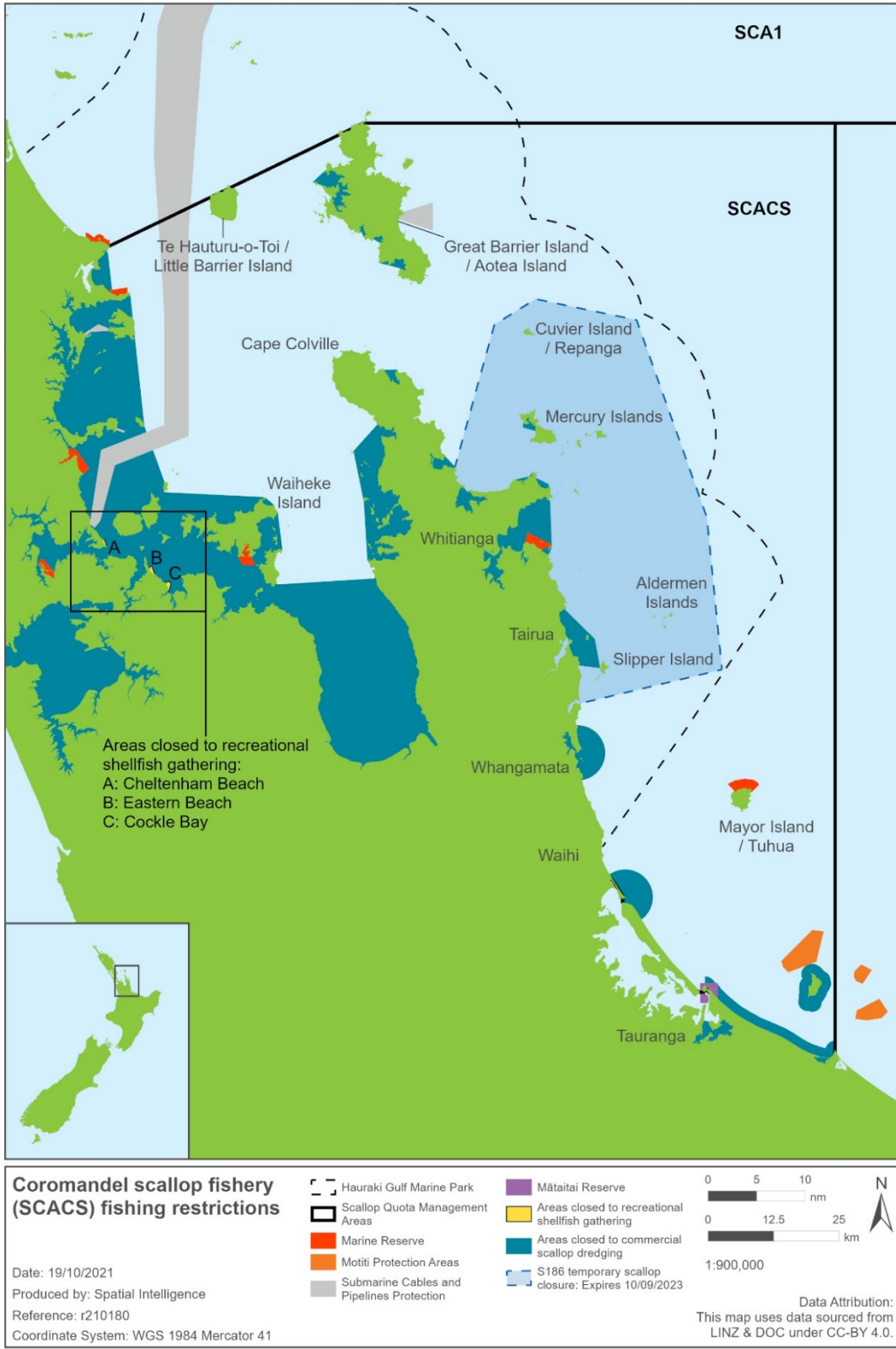


Figure A6. Fishing restrictions in the Coromandel (SCA CS) scallop fishery.

Tables

Table A1: List of submissions received for SCA CS.

Submitter	Option Support				
	1	2	3	Ban Dredging	Other
Conor Pullman			✓	✓	
Joe Dennehy				✓	✓
Visit Waiheke - Richard Potter				✓	✓
Andrew Dean	✓				
Robert Brown				✓	✓
The Mussel Reef Restoration Trust - Shaun Lee	✓			✓	
Florence Hewitt			✓	✓	
Hanna King				✓	
Catherine McNamara	✓				
Sam Cook	✓			✓	
Rita Gregory				✓	✓
Tony Lenz				✓	✓
Luke Williamson	✓			✓	
John Beau	✓			✓	
Matt Parkinson	✓				
Paul Ganley	✓			✓	
Te Ohu Kaimoana					✓
Vicky Froude	✓			✓	
Faculty of Science, University of Auckland - Andrew Jeffs				✓	✓
Nat Davey	✓				
Tony & Joanne Tisot			✓	✓	
Nick Somerhayes	✓				
Hauraki Gulf Forum	✓				
Nadia Pavlovich	✓				
Andrew Caldwell-Smith	✓				
Justin Caldwell-Smith	✓				
Vicky Pavlovich	✓				
Dino Pavlovich	✓				
John Beu			✓		
Sue Beu			✓		
Richard Eiger		✓		✓	
NZ Sport Fishing Council	✓				
Ngatiwai Trust Board	✓				
Matthew Conmee	✓				
Great Barrier Local Board - Izzy Fordham	✓				
Karen Wealleans	✓				
James Frankham	✓			✓	
Geoff Pike	✓				
Environmental Defence Society Inc. - Tracey Turner	✓			✓	
Ross Christensen	✓			✓	
Sue Neureuter	✓			✓	
Graham Brough				✓	✓
Blue Sky Marine - Kevin Oldham					✓
Whitianga & Coromandel Peninsula Commercial Fishermen's Association - Phil Clow					✓
Coromandel Scallop Fishermen's Association - Maaka Cherrington					✓
Forest & Bird - Geoff Keey	✓			✓	
Sydney Curtis-Wilson	✓			✓	
Fisheries Inshore New Zealand - Tom Clark				✓	✓
Iwi Collective Partnership - Maru Samuels	✓				

Northland Scallops (SCA 1) – Northland

Pecten novaezelandiae, kuakua/tipa

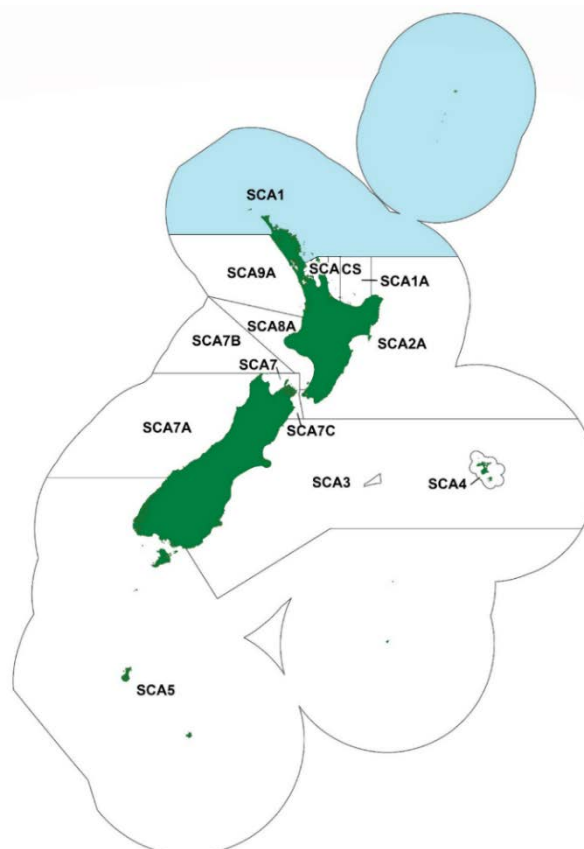


Figure 1: Quota Management Areas (QMAs) for the New Zealand scallop, with the Northland (SCA 1) scallop stock highlighted.

Table 1: Summary of options proposed for SCA 1 from 1 April 2022. Figures are all in tonnes meatweight. The preferred option of Fisheries New Zealand is highlighted in blue.

SCA 1						
Option	TAC	TACC	Allowances			Management
			Customary Māori	Recreational	Other mortality	
Current settings	30	10	7.5	7.5	5	
Option 1	30	10	7.5	7.5	5	Full closure (s11)
Option 1A	8.5 ↓ (21.5 t)	0 ↓ (10 t)	7.5	0 ↓ (7.5 t)	1 ↓ (4 t)	Full closure (s11) and TAC, TACC and allowances
Option 2	9.5 ↓ (20.5 t)	0 ↓ (10 t)	7.5	1 ↓ (6.5 t)	1 ↓ (4 t)	Partial Spatial closure (s11) and TAC, TACC and allowances Recreational dredging prohibited
Option 3	16 ↓ (14 t)	0 ↓ (10 t)	7.5	7.5	1 ↓ (4 t)	TAC, TACC and allowances
New option incorporated following consultation						Yes, Modified Option 1 (Option 1A)
Total submissions received						116
Number of submissions received in support of Option 1						48
Number of submissions received in support of Option 2						24
Number of submissions received in support of Option 3						9
Number of submissions received in support of an alternative option						33

1 Why are we proposing a review?

585. The scallop stock within SCA 1 supports a shared fishery that is highly valued by tangata whenua and stakeholders. This value represents not only the economic return from commercially landed and sold scallops, but also the role that scallops play in the ecosystem and in providing for cultural and social benefits.
586. FNZ is proposing measures aimed at rebuilding the scallop fisheries in the Northland (SCA 1) Quota Management Area (QMA) (Figure 1). This includes a range of proposed options which include spatial closures, method restrictions and/or catch limit reductions for the fishing year starting on 1 April 2022.
587. SCA 1 was last reviewed during the April sustainability round for the 2020 fishing year. At the time the TAC, TACC and the allowance for other sources of mortality from fishing were reduced. This decision was based on information that there was a long-term decline in the stock and that the TACC had been under caught since 2007, which was the last time SCA 1 was surveyed to estimate biomass.
588. In response to concerns regarding the state of northern scallop fisheries, FNZ commissioned the National Institute of Water and Atmospheric Research (NIWA) to conduct extensive scallop biomass surveys, and these were carried out in 2021. The results of the surveys conducted in SCA 1 show an overall decline in biomass and abundance from historical levels, with substantial declines in many core scallop beds since the previous 2007 survey. The levels of biomass between the 2007 and 2021 surveys are not known.
589. FNZ considers that the current biomass and abundance of scallops in SCA 1 are at levels that do not support sustainable fishing at the current catch limits and allowances. In some areas, the abundance and density of scallops may be lower than that required for successful spawning, which may be affecting repopulation and the contribution of spat to surrounding scallop beds. Although the particular minimum density necessary for successful spawning is not known, the low abundance and density could pose a risk whereby the overall biomass and distribution of scallops may continue to decline in SCA 1.
590. FNZ initially proposed three management options to support a recovery of the SCA 1 fishery. The first option proposes a full closure to recreational and commercial scallop harvest, under section 11 of the Fisheries Act 1996 (the Act), to promote the maximum recovery potential. Two other options recognise that the fishery could also recover while some level of ongoing utilisation is provided for. These options utilise combinations of reduced catch limits with spatial closures and method restrictions to reduce impacts on scallop beds and promote recovery. A fourth amended option (1A) has been added in response to submissions suggesting that the catch limits should be set to 0 tonnes as well as the closure. Under Option 1A the TAC will be reduced to 8.5 tonnes, the TACC, and recreational allowances would be reduced to 0. A nominal 1 tonne allowance for 'other sources of mortality caused by fishing' is proposed.
591. Given the level of concern, a status quo option has not been presented. All options proposed would make significant changes to current management settings and are expected to support a rebuild of the SCA 1 stock.
592. FNZ considers that the closures within the proposed options would help safeguard mature and juvenile scallops from direct fishing mortality, incidental fishing mortality and indirect fishing impacts. They would give the beds an opportunity to rest and help rebuild the stocks. The closures would reduce utilisation opportunities in the short term; however, this would be balanced by anticipated improved fishery productivity in the future.
593. Spatial closures are an effective management tool that have been previously used to stimulate recovery and enhance productivity in scallop fisheries overseas and within New Zealand. In areas that have experienced habitat change such as Southern scallops (SCA 7), closures alone have been less effective. Some scallop beds in SCA 1 which have experienced no intense

fishing for more than 10 years, have biomass below historical levels. An example of this includes the beds at Spirits Bay.

594. The length of closure for the options proposed has not been specified. However, FNZ expects to open the fishery if new information shows that it is sustainable to do so.
595. FNZ considers that the longer-term approach to scallop management in SCA 1 also needs to be reviewed. The proposed measures will protect the fishery in the short to medium term, and provide opportunity for stocks to recover, while FNZ works with tangata whenua and stakeholders to develop an updated long-term management approach.
596. FNZ is proposing four options for SCA 1 as outlined in Table 1 above.

1.1 About the stock

1.1.1 Fishery characteristics

597. Scallops are considered a 'shared' species, highly valued by tangata whenua and all stakeholders, while also being an important part of the marine ecosystem. Worldwide, and in New Zealand, scallop populations are highly variable, with "boom and bust" cycles occurring in all main fisheries based on environmental conditions.
598. Historically, SCA 1 has supported a number of key customary and recreational scallop beds in mostly sheltered bays and harbours with key sites including the Bay of Islands and Whangarei Harbour.
599. Scallops are regularly taken under customary authorisations and are identified as a taonga species by the Te Hiku o te Ika and Mid-North Iwi Fisheries Forums.
600. Scallops in SCA 1 are amongst the top three shellfish species harvested by recreational fishers. The most common method for recreational harvest is diving/hand gathering, however, there is also recreational dredging activity in the northern scallop fisheries, which can be concentrated in popular and easily accessible beds/areas.
601. The commercial fishery began in 1970 and was based around three core commercially fished areas. These were Spirits Bay, Rangaunu Bay, and Bream Bay. Commercial landings in SCA 1 have overall declined over time. As the fishery has declined, some areas decreased to the point they were no longer viable and fishing effort became focused on the scallop beds in Bream Bay. Nearly all significant catches since 2007 have been harvested from the Bream Bay area.
602. SCA 1 populations were impacted by the arrival of "black gill" and Chaetopterus parchment worm in the late 1990s and early 2000s. The impact of this event can be seen in commercial catch history and survey biomass estimates. After a period of reduced fishing, stocks recovered well in most areas with peaks in recruitment occurring in the years following.
603. After a peak in the mid 2000's the SCA 1 fishery declined to levels where fishing ceased entirely in 2012-13. Since that time catch has remained low when compared to historical levels.
604. The commercial scallop fishery supplies scallops to the domestic market and is responsible for most of the overall scallop SCA 1 catch. All northern commercial scallops are caught using 'Victorian box dredges.' Commercial fishers report that this dredge design suits the northern fishery conditions, which includes corrugated seabed environments.
605. All scallops taken commercially, and some recreational scallop catch, is taken using the method of bottom dredging. Dredge fishing involves direct contact with and disturbance of the sea floor and is known to have negative impacts on scallop growth, populations and the condition of the habitat that supports them⁷².
606. Sedimentation and land use impacts have also been identified as having a significant impact on both scallops and their habitat. Sediment from terrestrial runoff, and the quality of the water coming off the land, have been identified as factors leading to decline in scallop abundance,

particularly in coastal areas. Laboratory studies have demonstrated that suspended sediments disrupt feeding, decrease growth, and increase mortality in scallops^{74 75 76}.

607. Scallop fisheries are highly regulated, with catch limits, minimum size limits, bag limits and spatial, seasonal, and method restrictions in place. The commercial fishery is also subject to a minimum ACE holding requirement. Generally, commercial fishers are prohibited from accessing key customary and recreational scallop beds across SCA 1. Areas where commercial scallop fishing is restricted SCA 1 are shown in the Appendix, Figure A1. Customary and recreational scallop fishers are able to access commercially fished areas.

1.1.2 SCA 1 Management

608. SCA 1 was introduced into the Quota Management System (QMS) in 1997 with a TACC of 188 tonnes.
609. Since the time of introduction, the fishery has been reviewed five times. The TACC was reviewed in 1998, 2000, 2001, 2020 with the TACC being set at 106, 60, 40, and 10 tonnes respectively.
610. The fishery was last reviewed in 2020 where the TAC, TACC and the allowance for mortality caused by fishing were reduced. The TACC was reduced from 40 to 10 tonnes. This was a significant (75%) reduction from the TACC that had been in place since 2002. This reduction recognised the long-term decline in the stock and that the TACC had been significantly under-caught for many years. The TACC setting was not constraining based on recent catch levels at the time but prevented expansion of the fishery to support a recovery of stocks.
611. Scallop populations are highly variable from year to year and SCA 1 was listed in Schedule 2 of the Act to recognise this variability in 2001. For Schedule 2 stocks, you may increase the Total Allowable Catch (TAC) within a fishing year after considering information about a stock's abundance and having regard to other matters in section 11 of the Act. Historically, this was the basis for managing SCA 1, with a TAC set and in-season increases based on survey information about current abundance within that year. The in-season TAC was based on the sustainable yield⁷⁷ available that year – known as the Current Annual Yield (CAY)⁷⁸. If the TAC was increased, allowances could be altered, and additional Annual Catch Entitlement (ACE) generated for commercial fishing. The TAC and allowances would revert to the TAC at the start of the next fishing year.
612. This approach was considered to enable MSY to be achieved on average over time and allowed some utilisation to be available at almost any level of abundance. This approach required that a biomass survey was conducted each year.
613. In SCA 1 an in-season increase was only provided for in two years (2005 and 2006). Historically, the commercial scallop fishing industry participated in these surveys and provided the survey vessel, with applicable costs recovered back from quota owners. However, there have been no biomass surveys or in-season increases in TAC settings for SCA 1 since 2007. As catch rates declined over time there was little incentive for fishers to commission a survey unless they are reasonably assured of an in-season increase to their seasonal catch limits.

⁷⁴ Stevens, P M (1987) Response of excised gill tissue from the New Zealand scallop *Pecten novaezelandiae* to suspended silt. New Zealand Journal of Marine and Freshwater Research 21: 605–614

⁷⁵ Cranford, P J; Gordon, D C (1992) The influence of dilute clay suspensions on sea scallop (*Placopecten magellanicus*) feeding activity and tissue growth. Netherlands Journal of Sea Research 30: 107–120.

⁷⁶ Nicholls, P; Hewitt, J; Halliday, J (2003) Effects of suspended sediment concentrations on suspension and deposit feeding marine macrofauna. NIWA Client Report HAM2003-077 prepared for Auckland Regional Council under NIWA Project ARC03267.

ARC Technical Publication No. 211. 43 p.

⁷⁷ The amount of scallops that can be removed while ensuring the remaining population is viable.

⁷⁸ The current annual yield (CAY) is calculated yearly, and it incorporates fluctuations of scallop populations by applying a fixed reference level of fish mortality to the current fishable biomass. CAY provides a time varying estimate of the Maximum Sustainable Yield (MSY) but remains a constant proportion of the fish population.

1.1.2 Biology

614. Endemic to New Zealand, scallops (*Pecten novaezelandiae*), or kuakua/tipa, are suspension feeding bivalves found in a variety of coastal habitats across New Zealand – particularly in semi-enclosed areas where circulating currents are thought to retain larvae.
615. Scallops are functional hermaphrodites, meaning that they possess both male and female reproductive organs and can produce the associated eggs and sperm. They generally reach sexual maturity at approximately 70 mm shell length and usually mature by the end of their first year. Scallops, however, contribute little to the spawning pool until the end of their second year as year 1 scallops contain around 500,000 eggs each while year 4 and 5 scallops can contain over 40 million eggs each.
616. Scallops may spawn sporadically from August to February, but spawn prolifically over the summer months.
617. Like other broadcast spawners, high density beds and close proximity (to other scallops) are considered to be important for successful fertilisation of the eggs that are released and ongoing recruitment. However, the critical density of scallops necessary for successful spawning in SCA 1 is not known.
618. Fertilisation is followed by a planktonic larval stage lasting about three weeks before attaching to substrate. Spat detach and begin the free-living stage of their life cycle when they reach around 5 mm.
619. Scallop populations are highly variable from one year to the next due to the variability in annual recruitment. This is a result of their high fecundity, variability in larval and adult mortality, as well as growth rates in adults. This variability in populations is more noticeable in areas of high fishing mortality and where fisheries are supported by one or two-year classes.
620. Scallop populations fluctuate naturally and are susceptible to environmental degradation. Potential stressors to scallops, other than fishing, include:
 - stressors resulting from human activity, such as nutrient enrichment and sediment loading.
 - environmental stressors, such as changes in salinity, pH levels, climate change, and temperature; and biological stressors, such as harmful algal blooms and diseases/parasite events.

1.2 Status of the stock

621. In 2021, FNZ commissioned the National Institute of Water and Atmospheric Research (NIWA) to conduct comprehensive surveys of all major commercial and recreational non-commercial scallop beds.

1.2.1 Northern North Island scallop surveys

622. The 2021 survey sites (Table 2 and Appendix A5) are consistent with those from the most recent previous survey (2007), and additional analysis has been conducted allowing comparison of the most recent survey with historical results.
623. The sites do not cover all areas in SCA 1 where scallops are present, and it is known there are other sites with scallop beds within SCA 1. However, the surveys do represent all the main scallop beds that have been fished historically.
624. The objectives of the surveys in SCA 1 were to determine the distribution, abundance, and biomass of scallops within the areas surveyed and the dredge efficiency⁷⁹ of commercial scallop harvesting. The surveys do not provide an estimate of overall abundance within SCA 1,

⁷⁹ Dredge efficiency describes the proportion of scallops on the beds and in the path of the dredge that is retained by the dredge. A higher dredge efficiency means more of the available scallops are caught and reduces the estimated biomass

however they do provide the best available information on the beds surveyed and changes in the surveyed biomass in the stock over time.

625. The results of the surveys were reviewed by the FNZ Shellfish Working Group in July 2021. Additional time series and updated dredge efficiency data were presented in October 2021. SCA 1 survey time series for individual scallop beds can be found in the Appendix (Figures A2 to A4).

Table 2: 2021 survey sites in the Northland (SCA 1) scallop fishery.

Stock	Commercial	Non-commercial
SCA 1	Bream Bay	Bay of Islands – Rawhiti
	Pakiri	Bay of Islands – Urupukapuka
	Rangaunu Bay	Whangarei – Smugglers Bay
	Spirits Bay	Whangarei – Urquharts

1.2.2 Survey results

626. The survey results show that in many areas the 2021 biomass is substantially lower than in the previous 2007 survey (Table 3).
627. Overall, the 2021 biomass in the surveyed areas has declined and remains close to lowest recorded levels. The reasons for the low biomass levels are not currently known and could be a result of both fishing and non-fishing related stressors.
628. The final results of the survey are currently in the process of being published and will be released as a publicly available Fisheries Assessment Report in mid to late 2022. These results are summarised in Table 3. The figures have been updated following new analysis by NIWA which has estimated that the dredge efficiency is higher than previously considered. This updated dredge efficiency data was also applied to the historical survey results to ensure comparability. The update results in a lower survey biomass estimate but has minimal effect on comparing observed changes in the stock biomass, as the efficiency is also applied to the historical data.

Table 3: Comparison of 2007 and 2021 median biomass estimates (meatweight tonnes) in commercially fished scallop beds in Northland (SCA 1) using updated dredge efficiency at all densities (critical density 0).

Stock	Location	Biomass 2007	Biomass 2021
Northland (SCA 1)	Bream Bay	50	28
	Pakiri	4	7
	Rangaunu Bay	87	28
	Spirits Bay	29	1

1.2.3 Northland (SCA 1) core commercially fished locations

629. The information provided in this section is only for Spirits-Tom Bowling Bay, Rangaunu Bay and Bream Bay, which are the three core commercially fished locations. Graphs for the other locations are shown in the Appendix (Figures A3 and A4).
630. The time series of absolute and commercially fishable recruited scallop biomass between 1990 and 2021 are shown in Figure 2. Note that the time series differ depending on the critical densities used to estimate the biomass.

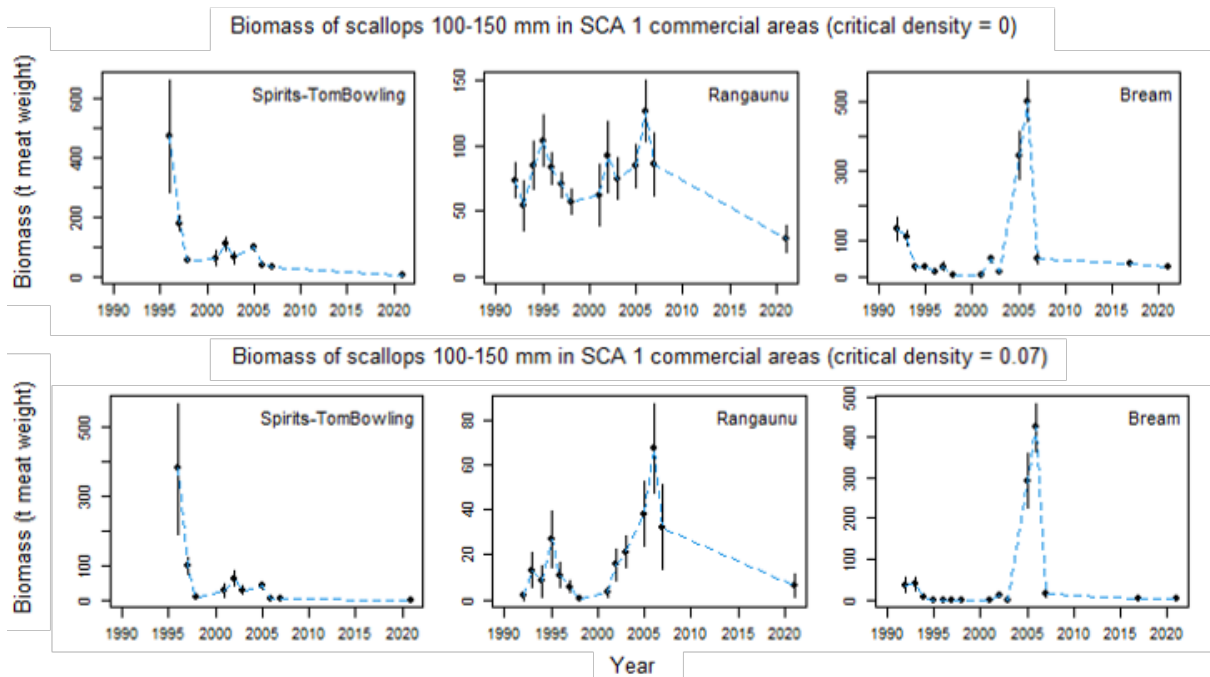


Figure 2: Time series of absolute (top) and commercially fishable (bottom) recruited scallop biomass between 1990 and 2021 in core commercially fished scallop locations.

631. Scallop biomass across the three locations has declined since the last survey and is at levels that are either similar to, or lower than, historical lows.
632. SCA 1 trends in recruitment (juvenile and pre-recruit densities) by location in commercial areas are shown in Figure 3. Note that the time series differ depending on the scallop sizes (1 - 69 mm and 70 - 99 mm). Recruitment gives an indication of the number of small scallops entering the fishery over the next few years.

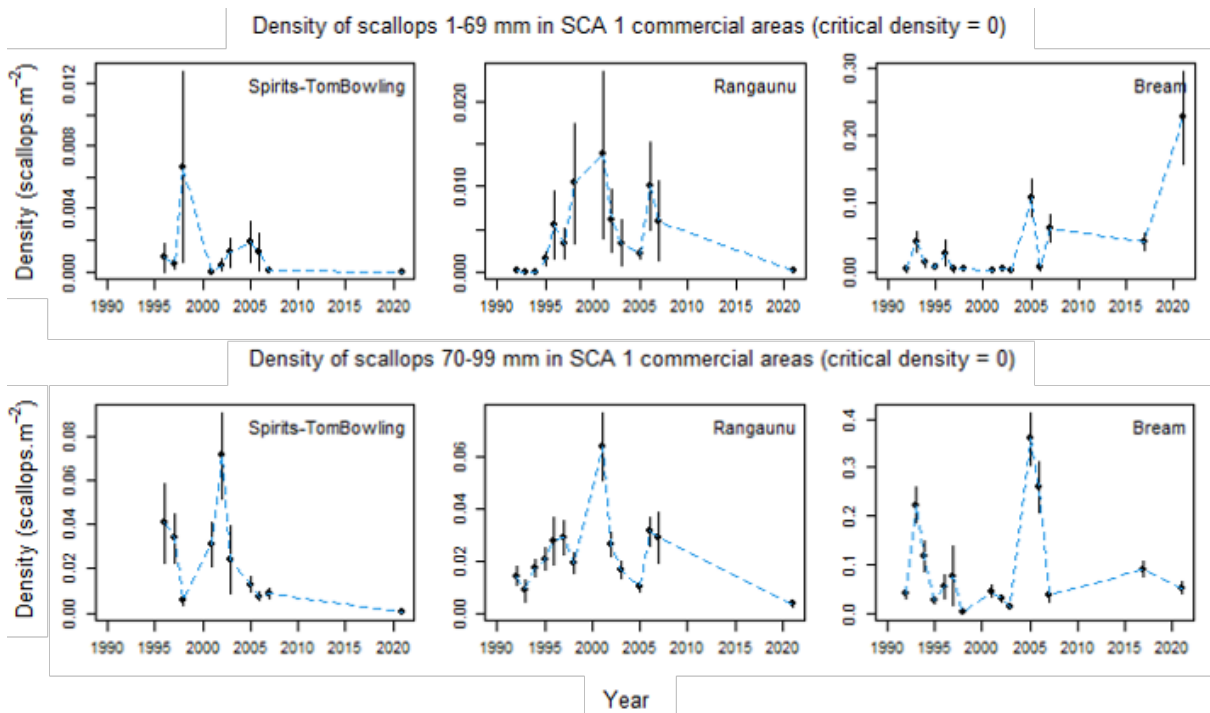


Figure 3: Time series of juvenile (top) and pre-recruit (bottom) scallop density between 1990 and 2021 in core commercially fished scallop locations.

633. Juvenile recruitment in 2021 is notably high at Bream Bay. Pre-recruit density in Bream Bay in 2021 is very low compared to the mid-2000s peak but remains higher than most other years. Recruitment for both juvenile and pre-recruits is very low at Rangaunu and Spirits–Tom Bowling bays.

1.2.4 Northland (SCA 1) core non-commercially fished locations

634. The information provided in this section is only for the Bay of Islands and Whangarei, which are the two core non-commercially fished locations in SCA 1. Graphs for the other locations are shown in the Appendix (Figure A4).

635. The time series of juvenile, pre-recruit and recruited scallop biomass between 1990 and 2021 can be found in Figure 4. Note that the time series differ depending on the scallop sizes.

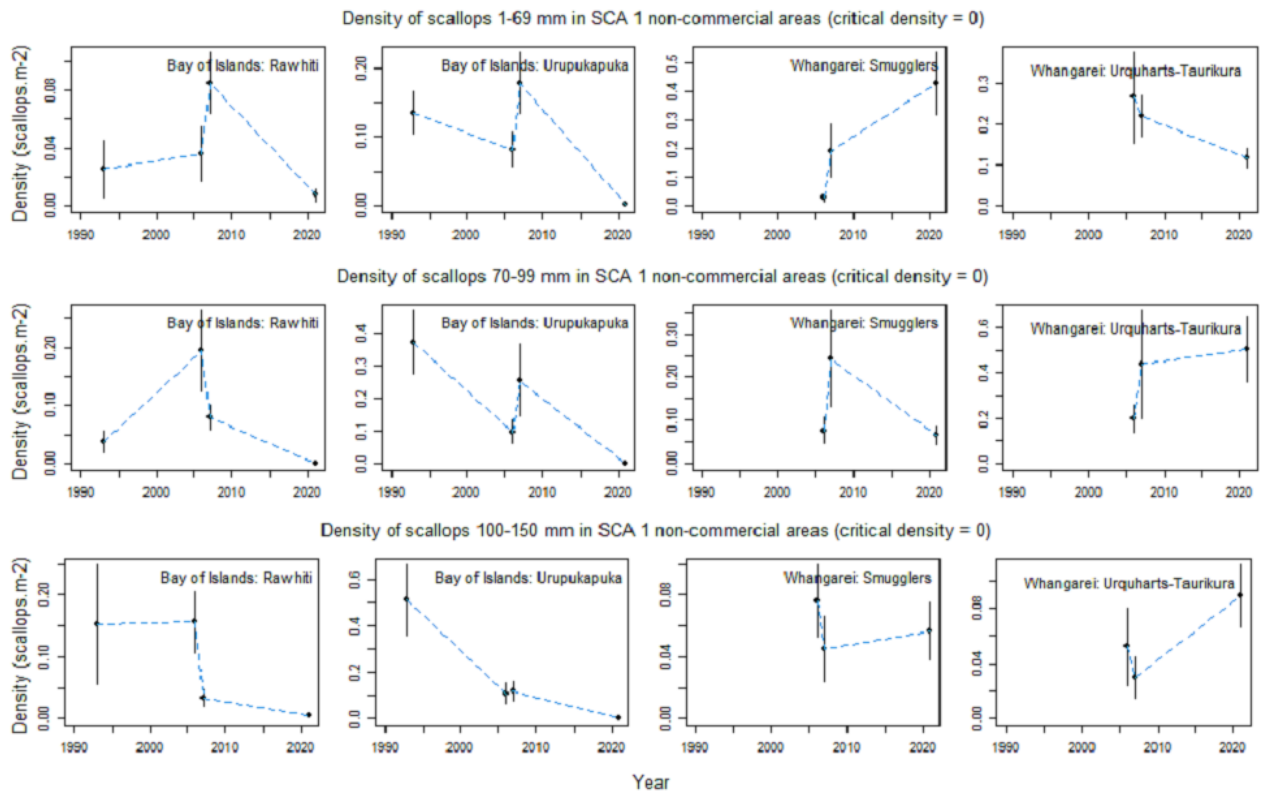


Figure 4: Time series of juvenile (top), pre-recruit (centre), and recruited (bottom) scallop density between 1990 and 2021 in core non-commercially fished scallop locations.

636. Juvenile, pre-recruit, and recruited scallop densities across the 2 beds in the Bay of Islands have declined since the last survey and are at levels that are below historical lows.

637. Smuggler’s Bay in Whangarei has displayed an increase in juvenile and recruited scallop densities but a decline in pre-recruits. The juvenile scallop density in Urquharts-Taurikura has displayed a decline while pre-recruit and recruited scallop densities in this bed have increased.

1.2.5 Additional Yield estimates Analysis

638. To determine sustainable yields⁸⁰ to guide management settings for 2022, additional analysis of the current and historic survey data was sought from NIWA in late 2021. Due to time constraints the analysis was not presented to the Shellfish Working Group, which is the normal

⁸⁰ The sustainable yield represents the number of scallops that can be removed while ensuring the remaining population is viable.

process for review and approval of scientific information. However, the analysis has been reviewed and approved by the FNZ Fisheries Science Team.

639. The analysis took into account that the yield for scallops is sensitive both to the direct impacts of fishing such as reductions in growth and increased mortality of adult scallops, and also to indirect effects such as additional juvenile mortality related to reduced habitat suitability in areas that have been repeatedly dredged⁸¹ ⁸². A review of New Zealand's scallop stock assessment data and methods reiterated the importance of including incidental fishing mortality in yield analysis⁸³.
640. Yields calculated using absolute biomass (scallops at all densities) are provided only to enable comparisons with yield estimates from previous years. Setting catch limits based on yields calculated using absolute biomass risks overfishing in the higher-density areas and could lead to unsustainable harvest levels.
641. Table 4 shows a range of biomass and yield estimates from the biomass surveys in 2021. The estimates are shown for three different critical densities (0, 0.04, 0.07) and four different target harvest rates (10, 15, 20, and 25%). FNZ notes that the critical densities used to determine biomass and yield estimates (0.04 and 0.07 for SCA 1) are not representative of biological reference levels, but rather relate to viable commercial fishing catch rates. In the absence of biological reference levels, FNZ considers the higher critical density (more scallops per unit area and hence higher catch rates) provides for a cautious approach to estimating abundance and yield.
642. Given that the SCA 1 beds are generally at low biomass levels and the likely future recruitment is low, FNZ considers that a cautious approach be adopted, using the estimates for critical density of 0.07 (representing exploitable biomass) and target harvest rate of 10% to 15% of the exploitable biomass.
643. Using a critical density of 0.07 and a harvest rate of 10% or 15% (estimates highlighted in blue in Table 4), the CAY estimates for the SCA 1 surveyed beds add up to 1 tonne, and all that yield from Rangaunu. This means an available yield of 1 tonne for the whole SCA 1 commercial fishery, not accounting for possible yield from areas not surveyed.
644. FNZ notes that yields were estimated from the 2021 survey, however, fishing occurred during the 2021-22 season (July to December) with 7.5 tonnes landed from Bream Bay. The total catch was greater than the yield estimated, and this may have impacted the current population after the survey.
645. FNZ notes that substantial scallop population declines have been observed in many locations in SCA 1 (see section 1.4), and a priority for future research is to determine appropriate target and limit reference points for New Zealand scallops.

⁸¹ Talman, S G; Norkko, A; Thrush, S F; Hewitt, J E (2004) Habitat structure and the survival of juvenile scallops *Pecten novaezelandiae*: comparing predation in habitats with varying complexity. *Marine Ecology Progress Series* 269: 197–207.

⁸² Cryer, M; Parkinson, D M (2006) Biomass surveys and stock assessments for the Coromandel and Northland scallop fisheries, 2005. *New Zealand Fisheries Assessment Report 2006/34*. 53 p.

⁸³ Smith, S; Hart, D; Haddon, M (2016) Review of New Zealand's scallop fishery stock assessment data and methods. *New Zealand Fisheries Science Review 2016/1*. 25 p.

Table 4: SCA 1 projected biomass and yield estimates (t meat of recruited scallops 100 mm shell length or larger) by location and total for the 2021 fishing season. Yields were calculated by applying target harvest rates in the range 10–25% (Y10–Y25) to the projected biomass occurring at three different critical density (scallops.m-2) thresholds: 1) absolute biomass (critical density = 0); 2) exploitable biomass above a critical density of 0.04; and 3) exploitable biomass above a critical density of 0.07. Bq2.5 and Bq97.5 are the 2.5% and 97.5% quantiles of the estimated biomass.

Critical density (scallops m-2)	Location	Area (km2)	Stations	Biomass (t, meatweight)					Yield (% of biomass)			
				Bmean	Bcv	Bmedian	Bq2.5	Bq97.5	Y10	Y15	Y20	Y25
0	Bream	82.3	40	29	0.23	28	18	42	3	4	6	7
	Mangawhai–Pakiri	46.7	14	7	0.27	7	3	11	1	1	1	2
	Rangaunu	185.6	29	29	0.38	28	12	54	3	4	6	7
	Spirits–Tom Bowling	61.8	19	1	0.53	1	0	3	0	0	0	0
	SCA 1 total	376.5	102	65	0.23	64	40	99	6	10	13	16
0.04	Bream	82.3	40	3	0.76	3	0	10	0	0	1	1
	Mangawhai–Pakiri	46.7	14	0	1.35	0	0	1	0	0	0	0
	Rangaunu	185.6	29	11	0.7	10	0	30	1	1	2	2
	Spirits–Tom Bowling	61.8	19	0	NA	0	0	0	0	0	0	0
	SCA 1 total	376.5	102	15	0.6	13	2	36	1	2	3	3
0.07	Bream	82.3	40	0	1.68	0	0	2	0	0	0	0
	Mangawhai–Pakiri	46.7	14	0	NA	0	0	0	0	0	0	0
	Rangaunu	185.6	29	7	0.89	6	0	21	1	1	1	1
	Spirits–Tom Bowling	61.8	19	0	NA	0	0	0	0	0	0	0
	SCA 1 total	376.5	102	7	0.87	6	0	22	1	1	1	1

2 Catch information and current settings within the TAC

2.1 Commercial

646. SCA 1 has historically supported a regionally important commercial fishery. There is a commercial fishing season in SCA 1, with fishing restricted to the period 15 July to 14 February each year. The regulated minimum legal size (MLS) for commercial scallops in SCA 1 is 100 millimetres in shell length.
647. Landings have varied between 200 tonnes to 10 tonnes (meatweight) between 1980–81 and 2009–10. There was a gradual decline in landings, from 68 tonnes (meatweight) in 2005–06 to only 1 and 2 tonnes in 2010–11 and 2011–12, respectively. In 2012–13, harvesting had virtually ceased and 86 kilograms and 2 tonnes of meatweight were landed in 2013–14 and 2014–15, respectively. Significant fishing occurred again in Bream Bay in 2015–16, with 16 tonnes (meatweight) landed. Since 2016–17, landings have fallen again and fluctuated between 5 and 8 tonnes (meatweight), with 7.5 tonnes being landed in the most recent fishing year (2021–22).

648. Figure 9 displays the historical commercial landings and catch limits for the SCA 1 fishery.

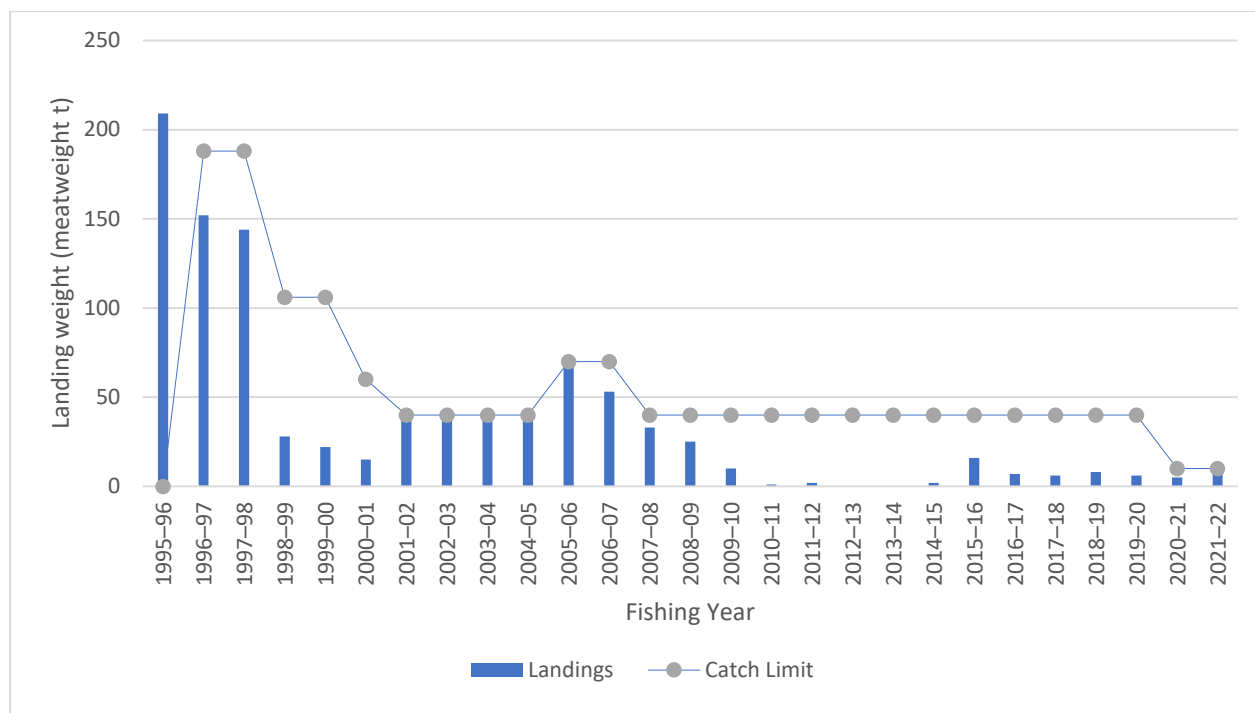


Figure 5: Landings and catch limits for SCA 1 (Northland) since 1995-96. TACC refers to the base TACC and any in season increase in Annual Catch Entitlement (ACE) and 'Weight' refers to meatweight.

2.2 Customary Māori

649. Scallops are an important traditional food for Māori and continue to be gathered under provisions for customary fishing.
650. While scallops are a common species for which customary authorisations are issued, there is limited quantitative information available on the level of customary take of scallops from both SCA 1. It is likely that Māori customary fishers also utilise the provisions under recreational fishing regulations.
651. FNZ has been informed by tangata whenua throughout the SCA 1 QMA that to protect local scallop populations, the issuing of customary authorisations has declined or in some cases ceased as the abundance of scallops has declined.
652. Significant parts of the SCA 1 QMA is not currently covered under the Fisheries (Kaimoana Customary Fishing) Regulations 1998. Customary fishing authorisations in some parts of SCA 1, if issued, would be under the Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on catch. As such customary harvest records held by FNZ are likely to be incomplete.

2.3 Recreational

653. There is significant recreational interest in scallops in suitable areas throughout SCA 1. These areas are mostly in enclosed bays and harbours. Many of these areas are set aside as non-commercial areas.
654. Harvesting of scallops was reported from larger boats/launches, off land and, most commonly, by trailer boats, from which an estimated 66% of scallops were taken nationally in 2017/18.
655. The best available information on current recreational catch is from the 2017/18 National Panel Survey of Marine Recreational Fishers (NPS), which provides a snapshot of the level of recreational take in that fishing year. Scallops were reported to be harvested using dredging

and/or by hand gathering from either the shore or while diving. The 2017/18 NPS estimated 468,843 scallops were harvested for that year across all scallop areas in New Zealand by hand gathering while diving, the popular method of choice.

656. A total estimated weight of 62 tonnes (green weight) of scallops was harvested by recreational fishers from all New Zealand scallop areas for the 2017-2018 fishing year. Of the overall national scallop take, 93% came from within Fisheries Management Area 1 (FMA 1), which includes the scallop beds in SCA 1. Within FMA 1 approximately 40% of recreational scallop catch is taken from SCA 1. The NPS reported 20 tonnes (green weight) from SCA 1 in 2017-18 (approximately 3 tonnes meat weight).

2.4 All other mortality caused by fishing

657. When setting or adjusting the TAC you must set an allowance within the TAC for all other mortality caused by fishing. This allowance is intended to provide for unrecorded mortality of fish associated with fishing activity, including incidental mortality from fishing methods, or illegal fishing.
658. Incidental damage to uncaught or undersize scallops can occur during commercial dredging.
659. The box dredges used in the SCA 1 commercial fisheries have been found to be more efficient in the sandy conditions prevalent in the northern region than the ring-bag dredges used elsewhere in New Zealand. However, scallops encountered by box dredges have shown modest reductions in growth rate, compared with scallops collected by divers, and quite high mortality (about 20–30%). This could potentially be as high as 50%, for scallops that are returned to the water. Experiments and modelling suggest that dredging also reduces habitat diversity and increases juvenile mortality.
660. Other sources of fishing-related mortality are also likely to occur from recreational dredging and the illegal take or 'poaching' of scallops. FNZ does not have reliable estimates of these other sources of mortality from fishing.
661. All proposed options in this document will lead to reduction in commercial effort, harvest, and associated mortality. Recreational take and the impacts of recreational dredging are also anticipated to reduce under the options proposed. As such an associated reduction in other sources of mortality is also expected.

3 Treaty of Waitangi Obligations

3.1 Input and participation of tangata whenua

662. 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 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.
663. To facilitate input and participation, Fisheries NZ engaged with tangata whenua at Iwi Fisheries Forums on preliminary survey results and the proposed options. The results of the scallop surveys and the proposed management options, including the potential for a full closure of SCA 1, has been discussed with the Te Hiku o te Ika, Mid-North and Mai i ngā Kuri a Whārei ki Tihirau forums.
664. Members of the Te Hiku o te Ika, Mid-North forums acknowledged the poor state of Northern scallop fisheries and expressed support for changes to management measures in SCA 1. Some forum members indicated they are considering traditional rāhui as an interim measure before any sustainability decisions are made.

Table 5: Input provided by Iwi Fisheries Forums on SCA 1.

Iwi Fisheries Forum	Input into SCA 1
Te Hiku o te Ika	<p>Te Hiku o te Ika Iwi Fisheries Forum supports Option 1 – a full closure of SCA 1.</p> <p>The forum identified that local knowledge is key to successful management of scallops. FNZ needs to work with tangata whenua when developing a management approach. The approach shouldn't just be economic focused. It needs to be local level, Iwi and community involved in the conversation.</p> <p>The impact of dredging on scallop beds was raised as a concern. Traditional scallop beds no longer provide scallops. There is evidence of dredging at these sites.</p>
Mid-North	<p>The Mid-North Iwi Fisheries Forum supports Option 1 - a full closure of SCA 1 (and Coromandel Scallops - SCA CS).</p> <p>Forum members proposed that FNZ work with tangata whenua to develop a future management strategy for both SCA 1 and SCA CS.</p> <p>It was put forward that iwi should be part of the monitoring and research for scallops - part of the diving and the discussions with scientists on the ground. This would bring local knowledge to the science process and be beneficial for both parties. Iwi also need better resourcing to do their own monitoring of their rohe moana.</p> <p>In addition to providing feedback through the forum, some members have made individual submissions.</p>

3.2 Kaitiakitanga

665. SCA 1 covers the rohe of the Te Hiku o Te Ika, and Mid-North Iwi Fisheries Forums, both of which identify scallops as a taonga species in their respective Iwi Forum Fisheries Plans.
666. FNZ considers that the proposed management options are in keeping with the objectives of the Iwi Fisheries Forum Plans which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries.
667. There are four customary fisheries management areas within SCA 1. These include a mātaimai reserve, one taiāpure and two temporary closures, implemented under section 186A of the Act (Table 5).
668. Tangata kaitiaki of the Te Renga Paraoa (Whangarei Harbour) rohe moana have indicated serious concerns regarding the state of scallop beds within the Whangarei Harbour area and have requested FNZ implement a closure to allow recovery of the stocks. The use of customary fisheries management tools has also been considered for scallop beds within their rohe. There are concerns that the abundance of scallops has declined in traditional fishing areas, which is supported by reports from MPI Compliance Officers who have interacted with scallop gatherers in the area.

Table 6: Customary fishing areas within SCA 1.

Customary Area	Management Type
Waikare Inlet Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing
Maunganui Bay Temporary Closure	S186A Temporary Closures Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method
Marsden Bank and Mair Bank Temporary Closure	Mātaitai Reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.

4 Environmental and Sustainability Considerations

4.1 Environmental principles (section 9 of the Act)

669. The key environmental principles with the SCA 1 fishery, which must be taken into account when considering sustainability measures concern

(a) associated or dependent species should be maintained above a level that ensures their long-term viability (in particular marine mammals, seabirds, fish and invertebrate bycatch)

(b) biological diversity of the aquatic environment should be maintained (in particular the benthic impacts from fishing) and

(c) habitats of particular significance for fisheries management should be protected.

4.1.1 Marine mammals and seabirds

670. There are no known captures of marine mammals or seabirds in New Zealand scallop fisheries.

4.1.2 Fish bycatch

671. A range of non-target fish and invertebrate species are caught and discarded by dredge fisheries for scallops. No data are available on the level or effect of this incidental catch and discarding by the fisheries, however the SCA 1 fishery shares many characteristics of the adjacent Coromandel Scallop (SCA CS) fishery.

672. In SCA CS, a photographic survey approach was used in 2006⁸⁴ to provisionally examine bycatch groups, and a more quantitative and comprehensive study was conducted using bycatch data collected in the 2009 dredge survey⁸⁵. Survey catches were quantified by volume of different component categories. Over the whole 2009 survey, scallops formed the largest live component of the total catch volume (26%), followed by assorted seaweed (11%), starfish (4%), other live bivalves (4%), coralline turfing algae (1%) plus other live components not exceeding 0.5%. Dead shell (identifiable and hash) formed the largest overall component (45%), and rock, sand, and gravel formed 8%. Categories considered to be sensitive to dredging were caught relatively rarely.

⁸⁴ Tuck, I; Parkinson, D; Dey, K; Oldman, J; Wadhwa, S (2006). Information on benthic impacts in support of the Coromandel Scallops Fishery Plan. Final Research Report prepared by NIWA for Ministry of Fisheries Research Project ZBD2005-15 Objective 1-6. p. (Unpublished report held by Ministry for Primary Industries, Wellington.)

⁸⁵ Williams, J R; Parkinson, D M (2010) Biomass survey and stock assessment for the Coromandel scallop fishery, 2010. New Zealand Fisheries Assessment Report 2010/37.

673. The effects of scallop dredging on the benthos are well-studied, with New Zealand studies (including in SCA 1) showing that with increasing fishing intensity there are decreases in the density and diversity of benthic communities and, especially, the density of emergent epifauna that provide structured habitat for other fauna. The results of these studies are summarised in the Aquatic Environment and Biodiversity Annual Review⁸⁶, and are consistent with the global literature.

4.1.3 Benthic impacts

674. Fishing with mobile bottom contact gear, such as dredges, has impacts on benthic populations, communities, and their habitats. The effects are not uniform but depend on factors such as the specific features of the seafloor, the natural disturbance regime, the species present, the type of gear and the frequency it is used. A description of the effects of scallop dredging are provided in Table 7.

675. There is widespread concern around the impacts of dredging on the seabed and wider marine environment. There have also been several public campaigns put forward to ban both recreational and commercial scallop dredging. Submitters noted concerns regarding the environmental effects of dredging and suggested that a more holistic approach to managing SCA 1 was required to address these concerns.

676. Removing scallop dredging was a feature of the Sea Change Hauraki Gulf Marine Spatial plan and the recently released Government Response strategy to Sea Change, through the draft Fisheries Plan. This committed to removing recreational dredging from the marine park and freezing commercial dredge fishing to within the current footprint, while implementing improved monitoring and management approaches.

677. While FNZ recognises that environmental factors, such as sedimentation and water quality, are also likely to affect scallop growth and mortality rates, as an agency it does not have a direct role in managing such environmental impacts. However, FNZ is engaging with local authorities to ensure fisheries-related concerns arising from terrestrial activities are addressed. A Coastal Planning Team has been established to engage with local authorities as FNZ moves further towards a more holistic ecosystem-based approach to managing fisheries.

678. All proposed options will see a reduction in dredging in the short to medium term.

⁸⁶ Aquatic Environment and Biodiversity Annual Review (Ministry for Primary Industries 2018) <https://www.mpi.govt.nz/dmsdocument/34854-aquatic-environment-and-biodiversity-annual-review-aebar-2018-a-summary-of-environmental-interactions-between-the-seafood-sector-and-the-aquatic-environment>

4.1.4 Habitats of particular significance for fisheries management

679. Information on habitats of particular significance for fisheries management in SCA 1 is given in Table 7.

Table 7: Summary of information on habitats of particular significance for fisheries management for stock.

Fish Stock	SCA 1
Habitat of particular significance	<p>Specific habitats of particular significance for scallops in SCA 1 have not been identified at this time. However, certain features of the habitats with which scallops are associated are known to influence scallop productivity by affecting the recruitment, growth, and mortality of scallops, and therefore may in the future be useful in terms of identifying habitats of significance.</p> <p>Figure A6 (in the Appendix) shows the main scallop beds that have been surveyed from 1990 – 2021.</p>
Attributes of habitat	<ul style="list-style-type: none"> • Scallops are found in a variety of coastal habitats, but particularly in semi-enclosed areas where circulating currents are thought to retain larvae. • Scallops inhabit waters of up to about 60 m deep but are more common in depths of 10 to 50 m on substrates of shell gravel, sand or, in some cases, silt. • Scallops are typically patchily distributed at a range of spatial scales. Some scallop beds are persistent, and others are short lived. The extent to which the various beds or populations are reproductively or functionally separate is not known. • Scallop larvae spend about three weeks in the plankton. They then attach to algae or some other filamentous material with fine byssus threads. This indicates that an important attribute of habitat is the presence of suitable settlement surfaces for larvae. When the spat reach about 5 mm they detach and take up the free-living habit of adults, usually lying in depressions on the seabed and often covered by a layer of silt.
Reasons for particular significance	<ul style="list-style-type: none"> • Scallops grow relatively fast, have high mortality, and variable recruitment. The rates of these processes probably vary in relation to environmental conditions (e.g., temperature, water flow, turbidity, and salinity), ecological resources (e.g., food, oxygen, and habitat), and with intra- and inter-specific interactions (e.g., competition, predation, parasitism, and mutualism), and the combination of these factors determines the species distribution and abundance⁸⁷ • Scallops are a key component of the inshore coastal ecosystem, acting both as consumers of primary producers and as prey for many predators. Scallops themselves can also provide structural habitat for other epifauna (e.g., sponges, ascidians, and algae).
Risks/Threats	<ul style="list-style-type: none"> • It is well known that fishing with mobile bottom contact gears such as dredges has impacts on benthic populations, communities, and their habitats^{88 89}. The effects are not uniform but depend on at least: 'the specific features of the seafloor habitats, including the natural disturbance regime, the species present, the type of gear used, the methods and timing of deployment of the gear and the frequency with which a site is impacted by specific gears; and the history of human activities, especially past fishing, in the area of concern'⁹⁰.

⁸⁷ Begon, M; Harper, J L; Townsend, C R (1990) Ecology: Individuals, Populations and Communities. Blackwell Science, Cambridge. 945 p.

⁸⁸ Kaiser, M J; Clarke, K R; Hinz, H; Austen, M C V; Somerfield, P J; Karakassis, I (2006) Global analysis of the response and recovery of benthic biota to fishing. Marine Ecology Progress Series 311: 1–14.

⁸⁹ Rice, J (2006) Impacts of mobile bottom gears on seafloor habitats, species, and communities: a review and synthesis of selected international reviews. Canadian Science Advisory Secretariat Research Document 2006/057. 35 p.

⁹⁰ Department of Fisheries and Oceans (2006) Impacts of trawl gear and scallop dredges on benthic habitats, populations and communities. DFO Canadian Science Advisory Secretariat Science Advisory Report 2006/025. 13 p.

	<ul style="list-style-type: none"> • The effects of scallop dredging on the benthos are relatively well studied and include several New Zealand studies carried out in areas of the northern fisheries (SCA 1 and SCA CS)^{91 92 93} and the Golden/Tasman Bays region of the southern fishery (SCA 7)⁹⁴. The results of these studies are that, generally, with increasing fishing intensity there are decreases in the density and diversity of benthic communities and, especially, the density of emergent epifauna that provide structured habitat for other fauna. • It is also likely that fine sediments introduced from runoff from land can have adverse effects on filter-feeding bivalves, including scallops.
Existing protection measures	<ul style="list-style-type: none"> • While specific habitats of significance have not been identified, there are scallop populations in many estuaries and harbours in SCA 1, and these are protected from benthic effects of commercial dredging, trawling and Danish seining which are prohibited, see Appendix Figure A1.

4.2 Sustainability measures (section 11 of the Act)

680. Section 11(1) of the Act allows you to set or vary any sustainability measure for one or more stocks or areas, after taking into account any effects of fishing on any stock and the aquatic environment, any existing controls that apply to the stock or area concerned, and the natural variability of the stock concerned. Scallop populations are known to vary over time and in response to environmental changes and can also be affected by fishing pressures. The proposals to close some or all scallop beds to harvesting seek to address the risk that fishing will further exacerbate conditions that have led to declining populations and not ensure the SCA 1 populations can recover.
681. Section 11(2) states that before setting or varying any sustainability measure, you shall have regard to any provisions of: any regional policy statements, regional plans, or proposed regional plans under the Resource Management Act 1991; any management strategy or plan under the Conservation Act 1987; sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000; any regulations under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and any planning documents lodged with you (the Minister of Fisheries (Minister for Primary Industries)) by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011. There are no specific matters under the above provisions that are relevant to the proposals for SCA 1.
682. Section 11 (2A) requires you to take into account:
- (a) Any conservation services or fisheries services
 - (b) Any relevant fisheries plan approved under this Part-see discussion of section 11A below
 - (c) Any decisions not to require conservation services or fisheries services.
683. Services of particular relevance to the decisions in this paper relate to research used to monitor stock abundance, such as the biomass surveys of SCA 1 in 2021. To date national fisheries

⁹¹ Thrush, S F; Hewitt, J E; Cummings, V J; Dayton, P K (1995) The impact of habitat disturbance by scallop dredging on marine benthic communities: what can be predicted from the results of experiments? Marine Ecology Progress Series 129: 141–150.

⁹² Thrush, S F; Hewitt, J E; Cummings, V J; Dayton, P K; Cryer, M; Turner, S J; Funnell, G A; Budd, R G; Milburn, C J; Wilkinson, M R (1998) Disturbance of the marine benthic habitat by commercial fishing - Impacts at the scale of the fishery. Ecological Applications 8: 866–879.

⁹³ Cryer, M; O'Shea, S; Gordon, D P; Kelly, M; Drury, J D; Morrison, M A; Hill, A; Saunders, H; Shankar, U; Wilkinson, M; Foster, G (2000) Distribution and structure of benthic invertebrate communities between North Cape and Cape Reinga. Final Research Report by NIWA for Ministry of Fisheries Research Project ENV9805 Objectives 1–4. (Unpublished report held by Fisheries New Zealand, Wellington.)

⁹⁴ Tuck, I; Hewitt, J; Handley, S; Lundquist, C (2017). Assessing the effects of fishing on soft sediment habitat, fauna and processes. New Zealand Aquatic Environment and Biodiversity Report No. 178. 147 p.

plans have been approved only for deepwater, shellfish and highly migratory species and there are no relevant approved fisheries plans for SCA 1. The management of the SCA 1 fishery is guided by the non-binding policy guidance in MPI's Harvest Strategy Standard (see below).

684. Section 11(3) outlines a non-exhaustive list of sustainability measures that you may set for a stock. Sustainability measures may relate to the areas from which any fish, aquatic life, or seaweed of any stock may be taken. You may implement any sustainability measures by notice in the Gazette (as proposed in this paper) or by the making of regulations under section 298 of the Act.
685. MPI proposes that the sustainability measures be set by notice in the Gazette.
686. Section 13 of the Act provides for the setting of a TAC for SCA 1 and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (HSS). The 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 QMS. It is intended to provide guidance on 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.
687. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

4.2.1 Hauraki Gulf Marine Park Act (HGMPA)

688. Section 11(2)(c) of the Fisheries Act 1996 requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when varying the TAC relating to stocks with boundaries intersecting with the Park.
689. SCA 1 boundaries overlap within the northernmost area of the Hauraki Gulf Marine Park. Therefore, sections 7 (recognition of national significance of Hauraki Gulf) and 8 (management of Hauraki Gulf) of the Hauraki Gulf Marine Park Act 2000 (HGMPA) apply to the management of these fisheries.
690. As this review aims to address a potential sustainability risk with the SCA 1 management settings, FNZ considers that the proposed options are consistent with obligations under sections 7 and 8 of the HGMPA.
691. The Hauraki Gulf Forum, established under the HGMPA, provided a submission in support of closing the Hauraki Gulf Marine Park to the harvest of scallops, which would include the southern area of SCA 1 encompassing the northwest corner of the marine park. (see Appendix Figure A1).
692. 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 scallops 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

693. FNZ received 116 submissions in total on the SCA 1 proposals.
694. Te Ohu Kaimoana did not specify support for proposed options but encouraged FNZ to work with tangata whenua to find a holistic solution to consider all the impacts scallop populations face, including land-use impacts and disease.
695. Industry submissions disagreed with the proposed options for SCA 1. Fisheries Inshore New Zealand (FINZ) submitted that for both stocks a full closure is irrational and raises concerns

regarding the proposal not to change the customary allowance. FINZ consider Options 2 and 3 for SCA 1 are inequitable and that other sectors should bear more responsibility.

696. Industry submissions (and other sector stakeholder submissions) considered the TAC should be adjusted if the fishery is closed under section 11 of the Act. In response to this feedback, FNZ has added Option 1A. Under Option 1A the TAC, TACC and allowances are reviewed with proposed settings to reflect a closure of the fishery to commercial and recreational take.
697. In SCA 1 the Northland Scallop Enhancement Co. Ltd (NSEC) submitted that using section 11 of the Act as proposed to close the fishery is at odds with the standard section 13 approach. NSEC provides an alternative option where the current TACC is retained but a range of controls are introduced, including setting catch limits for individual scallop beds. The current TACC exceeds the available yield calculated from the 2021 survey and FNZ considers there is a risk to the sustainability of the stock if the TACC is not reduced. The proposed additional management controls will be considered as part of any future management review and FNZ will be seeking to engage with the NSEC, treaty partners and other stakeholders on the longer-term management approach for the SCA 1 stock.
698. Submissions have been summarised in Table 8 below and a full list of submissions is available in the Appendix (Table A1).

Table 8: Summary of Submissions

Option 1				
TAC: 30 t	TACC: 10 t	Customary: 7.5 t	Recreational: 7.5 t	Other mortality: 5 t
Responses from representative bodies and organisations in support: 7 <ul style="list-style-type: none"> • The Mussel Reef Restoration Trust • NZ Sport Fishing Council, New Zealand Angling & Casting Association, New Zealand Underwater • Ngatiwai Trust Board • Fish Forever • Great Barrier Local Board • Environmental Defence Society • Forest & Bird • Iwi Collective Partnership 			Individual submissions in support: 39 14 of the submissions from individuals in support of Option 1 also submitted that dredging should be prohibited.	
Option 1A – Alternative Option				
TAC: 8.5	TACC: 0 t	Customary: 7.5 t	Recreational: 0 t	Other mortality: 1 t
Responses from representative bodies and organisations in support: N/A <ul style="list-style-type: none"> • Northland Scallop Enhancement Company • Fisheries Inshore New Zealand • NZ Sport Fishing Council, New Zealand Angling & Casting Association, New Zealand Underwater • Environmental Defence Society <p>The above from representative bodies and organisations submitted that under Option 1 the TAC, TACC and allowances should be reviewed.</p>			Individual submissions in support: N/A	

Option 2				
TAC: 9.5 t	TACC: 0 t	Customary: 7.5 t	Recreational: 1 t	Other mortality: 1 t
Responses from representative bodies and organisations in support: N/A			Individual submissions in support: 24 10 of the submissions from individuals in support of Option 2 also submitted that dredging should be prohibited.	
Option 3				
TAC: 16 t	TACC: 0 t	Customary: 7.5 t	Recreational: 7.5 t	Other mortality: 1 t
Responses from representative bodies and organisations in support: NA			Individual submissions in support: 9 3 of the submissions from individuals in support of Option 3 also submitted that dredging should be prohibited.	
Other –				
Responses from representative bodies and organisations in support: 5 <ul style="list-style-type: none"> • Te Ohu Kaimoana • Coromandel Scallop Fishermen's Association • Northland Scallop Enhancement Company • Fisheries Inshore New Zealand 			Individual submissions in support: 8 5 of the submissions from individuals in support of Option 3 also submitted that dredging should be prohibited. Submissions included alternative options including ban on scuba diving. Reducing recreational daily limits.	

6 Management Options

699. There are a range of management tools available under the Act that may be used to manage the impacts of fishing pressure on scallop abundance, including catch limits and method and/or spatial restrictions. FNZ has sought views on the use of some of these tools as part of the longer-term package of measures to manage the fishery. In the interim, FNZ considers closure options and associated measures as proposed in this paper provide the appropriate mechanism to protect remaining scallop beds and provide the opportunity for recovery.
700. Under section 11 of the Act you may set or vary the sustainability measures for a stock after taking into account any effects of fishing on any stock and the aquatic environment, any existing controls on fishing (see Table 9 below), and the natural variability of the stock. In determining the TAC for a stock under section 13 of the Act, you must have regard to the interdependence of stocks, the biological characteristics, and any environmental conditions affecting the stock.

701. Section 13 of the Act sets out the factors you must consider in setting or varying the TAC. When setting a TAC for stocks such as SCA 1 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 SCA 1 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.
702. For SCA 1, the management approach applied historically relied on setting a “baseline” catch limit which was considered to ensure sustainability under most levels of biomass and to provide for in-season increases to the TAC, ACE, and allowances should there be evidence of increased stock abundance within the fishing year. Surveys estimated biomass within the year and the Current Annual Yield was determined for that year as the basis for an increase. That approach was considered to be not inconsistent with the s13 obligations.
703. Considering the interdependence of stocks, scallops are considered to be a key component of the inshore coastal ecosystem, acting both as consumers of primary producers and as prey for many predators. Scallops themselves can also provide structural habitat for other epifauna (e.g., sponges, ascidians, and algae). In terms of biology, scallops are short-lived and highly fecund, with the potential for ‘boom and bust’ cycles of abundance, in the absence of fishing. The Act recognises this by enabling responsive management of scallop stocks using in-season adjustments if abundance is high. You must also consider environmental conditions affecting scallops. Sediment and other inputs from land into the coastal marine areas occupied by scallops are likely to contribute to impacts on scallop populations. There is also evidence of adverse effects on the environment from scallop dredging. Also, coastal ocean dynamics and nutrients can affect scallops via the availability of planktonic organisms as food and the dispersal of scallop eggs and larvae to favourable settlement sites. It is possible that a combination of environmental factors is influencing the SCA 1 population and resulting in low recruitment and abundance.

Table 9: Existing recreational and commercial restrictions for Northland scallop (SCA 1) fisheries.

Recreational	
SCA 1	<ul style="list-style-type: none"> • The recreational fishing season runs from 1 September – 31 March. • MLS of 100 millimetres in shell length. • Daily bag limit is 20 scallops per person. • Divers operating from a vessel can take scallops for up to two nominated safety people on board the vessel, in addition to daily catch limits for the divers. • Scallops must be brought ashore in a measurable state (i.e., not shucked). An exception applies for scallops consumed immediately on board a vessel.
Commercial	
SCA 1	<ul style="list-style-type: none"> • The commercial fishing season in SCA 1 runs from 15 July to 14 February each year. • There are significant spatial restrictions for commercial scallop fishers in SCA 1, with some areas that are closed to all forms of fishing. • The regulated MLS for commercial scallops in SCA 1 is 100 millimetres in shell length. • No commercial fisher fishing for scallops is permitted to use more than 1 dredge with a bar or bit that is more than 2.5 m long <i>or</i> more than 2 dredges, either of which has a bar or bit that is more than 1.4 m long. • No commercial fisher may take scallops from SCA 1 unless the fisher holds, at the time of the taking, a minimum 3 tonnes of annual catch entitlement.

6.1 Option 1

Full closure under a Section 11 Sustainability measure		
TAC: 30 t No change	TACC: 10 t -	Customary: 7.5 t - Recreational: 7.5 t - Other mortality: 5 t -

704. Option 1 proposes a full closure to the commercial and recreational harvest of scallops in the SCA 1 fisheries as a sustainability measure under section 11 of the Act rather than reducing catch limits. This will protect scallop beds from the direct and indirect impacts of fishing activity.
705. It is proposed the closure is implemented for an indefinite period; however, it is anticipated that FNZ will seek new information on the abundance and biomass of scallops in SCA 1 within 3 years. If new information indicates that the stocks have recovered, FNZ will review whether the closure is still required. The future management approach to the utilisation of scallops within SCA 1 will also be considered during the closure period to ensure any reopening of the fishery could occur in a manner that will ensure the ongoing sustainability of the stocks.
706. This option carries the least sustainability risk and is the most cautious response. It addresses the impacts of fishing affecting the scallop fisheries and will allow for scallop populations and their environments to remain undisturbed for the closure period.
707. It is acknowledged that Option 1 will impact all fishers in SCA 1 significantly. The most significant impact will be the complete exclusion of commercial fishing and the associated industries, which are currently built around the SCA 1 fishery. However, based on the best available information from the recent survey results, FNZ considers that this option would provide the maximum opportunity for recovery of the fishery.
708. A closure under section 11 of the Act would not extend to customary fishing authorised under section 50 of the Fisheries (Amateur Fishing) Regulations 2013 (fish, aquatic life, or seaweed taken under authorisation for hui or tangi). It would also still allow for tangata kaitiaki/tiaki to authorise the taking of fisheries resources under regulation 11 of the Fisheries (Kaimoana Customary Fishing) Regulations 1998 (power to authorise the taking of fisheries resources for customary food gathering).
709. Under Option 1 it is proposed no change is made to the TAC, TACC, and allowances as access to the fishery will be prohibited through the section 11 closure. FNZ will continue to monitor the fishery and, if new information indicates fishing can occur sustainably, the management measures and TAC settings will be reviewed prior to re-opening the fishery.

6.2 Option 1A – (Fisheries New Zealand preferred option)

Full closure under a Section 11 Sustainability measure and changes to TAC, TACC and allowances		
TAC: 8.5 t	TACC: 0 ↓ (10 t)	Customary: 7.5 t - Recreational: 0 ↓ (7.5) t Other mortality: 1 ↓ (4) t

710. Option 1A is a new Option included after feedback received during public consultation.
711. Many submissions regarding Option 1 included the view that the TAC, TACC and allowances should be reduced to recognise that no commercial or recreational fishing would occur while a closure was in place, and that the TAC should be set to reflect the state of the fishery. Submitters in support of a lower TAC than in Option 1 included the Northland Scallop Enhancement Company (NSEC), Fisheries Inshore New Zealand, Legasea and the New Zealand Sportfishing Council (NZSFC) and the Environmental Defence Society. Submitters representing commercial fishers raised concerns that under the TACC setting in Option 1 quota holders will continue to be charged fisheries cost recovery levies for the fishery despite not being able to harvest and sell scallops. The combined submission from NZSFC, New Zealand

Angling and Casting Association, New Zealand Underwater Association and LegaSea consider that you should set a sustainable TAC as part of this review.

712. Fisheries New Zealand considers that you can introduce a section 11 closure to SCA 1 without making changes to the TAC, TACC and allowances as is the case in the SCA 7 fishery which is currently closed. However, in response to the submissions received across sectors Fisheries New Zealand is proposing Option 1A.
713. Like Option 1, Option 1A proposes a full closure to the commercial and recreational harvest of scallops in SCA 1 as a sustainability measure under section 11 of the Act to protect scallop beds from the direct and indirect impacts of fishing activity and provide the greatest chance of recovery to greater abundance.
714. However, in addition, this option would reduce the TAC to 8.5 tonnes. The TACC and recreational allowance will be reduced to 0 tonnes to reflect that no fishing will be taking place while the closure is in effect. The customary allowance remains unchanged at 7.5 tonnes to recognise that customary fishing will not be prohibited under a section 11 closure. It is however noted that customary take may decline. This reflects feedback from iwi and kaitiaki in the region regarding their own local management of access to scallop fisheries, and the decision of many to issue no or limited customary authorisations for scallops. A nominal allowance for other mortality caused by fishing would be set at 1 tonne to account for any mortality associated with illegal or 'poaching' activity.
715. Setting the TACC at 0 tonne will ensure that a review of sustainable harvest levels and setting of and appropriate TAC, TACC, and allowances would need to occur prior to the section 11 closure being lifted.

6.3 Option 2

Full closure under a Section 11 Sustainability measure, except for recreational access to the defined areas around Smuggler's Bay and Urquharts Bay. Recreational dredge ban in SCA 1 under a Section 11 sustainability measure.				
TAC: 9.5 ↓ (20.5 t)	TACC: 0 ↓ (10 t)	Customary: 7.5 t –	Recreational: 1 ↓ (6.5 t) –	Other mortality: 1 ↓ (4)

716. Under Option 2, SCA 1 will be closed to recreational and commercial scallop fishing in all areas except for recreational take by hand gathering/diving, at Smugglers Bay and Urquharts Bay at the entrance of Whangarei Harbour. Commercial fishing is already prohibited in these areas. The proposed permitted fishing areas are shown in Figure 11. The areas include the survey sites from the 2021 NIWA scallop survey. The survey showed that scallop abundance in these areas is at levels that could sustain some ongoing harvest.
717. Under Option 2 recreational dredging will be prohibited in SCA 1 under a section 11 sustainability measure. This will protect juvenile scallops from the impacts of dredging in the areas where scallop harvest can continue.
718. The TAC for SCA 1 would be reduced from 30 tonnes to 9.5 tonnes. Within the TAC, the recreational allowance would be reduced from 7.5 tonnes to 1 tonne to reflect the reduced available fishing area. As with Option 1, the closures under section 11 would not restrict fishing under customary authorisation, and as such the current customary allowance would remain unchanged. The allowance for all other sources of mortality caused by fishing would be reduced from 5 tonnes to 1 tonne. FNZ considers the levels of harvest provided for under this option are sustainable, while still supporting a recovery of the overall stocks.
719. FNZ recognises that this option may result in a concentration of recreational fishing effort at Smugglers Bay and Urquhart's Bay. Both scallop beds are within the Te Renga Paraoa (Whangarei Harbour) rohe moana. Kaitiaki have expressed concerns that fishing on these beds in their current state is unsustainable, and that leaving them open as the only areas in SCA 1 available to scallop harvest would exacerbate the risks to sustainability. Tangata whenua have also considered a section 186A temporary closure on the taking of scallops from their rohe.

This option will not address the concerns of tangata whenua entirely, however several scallop beds within the harbour will be closed, including Takahiwai, Marsden Bay, and Snake Bank.

- 720. FNZ will monitor the beds as part of future management. The beds have been persistent over several years and are well known to recreational fishers. The proposed ban on recreational dredging will reduce impacts on scallop habitat in this area and better protect juvenile scallops recruiting into the beds. The removal of commercial take and the associated lack of dredging activity in surrounding areas is also expected to provide increased resilience and sustainability of these areas. Existing recreational controls including the size limit, bag limit and closed season will continue to constrain overall level of recreational harvest.
- 721. The TACC under Option 2 would be changed from 10 tonnes to 0 tonnes. This reflects that no commercial fishing will be able to occur under the proposed section 11 closure. The available information indicates that the biomass of scallops in all commercial beds is at levels that will not support sustainable harvest and as such a 0 TACC option is considered appropriate.
- 722. This option will protect the fishery so it can rebuild to levels that support future commercial fishing. The absence of commercial take and associated lack of dredging impacts on the core beds is expected to increase the speed of both localised and overall recovery.
- 723. It is acknowledged that Option 2 will impact all scallop fishers in SCA 1 significantly. This option will prevent commercial fishers from utilising the fishery and will prevent their ability to continue to operate while the proposed measures are in place. FNZ considers that these measures will help achieve a return to a long-term sustainable fishery that can support ongoing commercial scallop harvest in the future. As with Option 1, any reopening of the SCA 1 commercial fishery would be considered alongside improvements that may need to be made in terms of the management approach to future harvest.

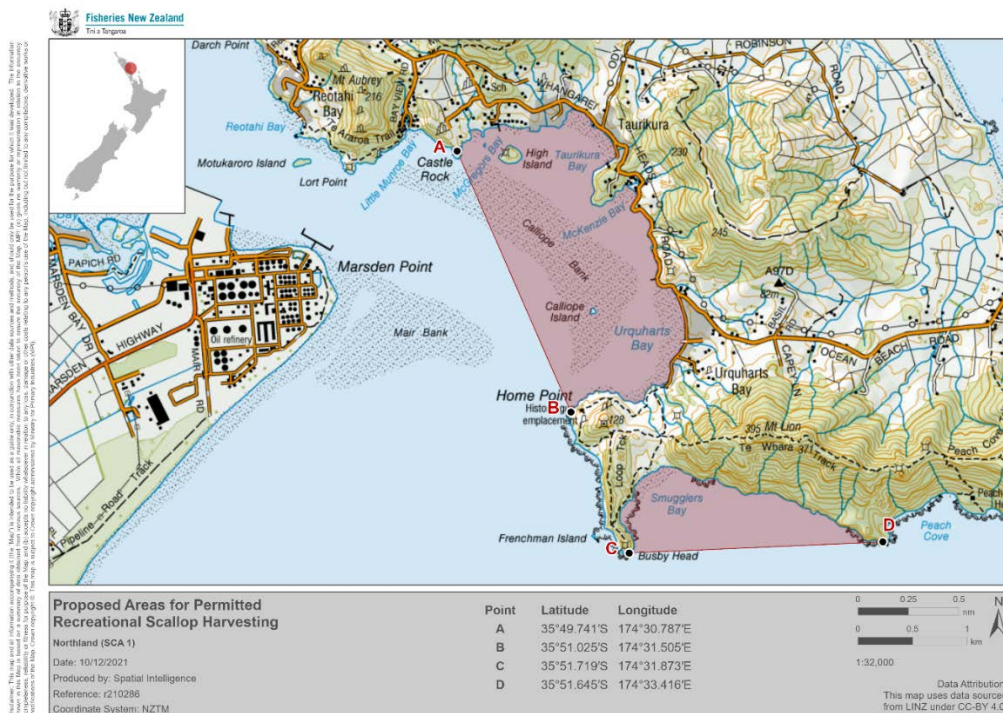


Figure 6: Areas outlining Smugglers Bay and Urquharts Bay in the Northland (SCA 1) fishery where recreational scallop fishing will be permitted under a partial closure. Note: Commercial scallop fishing is already prohibited in this area.

6.4 Option 3

Changes to TAC, TACC and allowances. Recreational dredge ban in SCA 1 under a Section 11 sustainability measure			
TAC: 16 ↓ (14 t)	TACC: 0 ↓ (10 t)	Customary: 7.5 –	Recreational: 7.5 – Other mortality: 1 ↓ (4)

724. Under Option 3, the SCA 1 TAC would be reduced from 30 tonnes to 16 tonnes meatweight.
725. Within the TAC, the allowances for customary and recreational fishing will remain at 7.5 tonnes each. The allowance for other sources of fishing mortality will be reduced from 5 tonnes to 1 tonne.
726. Option 3 proposes to set the TACC for SCA 1 at 0 tonnes meatweight. This option prevents commercial scallop fishing in SCA 1 unless an in-season increase is provided. Historically, in-season increases have been informed by a pre-season survey and CAY estimate. Commercial fishers will be able to utilise the fishery only if information indicates that there is sustainable yield available and an in-season increase of the TAC and ACE is provided. An in-season increase requires a public consultation process and Ministerial decision.
727. Option 3 places weight on the information available that the commercial fishery has the greatest fishing impact on scallop populations. Commercial fishing historically is responsible for most of the scallop harvest in SCA 1 and the method of dredging is known to have negative impacts on scallop populations and the habitats that support them. FNZ considers that Option 3 will protect SCA 1 and allow for the recovery of the stocks to provide for future commercial utilisation.
728. Option 3 takes the approach of removing commercial fishing impacts on the environment, the scallop populations, and the habitat that supports them through reducing the TACC. Option 3 would allow those beds traditionally harvested by commercial fishers to rebuild to abundance levels that will support the long-term sustainability of the SCA 1 fisheries. Increased abundance in these typically larger, deeper beds is also expected to provide support to the recovery of other beds through increased supply of spat, however the exact nature and extent of this effect is not fully understood.
729. A strong theme amongst many submissions was the proposition to ban dredging as a method of harvest. However, while some initiatives to find alternative and viable methods are being explored, a viable alternative harvesting method to dredging does not currently exist for commercial fisheries and, for that reason, the prohibition of commercial dredging is not proposed. FNZ notes that consultation is underway on a proposal to permit commercial fishers to take scallops using underwater breathing apparatus. Some fishers might adopt this method if permitted.
730. If the TACC were to be increased in the future to provide for commercial utilisation, the method of harvest would be considered in the setting of a sustainable TACC at that time. The operation and management of commercial scallop fisheries, including the ongoing use of dredging, will be part of the longer-term management consideration for the fishery. FNZ considers there are opportunities for innovation and development in this area, to work towards methods that have lower environmental impacts.
731. Under Option 3, recreational and customary fishing activity would be able to continue, however, the use of dredging for recreational take would be prohibited to remove any further benthic impacts on recreational beds and promote a recovery of these areas.
732. Recreational fishing also has impacts on scallop beds. The removal of scallop dredging will reduce benthic impacts to recreational scallop beds and promote increased recovery in these areas. As dredging is estimated to make up only 14% of recreational catch and hand gathering/diving (with extra provision for a skipper and safety person) is a viable alternative, the impact on recreational fishers is considered to be low. It is acknowledged that for a small number of recreational fishers, dredging is the only means by which they can collect scallops.

733. While the overall level of recreational access is in effect unconstrained, there are constraints on individual catch via a fishing season and bag and size limits. Typically, recreational take is impacted by availability, with less scallops taken when abundance is lower due to the additional effort required. The size limit for scallops is set to provide the opportunity for scallops to spawn prior to being eligible for harvest. Option 3 relies on these restrictions to ensure that recreational beds continue to recruit juvenile scallops.
734. Under Option 3, the TAC would be reduced and the allowance for other mortality would be reduced to 1 tonne to reflect the reduction in fishing that would occur and the reduced incidental mortality from removing commercial fishing and recreational dredging. The customary allowances remain unchanged to provide for the exercise of customary harvest activities.
735. As with all options, FNZ will monitor the fishery to ensure that the management measures put in place are leading to an appropriate level of recovery within the fishery.
736. Option 3 will impact commercial fishers in SCA 1 significantly and will prevent individuals and businesses in the commercial fishery from utilising the fishery.

Other options proposed by submitters

737. FNZ received a number of submissions proposing that a section 186A temporary closure should be used to close SCA 1 in the place of a section 11 sustainability measure. One of the submitters was The Patuharakeke Mana Moana Committee on behalf of the Patu Harakeke Te Iwi Trust Board and the hapu of Patuharakeke.
738. A section 186A temporary closure is a customary fishing tool used to close areas to fishing or prohibit certain fishing methods. The tool is available to tangata wheua to manage their fisheries. FNZ will provide you with advice if an application for a section 186A closure is received.

6.5 Economic considerations

739. The northern scallop fisheries support a number of people and businesses associated with the commercial fishery. This includes but is not limited to:
- 26 Quota holders of whom 3 each hold more than 10% of the shares.
 - 3 Permit holders using 4 vessels which reported landing SCA 1 in 2021.
 - Seafood processing facilities and licensed fish receivers.
 - Suppliers of fishing equipment and others in the marine industry.
 - Dive shops providing services to recreational fishers
 - Provisioning of vessels (fuel, maintenance, food, ice and other)
 - Local businesses and communities including through restaurants, seafood suppliers, hotels and events such as seafood festivals.
740. Also, under a closure or TACC of 0 tonnes, fishers/vessel operators would likely need to consider moving into a different fishery. This would require some conversion of the vessel to allow for alternative fishing gear to be used and purchase of that gear. The costs of conversion can be considerable, along with costs of obtaining quota or ACE for different species. Should these conversions occur, the fishers have noted the changes would affect the availability of vessels in the event the fishery re-opened.

741. Under Option 1, the TACC would not be reduced, however, the fishery would be closed under section 11 of the Act. This would prohibit any commercial harvest thus reducing the landed catch to 0 tonnes – a 100% reduction.
742. Under Options 1A, 2 and 3, the TACC would also decrease by 100% from 10 tonnes to 0 tonnes.
743. Based on the 2020/21 port price of \$15.90/kg this would result in an approximate potential decrease in revenue of \$159,000 (Table 8). This is the maximum potential loss, in 2021 7.5 tonnes of scallops were landed with a revenue of \$119,456 based on reported port price. Port prices are useful to indicate the relative effect of different options, but FNZ recognises that port prices do not reflect the full financial effects of options. Port prices are obtained from industry surveys and are the best metric we have for the commercial value of different species.

Table 10: Predicted changes to commercial revenue for the proposed options, based on estimated average export price in 2020/21 of \$15.9/kg for Northland Scallops (SCA 1).

Stock	Option	Change from current TACC (tonnes)	Predicted export revenue changes (\$p.a.)
SCA 1	Option 1&1A	10 ↓ (s11 full closure)	\$159,000
	Options 2 & 3	10 ↓	\$159,000

6.6 Other considerations

744. There was broad support from submitters for banning dredging, with 55 individual and representative submitters suggesting that all dredging be banned.
745. Some submitters suggested that –
- The TAC change is not enough, and a more holistic approach be developed.
 - diving with dive cylinders/tanks (SCUBA) also be banned.
 - There should be no harvesting of any species during the spawning season.
 - The skipper and diver safety person allowances (20 scallops each per day) should be dropped, and a shorter fishing season introduced.
746. These options were not consulted on and can be included as part of further consideration of future management approaches, including Iwi and stakeholders.

6.7 Deemed values

747. Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's ACE holdings. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year, while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting.
748. The Deemed Value Guidelines set out the operational policy FNZ uses to inform the development of advice provided to you on the setting of deemed values.
749. The deemed value rates for SCA 1 are shown in Table 11.

Table 11: Deemed value rates for SCA 1.

Stock	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
SCA 1	25.20	28.00	33.60	39.20	44.80	50.40	56.00

750. FNZ considers that under all proposed options the current deemed value rates are set appropriately and are not proposed to be adjusted as part of this sustainability review.
751. 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.

7 Conclusions and recommendations

752. The 2021 surveys of the abundance and biomass of the SCA 1 fishery have highlighted that there are concerns for the ongoing sustainability of scallop populations within SCA 1. FNZ concludes that the best available information suggests that the SCA 1 populations are at low abundance and low density as evidenced in the survey results for most survey and fished areas. Scallops are also facing uncertain environmental effects. These factors may adversely affect scallop spawning success and subsequent recruitment.
753. While it is likely there are a number of contributing factors for the current low abundance of scallops, including uncertain environmental effects and other effects not related to fishing, FNZ considers it is clear that ongoing fishing at current levels and under the current management settings poses a risk of further decline in this important shared fishery.
754. FNZ considers that the SCA 1 fishery is not responding to the current management approach and is concerned that the decline in biomass (across the core surveyed and fished areas) suggests that current catch limits are not sustainable. While management reference points for SCA 1 are not available, FNZ is concerned that the stock is not being maintained at or above the level that can produce MSY.
755. In addition, there are concerns regarding the impact of dredging on scallops, their habitat, and on the benthic environment more generally. FNZ considers that to ensure the recovery of the SCA 1 population, protection of the scallop population and habitat is necessary.
756. Given the available information, FNZ considers that a cautious approach to managing the recovery of this stock is appropriate to provide the best opportunity for the SCA 1 populations to improve, while further development of management approaches and harvesting technology are undertaken.
757. FNZ concludes that all options presented satisfy your obligations under s 13 of the Act, will protect scallops and their habitat from the effects of dredging, and are likely to ensure sustainability by providing the opportunity for the scallop populations to improve their status. However, FNZ recommends that Option 1A carries the least sustainability risk and is the most cautious response. It addresses the impacts of fishing affecting the scallop fisheries and will allow for scallop populations and their environments to remain undisturbed until the management arrangements are reviewed.
758. Under Option 1A, SCA 1 will be closed to scallop fishing and the TAC reduced to 8.5 tonnes with an allowance of 7.5 tonnes for customary fishing, 0 tonnes for recreational fishing, and 1 tonne for other mortality caused by fishing. Option 1A addresses submissions regarding Option 1 and the view that the TAC, TACC and allowances should be reduced to recognise that no commercial or recreational fishing would occur while a closure was in place under section 11, and that the TAC should be set to reflect the state of the fishery. Setting a TACC of 0 tonnes under Option 1A also addresses concerns that under the TACC setting in Option 1 quota holders will continue to be charged fisheries cost recovery levies despite not being able to harvest and sell scallops.
759. It is acknowledged that Option 1A will impact all fishers in SCA 1 significantly. The most significant impact will be the complete exclusion of commercial fishing and the associated

industries, which are currently built around the SCA 1 fishery. However, based on the best available information from the recent survey results, FNZ considers that this option would provide the maximum opportunity for recovery of the fishery

760. Should you wish to take a less cautious approach, and provide for limited utilisation, Option 2 could be considered. It would allow for recreational fishing by hand gathering/diving only within two areas in Whangarei Harbour (where surveys suggested some yield is sustainable), while all commercial scallop fishing would be excluded from SCA 1. This would provide some balance between providing for utilisation and ensuring sustainability, although the impact on commercial fishing would be significant.

8 Decision for SCA 1

Option 1

Agree to close the SCA 1 Quota Management Area to scallop fishing under a section 11 sustainability measure.

AND

Agree to retain the SCA 1 TAC at 30 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes;
- ii. Retain the allowance for recreational fishing interests at 7.5 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 5 tonnes;
- iv. Retain the SCA 1 TACC at 10 tonnes.

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

OR

Option 1A (Fisheries New Zealand preferred option)

Agree to close the SCA 1 Quota Management Area to scallop fishing under a section 11 sustainability measure.

AND

Agree to Reduce the SCA 1 TAC from 30 to 8.5 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes; *
- ii. Reduce the allowance for recreational fishing interests from 7.5 to 0 tonnes;
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 5 to 1 tonnes;
- iv. Reduce the SCA 1 TACC from 10 to 0 tonnes.

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

OR

Option 2

Agree to close the SCA 1 Quota Management Area to scallop fishing, except for the defined areas around Smuggler's Bay and Urquharts Bay at the entrance of Whangarei Harbour under a section 11 sustainability measure.

AND

Agree to Reduce the SCA 1 TAC from 30 to 9.5 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes;
- ii. Reduce the allowance for recreational fishing interests to 1 tonnes;
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 5 to 1 tonnes;
- iv. Reduce the SCA 1 TACC from 10 to 0 tonnes.

AND

Agree to Prohibit recreational dredging in SCA 1 under a section 11 sustainability measure.

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

OR

Option 3

Agree to Reduce the SCA 1 TAC from 30 to 16 tonnes and within the TAC:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 7.5 tonnes;
- ii. Retain the allowance for recreational fishing interests at 7.5 tonnes;
- iii. Reduce the allowance for all other sources of mortality to the stock caused by fishing from 5 to 1 tonnes;
- iv. Reduce the SCA 1 TAC from 10 to 0 tonnes.

AND

Agree to Prohibit recreational dredging in SCA 1 under a section 11 sustainability measure.

Agreed / Agreed as Amended / Not Agreed

AW

Duncan

Minister of Ocean & Fisheries

14/2/2022

see note over (p 140)

Disclaimer: This map and all information accompanying it (the "Map") is intended to be used as a guide only in conjunction with other data sources and methods, and should only be used for the purposes for which it was developed. The information shown in this Map is based on a summary of data obtained from various sources. While all reasonable measures have been taken to ensure the accuracy of the Map, MPI (a) gives no warranty or representation in relation to the accuracy, completeness, reliability or fitness for purpose of the Map, and (b) accepts no liability whatsoever in relation to any loss, damage or other costs relating to any person's use of the Map, including but not limited to any compilations, derivative works or modifications of the Map. Crown copyright administered by Ministry for Primary Industries (MPI). This map is subject to Crown copyright administered by Ministry for Primary Industries (MPI).



Figure A1. Fishing restrictions in the Northland (SCA 1) scallop fishery.

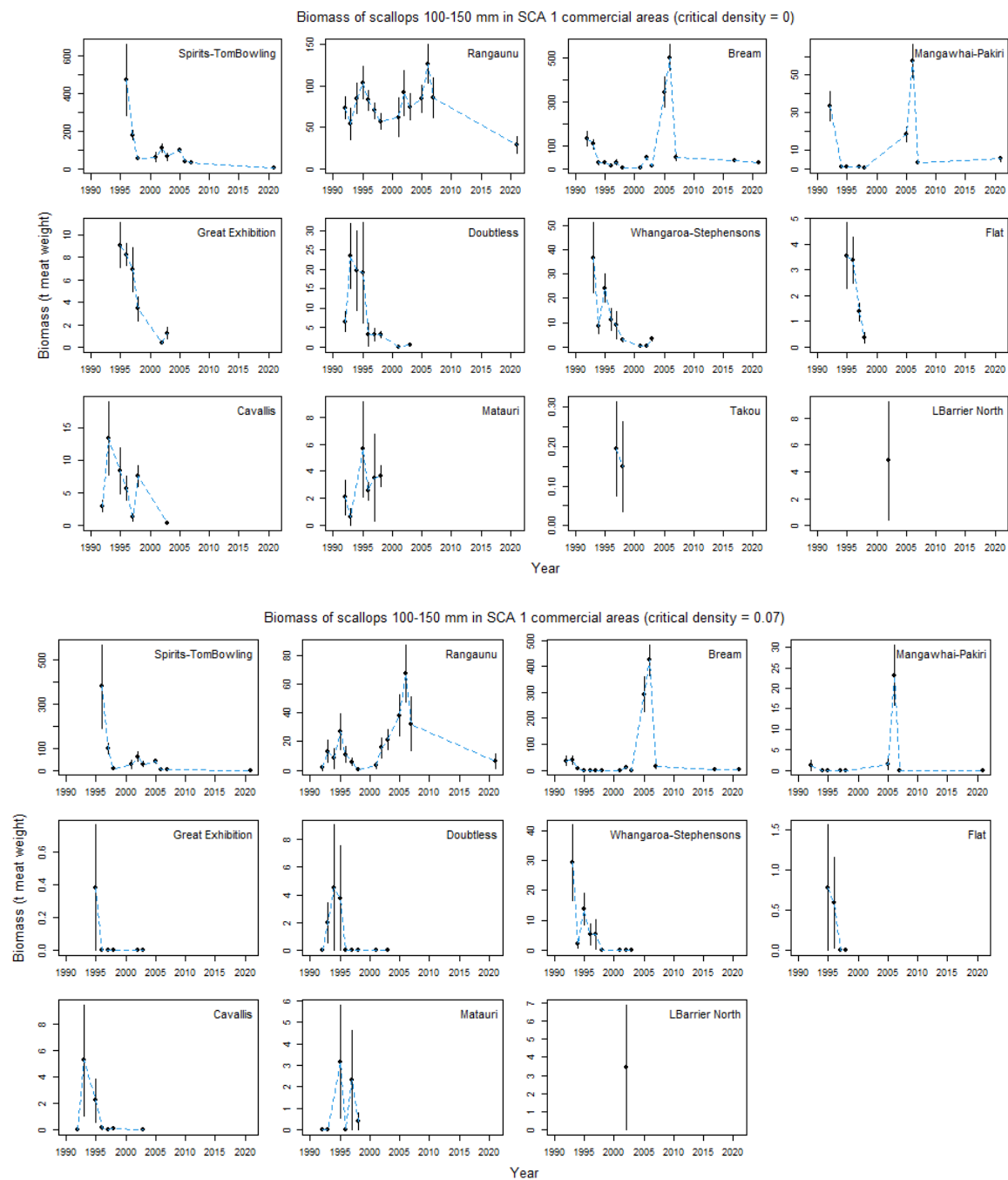


Figure A2. Time series of absolute (top) and commercially fishable (bottom) recruited scallop biomass (t meat weight of scallops 100 mm or larger) between 1990 and 2021 in Northland (SCA 1) commercial scallop locations. Estimates were generated by reanalysing the raw survey data and dredge efficiency estimated from paired dive-dredge sampling in 2021. Commercially fishable biomass (bottom) is the biomass that occurs in areas of scallop density greater than or equal to a critical density threshold of 0.07 recruited scallops.m⁻², which calculations suggest equates to a fishery CPUE of 50 kg.h⁻¹ (green weight of scallops 100 mm or larger per hour of dredging).

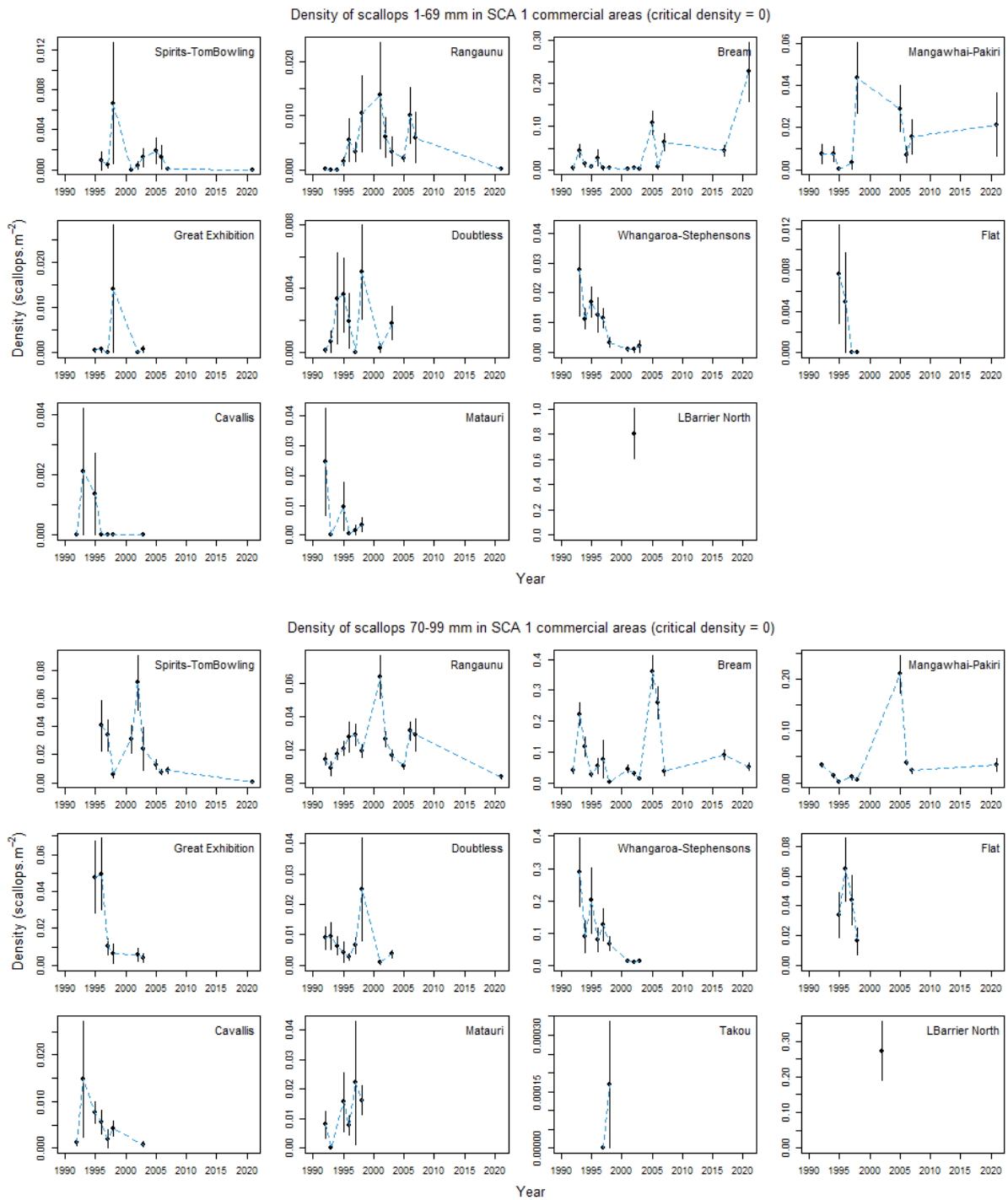


Figure A3. Time series of pre-recruit scallop density between 1990 and 2021 in Northland (SCA 1) commercial scallop locations. Top: pre-recruit scallops 1–69 mm shell length. Bottom: pre-recruit scallops 70–99 mm. Estimates were generated by reanalysing the raw survey data and dredge efficiency estimated from paired dive-dredge sampling in 2021.

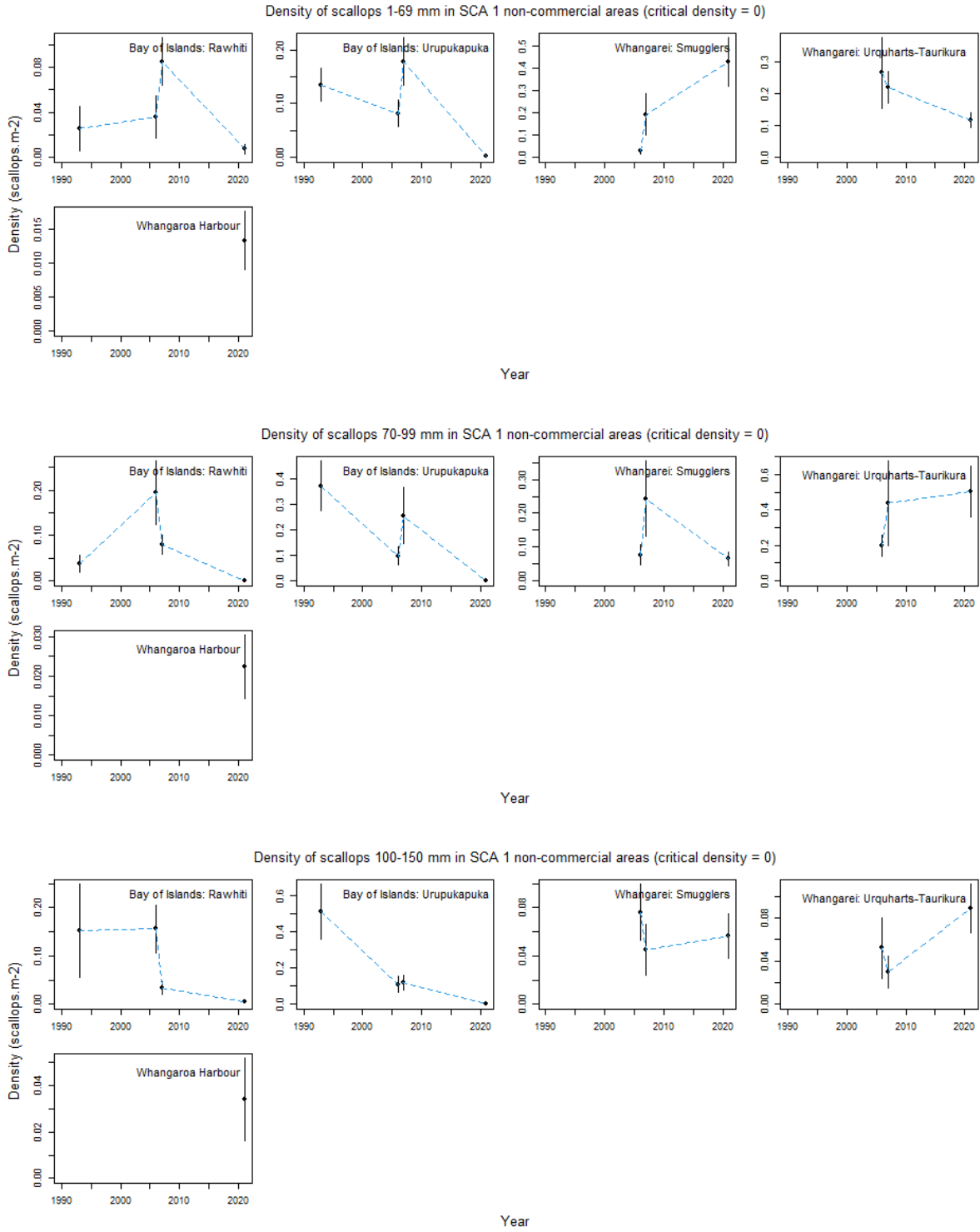


Figure A4. Time series of scallop density between 1990 and 2021 in Northland (SCA 1) non-commercial scallop locations. Top: Juvenile scallops (1–69 mm). Centre: pre-recruit scallops (70–99 mm). Bottom: Recruited scallops (100–150 mm). Estimates were generated by reanalysing the raw survey data, using a subset of strata

Disclaimer: This map and all information accompanying it (the "Map") is intended to be used as a guide only. It is produced in conjunction with other data sources and methods, and should not be used for the purposes for which it was developed. The information shown in this Map is based on a summary of data obtained from various sources. While all reasonable measures have been taken to ensure the accuracy of the Map, MPI (a) gives no warranty or representation in relation to the accuracy, completeness, reliability or fitness for purpose of the Map; and (b) accepts no liability whatsoever in relation to any loss, damage or other costs relating to any person's use of the Map, including but not limited to any compilations, derivative works or modifications of the Map. Crown copyright ©. This map is subject to Crown copyright administered by Ministry for Primary Industries (MPI).

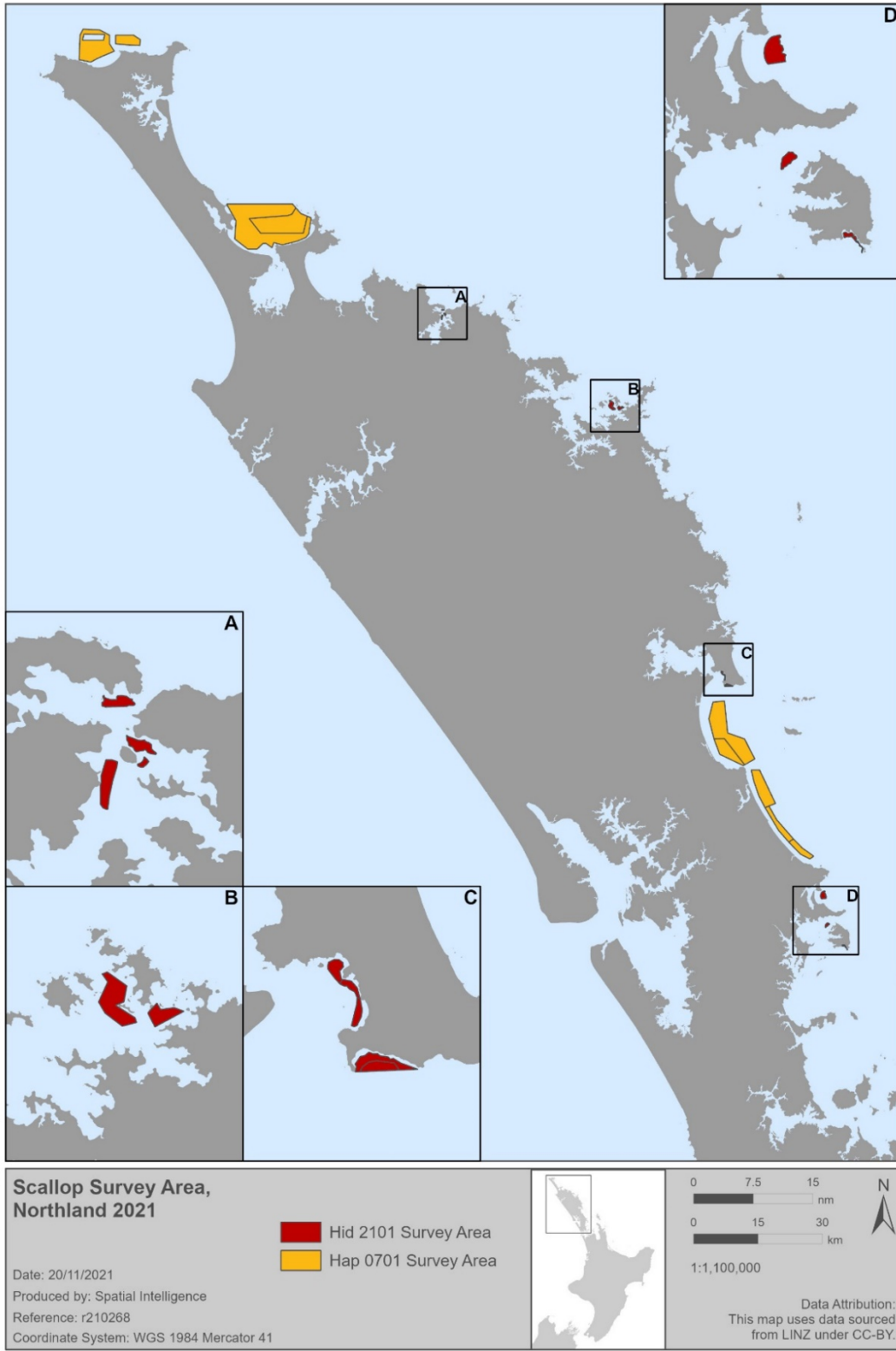


Figure A5. Scallop Survey Area in SCA 1 2021.

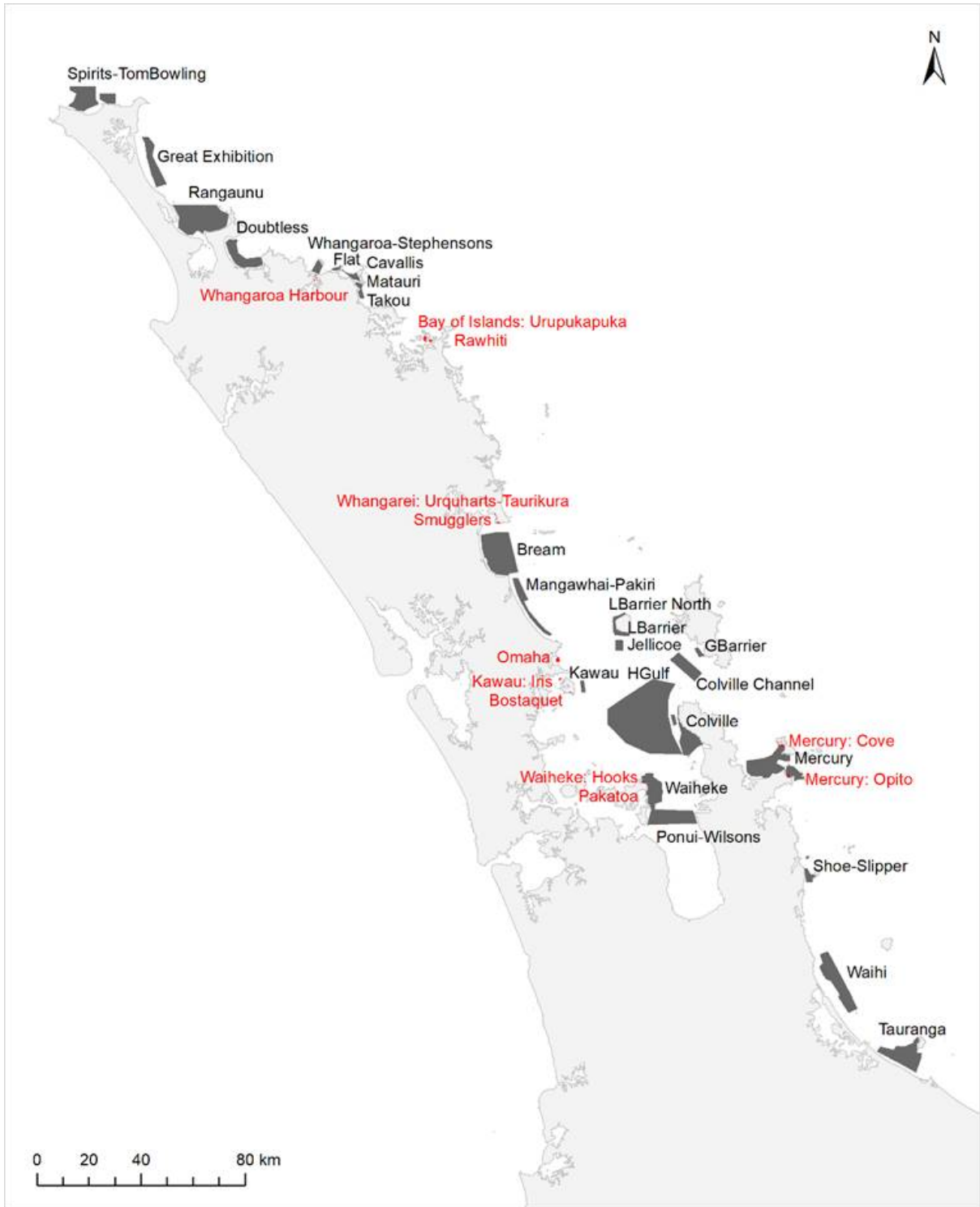


Figure A6. Historical commercial (black) and non-commercial (red) sites from scallop surveys conducted between 1990 and 2021.

Table A1: Written submissions and responses received for SCA 1 (in alphabetical order).

Submitter	Option Support				
	1	2	3	Ban Dredging	Other
Conor Pullman			✓	✓	
Joe Dennehy				✓	✓
Visit Waiheke Richard Potter					✓
John Rosser				✓	✓
Andrew Dean	✓				
Dive Now Whangarei Simon Collins		✓		✓	
Davey Milich					✓
Robert Brown				✓	✓
The Mussel Reef Restoration Trust Shaun Lee	✓			✓	
Peter & Florence Hewitt			✓	✓	
Hanna King				✓	✓
Catherine McNamara	✓				
Kris Wyatt					✓
Olaf Jones				✓	✓
Sam Cook	✓			✓	
Rita Gregory				✓	✓
Tony Lenz				✓	✓
Samuel Michael Henehan	✓			✓	
Tom Webb		✓			
Jack Worthington	✓			✓	
Luke Williamson	✓			✓	
John Beau	✓			✓	
Andrew Williams				✓	✓
Terrence Brocx			✓	✓	
Heidi Rosser	✓			✓	
Matt Parkinson	✓				
Paul Ganley	✓			✓	
John Gardiner				✓	✓
Owen Marshall					✓
Te Ohu Kaimoana					✓
Paul Mason					✓
Paul Buisson		✓			
Michael Badham			✓		
Patrick Chaplin					✓
Neil Dobbs	✓				
Dyne Hemara	✓				
Vicky Froude	✓			✓	
Mike Butcher			✓	✓	
Chris Wade Willis		✓			
Faculty of Science, University of Auckland Andrew Jeffs				✓	✓
Nat Davey	✓				
Tony & Joanne Tisot			✓	✓	
Dr David Flaws		✓			
Alvah Simon		✓			

Wakaminenga Ki Waitangi Komiti Maori Merehora Taurua	✓		
Tony Phipps		✓	▪
Simon Braithwaite		✓	
Paul Anderson	✓	✓	
Ryan Welsh	✓	✓	
Amy Macdonald	✓		
Kathy Silk	✓		
Anthony Anderson	✓		
Sally Griffin	✓	✓	
Lil Craig	✓		
Allen Temple	✓		
Kim Jones	✓		
Blair Jones	✓		
Brendon Chetham	✓		
Nick Somerhayes	✓		
Luke Ogle	✓	✓	
Ngatiwai Marae Committee and Moana Futures Ltd Jury Greenland			✓
Karl Pepi			✓
Nadia Pavlovich	✓		
Andrew Caldwell- Smith	✓		
Justin Caldwell- Smith	✓		
Vicky Pavlovich	✓		
Dino Pavlovich	✓		
John Beu		✓	
Sue Beu		✓	
Richard Eiger	✓	✓	
Jan Boyes	✓	✓	
Peter Thorne	✓		
Rueben Boyd		✓	
Marilyn Erica Berry	✓	✓	
William Andrewes	✓		
Ross Scobie	✓		
Susan Crawford		✓	✓
Nigel Crawford		✓	✓
Daniel Crawford		✓	✓
Robyn Johnston	✓	✓	
Northland Scallop Enhancement Company LTD Brad Leggott		✓	✓
Yoshimi Brett	✓		
Whangarei Heads Citizens Association Logan Carter			✓
Steve Collie		✓	✓
Melissa Arseneault	✓	✓	
Te Parawhau and Patuharakeke at Takahiwai Mere Kepa	✓		
Eljon Fitzgerald	✓	✓	
Rob Coates	✓		
Karen Kiss	✓	✓	

Rick Miller		✓			✓
Andrew Wiseman					✓
NZ Sport Fishing Council	✓				
Katarina & Campbell Moore		✓			
Ngati Kuta ki Te Rawhiti Robert Willoughby and Matu Clendon			✓		✓
Matawai Pokapu Komiti Maori Mere Mangu		✓			
Ngatiwai Trust Board	✓				
Matthew Conmee	✓				
Fish Forever John Booth	✓		✓		
Great Barrier Local Board Izzy Fordham	✓				
Jean McLaughlan	✓				
Karen Wealleans	✓				
James Frankham	✓		✓		
Geoff Pike	✓				
Environmental Defense Society Inc Tracey Turner	✓		✓		
Northland Scallop Enhancement Company LTD Tom Hollings					✓
Ross Christensen	✓		✓		
Anthony Morgan	✓		✓		
Graham Brough			✓		✓
Barbara Strack		✓			
Forest & Bird Geoff Keey	✓		✓		
Sydney Curtis-Wilson	✓		✓		
Fisheries Inshore New Zealand Tom Clark			✓		x
Iwi Collective Partership Maru Samuels	✓				
Chris Venmore					✓
	48	24	9	52	33