Ministry for Primary Industries
Manatū Ahu Matua

Review of Sustainability Measures for Rock Lobster (CRA 2, 4, 7 & 8) for 2018/19

Proposal to Alter Total Allowable Catches, Allowances, and Total Allowable Commercial Catches

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Growing and Protecting New Zealand

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Contents

Page

1 Submission Information

1. The Ministry for Primary Industries (MPI) and the multi-sector National Rock Lobster Management Group (an advisor on rock lobster management matters) welcomes written submissions on any or all of the proposals contained in this discussion paper. All written submissions must be received by MPI no later than 5pm on **Friday 9 February 2018**.

2. Written submissions should be emailed to FMsubmissions@mpi.govt.nz

   or sent directly to:
   Sustainability Review 2018
   Fisheries Management
   Ministry for Primary Industries
   P O Box 2526
   Wellington 6011.

1.1 OFFICIAL INFORMATION ACT 1982

3. All submissions are subject to the Official Information Act and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

2 Statutory Considerations

4. This section provides an overview of the Minister of Fisheries (the Minister's) legal obligations under the Fisheries Act 1996 (the Act) when setting or varying Total Allowable Catches (TACs) and Total Allowable Commercial Catches (TACCs) for New Zealand fishstocks.

5. Where relevant, stock-specific details relating to these obligations are set out in the section of the discussion paper relating to each stock.

2.1 SECTION 5(a) – INTERNATIONAL OBLIGATIONS

6. Section 5(a) says the Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with New Zealand's international obligations relating to fishing. As a general principle, where there is a choice in the interpretation of the Act or the exercise of discretion, the decision maker must choose the option that is consistent with New Zealand's international obligations relating to fishing.

7. The two key pieces of international law relating to fishing, and to which New Zealand is a party, are the United Nations Convention on the Law of the Sea, 1982 and the United Nations Convention on Biological Diversity 1992. International obligations also derive from New Zealand being a signatory to a number of international conventions. Of particular relevance are regional fisheries management organisations, Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on Migratory Species.

2.2 SECTION 5(b) – TREATY OF WAITANGI (FISHERIES CLAIMS) SETTLEMENT ACT 1992

8. Section 5(b) says the Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under it are required to act, in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act). This obligation furthers the agreements expressed in the Deed of Settlement referred to in the Preamble to the Settlement Act.

9. The development of customary regulations, Iwi Fisheries Forums, and providing for the input and participation of iwi in fisheries decisions, discussed elsewhere in this paper, are some of the ways in which the obligations in the Settlement Act are given effect to.

2.3 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

10. Section 8 says the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

11. "Ensuring sustainability" is defined as: "maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment". "Utilisation" of fisheries resources is defined as "conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing."

12. The Supreme Court has stated that the purpose statement incorporates "the two competing social policies reflected in the Act" and that "both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system....[I]n the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability".[1]

2.4 SECTION 9 – ENVIRONMENTAL PRINCIPLES

13. Section 9 prescribes three environmental principles that the Minister must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability.

Principle 1: Associated or dependent species should be maintained above a level that ensures their long-term viability.

14. The Act defines "associated and dependent species" as any non-harvested species taken or otherwise affected by the taking of a harvested species. "Harvested species" is defined to mean any fish, aquatic life or seaweed that may for the time being be taken with lawful authority. So this principle is focussed on species (such as protected species) for which a permission to target commercially cannot be given.

15. The term "long-term viability" (in relation to a biomass level of a stock or species) is defined in the Act as a low risk of collapse of the stock or species, and the stock or species has the potential to recover to a higher biomass level. This principle therefore requires the continuing existence of species by maintaining populations in a condition that ensures a particular level of reproductive success.

16. Where fishing is affecting the viability of associated and dependent species, appropriate measures such as method restrictions, area closures, and potentially adjustments to the TAC of the target stock should be considered.

Principle 2: Biological diversity of the aquatic environment should be maintained.

17. "Biological diversity" is defined in the Act as 'the variability among living organisms, including diversity within species, between species, and of ecosystems'. Determining the level of fishing or the impacts of fishing that can occur requires an assessment of the risk that fishing might cause catastrophic decline in species abundance or cause biodiversity to be reduced to an unacceptable level.

Principle 3: Habitat of particular significance for fisheries management should be protected.

18. Habitat is defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. MPI considers habitat to mean those waters and substrates necessary for fish to spawn, breed, feed or grow to maturity. These should be protected and adverse effects on them avoided, remedied, or mitigated.

2.5 SECTION 10 – INFORMATION PRINCIPLES

19. Section 10 prescribes four information principles that the Minister must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability:

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

a) Decisions should be based on the best available information;
b) Decision makers should take into account any uncertainty in the available information;
c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
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 the Act.

20. Less than full information suggests caution in decision-making, not deferral of a decision completely. "The fact that a dispute exists as to the basic material upon which the decision must rest, does not mean that necessarily the most conservative approach must be adopted. The obligation is to consider the material and decide upon the weight which can be given it with such care as the situation requires."[2]

21. Both scientific and anecdotal information need to be considered and weighed accordingly when making management decisions. The weighting assigned to particular information is subject to the certainty, reliability, and adequacy of that information.

22. As a general principle, information outlined in the MPI Fishery Assessment Plenary Report is considered the best available information on stock status and should be given significant weighting. The information presented in the Plenary Report is subject to a robust process of scientific peer review and is assessed against the Research and Science Information Standard for New Zealand Fisheries.[3] Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

2.6 SECTION 11 – SUSTAINABILITY MEASURES

23. Section 11(1) allows sustainability measures (such as a TAC) to be set or varied after the following factors are taken into account:
a) Any effects of fishing on the stock and the aquatic environment;
b) Any existing controls that apply to the stock or area concerned; and
c) The natural variability of the stock concerned.

24. Section 11 (2) says that before any sustainability measure is set or varied the Minister must have regard to any provision of–
a) Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991;
b) Any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and which the Minister considers to be relevant;
c) Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000;
ca) Regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and
d) A planning document lodged with the Minister of Fisheries by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011–
that apply to the coastal marine area and are considered to be relevant.

[2] *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.
[3] A non-binding MPI Policy Document.

25. Section 11 (2A) requires the Minister 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); and
    c) Any decisions not to require conservation services or fisheries services.

26. Services of particular relevance to this paper relate to programmed research used to monitor stock abundance. To date national fisheries plans have been approved only for deepwater and highly migratory species.

2.7 SECTION 12 – CONSULTATION AND INPUT AND PARTICIPATION OF TANGATA WHENUA

27. Section 12(1) says that before setting or varying any sustainability measure under the Act the Minister is required to:
    - Consult with those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including, but not limited to, Māori, environmental, commercial and recreational interests; and
    - Provide for the input and participation of tangata whenua having a non-commercial interest in the stock concerned or an interest in the effects of fishing on the aquatic environment in the area concerned; and have particular regard to kaitiakitanga.

28. The Act defines Kaitiakitanga to mean "the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori", where tikanga Māori refers to Māori customary values and practices.

29. Iwi Fisheries Forums and Forum Fisheries Plans are ways in which input and participation of tangata whenua can be provided for. Information provided by Forums and iwi views on the management of fisheries resources and fishstocks set out in Iwi Fisheries Plans express how tangata whenua exercise kaitiakitanga in respect of the stocks and areas in this sustainability round.

30. Section 12 (2) says that as soon as practicable after setting or varying any sustainability measure, the Minister shall give the persons consulted under 12(1), the reasons in writing for his or her decisions.

2.8 SECTION 13 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE CATCH (TAC)

31. A central consideration when choosing whether to use a management procedure to guide TAC setting in a rock lobster fishery is whether the procedure enables the Minister to set a TAC that complies with section 13 of the Act.

32. Under section 13 the general premise is to set a TAC that maintains the biomass of a stock at or above a level that can produce the maximum sustainable yield (MSY). That biomass level is abbreviated as B_{MSY}.

33. Under section 13(2) of the Act, the Minister must set a TAC that maintains a stock at or above a level that can produce the MSY, in a way that will result in the stock being

restored to or above a level that can produce the MSY, having regard to the interdependence of stocks. However, before a TAC can be set under section 13(2) the Minister must be provided with an assessment of both current biomass and the biomass that can produce MSY.

34. Where current biomass or B_{MSY} estimates are not available or not reliable, then the Minister is required to apply section 13 (2A) of the Act for the purposes of setting a TAC. Section 13 (2A) requires the Minister to set a TAC using the best available information, and ensuring that the TAC is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level which can produce the MSY.

35. The Minister may set the TAC to achieve the objective in a way and rate which has regard to the interdependence of stocks and within a period appropriate to the stock. In considering the way and rate in which a stock is moved towards or above a level that can produce the MSY under section 13(2)(b) or (c) or (2A), the Minister must have regard to such social, cultural and economic factors that are considered relevant.

36. The management procedures discussed in this paper are designed to move stock biomass to, or maintain the biomass of each stock at, a size at or above agreed reference levels (i.e. B_{REF}) as required under section 13 of the Act.

37. When setting a TAC under section 13, the Minster must also have regard to the biological characteristics of the stock, and any environmental conditions affecting the stock.

2.9 SECTIONS 20 & 21 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE COMMERCIAL CATCH (TACC)

38. After setting or varying the TAC, a separate decision arises in respect of allocating the TAC.

39. When setting a TACC for a stock under section 20 of the Act, section 21 requires the Minister to have regard to the TAC for that stock and allow for Māori customary non-commercial fishing interests, recreational interests, and all other sources of fishing-related mortality to that stock (including illegal catch and handling related mortality).

40. The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, the Minister has the discretion to make allowances for various sectors based on best available information.

41. The Courts have in a number of cases considered what is involved in allowing for non-commercial interests. In Snapper 1[4], the Court of Appeal said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which the Minister decides to impose upon them, e.g. bag limits and minimum lawful sizes. Having set the TAC, the Minister in effect apportions it between the relevant interests[5].

[4] New Zealand Fishing Industry Association (Inc) v Minister of Fisheries CA 82/97, 22 July 1997 ("Snapper 1").
[5] Snapper 1, p 17.

42. The Supreme Court in Kahawai[6] endorsed this approach and said that the words "allow for" require the Minister both to take into account the interests and make provision for them in the calculation of the TACC[7]. The Supreme Court went on to say that sections 20 and 21 prescribe a framework within which the Minister must operate when setting the TACC. The framework requires apportionment of the TAC by the Minister among the various interests and other mortality. The sequential nature of the method of allocation provided for in section 21 does not indicate that non-commercial fishing interests are to be given any substantive priority over commercial interests. In particular, the allowance for recreational interests is to be made keeping commercial interests in mind[8].

43. The Supreme Court further said that in the end, within the limits provided for by the Act, the Minister makes a policy decision as to what allocations are appropriate for non-commercial interests and other mortality, and what is to be the TACC. These decisions are interdependent. The Act does not confer priority for any interests over the other. It leaves that to the Minister's judgment.[9]

44. The Courts have also commented on the Minister's responsibilities in respect of allowances. The allowance represents what the Minister considers recreational interests should be able to catch, but also all that they will be able to catch. The Act envisages that the relevant powers will be exercised as necessary to achieve that goal.[10] Both the law and common sense dictate that a Minister should not reduce the TACC for conservation reasons unless able to take, and taking, reasonable steps to avoid the reduction being rendered futile through increased recreational fishing.[11]

45. When allowing for Māori customary non-commercial fishing interests, the Minister must take into account any relevant mātaitai reserves within the relevant quota management areas and any area closure or fishing method restriction or prohibition within those areas made under section 186A of the Act. There are a number of mātaitai reserves and temporary closures that fall within the areas of the rock lobster stocks discussed in this document. The intent is that the purpose of measures enacted to provide for customary fishing are not adversely affected, or reasons for limited customary take are ignored, when setting the customary allowance.

46. When allowing for recreational interests, the Minister must take into account any regulations made under section 311 of the Act that close an area or areas to commercial fishing for a stock. There are currently no section 311 regulations applying in the areas of the rock lobster stocks discussed in this paper.

[6] New Zealand Recreational Fishing Council Inc v Sanford Limited [2009] NZSC 54 ("Kahawai")
[7] Kahawai [55]
[8] Kahawai [61]
[9] Kahawai [65]
[10] Kahawai [56]
[11] Snapper at 101-102

3 Background Information

47. This section provides relevant background information on the management approach for rock lobster, stock indicators, and the MPI Harvest Strategy Standard.

3.1 MANAGEMENT APPROACH FOR ROCK LOBSTER STOCKS

48. The overall management approach for rock lobster fisheries is to monitor and manage them closely to provide for utilisation while ensuring sustainability. The use of responsive management procedures and regular review of rock lobster TACs is consistent with this management approach. Being able to respond to changes in rock lobster abundance is important, because rock lobster populations can fluctuate with changes in their environment.

49. The NRLMG acts as an advisor to the Minister on catch limit, regulatory and other management actions that apply specifically to rock lobster fisheries. The NRLMG is a national-level, multi-stakeholder group comprising representatives of customary, recreational and commercial fishing sectors and MPI.

50. The NRLMG's management goal is for all rock lobster fisheries: "to be managed and maintained at or above the assessed and agreed reference levels, using a comprehensive approach that recognises a range of customary Māori, amateur, commercial and environmental concerns and values".

3.2 DEFINITION OF STOCK INDICATORS

51. Two stock indicators are relevant to evaluation of the proposals presented in this paper[12]:

    a) The conceptual proxy, $\boldsymbol{B_{REF}}$, a reference biomass level.[13] The use of $\boldsymbol{B_{REF}}$ is a way of assessing a stock that is not inconsistent with the objective of maintaining a stock at or above, or moving the stock towards, a level that can maintain the maximum sustainable yield (MSY). This "not inconsistent" approach is set out in section 13(2A) of the Act where the Minister considers that current biomass or $\boldsymbol{B_{MSY}}$ cannot be estimated reliably using best available information. $\boldsymbol{B_{REF}}$ is generally a stock size at or above the stock size associated with a period in the fishery that showed good productivity and was demonstrably safe.

    b) Spawning stock biomass, ***SSB***, which is the weight of all mature females in the autumn-winter.

[12] Stock size is measured in terms of autumn-winter vulnerable biomass for the B_{REF} indicator. "Vulnerable biomass" is the biomass that is available to be caught legally: above the minimum legal size and not egg bearing if female.

[13] The Operational Guidelines for the Harvest Strategy Standard describe the B_{REF} concept as follows: "Conceptual proxies for B_{MSY}, F_{MSY} and *MSY* are qualitative surrogates that can be used in the absence of adequate information to directly estimate these reference points themselves. The conceptual interpretation embraces the spirit and intent of section 13 of the Act. It can be used in cases where there is insufficient information to estimate B_{MSY}, F_{MSY} or *MSY* explicitly, or where such estimates may be unreliable because, for example, there is little or nothing known about the stock recruitment relationship. In cases where the relationship between CPUE and abundance can be assumed to be more or less proportional, or where some other form of relationship has been derived from data, it may be reasonable to select an appropriate historical period when both CPUE and catches were relatively high and to use this CPUE level as a target. *The best example in current use in New Zealand is that for rock lobster*." [emphasis added].

3.3 MPI HARVEST STRATEGY STANDARD

52. The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fishstocks in the Quota Management System. It outlines MPI's approach to relevant sections of the Act, and as such, forms a core input to advice to the Minister on the management of fisheries, particularly the setting of TACs under section 13. The HSS is not, however, legally binding and the Minister is not obliged to choose options based on it.

53. The HSS specifies that management procedures should be designed to ensure that the probability of:

- Achieving the *MSY*-compatible target or better is at least 50%;
- Breaching the soft limit does not exceed 10%; and
- Breaching the hard limit does not exceed 2%.

54. For rock lobster:

- '*MSY*-compatible target' reference points include those that relate to stock biomass (B_{MSY}) as well as conceptual proxies (B_{REF});
- The soft limit is defined as 20% of the unfished SSB level or 50% B_{REF}; and
- The hard limit is defined as 10% of the unfished SSB level or 25% B_{REF}.

Rock lobster (CRA 2, 4, 7 and 8)

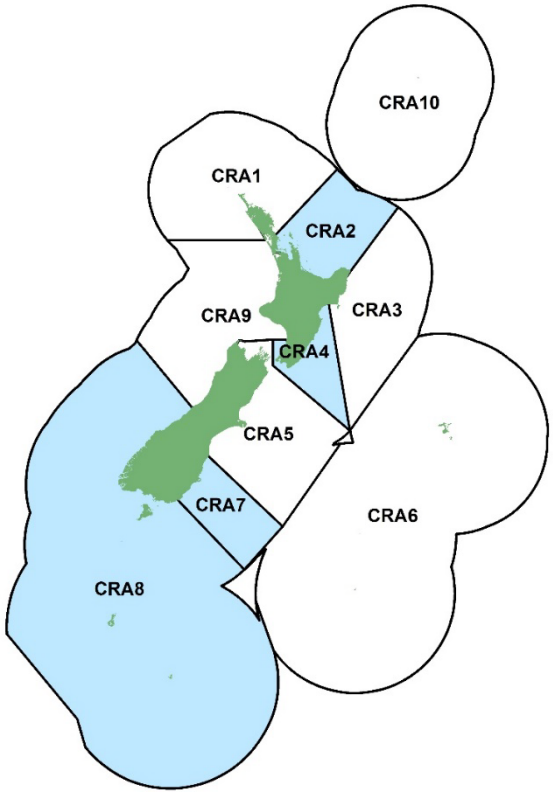

Figure 4.1: Map of rock lobster Quota Management Areas showing stocks under review in blue.

4 What is proposed?

55. It is proposed that the Total Allowable Catch (TAC), allowances and the Total Allowable Commercial Catch (TACC) are reviewed for rock lobster (*Jasus edwardsii*) in Quota Management Areas CRA 2, 4, 7 and 8 (Figure 4.1). The Ministry for Primary Industries (MPI) and the National Rock Lobster Management Group (NRLMG) welcomes tangata whenua and stakeholder input to inform a review of rock lobster sustainability measures for 1 April 2018.

56. The TAC, allowance and TACC proposals presented in this paper are based on new stock assessment information, or the results from the operation of management procedures or decision rules. MPI and the NRLMG considered this information, and the Minister of Fisheries (the Minister's) statutory obligations, in developing the options for consultation.

57. Management procedures are in place for most rock lobster stocks in New Zealand. Each management procedure is operated every year to guide the setting of catch limits in a way that is consistent with the Minister's statutory obligations for managing stocks within the Quota Management System. Management procedures are designed to move or maintain stock abundance at or above agreed reference levels, while recognising a range of customary Māori, recreational, and commercial values.

58. Table 4.1 provides a summary of the options proposed for rock lobster for the April 2018 fishing year. These include:

- Rebuilding the CRA 2 (Hauraki Gulf/Bay of Plenty) fishery through decreases to the TAC, the recreational and other mortality allowances, and the TACC; and
- A TAC and TACC decrease for the CRA 7 (Otago) fishery, and TAC and TACC increases for the CRA 4 (Wellington/Hawke's Bay) and CRA 8 (Southern) fisheries, with no changes to the non-commercial allowances.

Table 4.1: Proposed management options (in tonnes) for CRA 2, 4, 7 and 8 from 1 April 2018.

Stock	Option	TAC	TACC	Allowances		
				Customary **Māori**	Recreational	Other mortality
CRA 2	*Status quo*	416.5	200	16.5	140	60
	CRA2_01	251.5 ↓	140 ↓	16.5	50 ↓	45 ↓
	CRA2_02	231.5 ↓	120 ↓			
	CRA2_03	215.5 ↓	100 ↓			
	CRA2_04	191.5 ↓	80 ↓			
CRA 4	CRA4_01: *Status quo*	484	289	35	85	75
	CRA4_02: Based on the operation of the CRA 4 management procedure	513.8 ↑	318.8 ↑			
CRA 7	CRA7_01: *Status quo*	132.52	112.52	10	5	5
	CRA7_02: Based on the operation of the CRA 7 management procedure	117 ↓	97 ↓			
CRA 8	CRA8_01: *Status quo*	1,053	962	30	33	28
	CRA8_02: Based on the operation of the CRA 8 management procedure	1,161.7 ↑	1,070.7 ↑			

59. For each of the CRA 2 options, the NRLMG also recommends that an alternative recreational allowance of 34 tonnes (in addition to 50 tonnes) is considered by submitters. MPI welcomes views (including rationale) from submitters on alternative recreational allowance proposals for CRA 2.

5 Why the need for change?

60. Every year MPI and the NRLMG consider the results from stock assessments or the operation of management procedures. This process informs advice to the Minister and decisions on whether catch settings should change for the upcoming April fishing year, to provide for utilisation while ensuring sustainability.

61. Full scientific assessments of most rock lobster stocks are carried out every four to five years. These assessments estimate the current status of the stock relative to the desired levels of abundance, and also show how the stock has responded to previous management controls. In between years, management procedures are used in most rock lobster stocks (except for CRA 6 – Chatham Islands and CRA 9 – Westland/Taranaki) to guide the annual setting of TACs.

62. Management procedures set out pre-agreed management actions that will be taken in response to annual changes in commercial catch rates ('catch-per-unit-effort' or 'CPUE').[14] Commercial CPUE is considered to be a reliable indicator of relative stock abundance.

63. Each stock's management procedure is generally reviewed every five years unless a review is requested and approved by MPI and the NRLMG. The review is to ensure that TAC setting remains compliant with the statutory structure set out in the Fisheries Act 1996 (the Act). It involves a new stock assessment model and management procedure evaluations to determine whether there are opportunities for increased utilisation, or sustainability risks that require a management response.

64. Table 5.1 provides an outline of the use of current management procedures, and when they are scheduled for review.

Table 5.1: Management procedures: history and review schedule.

	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 7	CRA 8
Year current management procedure commenced	2015	2014	2015	2017	2016	2013	2016
Year of scheduled review	2019	2017	2019	2021	2020	2020[15]	2020

65. In 2014, the Government agreed to use a management procedure to guide TAC setting in the CRA 2 fishery until the 2019/20 fishing year. Following tangata whenua and stakeholder concerns that CRA 2 abundance was declining, the stock assessment and management procedure evaluations were brought forward by a year from 2018 to 2017. MPI and the NRLMG have selected a range of options for consultation, which are designed to rebuild the stock towards an "intermediate" target in an appropriate timeframe. This takes into account the biological characteristics of the stock, the extent of stock depletion, and the prevailing environmental conditions that can limit the rate of rebuild.

66. Based on operation of the proposed new and current management procedures, changes to the status quo are proposed for the CRA 2, 4, 7, and 8 rock lobster fisheries. Operation of the CRA 1 (Northland), CRA 3 (Gisborne), and CRA 5 (Canterbury/Marlborough) management procedures suggested that no change was needed to the management settings for these fisheries from April 2018.

67. For further technical information on management procedures for New Zealand rock lobster refer to the fisheries research report available for download from the MPI website here: www.mpi.govt.nz/document-vault/14566 [12MB].

[14] Standardised commercial CPUE from October to September ("offset year CPUE") is used as an input to all the management procedures discussed in this document. Use of offset year CPUE ensures the most up-to-date CPUE information is used in management procedure evaluations and decision-making.

[15] The CRA 7 management procedure was evaluated with a new model in 2015, extending its use until the 2020/21 fishing year.

6 Review of the CRA 2 (Hauraki Gulf/Bay of Plenty) Rock Lobster Fishery

6.1 PREVIOUS CRA 2 STOCK ASSESSMENT AND ACTIONS

68. A full scientific assessment of CRA 2 in 2013 suggested the abundance of rock lobsters was around 79% of the agreed reference level (B_{REF}).[16] In response the TAC was decreased from 452.6 to 416.5 tonnes and the TACC was reduced from 236 to 200 tonnes from April 2014. To further support a rebuild, the CRA 2 rock lobster industry voluntarily reduced the commercial catch limit in 2016 and 2017 from 200 to 150 tonnes, bringing the total reduction in commercial catch to 36%. No changes were made to non-commercial management controls in 2014.

69. Despite these reductions, MPI, tangata whenua, recreational fishers, some commercial fishers and scientists, as well as many in the wider community remained concerned about the availability of rock lobsters in CRA 2. As a result of these concerns, MPI brought forward a full scientific stock assessment of CRA 2 by one year from 2018 to 2017.

6.2 CRA 2 STOCK STATUS

70. The 2017 CRA 2 stock assessment results suggest female spawning stock biomass during the 2016 autumn-winter season was 18% of the unfished level. It is very likely that CRA 2 is below the soft limit (20% of the unfished spawning stock biomass level); the level at which it is MPI policy to implement a formal, time-constrained rebuilding plan. However, it is very unlikely that it is below the hard limit (10% of the unfished spawning stock biomass level); the level at which it is MPI policy to consider closing the fishery.

71. The stock assessment results are shown in Figure 6.1, comparing the estimated autumn-winter female spawning stock biomass of CRA 2 with the soft and hard limits for the stock.

[16] B_{REF} is the abundance of legally harvestable rock lobsters at the beginning of the autumn-winter season for the 1979-1981 reference period.

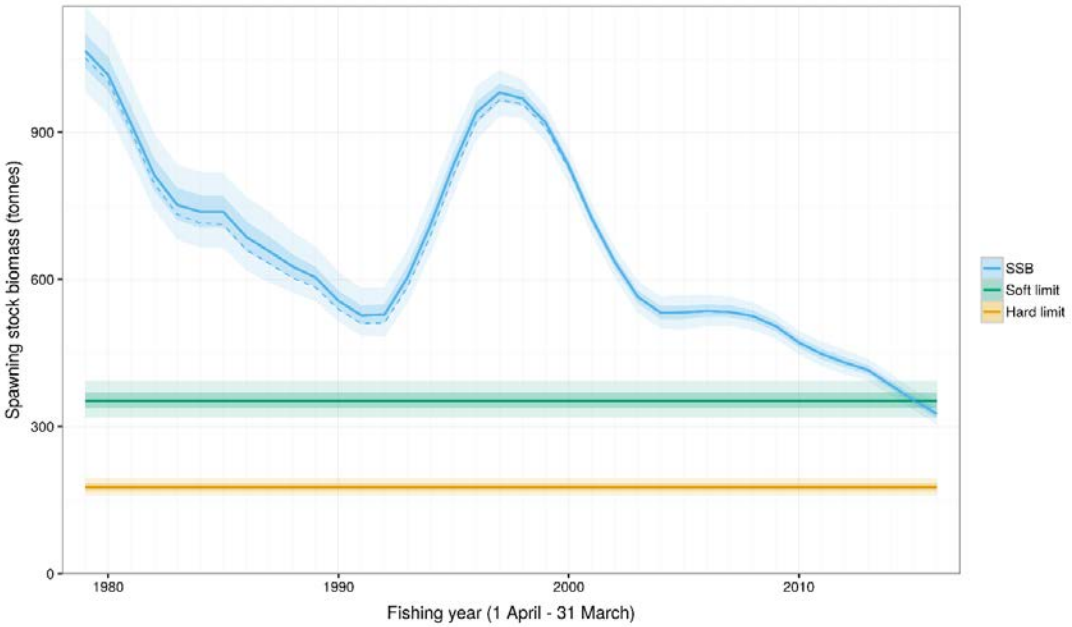

Figure 6.1: 2017 CRA 2 stock assessment results showing the estimated abundance of mature female rock lobsters (spawning stock biomass) in autumn-winter over time (blue line) in relation to the soft limit (green line) and hard limit (yellow line).

72. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 2. The CPUE series from 1989 for CRA 2 was updated in 2017 to only include vessels with at least five years in the fishery (previously more vessels with fewer years in the fishery were included in the CPUE series). The Rock Lobster Fisheries Assessment Working Group considers that this new CPUE series is a more accurate representation of CRA 2 abundance. The history of the new CRA 2 commercial CPUE series is shown in Figure 6.2. Since 1998, CRA 2 CPUE has shown an overall declining trend. CPUE in 2017 was 0.25 kg/potlift.

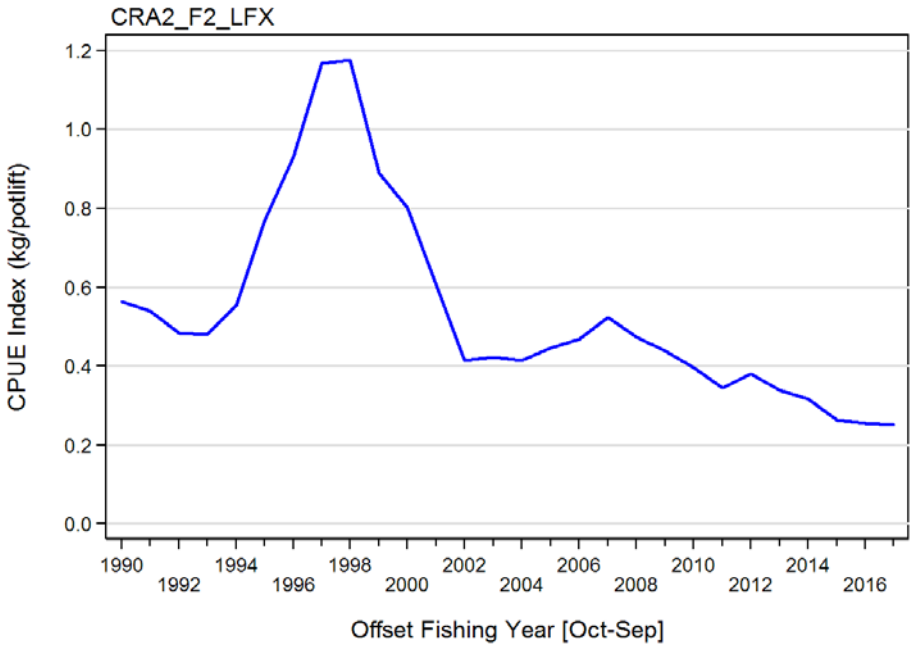

Figure 6.2: CRA 2 CPUE (kg/potlift). This CPUE series includes a criteria using vessels with at least five years' in the fishery.

6.3 PRE-ENGAGEMENT

73. Given the level of public interest in the CRA 2 fishery and how it is managed, MPI has been carrying out wide public engagement to involve those with an interest in the future management of the fishery.

74. The first stage in this engagement was in November 2017, where MPI held a series of multi-sector workshops in Whakatane and Thames. The purpose of these workshops was for the participants to develop a shared vision for the fishery, consider the new science information and provide input on future management measures.

75. Customary, recreational and commercial workshop participants generally agreed that they needed to contribute to the rebuild of this important shared fishery. Common themes that were identified at the workshops with respect to rock lobster abundance included: ongoing sustainability of the fishery; having more lobsters in the water that are easier to catch; ensuring the fishery is in a better place for all users; and having lobsters available for future generations. Representatives from the Mai I nga Kuri a Wharei ki Tihirau Forum also noted that they can only exercise customary rights in their respective areas and that this should be taken into account in decision-making.

76. The results of this pre-engagement have been further discussed by MPI and the multi-sector NRLMG and have been taken into account when developing the options presented for consultation in this paper.

6.4 PROPOSED CRA 2 OPTIONS

77. The proposed options for CRA 2 are part of a two-stage review of measures in 2018. The two stages are:
    1. A review of sustainability measures for 1 April 2018 to set a new TAC, allowances and TACC (the focus of this paper); and
    2. The adjustment of management measures later in 2018 to support proposed changes to the TAC, allowances and TACC. This will include further public consultation on changes to current fisheries regulations.

78. Table 6.1 provides a summary of the options proposed for CRA 2. Based on the evaluation of different management procedures, it is proposed that the TAC is reduced from 416.5 tonnes to between 191.5 and 251.5 tonnes. This is based on the goal of rebuilding current stock biomass towards an agreed target, but with different timeframes and socio-economic implications (discussed under the following sub-sections).

79. The status quo is not a valid option because it will not meet the rebuilding target within appropriate timeframes. It could also result in a further decline in CRA 2 stock abundance, which would affect the future utilisation opportunities for all fishing sectors.

Table 6.1: Proposed management options (in tonnes) for CRA 2 from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other mortality
Status quo	416.5	200	16.5	140	65
CRA2_01	251.5 ↓	140 ↓	16.5	50 ↓	45 ↓
CRA2_02	231.5 ↓	120 ↓			
CRA2_03	211.5 ↓	100 ↓			
CRA2_04	191.5 ↓	80 ↓			

Previously agreed reference level and an intermediate target

80. The previously agreed reference level for CRA 2 relates to the abundance of legally harvestable rock lobsters at the beginning of the autumn-winter season for the period 1979 to 1981. The 2017 stock assessment results suggest that rock lobster abundance has declined to around 21% of this previously agreed reference level (B_{REF}). The Rock Lobster Fisheries Assessment Working Group; however, have expressed concerns about whether this historical reference level should be used to guide future management (i.e. there may have been changes to the overall productivity of the stock).

81. While work is carried out on exploring alternative reference levels for CRA 2 in 2018, the NRLMG and MPI propose an "intermediate" target of doubling current rock lobster abundance (two times the abundance of legally harvestable lobsters at the beginning of the 2018 autumn-winter season) in an appropriate timeframe. This takes into account the biological characteristics of the stock, the extent of depletion, and the prevailing environmental conditions that can also limit the rate of rebuild (i.e. the recruitment of new lobsters to the fishery varies with changes in environmental conditions). Doubling the current biomass equates to approximately 40% of the unfished spawning stock biomass level.

TAC setting

82. For CRA 2, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known because further work is needed to evaluate how B_{MSY} can be determined for rock lobsters. Section 13(2A) of the Act provides for the Minister to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, the B_{MSY} level. The options presented to rebuild the CRA 2 stock towards an intermediate target of double the current biomass are consistent with section 13 requirements.

83. Section 13 (3) requires the Minister to consider social, cultural and economic factors that may be relevant to the way and rate a stock is moved towards or above B_{MSY} (or a level that is not inconsistent with B_{MSY}). There is no proposal to change the Māori customary allowance; however, the impacts on the recreational and commercial fisheries are discussed under the relevant sub-sections below.

84. For consultation, a range of TAC options are proposed that reduce the TAC from 416.5 tonnes to between 191.5 and 251.5 tonnes. These options were informed by evaluations of four different constant-catch harvest rules (management procedures).

85. A TAC of 191.5 tonnes is likely to rebuild the stock to the intermediate target in 4-5 years, while a TAC of 251.5 tonnes is likely to take 9 years to achieve this (Table 6.2). TAC options below 191.5 tonnes were considered (e.g. a TAC of 161.5 tonnes), however, they did not rebuild the stock to the target any earlier than 4 years given the biological characteristics of the stock. This is because it takes time for new lobsters to become available to the fishery and recruitment can vary from year to year. However, if recruitment into the fishery continues to be low in the future (i.e. the average estimated recruitment from 2010 to 2014), the rebuild timeframes shown in Table 6.2 would be extended (e.g. 8.5% probability of being above the intermediate target in 20 years under Option CRA2_01, and 8 years under Option CRA2_04).

Table 6.2: Summary of TAC options for CRA 2 with corresponding rebuild timeframes.

Option	*CRA2_01*	*CRA2_02*	*CRA2_03*	*CRA2_04*
TAC	251.5 t (40% ↓)	231.5 t (44 % ↓)	211.5 t (49% ↓)	191.5 t (54% ↓)
Rebuild to intermediate target (with 50% probability)[17]	9 years	7 years	5 years	4-5 years

Setting allowances and the TACC

86. Having set the TAC, the Minister must set the TACC and, in setting or varying the TACC, must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (sections 20 and 21).

- ***Māori c**ustomary fishing*

87. Rock lobster (koura) is a taonga species for tangata whenua. Information on Māori customary catch of rock lobster indicates that tangata whenua use of customary Māori harvesting rights for taking rock lobster is minimal and well within the current customary Māori allowance of 16.5 tonnes. An estimate of 5 tonnes was used in the 2017 CRA 2 stock assessment model to represent customary catches.

- *Recreational fishing*

88. Given its proximity to Auckland and other popular holiday destinations, CRA 2 supports one of New Zealand's most significant recreational rock lobster fisheries.

89. The current recreational allowance of 140 tonnes was set in 1999 when stock abundance was greater. Recreational catch estimates from MPI-commissioned surveys of and stock assessment information now suggest that current CRA 2 recreational catch is lower than the current allowance. Recreational catches are considered likely to have decreased as a result of declining abundance.

90. The Minister has discretion when making allowances for various sectors. The NRLMG recommends that submitters consider recreational allowance options of 34 and 50 tonnes. MPI welcomes views (including rationale) from submitters on alternative recreational allowance proposals for CRA 2.

[17] Based on the assumption that recreational catch is constrained between 34 and 68 tonnes.

Catch estimates

91. MPI considers that the best available information on current recreational catch is provided from the 2011/12 National Panel Survey (previously called the Large-Scale Multi-Species (LSMS) Survey, red square in Figure 6.3). This survey estimated the recreational catch of rock lobsters in CRA 2 at 40.86 tonnes[18]. The Rock Lobster Fisheries Assessment Working Group also considers this estimate to be the least biased of the survey estimates considered and the most precise. An updated recreational catch estimate for 2017/18 will be available in 2019 from a National Panel Survey that is currently underway.

92. In the 2017 CRA 2 stock assessment, recreational catch estimates from 1994, 1996, 2010 and two 2011 recreational surveys were used to construct a recreational catch trajectory (Figure 6.3). The trajectory was also developed by assuming that recreational catch was proportional to the CRA 2 spring-summer abundance, as reflected by spring-summer commercial CPUE for CRA 2.

93. The resulting recreational catch trajectory showed a strong increasing trend from the early 1990s, exceeding 100 tonnes in the mid to late 1990s. Since then a strong decreasing trend has been shown. In 2016, the model estimate of recreational catch was 34 tonnes.

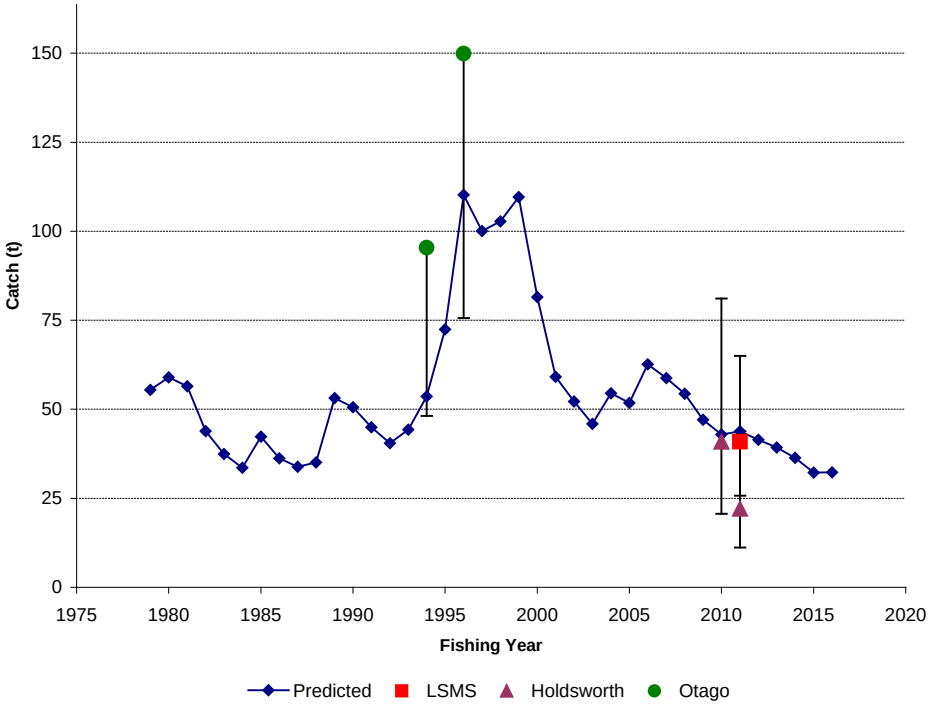

Figure 6.3: The predicted recreational catch trajectory (tonnes) for the 2017 CRA 2 stock assessment. The coloured shapes refer to the recreational survey estimates from 1994 (Otago), 1996 (Otago), 2010 (Holdsworth) and two in 2011 (Holdsworth and LSMS). The blue line shows the predicted recreational catch trajectory that was developed by assuming recreational catch is proportional to spring-summer commercial CPUE (i.e. the availability of rock lobsters to the fishery). Section 111 catches which were taken by commercial fishers for non-commercial purposes were added to the trajectory (i.e. a maximum of 2.036 tonnes).

[18] With a coefficient of variation of 24% (a measure of the ratio of the standard deviation to the mean).

Stock rebuild

94. As the stock rebuilds, recreational catches are likely to increase under current recreational fishing controls. Management procedure evaluations suggest that recreational catches are of sufficient magnitude to influence the rate of the stock rebuild. The rebuild timeframes shown in Table 6.2 above for each option could be compromised if recreational catch increases above estimated levels.

95. The proposed recreational allowance will set a new figure to manage recreational catch within the context of a rebuild plan. To ensure that recreational catch remains within the proposed allowance and does not compromise the rebuild, consultation on additional management controls will be undertaken later in 2018, which may involve a reduction to the recreational daily bag limit.

- *Other mortality*

96. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling mortality. It is difficult for MPI to get an accurate estimate of illegal catch given that illegal activity is not easily detected. However, the Rock Lobster Fisheries Assessment Working Group used historical MPI estimates of illegal take in the 2017 stock assessment model. An 88 tonne estimate from 1996 was decreased to an assumed value of 40 tonnes in 2016. The illegal catch estimate was lowered based on assumptions that the level of illegal take tends to lower when overall abundance of a stock is low. It is proposed that the allowance for other sources of mortality (e.g. illegal catch) is decreased from 60 to 45 tonnes under the four options.

97. The 2017 CRA 2 assessment also assumed that handling mortality was 10% of returned lobsters until 1990 and then 5% thereafter. The 2016 model estimate of handling mortality was 2.4 tonnes.

98. To ensure the CRA 2 rebuilds, MPI is investigating further measures to reduce opportunities for illegal catch of rock lobster from the fishery. If illegal catch can be reduced, the rebuild of the fishery may occur faster and there may be more lobsters available to the legitimate catching sectors.

TACC setting

99. Four different TACC reductions are proposed from the current TACC of 200 tonnes to 80, 100, 120 or 140 tonnes. These options are based on evaluations of constant-catch harvests rules (management procedures) that propose setting the TACC at reduced levels for five years while the fishery rebuilds.

100. Annual landings and the TACCs for CRA 2 since 1990 are shown in Figure 6.4. The current CRA 2 TACC of 200 tonnes was set in 2014 based on the operation of the CRA 2 management procedure (previously a TACC of 236 tonnes applied from 1997 to 2013). Because of their concern about stock status, the CRA 2 commercial industry also voluntarily retired 50 tonnes for each of the 2016 and 2017 fishing years. Figure 6.4 reflects this in that the TACC has not been fully caught in recent years.

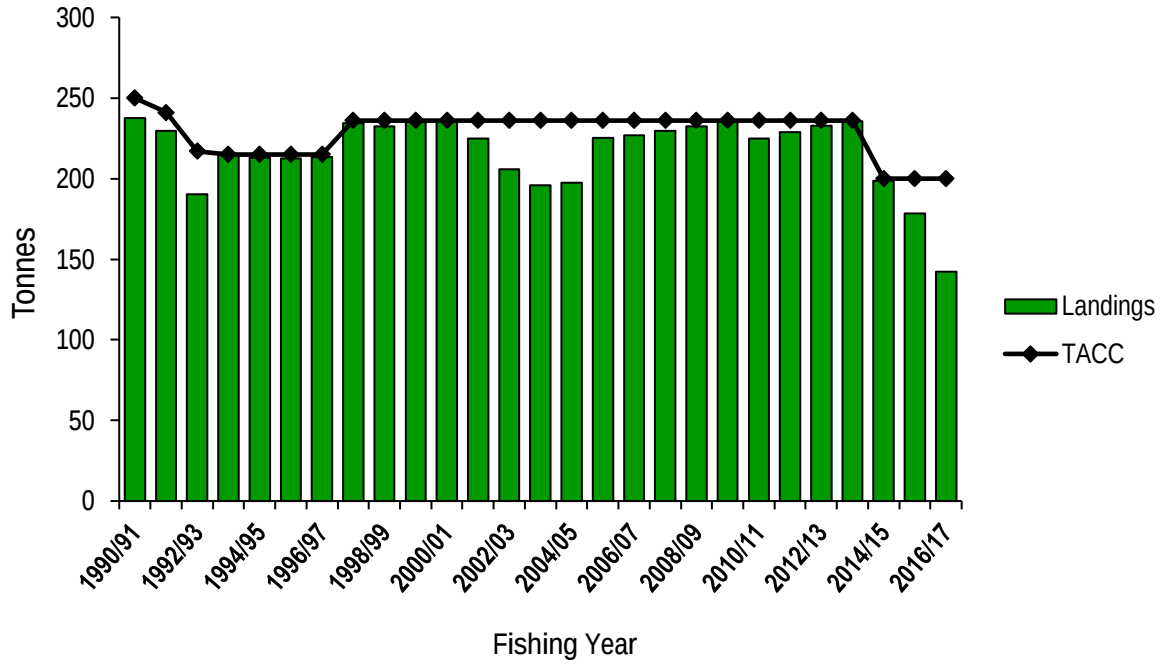

Figure 6.4: CRA 2 commercial landings and TACCs from 1990 to 2016.

101. The proposal to reduce the TACC is expected to have a number of economic impacts on the industry. For TACC reductions greater than 140 tonnes, the impacts will be progressively greater.

102. The rock lobster industry notes that some operations are marginally economic as a result of voluntarily retiring 50 tonnes of commercial catch in each of the last two fishing years. A TACC reduction will mean that less Annual Catch Entitlement (ACE) will be available, which is likely to lead to a restructuring of the fleet with some operations no longer being economically viable. Any reductions in fishing businesses will have flow on impacts in reduced economic activity, often in smaller regional towns and communities along the coastline.

6.5 OTHER MATTERS

Additional Management Measures

103. As noted, MPI intends to consult on a broader range of management measures for implementation later in 2018 to complement proposed changes to the TAC, allowances and the TACC. This is likely to include measures to ensure that non-commercial fishing supports a rebuild of the CRA 2 stock, which may involve a change to the current recreational daily bag limit of six rock lobsters to ensure recreational catch remains within the allowance that is set as the stock rebuilds.

104. MPI will engage widely with tangata whenua and stakeholders in the development of these broader options, and will carry out full public consultation prior to any decisions being made.

105. For more information on the CRA2 review go to: www.mpi.govt.nz/cra2-review . On this page you will find background information, new science information, and how you can be kept up-to-date on the review's progress.

Hauraki Gulf Marine Park Act 2000

106. Section 11(2) of the Fisheries Act requires the Minister to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) when setting or varying a sustainability measure (such as a TAC). The CRA 2 rock lobster fishery intersects with this Park, therefore sections 7 and 8 of the HGMPA are applicable to any management decisions.

107. The options presented in this paper to decrease the TAC, allowances and TACC for CRA 2, and therefore rebuild the fishery from its current state of low abundance, are consistent with the relevant sections of the HGMPA.

7 Review of the CRA 4 (Wellington/Hawke's Bay) Rock Lobster Fishery

7.1 CRA 4 STOCK STATUS AND PREVIOUS ACTIONS

108. The results of the most recent CRA 4 stock assessment carried out in 2016 suggest that stock biomass was below the agreed reference level, $B_{REF,}$ by 25%.[19] Spawning stock biomass in 2016 was 51% of the unfished level, well above the soft limit of 20% in which it is MPI policy to implement a formal, time-constrained rebuilding plan. The previous CRA 4 stock assessment in 2011 suggested that stock biomass was 1.6 times the agreed reference level.

109. In response to the new science information, the government agreed to use a new CRA 4 management procedure to guide TAC setting from April 2017 to ensure that stock biomass was rebuilt towards the agreed reference level in the next five years. Its operation resulted in a substantial TAC reduction from 592 to 484 tonnes from 1 April 2017.

110. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 4, and is the abundance indicator used in the CRA 4 management procedure. The history of CRA 4 commercial CPUE is shown in Figure 7.1. CPUE increased from 2008 to 2012, then declined. However, between 2016 and 2017 CPUE increased from 0.69 to 0.76 kg/potlift, suggesting rock lobster abundance in CRA 4 has increased in the last year.

[19] B_{REF} for CRA 4 is the average pre-season autumn-winter vulnerable biomass associated with the period 1979-88.

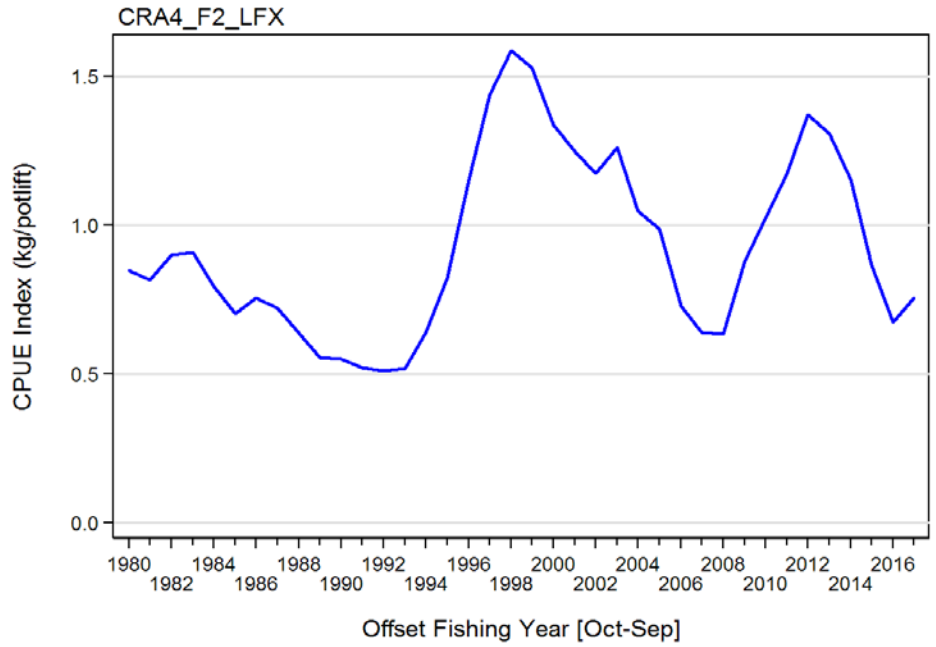

Figure 7.1: CRA 4 CPUE (kg/potlift).

7.2 PROPOSED CRA 4 OPTIONS

111. Table 7.1 provides a summary of the options proposed for CRA 4. The current CRA 4 management procedure has been used to guide TAC setting options. The proposals to increase the TAC and TACC will provide for increased utilisation opportunities and are expected to ensure that the stock moves towards its reference level.

Table 7.1: Proposed management options (in tonnes) for CRA 4 from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other mortality
CRA4_01: *Status quo*	484	289	35	85	75
CRA4_02: Based on the operation of the current CRA 4 management procedure	513.8 ↑	318.8 ↑			

TAC setting

112. For CRA 4, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known, because further work is needed to evaluate how B_{MSY} can be determined for rock lobsters. Because of this, any variation of the CRA 4 TAC must be done under section 13(2A).

- *Option CRA4_01 – Retain the current CRA 4 TAC (status quo)*

113. Under Option CRA4_01, the CRA 4 TAC would stay at its current level of 484 tonnes from 1 April 2018.

114. Compared to Option CRA4_02, this option could result in increased abundance in the CRA 4 fishery in the short-term, increased non-commercial catches and catch rates, and higher CPUE for commercial fishers, which may result in reduced harvesting costs.

- *Option CRA4_02 – Use the CRA 4 management procedure and increase the CRA 4 TAC*

115. Under Option CRA4_02, the CRA 4 TAC would be increased to 513.8 tonnes (a 6.2% increase). The proposed TAC increase is guided by the use of the current CRA 4 management procedure that was agreed to in 2017 for the 2017/18 to 2021/22 fishing years. The NRLMG supports the use of management procedures unless there are compelling reasons in a particular case not to follow the procedure.

116. Ongoing application of the CRA 4 management procedure is expected to maintain the stock above the agreed reference level ($B_{REF,}$) with greater than 50% probability. Simulation testing indicates it would maintain the stock above $B_{REF,}$ with 92% probability. Maintaining the stock above the reference level is likely to provide increased utilisation benefits for all sectors.

117. Historically, only the TACC has been increased or decreased to give effect to the variations in the TAC. Therefore, it is proposed that the TAC increase comes solely from a 29.8 tonne increase to the TACC. The implications of this are discussed under the TACC setting section below.

Setting allowances and the TACC

- ***Māori customary fishing***

118. Rock lobster (koura) is a taonga species for tangata whenua. Information on Māori customary catch of rock lobster indicates that tangata whenua use of customary Māori harvesting rights for taking rock lobster is minimal and was well within the current customary Māori allowance for CRA 4 of 35 tonnes. An estimate of 20 tonnes was used in the 2016 CRA 4 stock assessment model to represent customary catches.

- *Recreational fishing*

119. In the 2016 CRA 4 stock assessment, recreational catch estimates from 1994, 1996 and 2011 recreational surveys were used to construct a recreational catch trajectory (Figure 7.2). The trajectory was also developed by assuming that recreational catch was proportional to the CRA 2 spring-summer abundance, as reflected by spring-summer commercial CPUE for CRA 4. The resulting recreational catch trajectory showed a strong increasing trend up to the end of 1990s, followed by a steep drop to 2007, which recovered by 2013 before dropping again from 2014.

120. The 2011 recreational catch estimate comes from the 2011/12 National Panel survey, which estimated that the recreational catch of rock lobsters in CRA 4 was 44.17 tonnes[20]. While this estimate is subject to some uncertainty, it is well within the current 85 tonne allowance. Therefore, no change is proposed to the 85 tonne recreational allowance for CRA 4.

[20] With a coefficient of variation of 17% (a measure of the ratio of the standard deviation to the mean).

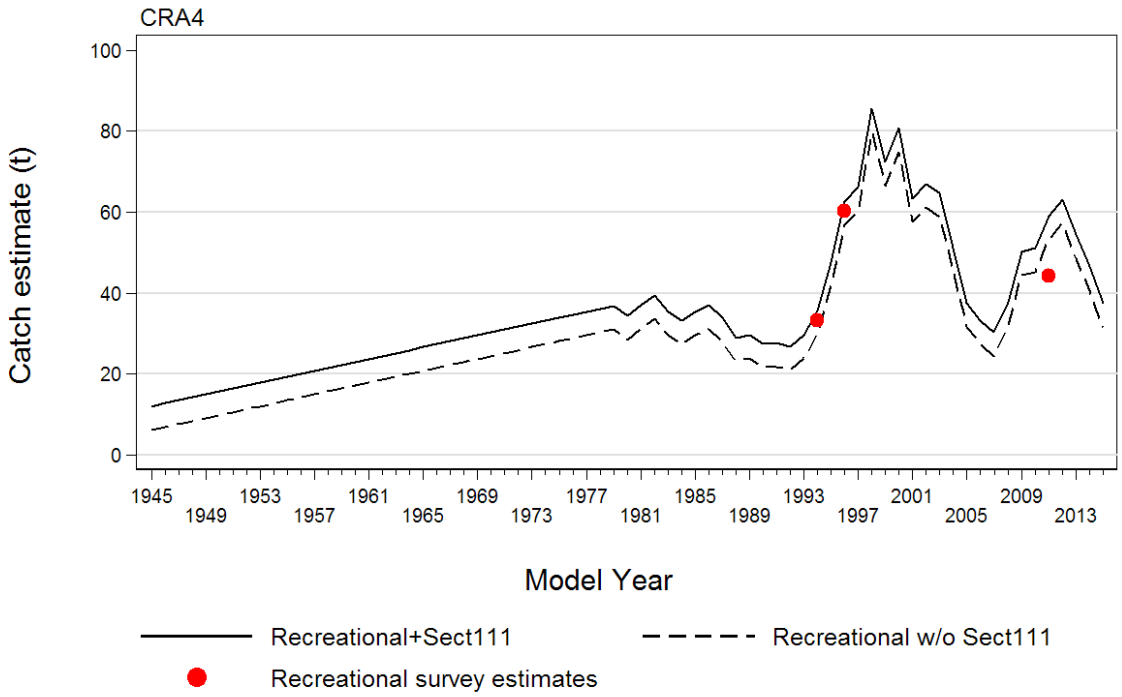

Figure 7.2: The predicted recreational catch trajectories (tonnes) for the 2016 CRA 4 stock assessment. The red dots refer to the recreational survey estimates from 1994, 1996 and 2011. The solid black line shows the recreational catch trajectory with the additional section 111 catches which were taken by commercial fishers for non-commercial purposes (i.e. a maximum of 5.8 tonnes of section 111 catches). The dashed black line is the recreational catch trajectory without the section 111 catches.

- *Other mortality*

121. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling mortality. It is difficult for MPI to get an accurate estimate of illegal catch given that illegal activity is not easily detected. However, the Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1990 to 2004 in the 2016 stock assessment model to estimate illegal catches. For the 2015/16 fishing year the illegal catch estimate assumed for the model was 40 tonnes.

122. The 2016 CRA 4 assessment also assumed that handling mortality was 10% of returned lobsters until 1990 and then 5% thereafter. The 2016 model estimate of handling mortality was 18.14 tonnes.

123. No change is proposed to the 75 tonne CRA 4 allowance for other sources of fishing-related mortality (i.e. illegal catch). It is assumed that estimated levels of illegal catch and handling mortality are within the other mortality allowance.

TACC setting

- *Option CRA4_01 – Retain the current CRA 4 TACC*

124. Under Option CRA4_01 the CRA 4 TACC would stay at its current level of 289 tonnes. This option would maintain the current level of utilisation of the commercial fishery without realising the potential for increased sustainable utilisation opportunities for commercial fishers.

- *Option CRA4_02 – Increase the CRA 4 TACC by 29.8 tonnes*

125. Under Option CRA4_02, the CRA 4 TACC would be increased to 318.8 tonnes from 1 April 2018, as guided by the use of the current CRA 4 management procedure. The proposed 29.8 tonne TACC increase has the potential to result in an increase of annual revenue to the catching sector alone of approximately $2.15 million (based on 2017 average port price information).

126. Annual landings and the TACCs for CRA 4 since 1990 are shown in Figure 7.3. In 2007 and 2008, the industry used a voluntary management procedure to guide Annual Catch Entitlement shelving (down to 340 and 250 tonnes respectively and is why the TACC wasn't caught in these years). Since 2012 a management procedure has been used in CRA 4 to regularly review the TACC.

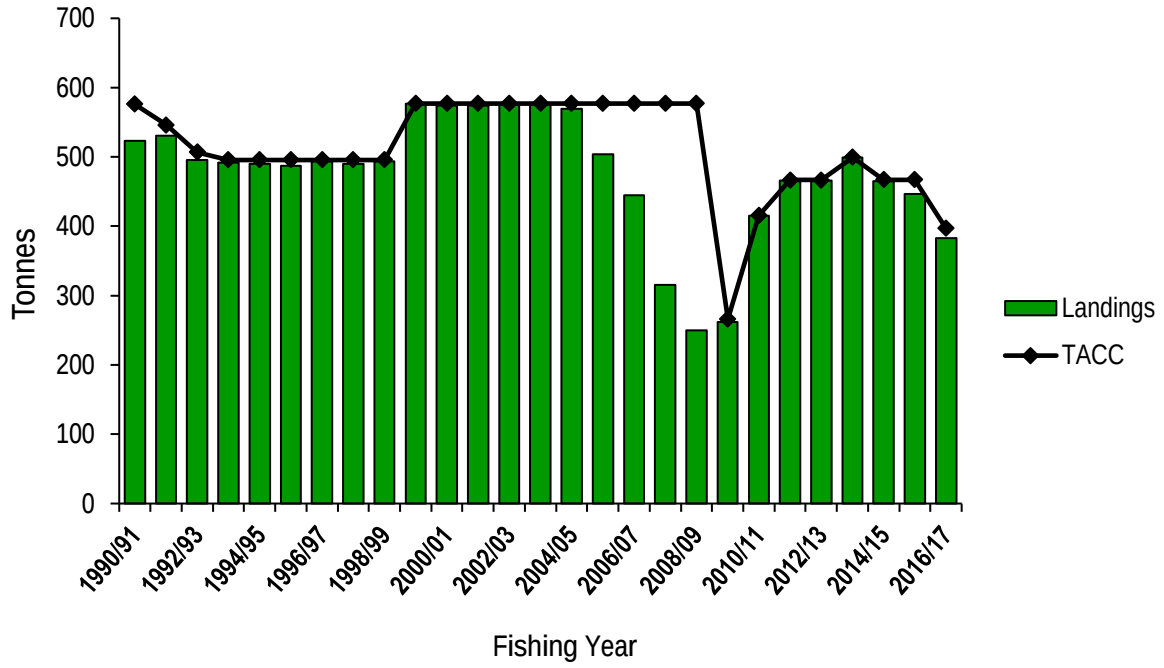

Figure 7.3: CRA 4 commercial landings and TACCs from 1990 to 2016.

127. A graphical representation of the current CRA 4 management procedure is provided in Figure 7.4. The graph shows the proposed TACC for the next year as a function of CPUE in the current year. When the rule was operated with the 2017 CPUE of 0.76 kg/potlift, it resulted in an increased TACC of 318.8 tonnes for the 2018/19 fishing year (shown by the blue triangle on the graph).

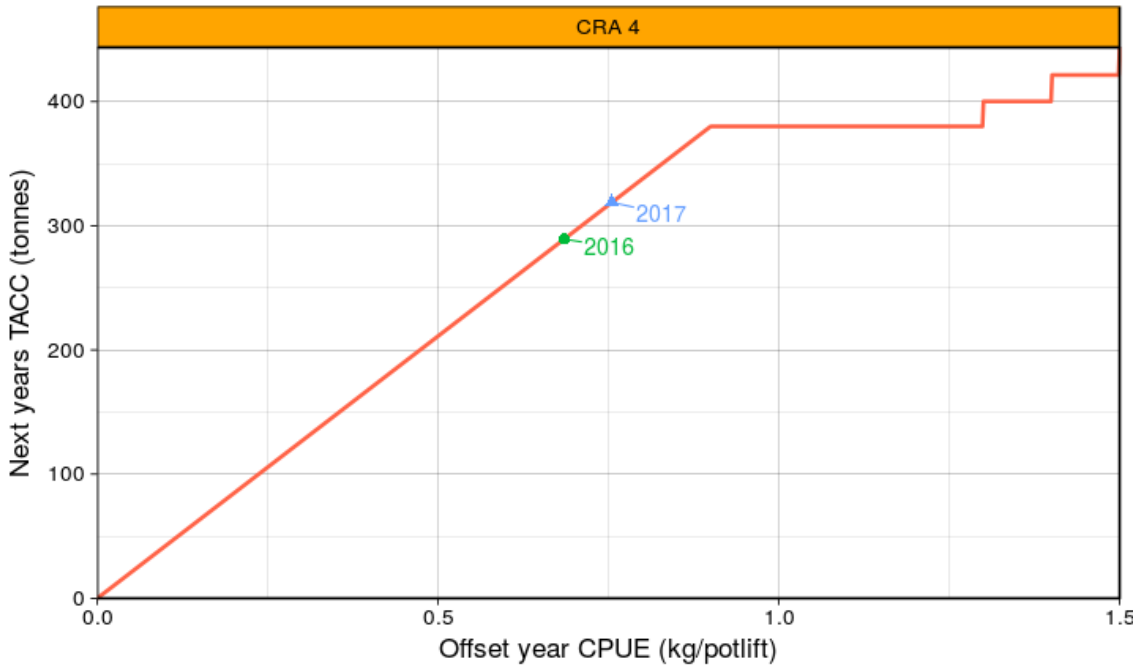

Figure 7.4: The current CRA 4 management procedure, showing the TACCs resulting from evaluations performed in 2016 and 2017 (shown as coloured shapes) for the 2017/18 and 2018/19 fishing years.

8 Review of the CRA 7 (Otago) Rock Lobster Fishery

8.1 CRA 7 STOCK STATUS

128. The results of the most recent CRA 7 stock assessment conducted in 2015 suggested there were no sustainability concerns for the CRA 7 fishery. 2015 biomass was twice the agreed reference level, B_{REF}..[21]

129. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 7, and is the abundance indicator used in the CRA 7 management procedure. The history of CRA 7 commercial CPUE is shown in Figure 8.1. At the time of the stock assessment in 2015, CPUE was at a relatively high level. CPUE increased substantially from 2012 to 2016, but declined slightly in 2017.

[21] B_{REF} for CRA 7 is the average pre-season autumn-winter vulnerable biomass associated with the period 1979-81. 1979-81 was a period when the stock showed good productivity and was demonstrably safe. There are no reliable B_{MSY} and *SSB* estimates available for CRA 7 because of the high level of emigration estimated for the stock.

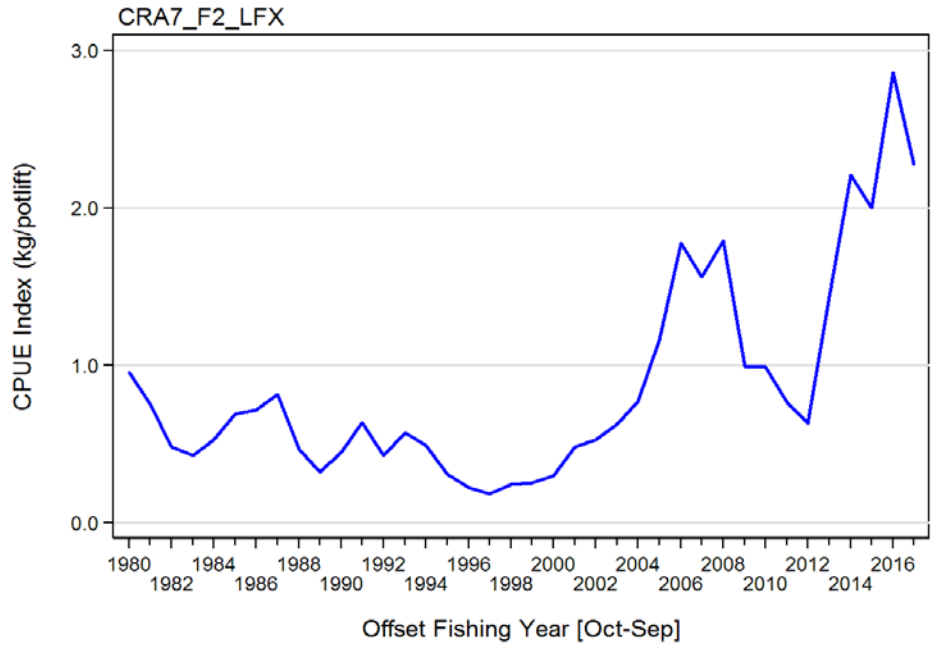

Figure 8.1: CRA 7 CPUE (kg/potlift).

8.2 PROPOSED CRA 7 OPTIONS

130. Table 8.1 provides a summary of the options proposed for CRA 7. The current CRA 7 management procedure has been used to guide TAC setting options. The proposals to decrease the TAC and TACC are expected to ensure the CRA 7 stock continues to be maintained above the agreed reference level (B_{REF}).

Table 8.1: Proposed management settings in tonnes for CRA 7 from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other mortality
CRA7_01: *Status quo*	132.52	112.52	10	5	5
CRA7_02: Based on the operation of the current CRA 7 management procedure	117 ↓	97 ↓			

TAC setting

131. For CRA 7, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known, because further work is needed to evaluate how B_{MSY} can be determined for rock lobsters. Because of this, any variation of the CRA 7 TAC must be done under section 13(2A).

- *Option CRA7_01 – Retain the current CRA 7 TAC*

132. Under Option CRA7_01, the CRA 7 TAC would stay at its current level of 132.52 tonnes for the 2018/19 fishing year.

133. This option is not supported by MPI or the NRLMG. Maintaining the current TAC could impact on the goal of maintaining stock abundance at or above the agreed reference level.

- *Option CRA7_02 – Use the CRA 7 management procedure and decrease the CRA 7 TAC*

134. Under Option CRA7_02, the CRA 7 TAC would be decreased to 117 tonnes. The proposed TAC decrease is guided by the use of CRA 7 management procedure that was agreed to in 2013. The CRA 7 management procedure was evaluated with a new operating model in 2015, effectively extending its use from 2017/18 to the 2020/21 fishing year. The NRLMG supports the use of management procedures unless there are compelling reasons in a particular case not to follow the procedure.

135. Ongoing application of the CRA 7 management procedure is expected to maintain the stock above agreed reference level ($B_{REF,}$) with greater than 50% probability. Simulation testing indicates it would maintain the stock above B_{REF} with 98% probability. This is likely to provide increased utilisation benefits for all sectors.

136. Historically, only the TACC has been increased or decreased to give effect to the variations in the TAC. Therefore, it is proposed that the TAC decrease comes solely from a 15.52 tonne decrease to the TACC. The implications of this are discussed under the TACC setting section below.

Setting allowances and the TACC

- ***Customary Māori fishing***

137. Rock lobster (koura) is a taonga species for tangata whenua. Information on customary Māori catch of rock lobster is complete in the Ngai Tahu Claims Area (including CRA 7). This information indicates that tangata whenua use of customary Māori harvesting rights for taking rock lobster is minimal and is well within the current customary Māori allowance of 10 tonnes. In the 2016/17 fishing year, approximately 1.5 tonnes of rock lobster were reported as harvested from CRA 7.

138. An estimate of 1 tonne was used in the 2015 CRA 7 stock assessment model to represent customary catches.

- *Recreational fishing*

139. There are no reliable recreational catch survey estimates available for CRA 7 and there is no new information to suggest the current CRA 7 recreational allowance of 5 tonnes should be changed. In the absence of any reliable information, in the 2015 CRA 7 stock assessment recreational catch estimates were assumed to be at 1 tonne in 1945 and were increased to 5 tonnes in 1979. A constant estimate of 5 tonnes was assumed from 1979 to 2014.

- *Other mortality*

140. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling mortality. It is difficult for MPI to get an accurate estimate of illegal catch given that illegal activity is not easily detected. However, the Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1990 to 2002 and assumed 1 tonne per year from 2002 to 2014 in the stock assessment model. No change is proposed to the 5 tonne CRA 7 allowance for other sources of fishing-related mortality (i.e. for illegal catch).

TACC setting

- *Option CRA7_01 – Retain the current CRA 7 TACC*

141. Under Option CRA7_01, the CRA 7 TACC would stay at its current level of 112.52 tonnes. This option would maintain the current level of utilisation of the commercial fishery.

- *Option CRA7_02 – Decrease the CRA 7 TACC by 15.52 tonnes*

142. Under Option CRA7_02, the CRA 7 TACC would be decreased to 97 tonnes from 1 April 2018, as guided by the use of the current CRA 7 management procedure. The proposed 15.52 tonne TACC decrease has the potential to result in a loss of annual revenue to the catching sector alone of approximately $1.12 million (based on 2017 average port price information).

143. Annual landings and the TACCs for CRA 7 since 1990 are shown in Figure 8.2. Since 1996 a management procedure has been used in CRA 7 to regularly review the TACC to ensure catches reflect available abundance. This is important in CRA 7 because there are migrations of lobsters out of CRA 7 into CRA 8 at certain intervals.

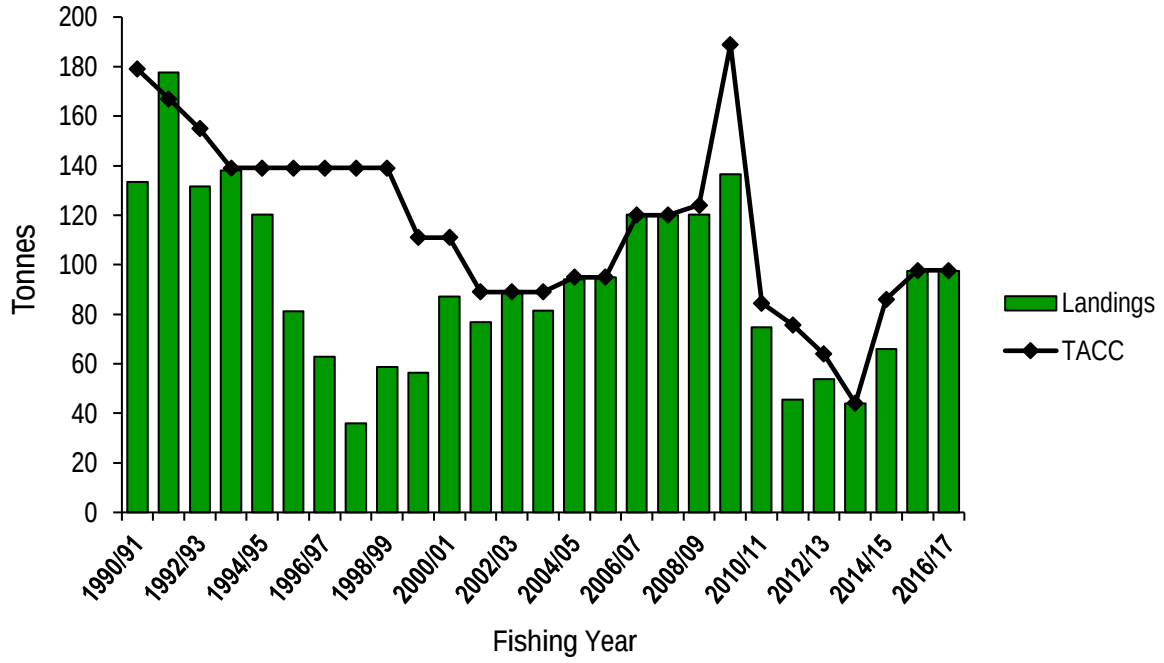

Figure 8.2: CRA 7 commercial landings and TACCs from 1990 to 2016.

144. A graphical representation of the current CRA 7 management procedure is provided in Figure 8.3. The graph shows the proposed TACC for the next year as a function of CPUE in the current year. When the rule was operated with the 2017 CPUE of 2.28 kg/potlift it resulted in a decreased TACC of 97 tonnes for the 2018/19 fishing year (shown by the pink cross on the graph).

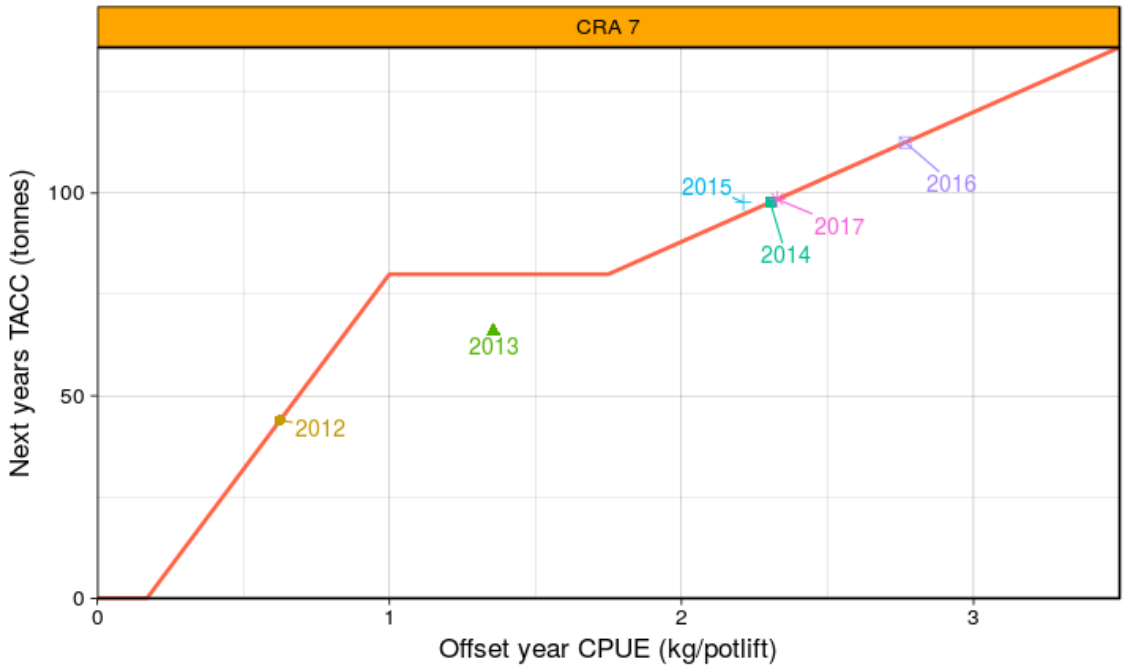

Figure 8.3: The current CRA 7 management procedure, showing the TACCs resulting from evaluations performed in 2012 to 2017 (shown as coloured shapes) for the 2013/14 to 2018/19 fishing years.

9 Review of the CRA 8 (Southern) Rock Lobster Fishery

9.1 CRA 8 STOCK STATUS

145. The results of the most recent CRA 8 stock assessment carried out in 2015 suggest that there are no sustainability concerns for the CRA 8 fishery. Stock biomass in 2015 was 1.4 times the agreed reference level, B_{REF}.[22] Spawning stock biomass in 2015 was 44% of the unfished level, well above the soft limit (20% of the unfished level) where it is MPI policy to implement a rebuild plan.

146. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 8 and is the abundance indicator used in the CRA 8 management procedure. The CPUE type used for CRA 8 is unique in that it relates only to the fish that were landed and does not consider fish that were of legal size but were legally returned to the water. Unlike other rock lobster fisheries, a lot of big fish are returned to the water in CRA 8: an estimated 40% by weight.

147. The history of CRA 8 commercial CPUE is shown in Figure 9.1. CPUE increased steadily from 1998 to 2008 to 2012, declined slightly before increasing again from 2011.

[22] B_{REF} for CRA 8 is the average pre-season autumn-winter vulnerable biomass associated with the period 1979-81.

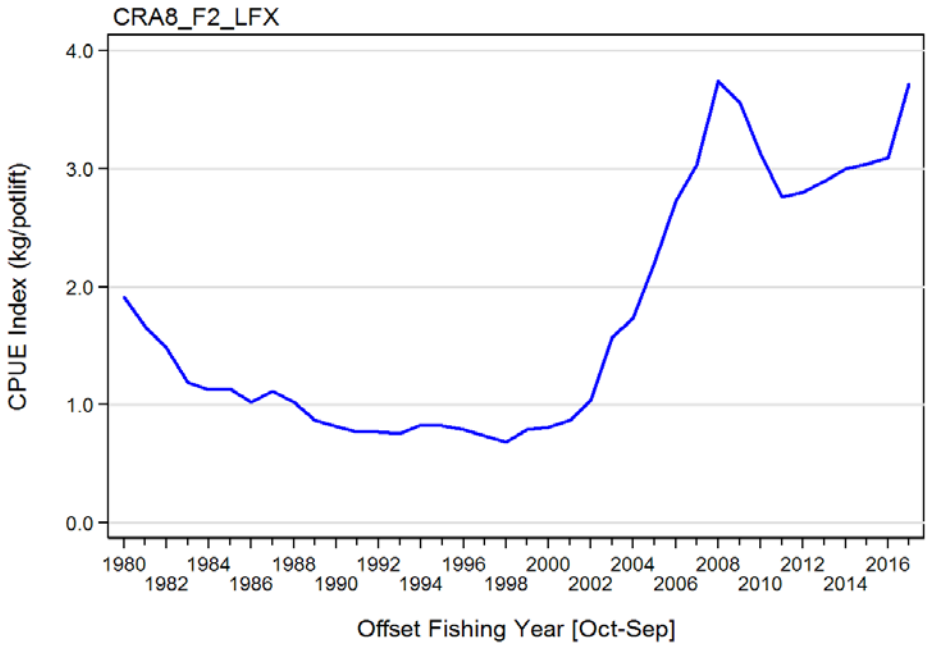

Figure 9.1: CRA 8 CPUE (kg/potlift).

9.2 PROPOSED CRA 8 OPTIONS

148. Table 9.1 provides a summary of the options proposed for CRA 8. The current CRA 8 management procedure has been used to guide TAC setting options. The proposals to increase the TAC and TACC will provide for increased utilisation opportunities whilst ensuring sustainability.

Table 9.1: Proposed management options in tonnes for CRA 8 from 1 April 2018.

Option	TAC	TACC	Allowances		
			Customary **Māori**	Recreational	Other mortality
CRA8_01: *Status quo*	1,053	962	30	33	28
CRA8_02: Based on the operation of the current CRA 8 management procedure	1,161.7 ↑	1,070.7 ↑			

TAC setting

149. For CRA 8, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known, because further work is needed to evaluate how B_{MSY} can be determined for rock lobsters. Because of this, any variation of the CRA 8 TAC must be done under section 13(2A).

- *Option CRA8_01 – Retain the current CRA 8 TAC*

150. Under Option CRA8_01, the CRA 8 TAC would stay at its current level of 1,053 tonnes for the 2018/19 fishing year.

151. This option could result in increased abundance in the CRA 8 fishery in the short-term, increased non-commercial catches and catch rates compared to Option CRA8_02, and higher CPUE for commercial fishers, which may result in reduced harvesting costs. But, at the cost of not being able to take advantage of the proposed TACC increase under Option CRA8_02.

- *Option CRA8_02 – Use the CRA 8 management procedure and increase the CRA 8 TAC*

152. Under Option CRA8_02, the CRA 8 TAC would be increased to 1,161.7 tonnes. The proposed TAC increase is guided by the use of the CRA 8 management procedure that was agreed to in 2016 from the 2016/17 to 2020-21 fishing years. The NRLMG supports the use of management procedures unless there are compelling reasons in a particular case not to follow the procedure.

153. Ongoing application of the CRA 8 management procedure is expected to maintain the stock above B_{REF} with greater than 50% probability. Simulation testing indicates it would maintain the stock above B_{REF} with 99% probability. This is likely to provide increased utilisation benefits for all sectors.

154. This option will increase the current utilisation opportunities. Historically, only the TACC has been increased or decreased to give effect to the variations in the TAC. Therefore, it is proposed that the TAC increase comes solely from a 108.7 tonne increase to the TACC. The implications of this are discussed under the TACC setting section below.

Setting non-commercial allowances

- ***Customary Māori** fishing*

155. Rock lobster (koura) is a taonga species for tangata whenua. Information on Māori customary catch of rock lobster is complete in the Ngai Tahu Claims Area (including CRA 8). This information indicates that tangata whenua use of customary Māori harvesting rights for taking rock lobster is conservative and is well within the current customary Māori allowance of 30 tonnes. In the 2016/17 fishing year, approximately 11.6 tonnes of rock lobsters were reported as harvested from CRA 8.

156. An estimate of 10 tonnes was used in the 2015 CRA 8 stock assessment model to represent customary catches.

- *Recreational fishing*

157. Little is known about recreational catch in CRA 8. Information from the 2011-12 National Panel Survey estimated that 6.9 tonnes of rock lobster were caught by recreational fishers. Given the low number of fishers and events covered in the survey and the high variance[23], it is assumed that 6.9 tonnes is an underestimate of recreational catch.

[23] With a coefficient of variation of 60% (a measure of the ratio of the standard deviation to the mean).

158. In the 2015 CRA 8 stock assessment, a recreational catch trajectory was constructed as follows: beginning at 1 tonne in 1945 recreational catch was increased to 5 tonnes in 1979, and then from 1979 to 2014 recreational catch was assumed to be a constant 20 tonnes.

159. Taking into account the uncertainty in the information on CRA 8 recreational catch, it is assumed that the 33 tonne recreational allowance adequately allows for likely levels of recreational catch from the CRA 8 fishery. Therefore, no change is proposed to the CRA 8 recreational allowance.

- *Other mortality*

160. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling related mortality. It is difficult for MPI to get an accurate estimate of illegal catch given that illegal activity is not easily detected. However, the Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1990 to 2002 in the 2015 stock assessment model to estimate illegal catches. An estimate of 3 tonnes was used from 2011 to 2014, with the missing years from 2003 to 2010 filled in by scaling the illegal catch down from the 18 tonnes estimated for 2002. No change is proposed to the 28 tonne CRA 8 allowance for other sources of fishing-related mortality (i.e. for illegal catch).

TACC setting

- *Option CRA8_01 – Retain the current CRA 8 TACC*

161. Under Option CRA8_01, the CRA 8 TACC would stay at its current level of 962 tonnes. This option would maintain the current level of utilisation of the commercial fishery without realising the potential for increased sustainable utilisation for commercial fishers.

- *Option CRA8_02 – Increase the CRA 8 TACC by 108.7 tonnes*

162. Under Option CRA8_02, the CRA 8 TACC would be increased to 1,070.7 tonnes from 1 April 2018, as guided by the use of the CRA 8 management procedure. The proposed 108.7 tonne TACC increase has the potential to result in an increase in annual revenue to the catching sector alone of over $7.8 million (based on 2017 average port price information).

163. Annual landings and the TACCs for CRA 8 since 1990 are shown in Figure 9.2. Since 1996 a management procedure has been used in CRA 8 to regularly review the TACC to ensure catches reflect available abundance.

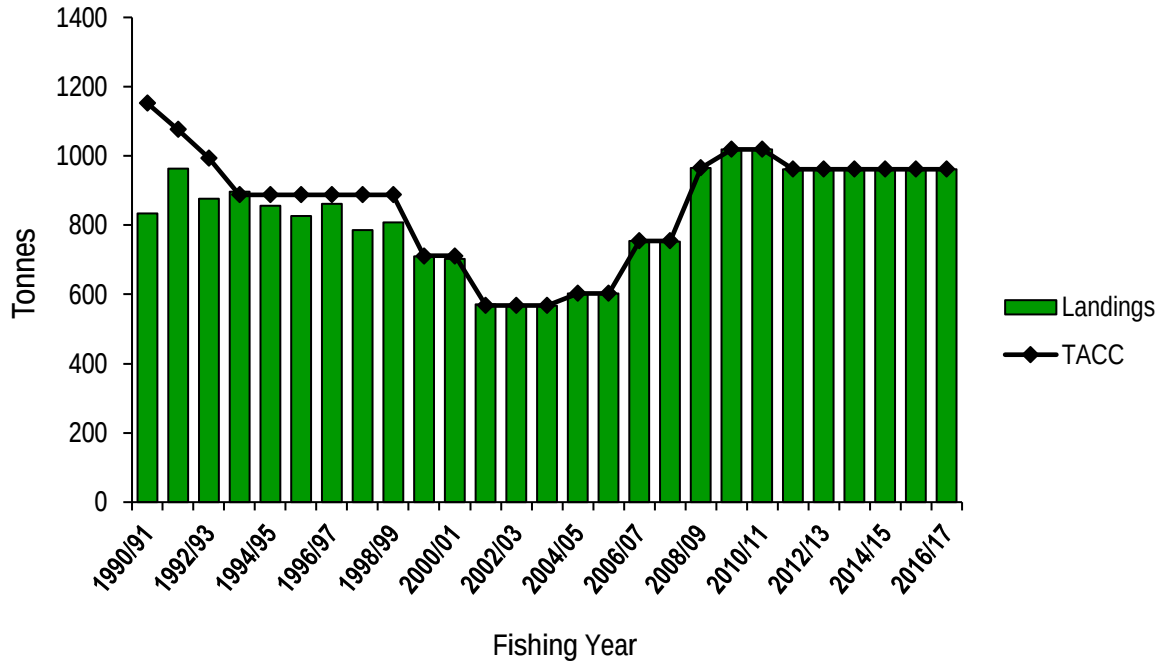

Figure 9.2: CRA 8 commercial landings and TACCs from 1990 to 2016.

164. A graphical representation of the CRA 8 management procedure is provided in Figure 9.3. The graph shows the proposed TACC for the next year as a function of CPUE in the current year. When the rule was operated with the 2017 CPUE of 3.71 kg/potlift it resulted in a TACC of 1,070.7 tonnes for the 2018/19 fishing year (shown by the purple square on the graph).

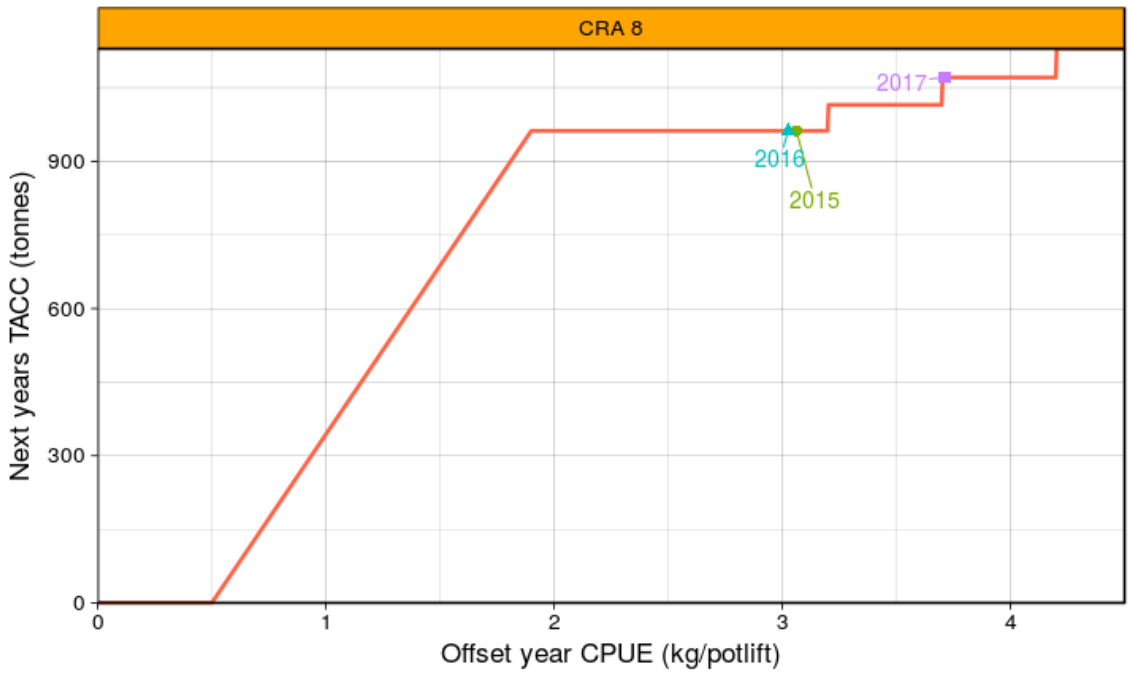

Figure 9.3: The current CRA 8 management procedure, showing the TACCs resulting from evaluations performed in 2015 to 2017 (shown as coloured shapes) for the 2015/16 to 2018/19 fishing years.

10 Other Relevant Matters

10.1 ENVIRONMENTAL PRINCIPLES

165. Section 9 of the Act requires that the Minister takes into account environmental principles when exercising or performing functions, duties, or powers in relation to the utilisation of fisheries resources or ensuring sustainability.

166. The proposals are not expected to change the environmental impacts and interactions significantly for the CRA 2, 4, 7 and 8 fisheries. Rock lobsters are caught by potting and diving, which are selective fishing methods with low expected impacts on the benthic environment and low bycatch levels. Where TAC increases are proposed for CRA 4 and CRA 8, the proposals will provide for additional catch resulting from greater relative abundance in these fisheries, but there is unlikely to be any additional vessels. Where TAC decreases are proposed for CRA 2 and CRA 7, targeted fishing effort is expected to reduce.

10.2 SUSTAINABILITY MEASURES

167. Section 11 of the Act sets out additional matters that the Minister must take into account or have regard to when setting a sustainability measure such as a TAC.

168. These matters have been considered when developing the proposals for the stocks under review. With respect to natural variability of rock lobster stocks, a variety of environmental factors are thought to influence the productivity of rock lobster populations including water temperature, ocean currents, latitude, shelter availability, and food availability. Studies have shown that lobsters grow at different rates around New Zealand and female lobsters become mature at different sizes. The development of management procedures for the rock lobster stocks discussed in this paper take into account variability in growth, maturity, available abundance, and recruitment.

10.3 INPUT AND PARTICIPATION OF TANGATA WHENUA

169. The Mai i nga Kuri a Wharei ki Tihirau Forum (the Bay of Plenty Iwi Fisheries Forum) have been involved in discussions about the future management of the CRA 2 fishery. Iwi that are represented at the Forum include: Ngai Te Rangi; Ngāti Ranginui; Ngāti Pukenga; Te Arawa; Ngāti Tuwharetoa ki Kawerau; Ngāti Manawa; Ngāti Whare; Whakatohea; Te Upokorehe; Ngāti Awa; Ngāitai; and Ngāti Rangitihi.

170. Te Ohu Kaimoana also supports relevant iwi commercial and non-commercial interests to provide feedback on rock lobster proposals each year. In particular, Te Ohu Kaimoana have recently provided the Mai i nga Kuri a Wharei ki Tihirau Forum with support on the review of the CRA 2 fishery and have also encouraged other iwi that are not part of the Forum to participate in CRA 2 engagement opportunities.

171. The proposals to consult on CRA 7 and 8 were presented to Te Waka a Māui me Ōna Toka Iwi Forum in November 2017 and they were supportive of the proposals for these fisheries. The Te Waka a Māui me Ōna Toka Iwi Forum represents all nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. In addition, a Te Waka a Māui me Ōna Toka

Iwi Forum representative is a member of the NRLMG who directly inputs into decision-making on behalf of South Island tangata whenua.

10.4 INTERDEPENDENCE OF STOCKS

172. The obligation to have regard to the interdependence of stocks when setting a TAC under section 13 requires consideration of the effects of fishing on associated stocks harvested with the target stock. Examples include other non-target species (bycatch) or benthic species that are incidentally impacted by fishing gear. The role of the target stock in the food chain should also be considered. In particular, independence involves a direct trophic (i.e. one stock is likely to be directly affected through a predator-prey relationship by the abundance of another stock) relationship between stocks.

173. Potting is the main method commercial fishers use to target rock lobster. This method is considered to have very little direct effect on non-target species and benthic species. The most frequently reported incidental species caught via commercial rock lobster potting, in decreasing order of catch across all stocks are: octopus, conger eel, blue cod, trumpeter, sea perch, red cod, butterfish and leatherjackets. This is based on an analysis of estimated incidental catches for the period 1989 to 2003. The non-rock lobster catch ranged from 2 to 11% of the estimated rock lobster catch weight per stock over this period.

174. Rock lobsters are predators of molluscs and other invertebrates and predation on rock lobsters is known from octopus, blue cod, groper, southern dogfish, rig and seals. Predation by rock lobsters has been suggested as contributing to trophic cascades in a number of studies in New Zealand, particularly in the Greater Hauraki Gulf (i.e. if fished predators such as rock lobster, snapper and blue cod are reduced to certain levels urchin-grazed kelp 'barrens' can form). However, a literature review (Breen unpublished) suggests that the evidence for lobster-driven trophic cascades at a national scale is limited.

10.5 BIOLOGICAL CHARACTERISTICS AND ENVIRONMENTAL CONDITIONS

175. When setting a TAC under section 13, the Minister must also have regard to the biological characteristics of the stock and any environmental conditions affecting the stock. A variety of environmental factors are thought to influence the productivity of rock lobster populations, including water temperature, ocean currents, latitude, shelter availability, and food availability. Studies have shown that lobsters grow at different rates around New Zealand and female lobsters become mature at different sizes.

176. Variability in growth, maturity, available abundance, and recruitment were taken into account during the development of management procedures for the rock lobster stocks discussed in this paper.

10.6 DEEMED VALUE RATES: SECTION 75

177. Deemed values are charges commercial fishers must pay for every kilogram of stocks landed in excess of their Annual Catch Entitlement (ACE) holdings. The purpose of the deemed value framework is to encourage commercial fishers to balance their catch with ACE.

178. Under section 75 of the Act, the Minister must set annual and interim deemed value rates for all stocks managed in the Quota Management System and may vary such rates, after considering specific matters. Any deemed value set takes effect from the first day of the next fishing year for the stock concerned. The annual deemed value rate must be greater than the interim deemed value rate.

179. The interim deemed value rate for all rock lobster stocks (including CRA 2, 4, 7 and 8) is currently set at 90% of the annual deemed value rate. As the current interim and annual deemed value rates are consistent with the Deemed Value Guidelines[24], no changes are proposed to the deemed value rates for any rock lobster stocks, as outlined in Table 10.1.

Table 10.1: Standard Deemed Value Rates ($/kg) for all rock lobster stocks.

Interim Rate ($/kg)	Annual Differential Rates ($/kg) for excess catch (% of ACE)					
	100-120%	120-140%	140-160%	160-180%	180-200%	200%+
99.00	110.00	132.00	154.00	176.00	198.00	220.00

11 Further Information

180. Should you require further information, please see:

Fisheries Act (1996):
http://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html

Operational management procedure for New Zealand rock lobster stocks:
Fisheries research report available here: http://www.mpi.govt.nz/document-vault/14566 [12MB].

November 2017 Fisheries Assessment Plenary Report:
For information on rock lobster biology, stock assessment and stock status refer to the November 2017 Fisheries Assessment Plenary report.
http://fs.fish.govt.nz/Doc/24542/14-CRA_2017_FINAL.pdf.ashx [2.6MB].

MPI website for the management review of the CRA 2 rock lobster fishery:
http://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/review-of-the-cra2-rock-lobster-fishery/

Harvest Strategy Standard:
Harvest Strategy Standard for New Zealand Fisheries. (2008). Compiled by the Ministry of Fisheries, Wellington, New Zealand, 27 p.
(http://fs.fish.govt.nz/Page.aspx?pk=104)

Previous reviews of the stocks:
CRA 3, 4 and 7 Sustainability Round Review April 2017:
https://www.mpi.govt.nz/dmsdocument/16879-review-of-rock-lobster-sustainability-measures-for-1-april-2017-final-advice-paper

[24] Available at www.mpi.govt.nz/document-vault/3663

CRA 4 and 8 Sustainability Round Review April 2016:
https://www.mpi.govt.nz/dmsdocument/11611-review-of-rock-lobster-sustainability-measures-for-1-april-2016

CRA 7 Sustainability Round Review April 2015:
https://www.mpi.govt.nz/document-vault/6415

CRA 2, 4 and 7 Sustainability Round Review April 2014:
https://www.mpi.govt.nz/dmsdocument/3993-review-of-rock-lobster-sustainability-measures-final-advice-paper