



Review of Rock Lobster Sustainability Measures for 1 April 2019

Final Advice Paper

Prepared by the National Rock Lobster Management Group,
including Fisheries New Zealand

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1 Summary

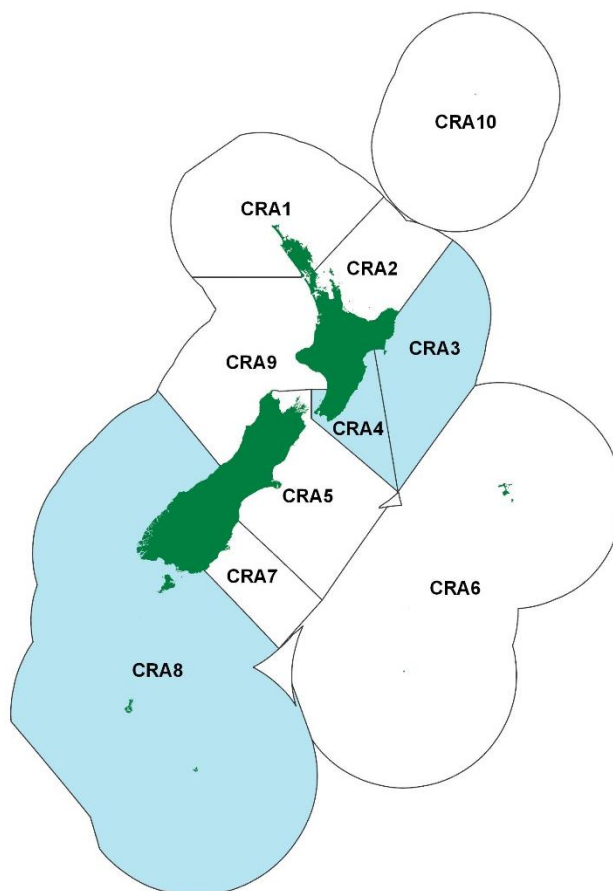


Figure 1: Map of rock lobster Quota Management Areas showing stocks under review in blue.

1. You are being asked to make decisions on sustainability measures for three rock lobster stocks for the fishing year beginning 1 April 2019 (Figure 1). The Total Allowable Catch (TAC), allowances, and Total Allowable Commercial Catch (TACC) proposals presented in this paper for your decision are based on the results from the operation of management procedures or decision rules.
2. Under the Fisheries Act 1996 (the Act), you are required to set a TAC that maintains a stock at or above, restores a stock to or above, or moves the stock towards or above a level that can produce the maximum sustainable yield (MSY). When varying a TAC you must have regard to these requirements. For rock lobster, MSY-compatible reference biomass levels are generally used.
3. After varying the TAC, a separate decision arises in respect of allocating the TAC. You have discretion when making allowances for various sectors and in varying the TACC. The Act does not recognise an inherent priority that directs your TAC allocation decisions.
4. Management procedures are in place for six of the ten rock lobster stocks in New Zealand. Each management procedure is operated every year to guide the varying of catch limits in a way that is consistent with your statutory obligations for managing stocks under the Act. The first management procedure in rock lobster fisheries was used in 1997 to rebuild the CRA 7 (Otago) and CRA 8 (Southern) stocks.

5. 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. They enable TACs to be regularly reviewed so that overall removals from a stock reflect available abundance. This is particularly important for rock lobster because abundance can fluctuate from year to year with changes in environmental conditions (e.g. water currents and temperatures can affect the number of lobsters entering a stock).
6. The final proposals (Table 1) for each stock under review are based on discussions by the multi-stakeholder National Rock Lobster Management Group (NRLMG), which includes Fisheries New Zealand. They are also based on the consideration of best available information, and an analysis of submissions received from tangata whenua and fishing interests on each consultation option. The NRLMG has acted as a primary advisor to Ministers on rock lobster management matters since 1992.
7. Your decisions for each stock under review relate to:
 - **CRA 3 (Gisborne)** - Decreases to the TAC and TACC, with no change to the customary, recreational, and other mortality allowances, based on the operation of the CRA 3 management procedure that the previous government agreed to use until the 2020/21 fishing year;
 - **CRA 4 (Wellington/Hawke's Bay)** - Increases to the TAC and TACC, and a decrease to the other mortality allowance, with no change to the customary and recreational allowances, based on the use of the CRA 4 management procedure that the previous government agreed to use until the 2022/23 fishing year; and
 - **CRA 8 (Southern)** - Increases to the TAC and TACC, with no change to the customary, recreational, and other mortality allowances, based on the use of the CRA 8 management procedure that the previous government agreed to use until the 2021/22 fishing year.

Table 1: TAC, allowance and TACC final proposals (in tonnes) for CRA 3, 4 and 8 from 1 April 2019. NRLMG recommendations are shown in blue italics

Stock	Option	TAC	TACC	Allowances		
				Customary Māori	Recreational	Other mortality
CRA 3	CRA3_01: Status quo	366.86	237.86			
	CRA3_02: Based on the operation of the CRA 3 management procedure <i>(NRLMG recommended)</i>	351.9 ↓ (4.1%)	222.9 ↓ (6.3%)	20	20	89
CRA 4	CRA4_01: Status quo	513.8	318.8			75
	CRA4_02: Based on the operation of the CRA 4 management procedure <i>(NRLMG recommended)</i>	558 ↑ (8.6%)	380 ↑ (19.2%)	35	85	58 ↓ (22.7%)
CRA 8	CRA8_01: Status quo	1,161.7	1,070.7			
	CRA8_02: Based on the operation of the CRA 8 management procedure <i>(NRLMG recommended)</i>	1,220.6 ↑ (5.1%)	1,129.6 ↑ (5.5%)	30	33	28

8. In addition to the proposals for CRA 3, CRA 4 and CRA 8 in this paper, the NRLMG would like to bring to your attention a number of additional matters associated with the management of rock lobster fisheries. These matters are discussed in Section 12 towards the end of this document. They include: implications of Fisheries New Zealand's Digital Monitoring system; NRLMG membership review; estimating and managing recreational harvest (including from amateur charter vessels); estimating and constraining illegal harvest; differential minimum legal size regimes in CRA 3 and CRA 8; and, seismic testing concerns.

2 NRLMG recommendations

2.1 CRA 3 (GISBORNE)

9. The NRLMG recommends that you agree to Option CRA3_02, which is to apply the current CRA 3 management procedure and reduce the TAC and TACC by 14.96 tonnes.
10. The results of the 2014 CRA 3 stock assessment suggested there were no sustainability concerns for the CRA 3 fishery. Stock biomass in 2013 was well above the agreed reference level by 3.3 to 4.7 times. Monitoring information suggests that lobster abundance has decreased in recent years, but it is considered that the stock is still likely to be above the reference level. The proposed TAC decrease is expected to ensure the stock is maintained at or above the reference level.
11. No change is proposed to the non-commercial allowances for CRA 3. Best estimates of current levels of Māori customary, recreational removals, and other sources of fishing-related mortality (i.e. illegal take and handling mortality) are considered to be within the current allowances.
12. A new CRA 3 stock assessment is scheduled for later this year. This assessment will provide an updated estimate of the current status of the stock relative to desired levels of abundance, which will be used to inform whether any further changes are required to catch settings or other management controls.

2.2 CRA 4 (WELLINGTON/HAWKE'S BAY)

13. The NRLMG recommends that you agree to Option CRA4_02, which is to apply the current CRA 4 management procedure and increase the TAC by 44.2 tonnes, increase the TACC by 61.2 tonnes, and reduce the other mortality allowance by 17 tonnes.
14. The results of the 2016 CRA 4 stock assessment suggested that stock biomass was below the agreed reference level by 25%. In response to this new science information, a new CRA 4 management procedure was put in place in 2017 to ensure the stock was rebuilt towards the agreed reference in 2021 with 92% probability. Its operation resulted in a TAC decrease from 592 to 484 tonnes, and a TACC decrease from 397 to 289 tonnes from April 2017. Monitoring information suggests that lobster abundance in CRA 4 has increased in recent years. You increased the CRA 4 TAC from 484 to 513.8 tonnes and TACC from 289 to 318.8 tonnes from April 2018.
15. A decrease is proposed to the allowance for other sources of fishing-related mortality, to reflect the estimates used in the most recent CRA 4 stock assessment. No change is proposed to the non-commercial allowances for CRA 4. Best estimates of current levels of Māori customary and recreational removals are considered to be within the current allowances.

2.3 CRA 8 (SOUTHERN)

16. The NRLMG recommends that you agree to Option CRA8_02, which is to apply the current CRA 8 management procedure and increase the TAC and TACC by 58.9 tonnes.
17. Based on the 2015 stock assessment results there are no sustainability concerns for the CRA 8 fishery. Stock biomass in 2015 was 1.4 times the agreed reference level. Ongoing application of the current CRA 8 management procedure is expected to maintain the CRA 8 stock above the agreed reference level with 99% probability.
18. No change is proposed to the non-commercial allowances for CRA 8. Best estimates of current levels of Māori customary, recreational, and other sources of fishing-related mortality are considered to be within the current allowances.

3 Summary of the NRLMG's recommendations

19. To ensure the long-term sustainable utilisation of rock lobster fisheries, the NRLMG recommends that you make decisions for each stock under review as follows:

CRA 3 (GISBORNE)

Option CRA3_01 (Status quo)

Agree to retain the CRA 3 TAC at 366.86 tonnes and within the TAC:

- i. retain the allowance of 20 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 20 tonnes for recreational fishing interests;
- iii. retain the allowance of 89 tonnes for other sources of fishing-related mortality;
- iv. retain the CRA 3 TACC at 237.86 tonnes.

Agreed / Not Agreed

OR

Option CRA3_02 (NRLMG recommended)

Agree to apply the current CRA 3 management procedure, and based on its use reduce the CRA 3 TAC from 366.86 to 351.9 tonnes, and within the TAC:

- i. retain the allowance of 20 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 20 tonnes for recreational fishing interests;
- iii. retain the allowance of 89 tonnes for other sources of fishing-related mortality;
- iv. reduce the TACC from 237.86 to 222.9 tonnes.

Agreed / Not Agreed

CRA 4 (WELLINGTON/HAWKE'S BAY)

Option CRA4_01 (*Status quo*)

Agree to retain the CRA 4 TAC at 513.8 tonnes and within the TAC:

- i. retain the allowance of 35 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 85 tonnes for recreational fishing interests;
- iii. retain the allowance of 75 tonnes for other sources of fishing-related mortality;
- iv. retain the CRA 4 TACC at 318.8 tonnes.

Agreed / Not Agreed

OR

Option CRA4_02 (*NRLMG recommended*)

Agree to apply the current CRA 4 management procedure, and based on its use increase the CRA 4 TAC from 513.8 to 558 tonnes, and within the TAC:

- i. retain the allowance of 35 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 85 tonnes for recreational fishing interests;
- iii. reduce the allowance for other sources of fishing-related mortality from 75 to 58 tonnes;
- iv. increase the TACC from 318.8 to 380 tonnes.

Agreed / Not Agreed

CRA 8 (SOUTHERN)

Option CRA8_01 (Status quo)

Agree to retain the CRA 8 TAC at 1,161.7 tonnes and within the TAC:

- i. retain the allowance of 30 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 33 tonnes for recreational fishing interests;
- iii. retain the allowance of 28 tonnes for other sources of fishing-related mortality;
- iv. retain the CRA 8 TACC at 1,070.7 tonnes.

Agreed / Not Agreed

OR

Option CRA8_02 (NRLMG recommended)

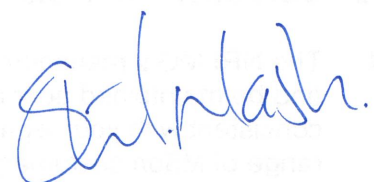
Agree to use the current CRA 8 management procedure, and based on its operation increase the CRA 8 TAC from 1,161.7 to 1,220.6 tonnes, and within the TAC:

- i. retain the allowance of 30 tonnes for Māori customary non-commercial fishing interests;
- ii. retain the allowance of 33 tonnes for recreational fishing interests;
- iii. retain the allowance of 28 tonnes for other sources of fishing-related mortality;
- iv. increase the CRA 8 TACC from 1,070.7 to 1,129.6 tonnes.

Agreed / Not Agreed

Note that deemed values are charges commercial fishers must pay for every kilogram of stocks landed in excess of their Annual Catch Entitlement, and that no change is proposed to the deemed value rates for any rock lobster stock.

Noted



Hon Stuart Nash
Minister of Fisheries

17 / 03 / 2019

4 Context

4.1 NRLMG ROLE AND FUNCTION

20. In 1992, the then Minister of Fisheries (Hon D L Kidd) endorsed the establishment of a national group to revise and develop the Rock Lobster Management Plan, and asked sector groups to nominate representatives. The NRLMG was subsequently established to:
 - a) Provide a co-ordinated participatory management forum; and
 - b) Provide the Minister of Fisheries with good quality, ongoing advice relating to management of rock lobster from a group that is representative of all interests in the fishery.
21. The NRLMG is a national-level, multi-stakeholder group comprising representatives of the customary¹, recreational and commercial fishing sectors, and Fisheries New Zealand. Since its formation, the NRLMG has acted as a primary advisor to previous Ministers on catch limit, regulatory and other management actions that apply specifically to rock lobster fisheries. The NRLMG is the longest standing collaborative multi-stakeholder fisheries group in New Zealand.
22. The NRLMG has an independent chair (Jo Akroyd), and Fisheries New Zealand supports the group by providing the secretariat as well as scientific and fisheries management advice. Current members of the NRLMG are: Nigel Scott (Te Waka a Māui Fisheries Forum); Peter van Kampen (Te Ohu Kaimoana); Geoff Rowling and Keith Ingram (NZ Recreational Fishing Council); Mark Edwards and Malcolm Lawson (NZ Rock Lobster Industry Council); and Alicia McKinnon, Julie Hills, and Sonja Hempel (Fisheries New Zealand). There are also agreed alternate members: George Zander (NZ Recreational Fishing Council); and Daryl Sykes (NZ Rock Lobster Industry Council).
23. The NRLMG is currently undertaking a review of its membership, to ensure it is fit for purpose and representative of all sectors involved in rock lobster management. The NRLMG intends to provide you with advice later in 2019 upon completion of this review.

4.2 CURRENT MANAGEMENT APPROACH

24. The NRLMG's management goal for all rock lobster fisheries is that they will be managed and be maintained at or above the assessed and agreed biological reference points consistent with your legal obligations, using a comprehensive approach that recognises a range of Māori customary non-commercial, recreational, commercial, and environmental concerns and values.
25. The NRLMG considers and proposes changes to the TAC, allowances and TACC in two situations:
 - a) You confirm a change triggered by a fully tested and accepted management procedure, following advice from the NRLMG;
 - b) Stock modelling demonstrates that a change is required to move the stock to, or maintain the stock at, a size at or above an agreed reference level.

¹ The aim for Tangata Whenua membership is to be cognisant of, and integrate, the full range of sector harvesting rights held by Māori (customary, recreational and commercial).

26. 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 six of the ten rock lobster stocks to guide annual catch variation reviews. Management procedures set out pre-agreed management actions that will be taken in response to annual changes in commercial catch rates ('catch-per-unit-of-effort' or 'CPUE').
27. There are no management procedures currently in place for CRA 2 (Hauraki Gulf/Bay of Plenty), CRA 6 (Chatham Islands), or CRA 9 (Westland/Taranaki) rock lobster fisheries. The CRA 2 rock lobster fishery is currently subject to a time constrained rebuild plan.

Management procedure use in New Zealand

28. The management procedure approach establishes a regime that can respond to changes in stock abundance in the fishery on an annual basis in a way that is consistent with your statutory obligations. Rock lobster abundance can fluctuate from year to year with changes in environmental conditions, and management procedures provide a responsive approach to this natural variability.
29. Each stock's management procedure has been used by previous Ministers to guide statutory TAC variation in rock lobster fisheries for varying periods. The oldest example of management procedures is in CRA 7 (Otago) and CRA 8 (Southern), where they have been used to guide TAC variation since 1997, first to rebuild the stocks and then to maintain them above reference levels with high probability.
30. Management procedures are generally reviewed every five years, unless a review is requested and approved by the NRLMG. The review is to ensure the variation of TACs remains compliant with the statutory structure set out in the Act. It involves a new stock assessment and management procedure evaluations to determine whether there are opportunities for increased utilisation, or sustainability risks that require management response.
31. Commercial CPUE from each year is used as an input to a management procedure to determine the TACC for the fishing year that begins in the following April. Rock lobster has an April fishing year that begins on 1 April and ends on 31 March. The CPUE series used in management procedures is called an 'offset year CPUE' because it is calculated based on data from the most recent October fishing year (1 October to 30 September). Use of offset year CPUE ensures that the most up-to-date CPUE information is used in management procedure operations and decision-making.
32. CPUE is used as the main input because it is considered to be a reliable indicator of relative stock size in rock lobster fisheries. CPUE has been successfully used in several management procedures to rebuild stocks from low to high abundance levels, or to maintain stocks near target levels.
33. Table 2 provides an outline of the use of current management procedures, and when they are scheduled for review.

Table 2: Management procedures: history and review schedule.

Quota Management Area	CRA 1	CRA 3	CRA 4	CRA 5	CRA 7	CRA 8
Region	Northland	Gisborne	Wellington/ Hawke's Bay	Canterbury/ Marlborough	Otago	Southern
Year current management procedure commenced	2015	2015	2017	2016	2013	2016
Year of scheduled review	2019 (TBC)	2019 (TBC)	2021	2020	2020 ²	2020

34. The NRLMG and rock lobster scientists note that management procedures are unlikely to be developed for CRA 1 and CRA 3 later this year because of the new Digital Monitoring system that Fisheries New Zealand is implementing and the likely break that it will cause to the current commercial CPUE series. These implications for rock lobster management are discussed further in Section 12 towards the end of this document.

Management procedure benefits

35. The traditional approach used to set catch limits in most of New Zealand's fisheries is to undertake a stock assessment and then to provide recommendations on the TAC, allowances, and the TACC. This approach has some disadvantages: stock assessment capacity is limited, and under this approach for rock lobster only one or two assessments can be generally carried out each year. Delays in updating a stock assessment can cause management action to be delayed and catch limits to be set inappropriately for a fishery.
36. A management procedure has a number of advantages over the traditional stock assessment approach. These advantages include:
- A management regime that can respond to changes in stock abundance in the fishery on an annual basis;
 - Greater certainty and transparency about how best available information will be used to make decisions;
 - An explicit definition of management goals (e.g. maximising yield, maximising stability, minimising risk);
 - Greater certainty of achieving management goals;
 - The involvement of fishery stakeholders in the choice of a management procedure;
 - The ability to address uncertainty in the assessment and management process; and
 - Management procedures reduce the frequency that stock assessments are required.
37. As part of the Fisheries Change Programme, Fisheries New Zealand is consulting on proposals to make greater use of harvest control rules (management procedures) to streamline the process for varying catch limits for fishstocks. The NRLMG welcomes any improvements to speed up your decisions for catch variation and management controls for rock lobster.

² The CRA 7 management procedure was evaluated with a new model in 2015, extending its use until the 2020/21 fishing year.

Evaluation of management procedures

38. Management procedures are evaluated with a modified stock assessment model, known as an 'operating model'. Data used in the model include: customary, recreational, commercial and illegal catch; length frequencies from catch sampling and industry logbook data; tag-recapture data (i.e. growth information); and larval settlement levels.
39. Peer review of stock assessment models and management procedures occurs at the Rock Lobster Fisheries Assessment Working Group and at the November Mid-year Fisheries Assessment Plenary. These processes are coordinated and overseen by Fisheries New Zealand, and different interests can openly participate. Each management procedure is also simulation-tested. This includes testing for robustness to uncertainties in model assumptions (e.g. rock lobster population dynamics, variable levels of recruitment and non-commercial catches), and other factors.

4.3 STOCK INDICATORS

40. Three stock indicators are relevant to evaluation of the proposals presented in this paper:
 - a) The statutory reference level, B_{MSY} , the stock size that can produce the maximum sustainable yield. Section 13 of the Act requires you to set a TAC that moves the stock to, or maintains the stock at, a size at or above a level that can produce the maximum sustainable yield or at a level that is not inconsistent with this objective. When varying a TAC you must have regard to these requirements.
 - b) The conceptual proxy, B_{REF} , a reference biomass level.³ The use of 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 you consider that current biomass or B_{MSY} cannot be estimated reliably using best available information. 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.
 - c) Spawning stock biomass, SSB , which is the weight of all mature females in the autumn-winter.

4.4 FISHERIES NEW ZEALAND HARVEST STRATEGY STANDARD

41. The Harvest Strategy Standard 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 Fisheries New Zealand's approach to relevant sections of the Act, and as such, forms a core input to our advice to you on the management of rock lobster fisheries, particularly the varying of TACs under section 13. The Harvest Strategy Standard is not, however, legally binding and you are not obliged to choose options based on it.

³ 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. Conceptual B_{MSY} : 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].

42. The Harvest Strategy Standard specifies that management procedures should be designed to ensure that the probability of:
 - Achieving or exceeding the MSY-compatible target is at least 50%;
 - Breaching the soft limit does not exceed 10%;
 - Breaching the hard limit does not exceed 2%.
43. For rock lobster:
 - 'MSY-compatible target' reference points include conceptual proxies (B_{REF}^4);
 - The soft limit is defined as 20% of the unfished spawning stock biomass level or 50% B_{REF} ;
 - The hard limit is defined as 10% of the unfished spawning stock biomass level or 25% B_{REF} .
44. For the stocks discussed in this paper, soft and hard limits are based on percentages of the unfished spawning stock biomass levels.
45. Simulation-testing suggests that all of the management procedures discussed in this paper are consistent with the Harvest Strategy Standard.

4.5 ROCK LOBSTER BIOLOGY

Distribution

46. In New Zealand, spiny red rock lobster *Jasus edwardsii* occurs from the Three Kings Islands in the north to the Auckland Islands in the south, and east to the Chatham Islands. Rock lobsters are generally found within the depth range of 5-100 metres, but can also be found on shallower seamounts out to 300 metres. They are most commonly found on or near rocky reef platforms.

Larval distribution and recruitment

47. Because of the long larval life of rock lobsters, the origins of larvae are difficult to determine. Larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site.
48. Puerulus larvae settle mainly on rocky habitats at depths less than 20 metres with the settlement season varying with locality. The number of pueruli that settle varies among areas and from year to year. Annual levels of settlement have been collected from sites in CRA 3, 4, 5, 7 and 8 since 1979. Settlement collector trials were carried out in CRA1 and CRA 2 in the 2000s, but were discontinued, either for logistic reasons or because they were not providing good indices of settlement. The CRA 2 industry has deployed a new type of collectors to monitor settlement over the last two fishing years.
49. Puerulus settlement may be affected by environmental factors such as the amount of suitable habitat available, the persistence of storms, prevailing ocean currents, sea temperature, food availability, and predation. Large numbers of puerulus larvae die before ever reaching suitable habitat. This is due in part to predation but, as noted above, may also be a result of unfavourable environmental conditions.

⁴ 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.

Interdependence of stocks

50. The interdependence of stocks involves the consideration of the effects of fishing on associated or dependent species affected by fishing for the target stock. Examples include non-target fish species (bycatch) or benthic species that are incidentally taken or impacted by fishing gear. The role of the target stock in the food chain should also be considered. In particular, interdependence involves direct trophic relationships between stocks (i.e. one stock is likely to be directly affected through a predator-prey relationship by the abundance of another stock).
51. Potting is the method commercial fishers use to target rock lobster. This method is considered to have 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 rock lobster 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. Escape gaps provided for sublegal lobsters to escape also allow many fish and invertebrates to escape.
52. Rock lobsters feed on a wide range of small shellfish, crabs, starfish and kina, depending on local availability. Predation on rock lobsters is known from octopus, blue cod, groper, school shark, rig and seals.
53. Some scientists have suggested that decreased predation from large reef predators such as lobsters, snapper and other fishes is responsible for population increases in sea urchins and destruction of kelp forests. This hypothesis is controversial and the literature is equivocal. There is research suggesting that on some rocky reefs in the north of New Zealand (e.g. within the CRA 2 area), recovery of predators like rock lobster and snapper inside marine reserves has led to the recovery of macro algal habitat through predation exerted on herbivorous urchins. However, there is also contradictory evidence. Sea urchin populations are affected by other factors than predation, such as diseases and temperature effects on recruitment.

5 Need for review

54. Every year the NRLMG considers the results from stock assessments or the operation of management procedures. The outputs of this process inform advice to you and decisions on whether catch settings should change for the upcoming April fishing year, to provide for utilisation while ensuring sustainability.
55. Based on operation of current management procedures, changes to the status quo are proposed for the CRA 3, 4, and 8 rock lobster fisheries. Operation of the CRA 1 (Northland), CRA 7 (Otago), and CRA 5 (Canterbury/Marlborough) management procedures suggested that no change was needed to the management settings for these fisheries from April 2019.⁵
56. There is also no new information to suggest that changes to the catch settings are needed for the CRA 2 (Hauraki Gulf/Bay of Plenty), and CRA 9 (Taranaki/Westland) fisheries. A new stock assessment was completed for CRA 6 (Chatham Islands) in 2018, which suggested that there were no sustainability concerns for the stock. Spawning stock biomass in 2018

⁵ For further technical information on management procedures for New Zealand rock lobster refer to the Fisheries Assessment Report available for download from the Fisheries New Zealand website here: <https://www.mpi.govt.nz/dmsdocument/29627/send> [12MB].

was 32% of the unfished level (above the Fisheries New Zealand “soft” limit), and was projected to increase to 35% in 2022. Therefore, no changes are required to current catch settings.

57. A rebuilding strategy is currently in place for the CRA 2 fishery, following substantial reductions that were made to the TACC (down from 200 to 80 tonnes), and the recreational allowance (down from 140 to 34 tonnes) from April 2018. Consultation on proposals to reduce the CRA 2 recreational bag limit from six to three spiny rock lobsters, and to introduce telson clipping for recreationally caught spiny lobsters, closed on 19 December 2018 and separate advice will be provided shortly for your consideration on these two measures. A review of the CRA 2 TAC, allowances, TACC, and other management controls will occur at the next CRA 2 stock assessment (currently proposed for 2021 unless monitoring information suggests a review is required earlier).

6 Central statutory considerations

58. This section provides an overview of your central statutory considerations for varying TACs and TACCs under the Fisheries Act 1996 (the Act). Details of your other statutory considerations are provided in Appendix 1.
59. Where relevant, stock-specific details relating to these considerations are set out in sections of this paper where individual stocks are discussed.

6.1 SECTION 13 - VARIATION OF THE TOTAL ALLOWABLE CATCH (TAC)

60. 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} .
61. MSY is defined, in relation to any fish stock, as being the greatest yield that can be achieved over time while maintaining the stock’s productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.
62. Section 13(2) of the Act requires a TAC to be set that maintains a stock at or above MSY or that moves or restores it to or above that level, having regard to the interdependence of stocks.
63. Section 13(2A) says that if you consider that the current level of a stock or the level of a stock that can produce the MSY is not able to be estimated reliably using the best available information (as is the case for rock lobster), you must:
- not use this lack of information as a reason for postponing, or failing to set a TAC for the stock;
 - have regard to the interdependence of stocks, the biological characteristics of the stock and any environmental conditions affecting the stock (see *Rock lobster biology* above); and
 - set a TAC using the best available information that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level which can produce the MSY.

- 64. You 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.
- 65. 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 (section 13(3)) you may have regard to such social, cultural, and economic factors as you consider relevant. This provision applies to TACs set under section 13(2) or section 13(2A). Section 13(2A) is applicable to rock lobster.

6.2 SECTIONS 20 & 21 - VARIATION OF THE TOTAL ALLOWABLE COMMERCIAL CATCH (TACC)

- 66. After varying the TAC, a separate decision arises in respect of allocating the TAC.
- 67. When setting or varying a TACC for a stock under section 20 of the Act, section 21 requires you 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).
- 68. 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, you have the discretion to make allowances for various sectors based on best available information. Having set or varied the TAC you in effect apportion it between the relevant interests.⁶
- 69. The Courts have in a number of cases considered what is involved in allowing for non-commercial interests. In *Snapper*⁷ 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 you decide to impose upon them, e.g. bag limits and minimum lawful sizes.
- 70. The Supreme Court in *Kahawai*⁸ endorsed this approach and said that the words “allow for” require you both to take into account the interests and make provision for them in the calculation of the TACC.⁹ It also said that although what the Minister allows for is an estimate of what recreational interests will catch, it is an estimate of a catch the Minister is able to control by for example daily bag and fish length limits; that 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
- 71. The Supreme Court went on to say that sections 20 and 21 prescribe a framework within which you must operate when setting or varying the TACC. The framework requires apportionment of the TAC by you 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.¹¹

⁶ New Zealand Fishing Industry Association (Inc) v Minister of Fisheries CA 82/97, 22 July 1997 (“Snapper 1”).

⁷ *Snapper 1*, p 17.

⁸ *New Zealand Recreational Fishing Council Inc v Sanford Limited* [2009] NZSC 54 (“Kahawai”)

⁹ *Kahawai* [55]

¹⁰ *Kahawai* [56]

¹¹ *Kahawai* [61]

72. The Supreme Court said that in the end, within the limits provided for by the Act, you make 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 your judgement.¹²
73. Under the customary fishing regulations [Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998], customary take is regulated through the authorisation system which requires that all customary fishing is to be undertaken in accordance with tikanga and the overall sustainability of the fishery. This framework was put in place to give effect to legal obligations in the Settlement Act.¹³
74. When allowing for Māori customary non-commercial interests, you must take into account:
- a) Any mātaihai reserve in the relevant Quota Management Area; and
 - b) Any temporary area closure or temporary fishing method restriction or prohibition imposed in the area for the purposes of improving the availability or size of a species for customary fishing purposes, or recognising a customary fishing practice in the area.
75. There are a number of mātaihai reserves and temporary closures that fall within each of the rock lobster stocks under review, including:
- a) CRA 3 – Te Hoe Mātaihai, Horokaka Mātaihai, Toka Tamure Mātaihai, and Hakihea Mātaihai;
 - b) CRA 4 - Moremore Mātaihai (a & b);
 - c) CRA 8 - Waikawa Harbour/Tumu Toka Mātaihai, Motupōhue (Bluff Hill) Mātaihai, Oreti Mātaihai, Pikomamaku Mātaihai, Te Whaka a Te Wera Mātaihai, Kaihuka Mātaihai, Horomamae Mātaihai, Waitutu Mātaihai, Okuru/Mussel Point Mātaihai, Tauperikaka Mātaihai, Mahitahi/Bruce Bay Mātaihai, Manakaiaua/Hunts Beach Mātaihai, and Okarito Lagoon Mātaihai.
76. The NRLMG notes that the proposals in this paper will not impact the ability to take rock lobster for customary purposes in these areas, and considers that they are unlikely to impact on these mātaihai reserves.
77. 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 or varying the customary allowance.
78. When allowing for recreational interests, you must take into account any regulations made under section 311 of the Act that prohibit or restrict fishing in any area. There are currently no section 311 regulations applying in the areas of the rock lobster stocks discussed in this paper.
79. An allowance is to be made for all other mortality to a stock that results from fishing. This includes illegal catch, discards, and incidental mortality from fishing gear.

¹² Kahawai [65]

¹³ Where the customary regulations don't apply, customary fishing is regulated under regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 and a similar authorisation system applies.

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

80. Section 12(1) says that before setting or varying any sustainability measure under the Act you are 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.
81. 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.
82. 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 tangata whenua 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. This is set out below.
83. Section 12 (2) says that as soon as practicable after setting or varying any sustainability measure, you shall give the persons consulted under 12(1), the reasons in writing for his or her decisions.

Input and participation to National Rock Lobster Management Group meetings

84. A Te Waka a Māui me Ōna Toka Iwi Forum representative (from the iwi forum that covers the South Island) is a member of the NRLMG, who directly inputs into decision-making on behalf of South Island tangata whenua. A representative of Te Ohu Kaimoana is also a member of the NRLMG, which supports relevant iwi to provide feedback on rock lobster proposals each year.

The CRA 3 and CRA 4 proposals

85. The majority of the CRA 3 and CRA 4 management areas do not have Iwi Forum Fisheries Plans.
86. The proposals to consult on CRA 3 and CRA 4 were presented at a multi-sector meeting on 29 November 2018 in Napier where research ideas were being discussed for various species. This meeting included tangata whenua representatives from Mahia to Wairarapa. No concerns were expressed about the proposals.
87. The proposal to consult on CRA 4 was also presented to Te Taihauauru Iwi Fisheries Forum on 16 November 2018. Te Taihauauru represents iwi and hapu along the western side of the lower North Island, from the Mokau River in north Taranaki through to Waikanae in the south. The forum did not have any specific feedback on the CRA 4 proposal. Only a small proportion of the CRA 4 fishery falls within the Forum’s rohe (Manawatu River to Waikanae).

88. The Te Taihauāuru Iwi Forum Fisheries Plan notes that rock lobster is an important species (described as taonga by some iwi), both significant in terms of its integral role in cultural practices, and economically significant as a result of the income it generates. The Plan contains three objectives which are relevant to the management options proposed for CRA 4:
- a) Management objective 1: customary non-commercial fisheries are healthy, sustainable, and support the cultural wellbeing of Te Taihauāuru Iwi;
 - b) Management objective 2: commercial fisheries are sustainable and support the economic wellbeing of Te Taihauāuru Iwi; and
 - c) Management objective 3: mana and rangatiratanga over our fisheries is restored, preserved and protected for future generations.
89. The NRLMG considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

CRA 8 proposals

90. The proposal to consult on CRA 8 was presented to Te Waka a Māui me Ōna Toka Iwi Forum in November 2018 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. Of these iwi, Ngāi Tahu is most relevant, as CRA 8 falls within their rohe.
91. Rock lobster (koura) is identified as a taonga species in the South Island Te Waipounamu Iwi Fisheries Plan. The Plan contains three objectives which are relevant to the management options proposed for CRA 8:
- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
 - b) Management objective 3: to develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi; and
 - c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
92. The NRLMG considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

7 Consultation and submissions

93. Decisions to vary TACs are made under section 13(4) of the Act; therefore, the consultation requirements of section 12(1) apply. Decisions to vary TACCs are made under section 20(2), to which the consultation requirements of section 21(2) apply. These provisions require consultation with such persons or organisations representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Māori, recreational, environmental, and commercial interests.
94. Fisheries New Zealand consulted on proposals to review sustainability measures for three rock lobster stocks from 18 December 2018 to 12 February 2019. A standard consultation process was followed, consisting of posting the consultation document on the Fisheries New Zealand website and alerting stakeholders to the consultation through a media release, social media posts, and email notifications.

7.1 SUBMISSIONS RECEIVED

95. Nineteen submissions on the consultation document were received from various organisations, groups and individuals.

Organisation and group submitters
CRA 4 Rock Lobster Industry Association Inc (CRAMAC 4)
CRA 8 Rock Lobster Industry Association Inc (CRAMAC 8)
Fiordland Marine Guardians
Forest & Bird
Guardians of Kāpiti Marine Reserve Trust (Kāpiti Guardians)
Iwi Collective Partnership (ICP)
Joint recreational submission from the New Zealand Sport Fishing Council, LegaSea, and Spearfishing New Zealand (hereafter referred to as "NZSFC")
Mahia Fishermen/Quota Owners
New Zealand Recreational Fishing Council (NZRFC)
New Zealand Rock Lobster Industry Council (NZ RLIC)
Ngāti Kahungunu Iwi Incorporated
Tairāwhiti Rock Lobster Industry Association (CRAMAC 3)
Te Ohu Kaimoana Trustee Ltd (TOKM)
Tūhoe Fish Quota Limited

96. Each submission is discussed further below as relevant to each stock and in the other matters in Section 12. Full copies of the submissions are available in Appendix 2.

8 Review of the CRA 3 (Gisborne) Rock Lobster Fishery

8.1 CRA 3 FISHERY OVERVIEW

Māori customary fishing

97. Rock lobster (koura) is a taonga species for tangata whenua. Information on CRA 3 customary catches is available under the Fisheries (Kaimoana) Regulations 1998, and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013. In the 2017 calendar year, approximately 8,400 rock lobsters were reported as customary harvest from CRA 3. This information is considered incomplete, because customary take of rock lobster that occurs under the Amateur Regulations for the purposes of hui and tangi is not required to be reported.
98. An estimate of 20 tonnes was used in the last 2014 CRA 3 stock assessment model to represent customary catches.

Recreational fishing

99. The CRA 3 rock lobster fishery supports a popular recreational fishery along the East Coast of the North Island, including in areas such as Poverty Bay and Mahia.
100. Recreational fishers are not required to report the quantities of rock lobsters they catch. For the 2014 CRA 3 stock assessment, recreational catch estimates from 1992, 1996 and 2011 recreational harvest surveys were used to construct a recreational catch trajectory (Figure 2). The trajectory was developed by assuming that recreational catch was proportional to the CRA 3 spring-summer abundance, as reflected by spring-summer commercial CPUE for CRA 3.
101. The resulting recreational catch trajectory showed a strong increasing trend from the early 1990s, exceeding 20 tonnes in the late 1990s, and then a strong decreasing trend in the early 2000s before an increase was seen in the late 2000s. In 2013, the model assumption of recreational catch was 20.42 tonnes.
102. The 2011 recreational catch estimate comes from the 2011/12 National Panel Survey, which estimated that the recreational catch of rock lobsters was 8.07 tonnes¹⁴. There is considerable uncertainty in this estimate.

¹⁴ With a coefficient of variation of 33% (the ratio of the standard error to the mean).

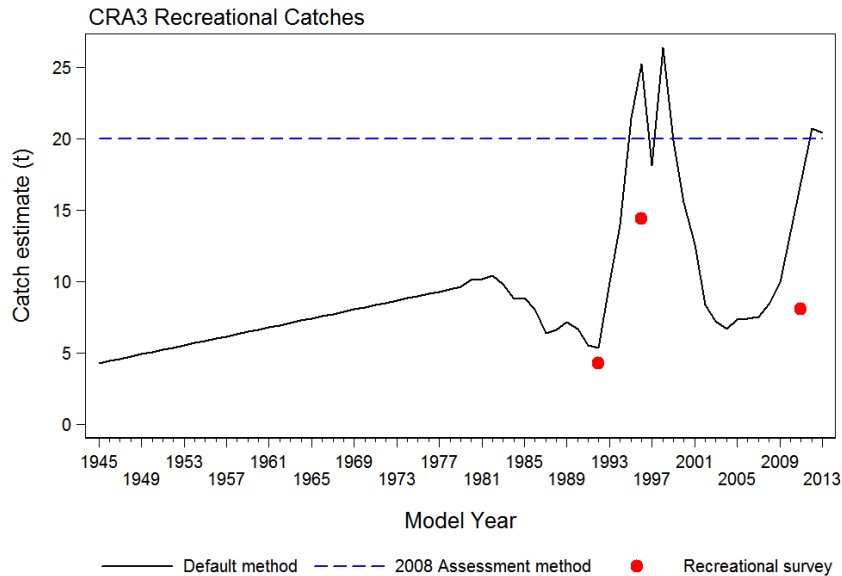


Figure 2: Recreational catch trajectory (tonnes) for the 2014 stock assessment of CRA 3. The red dots are the recreational survey estimates from 1992, 1996 and 2011, and the solid black line is the recreational catch trajectory. The blue dashed line is the recreational catch estimate used in the 2008 stock assessment.

Other mortality

103. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling mortality. It is difficult 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 estimates from 1989 and a constant illegal catch of 89 tonnes per year from 2002 to 2013.

Commercial fishing

104. The current asset value of the CRA 3 fishery is estimated at over \$222 million, based on the current TACC and the 2017/18 average quota share price (\$934,373 per tonne). The average Annual Catch Entitlement (ACE) value (the earnings quota owners receive when selling their ACE) for the 2017/18 fishing year was \$50,515 per tonne for CRA 3.

105. Annual landings and the TACC for CRA 3 since 1990 are shown in Figure 3¹⁵. Prior to 1995, there was a New Zealand wide stock assessment with catches apportioned to each Quota Management Area, and TACCs were not set on an annual basis to reflect available abundance. Since 2010, a management procedure has been used in CRA 3 to annually review the TACC to ensure that catches reflect available abundance.

¹⁵ In 2003 and 2004, the TACC was substantially under-caught because of voluntary Annual Catch Entitlement shelving by the CRA 3 industry.

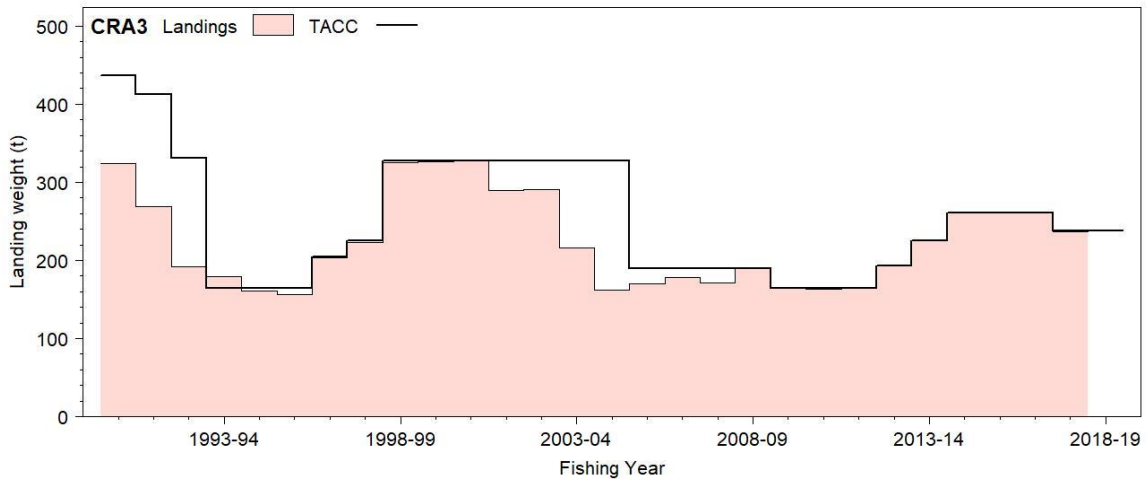


Figure 3: CRA 3 commercial landings and the TACCs from 1990 to 2018.

106. In CRA 3, commercial fishers can also land male rock lobsters at or above 52 mm tail width during June, July and August, while recreational fishers must take male rock lobsters at or above 54 mm tail width year-round. This matter is discussed further in Section 12 under differential minimum legal sizes.

8.2 CRA 3 STOCK STATUS

107. The results of the most recent CRA 3 stock assessment conducted in 2014 suggested there were no sustainability concerns for the CRA 3 fishery. 2013 biomass was well above both B_{MSY} (3.3 to 4.7 times) and B_{MIN} (3.0 to 3.6 times)¹⁶. Spawning stock biomass in 2013 was 70-107% of the unfished level.
108. With 2013 catch levels and recent recruitments, biomass was projected to decline by 15-31% by 2017, but would remain well above reference points.
109. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 3, and is the abundance indicator used in the CRA 3 management procedure. The history of offset year (i.e. October through September) CRA 3 commercial CPUE is shown in Figure 4. CPUE increased from 2008 to 2012 and then declined, but remains relatively high. CPUE in 2018 is lower than that in 2014 by about 30%, however stock biomass is still very likely to be above B_{MSY} .

¹⁶ B_{REF} is not reported for CRA 3 because it is not considered a useful indicator at this time.

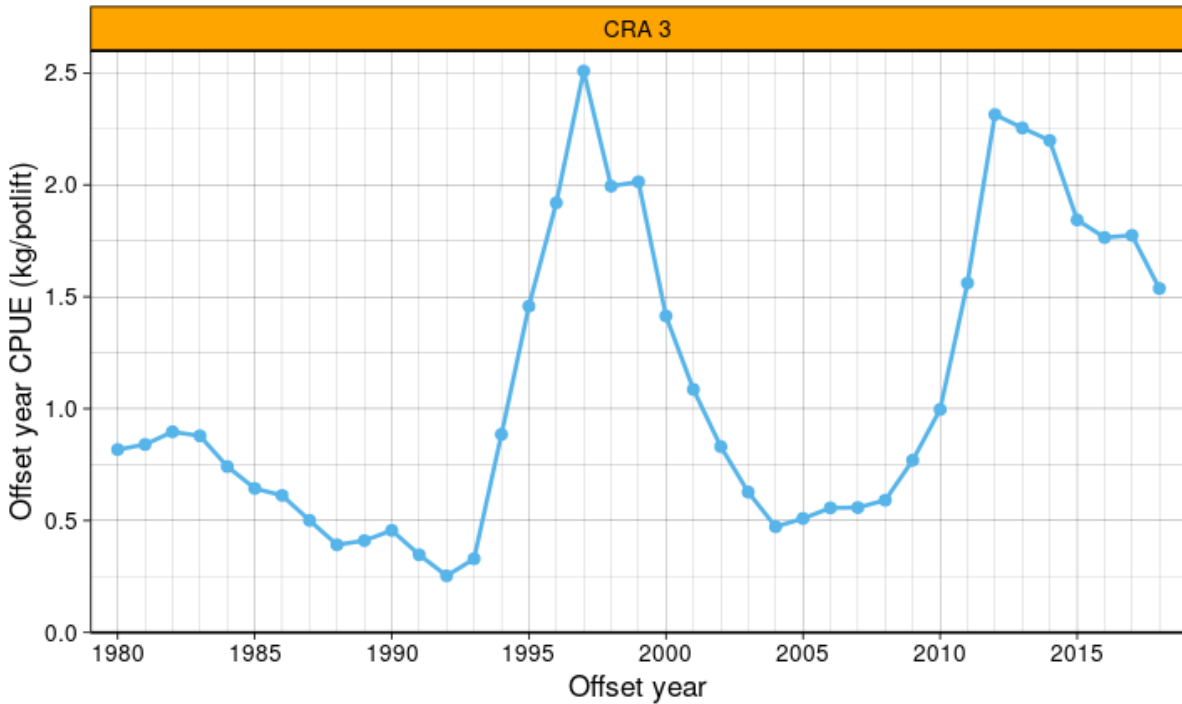


Figure 4: CRA 3 CPUE from 1980 to 2018 (kg/potlift).

8.3 THE CURRENT CRA 3 MANAGEMENT PROCEDURE

110. The government agreed to use the current CRA 3 management procedure in 2015 to form the basis for management action until the 2020/21 fishing year. A graphical representation of the CRA 3 management procedure is provided in Figure 5. The graph shows the proposed TACC for the next year as a function of CPUE in the current year.
111. The 2018 standardised CPUE was 1.54 kg/potlift, a decrease from 1.79 kg/potlift in 2017. When the rule was operated with the 2018 CPUE, it resulted in a TACC of 222.9 tonnes (shown by the open pink square on the graph).

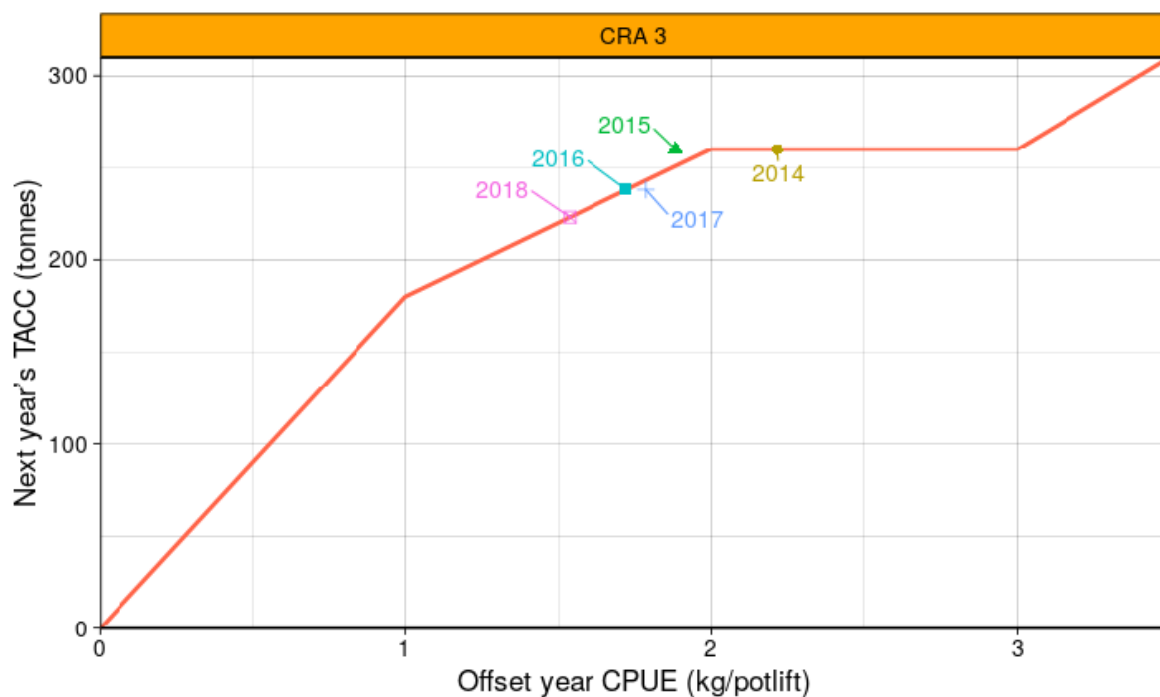


Figure 5: The CRA 3 management procedure, showing the TACCs resulting from the rule evaluations performed in 2014 through 2018.

8.4 FINAL CRA 3 PROPOSALS

112. Table 3 shows the final proposals for CRA 3, which are the same as the consultation options. The current CRA 3 management procedure has been used to guide the options for varying the TAC. The proposals to decrease the TAC and TACC are expected to ensure the CRA 3 stock is maintained above B_{MSY} . The NRLMG recommends that you agree to Option CRA3_02.

Table 3: Final TAC, allowance and TACC proposals (in tonnes) for CRA 3 from 1 April 2019.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other mortality
CRA3_01: Status quo	366.86	237.86			
CRA3_02: Based on the operation of the CRA 3 management procedure (NRLMG recommended)	351.9 ↓ (4.1%)	222.9 ↓ (6.3%)	20	20	89

8.5 SUMMARY OF CRA 3 SUBMISSIONS

113. A total of 12 submissions were received on the CRA 3 proposals.

Support for CRA3_01 (*Status quo*)

114. Two submissions were received in support of Option CRA3_01. A group of 12 Mahia Fishermen/Quota Owners and an individual M. Hemopo both supported retaining the current settings.

115. The group of Mahia Fishermen/Quota Owners and M. Hemopo both consider that rock lobster abundance in the Mahia Peninsula area (the southern sub-area of CRA 3) is plentiful and increasing. The Mahia Fishermen/Quota Owners submit that they are catching their quota comfortably without any extra effort, and a catch reduction for the CRA 3 area would unnecessarily restrict the fishing activity of commercial fishers in Mahia.

Support for CRA3_02

116. Nine submissions were received in support of Option CRA3_02 - use the current CRA 3 management procedure and reduce the CRA 3 TAC and TACC by 14.96 tonnes. CRAMAC 3, Forest & Bird, ICP, Ngāti Kahungunu Iwi Incorporated, NZRFC, NZ RLIC, TOKM, and two individuals (A. Jorion and N. Palfreyman) support this option.

117. CRAMAC 3, ICP, Ngāti Kahungunu Iwi Incorporated, NZRFC, NZ RLIC, and TOKM all supported the use of the management procedure to manage the decline in CRA 3 lobster abundance and ensure the stock is managed at or above B_{MSY} .

118. Forest & Bird supported CRA3_02 as an interim measure, but considers that the proposed decrease does not adequately address the decline in CRA 3 stock abundance, and that it does not meet the requirements of the Harvest Strategy Standard. Forest & Bird also considered that the TAC should be distributed differently than proposed in Option CRA3_02, and supported increasing the recreational allowance from 20 to 25 tonnes, and decreasing the TACC by 20 tonnes (not 15 tonnes).

119. A. Jorion and N. Palfreyman supported reducing the CRA 3 TACC, noting that the area has been heavily fished.

Other comments

120. NZSFC opposed the use of the management procedure in CRA 3, and did not consider that the proposed reduction in the TAC and TACC was sufficient to halt the decline of abundance in CRA 3. NZSFC considered that additional reductions in catch limits are required to rebuild rock lobster abundance in CRA 3. NZSFC and Forest & Bird both recommend that Fisheries New Zealand gets independent scientific advice on how best to respond to the 30% decline in the commercial catch rate over the last four years.

121. Tuhoe Fish Quota Limited provided a general comment that the proposed measures for 2019/20 seemed fair and reasonable.

122. Some submitters also raised other matters and these are discussed further in Section 12. The NZSFC, Forest & Bird, and A. Jorion submitted that they oppose the use of a differential minimum legal size for commercial fishing in CRA 3. NZ RLIC noted the need for more regular and precise estimates of recreational take and illegal removals in CRA 3, noting that more accurate estimates would better inform management decisions and ensure the integrity of the TAC in CRA 3.

8.6 ANALYSIS OF CRA 3 FINAL PROPOSALS

Varying the TAC

123. For CRA 3, the biomass level that can produce the maximum sustainable yield (B_{MSY}) has been estimated. Accordingly, two options are presented below for the CRA 3 TAC to maintain the stock at or above B_{MSY} (section 13(2)(a)). For further information on your statutory considerations, refer to Section 6 and Appendix 1.
124. Under Option CRA3_01, the CRA 3 TAC would stay at its current level of 366.86 tonnes from 1 April 2019. This option is not supported by the NRLMG. Maintaining the current TAC could result in a further decline in CRA 3 stock abundance and could affect the goal of maintaining stock biomass at or above B_{MSY} .
125. Under Option CRA3_02, the CRA 3 TAC would be decreased to 351.9 tonnes (a 4.1% decrease). The proposed TAC decrease is guided by the use of the CRA 3 management procedure. The NRLMG supports the use of management procedures unless there are compelling reasons in a particular case not to follow the procedure.
126. Ongoing application of the CRA 3 management procedure is expected to maintain the stock above B_{MSY} with greater than 50% probability. Simulation testing indicates it would maintain the stock above B_{MSY} with 99% probability, which is consistent with Fisheries New Zealand's Harvest Strategy standard (i.e. to achieve or exceed the MSY-compatible target by at least 50%). This is likely to maintain utilisation benefits for all sectors.
127. In response to the request from NZSFC and Forest & Bird for independent advice on the decline in the commercial catch rate, the NRLMG notes a full scientific assessment of the CRA 3 fishery is scheduled for later this year and this will be used to inform CRA 3 TAC setting for April 2020. The assessment will provide estimates of the current status of the stock relative to desired levels of abundance, and will also show how the stock has responded to previous management controls. As part of the assessment the establishment of a new reference level for the fishery will also be considered, alongside engagement with tangata whenua and other fishing interests. To ensure the assessment is robust it will be peer reviewed at the Rock Lobster Fisheries Assessment Working Group and at the November Mid-year Fisheries Assessment Plenary later this year.

Varying allowances and the TACC

128. Table 4 provides a summary of information on current non-commercial allowances for CRA 3 and stock assessment assumptions of non-commercial catch.

Table 4: Current CRA 3 allowances and model assumptions of non-commercial catches (in tonnes).

CRA 3	Customary Māori	Recreational	Other mortality	Total
Current allowances	20	20	89	129
Non-commercial catch assumptions for the 2014 stock assessment	20	Assumed to vary with biomass. Assumed at 20.42 for 2013.	89	129.42

Customary Māori fishing

129. One submitter (M. Hemopo) considered that the customary allowance for CRA 3 should be increased from 20 to 25 tonnes over five years. The NRLMG interprets this to mean a one-tonne increase to the customary allowance every year for the next five fishing years.
130. The NRLMG considers that based on best available information, the customary Māori allowance adequately provides for the current level of customary fishing. Fisheries New Zealand will continue to work with tangata whenua to encourage reporting of customary catch information, and the NRLMG will review the appropriateness of the Māori non-commercial fishing allowance as part of the CRA 3 stock assessment in 2019.
131. No change is proposed to the 20 tonne customary Māori allowance for CRA 3. While noting the incompleteness and uncertainty in the CRA 3 customary harvest information, it is assumed that current harvest is within the 20 tonne allowance allocated for customary Māori interests.

Recreational fishing

132. Forest & Bird consider that anecdotal evidence indicates that the recreational allowance is being exceeded, and they support increasing the recreational allowance to 25 tonnes to better reflect recreational fishing within CRA 3.
133. NZ RLIC considers that the 2017/18 National Panel Survey estimate needs to be used to review the CRA 3 recreational allowance and management controls for 1 April 2020.
134. The NRLMG proposes that no change is made to the 20 tonne recreational allowance for CRA 3 at this time. The recreational allowance was first set in 2005 on the basis of estimates available from surveys at the time, which are now considered to be unreliable and likely to be overestimates. However, new information on CRA 3 recreational harvest is expected in 2019 from the 2017/18 National Panel Survey of recreational harvest. This information will be considered as part of the new CRA 3 stock assessment currently proposed for 2019, which will help to inform whether the CRA 3 recreational allowance should be varied or other management controls should be considered. If CRA 3 stock abundance continues to decline, a review of management controls for all sectors is likely to be considered.

Other mortality

135. No change is proposed to the 89 tonne CRA 3 allowance for other sources of fishing-related mortality. It is considered that there are moderate to high levels of illegal fishing in CRA 3, however it is difficult to get an accurate estimate given that illegal take is not easily detected. Submitter Ngāti Kahungunu Iwi Incorporated noted support for a review of the other mortality allowance.
136. The 89 tonne other mortality allowance was first set in 2005 based on historical (and highly uncertain) illegal take estimates. Fisheries New Zealand is currently exploring better ways to estimate illegal take. A new estimate of illegal take should be available in time to inform a new CRA 3 stock assessment currently scheduled for later in 2019. An estimate of handling-related mortality should also be available from the proposed 2019 CRA 3 stock assessment. The intention is for this information to be considered in future TAC variation, and in the variation of the allowance for other sources of fishing-related mortality.

TACC

137. Under Option CRA3_01, the CRA 3 TACC would stay at its current level of 237.86 tonnes. This option would maintain the current commercial utilisation opportunities.
138. Under Option CRA3_02, the CRA 3 TACC would be decreased to 222.9 tonnes from 1 April 2019, as guided by the use of the CRA 3 management procedure.
139. The NRLMG notes that the proposed 15 tonne TACC decrease has the potential to result in a loss of annual revenue to the catching sector alone of approximately \$1.2 million (based on 2017 average port price information).¹⁷ Submitter ICP supported the TACC decrease, but noted that it could result in lost earnings for them of approximately \$55,000 - \$60,000 per annum.

8.7 OTHER CONSIDERATIONS

140. NZSFC and Forest & Bird both commented on the incidence of a bacterial shell disease known as “tail fan necrosis” in CRA 3 rock lobsters. This is not a new issue (it has been known since around 2000), and the syndrome only appears in a portion of the CRA 3 fishery from Poverty Bay to East Cape.
141. Tail fan necrosis is a progressive chitinolytic and necrotising syndrome predominately affecting the tail (telson and uropods), especially of males, occurring at a depth of 0-30 metres. The tails of the lobsters are blistered, ulcerated and blackened. Tail fan necrosis has also been reported from Australia, the Caribbean, Europe and India.
142. The consequences of the syndrome for industry are some increase in fishing effort to catch their Annual Catch Entitlement because rock lobsters with the syndrome are unsuitable for the export market because of their unsightly lesions (not because of food safety concerns). There is no information to suggest the syndrome is causing an issue with the sustainability of current harvest levels.
143. No single causative agent has been identified. Work on the syndrome has previously been carried out by NIWA and the University of Auckland, and work is currently being carried out by the Institute of Environmental Science and Research. For several years the Ministry for Primary Industries’ Animal Health Laboratory, in conjunction with the NZ RLIC, has also been investigating the syndrome. The NRLMG will keep you informed of any developments in future research.

¹⁷ The 2017/18 port price for rock lobster was \$79.58 per kg.

9 Review of the CRA 4 (Wellington/Hawke's Bay) rock lobster fishery

9.1 CRA 4 FISHERY OVERVIEW

Māori customary fishing

144. 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. In the 2017 calendar year, approximately 430 rock lobsters were reported as harvested from CRA 4. This information is considered incomplete, because customary take of rock lobster that occurs under the Amateur Regulations for the purposes of hui and tangi is not required to be reported.
145. An estimate of 20 tonnes was used in the 2016 CRA 4 stock assessment model to represent customary catches.

Recreational fishing

146. The CRA 4 fishery supports a valuable recreational fishery in Hawke's Bay, the Wairarapa Coast, through Cook Strait to the lower West Coast of the North Island.
147. For 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 6). The trajectory was also developed by assuming that recreational catch was proportional to the CRA 4 spring-summer abundance, as reflected by spring-summer commercial CPUE for CRA 4.
148. 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. The 2015 model assumption (an outcome of the assumptions made about recreational catch and survey data) of recreational catch was 37.5 tonnes.
149. 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 tonnes¹⁸.

¹⁸ With a coefficient of variation of 17% (the ratio of the standard error to the mean).

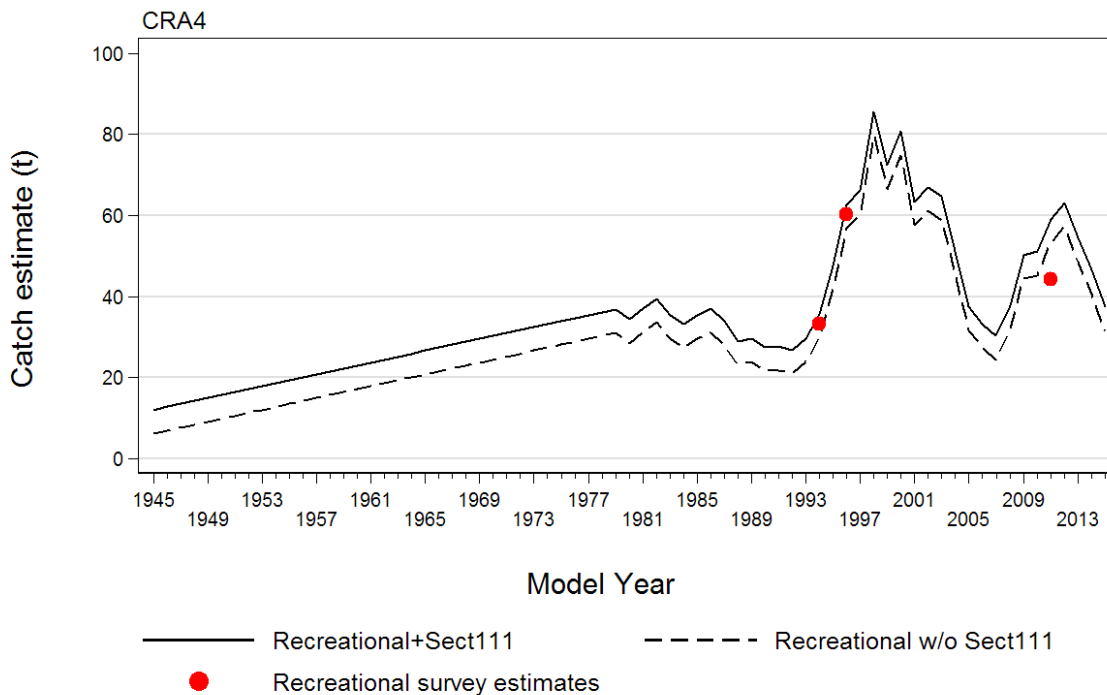


Figure 6: The predicted recreational catch trajectories (tonnes) for the 2016 CRA 4 stock assessment. The red dots refer to the recreational survey estimates from 1994, 1996 and 2011. The solid black line shows the recreational catch trajectory with the additional section 111 catches which were taken 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

150. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling mortality. It is difficult for Fisheries New Zealand 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 Fisheries New Zealand 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.
151. 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.

Commercial

152. The current asset value of CRA 4 is estimated at \$225 million, based on the current TACC and the 2017 quota share price (\$1,120,312 per tonne). The average Annual Catch Entitlement (ACE) value (the earnings quota owners receive when selling their ACE) for the 2016/17 fishing year was \$52,530 per tonne for CRA 4.
153. Annual landings and the TACCs for CRA 4 since 1990 are shown in Figure 7 overleaf. 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.

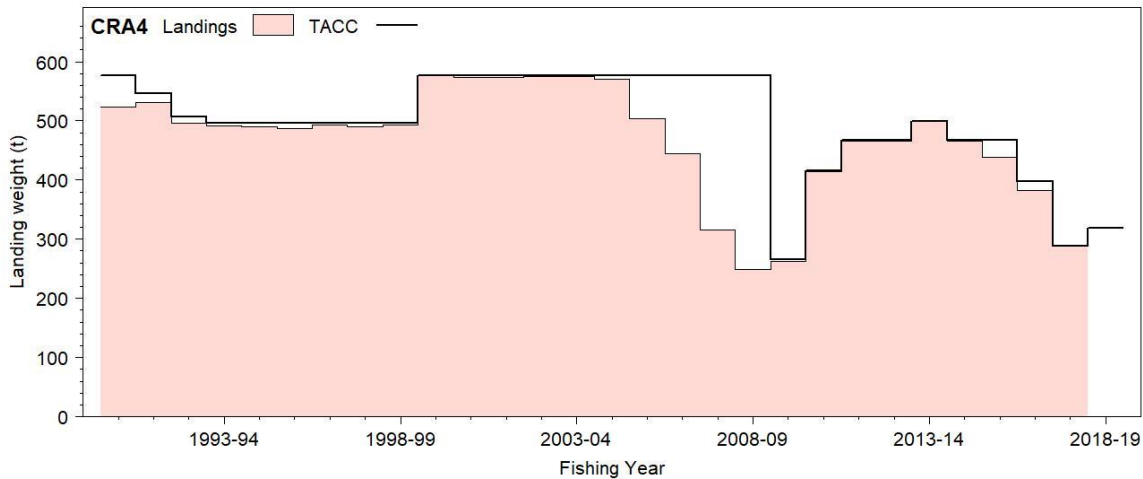


Figure 7: CRA 4 commercial landings and TACCs from 1990 to 2018.

9.2 CRA 4 STOCK STATUS AND PREVIOUS ACTIONS

154. The results of the most recent CRA 4 stock assessment carried out in 2016 suggested 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% where it is Fisheries New Zealand policy to implement a formal, time-constrained rebuilding plan.
155. In response to the new science information, the previous government agreed to use a new CRA 4 management procedure to guide varying the TAC 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, which included a 27% reduction to the TACC. No changes were made to the allowances or management controls for non-commercial fishers. A modest TAC increase of 29.8 tonnes then occurred from April 2018.
156. 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 8. CPUE increased from 2008 to 2012, and then declined. CRA 4 CPUE has increased since 2016 from 0.69 to 0.90 kg/potlift, suggesting rock lobster abundance in CRA 4 has increased.

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

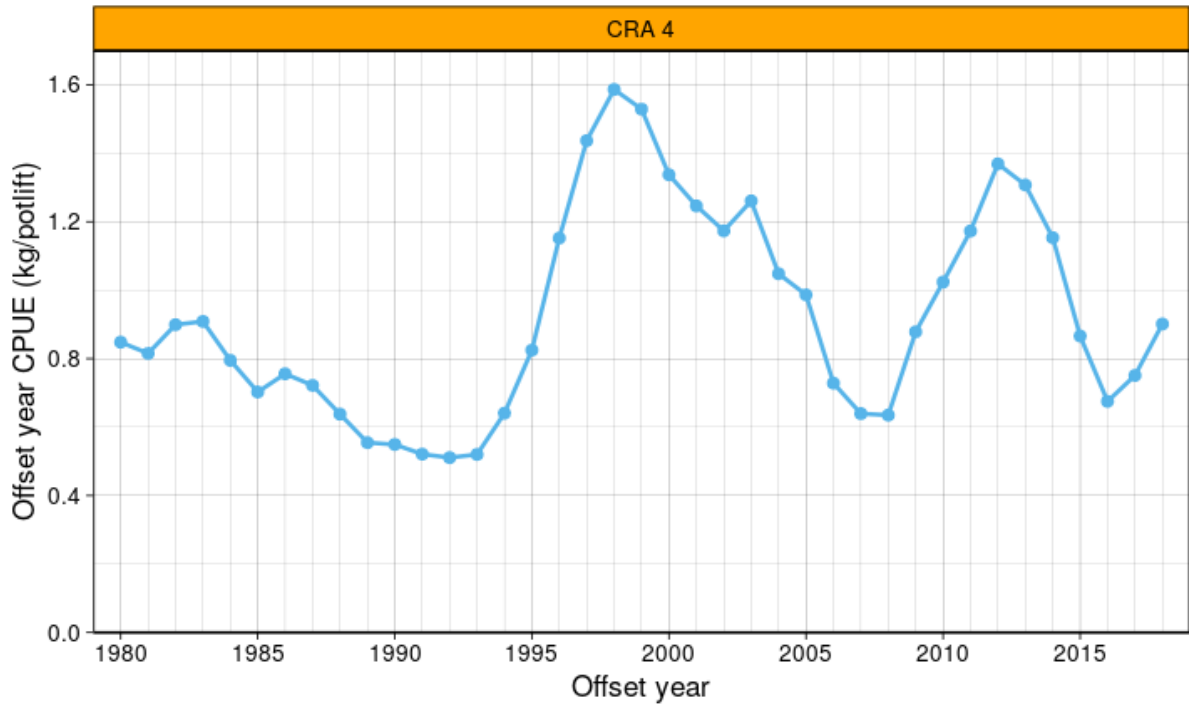


Figure 8: CRA 4 CPUE (kg/potlift).

9.3 THE CURRENT CRA 4 MANAGEMENT PROCEDURE

157. The previous government agreed to use the current CRA 4 management procedure in 2017 to form the basis of any management action needed for the fishing years 2017/18 to 2021/22. A graphical representation of the current procedure is provided in Figure 9. The graph shows the proposed TACC for the next year as a function of CPUE in the current year.
158. When the rule was operated with the 2018 CPUE of 0.90 kg/potlift, it resulted in an increased TACC to 380 tonnes for the 2019/20 fishing year (shown by the purple square on the graph).

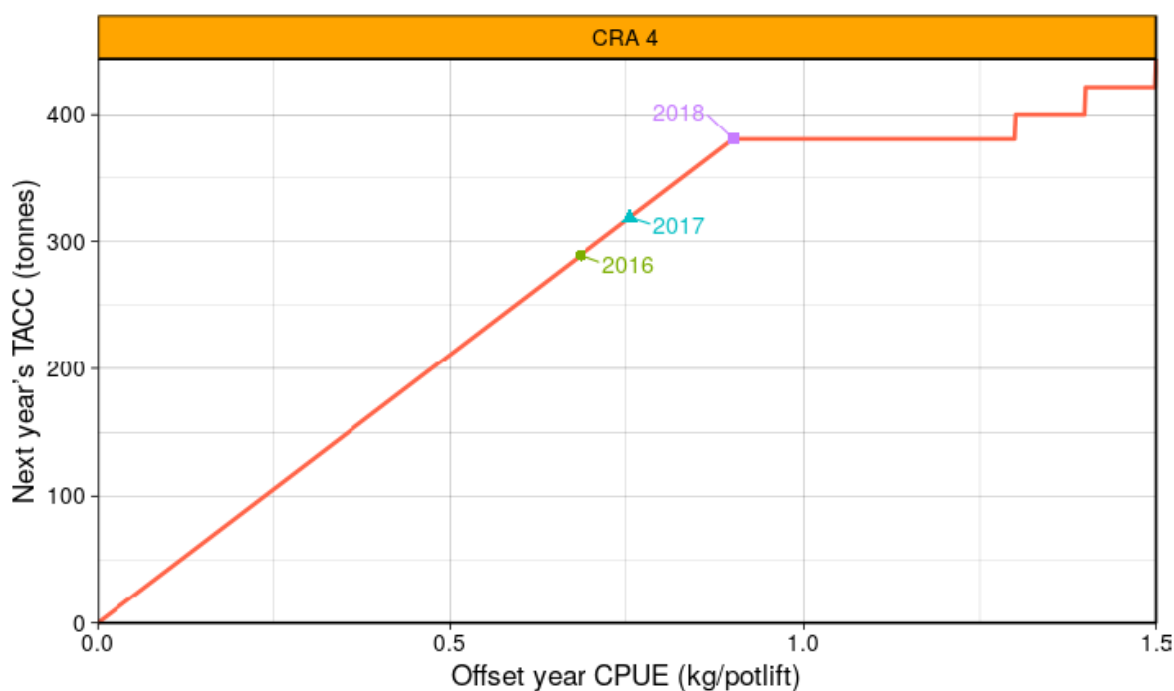


Figure 9: The current CRA 4 management procedure, showing the TACCs resulting from evaluations performed from 2016 to 2018 (shown as coloured shapes) for the 2016/17 to 2019/20 fishing years.

9.4 FINAL CRA 4 PROPOSALS

159. Table 5 below shows the final proposals for CRA 4, which are the same as the consultation options. The current CRA 4 management procedure and advice from the NRLMG have been used to guide the final options for varying the TAC. 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. The NRLMG recommends that you agree to Option CRA4_02.

Table 5: Final TAC, allowance and TACC proposals (in tonnes) for CRA 4 from 1 April 2019.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other mortality
CRA4_01: <i>Status quo</i>	513.8	318.8			75
CRA4_02: Based on the operation of the CRA 4 management procedure <i>(NRLMG recommended)</i>	558 ↑ (8.6%)	380 ↑ (19.2%)	35	85	58 ↓ (22.7%)

9.5 SUMMARY OF CRA 4 SUBMISSIONS

141. A total of 12 submissions were received on the CRA 4 proposals.

Support for Option CRA4_01 (*Status quo*)

160. Eight submissions were received in support of Option CRA4_01. Ngāti Kahungunu Iwi Incorporated, NZRFC, Kāpiti Guardians, NZSFC, Forest & Bird, N. Palfreyman, A. McGhie and T. Mulligan either supported retaining the current settings or directly opposed the increase.
161. Ngāti Kahungunu Iwi Incorporated supported a cautious management approach, noting uncertainty about whether recent sea temperature increases may have a negative or positive impact on abundance and recruitment to the stock. While Ngāti Kahungunu supports an eventual increase for the TACC and the return to previous allowances for commercial fishers, it supports a precautionary management approach for CRA 4 at this time.
162. Kāpiti Guardians opposed increasing the CRA 4 TAC on the grounds that CPUE is not a good indicator of abundance for CRA 4 and noted a need for better data for the Kāpiti region to support a TAC increase in future. They considered that any changes in catch limits should be accompanied by improved protection of breeding stocks (i.e. through the establishment of a network of larger marine reserves).
163. NZRFC supports the use of management procedures to manage rock lobster fisheries; however, it considers that a precautionary approach should be taken for CRA 4. NZRFC note that commercial CPUE is not as good as recently enjoyed, and that there has been a shift of commercial effort within CRA 4 (into Ngawi from other areas), which they consider could be causing localised depletion.
164. NZSFC opposed increasing the CRA 4 TACC, stating that you must take a precautionary approach to ensure the CRA 4 stock continues to rebuild. They do not consider that a 19.2% increase in commercial catch rates (CPUE) is a reliable measure of the increase in CRA 4 stock abundance. An increase of this magnitude in a single year suggests behavioural change by fishers, not just an increase in rock lobster abundance. NZSFC submit that annual TACC increases in CRA 4 should be capped at around 30 tonnes per year until the reference level has been attained with 70% probability.
165. Forest & Bird also considers that an increase of rock lobster abundance [CPUE] over one year seems unrealistic. They support the *status quo* until such a time as an independent review of the management procedure for CRA 4 and information used in stock assessments.
166. Two individual submitters, N. Palfreyman and A. McGhie, also opposed the proposed increase to the CRA 4 TAC and TACC. N. Palfreyman opposed the increase on the grounds that recreational fishers would not support the measure. A. McGhie opposed increasing the CRA 4 TAC, noting that the CRA 4 fishery fluctuates in abundance and can drop in abundance fairly rapidly. A. McGhie considered that the CRA 4 fishery is fragile, and should be left to increase in abundance to safeguard against future biomass fluctuations. A. McGhie noted that quota owners would be adversely affected by maintaining the *status quo*, but considered that not taking the TAC increase proposed by the management procedure would be the best course of action to build the fishery for future sustainability.
167. While T. Mulligan did not indicate which stock he supported no changes to the rules for, it is assumed that this comment relates to CRA 4 because he is a Tangata Kaitiaki for Ngati Hawea which is located in the area.

Support for Option CRA4_02

168. Four submissions were received in support of Option CRA4_02 - use the current CRA 4 management procedure and increase the TAC by 44.2 tonnes, increase the TACC by 61.2 tonnes, and reduce the other mortality allowance by 17 tonnes. TOKM, ICP, CRAMAC 4 and the NZ RLIC supported this option.
169. NZ RLIC submit that CRA 4 operators across the management area have reported relatively good fishing success and do not have reservations about the proposed TACC increase.

Other comments

170. Tūhoe Fish Quota Limited provided a general comment that the proposed measures for 2019/20 seemed fair and reasonable.
171. Some submitters also raised other matters and these are discussed further in Section 12. NZ RLIC note the need for more regular and precise estimates of recreational take and illegal removals in CRA 4, noting that more accurate estimates would better inform management decisions and ensure the integrity of the TAC in CRA 4. Ngati Kahungunu Iwi Incorporated raised concerns about impacts of seismic survey activity along the Hawke's Bay and Wairarapa coastlines since 2016, and the negative effects this may be having on rock lobster.

9.6 ANALYSIS OF CRA 4 FINAL PROPOSALS

Varying the TAC

172. For CRA 4, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known. An MSY-compatible reference level, B_{REF} , is instead used for CRA 4. Because of this, any variation of the CRA 4 TAC must be done having regard to section 13(2A). For further information on your statutory considerations, refer to Section 6 and Appendix 1.
173. Under Option CRA4_01, the CRA 4 TAC would stay at its current level of 513.8 tonnes from 1 April 2019. Compared with 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.
174. Under Option CRA4_02, the CRA 4 TAC would be increased to 558 tonnes (an 8.6% increase). The proposed TAC increase is guided by the use of the current CRA 4 management procedure. The NRLMG supports the use of management procedures unless there are compelling reasons in a particular case not to follow the procedure.
175. 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. The 2016 stock assessment results also suggested spawning stock biomass was 51% of the unfished level, suggesting egg production is not a concern.
176. While some non-commercial submitters consider that a precautionary approach is needed, the NRLMG considers that the CRA 4 management procedure is suitably cautious. CPUE has reached the "plateau" feature on the CRA 4 management procedure (Figure 9) and if CPUE continues to increase, no TACC increase will be proposed until CPUE is over 1.3 kg/potlift. If CPUE does decline below 0.9kg/potlift, a TACC decrease will be recommended.

The NRLMG consider that this adequately addresses any concerns for the sustainability of the CRA 4 stock, and will continue to monitor and review the performance of the CRA 4 fishery.

177. Forest & Bird (and NZSFC) are concerned that no vessel-independent data is considered when determining stock status. Fisheries New Zealand notes that it has not contracted fisheries-independent surveys for New Zealand rock lobster. However, South Africa has found that the variance in their fishery-independent monitoring surveys for rock lobster is much larger than the variance seen in CPUE from the commercial fleet (this is thought to be related to less data collected via independent surveys). They have concluded that it is essential to include commercial CPUE in order to obtain a robust assessment.

Varying allowances and the TACC

178. Table 6 provides a summary of information on current non-commercial allowances for CRA 4 and stock assessment assumptions of non-commercial catch.

Table 6: Current CRA 4 allowances and model assumptions of non-commercial catches (in tonnes).

CRA 4	Customary Māori	Recreational	Other mortality	Total
Current allowances	35	85	75	195
Non-commercial catch assumptions for the 2016 stock assessment	20	Assumed to vary with biomass. Assumed at 37.5 t for 2015.	40 t illegal. 18 t handling mortality.	115.5

Māori customary fishing

179. No change is proposed to the 35 tonne customary Māori allowance. While noting the incompleteness and uncertainty in the CRA 4 customary harvest information, it is assumed that current harvest is well within allowance for customary Māori interests at this time. Fisheries New Zealand will continue to work with tangata whenua to encourage reporting of customary catch information.

Recreational fishing

180. No change is proposed to the 85 tonne recreational allowance for CRA 4. While there is uncertainty in the current estimate of recreational catch, it is considered to be well within the current 85 tonne allowance.
181. The 85 tonne recreational allowance was first set in 1999 on the basis of estimates available from surveys at the time, which are now considered to be biased and likely to be overestimates. A new CRA 4 recreational harvest estimate is expected in 2019 from the 2017/18 National Panel Survey of recreational harvest. This estimate will be considered in future variation of allowances, or in a review of other management controls for recreational fishers.

Other mortality

182. Kāpiti Guardians were unable to find published information on new assessments of fishing-related mortality, and therefore opposed the proposed reduction in the other mortality allowance. Forest & Bird supported the proposed adjustment of the other mortality allowance and recommended that the Ministry for Primary Industries compliance team continues monitoring the sale of rock lobsters to ensure there is no increase in illegal catch and black market sales.
183. To reflect the estimates used in the stock assessment for illegal take and handling-related mortality, the NRLMG proposes that the 75 tonne CRA 4 allowance for other sources of fishing-related mortality be reduced to 58 tonnes.

TACC

184. Under Option CRA4_01, the CRA 4 TACC would stay at its current level of 318.8 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.
185. Under Option CRA4_02, the CRA 4 TACC would be increased to 380 tonnes from 1 April 2019, as guided by the use of the current CRA 4 management procedure.
186. The NRLMG notes that the proposed 61.2 tonne TACC increase has the potential to result in an increase of annual revenue to the catching sector alone of approximately \$4.87 million (based on 2017 average port price information).²⁰ Submitter ICP noted that the proposed increase could result in additional earnings for them of approximately \$45,000.
187. In response to NZSFC concerns of localised depletion in Ngawi, the NRLMG notes that there has been a 57% decrease in reported commercial rock lobster catches between 2013/14 and 2017/18 fishing years in statistical area 914 (a sub-area that encompasses Ngawi and Cape Palliser).

9.7 OTHER CONSIDERATIONS

188. In response to some submitter comments (particularly NZSFC and Forest & Bird) about CRA 4 CPUE, the NRLMG notes that CPUE is considered to be a reliable indicator of relative stock size in rock lobster fisheries. Work is continuing through 2019 on how CPUE is interpreted for all rock lobster fisheries. This includes impacts of the new Digital Monitoring system on commercial CPUE, and whether or not a “vessel effect” is appropriate for other areas. The new CRA 2 CPUE series included vessels with at least five years in the fishery and this was found by the Rock Lobster Fisheries Assessment Working Group to more accurately represent CRA 2 abundance.
189. While solutions are worked through, it is not considered that this matter poses a risk to the sustainability of the CRA 4 fishery at this time.

²⁰ The 2017/18 port price for rock lobster was \$79.58 per kg.

10 Review of the CRA 8 (Southern) rock lobster fishery

10.1 CRA 8 FISHERY OVERVIEW

Māori customary fishing

190. Rock lobster (koura) is a taonga species for tangata whenua. Reporting of customary Māori catch of rock lobster is fully operational in the Ngāi Tahu rohe moana (including CRA 8). In the 2017 fishing year, approximately 16,500 lobsters, plus 2.3 tonnes, were reported as harvested from CRA 8.
191. An estimate of 10 tonnes was used in the 2015 CRA 8 stock assessment model to represent customary catches.

Recreational fishing

192. The CRA 8 fishery has a number of areas closed to commercial fishing, which provide non-commercial fishers with exclusive access to rock lobsters. In Fiordland, the inner fiords are closed to commercial rock lobster fishing and were established in 2005 by the Fiordland Marine Guardians under a 'gifts' and 'gains' approach.
193. 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. In addition, an average of 13 tonnes of rock lobsters were taken over the last three April fishing years by commercial fishers for non-commercial purposes (section 111 take).
194. Overall, 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 variance²¹, it is assumed that 6.9 tonnes is an underestimate of recreational catch and is very uncertain.

Other mortality

195. There are various potential other sources of mortality caused by fishing, such as illegal catch and handling-related mortality. It is difficult for Fisheries New Zealand 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 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. An estimate of handling-related mortality is not currently available for CRA 8, and will be estimated at the time of the next CRA 8 stock assessment (currently scheduled for 2020).

Commercial

196. The current asset value of the CRA 8 fishery is estimated to be over \$1.37 billion, based on the current TACC and the 2017/18 average quota share price (\$1,279,989 per tonne). The average Annual Catch Entitlement (ACE) value (the earnings quota owners receive when selling their ACE) for the 2017/18 fishing year was \$47,217 per tonne for CRA 8.

²¹ With a coefficient of variation of 60% (the ratio of the standard error to the mean).

197. Annual landings and the TACCs for CRA 8 since 1990 are shown in Figure 10. Prior to 1995, there was a New Zealand-wide stock assessment with catches apportioned to each Quota Management Area, and TACCs were not set on an annual basis to reflect available abundance. Since 1996, a management procedure has been used in CRA 8 to review the TACC annually to ensure catches reflect available abundance.

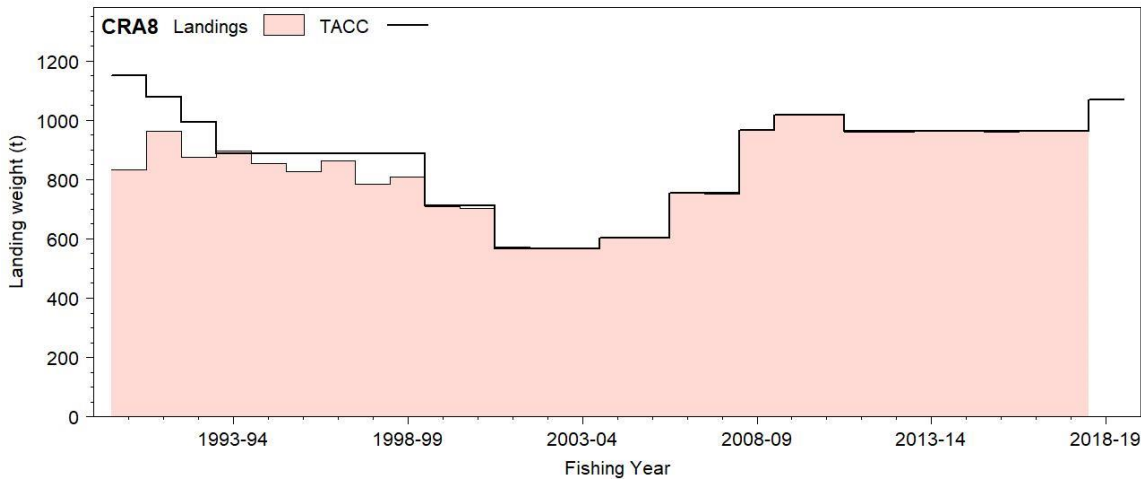


Figure 10: CRA 8 commercial landings and TACCs from 1990 to 2018.

10.2 CRA 8 STOCK STATUS

198. The results of the CRA 8 stock assessment carried out in 2015 suggested 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 Fisheries New Zealand policy to implement a rebuild plan.

199. 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 relates only to the fish that are landed. It does not consider fish that were of legal size, but were legally returned to the water (i.e. larger lobsters are discarded because of their lower market value). Unlike other rock lobster fisheries, a lot of fish are returned to the water in CRA 8: an estimated 40% by weight.

200. The history of CRA 8 commercial CPUE is shown in Figure 11. CPUE increased steadily from 1998 to 2012, declined slightly before increasing again from 2011 to a CPUE of 4.25 kg/potlift in 2018 (the highest CPUE in the observed history).

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

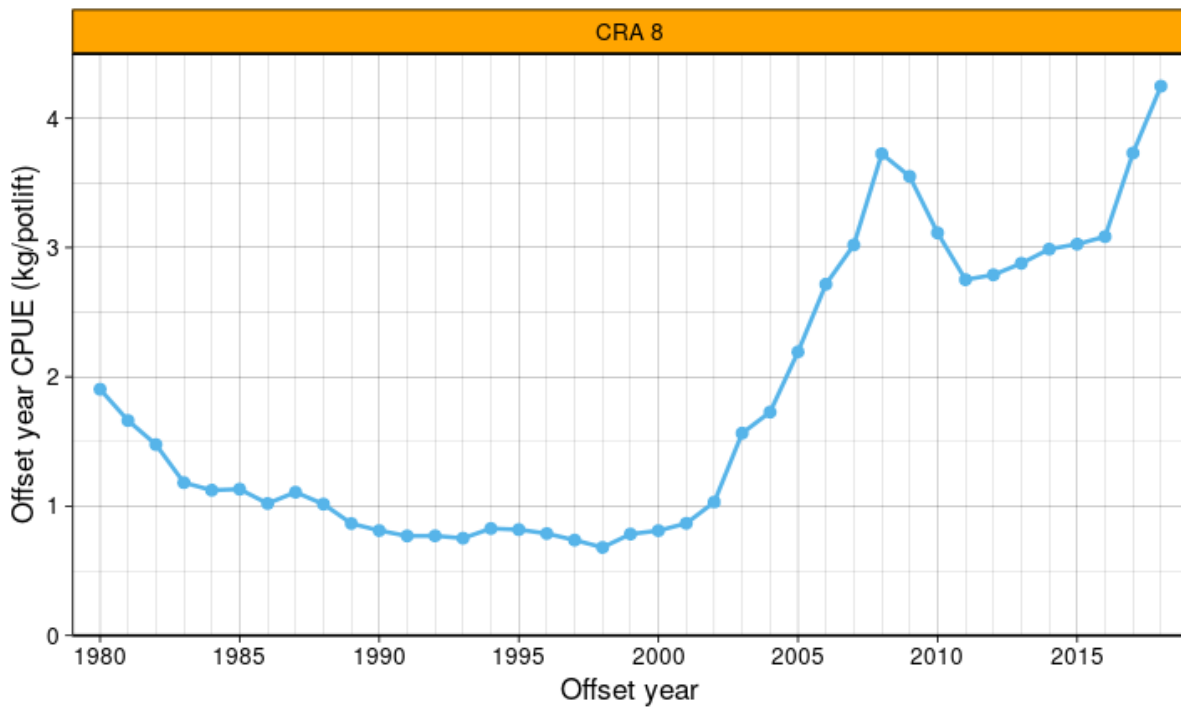


Figure 11: CRA 8 CPUE 1980 to 2018 (kg/potlift).

10.3 THE CURRENT CRA 8 MANAGEMENT PROCEDURE

201. The previous government agreed to use the current CRA 8 management procedure to the 2020/21 fishing year. A graphical representation of the CRA 8 management procedure is provided in Figure 12. The CRA 8 management procedure is unique in that it uses information only from retained legal state catch. This reflects the focus to both manage at higher biomasses and maximise economic return. The graph shows the proposed TACC for the next year as a function of CPUE in the current year.
202. When the rule was operated with the 2018 CPUE of 4.25 kg/potlift, it resulted in a TACC of 1,129.6 tonnes for the 2019/20 fishing year (shown by the pink symbol on the graph).

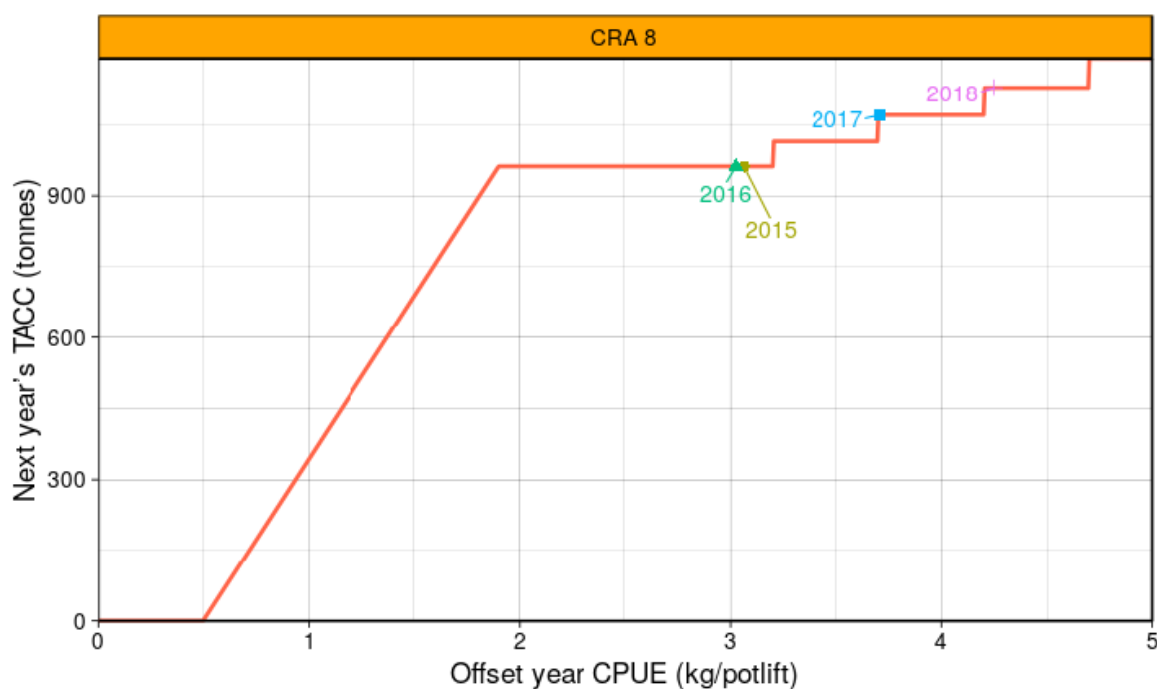


Figure 12: The current CRA 8 management procedure, showing the TACCs resulting from evaluations performed from 2015 to 2018 (shown as coloured shapes).

10.4 FINAL CRA 8 PROPOSALS

203. Table 7 provides a summary of the options proposed for CRA 8. The current CRA 8 management procedure has been used to guide the options for varying the TAC. The proposals to increase the TAC and TACC will provide for increased utilisation opportunities whilst ensuring sustainability.

Table 7: Final TAC, allowance and TACC proposals (in tonnes) for CRA 8 from 1 April 2019.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	Other mortality
CRA8_01: <i>Status quo</i>	1,161.7	1,070.7			
CRA8_02: Based on the operation of the CRA 8 management procedure <i>(NRLMG recommended)</i>	1220.6 ↑ (5.1%)	1,129.6 ↑ (5.5%)	30	33	28

10.5 SUMMARY OF CRA 8 SUBMISSIONS

204. A total of ten submissions were received on the CRA 8 proposals.

Support for Option CRA8_01 (*Status quo*)

205. Two submissions were received in support of Option CRA8_01. NZSFC and one individual (G. MacRae) supported retaining the current settings.

206. NZSFC oppose the proposed increase to the CRA 8 TACC on the grounds that commercial fishers have a differential minimum legal size. NZSFC consider that this measure should be abolished, which is discussed further in Section 12.

207. G. MacRae submitted that a precautionary approach should be taken with the CRA 8 fishery. This individual noted that a recent demand for smaller lobsters (which are usually high-graded and returned to the water), a relatively underexploited size, may be affecting the CPUE data, which while accurate, may be misrepresenting the productivity of the CRA 8 fishery.

Support for Option CRA8_02

208. Five submissions were received in support of Option CRA8_02 - use the current CRA 8 management procedure and increase the CRA 8 TAC and TACC by 58.9 tonnes. TOKM, NZRFC, CRAMAC 8, NZ RLIC and one individual (N. Palfreyman) supported this option. TOKM noted that Ngai Tahu also support the proposed increase.

209. NZ RLIC and CRAMAC 8 note that the current management approach for the CRA 8 fishery, not only ensures sustainability, but delivers economic benefits through an ability to target fishing effort at certain times of year and certain grades when market prices are at their most favourable.

210. CRAMAC 8 expressed general support for Option CRA8_02, but noted their preference for a reduced allowance for other sources of mortality (reduced from 28 to 3 tonnes) to better reflect the estimate used in the most recent stock assessment.

211. N. Palfreyman notes that the CRA 8 area is less populated than the Auckland area, and should be able to sustain the proposed increase.

Other comments

212. Forest & Bird expressed support for the proposed TAC increase of 5.1% (Option CRA8_02), while noting concerns over the reliability of commercial fishers self-reporting [CPUE]. However, they strongly oppose the commercial differential minimum legal size, and therefore did not support allocating the increase to the commercial sector while this measure is in place.

213. The Fiordland Marine Guardians agree that the options are appropriate considering the performance of the fishery, but did not specify a preferred option. The Fiordland Marine Guardians considered that more effort should be directed towards ensuring that amateur charter vessel returns are completed, filed, and that these data are used to inform recreational rock lobster fisheries management. The Fiordland Marine Guardians noted that amateur charter vessel take can comprise a significant proportion of recreational rock lobster take in CRA 8.

214. Tūhoe Fish Quota Limited provided a general comment that the proposed measures for 2019/20 seemed fair and reasonable.
215. NZ RLIC noted the need for more regular and precise estimates of recreational take and illegal removals in CRA 8, noting that more accurate estimates would better inform management decisions and ensure the integrity of the TAC in CRA 8. This matter is discussed in Section 12, along with the commercial differential minimum legal size and amateur charter vessels.

10.6 ANALYSIS OF CRA 8 FINAL PROPOSALS

Varying the TAC

216. For CRA 8, the biomass level that can produce the maximum sustainable yield (B_{MSY}) is not known. An MSY-compatible reference level, B_{REF} , is instead used for CRA 8. Because of this, any variation of the CRA 8 TAC must be done having regard to section 13(2A). For further information on your statutory considerations, refer to Section 6 and Appendix 1.
217. Under Option CRA8_01, the CRA 8 TAC would stay at its current level of 1,161.7 tonnes from 1 April 2019. This option could result in increased abundance in the CRA 8 fishery in the short-term, increased non-commercial catches and catch rates compared with Option CRA8_02, and higher CPUE for commercial fishers, which may result in reduced harvesting costs. However, this option forgoes the opportunity to take advantage of the proposed TACC increase under Option CRA8_02.
218. Under Option CRA8_02, the CRA 8 TAC would be increased to 1,220.6 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.
219. Ongoing application of the CRA 8 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.

Varying allowances and the TACC

220. Table 8 provides a summary of information on current non-commercial allowances for CRA 8 and stock assessment assumptions of non-commercial catch.

Table 8: Current CRA 8 allowances and model assumptions of non-commercial catches (in tonnes).

CRA 8	Customary Māori	Recreational	Other mortality	Total
Current allowances	30	33	28	91
Non-commercial catch assumptions for the 2015 stock assessment	10	20	3 from 2011 to 2014	33

Māori customary fishing

221. No change is proposed to the 30 tonne customary Māori allowance. Current harvest is considered to be conservative and is well within the allocation for this interest at this time.

Recreational fishing

222. CRAMAC 8 notes that there is anecdotal evidence of an ongoing increase in recreational take (including amateur charter vessel take) as abundance increases, and as a result considers that the recreational take is close to the current allowance. The Fiordland Marine Guardians also questioned why amateur charter vessel information was not considered in the allowance setting.

223. Available estimates of recreational catch include an estimate of 6.9 tonnes from the 2011/12 National Panel Survey, and a 13 tonne three-year average of rock lobsters taken by commercial fishers for non-commercial purposes (section 111 take). In addition, approximately 17,000 lobsters were taken by amateur charter vessels from the CRA 8 area in the 2017/18 April fishing year (or 13.6 tonnes using a weight estimate of 0.8 kg per lobster).

224. While there is uncertainty in the current estimate of recreational catch, it is considered to be around the current 33 tonne allowance. Therefore, no change is proposed to the 33 tonne recreational allowance for CRA 8 at this time. A new CRA 8 recreational harvest estimate is expected in 2019 from the 2017/18 National Panel Survey of recreational harvest. This estimate will be considered when varying the allowance in future, or in a review of other management controls for recreational fishers.

Other mortality

225. CRAMAC 8 proposed in their submission that the CRA 8 allowance for other sources of fishing-related mortality (i.e. illegal catch and handling mortality) should be reduced from 28 to 3 tonnes, to reflect the model estimate used in the stock assessment for illegal take.

226. The NRLMG considers that the allowance for other mortality to the stock caused by fishing, should reflect handling-related mortality in addition to illegal take. An estimate of handling-related mortality is not currently available for CRA 8, and will be estimated at the time of the next proposed CRA 8 stock assessment in 2020. This information will be considered when varying the allowance in future. Therefore, it is recommended that the proposed other mortality of 28 tonnes is retained at this time.

TACC

227. Under Option CRA8_01, the CRA 8 TACC would stay at its current level of 1070.7 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.

228. Under Option CRA8_02, the CRA 8 TACC would be increased to 1,129.6 tonnes from 1 April 2019, as guided by the use of the CRA 8 management procedure.

229. The proposed 58.9 tonne TACC increase has the potential to result in an increase in annual revenue to the catching sector alone of \$4.69 million (based on 2017 average port price information).²³
230. CRAMAC 8 notes that the export earnings will be higher again, with a large portion of these increased earnings spent within the southern regional economies. CRAMAC 8 considers it unlikely that the proposed increase will result in the addition of further vessels to the catching fleet, instead existing vessels will become more financially efficient and profitable.

11 Deemed Value Rates

231. 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.
232. Under section 75 of the Act, you 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.
233. The interim deemed value rate for all rock lobster stocks (including CRA 3, 4, 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 Guidelines²⁴, no changes are proposed to the deemed value rates for any rock lobster stocks, as outlined in Table 9.

Table 9: 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

²³ The 2017/18 port price for rock lobster was \$79.58 per kg.

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

12 Other Matters

234. In addition to commenting on the proposed sustainability measures for the three stocks discussed in this paper, some submitters commented on the following matters. While most of these matters are not directly related to your decisions on this sustainability round, the NRLMG would like to bring these matters your attention because they relate to the management of rock lobster fisheries more generally.

12.1 DIGITAL MONITORING

235. Fisheries New Zealand is currently rolling out a new digital system for tracking, monitoring, and reporting of commercial fishing. This system will provide Fisheries New Zealand with more accurate and up-to-date information, and provide finer scale information on rock lobster harvest. However, since commercial fishers will be required to use new electronic monitoring and reporting systems, the change in data collection will likely result in a break in the CPUE time series for rock lobster.

236. CPUE is a relative indicator of rock lobster abundance and is the main input used in management procedures (or decision rules). There is some uncertainty around how the new digital system will affect CPUE and the ability to operate the current management procedures. The rock lobster stock assessment team is currently considering alternative potential stock assessment methodology in light of a break in CPUE series to ensure that future sustainability advice remains robust. Fisheries New Zealand supports this work and is committed to working through any issues that arise from the new system (including those raised by NZ RLIC below).

237. NZ RLIC notes that there are issues still to be resolved with the detail of information being required and duplication with information collected already in the industry stock monitoring programme. This runs the risks of compromising the collection of data from fishers at sea on legal state retained lobsters and lobsters of legal state that are returned to the sea (high-graded). This data forms the core of the CPUE index. Fisheries New Zealand acknowledges this concern and is currently working with industry on resolving it.

238. NZ RLIC also considers that the current settings in the regulations and circulars create an illogical situation and very poor reporting incentives for predated fish and theft from commercial holding pots. Commercial fishers cannot legally land moribund or dead animals as is proposed for predated lobsters. A requirement to report theft from holding pots and have that amount of fish covered by Annual Catch Entitlement is considered to be both inequitable and can be clearly seen to create poor incentives to report. Fisheries New Zealand notes that the *Your fisheries – Your say* consultation proposes to address the current inconsistency about dealing with dead lobsters.

239. Industry considers that the requirement, at least until the review of landings and returns policy, to retain all live Quota Management System finfish species taken in pots will create significant problems for them. NZ RLIC notes that rock lobster fishers have generally never retained, and therefore reported the catch of finfish. Those fish have been returned alive to the sea to the benefit of the stocks and for use by other sectors. A requirement to retain those fish will create a difficult issue for commercial lobster fishers who will not be able to obtain Annual Catch Entitlement as the TACCs have never taken into account this catch. Fisheries New Zealand notes that the rules governing the high-grading of finfish are longstanding, and that the new digital system has not created any new requirements. In providing for all the catch to be reported, Fisheries New Zealand advises that digital monitoring has seen attention focus on several at-sea practices, including this issue.

12.2 MEMBERSHIP OF THE NRLMG

240. Submitters NZSFC and Forest & Bird expressed concerns about the NRLMG and suggest that a review of its role and membership is undertaken.
241. The Chair of the NRLMG is appointed by you. Sector members of the NRLMG are nominated by their respective national sector representative entities and are appointed for a term of three years. A formal review of membership has not occurred in the last five years, despite some changes to sector membership. The NRLMG has also invited NZSFC representatives to attend NRLMG meetings as observers from November 2017. This was to predominantly support discussions on the CRA 2 (Hauraki Gulf/Bay of Plenty) fishery; however, NZSFC representatives have continued to participate in meetings since.
242. The NRLMG has recently commenced a review of membership to ensure the ongoing effectiveness of the group, and that it is fit for purpose for all sectors involved in rock lobster management. This may include proposals to adjust membership. For example, the review may look to again seek environmental representation (they previously attended but stopped at their own volition), or to bolster recreational sector representation. The NRLMG is proposing to provide you with advice on membership later in 2019. Fisheries New Zealand is supportive of this review and will work alongside the independent chair of the NRLMG to provide you with advice.
243. To ensure more public transparency of the role and functions of the NRLMG, it is proposed that a dedicated webpage is created on the Fisheries New Zealand website during 2019. This is likely to include details of the NRLMG, and its final advice and meeting minutes.

12.3 NON-COMMERCIAL REMOVALS

244. The NRLMG sector members (customary, recreational and commercial) have requested better estimates of non-commercial removals since the group was established in 1992, but consider that they have experienced little progress in addressing this information gap. Accurate information about non-commercial removals is important for fisheries management decisions. NRLMG sector members are concerned that the lack of information in this area could be compromising their agreed goal of ensuring all rock lobster stocks are managed at or above agreed reference levels.
245. This view point was supported by a number of submitters on this sustainability round. NZ RLIC advises that overestimates of non-commercial and illegal removals lead to overestimating the productivity of the CRA 2 stock, and contributed to the decline in the stock despite the management procedure and Annual Catch Entitlement shelving by industry. This is based on findings from an independent review of the 2013 CRA 2 stock assessment by NIWA.

Estimating and effectively managing recreational harvest

246. Since recreational fishers are not required to report their catch, the amount and trend of recreational harvest is uncertain for some rock lobster fisheries. Harvest estimates are currently dependent on recreational harvest surveys that are run at five to seven year intervals (not annually). This frequency of information is inadequate for stocks where recreational catch is substantial and may vary significantly within this timeframe.
247. NRLMG sector members are concerned about the availability and reliability of recreational harvest estimates from rock lobster fisheries as a basis for fisheries management decisions

to ensure the sustainable utilisation of rock lobster. The NRLMG considers that the need for reliable and credible recreational harvest data is particularly important in areas where the level of recreational fishing and diving activity are higher. For example, CRA 1 (Northland), CRA 2 (Hauraki Gulf/Bay of Plenty), CRA 3 (Gisborne), CRA 4 (Wellington/Hawke's Bay), and CRA 5 (Canterbury/Marlborough).

248. The NRLMG note the limited funding that is available for recreational harvest research, and strongly encourage the government to adequately resource surveys so that annual estimates are obtained with usable precision. They consider that five to six year old estimates from the National Panel Survey approach do not provide timely information to inform annual management decisions.
249. Customary and commercial members are also focused on constraining recreational take to the recreational allowances set under the TAC. They note the potential for uncontrolled increases in recreational removals to undermine the integrity of the TAC, the management strategies in place for rock lobster and result in effective re-allocation of the TAC. Most reviews of rock lobster stocks in recent years have resulted in changes only to the TACCs with no adjustments to recreational allowances or management controls. In CRA 2 you reduced both the TACC and the recreational allowance, but any changes to management controls have yet to be implemented and are unlikely to be in place before mid 2019, well over a year after the decisions.
250. Fisheries New Zealand considers that information on the level of recreational harvest of rock lobsters has improved in recent years through specific onsite and National Panel surveys. Fisheries New Zealand invests a considerable amount of its fisheries research budget into obtaining recreational harvest estimates for key fishstocks.
251. A repeat National Panel Survey was recently carried out for 2017/18, with results expected in 2019 (the last was done in 2011/12). Fisheries New Zealand continues to explore ways to collect better information on recreational catch, such as carrying out specific onsite surveys in areas where the National Panel Survey approach does not provide good estimates. Fisheries New Zealand is also looking at new technologies to collect harvest estimates from fishers involved in the National Panel Survey between survey years.

Amateur Charter Vessels

252. NRLMG sector members and some submitters (NZ RLIC and Fiordland Marine Guardians) are concerned with the level of recreational removals by customers on amateur charter vessels in some areas (i.e. CRA 5 (Canterbury/Marlborough) and CRA 8 (Southern)). There are also concerns that the administrative framework for amateur charter vessels is not being actively enforced by the Ministry for Primary Industries' compliance team.
253. From 2010, all amateur charter vessel operators have been required to register their boats with Fisheries New Zealand (and its predecessors), and report their fishing activity and catch of high-value species, such as rock lobster and kingfish, in various areas across New Zealand.
254. Since the introduction of the amateur charter vessel scheme, Fisheries New Zealand notes there have been improvements to the information reported, and non-compliance with vessel registrations. Work to improve the operation of the regulations is ongoing. For instance, NIWA is currently undertaking a further review of amateur charter vessel reporting. The outcomes of this work are expected later this year, and will likely recommend further improvements that can be made to the charter scheme.

255. Fisheries New Zealand is aware that amateur charter vessels is an area of work that needs to be looked at more closely. It is a matter that is currently on the Fisheries New Zealand work programme, but is not the highest priority at this time. In the interim, Fisheries New Zealand is working on local issues with the Kaikōura Marine Guardians, Fiordland Marine Guardians and the NRLMG on resolving these concerns for the Kaikōura and Fiordland Marine Areas. Options for local regulations in the Kaikōura and Fiordland Marine Areas are currently being discussed.

Estimating and effectively constraining illegal harvest

256. Accurately identifying and effectively constraining and reducing illegal take of rock lobster is a matter of high priority for the NRLMG sector members and for multiple submitters. It is considered that the estimates of illegal take provided by Fisheries New Zealand are inaccurate, and may be compromising the accuracy of stock assessments, the appropriate setting of catch limits, and the sustainable utilisation of rock lobster fisheries.
257. Estimates of illegal take are of most concern to the NRLMG sector members because they make up a substantial portion of the TAC. Many of the estimates of illegal take for rock lobsters have not been updated since the early 2000s – and even at that time they were not robust. Consequently, the current levels of illegal take and associated historical pattern are highly uncertain.
258. The NRLMG sector members strongly urge Fisheries New Zealand to make it a priority during 2019 to constrain illegal removals from lobster fisheries and re-evaluate estimates of illegal take for use in stock assessments. The NRLMG is available to assist and provide input into the development of any new methodology to estimate illegal take.
259. Fisheries New Zealand notes that estimating illegal removals is inherently difficult, as by its nature it is hard to detect. Fisheries New Zealand has investigated a range of different approaches to estimate illegal removals, and is continuing to look at how other jurisdictions (e.g. Australian states) develop estimates of illegal take.
260. NZ RLIC also raised in their submission other generic issues, including the need to consider the nationwide application of accumulation limits and telson clipping for recreational fishers. These measures can complement the other compliance measures in place to address illegal take nationally.

12.4 DIFFERENTIAL MINIMUM LEGAL SIZES

261. Several submitters (NZSFC, Forest & Bird, and A. Jorion) expressed concerns about the differential minimum legal sizes that apply in CRA 3 and CRA 8.

CRA 3

262. In CRA 3, commercial fishers can land male rock lobsters at or above 52 mm tail width during June, July and August, while recreational fishers must take male rock lobsters at or above 54 mm tail width year-round. The CRA 3 differential minimum legal size was introduced in 1993 as an outcome of a review of the CRA 3 fishery by a regional multi-stakeholder group. Other measures implemented at the time included (but were not confined to): a 50% decrease in the TACC; a closed season to all users during September, October and November; and, additional closures to commercial fishers from 1 December until 31 January and 1 May until 31 May.
263. The 1993 management package was introduced to support a stock rebuild, increase the unit value of the catch so that the effect of reduced commercial catches could be mitigated, and

reduce illegal take and handling-related mortality through pots out of the water during spring/summer. The CRA 3 differential minimum legal size specifically provided commercial fishers with access to previously unavailable rock lobsters (males 52 mm tail width and above) in autumn-winter when market prices were highest to mitigate some of the impact of the quota cuts.

264. Elements of the CRA 3 management regime have been reviewed since 1993, with the only regulated element remaining being the differential minimum legal size. At present within CRA 3, from Gisborne to East Cape commercial operators fish the smaller males during winter and then voluntarily have all their pots out of the water from 1 September to 15 January (seasonal closure). In southern CRA 3, Mahia commercial fishers do not fish the smaller males during winter and do not follow the voluntary spring/summer seasonal closure. This is because the Mahia fishery behaves differently than the rest of CRA 3, with greater proportions of female lobsters caught.
265. Recreational concerns with CRA 3 differential size arose in the early 2000's, and coincided with a period of very low CRA 3 stock abundance. A management procedure has been in use in CRA 3 since 2010 to ensure the stock is sustainability utilised. However, some recreational fishers have continued to raise equity issues between sectors and claimed the commercial differential size is affecting the availability of lobsters to them over summer in waters close to Gisborne.

CRA 8

266. In CRA 8, commercial fishers can land female rock lobsters at or above 57 mm tail width at any time of year, while recreational fishers must take female rock lobsters at or above 60 mm tail width year-round. The CRA 8 differential size arose from the change in measure from tail length to tail width in 1988. It was intended that the new size would correlate to the old; however, the change in measure in CRA 8 resulted in loss of access to significant quantities of previously available rock lobsters in the Southern fishery (a 28% reduction in landings between 1987 and 1988). This affected the CRA 8 fishery, especially for females, because rock lobster tails were generally narrower for a given length in the south than in other areas.
267. A judicial review of the 1998 tail width measure was undertaken in the High Court based on claims from CRA 8 commercial fishers that the new minimum legal size has a serious effect on their catch and livelihood. The Court concluded that CRA 8 commercial fishers should pursue their contentions with the Minister of Fisheries and seek amendment to the minimum legal size based on an analysis of their catches and economic consequences. The Minister granted the CRA 8 female differential minimum legal size for the 1989/90 and 1990/91 seasons (56 and 57 mm tail width respectively) based on an analysis of commercial catch information and discussions with commercial fishers. The Minister then decided that the female 57 mm tail width minimum legal size should be retained from the 1991/92 fishing year.

Recent reviews of the differential size regime

268. In May 2012, the government agreed to retain the CRA 3, CRA 7 (Otago)²⁵ and CRA 8 commercial differential minimum legal sizes because the differentials do not impact on stock sustainability (the sizes are taken into account stock assessments), and because of the significant economic impact any increase in size would have. In 2014, the government then decided against allowing recreational fishers to take rock lobsters at the lower commercial

²⁵ In CRA 7, commercial fishers can land male and female rock lobsters at or above 127 mm tail length at any time of year, whilst recreational fishers must land male rock lobsters at or above 54 mm tail width and female rock lobsters at or above 60 mm tail width year-round. Since the mid-1900s the minimum legal size that has applied to CRA 7 commercial fishing has differed from elsewhere in New Zealand due to the biological characteristics of the fishery.

minimum legal size in CRA 3, CRA 7 and CRA 8 because of compliance and enforcement challenges associated with a differential size regime for recreational fishers. However, the commercial sector (and NRLMG sector members) supported recreational fishers having access to the same minimum legal size as commercial fishers.

269. A CRA 3 stock assessment is being conducted later this year and this provides an opportunity to look at the other management controls that apply to the CRA 3 fishery (including the differential minimum legal size and regulated and voluntary closures). Fisheries New Zealand notes that there is some rationale for having differential sizes between sectors in CRA 3 because it helps to manage how the catch is taken. There are also trade-offs that may affect the social, cultural, and economic wellbeing to consider when considering any change to the current minimum legal size regime in CRA 3. This includes a possibility of increased competition for lobsters during spring/summer if commercial can no longer access smaller males during winter, and greater opportunities for illegal take if commercial pots are in the water for longer periods over spring/summer.
270. For CRA 8, Fisheries New Zealand is not proposing to review the CRA 8 differential minimum legal size at this time. The CRA 8 fishery has a number of areas closed to commercial fishing (i.e. the inner fiords in Fiordland), which provide non-commercial fishers with exclusive access to rock lobsters and good utilisation benefits. The NRLMG notes there are not generally widespread recreational concerns with the differential minimum size in CRA 8.

12.5 SEISMIC TESTING CONCERNS

271. The NRLMG (and submitter Ngāti Kahungunu Iwi Incorporated) is concerned about the impact seismic surveying for oil and gas exploration is having on rock lobsters. This potentially includes impacts on rock lobster larvae, with potential flow-on effects for recruitment and future abundance of rock lobster.
272. Recent research has confirmed there can be adverse impacts on invertebrates, including impacts on the predation, feeding and fitness of adult lobsters and the mortality of rock lobster larvae. This is of a particular concern because lobster larvae can drift in the ocean for 12 months or more before they settle on shore as juvenile lobsters.
273. The NRLMG is encouraging a whole-of-government approach to resolving this issue, because there are multiple local and central agencies involved. The NRLMG considers that, at the very least, the classification of seismic testing as a 'permitted' activity should be reconsidered, and a process put in place to consult fisheries stakeholders before authorisations are granted. Currently, the Environmental Protection Authority is only required to notify tangata whenua of the permitted activity.
274. Fisheries New Zealand continues to support the discussions where it can, noting that other local and central government agencies have responsibility for considering and managing this issue. Fisheries New Zealand and members of the NRLMG have contacted various government agencies, but have made limited progress so far, given the complex nature of the issue.

Appendix 1 – Other Statutory Considerations

275. In addition to your central statutory considerations for setting or varying TACs and TACCs under the Act (as discussed in Section 6), the following statutory considerations are also relevant.

A.1 SECTION 5(a) – INTERNATIONAL OBLIGATIONS

276. 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.

277. 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 (UNCLOS) and the United Nations Convention on Biological Diversity 1992 (the CBD). 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 (CITES) and the Convention on Migratory Species (CMS).

A.2 SECTION 5(b) – TREATY OF WAITANGI (FISHERES CLAIMS) SETTLEMENT ACT 1992

278. The Crown recognises that traditional fisheries are of importance to Māori. It is the Crown's Treaty duty to develop policies to help recognise use and management practices and provide protection for and scope for the exercise of rangatiratanga in respect of traditional fisheries.

279. 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.

280. The development of customary regulations, and Iwi Fisheries Forums to provide for the input and participation of tangata whenua 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.

A.3 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

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

282. "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."

283. 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”.²⁶

A.4 SECTION 9 – ENVIRONMENTAL PRINCIPLES

284. Section 9 prescribes three environmental principles that you 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.

285. 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.

286. 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.

287. 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.

288. “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.

289. Habitat is defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. In Fisheries New Zealand’s view, in the fisheries context, this means 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.

290. The NRLMG considers that the options presented in this paper will provide for the section 9 principles to be maintained. Rock lobster is taken by potting and hand-gathering fishing methods which have relatively low level of bycatch. The main method that commercial fishers use to target rock lobster is potting, which is considered to have very little direct effect on the aquatic environment.

²⁶ Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 at [39].

A.5 SECTION 10 – INFORMATION PRINCIPLES

291. Section 10 prescribes four information principles that you must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability:
- 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.
292. 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.”²⁷
293. 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.
294. As a general principle, information outlined in the Fisheries New Zealand 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.²⁸ Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.
295. The NRLMG considers that the best available information has been used as the basis for the proposals in this paper. All science information on which the management proposals are based, has been peer-reviewed by one of Fisheries New Zealand’s Fisheries Assessment Working Groups and meets the Fisheries New Zealand Research and Science Information Standard for New Zealand Fisheries.

A.6 SECTION 11 – SUSTAINABILITY MEASURES

296. 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 any stock and the aquatic environment.*
Rock lobster fishing methods (potting and hand gathering) are thought to have little direct effect on non-target species and the aquatic environment. The levels of incidental catch landed from rock lobster potting were analysed for the period from 1989 to 2003. Non-rock lobster catch landed ranged from 2 to 11% of the estimated catches only, noting it is likely that not all bycatch is reported (only the top five species are required to be reported). The most frequently reported incidental species caught were, in decreasing order of catch across all stocks: octopus, conger eel, blue cod, trumpeter, sea perch, red cod, butterfly and leatherjackets.

²⁷ *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.

²⁸ A non-binding Fisheries New Zealand Policy Document.

- b) *Any existing controls under the Act that apply to the stock or area concerned.*
A range of management controls apply to the stocks discussed in this paper including minimum legal sizes, daily bag limits for recreational fishers, method restrictions, and protection of egg-bearing females.
- c) *The natural variability of the stock.*
Recruitment to rock lobster stocks is highly variable and this was taken into account during the development of options discussed in this paper. Rock lobsters have a long larval life, swimming and drifting in the ocean for 12-15 months. This means that larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site.
The number of 'puerulus' larvae that settle to the sea floor varies among areas and from year to year. Puerulus settlement may be affected by environmental factors such as the amount of suitable habitat available, the persistence of storms, prevailing ocean currents, sea temperature, food availability, and predation. Large numbers of puerulus larvae also die before reaching suitable habitat, which is due in part to predation, but may also be a result of unfavourable environmental conditions.

297. Section 11 (2) says that before any sustainability measure is set or varied you must have regard to any provision of any of the following that apply to the coastal marine area and are considered to be relevant:

- a) *Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 (RMA).*
Gisborne, Hawke's Bay, Manawatu-Wanganui, Greater Wellington, Southland, and West Coast Councils have regional plans that cover the CRA 3, 4 and 8 rock lobster fisheries. The provisions of these various documents are of a general nature and contain nothing specific to the stocks being reviewed.
- b) *Any management strategy or management plan under the Conservation Act 1987.*
Conservation Management Strategies are currently in place for West Coast, Southland, and Stewart Island. There are also other strategies that cover East Coast and Hawke's Bay (CRA 3 and CRA 4). While of general relevance, there is nothing in them specific to the fishstocks being reviewed.
- c) *Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000.*
The CRA 3, 4 and 8 fisheries do not intersect with the Hauraki Gulf Marine Park.
- ca) *Regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012.*
The NRLMG is not aware of any specific matters in the regulations made under this 2012 Act that are relevant to the TAC proposals set out in this paper.
- d) *Any planning document lodged with you by a customary marine title group section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011.*
There are numerous applications that have been made under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 and the majority of these are still being processed.

298. Section 11 (2A) says that before any sustainability measure is set or varied you must take into account:
- a) Any conservation services or fisheries services;
 - b) Any relevant fisheries plan approved under this Part; and
 - c) Any decisions not to require conservation services or fisheries services.
299. Services of particular relevance to the decisions in this paper relate to programmed research used to monitor rock lobster stock abundance and develop management procedures. To date national fisheries plans have been approved only for deepwater and highly migratory species, and not rock lobster.

Appendix 2 – Submissions received on the Discussion Document

See attached document.