



# Review of Rock Lobster Sustainability Measures for 1 April 2017

## Final Advice Paper

Prepared by the National Rock Lobster Management Group

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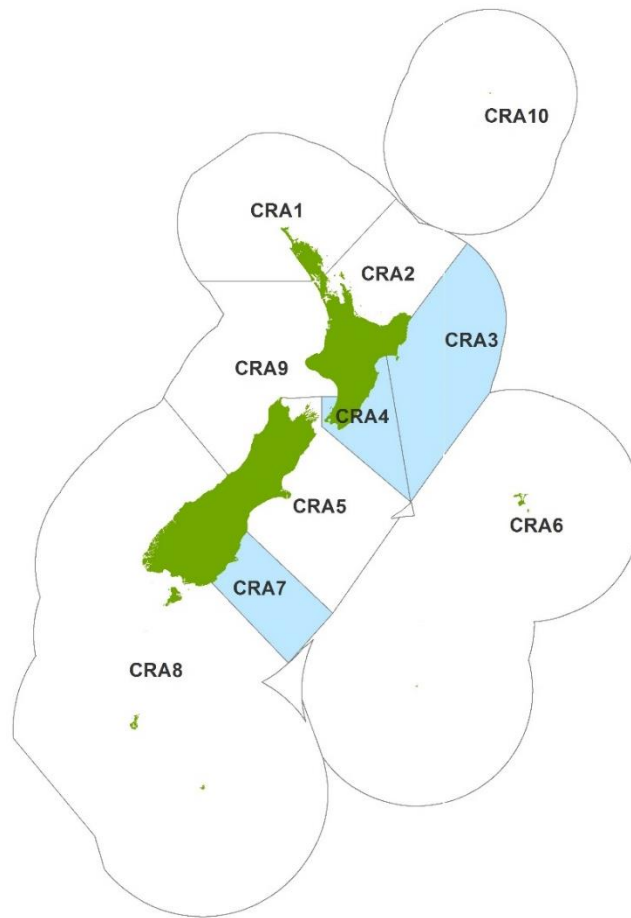
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# 1 Executive summary



**Figure 1.1: Map of rock lobster quota management areas (QMAs) showing stocks under review in blue.**

You are being asked to make decisions on sustainability measures for three rock lobster stocks for the fishing year beginning 1 April 2017. The total allowable catch (TAC), allowances and total allowable commercial catch (TACC) proposals presented in this paper for your decision are guided by new stock assessment information and/or the results from the operation of management procedures (“decision rules”).

Your decisions relate to:

- Decreasing the TAC and TACC for the CRA 3 (Gisborne) fishery with no changes to the non-commercial allowances;
- Replacing the current CRA 4 (Wellington/Hawkes Bay) management procedure with a new management procedure, decreasing the TAC and TACC, and making no change to the non-commercial allowances; and
- Increasing the TAC and TACC for the CRA 7 (Otago) fishery with no changes to the non-commercial allowances.

Table 1.1 provides a summary of the final proposals for each rock lobster stock under review. These proposals were developed by the National Rock Lobster Management Group (NRLMG) after consideration of best available information and tangata whenua and stakeholder views.

**Table 1.1: TAC, allowance and TACC proposals for CRA 3, CRA 4 and CRA 7 from 1 April 2017 (all values in tonnes). NRLMG preferences are shown in blue italics.**

| Stock              | Option  | TAC      | TACC     | Allowances      |              |                 |
|--------------------|---|----------|----------|-----------------|--------------|-----------------|
|                    |   |          |          | Customary Māori | Recreational | Other mortality |
| CRA 3              | <b>CRA3_01:</b> Use the <u>current</u> CRA 3 management procedure and decrease the TAC by decreasing the TACC by 9%.<br><i>(NRLMG preferred)</i>                            | 366.86 ↓ | 237.86 ↓ | 20              | 20           | 89              |
|                    | <b>CRA3_02 (status quo):</b> Retain the current CRA 3 TAC, allowances and TACC.   | 389.95   | 260.95   | 20              | 20           | 89              |
| CRA 4 <sup>1</sup> | <b>CRA4_01:</b> Use the <u>new</u> Rule 24 CRA 4 management procedure and reduce the TAC by reducing the TACC by 23%.<br><i>(Commercial preferred)</i>                      | 502 ↓    | 307 ↓    | 35              | 85           | 75              |
|                    | <b>CRA4_02:</b> Use the <u>new</u> Rule 6 CRA 4 management procedure and reduce the TAC by reducing the TACC by 27%.<br><i>(Customary and recreational preferred)</i>       | 484 ↓    | 289 ↓    | 35              | 85           | 75              |
| CRA 7              | <b>CRA7_01:</b> Use the <u>current</u> CRA 7 management procedure and increase the TAC by increasing the TACC by 15%.<br><i>(Customary, commercial &amp; MPI preferred)</i> | 132.52 ↑ | 112.52 ↑ | 10              | 5            | 5               |
|                    | <b>CRA7_02 (status quo):</b> Retain the current CRA 7 TAC, allowances and TACC.<br><i>(Recreational preferred)</i>  | 117.72   | 97.72    | 10              | 5            | 5               |

A central consideration when choosing to use a management procedure to guide TAC setting in a fishery is whether the procedure enables you to set a TAC that complies with section 13 of the Fisheries Act 1996 (the Act). The management procedures discussed in this paper are designed to move stock biomass to, or maintain the biomass of each stock at, a size at or above a level that can produce the maximum sustainable yield (i.e.  $B_{MSY}$ ) or at a level that is not inconsistent with this objective.

Rock lobster management procedures, in general, are designed to move or maintain stock abundance well above  $B_{MSY}$  and an agreed reference level using a comprehensive approach that recognises a range of customary Māori, recreational and commercial values.

The NRLMG supports the use of management procedures in New Zealand's rock lobster fisheries. Use of management procedures to guide TAC setting allows for much more rapid management responses than does the conventional approach of periodic stock assessment followed by decision making. Having infrequent stock assessments can cause delays to the implementation of management actions required for stock sustainability. Management procedures also provide stakeholders with greater certainty on what the management response will be, which helps to reduce tensions, and they can free up resources for other research because they reduce the frequency that stock assessments are required.

<sup>1</sup> The current CRA 4 TAC is 592 tonnes and the TACC is 397 tonnes.

## 2 NRLMG recommendations

### CRA 3 (Gisborne)

The NRLMG recommends that you agree to Option CRA3\_01, which is to use the current CRA 3 management procedure and decrease the TAC/TACC by 23.09 tonnes.

The results of the most recent CRA 3 stock assessment conducted in 2014 suggested there were no sustainability concerns for the CRA 3 fishery. Best available information suggests CRA 3 stock biomass in 2016 is likely to be lower than the biomass in 2014, but the biomass is still considered to be above  $B_{MSY}$ . Ongoing application of the CRA 3 management procedure and applying the proposals to decrease the TAC and TACC are expected to ensure the CRA 3 stock is maintained above  $B_{MSY}$  with greater than 99% probability.

No change is proposed to the non-commercial allowances for CRA 3 because it is considered that they are consistent with current estimates of harvest and allow for customary and recreational fishing interests

### CRA 4 (Wellington/Hawkes Bay)

Based on the 2016 stock assessment results, there are some sustainability concerns for the CRA 4 fishery: stock biomass in 2016 was below the management target by 25%.

Commercial NRLMG members recommend that you agree to Option CRA4\_01, which is to use the new CRA 4 management procedure (Rule 24) and decrease the TAC/TACC by 90 tonnes. They consider that this option will best support a rebuild of the fishery in line with your statutory obligations while minimising economic impacts on the industry, including on fleet size and distribution of effort during the rebuild period. A 90 tonne TACC decrease has the potential to result in a loss of revenue for the industry of approximately \$6.5 million (\$1.3 million less than Option CRA4\_02 which has a potential loss of \$7.8 million).

Customary and recreational NRLMG members support Option CRA4\_02, which is to use the new CRA 4 management procedure (Rule 6) and decrease the TAC/TACC by 108 tonnes. They support this option because there is a greater probability of a rebuild of the stock in five years and because the TACC is held at a lower level when the management procedure is operating on the 'plateau', compared with the proposed Rule 24 management procedure<sup>2</sup>. Commercial members consider that this outcome of a greater probability of rebuild is only possible if all catches are effectively constrained to the allowances made in the TAC.

MPI has not expressed a preferred position because either option meets your statutory obligations for TAC setting to move the stock to a level at or above the management target in a way and rate considered appropriate for the stock. Both of the new management procedures proposed for CRA 4 are similar in their design. Ongoing application of either of the new procedures is expected to rebuild current CRA 4 stock biomass towards the management target in the next five years by greater than 86% probability (Rule 24 has a probability of 86.3% while Rule 6 has a slightly higher probability of 91.7%).

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<sup>2</sup> The plateau for Rule 6 is a TACC of 380 tonnes when CPUEs are between 0.9 and 1.3 kg/potlift, and for Rule 24 the TACC is 420 tonnes between the same CPUEs.

No change is proposed to the non-commercial allowances for CRA 4 under either option because it is considered that the allowances are consistent with current estimates of non-commercial removals and they allow for customary and recreational fishing interests.

## **CRA 7 (Otago)**

Customary and commercial NRLMG members, and MPI, recommend that you agree to Option CRA7\_01, which is to use the current CRA 7 management procedure and increase the TAC/TACC by 14.8 tonnes. Recreational NRLMG members support the use of the CRA 7 management procedure, but have chosen to support the status quo (Option CRA7\_02) in this case because of other matters they would like MPI to address. These matters are outside the scope of this sustainability review because they involve regulatory change, but include resolving the difference in the type of size measure and the minimum legal size limit between recreational and commercial fishers<sup>3</sup>.

The results of the most recent CRA 7 stock assessment conducted in 2015 suggest there are no sustainability concerns for the CRA 7 fishery. Best available information suggests CRA 7 biomass in 2015 was twice the management target. Ongoing use of the CRA 7 management procedure is expected to ensure the stock is maintained well above the management target and the proposal to increase the TACC is unlikely to compromise this.

No change is proposed to the non-commercial allowances for CRA 7 because it is considered that the allowances are consistent with current removal estimates and they allow for customary and recreational fishing interests.

## **Additional comments**

The NRLMG has requested better estimates of non-commercial removals since it was established in 1992, but has experienced little progress in addressing this information gap.

Accurate information about non-commercial removals is necessary for fisheries management decisions and the NRLMG is concerned that the lack of information in this area could be compromising the NRLMG's agreed goal of ensuring all rock lobster stocks are managed at or above agreed reference levels. The lack of accurate information on non-commercial and illegal catch contributes to uncertainty of stock assessments, detracts from the effectiveness of agreed harvest strategies, and undermines the incentives created by the quota management system.

As a matter of priority, the NRLMG strongly urges action to constrain illegal removals from rock lobster fisheries and re-evaluate estimates of illegal take for use in stock assessments. The NRLMG requests MPI makes this a priority during 2017. The NRLMG is available to assist and provide input into the development of any new methodology for estimating illegal take. The NRLMG also requests that rock lobster is given priority when recreational harvest surveys are being planned and designed.

MPI is committed to improving non-commercial removal estimates, but acknowledge that further work is needed to improve estimates of illegal removals from some rock lobster fisheries.

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<sup>3</sup> The CRA 7 commercial minimum legal size is 127 mm tail length for male and female rock lobsters at any time of year, whilst the recreational minimum legal size is 54 mm tail width for male rock lobsters and 60 mm tail width for female rock lobsters at a any time of year.



## 3 Purpose

### 3.1 NEED FOR ACTION

Every year the NRLMG considers the results from the operation of management procedures for seven of the ten rock lobster stocks for which procedures are available. This determines whether catch limit changes are required for the upcoming April fishing year to ensure utilisation of rock lobster stocks whilst ensuring sustainability.

A management procedure is a kind of decision rule that is used to guide the setting of catch limits in rock lobster fisheries. Management procedures are informed by annual changes in commercial catch rates ('catch-per-unit-of-effort' or 'CPUE'). Commercial CPUE is considered, based on scientific modelling results, to be a reliable indicator of abundance.

Management procedures are used to guide TAC/TACC decisions in all rock lobster fisheries except for CRA 6 (Chatham Islands), CRA 9 (Westland/Taranaki) and CRA 10 (Kermadec). In 2016, new management procedures were evaluated for the CRA 4 rock lobster fishery.

In 2012, a previous Minister agreed to use the current CRA 4 management procedure to guide TAC setting in the CRA 4 fishery until the 2016/17 fishing year. For the 2017/18 fishing year, new stock assessment and management procedure evaluations were carried out for the CRA 4 stock to select the new candidate management procedures outlined in this document. The NRLMG selected two candidate rules for consultation, both of which are designed to rebuild the stock to or above the management target ( $B_{REF}$ ) by 2021 with greater than 86% probability.

Based on results from the operation of the proposed new and current management procedures, changes to the status quo are proposed for the CRA 3, CRA 4, and CRA 7 rock lobster fisheries. Operation of the CRA 1, CRA 2, CRA 5, and CRA 8 management procedures suggested that no change was needed to the management settings for these fisheries from April 2017<sup>4</sup>.

### 3.2 MANAGEMENT APPROACH

The NRLMG is the primary advisor to you on catch limit, regulatory and other management actions that apply specifically to rock lobster fisheries. The NRLMG is a national-level, multi-stakeholder group comprising representatives of customary<sup>5</sup>, recreational and commercial fishing sectors and MPI.

**The NRLMG's management goal is for all rock lobster fisheries:**

*"to be managed and maintained at or above the assessed and agreed reference levels, using a comprehensive approach that recognises a range of customary Māori, amateur, commercial and environmental concerns and benefits"*

<sup>4</sup> The current CRA 1, CRA 2, CRA 5 and CRA 8 management procedures are not discussed further in this document because there is no proposal to change the management procedure approach, nor to change the TACs, allowances or TACCs of those stocks for the 2017/18 fishing year.

<sup>5</sup> 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).

## 4 Background information

This section provides relevant background information on the management procedure approach, stock indicators, and the MPI Harvest Strategy Standard.

### 4.1 MANAGEMENT PROCEDURE APPROACH

#### 4.1.1 History of management procedure use in New Zealand

Each stock's management procedure has been used by Ministers to guide statutory TAC setting in rock lobster fisheries for varying periods. The oldest example of management procedures is in CRA 7 and CRA 8, where they have been used to guide TAC setting since 1997, first to rebuild the stocks and then to maintain them above reference levels with high probability.

Management procedures are generally reviewed every five years unless an earlier review is requested and approved by the NRLMG. The review assesses whether TAC setting remains compliant with the statutory structure set out in the Act. It involves the development of a new stock assessment model and new management procedure evaluations.

Table 4.1 provides an outline of the use of current management procedures and when they are scheduled for review. New CRA 4 management procedures have been evaluated this year.

**Table 4.1: History of current management procedure use and their review schedule**

|                                      | CRA 1 | CRA 2 | CRA 3 | CRA 4 | CRA 5 | CRA 7 | CRA 8 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| First year of the current management | 2015  | 2014  | 2015  | 2012  | 2016  | 2013  | 2016  |
| Year of scheduled review             | 2019  | 2017  | 2019  | 2016  | 2020  | 2020  | 2020  |

#### 4.1.2 Management procedure benefits

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 could be 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.

A management procedure has a number of advantages over the traditional stock assessment approach. These include:

- a) The establishment of a management regime that can respond to changes in stock abundance in the fishery on an annual basis;
- b) An explicit definition of management goals (e.g. maximising yield, maximising stability, minimising risk);
- c) Greater certainty of achieving management goals;
- d) The involvement of fishery stakeholders in the choice of a management procedure;
- e) The ability to address uncertainty in all facets of the assessment and management process;
- f) The opportunity to free up resources for other research: management procedures reduce the frequency that stock assessments are required.

### 4.1.3 Evaluation of management procedures

Management procedures are evaluated with a modified stock assessment model, known as the 'operating model'. Data used in the stock assessment model include: customary, recreational, commercial and illegal catch; length frequencies of the catch from observer and industry logbook data; tag-recapture data (i.e. growth information); and larval settlement levels. The most important inputs to the assessment are commercial CPUE indices and length frequencies.

Extensive 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. Each management procedure is also extensively simulation-tested, which includes testing for robustness to uncertainties in model assumptions (e.g. variable levels of recruitment and non-commercial catches) and modelling choices.

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

### 4.1.4 Main data input

Standardised commercial CPUE from October through September each year is used as an input to a management procedure to determine the TAC or TACC for the fishing year that begins in the following April. This CPUE series is called 'offset year CPUE' because it is six months out of phase with the fishing year, April through March. Use of offset year CPUE ensures that the most up-to-date CPUE information is used in management procedure operations and decision-making.

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.

## 4.2 DEFINITION OF STOCK INDICATORS

Four stock indicators are relevant to evaluation of the proposals presented in this paper<sup>6</sup>:

- 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.
- b) The conceptual proxy,  $B_{REF}$ <sup>7</sup>, a reference biomass level or management target. 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. 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

<sup>6</sup> Stock size is measured in terms of autumn-winter vulnerable biomass for the  $B_{MSY}$ ,  $B_{REF}$  and  $B_{MIN}$  indicators. "Vulnerable biomass" is the biomass that is available to be caught legally: above the minimum legal size and not egg bearing if female.

<sup>7</sup> 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].

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) The minimum stock size,  $B_{MIN}$ , which is the lowest stock size observed in the history of the fishery.
- d) Spawning stock biomass,  $SSB$ , which is the weight of all mature females in the autumn-winter.

### 4.3 THE MPI HARVEST STRATEGY STANDARD

In October 2008, MPI released the Harvest Strategy Standard (HSS) for New Zealand fisheries. The Harvest Strategy Standard specifies performance standards for Quota Management System species and also provides guidance for TAC setting under the Act.

The HSS specifies that management procedures<sup>8</sup> 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%.

For rock lobster:

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

Extensive simulation-testing suggests that all of the management procedures discussed in this document are consistent with the HSS.

## 5 Consultation

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, environmental, commercial and recreational interests.

MPI consulted on proposals to review sustainability measures for three rock lobster stocks from 11 January to 10 February 2017. A standard consultation process was followed, consisting of posting the consultation document on the MPI website and alerting stakeholders to the consultation through a letter sent to numerous tangata whenua, recreational and commercial contacts.

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<sup>8</sup> Referred to in the HSS as Management Strategy Evaluations or MSEs.

## 5.1 SUBMISSIONS RECEIVED

Twenty-four submissions on the consultation document were received from the following organisations, groups and individuals:

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|---|
| Alain Jorion  |
| Andrew Fulford  |
| CRA 4 Rock Lobster Industry Association Inc (CRAMAC 4)  |
| David Yule  |
| Dugald Cameron  |
| Gary Homan  |
| Gary Horan  |
| Hoani Tukino Aupouri  |
| Iwi Collective Partnership (ICP)  |
| Joint Tairawhiti Iwi organisations (Ngati Porou Seafoods Ltd; Rongowhakaata Iwi Asset Holding Company; Te Runanga o Turanganui a Kiwa; Te Aitanga a Mahaki Trust) |
| Kahungunu Asset Holding Company (KAHC)  |
| Lewis Peart   |
| Linda Coulston  |
| Mark Parry  |
| Neil Bramley  |
| New Zealand Recreational Fishing Council (NZRFC)  |
| New Zealand Rock Lobster Industry Council (NZ RLIC)   |
| New Zealand Sport Fishing Council (NZSFC)   |
| Ngawi Sports Fishing Club (NSFC)  |
| Nick Terry  |
| Rob Davidson  |
| Tairawhiti Rock Lobster Industry Association Inc (CRAMAC 3)   |
| Tāmanuhiri Tūtū Poroporo Trust (TTPT)   |
| Te Ohu Kaimoana Trustee Ltd (Te Ohu)  |

Full copies of the submissions are available in Appendix 3. Each submission is discussed further below as relevant to each stock and in the other matters section in Appendix 1.

## 6 Legal considerations

Your statutory considerations for TAC and TACC setting are discussed below and for each individual stock as relevant in the following sections.

### 6.1 PURPOSE OF THE ACT (SECTION 8)

The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. The options presented in this paper for each rock lobster stock provide for the utilisation of these stocks while ensuring sustainability.

### 6.2 ENVIRONMENTAL PRINCIPLES (SECTION 9)

Section 9 of the Act requires that you take the following environmental principles into account when exercising or performing functions, duties, or powers in relation to the utilisation of fisheries resources or ensuring sustainability:

- a) Associated or dependent species should be maintained above a level that ensures their long-term viability;
- b) Biological diversity of the aquatic environment should be maintained;

- c) Habitats of particular significance for fisheries management should be protected.

The NRLMG considers that all 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.

### 6.3 INFORMATION PRINCIPLES (SECTION 10)

Section 10 of the Act requires that you take the following information principles into account:

- 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;
- 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.

The NRLMG considers that the best available information has been used as the basis for the recommendations in this paper. All science information on which the management proposals are based, has been peer-reviewed by one of MPI's Fisheries Assessment Working Groups and meets the MPI Research and Science Information Standard for New Zealand Fisheries.

### 6.4 SUSTAINABILITY MEASURES (SECTION 11)

Under section 11 of the Act, before setting or varying any sustainability measure for any stock, you must:

- a) *Section 11(1)(a)*: take into account any effects of fishing on any stock and the aquatic environment. Rock lobster fishing methods (potting and hand gathering) are thought to have very 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, butterfish and leatherjackets.
- b) *Section 11(1)(b)*: take into account 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. No changes are proposed to these existing controls.
- c) *Section 11(1)(c)*: take into account the natural variability of the stock. Recruitment to rock lobster stocks is highly variable. This variability was taken into account during development of the management procedures discussed in this paper.
- d) *Sections 11(2)(a) and (b)*: require you to have regards to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. The NRLMG is not aware of any such policy statements, plans or strategies that should be taken into account for the stocks.

- e) *Section 11(2)(c)*: have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The CRA 3, CRA 4 and CRA 7 rock lobster fisheries do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations under that Act.
- f) *Section 11(2)(ca)*: have regard to 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.
- g) *Section 11(2)(d)*: have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011. No planning documents applicable to the fisheries have been lodged.
- h) *Section 11(2A)(b)*: take into account any relevant fisheries plan approved under section 11A. No fisheries plans applicable to rock lobster have been approved.
- i) *Sections 11(2A)(a) and (c)*: take into account any conservation or fisheries services, or any decision not to require such services. The NRLMG does not consider that existing or proposed services materially affect the proposals for these stocks. No decision has been made not to require a service in this fishery at this time.

## 6.5 TAC SETTING (SECTION 13)

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

Under section 13(2) of the Act you must 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. However, before a TAC can be set under section 13(2) you must be provided with an assessment of both current biomass and the biomass that can produce the maximum sustainable yield (commonly called  $B_{MSY}$ ).

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

In considering the way and rate in which a stock is moved towards, or above, a level that can produce the maximum sustainable yield (i.e.  $B_{MSY}$ ) under section 13(2)(b) or (c) or (2A), you must have regard to such social, cultural and economic factors that are considered relevant.

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

When setting a TAC under section 13, you must also have regard to:

- a) *Interdependence of stocks*: is where there is a direct trophic (i.e. a stock is likely to be directly affected by the abundance of another stock) or symbiotic relationship between stocks. Rock lobsters are predators of molluscs and other invertebrates and predation upon rock lobsters is known from octopus, blue cod, groper, southern dogfish, rig and seals.

Although there is uncertainty, the options proposed are unlikely to have any significant effect on the interdependence of stocks.

- b) *Biological characteristics and environmental conditions*: a variety of environmental factors are thought to influence the productivity of rock lobster populations including water temperature, ocean currents, latitude, shelter availability and food availability. Studies have also shown that lobsters grow at different rates around New Zealand and female lobsters become mature at different sizes. Variability in growth, maturity, available biomass, and recruitment were taken into account during the development of management procedures for the rock lobster stocks discussed in this paper.

## 6.6 TACC SETTING (SECTIONS 20 AND 21)

When setting 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.

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. Allowance options are discussed individually for each rock lobster stock later in this paper.

When allowing for Māori customary non-commercial fishing interests you must take into account any relevant mātaihai reserves within the relevant quota management areas and any area closure or fishing method restriction or prohibition within those areas made under section 186A of the Act. There are several mātaihai reserves that fall within the areas of the rock lobster stocks discussed in this paper. The NRLMG considers that the proposed customary allowances for each stock will provide for the harvest of rock lobster that is likely to be taken from a management area, after taking into account the mātaihai reserves and temporary closures in place.

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.

## 7 Review of the CRA 3 (Gisborne) rock lobster fishery

### 7.1 FINAL CRA 3 PROPOSALS

Table 7.1 below shows the final proposals for CRA 3. The current CRA 3 management procedure and advice from the NRLMG has been used to guide the final TAC setting options. The proposals to decrease the TAC and TACC are expected to ensure the CRA 3 stock is maintained well above  $B_{MSY}$ .



**Table 7.1: Final TAC, allowance and TACC proposals for CRA 3 from 1 April 2017 (all values in tonnes).**

| Option  | TAC      | TACC     | Allowances      |              |                 |
|---|----------|----------|-----------------|--------------|-----------------|
|   |          |          | Customary Māori | Recreational | Other mortality |
| <b>CRA3_01:</b> Use the <u>current</u> CRA 3 management procedure and decrease the TAC by decreasing the TACC by 9%.<br><i>(NRLMG preferred option)</i> | 366.86 ↓ | 237.86 ↓ | 20              | 20           | 89              |
| <b>CRA3_02 (status quo):</b> Retain the current CRA 3 TAC, allowances and TACC.   | 389.95   | 260.95   | 20              | 20           | 89              |

## 7.2 SUMMARY OF CRA 3 SUBMISSIONS

### 7.2.1 Support for Option CRA3\_01

Nine submissions were received in support of Option CRA3\_01 (use the current CRA 3 management procedure and decrease the TAC/TACC by 23.09 tonnes). CRAMAC 3, KAHC, ICP, joint Tairāwhiti Iwi organisations, Te Ohu, TTPT, NZ RLIC, NZRFC, and one individual (Mr Yule) all support the proposed decrease.

CRAMAC 3 considers that the current CRA 3 management procedure should comfortably provide for the realistic harvest expectations of all user groups. Industry accepts that managing to a higher level of abundance may mean leaving fish in the water on occasion, but also enables increased flexibility in landing lobsters of a preferred size when prices are good.

The NZ RLIC endorses CRAMAC 3's submission and adds that the use of the current CRA 3 management procedure exceeds your statutory requirement to manage the CRA 3 fishery above statutory reference levels, and that the proposed reduction is a conservative step to ensure the sustainable use of the fishery.

Submitters TTPT, Tairāwhiti Iwi organisations and ICP consider that reducing the TAC/TACC will result in lost revenue, but will ensure a sustainable and healthy fishery in the long term.

The NZRFC supports Option CRA3\_01 and notes that apart from the nearshore waters in dispute close to Gisborne where some recreational fishers allege they suffer localised depletion of rock lobsters, the CRA 3 fishery is in reasonable condition when compared to the neighbouring fisheries either side.

### 7.2.2 Support for Option CRA3\_02

No submissions were received in support of Option CRA3\_02 (retain the current settings).

Submitter ICP considers that the status quo cannot be supported because of the recent observed declines in CPUE.

### 7.2.3 Other comments

NZSFC state that use of the current CRA 3 management procedure should be discontinued due to the continued decline of rock lobster abundance and because it does not meet the aspirations of any of the stakeholders to ensure sustainability, stability in harvest and improve abundance. They suggest that the TAC should be set at 366 tonnes, the allowances for

customary Māori and recreational be retained at 20 tonnes each, the other mortality allowance should be increased to 120 tonnes and the TACC should be reduced to 206 tonnes.

Mr Aupouri submitted that demand for the valuable rock lobster resource is driving fishing pressure and noted that high commercial fishing pressure has been observed close to shore over winter 2016. He considered that large males were caught by commercial fishers coming inshore to breed before they could reproduce, resulting in less legal-sized rock lobsters.

Four submitters (Mr Jorion, Ms Coulston, NZRFC and NZSFC) would like a change to the smaller minimum legal size that applies to commercially landed male rock lobsters in CRA 3 during June, July and August. This issue is outside the scope of this review (see Appendix 1 for further discussion).

CRAMAC 3, NZ RLIC, NZSFC, TTPT, and joint Tairawhiti lwi organisations raise concerns over estimates of illegal catch and uncertainties associated with levels of recreational removals (discussed further in Appendix 1).

### 7.3 CRA 3 STOCK STATUS

The results of the most recent CRA 3 stock assessment conducted in 2014 suggest there are no sustainability concerns for the CRA 3 fishery. 2013 biomass was well above the statutory reference level  $B_{MSY}$  (3.3 to 4.7 times) and  $B_{MIN}$  (3.0 to 3.6 times)<sup>9</sup>. Spawning stock biomass in 2013 was 70-107% of the unfished level.

With 2013 catch levels and recent recruitments, the biomass was projected to decline by 15-31% by 2017, but would remain well above reference points.

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 7.1. CPUE increased from 2008 to 2012. It has since declined but remains relatively high.

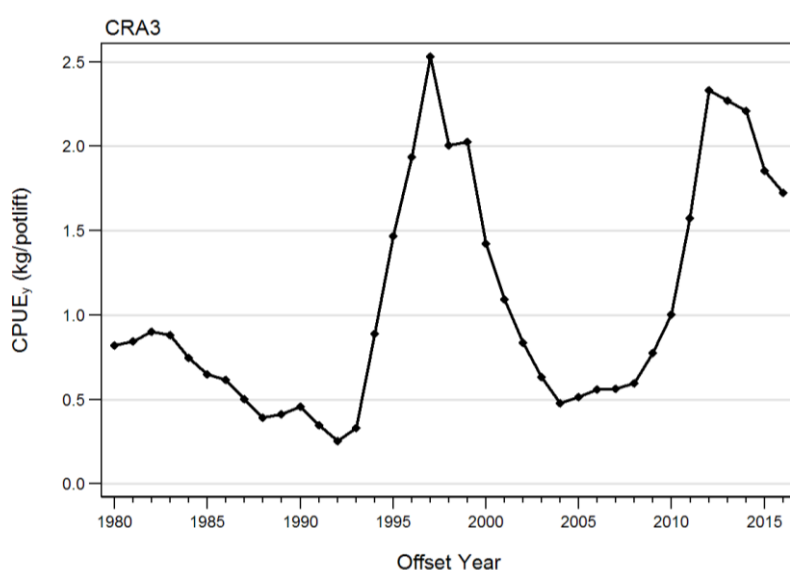


Figure 7.1: The history of CPUE in CRA 3, 1980 – 2016 (offset years) (based on the procedure for preparing data for CPUE standardisation called “F2-LFX”).

<sup>9</sup>  $B_{REF}$  is not reported for CRA 3 because it is not considered a useful indicator at this time.

## 7.4 ANALYSIS OF CRA 3 FINAL PROPOSALS

### 7.4.1 TAC setting

The current CRA 3 TACC is 389.95 tonnes.

Best available information (i.e. recent commercial CPUE information) suggests CRA 3 biomass in 2016 is lower than biomass in 2014, but is still considered to be above  $B_{MSY}$ . Accordingly you have two options to consider to set the CRA 3 TAC to maintain the stock at or above  $B_{MSY}$  (section 13(2)(a)).

- **Option CRA3\_01 – Use the CRA 3 management procedure and decrease the CRA 3 TAC**

Under Option CRA3\_01 the CRA 3 TAC would be decreased to 366.86 tonnes. The proposed TAC decrease is specified by the CRA 3 management procedure that you agreed to use in 2015 to guide TAC setting in the fishery until the 2020/21 fishing year.

The proposed TAC reduction is expected to ensure the stock is maintained above  $B_{MSY}$ . Ongoing application of the CRA 3 management procedure is expected to maintain the stock above  $B_{MSY}$  with greater than 50% probability and above  $B_{MIN}$  with greater than 90% probability. Simulation testing indicates it would maintain the stock above  $B_{MSY}$  with 99% probability.

Historically, only the TACC has been increased or decreased to give effect to the variations in the TAC. Depending on allocation decisions, the commercial sector may be the most affected by the proposed TAC decrease from the loss of commercial utilisation opportunities.

Overall it is expected that ongoing application of the CRA 3 management procedure will maintain fishing opportunities for all sectors by maintaining stock abundance above the agreed reference levels.

- **Option CRA3\_02 – Retain the current CRA 3 TAC**

Under Option CRA3\_02 the CRA 3 TAC would stay at its current level for the 2017/18 fishing year.

This option is not supported by the NRLMG and no submissions were received in support. Maintaining the current TAC could result in a further decline in CRA 3 stock abundance and this could affect the utilisation opportunities for all fishing sectors.

### 7.4.2 Setting non-commercial allowances

- **Customary Māori allowance**

No change is proposed to the 20 tonne customary Māori allowance for CRA 3.

Information on CRA 3 customary catches under the Fisheries (Kaimoana) Regulations 1998 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013 is available. In the 2015 calendar year, approximately 11,000 rock lobsters were reported harvested from CRA 3. 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.

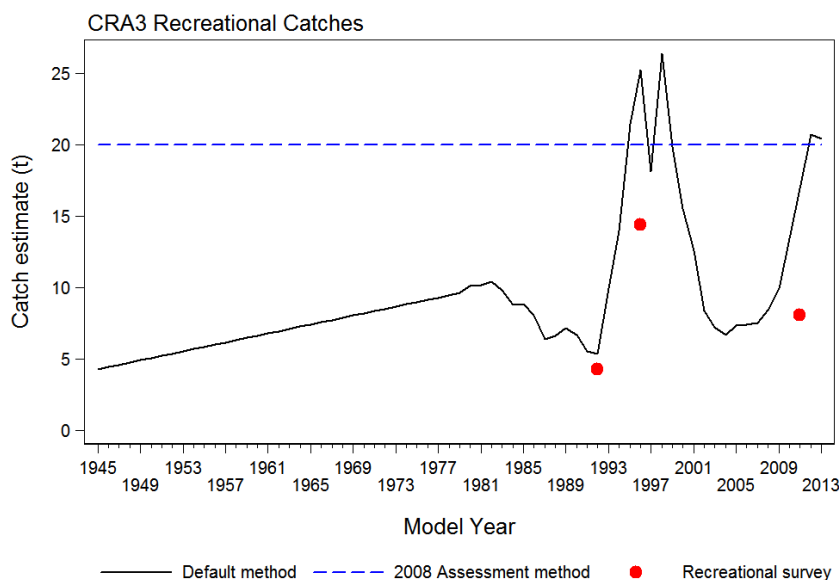
An estimate of 20 tonnes was used in the last 2014 CRA 3 stock assessment model to represent customary catches.

TTPT acknowledge in their submission that no change is proposed to the CRA 3 customary Māori allowance.

- **Recreational allowance**

No change is proposed to the 20 tonne recreational allowance for CRA 3 because the current assumptions of recreational harvest are within the bounds of stock assessment model estimates.

In 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 7.2). The model assumed that recreational catch was proportional to the spring-summer commercial CPUE for CRA 3. 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 from 2009.



**Figure 7.2: Recreational catch trajectory (t) for the 2014 stock assessment of CRA 3. The red dots refer to the recreational survey estimates. For comparison, the solid black line shows the catch trajectory made proportional to spring-summer CRA 3 CPUE. The blue dashed line is the recreational catch trajectory that was used in the 2008 stock assessment (a constant 20 tonnes). Section 111 catches which were taken by commercial fishers for non-commercial purposes were added to the 2014 trajectory (i.e. a maximum of 2.94 tonnes).**

- **Other mortality allowance**

No change is proposed to the 89 tonne CRA 3 allowance for other sources of fishing-related mortality (i.e. for illegal catch).

There is no reliable information on current levels of illegal catch. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1989 and a constant illegal catch of 89 tonnes per year from 2002 to 2013 in the 2014 stock assessment.

Since 2002, MPI has accepted the 89 tonne illegal take estimate as an appropriate assessment of illegal take based on ongoing monitoring of the fishery and input from MPI compliance staff.

There is currently no robust methodology for estimating illegal take so it is not possible to assess what the exact level is. The NRLMG sector members have little confidence in the 89 tonne estimate and are urging MPI to re-evaluate the illegal fishing situation and implement measures to both better constrain and measure it.

NZSFC and Ms Coulston both refer to a 2012 MPI report called “Developing and applying a methodology to estimate illegal take from New Zealand fisheries” and suggest that a 120 tonne other mortality allowance should be set for CRA 3 based on the findings of this report. The CRA 3 fishery was used as a case study for this report to develop a potential methodology. The report clearly stated that 120 tonnes should not be considered a formal estimate of CRA 3 illegal take because of a number of shortcomings in the data that informed the model.

NZSFC suggest in the absence of a handling mortality estimate for CRA 3 from the 2014 stock assessment, 31 tonnes should be used to represent this part of other mortality: it is uncertain how this estimate was arrived at. The NRLMG note that as part of the scheduled 2019 CRA 3 stock assessment a formal estimate of handling mortality will be calculated for CRA 3.

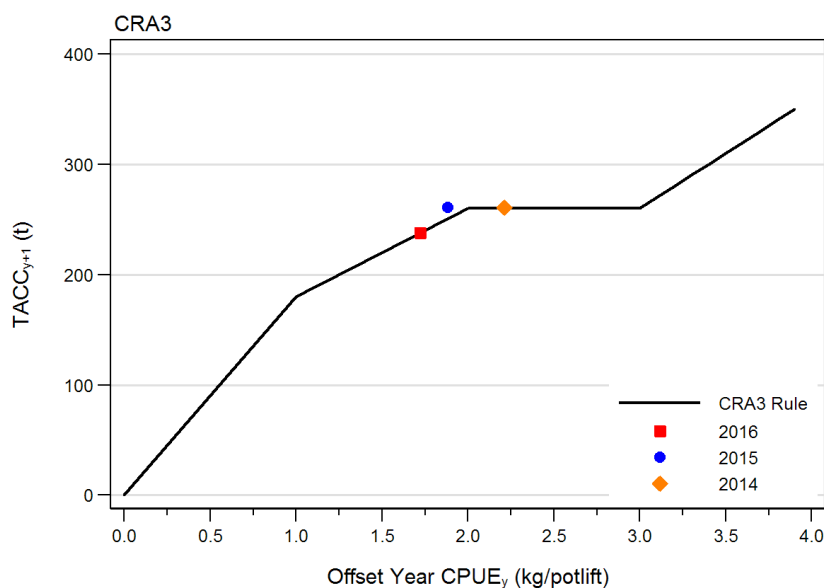
### 7.4.3 TACC setting

The current CRA 3 TACC is 260.95 tonnes.

- ***Option CRA3\_01 – Decrease the CRA 3 TACC by 23.09 tonnes***

Under Option CRA3\_01 the CRA 3 TACC would be decreased to 237.86 tonnes from 1 April 2017, as guided by the use of the CRA 3 management procedure. The proposed 23.09 tonne TACC decrease has the potential to result in a loss of revenue for the industry of approximately \$1.7 million (based on 2016 average port price information).

A graphical representation of the CRA 3 management procedure is provided in Figure 7.3. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year. The 2016 standardised offset year CPUE was 1.72 kg/potlift, a decrease from 1.88 kg/potlift in 2015. When the rule was operated with the 2016 CPUE it resulted in a TACC of 237.86 tonnes (shown by the red square on the graph).



**Figure 7.3: The CRA 3 management procedure, showing the TACCs resulting from the rule evaluations performed in 2014 through 2016 for the 2014/15 through 2017/18 fishing years (shown as coloured shapes).**

- **Option CRA3\_02 – Retain the current CRA 3 TACC**

Under Option CRA3\_02 the CRA 3 TACC would stay at its current level. This option would maintain the current commercial fishing opportunities.

This option is not supported by the NRLMG.

If you choose to retain the status quo settings and not follow the results of the CRA 3 management procedure this could pose a risk to sustainability, particularly if CPUE continues to decline during 2017

## 8 Review of the CRA 4 (Wellington/Hawkes Bay) rock lobster fishery

### 8.1 FINAL CRA 4 PROPOSALS

Table 8.1 below shows the final proposals for CRA 4. The proposed new CRA 4 management procedures and advice from the NRLMG have been used to guide the final TAC setting options. The proposals to decrease the TAC and TACC are expected to ensure the CRA 4 stock is rebuilt towards the agreed management target ( $B_{REF}$ ).

**Table 8.1: Final TAC, allowance and TACC proposals for CRA 4 from 1 April 2017 (all values in tonnes).**

| Option  | TAC   | TACC  | Allowances      |              |                 |
|---|-------|-------|-----------------|--------------|-----------------|
|   |       |       | Customary Māori | Recreational | Other mortality |
| <b>CRA4_01:</b> Use the <u>new</u> Rule 24 CRA 4 management procedure and reduce the TAC by reducing the TACC by 23%.<br><i>(Commercial preferred)</i>                | 502 ↓ | 307 ↓ | 35              | 85           | 75              |
| <b>CRA4_02:</b> Use the <u>new</u> Rule 6 CRA 4 management procedure and reduce the TAC by reducing the TACC by 27%.<br><i>(Customary and recreational preferred)</i> | 484 ↓ | 289 ↓ | 35              | 85           | 75              |

The NRLMG did not reach consensus on the preferred option for CRA 4 although both options support a rebuild of the CRA 4 stock and propose significant reductions to the TACC.

Commercial members prefer Option CRA4\_01 because it will support a rebuild of the fishery while minimising economic impacts into the future. Customary and recreational members support Option CRA4\_02 because there is a greater probability of a rebuild of the stock in five years and because the TACC is held at a lower level when the management procedure is operating on the ‘plateau’, compared with the proposed Rule 24 management procedure. Commercial members consider that this outcome of a greater probability of rebuild is only possible if all catches are effectively constrained to the allowances made in the TAC.

MPI has not expressed a preferred position because either option meets your statutory obligations for TAC setting to move the stock to a level at or above the management target in a way and rate considered appropriate for the stock.

## 8.2 SUMMARY OF CRA 4 SUBMISSIONS

### 8.2.1 Support for Option CRA4\_01

Four submissions were received in support of Option CRA4\_01 (use the new CRA 4 management procedure “Rule 24” and decrease the TAC/TACC by 90 tonnes). CRAMAC 4, KAHC, NZ RLIC, and an individual (Mr Bramley) all supported this decrease.

NZ RLIC and CRAMAC 4 both support the new “Rule 24” procedure and submit that whilst there is general industry acceptance of the need for a TAC decrease there is not unanimous agreement across industry that only the TACC should be reduced. Both of these submitters have serious reservations about the burden of stock rebuild again falling solely on industry. They consider that immediate steps must be taken to constrain illegal fishing activity in CRA 4 and to re-evaluate the current estimates of illegal unreported removals.

CRAMAC 4 notes that industry participants at a recent Special General Meeting signalled that they are determined to avoid the situation where abundance improves then falls to levels which require drastic catch reductions. CRAMAC 4 are committed to other measures as well as the management procedure to support a rebuild and, for example, have already commenced effort-spreading initiatives.

Mr Bramley submits that Rule 24 will be more than adequate in rebuilding and maintaining the sustainability of the CRA 4 stock over the next five years. Mr Bramley also considers that the CRA 4 management procedure is directly associated to the 10% quota aggregation limit. He considers if big entities are given more control over Annual Catch Entitlement (ACE) through the erosion of the aggregation limit this could impact on ACE dependent fishers.

### **8.2.2 Support for Option CRA4\_02**

Seven submissions were received in support of Option CRA4\_02 (use the new CRA 4 management procedure “Rule 6” and decrease the TAC/TACC by 108 tonnes). Te Ohu, NZRFC, NSFC, ICP, Tairawhiti Iwi organisations, and three individuals (Messrs Cameron, Davidson, and Yule) support this option.

Te Ohu consider a significant reduction is necessary to ensure a faster rebuild of the CRA 4 fishery and with higher probability. Te Ohu also note that iwi have consistently promoted a more conservative approach to CRA 4 fisheries management.

NSFC considers that a conservative approach is needed to rebuild the fishery because of a lack of rock lobsters available to recreational fishers in recent years, and claim that recreational fishers are struggling to catch their bag limit on a regular basis. Te Ohu and ICP also support a more conservative approach and consider that the 27% reduction proposed by Rule 6 provides a greater probability of rebuilding the stock. NZRFC supports the submissions from NSFC and Te Ohu.

ICP and Tairawhiti Iwi organisations consider that reducing the TAC/TACC will result in lost revenue but will ensure a sustainable and healthy fishery in the long term.

On the other hand, CRAMAC 4 considers that this option will serve to enhance the already available opportunity for illegal fishing and may result in many younger fishers being displaced (to a greater level than Option CRA4\_01) as older more financially able fishers compete in the reduced Annual Catch Entitlement market.

### **8.2.3 Other comments**

NZSFC state that use of a CRA 4 management procedure should be discontinued because of continued decline of rock lobster abundance. NZSFC, however, support the TAC, allowance and TACC proposals as per Option CRA4\_02. They have ongoing concerns about the decline in recreational catch and catch rates.

Mr Fulford supports reducing the TACC by an additional 30% over what has been proposed, and expressed concerns over overfishing and poor catches affecting the Cape Kidnappers/Red Island area in CRA 4.

Mr Davidson did not express support for an option. He is concerned about the competition between recreational and commercial fishers, being of the opinion that commercial fishers are outcompeting recreational fishers for rock lobsters, particularly close to shore.

NZ RLIC submit that sector expectations of fishing success and catches, often based on historical levels of high recruitment and abundance, should be re-evaluated in light of fluctuating environmental conditions and lower stock abundance that are not solely related to commercial fishing.



### 8.3 CRA 4 STOCK STATUS

A new stock assessment was carried out for the CRA 4 fishery in 2016 (the previous was in 2011). The assessment results suggest that stock biomass in 2016 was 1.3 times  $B_{MIN}$  but below the management target,  $B_{REF}$ , by 25%.<sup>10</sup> Spawning stock biomass in 2016 was 51% of the unfished level.

With 2016 catch levels and recent recruitments, stock biomass is projected to decline in the next four years by 6%.

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 offset year (i.e. October through September) CRA 4 commercial CPUE is shown in Figure 8.1. CPUE increased from 2008 to 2012, but has since declined.

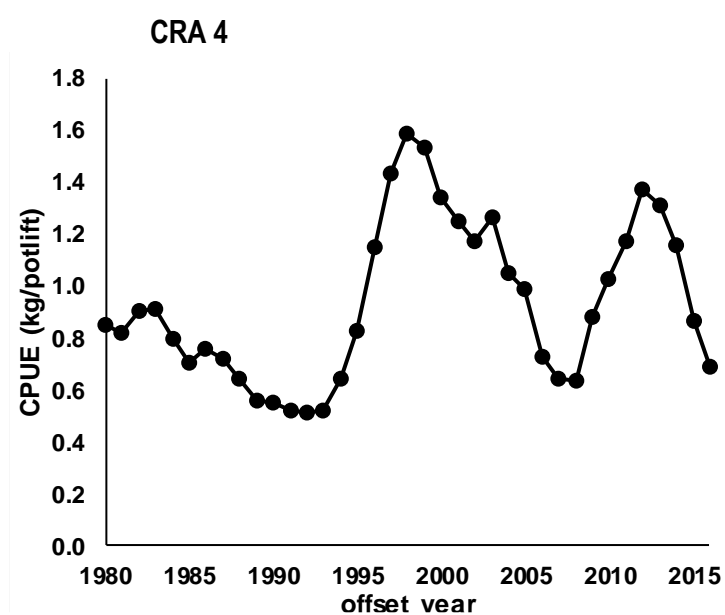


Figure 8.1: The history of CPUE in CRA 4, 1980 – 2016 (offset years) (based on the procedure for preparing data for CPUE standardisation called “F2-LFX”).

NZ RLIC note in their submission, based on information presented to the Rock Lobster Fisheries Assessment Working Group and stock assessment results, that the underlying productivity of the CRA 4 fishery has diminished over time for reasons unknown. They consider that causative factors relating to strengths of settlement and subsequent recruitment into the CRA 4 fishery should be investigated. The NRLMG proposes to follow this point up with the Rock Lobster Fisheries Assessment Working Group to determine whether any additional research is needed.

### 8.4 ANALYSIS OF CRA 4 FINAL PROPOSALS

#### 8.4.1 Use of a new management procedure

It is proposed that a new management procedure is used to guide TAC setting in the CRA 4 fishery for five years from the 2017/18 through to the 2021/22 fishing years.

<sup>10</sup>  $B_{REF}$  for CRA 4 is the average pre-season autumn-winter vulnerable biomass associated with the period 1979-88.

Two different management procedure options are proposed for consideration: either *Rule 24* [Option CRA4\_01] or *Rule 6* [Option CRA4\_02]. It is proposed that one of these new procedures replace the current CRA 4 management procedure, which has been in use in the fishery since 2012 and has now effectively expired because it has been in use for a term of five years.

Development of new CRA 4 management procedure candidates was guided by feedback received from a multi-sector meeting in Masterton in July 2016 where future aspirations for the fishery were discussed. Common themes identified at the meeting included: sustainability, good levels of abundance, stability, safety and fish being available for the next generation. Feedback from the NRLMG was used to refine the set of possible candidate procedures.

Use of either of the new CRA 4 management procedures should not pose a risk to stock sustainability. Application of either procedure is expected to rebuild current stock biomass towards the management target,  $B_{REF}$ , in the next five years by greater than 86% probability under the base case operating model and by about 50% under a less optimistic robustness trial. For further information on the specifications of the new CRA 4 procedures refer to Appendix 2.

**Table 8.2: Summary of indicator results from base case evaluations for the new candidate CRA 4 management procedures (Options CRA4\_01 and CRA4\_02).**

| <b>Stock Indicators<sup>11</sup></b>                       | <b>Results</b>           |                         |
|--|--------------------------|-------------------------|
|  | <b>Rule 24 (CRA4_01)</b> | <b>Rule 6 (CRA4_02)</b> |
| Probability of stock biomass being above $B_{REF}$ in 2021 | 86.3%                    | 91.7%                   |
| <b>Catch Indicators</b>                                    |                          |                         |
| Average commercial catch over five years                   | 326 t                    | 309 t                   |
| Commercial catch in 2021                                   | 396 t                    | 369 t                   |
| <b>CPUE Indicators</b>                                     |                          |                         |
| Average CPUE over 5 years                                  | 0.76 kg/potlift          | 0.78 kg/potlift         |
| Commercial CPUE in 2021                                    | 0.94 kg/potlift          | 0.97 kg/potlift         |

Both of the proposed new CRA 4 management procedures are similar in their design. The two main differences in their design are with respect to: the plateau height - for *Rule 24* between CPUEs of 0.9 to 1.3 kg/potlift the TACC is 420 tonnes, and for *Rule 6* between the same CPUEs the TACC is 380 tonnes; and, the CPUE value when the TACC is zero – for *Rule 24* between CPUEs of zero and 0.1 kg/potlift the TACC is zero, and for *Rule 6* the TACC is zero at 0 kg/potlift (see Figures 8.3 and 8.4).

CRAMAC 4 note in their submission that there is little apparent difference between the two rules, other than “Rule 6” constraining commercial catch at a lower level with a lower plateau height. This is of concern to the industry if no effective constraints are placed on other users because the TACC constraint will remove the potential for industry to obtain improved fishing opportunity when stock abundance increases over time.

#### 8.4.2 TAC setting

The current CRA 4 TAC is 592 tonnes.

<sup>11</sup> An explanation of the stock indicators is provided in section 4.2.

There is a reliable estimate of current biomass but no reliable estimate of  $B_{MSY}$ . Because of this, any variation of the CRA 4 TAC must be done under section 13(2A).

- **Option CRA4\_01 – Use the new Rule 24 CRA 4 management procedure and decrease the CRA 4 TAC**

Under Option CRA4\_01 the CRA 4 TAC would be decreased to 502 tonnes. This TAC is guided by the use of the new Rule 24 CRA 4 management procedure.

Under Rule 24 there is an 86.3% probability that the stock will be above the management target,  $B_{REF}$ , in five years. Rebuilding the CRA 4 stock towards the target should provide increased utilisation opportunities for all sectors.

It is proposed that the TAC decrease is implemented by way of a 90 tonne decrease to the TACC.

- **Option CRA4\_02 – Use the new Rule 6 CRA 4 management procedure and decrease the CRA 4 TAC**

Under Option CRA4\_02 the CRA 4 TAC would be decreased to 484 tonnes. This TAC is guided by the use of the new Rule 6 CRA 4 management procedure.

Under Rule 6 there is a 91.7% probability that the stock will be above the management target,  $B_{REF}$ , in five years, which should provide increased utilisation opportunities for all sectors. This outcome of a greater probability of rebuild, in comparison to Rule 24, is only possible if all catches are effectively constrained to the allowances made in the TAC.

It is proposed that the TAC decrease come solely from a 108 tonne decrease to the TACC.

### 8.4.3 Setting of non-commercial allowances

- **Customary Māori allowance**

No change is proposed to the 35 tonne customary Māori allowance for CRA 4 under either option.

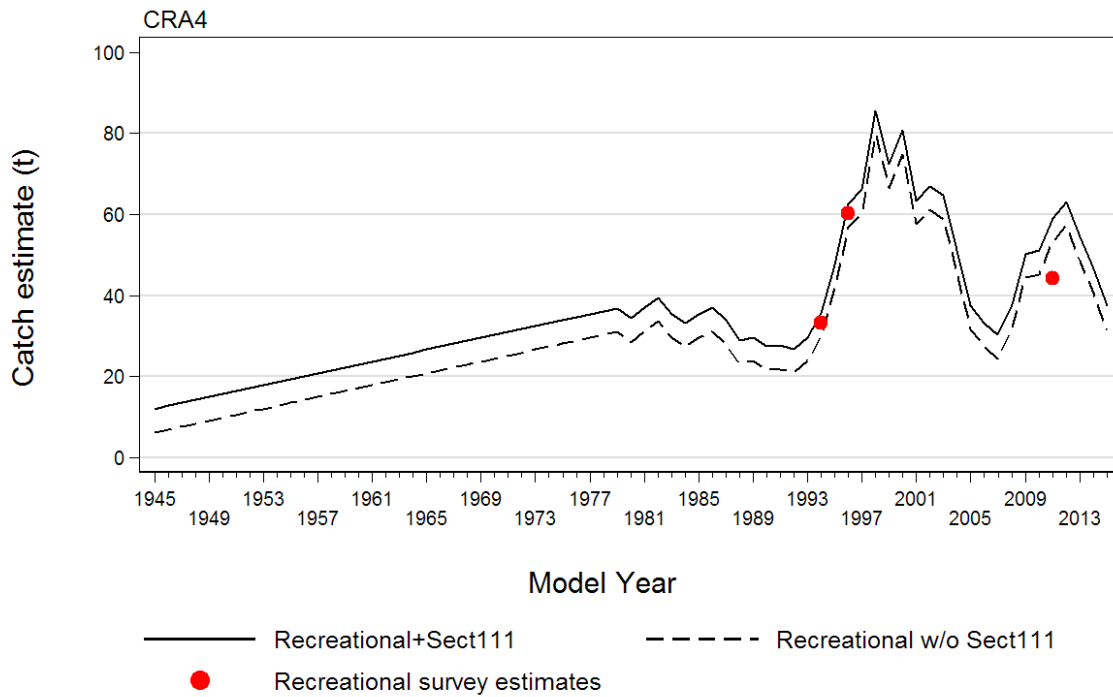
Information on CRA 4 customary catches under the Fisheries (Kaimoana) Regulations 1998 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013 is available. In the last three April fishing years, less than 5 tonnes of rock lobsters were reported as landed each year in CRA 4 under the regulations. Noting the incompleteness and uncertainty in the CRA 4 customary harvest information, it is assumed that current harvest is within the 35 tonne allowance allocated for customary Māori interests.

An estimate of 20 tonnes was used in the 2016 CRA 4 stock assessment model to represent customary catches.

- **Recreational allowance**

No change is proposed to the 85 tonne recreational allowance for CRA 4 under either option because the current assumptions of recreational harvest are within the bounds of stock assessment model estimates.

In the 2016 CRA 4 stock assessment, recreational catch estimates from 1994, 1996 and 2011 recreational harvest surveys were used to construct a recreational catch trajectory (Figure 8.2). The model assumed that recreational catch was proportional to the spring-summer commercial CPUE for CRA 4. The resulting recreational catch trajectory showed a strong increasing trend up to the end of 1990s, following by a steep drop to 2007/08, which recovered by 2013/14 before dropping again from 2014/15.



**Figure 8.2: Recreational catch trajectories (tonnes) for the 2016 stock assessment of CRA 4. The red dots refer to the recreational survey estimates. Trajectories with (solid black line) and without (dashed black line) the additional Section 111 catches which were taken by commercial fishers for non-commercial purposes are shown (i.e. a maximum of 5.8 tonnes of section 111 catches).**

- **Other mortality allowance**

No change is proposed to the 75 tonne CRA 4 allowance for other sources of fishing-related mortality under either option.

There is no reliable information on current levels of illegal catch. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1990 to 2004 in the 2016 stock assessment model to estimate illegal catches. For the 2015/16 fishing year the illegal catch estimate assumed for the model was 40 tonnes. NZ RLIC and CRAMAC 4 submit that steps must be taken to address illegal take in the CRA 4 fishery and the illegal take estimate must be re-evaluated. The NRLMG agrees with this (refer to Appendix 1 for further NRLMG discussion on uncertainties of non-commercial removals).

The 2016 CRA 4 assessment also assumed that handling mortality was 10% of returned lobsters until 1990 and then 5%, based on a literature review. The 2016 model estimate of handling mortality was 18.14 tonnes.

Despite uncertainties, it is assumed that current estimated levels of illegal catch and handling mortality are within the other mortality allowance (40 tonnes plus 18.14 tonnes = 58.14 tonnes).

#### 8.4.4 TACC setting

The current TACC for CRA 4 is 397 tonnes.

- **Option CRA4\_01 - Decrease the CRA 4 TACC by 90 tonnes (as guided by the new Rule 24 CRA 4 management procedure)**

Under Option CRA4\_01 the CRA 4 TACC would be decreased to 307 tonnes from 1 April 2017, as guided by the use of the new CRA 4 management procedure (Rule 24). The proposed 90 tonne TACC decrease has the potential to result in a loss of revenue for the industry of approximately \$6.5 million (based on 2016 average port price information).

A graphical representation of the Rule 24 CRA 4 management procedure is provided in Figure 8.3. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year. The 2016 standardised offset year CPUE was 0.685 kg/potlift, and when the rule was operated with the 2016 CPUE it resulted in a TACC of 307 tonnes (shown by the red square on the graph).

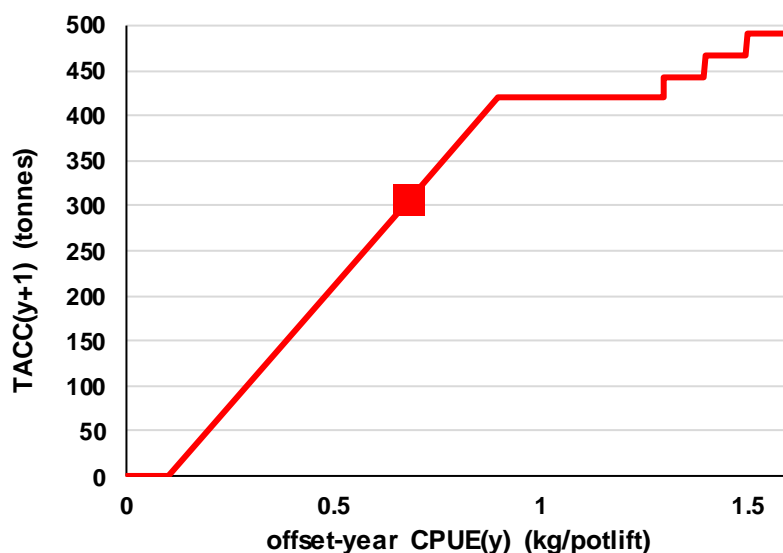


Figure 8.3: The new Rule 24 CRA 4 management procedure, showing the TACC resulting from the rule evaluation performed in 2016 for the 2017/18 fishing year.

- **Option CRA4\_02 - Decrease the CRA 4 TACC by 108 tonnes (as guided by the new Rule 6 CRA 4 management procedure)**

Under Option CRA4\_02 the CRA 4 TACC would be decreased to 289 tonnes from 1 April 2017, as guided by the use of the new CRA 4 management procedure (Rule 6). The proposed 108 tonne TACC decrease will result in a loss of revenue for the industry of approximately \$7.8 million (based on 2016 average port price information).

A graphical representation of the Rule 6 CRA 4 management procedure is provided in Figure 8.4. When the rule was operated with the 2016 standardised offset year CPUE of 0.685 kg/potlift it resulted in a TACC of 289 tonnes (shown by the red square on the graph).

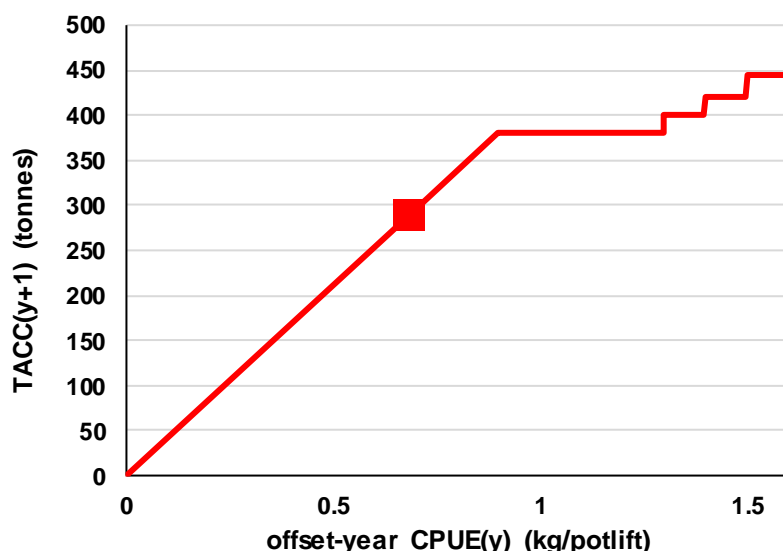


Figure 8.4: The new Rule 6 CRA 4 management procedure, showing the TACC resulting from the rule evaluation performed in 2016 for the 2017/18 fishing year.

## 9 Review of the CRA 7 (Otago) rock lobster fishery

### 9.1 FINAL CRA 7 PROPOSALS

Table 9.1 below shows the final proposals for CRA 7. The current CRA 7 management procedure and advice from the NRLMG has been used to guide the final TAC setting options.

**Table 9.1: Final TAC, allowance and TACC proposals for CRA 7 from 1 April 2017 (all values in tonnes).**

| Option  | TAC      | TACC     | Allowances      |              |                 |
|---|----------|----------|-----------------|--------------|-----------------|
|   |          |          | Customary Māori | Recreational | Other mortality |
| <b>CRA7_01:</b> Use the <u>current</u> CRA 7 management procedure and increase the TAC by increasing the TACC by 15%.<br><i>(Customary, commercial and MPI preferred)</i> | 132.52 ↑ | 112.52 ↑ | 10              | 5            | 5               |
| <b>CRA7_02 (status quo):</b> Retain the current CRA 7 TAC, allowances and TACC.<br><i>(Recreational preferred)</i>  | 117.72   | 97.72    | 10              | 5            | 5               |

The NRLMG did not reach consensus on the preferred option for CRA 7. Customary, commercial and MPI members support Option CRA7\_01 because ongoing use of the CRA 7 management procedure is expected to ensure the stock is maintained well above the management target and increasing the TACC is unlikely to compromise this. Recreational members support the use of management procedures in rock lobster fisheries, but have chosen to support Option CRA7\_02 in this case because of other matters that they would like MPI to address, in particular i.e. addressing differences in the type of size measure used and the minimum legal size limit between recreational and commercial fishers. These matters are outside the scope of this sustainability review because any changes to these measures would require regulatory change.

## 9.2 SUMMARY OF CRA 7 SUBMISSIONS

### 9.2.1 Support for Option CRA7\_01

Two submissions were received from NZ RLIC (including CRAMAC 7) and Te Ohu in support of Option CRA7\_01 (use the current CRA 7 management procedure and increase the TAC/TACC by 14.8 tonnes).

NZ RLIC and CRAMAC 7 supports the application of the current CRA 7 management procedure because it can respond quickly to increases and decreases in abundance. They believe this represents a pragmatic and conservative management approach to the management of the CRA 7 fishery and note that growing and banking abundance to increase catch rates has not been successful in CRA 7 because of the migratory nature of the fishery (CRA 7 fish move into CRA 8 at certain times).

### 9.2.2 Support for Option CRA7\_02

Three submissions from NZRFC and two individuals (Mr Parry and Mr Yule) were received in support of Option CRA7\_02 (retain the current settings).

### 9.2.3 Other comments

NZSFC state that use of a CRA 7 management procedure to guide TAC and TACC should be discontinued. NZSFC, however, support the TAC, allowance and TACC proposals as per Option CRA7\_02. They consider the proposed 15% increase to the TACC adds to their concerns about the long-term viability of the CRA 7 stock.

Mr Homan supports significant quota increases in the Otago area, but did not specifically support Option CRA7\_01, which proposes an increase to the TAC/TACC.

Three submitters (Mr Parry, NZRFC and NZSFC) would like a change to the smaller minimum legal size that applies to commercially caught rock lobsters in CRA 7. This issue is outside the scope of this review (see Appendix 1 for further discussion).

## 9.3 CRA 7 STOCK STATUS

The results of the most recent CRA 7 stock assessment conducted in 2015 suggest there are no sustainability concerns for the CRA 7 fishery. 2015 biomass was twice  $B_{REF}$  and 8.4 times  $B_{MIN}$ .<sup>12</sup>

With 2014 catch levels and recent recruitments, biomass was projected to decline by 7% by 2018, but would remain well above reference levels.

Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 7 and is the abundance indicator used in the CRA 7 management procedure. The history of offset year (i.e. October through September) CRA 7 commercial CPUE is shown in Figure 9.1. CPUE has increased substantially since 2012, and in 2016 was the highest ever recorded for CRA 7.

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<sup>12</sup>  $B_{REF}$  for CRA 7 is the average pre-season autumn-winter vulnerable biomass associated with the period 1979-81. 1979-81 was a period when the stock showed good productivity and was demonstrably safe. There are no reliable  $B_{MSY}$  and  $SSB$  estimates available for CRA 7 because of the high level of emigration estimated for the stock.

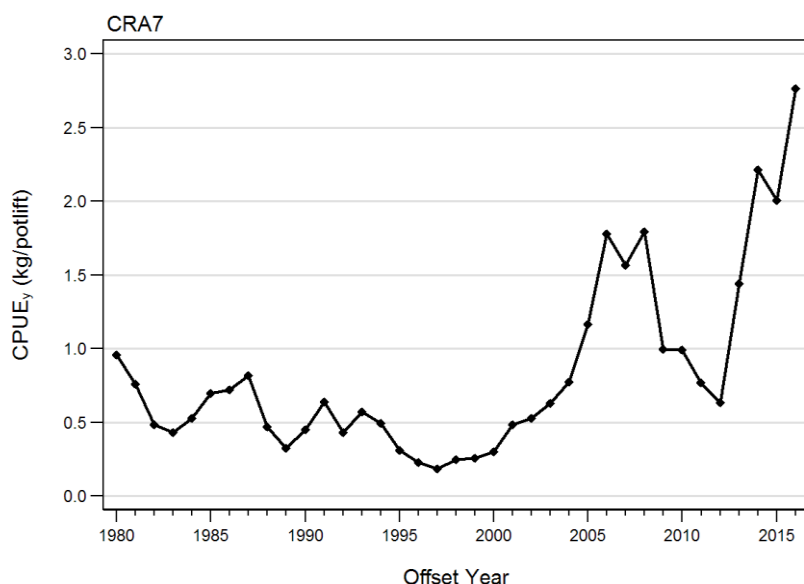


Figure 9.1: The history of CPUE in CRA 7, 1980 – 2016 (offset years) (based on the procedure for preparing data for CPUE standardisation called “F2\_LFX”).

## 9.4 ANALYSIS OF CRA 7 FINAL PROPOSALS

### 9.4.1 TAC setting

The current CRA 7 TAC is 117.72 tonnes.

There is a reliable estimate of current biomass but no reliable estimate of  $B_{MSY}$ . Because of this any variation to the CRA 7 TAC must be done under section 13(2A).

- **Option CRA7\_01 – Use the CRA 7 management procedure and increase the CRA 7 TAC**

Under Option CRA7\_01 the CRA 7 TAC would be increased to 132.52 tonnes. The proposed TAC increase is specified by the CRA 7 management procedure that you agreed to use in 2013 to guide TAC setting in the fishery. The CRA 7 management procedure was evaluated with a new operating model in 2015, effectively extending its use from 2017/18 to the 2020/21 fishing year.

Ongoing application of the CRA 7 management procedure is expected to maintain the stock above  $B_{REF}$  with greater than 50% probability. Simulation testing indicates it would maintain the stock above  $B_{REF}$  with 98% probability.

This option will increase the current utilisation opportunities. Historically, only the TACC has been increased or decreased to give effect to the variations in the TAC. Overall utilisation benefits are likely to increase for all sectors under the management procedure approach through increases to CRA 7 abundance.

- **Option CRA7\_02 – Retain the current CRA 7 TAC**

Under Option CRA7\_02 the CRA 7 TAC would stay at its current level for the 2017/18 fishing year.

This option could result in increased abundance in the CRA 7 fishery in the short-term, increased non-commercial catches and catch rates compared to Option CRA7\_01, and higher



CPUE for commercial fishers, which may result in reduced harvesting costs (but at the cost of not being able to take advantage of the proposed TACC increase under Option CRA7\_01).

#### 9.4.2 Setting non-commercial allowances

- **Customary Māori allowance**

No change is proposed to the 10 tonne customary Māori allowance for CRA 7.

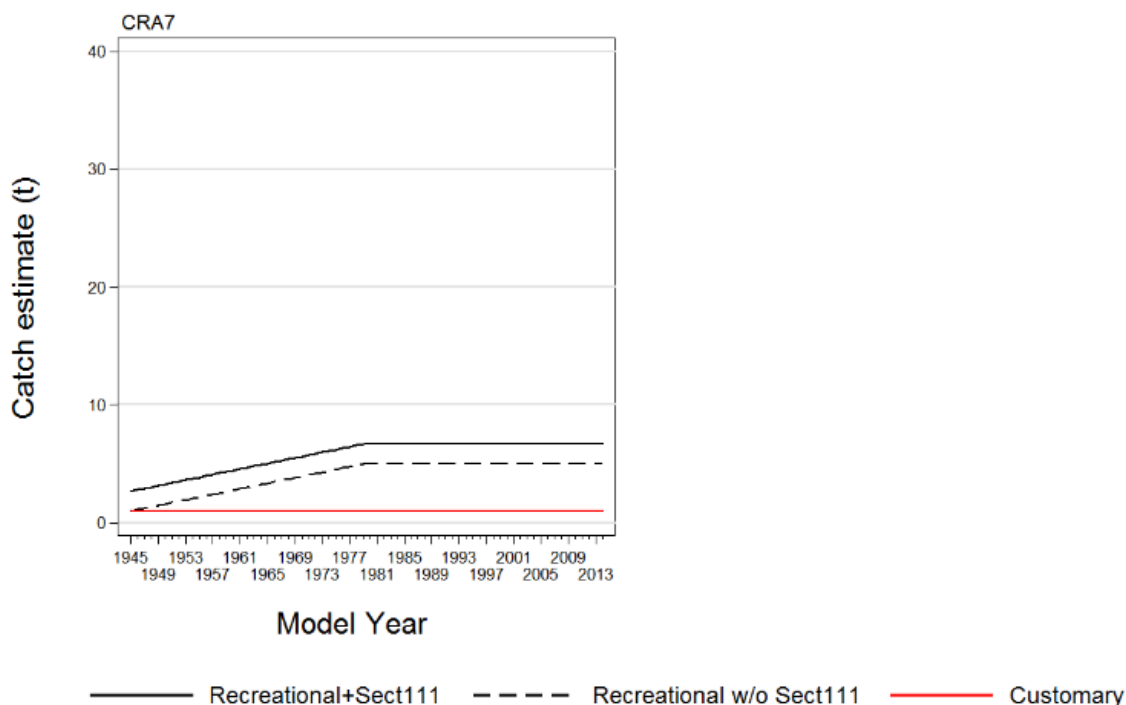
Reports of customary Māori catch made under the Fisheries (South Island Customary Fishing) Regulations 1999 suggests there are low levels of rock lobster harvest from CRA 7. It is assumed that current harvest is within the 10 tonne allowance allocated for customary Māori interests.

An estimate of 1 tonne was used in the last 2015 CRA 7 stock assessment model to represent customary catches (red line in Figure 9.2 below).

- **Recreational allowance**

No change is proposed to the 5 tonne recreational allowance for CRA 7 because the current assumptions of recreational harvest are within the bounds of stock assessment model estimates.

In the 2015 CRA 7 stock assessment, recreational catch estimates were assumed to be at 1 tonne in 1945 and were ramped to 5 tonnes in 1979. A constant estimate of 5 tonnes was assumed from 1979 to 2014 (Figure 9.2).



**Figure 9.2: Recreational (black line) catch trajectory (tonnes) for the 2015 stock assessment of CRA 7. The red line is the customary catch trajectory used in the 2015 assessment. Section 111 catches which were taken by commercial fishers for non-commercial purposes were added to the 2015 recreational catch trajectory (i.e. a maximum of 1.7 tonnes).**

- **Other mortality allowance**

No change is proposed to the 5 tonne CRA 7 allowance for other sources of fishing-related mortality (i.e. for illegal catch).

There is no reliable information on current levels of illegal catch. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates from 1990 to 2002 and assumed 1 tonne per year from 2002 to 2014 in the 2015 stock assessment model.

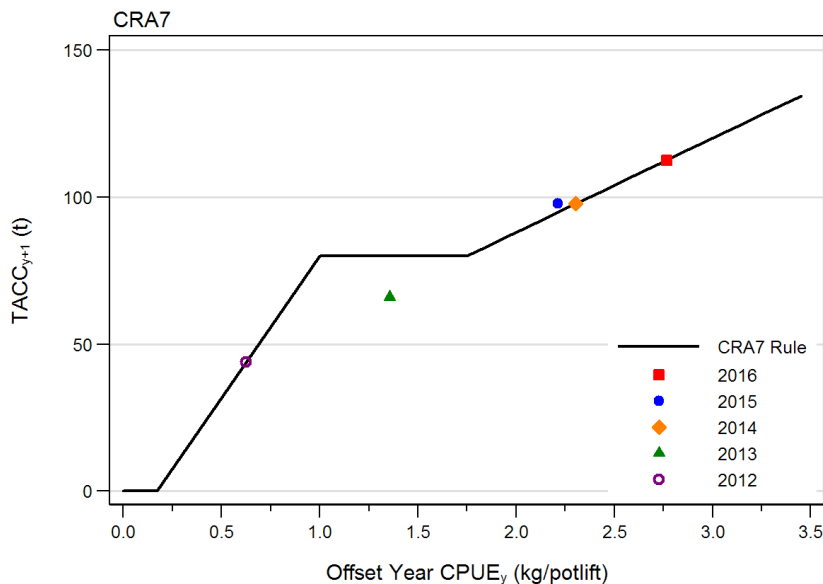
### 9.4.3 TACC setting

The current CRA 7 TACC is 97.72 tonnes.

- **Option CRA7\_01 – Increase the CRA 7 TACC by 14.8 tonnes**

Under Option CRA7\_01 the CRA 7 TACC would be increased to 112.52 tonnes from 1 April 2017, as guided by the use of the CRA 7 management procedure. The proposed 14.8 tonne TACC increase has the potential to result in a gain of revenue for the industry of approximately \$1.07 million (based on 2016 average port price information).

A graphical representation of the CRA 7 management procedure is provided in Figure 9.3. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year. The 2016 standardised offset year CPUE was 2.78 kg/potlift, and when the rule was operated with the 2016 CPUE it resulted in a TACC of 112.52 tonnes (shown by the red square on the graph).



**Figure 9.3: The CRA 7 management procedure, showing the TACCs resulting from the rule evaluations performed in 2012 through 2016 for the 2013/14 through 2017/18 fishing years (shown as coloured shapes).**

- **Option CRA7\_02 – Retain the current CRA 7 TACC**

Under Option CRA7\_02 the CRA 7 TACC would stay at its current level. This option would maintain the current level of sustainability of the commercial fishery without realising the potential utilisation opportunities for commercial fishers.

If you choose not to follow the results of the CRA 7 management procedure in 2017, the procedure cannot be used to guide TAC setting in future years. This may pose a risk to stock sustainability in the future if CPUE decreases because there would be limited information to advise on the management of the stock until a stock assessment is performed (currently scheduled for 2020).

## Appendix 1: Other matters

In addition to commenting on the proposed sustainability measures for the three rock lobster stocks discussed in this paper, some submitters commented on or proposed other management matters that are directly outside the scope of this review. Some of these matters are discussed briefly below.

### A1.1 UNCERTAINTY IN NON-COMMERCIAL REMOVALS

A number of submitters (CRAMAC 3, CRAMAC 4, TTPT, joint Tairawhiti Iwi organisations and NZ RLIC) expressed concerns about levels of recreational and illegal removals and uncertainties surrounding estimated removals. Most of these submitters request that MPI put plans in place to more accurately estimate, address, and constrain recreational and illegal catch if necessary.

The NRLMG has requested better estimates of non-commercial removals since it was established in 1992, but has experienced little progress in addressing this information gap. Accurate information about non-commercial removals is necessary for fisheries management decisions and the NRLMG is 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.

The lack of accurate information on non-commercial and illegal catch contributes to uncertainty of stock assessments, detracts from the effectiveness of agreed harvest strategies, and undermines the incentives created by the quota management system. There is also a risk that uncontrolled and increasing non-commercial removals could undermine rebuild strategies and have negative effects on the quality of fishing success for all legitimate users, and on commercial ownership and utilisation rights and opportunities.

Information on the level of recreational harvest of rock lobsters for some areas has started to improve in recent years through specific onsite surveys and the 2011-12 National Panel Survey (a new version of this survey is scheduled for 2017-18). Customary harvest information is complete in some localised areas through the adoption of the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1999. However, for many areas there is still no mandatory requirement for customary authorisers to report summary harvest levels.

Estimates of illegal take are of most concern to the NRLMG because they make up a substantial portion of the TAC (371 tonnes in allowances nationally). 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 and the NRLMG and Rock Lobster Fisheries Assessment Working Group have little confidence in the estimates.

The NRLMG strongly urges MPI to make it a priority during 2017 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. The NRLMG also requests that rock lobster is given priority when recreational harvest surveys are being planned and designed.

MPI is committed to improving non-commercial removal estimates, but acknowledges that further work is needed to improve estimates of illegal removals from some rock lobster fisheries.

## **A1.2 FISHERIES ASSESSMENT AND MANAGEMENT APPROACH**

The NRLMG is extremely disappointed that the NZSFC continues to express misinformation in their submissions year after year about the rock lobster fisheries assessment and management approach.

The NRLMG has every confidence in the stock assessment and management approach for rock lobster. The NRLMG does not consider that a full review of rock lobster management is required because research information and experience is showing that the current approach is working. The rock lobster assessment approach is highly sophisticated and is regularly peer-reviewed by independent scientists to ensure that rock lobster continues to be the best managed species in New Zealand.

The NRLMG will continue to encourage the NZSFC to participate in the Rock Lobster Fisheries Assessment Working Group processes so that they can get a greater understanding of the rock research and assessment process. Working Group meetings are where technical details of rock lobster assessment can be discussed and debated. The NRLMG continues to be disappointed that the NZSFC has not taken up opportunities to be more involved in stock assessment processes..

## **A1.3 CRA 2 (BAY OF PLENTY) ROCK LOBSTER FISHERY**

Submitters Mr Peart and the NZSFC expressed concerns about the health of the CRA 2 rock lobster fishery. This is out of the scope of this review, as the fishery is not due for assessment this year. NZ RLIC note in their submission that whilst current CRA 2 abundance is less than preferred by legitimate and responsible extractive users there is no evidence of a 'sustainability issue' with the fishery.

A management procedure has been in use in the CRA 2 fishery since 2014 to ensure the stock is maintained above your statutory reference level,  $B_{MSY}$ . Based on the operation of this procedure no change was proposed for the CRA 2 TAC for April 2017 because commercial CPUE had not declined to a level to invoke a reduction (CPUE has declined by only 0.072 kg/potlift since 2014).

MPI is aware of the concerns expressed by some stakeholders about the availability of rock lobsters in CRA 2 and will be undertaking a review of the management regime in 2017/18. The CRA 2 stock assessment has been brought forward from 2018 to 2017 and local engagement will be carried out in 2017 to discuss issues facing the fishery and to identify potential solutions. This new science information and local engagement will inform a comprehensive review of management measures for 2018.

The CRA 2 Rock Lobster Management Company (CRAMAC 2) recently agreed to limit their commercial catch limit for the 2017/18 fishing year to 150 tonnes to show that the industry is serious about the progressive rebuild of this shared fishery (the TACC is 200 tonnes). This voluntary action was implemented for the current 2016/17 fishing year and incorporates periodic reviews of agreed industry performance indicators within season.

## **A1.4 CRA 9 (WESTLAND/TARANAKI) ROCK LOBSTER FISHERY**

A management procedure for CRA 9 was used to guide TAC setting for the 2014/15 fishing year. However, an audit of the CRA 9 CPUE data in 2015 suggested that the CRA 9 CPUE index was not a reliable indicator of abundance in CRA 9 because of the small number of vessels fishing in recent years (six or fewer) and the large size of the CRA 9 area, in which changes in the area fished could affect CPUE substantially. You agreed not to use the CRA 9 management procedure for April 2016 TAC setting as long as alternative management approaches were explored.

From April 2015 the CRA 9 industry has put effort into increasing their logbook programme coverage. There are now five regular logbook participants, which is improving information on catch rates and the size frequency distributions of lobsters in pots. NZ RLIC notes in their submission that considerable effort has gone into advising and instructing industry participants to correctly report effort and landing and this is helping to improve the quality of data available for future management considerations.

The stock status of rock lobster in CRA 9 is unknown. However, the size frequency distribution from recent logbook data shows a large proportion of fish are well above the minimum size limit, which suggests the stock has only had low fishing pressure in the recent history of the fishery. NRLMG will be asking the Rock Lobster Fisheries Assessment Working Group for further advice on potential management approaches and information needs during 2017.

## **A1.5 DIFFERENTIAL MINIMUM LEGAL SIZES**

Some submitters suggest changes to the smaller minimum legal size that applies to commercially caught rock lobsters in CRA 3 and/or CRA 7. As these measures are set by regulations, they are outside of the scope of this sustainability/catch limit review.

### **CRA 3**

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. Some recreational fishers remain concerned that this differential minimum size limit is affecting the availability of legal-sized male rock lobsters for recreational fishers over summer. These concerns relate predominately to the nearshore waters close to Gisborne.

Mr Jorion, Ms Coulston, NZRFC and NZSFC stress that the commercial male size must be increased to match the recreational size. Mr Jorion seems to be open to decreasing the recreational size down for male rock lobsters to 52 mm, but only if the change is year-round, and the NZRFC suggest that if equity in the size is not restored you must introduce spatial separation close to Gisborne out to three nautical miles.

CRAMAC 3 note that they undertook a two-day sampling programme in November 2016 from the Gisborne Port to Pouawa area to demonstrate the potential for recreational harvest when the commercial fishery is voluntarily closed from 1 September to 15 January. Standard 3 x 3 foot (0.914 x 0.914 m) pots were used and were set in depths from 1 to 17 fathoms (1.83 to 31.1 m). The survey showed there were reasonable numbers of male rock lobsters available over 54 mm tail width for recreational to access (see the CRAMAC 3 submission in Appendix 3 for the survey results).

MPI also sought community feedback on how the CRA 3 fishery was performing late in 2016. This feedback is currently being considered by MPI to determine next steps.

## **CRA 7**

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. Three submitters (Mr Parry, NZRFC and NZSFC) would like the commercial CRA 7 size to increase to match the recreational minimum legal size. NZRFC suggest a five-year trial of equalising the size limit between recreational and commercial fishers in CRA 7.

MPI is not proposing a review the CRA 7 minimum legal size at this time. In May 2012 the previous Minister agreed to retain the current CRA 7 commercial minimum legal size because of the significant impact removal would have on the CRA 7 industry. In 2014 you decided against allowing recreational fishers to take rock lobsters at the commercial size in CRA 7 because of compliance and enforcement challenges associated with a differential size regime for recreational fishers.

## **Commercial reporting in CRA 3 and CRA 7**

NZSFC and Ms Coulston also suggest that CRA 3 commercial fishers should report the proportions of 52 to 54 mm tail width male fish versus 54 mm tail width and over and CRA 7 should do likewise. The NRLMG notes that the proportions of commercial landings at 52 mm and under the 54 mm tail width for males and at or above 60 mm tail width for females can be estimated by looking at length frequencies collected through the catch sampling programme. The stock assessment takes the seasonal differences in MLS into account.

## Appendix 2: New CRA 4 management procedure specifications

In 2016 a new stock assessment was carried out for CRA 4. This assessment model was used as the operating model for evaluating new CRA 4 management procedures.

The NRLMG considered numerous CRA 4 management procedure options late in 2016 and have put forward two candidate rules, called *Rule 24* and *Rule 6*, for consideration.

Some important elements of the proposed new CRA 4 management procedures are:

- a) The output variable is TACC (tonnes);
- b) Offset-year standardised CPUE is used as an input to the rule to determine the TACC for the fishing year that begins in the following April;
- c) CPUE is calculated using the 2012 F2\_LFX procedure which uses:
  - i. landings to a licensed fisher receiver, along with recreational landings from a commercial vessel and the amount of rock lobsters returned to the water in accordance with Schedule 6 of the Act (i.e. highgraded rock lobsters),
  - ii. estimates, by vessel, of the ratio of annual landed catch divided by annual estimated catch to correct every landing record in a quota management area for the vessel;
- d) The management procedure is to be evaluated every year (no “latent year”), based on offset-year CPUE; and
- e) The minimum change threshold for the TACC is 5%. There is no maximum change threshold for the TACC.

The proposed new CRA 4 management procedures are both generalised plateau step rules, illustrated in Figures 8.3 and 8.4 above.

*For Rule 24:* between CPUE values of zero and 0.1 kg/potlift the TACC is zero; the TACC then increases linearly to 0.9 kg/potlift; between CPUEs of 0.9 and 1.3 kg/potlift the TACC is 420 tonnes; as CPUE increases above 1.3 kg/potlift, the TACC increases in steps with a width of 0.1 kg/potlift and a height of 5.3% of the preceding TACC.

*For Rule 6:* at a CPUE value of zero the TACC is zero; the TACC then increases linearly to 0.9 kg/potlift; between CPUEs of 0.9 and 1.3 kg/potlift the TACC is 380 tonnes; as CPUE increases above 1.3 kg/potlift, the TACC increases in steps with a width of 0.1 kg/potlift and a height of 5.3% of the preceding TACC.

The table below provides the results of the operation of the proposed new CRA 4 management procedures for the 2017/18 fishing year.

| Proposed CRA 4 rules               | Offset-year<br>'F2-LFX' CPUE at time<br>of analysis<br>(kg/potlift) | Rule result:<br>TACC (t) |
|------------------------------------|---|--------------------------|
| <i>Rule 24</i><br>(Option CRA4_01) | 0.685   | 307                      |
| <i>Rule 6</i><br>(Option CRA4_02)  | 0.685   | 289                      |