



# Review of Rock Lobster Sustainability Measures for 1 April 2014

Final Advice Paper

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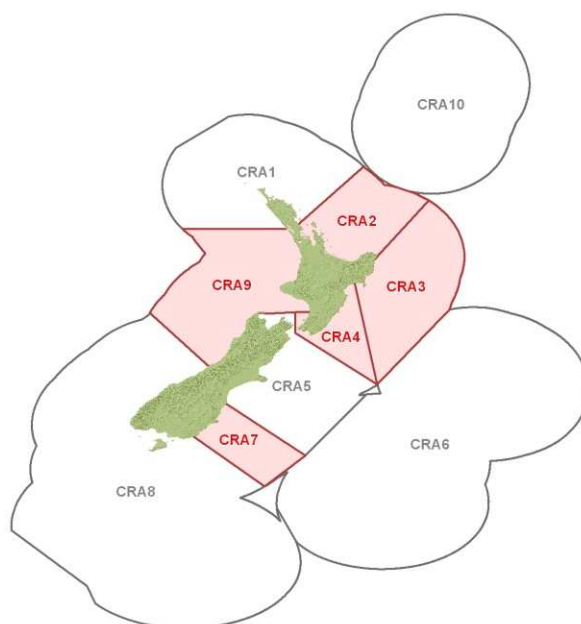
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# 1 EXECUTIVE SUMMARY

Figure 1.1 Map of rock lobster Quota Management Areas showing stocks under review in red.



You are being asked to make decisions on sustainability measures, under the Fisheries Act 1996 (the Act), for five rock lobster stocks for the fishing year beginning 1 April 2014.

Your decisions relate to the:

- a) Use of new management procedures to guide Total Allowable Catch (TAC) setting in CRA 2 (Bay of Plenty) and CRA 9 (Westland/Taranaki) rock lobster fisheries;
- b) Setting of TACs, allowances and Total Allowable Commercial Catches (TACCs) for :
  - CRA 3 (Gisborne), CRA 4 (Hawkes Bay/Wellington) and CRA 7 (Otago) rock lobster fisheries using existing management procedures;
  - CRA 2 and CRA 9 rock lobster fisheries using new management procedures.

A management procedure is a tool used to guide the setting of catch limits within the scope of the statutory structure of the Act. Management procedures for rock lobster are operated for each fishing year and deliver a TAC result annually.

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.

Section 13 requires you to set a TAC that moves the stock to, or maintains the stock at, a size at or above a level than can produce the maximum sustainable yield or at a level that is not inconsistent with this objective. The stock size that can produce the maximum sustainable yield is commonly called *Bmsy*.

All of the management procedures discussed in this Final Advice Paper are expected to move stock biomass to, or maintain stock biomass at, a size at or above *Bmsy* or the agreed proxy

(i.e. *Bref*<sup>1</sup>). The National Rock Lobster Management Group (NRLMG) aspires to manage the biomass of each rock lobster stock well above your statutory reference levels to provide for greater economic and utilisation benefits for all sectors.

The NRLMG considered the following final proposals for each rock lobster stock under review (Table 1.1).

**Table 1.1: Summary of final TAC, allowance and TACC proposals for CRA 2, 3, 4, 7 & 9 that were considered by the NRLMG**

Stock	Option	TAC	Customary	Recreational	Other mortality	TACC
CRA 2	<b>CRA2_01:</b> Be guided by the <u>new Rule 4</u> CRA 2 management procedure and decrease the TAC and TACC	416.5 t ↓	16.5 t	140 t	60 t	200 t ↓
	<b>CRA2_02:</b> Be guided by the <u>new Rule 6</u> CRA 2 management procedure and decrease the TAC and TACC	426.5 t ↓	16.5 t	140 t	60 t	210 t ↓
	<b>CRA2_03:</b> Retain the current CRA 2 TAC, allowances and TACC	452.583 t	16.5 t	140 t	60 t	236.083 t
CRA 3	<b>CRA3_01:</b> Be guided by the CRA 3 management procedure and increase the TAC and TACC	389.95 t ↑	20 t	20 t	89 t	260.95 t ↑
	<b>CRA3_02:</b> Retain the current CRA 3 TAC, allowances and TACC	354.5 t	20 t	20 t	89 t	225.5 t
CRA 4	<b>CRA4_01:</b> Be guided by the CRA 4 management procedure and decrease the TAC and TACC	662 t ↓	35 t	85 t	75 t	467 t ↓
	<b>CRA4_02:</b> Retain the current CRA 4 TAC, allowances and TACC	694.7 t	35 t	85 t	75 t	499.7 t
CRA 7	<b>CRA7_01:</b> Be guided by the CRA 7 management procedure and increase the TAC and TACC	86 t ↑	10 t	5 t	5 t	66 t ↑
	<b>CRA7_02:</b> Retain the current CRA 7 TAC, allowances and TACC	64 t	10 t	5 t	5 t	44 t
CRA 9 <sup>2</sup>	<b>CRA9_02:</b> Be guided by the <u>new Rule 4041</u> CRA 9 management procedure, set a TAC of 115.8 t and increase the TACC	115.8 t	20 t	30 t	5t	60.8 t ↑
	<b>CRA9_05:</b> Retain the current CRA 9 TACC (no TAC or allowances have been previously set for CRA 9)	N/A	N/A	N/A	N/A	47.008 t

<sup>1</sup> *Bref* is a proxy reference level; it is a way of setting a TAC under section 13(2A) of the Act that is not inconsistent with the objective of maintaining a stock at or above, or moving the stock towards or above a level that can maintain the maximum sustainable yield.

<sup>2</sup> Options CRA9\_01, 03 and 04 are excluded from the final proposal based on NRLMG feedback and submission analysis.

You may, however, choose to set an alternative TAC (and allocate it among Maori customary non-commercial fishing interests, recreational fishing interests, other sources of fishing-related mortality and the TACC) based on your assessment of best available information, in accordance with your statutory obligations (which may require further consultation if it is outside the range consulted on).

Overall the NRLMG considers once a management procedure has been agreed for use, its result should be followed unless there are compelling reasons in a particular case not to follow it. Departing from a management procedure result for a stock could mean that its performance in relation to stock sustainability indicators can become uncertain.

### **CRA 2 (Bay of Plenty) rock lobster fishery**

CRA 2 stock biomass in 2012 was 36% above *Bmsy*. The NRLMG has a desire to manage this shared fishery above *Bmsy* to provide improved economic and utilisation benefits.

The NRLMG recommends that you agree to use a new management procedure to guide TAC setting in CRA 2 for the first time. This management procedure approach will allow for much more rapid management responses than the conventional approach of periodic stock assessments followed by decision making.

The NRLMG advises there is very little difference in the two options proposed for CRA 2 with respect to the rate that a rebuild of the CRA 2 fishery is expected to occur.

Recreational, commercial and Ministry for Primary Industries (MPI) members of the NRLMG recommend that you agree to be guided by the new CRA 2 Management Procedure called '*Rule 4*' and decrease the TAC and TACC by 36.083 tonnes (Option CRA2\_01). These members support the most conservative TAC/TACC reduction to halt a decline of CRA 2 abundance and stimulate a rebuild of the stock for the benefit of all fishing sectors.

Customary NRLMG members recommend that you agree to be guided by the new CRA 2 Management Procedure called '*Rule 6*' and decrease the TAC and TACC by 26.083 tonnes (Option CRA2\_02). These members support this option because they consider that it would have less economic impact on the commercial sector in comparison to Option CRA2\_01. As with Option CRA2\_01, Option CRA2\_02 is also expected to stimulate a rebuild of the CRA 2 fishery.

The NRLMG notes that most submissions for CRA 2 supported the greater TAC/TACC decrease.

### **CRA 3 (Gisborne) rock lobster fishery**

CRA 3 stock biomass in 2013 was very likely (>90%) to be above *Bmsy*.

The NRLMG recommends that you agree to be guided by the existing CRA 3 management procedure and increase the TAC and TACC by 35.45 tonnes (Option CRA3\_01).

NRLMG recreational members continue to express serious concerns about the ongoing inequity in the size limit between recreational and commercial fishers and request that this issue is resolved immediately. These members express support for the CRA 3 TAC/TACC increase because abundance appears to be increasing in the fishery.

The NRLMG notes that submissions were divided on the CRA 3 proposals with commercial and some customary submitters supporting the TAC/TACC increase, and recreational and some customary submitters supporting the *status quo*.

#### **CRA 4 (Hawkes Bay/Wellington) rock lobster fishery**

CRA 4 stock biomass in 2013 was very likely (>90%) to be above *Bmsy*.

The NRLMG recommends that you agree to be guided by the existing CRA 4 management procedure and decrease the TAC and TACC by 32.7 tonnes (Option CRA4\_01). This decrease will ensure the CRA 4 stock is maintained above the target (*Bref*, which is higher than *Bmsy*).

The NRLMG notes that all of the submissions received for CRA 4 supported the TAC/TACC decrease.

#### **CRA 7 (Otago) rock lobster fishery**

CRA 7 stock biomass in 2013 was about as likely as not (40-60%) to be above the agreed proxy, *Bref*<sup>3</sup>.

Commercial, customary and MPI members of the NRLMG recommend that you agree to be guided by the existing CRA 7 Management Procedure and increase the TAC and TACC by 22 tonnes (Option CRA7\_01). These members consider that once a management procedure has been agreed for use, its result should be followed unless there are compelling reasons in a particular case not to follow it.

NRLMG recreational members recommend that you agree to retain the current CRA 7 TAC, allowances and TACC (Option CRA7\_02). These members consider that it is too early to increase the TACC and the current management approach in the fishery is not working because there is a lack of legal sized rock lobsters for recreational fishers.

The NRLMG notes that submissions were divided on the CRA 7 proposals with commercial and customary submitters supporting the TAC/TACC increase and recreational submitters supporting the *status quo*.

#### **CRA 9 (Westland/Taranaki) rock lobster fishery**

CRA 9 stock biomass in 2013 was 40% above *Bmsy*.

The NRLMG advises that the CRA 9 fishery is not fully utilised with only five commercial vessels fishing a small part of the management area. As such, there is limited information available to inform the new proposed CRA 9 management procedure.

Despite this limitation, the NRLMG recommends that you agree to use a new CRA 9 management procedure called '*Rule 4041*' to guide TAC setting in CRA 9 for the first time (Option CRA9\_02). The NRLMG considers that the proposed procedure results in a conservative management strategy for the fishery, which will enable the commercial fishery to develop and for further information to be collected.

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<sup>3</sup> A reliable *Bmsy* estimate is not available for CRA 7.



No TAC or allowances have been previously set for CRA 9. The NRLMG recommends that you set a TAC, allowances and a TACC for CRA 9 as follows:

- Set a CRA 9 TAC of 115.8 tonnes for the first time;
- Set an allowance for customary Maori interests of 20 tonnes;
- Set an allowance for recreational interests of 30 tonnes;
- Set an allowance for other sources of fishing-related mortality of 5 tonnes;
- Increase the TACC by 13.792 tonnes.

The NRLMG notes that most submitters supported the proposed new CRA 9 management procedure and the proposed TAC, allowances and TACC as outlined above.

## 2 SUMMARY OF RECOMMENDATIONS

### CRA 2 rock lobster fishery

The NRLMG recommends that for the fishing year commencing on 1 April 2014 you choose either:

**Option CRA2\_01** **Agreed / Not Agreed**  
(*Recreational, commercial and MPI preferred option*)

- i. **Agree** to be guided by the new *Rule 4* CRA 2 management procedure from the 2014-15 year onwards;

*And, resulting from the application of the new management procedure,*

- ii. decrease the CRA 2 TAC from 452.583 to 416.5 tonnes;
- iii. retain the customary allowance of 16.5 tonnes;
- iv. retain the recreational allowance of 140 tonnes;
- v. retain the allowance for other sources of fishing-related mortality of 60 tonnes;
- vi. decrease the TACC from 236.083 to 200 tonnes.

OR

**Option CRA2\_02** **Agreed / Not Agreed**  
(*Customary preferred option*)

- i. **Agree** to be guided by the new *Rule 6* CRA 2 management procedure from the 2014-15 year onwards;

*And, resulting from the application of the new management procedure,*

- ii. decrease the CRA 2 TAC from 452.583 to 426.5 tonnes;
- iii. retain the customary allowance of 16.5 tonnes;
- iv. retain the recreational allowance of 140 tonnes;
- v. retain the allowance for other sources of fishing-related mortality of 60 tonnes;
- vi. decrease the TACC from 236.083 to 210 tonnes.

OR

**Option CRA2\_03** **Agreed / Not Agreed**

- i. **Agree** to retain the current CRA 2 TAC, allowances and TACC.

### CRA 3 rock lobster fishery

The NRLMG recommends that for the fishing year commencing on 1 April 2014 you choose either:

**Option CRA3\_01** **Agreed / Not Agreed**  
(*NRLMG preferred option*)

- i. **Agree** to be guided by the CRA 3 management procedure and increase the CRA 3 TAC from 354.5 to 389.95 tonnes;

*And, within this,*

- ii. retain the customary allowance of 20 tonnes;
- iii. retain the recreational allowance of 20 tonnes;
- iv. retain the allowance for other sources of fishing-related mortality of 89 tonnes;
- v. increase the TACC from 225.5 to 260.95 tonnes.

OR

**Option CRA3\_02**

**Agreed / Not Agreed**

- i. **Agree** to retain the current CRA 3 TAC, allowances and TACC.

**CRA 4 rock lobster fishery**

The NRLMG recommends that for the fishing year commencing on 1 April 2014 you choose either:

**Option CRA4\_01**

**Agreed / Not Agreed**

*(NRLMG preferred option)*

- i. **Agree** to be guided by the CRA 4 management procedure and decrease the CRA 4 TAC from 694.7 to 662 tonnes;

*And, within this,*

- ii. retain the customary allowance of 35 tonnes;
- iii. retain the recreational allowance of 85 tonnes;
- iv. retain the allowance for other sources of fishing-related mortality of 75 tonnes;
- v. decrease the TACC from 499.7 to 467 tonnes.

OR

**Option CRA4\_02**

**Agreed / Not Agreed**

- i. **Agree** to retain the current CRA 4 TAC, allowances and TACC.

**CRA 7 rock lobster fishery**

The NRLMG recommends that for the fishing year commencing on 1 April 2014 you choose either:

**Option CRA7\_01**

**Agreed / Not Agreed**

*(Customary, commercial and MPI preferred option)*

- i. **Agree** to be guided by the CRA 7 management procedure and increase the CRA 7 TAC from 64 to 86 tonnes;

*And, within this,*

- ii. retain the customary allowance of 10 tonnes;
- iii. retain the recreational allowance of 5 tonnes;
- iv. retain the allowance for other sources of fishing-related mortality of 5 tonnes;
- v. increase the TACC from 44 to 66 tonnes.

OR

**Option CRA7\_02**  
(Recreational preferred option)

**Agreed / Not Agreed**

- i. **Agree** to retain the current CRA 7 TAC, allowances and TACC.

### **CRA 9 rock lobster fishery**

The NRLMG recommends that for the fishing year commencing on 1 April 2014 you choose either:

**Option CRA9\_02**  
(NRLMG preferred option)

**Agreed / Not Agreed**

- i. **Agree** to be guided by the new *Rule 4041* CRA 2 Management Procedure from the 2014-15 year onwards;

*And, resulting from the application of the new management procedure,*

- ii. set a CRA 9 TAC of 115.8 tonnes for the first time;
- iii. set a customary allowance of 20 tonnes;
- iv. set a recreational allowance of 30 tonnes;
- v. set an allowance for other sources of fishing-related mortality of 5 tonnes;
- vi. increase the TACC from 47.008 to 60.8 tonnes.

OR

**Option CRA9\_05**

**Agreed / Not Agreed**

- i. **Agree** to retain the current CRA 9 TACC (no TAC or allowances have been previously set for CRA 9).



Dr John McKoy  
Chair  
National Rock Lobster Management Group

Hon Nathan Guy  
Minister for Primary Industries

/ / 2014

## 3 BACKGROUND INFORMATION

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 Maori, amateur, commercial and environmental concerns and benefits”.*

### 3.1 Management procedures

A management procedure is a tool used to guide the setting of catch limits within the scope of the statutory structure of the Act. Management procedures are becoming more widely used, especially in South Africa, Australia, Europe, North America, and New Zealand.

A management procedure:

- a) Specifies what data will be used to make catch limit decisions;
- b) Specifies how the data will be collected and analysed;
- c) Contains a harvest control rule, which is a mathematical equation that determines what the specific output of the procedure will be, such as the exact TAC or TACC, given the data;
- d) Has been thoroughly simulation tested with a robust operating model.

#### 3.1.1 Evaluation

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 catches, length frequencies of the catch from observer and industry logbook data, tag-recapture data (i.e. growth information) and juvenile settlement levels. However, the most important inputs to the assessment are the abundance indices (catch-per-unit-effort) which are considered to be proportional to abundance.

Extensive peer-review of stock assessment models and management procedures occurs at the Rock Lobster Fisheries Assessment Working Group and at the November Stock Assessment Plenary. Each management procedure is 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.

#### 3.1.2 Main data input

Standardised catch-per-unit-effort (CPUE) up to the end of September each year is used as input to a management procedure to determine the TAC or TACC for the fishing year that begins in the following April.

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.

### 3.1.3 Management procedure benefits

The traditional approach used to set catch limits in many of New Zealand's fisheries is to undertake a stock assessment and then to provide recommendations on the TAC, sector allowances and the TACC. This approach has some disadvantages: stock assessment capacity is limited, and for rock lobster only one or two assessments can be carried out each year. Delays in updating a stock assessment can cause management action to be delayed and for catch limits to be set inappropriately for a fishery.

A management procedure approach 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 (agreement is obtained among managers and stakeholders before the procedure is implemented: they agree about the data inputs, the way the inputs will be treated to make inferences, the harvest control rule and the period for which the management procedure will be used);
- 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 need for regular stock assessments.

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

Management procedures are currently in place for the following rock lobster fisheries; CRA 3, CRA 4, CRA 5, CRA 7 and CRA 8.

Management procedures have been used by Ministers to guide statutory TAC setting in rock lobster fisheries for varying periods. The oldest example of the use 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. The review aims to ensure that 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 3.1 provides an outline of the use of current management procedures and when they are scheduled for review.

**Table 3.1: History of current management procedure use and their review schedule**

	CRA 3	CRA 4	CRA 5	CRA 7	CRA 8
First year the current management procedure was used	2010	2012	2012	2013	2013
Year of scheduled review	2014	2016	2016	2017	2017

### 3.2 Definition of stock indicators (*Bmsy*, *Bref*, *Bmin*)

Three stock indicators are relevant to evaluation of the proposals presented in this paper<sup>4</sup>:

- a) The statutory reference level, ***Bmsy***. 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. The stock size that can produce the maximum sustainable yield is commonly called *Bmsy*.
- b) The conceptual proxy, ***Bref***<sup>5</sup>. The use of *Bref* 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 *Bmsy* cannot be estimated reliably using best information. *Bref* 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, ***Bmin***. *Bmin* is the stock size associated with lowest abundance in the observed history of the fishery.

For each of the rock lobster stocks discussed in this paper, there are some differences in the indicators that are reported. This is because the Rock Lobster Fisheries Assessment Working Group has continually improved the way indicators are calculated over time.

### 3.3 The MPI Harvest Strategy Standard

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

<sup>4</sup> Stock size is measured in terms of autumn-winter vulnerable biomass for the *Bmsy*, *Bref* and *Bmin* 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>5</sup> The Guidelines for Harvest Strategy Standards describe the *Bref* concept as follows: “Conceptual proxies for BMSY, FMSY 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 BMSY, FMSY 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 BMSY: 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]

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

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

For rock lobster:

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

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

### **3.4 Draft National Fisheries Plan for Inshore Shellfish Fisheries**

Rock lobsters are 'Group 1' stocks in the Draft MPI National Fisheries Plan for Inshore Shellfish Fisheries. Stocks in this group are highly desired by all sectors and tend to be fully utilised. Objectives for this group are to maximise the overall social, economic and cultural benefit obtained from each stock, and to maintain biomass of each stock at or above *Bmsy* (or an accepted proxy i.e. *Bref*). The management approach for these stocks is to monitor and manage them closely to ensure full utilisation can continue in a sustainable way.

The use of responsive management procedures and regular review of rock lobster TACs is consistent with this management approach.



## 4 NEW MANAGEMENT PROCEDURES TO GUIDE TAC SETTING IN CRA 2 AND CRA 9

In this section, new management procedures for CRA 2 and CRA 9 rock lobster fisheries are outlined and discussed.

### 4.1 Reasons for new management procedures

Management procedures are not currently in place for CRA 2 or CRA 9. As discussed in section three above, the NRLMG considers that the use of management procedures in rock lobster fisheries has a number of advantages over the traditional stock assessment approach.

The CRA 2 fishery has had infrequent stock assessments, in part because of limited recreational harvest information up until now. CRA 2 was last assessed in 2002 before a new stock assessment model was developed. The 2013 CRA 2 stock assessment model was used as the basis for the operating model for evaluating new CRA 2 management procedures.

No formal stock assessment has been performed for CRA 9. In 2013 an informal CRA 9 stock assessment was performed with a surplus-production model. This assessment model was simpler than the complex length-based model that has been used for other rock lobster fisheries.

The utility of the simple assessment model for evaluating management procedures was explored in 2011. This was done by comparing the performance of a surplus-production model and a multi-stock length-based model for the CRA 5 (Canterbury/Marlborough) rock lobster fishery. This comparative study concluded that the simple surplus-production model performed adequately for developing management procedures<sup>6</sup>.

### 4.2 Consultation and submissions

MPI, on behalf of the NRLMG, consulted on the NRLMG's initial position paper (IPP) on proposals to use new management procedures to guide CRA 2 and CRA 9 TAC setting between 24 January and 21 February 2014. The options that were proposed in the IPP are shown in Table 4.1.

**Table 4.1: Summary of IPP options for CRA 2 and CRA 9**

Stock	Option	Description
CRA 2	CRA2_A	Agree to use the <u>new Rule 4</u> CRA 2 management procedure to guide TAC setting in CRA 2
	CRA2_B	Agree to use the <u>new Rule 6</u> CRA 2 management procedure to guide TAC setting in CRA 2
	CRA2_C	Continue to use periodic stock assessments to guide TAC setting in CRA 2 ( <i>status quo</i> )

<sup>6</sup> Breen, P. A. 2011. Operational management procedure evaluations for CRA 5 using a surplus-production operating model. Unpublished Final Research Report for Ministry of Fisheries Research project CRA2009-01, Objective 5. NZ RLIC Ltd. 15 December 2011. 34 pp.

	<b>CRA9_A</b>	Agree to use the <u>new Rule 4041</u> CRA 9 management procedure to guide TAC setting in CRA 9
<b>CRA 9</b>	<b>CRA9_B</b>	Agree to use the <u>new Rule 4144</u> CRA 9 management procedure to guide TAC setting in CRA 9
	<b>CRA9_C</b>	Continue to use periodic 'informal' stock assessments to guide TAC setting in CRA 9 ( <i>status quo</i> )

Seven written submissions were received from the following organisations or groups on the IPP options:

- CRA 9 Industry Association Incorporated (CRAMAC 9)
- New Zealand Recreational Fishing Council (NZRFC)
- New Zealand Rock Lobster Industry Council (NZ RLIC), with support from the CRA 2 Rock Lobster Management Company Limited (CRAMAC 2)
- New Zealand Sport Fishing Council, including supporters of LegaSea (NZSFC)
- Ngati Porou Seafoods Limited (Ngati Porou)
- Te Hoiere Asset Holding Company Limited (Te Hoiere)
- Te Ohu Kaimoana Trustee Limited (Te Ohu).

Full copies of the submissions are provided in Appendix 7. Each submission is discussed further below as relevant to each stock.

Initial consultation was also undertaken with tangata whenua and fishing representatives from the CRA 2 fishery at a multi-stakeholder meeting in May 2013. The following joint sector aspirations were identified by MPI at this meeting:

- Higher abundance (including a wide size distribution of rock lobsters);
- Improved stability;
- Improved CPUE;
- Improved information on non-commercial catches and recruitment dynamics.

The first three aspirations were used to guide development of the new CRA 2 management procedures.

In November and December 2013, MPI also sought feedback from specific Iwi forums and Regional Recreational Forums about the NRLMG's initial proposals for CRA 2 and CRA 9. This feedback was considered in developing the proposals.

## 4.3 Proposed new CRA 2 management procedures

### 4.3.1 Final proposals

The NRLMG proposes that you consider two management procedure options for CRA 2 (called '*Rule 4*' and '*Rule 6*') (Table 4.2).

**Table 4.2: Summary of final proposals for CRA 2**

Stock	Option	Description
CRA 2	CRA2_A	Agree to use the <u>new Rule 4</u> CRA 2 management procedure to guide TAC setting in CRA 2
	CRA2_B	Agree to use the <u>new Rule 6</u> CRA 2 management procedure to guide TAC setting in CRA 2

The specifications of the proposed new CRA 2 management procedures are described in Appendix 2.

If you choose to use one of these procedures to guide TAC setting, it is recommended that you would use them for 5 years from the 2014-15 to 2018-19 fishing years unless there were compelling reasons in a particular case not to follow the rule results.

#### 4.3.2 Overview of submissions

##### *Support for Option CRA2\_A*

Recreational submitter NZRFC and commercial submitter NZ RLIC (with support from CRAMAC 2) support the use of the new CRA 2 management procedure called '*Rule 4*' to guide TAC setting (Option CRA2\_A).

The NZRFC considers that the most conservative management procedure should be implemented for CRA 2, but note concerns about how management procedures are now being used to lock in increased TACCs while at the same time reducing or limiting non-commercial allowances.

The NZ RLIC submits that the clear preference of the CRA 2 industry is to take the most responsible and conservative option so as to halt further stock decline and accelerate an intended rebuild of the CRA 2 fishery.

##### *Support for Option CRA2\_B*

Customary submitters Ngati Porou and Te Ohu support the use of the new CRA 2 management procedure called '*Rule 6*' to guide TAC setting (Option CRA2\_B).

Ngati Porou submits that the sector aspirations for the CRA 2 fishery (i.e. higher abundance, improved stability and improved CPUE) will be better managed under a management procedure approach. Ngati Porou considers that the *Rule 6* CRA 2 management procedure would have less economic impact on the industry.

Te Ohu considers that management procedures provide more value than the traditional management strategies and are an effective way to make decisions quickly and responsively.

##### *Other*

Recreational submitter the NZSFC is opposed to the proposed CRA 2 options. The NZSFC asks you to address the sustainability concerns of non-commercial stakeholders by agreeing to stop the use of management procedures based on CPUE and to initiate a full review of rock lobster management. The NZSFC also considers that the CRA 2 management procedure options are totally inadequate to turn the fishery around from years of overfishing.

### 4.3.3 Analysis of final proposals

This section analyses the approaches proposed for you to use to guide CRA 2 TAC setting. Refer to section five for an outline and discussion of the specific TAC, allowance and TACC proposals for CRA 2.

#### *Sustainability*

Use of the new CRA 2 management procedures to guide CRA 2 TAC setting should not pose a risk to stock sustainability (Options CRA2\_A and CRA2\_B). Ongoing application of either CRA 2 management procedure is expected to maintain the CRA 2 stock above *Bmsy* with greater than 50% probability and *Bmin* with greater than 90% probability.

The NRLMG notes the new CRA 2 management procedure called '*Rule 4*' is the most conservative of the two options. However, there is very little difference in the performance of both procedures in relation to rebuilding stock abundance and providing improved utilisation benefits for all sectors (Table 4.3).

**Table 4.3: Indicator results from base case evaluations for CRA 2 *Rule 4* and *Rule 6* (based on 1000 20-year runs for each rule)**

	Option CRA2_A <i>Rule 4</i>	Option CRA2_B <i>Rule 6</i>
<b><i>Stock Indicators</i></b> <sup>7</sup>		
The proportion of years in which biomass was <u>less</u> than:		
- <i>Bmsy</i>	4.2 %	7.3 %
- <i>Bmin</i>	2.1 %	4.5 %
The proportion of years in which SSB was <u>less</u> than 20% <i>SSB0</i>	0 %	0 %
<b><i>Catch Indicators</i></b>		
Minimum commercial catch	199.9 tonnes	209.8 tonnes
Average commercial catch	208.1 tonnes	215.1 tonnes
Average recreational catch	72.0 tonnes	69.2 tonnes
Average CPUE	0.48 kg/potlift	0.46 kg/potlift
Stability – the average annual change in TACC	3.0%	2.5 %

#### *Utilisation*

Simulation testing of the new CRA 2 management procedures suggests they will improve the current utilisation benefit of the CRA 2 fishery for all sectors by increasing the stock from its current size. This is demonstrated by the average CPUE indicator. 2013 standardised offset year CPUE was 0.37 kg/potlift and it is predicted that average CPUE should be 0.48 kg/potlift under ongoing application of *Rule 4* and 0.46 kg/potlift under *Rule 6*.

The main difference between the two rules relates to where the TACC would be held constant between CPUEs of 0.3 to 0.5 kg/potlift. Under *Rule 4* this is a TACC of 200 tonnes, whereas under *Rule 6* this is a TACC of 210 tonnes. At this range of CPUEs, *Rule 4* would have the greatest impact on the industry through lower available catch and would rebuild the stock slightly faster.

<sup>7</sup> An explanation of the stock indicators is provided in the background section on page 8.

The CRA 2 management procedure is not designed to lock in a TACC. This is because both procedures propose a TACC decrease for the 2014/15 fishing year of 36 or 26 tonnes. If CPUE in the CRA 2 fishery declines below 0.3 kg/potlift further TACC reductions would be proposed.

There is also a trade-off between recreational catch and commercial catch. Modelling suggests that any decrease in commercial catch results in greater average catch for recreational fishers, because of increased stock abundance. In the CRA 2 example, *Rule 6* has a higher average commercial catch than *Rule 4* (by about 7 tonnes), but a lower average recreational catch (by about 3 tonnes).

## 4.4 Proposed new CRA 9 management procedure

### 4.4.1 Final proposals

The NRLMG proposes that you consider one management procedure option for CRA 9 (called '*Rule 4041*') (Table 4.4). Based on NRLMG feedback and analysis of submissions Option CRA9\_A1 has replaced Option CRA9\_A, and Option CRA9\_B has been excluded from the final proposals. No submissions were received in support for Option CRA9\_B – agree to use the new CRA 9 management procedure called '*Rule 4144*' to guide CRA 9 TAC setting.

**Table 4.4: Summary of final proposals for CRA 2 and CRA 9**

Stock	Option	Description
CRA 9	CRA9_A1 (modified option)	Agree to use the new <i>Rule 4041</i> CRA 9 management procedure to guide TAC setting in CRA 9

The specifications of the proposed new CRA 9 management procedure are described in Appendix 6. If you choose to use this procedure to guide TAC setting, it is recommended that you would use it for 5 years from the 2014-15 to 2018-19 fishing years unless there were compelling reasons in a particular case not to follow the rule results.

### 4.4.2 Overview of submissions

#### *Support for Option CRA9\_A*

Recreational submitter the NZRFC supports the use of the new CRA 9 management procedure called '*Rule 4041*' to guide TAC setting (Option CRA9\_A), but note concerns about the potential increase in the TACC once the procedure is in place.

Commercial submitters CRAMAC 9 and NZ RLIC and customary submitters Te Hoiere and Te Ohu expressed support for Option CRA9\_A. However, these submitters request that a further modification is applied to make the rule more conservative in relation to future TACC increases. CRAMAC 9 and NZ RLIC specifically request that a maximum change threshold is applied to *Rule 4041* so that the TACC increases only by one step at a time if the CPUE allows for a step or steps to be taken.

#### *Other*

As expressed above for CRA 2, the NZSFC does not support the current management approach for rock lobster. The NZSFC, however, noted in their submission that the management procedure proposed for CRA 9 is reasonably conservative.

### 4.4.3 Analysis of final proposals

#### *Sustainability*

Use of the new CRA 9 management procedure to guide CRA 9 TAC setting should not pose a risk to stock sustainability (Option CRA9\_A1). Ongoing application of the CRA 9 management procedure is expected to maintain the stock above *Bmsy* with greater than 50% probability and *Bmin* with greater than 90% probability (Table 4.5)

**Table 4.5: Indicator results from base case evaluations for CRA 9 Rule 4041 (based on 2500 50-year runs for each rule)**

	Option CRA9_A1 Rule 4041
<b>Stock Indicators<sup>8</sup></b>	
The proportion of years in which biomass was <u>less</u> than:	
- <i>Bmsy</i>	6.4 %
- <i>Bmin</i>	1.1 %
<b>Catch Indicators</b>	
Minimum commercial catch	40.0 tonnes
Average commercial catch	48.4 tonnes
Average recreational catch	27.9 tonnes
Average CPUE	2.02 kg/potlift
Stability – the average annual change in TACC	8.8 %

#### *Utilisation*

Simulation-testing of the new CRA 9 management procedure suggests it will provide a high utilisation benefit of the CRA 9 fishery for all sectors by maintaining stock abundance well above *Bmsy*.

The NRLMG supports submitter proposals to modify the *Rule 4041* CRA 9 management procedure to make it more conservative and prevent any large increases in the TACC in the future.

The modification would result in a proposed maximum TACC increase of only 15% from the preceding year if CPUE increased (i.e. CPUE fell on the steps of the rule). However, if the procedure proposed a TACC decrease, the TACC will be changed based on the result of the operation of the procedure (i.e. there would be no maximum decrease threshold).

The NRLMG advises that a CRA 9 TAC/TACC increase could be proposed after a management procedure is in place. This is because of a likely increase in the numbers of larger lobsters that will be landed in CRA 9 - significantly increasing the CPUE in a way that does not reflect changes in abundance. However, the added modification will help to prevent large increase in the TACC.

<sup>8</sup> An explanation of the stock indicators is provided in the background section on page 8.

## 4.5 Other considerations

If you consider the use of management procedures to guide TAC setting for CRA 2 and CRA 9 inappropriate, periodic stock assessment results would be used to guide TAC setting.

The NRLMG notes that compared to a management procedure approach, using periodic stock assessments to guide TAC setting:

- Would be less responsive to observed changes in stock abundance in the fishery;
- Would provide less certainty of achieving desired sustainability and utilisation outcomes;
- Might result in less cost efficient management of the fishery.

The NRLMG advises that recent CRA 2 and CRA 9 assessments could be used to inform TAC setting in these fisheries. However, this would not occur for April 2014 TAC setting because further consultation and assessment of the TAC options would be required first.

## 4.6 Additional comments

In response to a number of technical assertions made by the NZSFC about the rock lobster management approach in their submission, 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 to rebuild and maintain healthy rock lobster abundance levels.

Many of the points raised by the NZSFC are better considered at the Rock Lobster Fisheries Assessment Working Group table where technical details of rock lobster assessment are regularly debated. The NRLMG will be encouraging the NZSFC to participate in this scientific forum.

The NRLMG notes that the CRA 2 stock assessment was scientifically peer reviewed and accepted as a model of the fishery. Also, all of the management procedures discussed in this paper are consistent with your statutory obligations.

## 4.7 NRLMG recommendations

The NRLMG reached agreement on a single recommendation for CRA 9, but were unable to reach a consensus recommendation on a preferred CRA 2 management procedure option.

### **CRA 2**

#### *Use the new rule 4 CRA 2 management procedure*

Recreational, commercial and MPI members of the NRLMG recommend that you agree to use the new *Rule 4* CRA 2 management procedure to guide TAC setting in CRA 2 (Option CRA2\_A). These members support the most conservative management procedure option to halt a decline of CRA 2 abundance and stimulate a rebuild of the CRA 2 stock for the benefit of all fishing sectors.

OR

*Use the new rule 6 CRA 2 management procedure*

Customary NRLMG members recommend that you agree to use the new *Rule 6* CRA 2 management procedure to guide TAC setting in CRA 2 (Option CRA2\_B). These members support this option because they consider that it would have less economic impact on commercial fishers (in comparison to *Rule 4*). As with Option CRA2\_A, Option CRA2\_B is also expected to stimulate a rebuild of the CRA 2 fishery.

**CRA 9**

*Use the new rule 4041 CRA 9 management procedure*

The NRLMG recommends that you use the new *Rule 4041* CRA 9 management procedure to guide TAC setting in CRA 9 (Option CRA9\_A1). The NRLMG supports a conservative management approach for the CRA 9 fishery while ways are explored to develop the commercial fishery and further information is gathered to support decision-making.



## 5 PROPOSED TACs, ALLOWANCES AND TACCs FOR CRA 2, CRA 3, CRA 4, CRA 7 & CRA 9

In this section, TACs, allowances and TACCs for CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9 rock lobster fisheries are outlined and discussed.

### 5.1 Reasons for reviewing TACs

Management procedures are currently in place for CRA 3, CRA 4, CRA 5, CRA 7 and CRA 8 rock lobster fisheries. New management procedures have been evaluated for CRA 2 and CRA 9 in 2013. These new management procedures are described further in section four above.

Each year, management procedures are operated to deliver a TAC result that is consistent with your statutory obligations. Operation of the CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9 management procedures result in proposed TAC changes. Operation of the CRA 5 and CRA 8 management procedures result in no proposed changes to the TACs<sup>9</sup>.

The NRLMG supports the use of management procedures to guide TAC setting for rock lobster fisheries because they allow for much more rapid management responses than does the conventional approach of periodic stock assessments followed by decision making. The delay caused by having infrequent stock assessments can cause TAC levels to lag behind stock abundance.

### 5.2 Central statutory considerations

Your central statutory considerations for TAC setting are discussed below and for each individual stock as relevant. Additional statutory considerations are discussed in Appendix 1.

#### 5.2.1 TAC: Section 13

Under section 13(2) of the Act you must set a TAC that maintains at or above, restores 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 estimate of both current biomass and the biomass that can produce the maximum sustainable yield (commonly called *Bmsy*).

Where current biomass or *Bmsy* estimates are not available or not reliable then you are required to apply section 13 (2A) of the Act instead. 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, *Bmsy*.

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. *Bmsy*) under section 13(2)(b) or (c) or (2A), you must have regard to such social, cultural and economic factors that you consider relevant.

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<sup>9</sup> The current CRA 5 and CRA 8 management procedures are not discussed further in this paper because there is no proposal to change the management procedure approach, or change the TAC, allowances or TACC for the 2014-15 fishing year.

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<sub>msy</sub>* or the agreed proxy (i.e. *B<sub>ref</sub>*) as required under section 13 of the Act.

### **5.2.2 TACC: 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 Maori 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. Allocation options are discussed individually for each rock lobster stock later in this section.

When allowing for Maori customary non-commercial fishing interests you must take into account any relevant *mātaitai* reserves within the relevant quota management areas and any area closure or fishing method restriction or prohibition within those areas made under section 186A of the Act. There are several *mātaitai* reserves and temporary closures that fall within the areas of the rock lobster stocks discussed in this paper. The NRLMG considers that existing CRA 2, CRA 3, CRA 4, and CRA 7 and proposed CRA 9 customary allowances adequately provide for the harvest of rock lobster likely to be taken from the existing customary management controls.

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.

## **5.3 Consultation and submissions**

MPI, on behalf of the NRLMG, consulted on the NRLMG's IPP on proposals to set TACs, allowances and TACCs for CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9 rock lobster fisheries between 24 January and 21 February 2014.

16 written submissions were received from the following organisations, groups or individuals on the IPP options:

- CRA 9 Industry Association Inc (CRAMAC 9)
- Iain Storrie
- New Zealand Recreational Fishing Council (NZRFC)
- New Zealand Rock Lobster Industry Council (NZ RLIC) ), with support from the CRA 2 Rock Lobster Management Company Limited (CRAMAC 2) and the CRA 4 Rock Lobster Industry Association (CRAMAC 4)
- New Zealand Sport Fishing Council, including supporters of LegaSea (NZSFC)
- New Zealand Underwater Association (NZUA)
- Ngati Oneone Hapu (Ngati Oneone)
- Ngati Porou Seafoods Limited (Ngati Porou)

- Nick Herd - recreational fisher
- Otago Rock Lobster Industry Association Inc (CRAMAC 7)
- Ruamano Quota Holding Limited (Ruamano)
- Stuart Arnold - recreational fisher
- Tairawhiti Rock Lobster Industry Association Inc (CRAMAC 3)
- Tamanuhiri Tutu Poroporo Trust (Tamanuhiri)
- Te Hoiere Asset Holding Company Limited (Te Hoiere)
- Te Ohu Kaimoana Trustee Limited (Te Ohu).

Full copies of the submissions are provided in Appendix 7. Each submission is discussed further below as relevant for each stock.

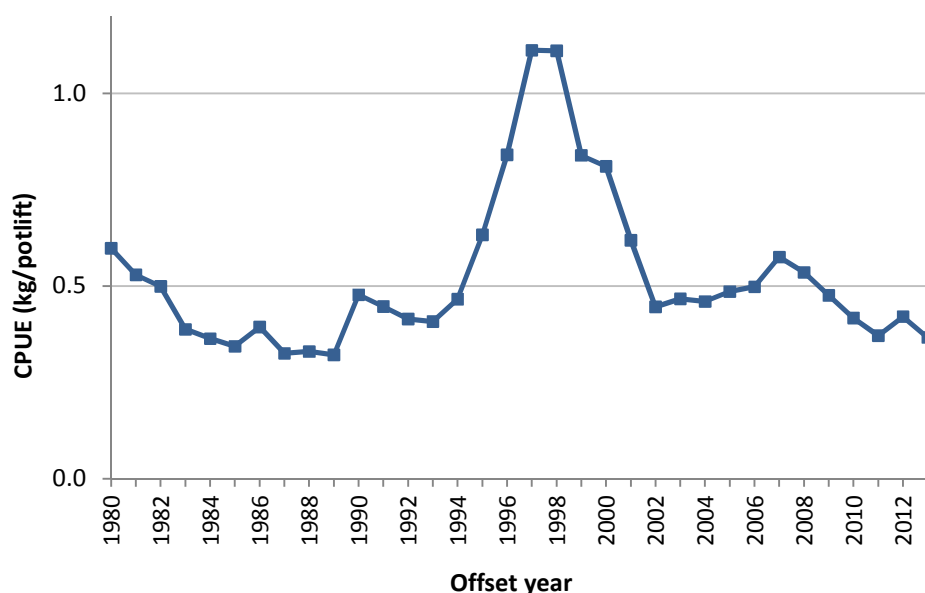
## 5.4 CRA 2 rock lobster fishery

### 5.4.1 CRA 2 stock status

The 2013 CRA 2 stock assessment results indicated that 2012 stock biomass was 36% above *B<sub>msy</sub>* and 21% below *B<sub>ref</sub>*<sup>10</sup>. With 2012 catch levels and recent recruitments, the assessment predicted that average projected stock biomass in 2016 would be roughly the same as current biomass.

Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 2 and is the abundance indicator used in the new CRA 2 management procedures. The history of offset year (i.e. October through September) CRA 2 commercial CPUE is shown in Figure 5.1. Since 2007, CRA 2 CPUE has generally decreased.

Figure 5.1: The history of offset CPUE in CRA 2<sup>11</sup>



<sup>10</sup> *B<sub>ref</sub>* for CRA 2 is based on the years 1979-81, as suggested by the Rock Lobster Fisheries Assessment Working Group in October 2013.

<sup>11</sup> Based on the 2012 *F2-LFX* procedure for preparing data for CPUE standardisation.

## 5.4.2 Final proposals

The NRLMG proposes that you consider three options for CRA 2 (Table 5.1). These options are the same as the IPP.

**Table 5.1: Final proposed CRA 2 TAC, allowance and TACC options**

Option	TAC	Customary	Recreational	Other mortality	TACC
<b>CRA2_01:</b> Be guided by the <u>new Rule 4</u> CRA 2 management procedure and decrease the TAC and TACC	416.5 t ↓	16.5 t	140 t	60 t	200 t ↓
<b>CRA2_02:</b> Be guided by the <u>new Rule 6</u> CRA 2 management procedure and decrease the TAC and TACC	426.5 t ↓	16.5 t	140 t	60 t	210 t ↓
<b>CRA2_03:</b> Retain the current CRA 2 TAC, allowances and TACC	452.583 t	16.5 t	140 t	60 t	236.083 t

## 5.4.3 Overview of CRA 2 submissions

### *Support for Option CRA2\_01*

Recreational submitters Mr Arnold, Mr Herd and NZUA and commercial submitter NZ RLIC (with support from CRAMAC 2) support Option CRA2\_01 – be guided by the new *Rule 4* CRA 2 management procedure and decrease the TAC and TACC by 36.083 tonnes.

Mr Herd and Mr Arnold consider that the commercial take is excessive in CRA 2 and this is having a significant impact on the recreational fishery.

The NZ RLIC states that the clear preference from the CRA 2 industry is take the most responsible TAC/TACC reduction, but this is conditional upon a commensurate reduction to the current recreational allowance and commitment from MPI to work with industry to effectively constrain illegal unreported removals. The NZ RLIC considers it is irresponsible and also inequitable to rely solely on a TACC reduction intended to improve stock abundance knowing that the reduction will likely have a more immediate impact in terms of improving recreational fishing success.

### *Support for Option CRA2\_02*

Customary submitters Ngati Porou and Te Ohu support Option CRA2\_02 – be guided by the new *Rule 6* CRA 2 management procedure and decrease the TAC and TACC by 26.083 tonnes.

Ngati Porou considers that the *Rule 6* CRA 2 management procedure will have less economic impact on the industry. Ngati Porou also expressed concerns that any increase in rock lobster abundance created by a reduction in the TACC will simply be taken through the recreational catch.

Te Ohu expressed concerns about the potential for CRA 2 recreational catches to increase and the impact that this could eventually have on TAC allocations in the future.

### *Support for Option CRA2\_03*

No submissions were received on Option CRA2\_03 – retain the current CRA 2 TAC, allowances and TACC.

### *Other comments*

Recreational submitter the NZSFC opposes the options proposed for CRA 2. Instead they urge you to take management action required to double biomass in CRA 2, to mitigate the risks associated with low biomass levels and to address the serious public concerns over the depleted state of the fishery.

## **5.4.4 Analysis of CRA 2 final proposals**

### ***TAC Setting***

Best available information suggests the current CRA 2 stock is above *Bmsy*. Accordingly you may set or vary the CRA 2 TAC to maintain the stock at or above *Bmsy* (section 13(2)(a)).

*Options CRA2\_01 and CRA2\_02 – Be guided by a new CRA 2 management procedure and decrease the TAC*

For the 2014-15 fishing year it is proposed that the CRA 2 TAC would be set at:

- 416.5 tonnes under Option CRA2\_01; or
- 426.5 tonnes under Option CRA2\_02.

Each proposed TAC variation is guided by results from the operation of two proposed new CRA 2 management procedures (*Rule 4* and *Rule 6*). Important elements of the new CRA 2 management procedures are set out further below, in section four above and in Appendix 2. There are slight differences in the parameters of each management procedure.

Ongoing application of the CRA 2 management procedures is expected to maintain the stock above *Bmsy*. Simulation testing indicates the new procedures would maintain the stock above *Bmsy* with greater than 93% probability.

The NRLMG notes the CRA 2 stock was 36% above *Bmsy* in 2012. However, the NRLMG (and submitters) propose that the TAC is reduced to enable the stock to be maintained above *Bmsy* and consequently provide improved economic and utilisation benefits. Recreational submitter the NZSFC suggested that the TAC needs to be cut further than proposed so that biomass in CRA 2 can be doubled. The NRLMG does not consider this action necessary.

Each of the proposed TAC decrease options will reduce the current utilisation benefit of the fishery. How the reduction is shared amongst the fishery sectors will depend on allocation decisions, which are discussed further below.

Overall it is expected that ongoing application of either CRA 2 management procedure will improve fishing opportunities for all sectors by increasing the stock above its current size.

### *Option CRA2\_03 – Retain the current CRA 2 TAC*

Under Option CRA2\_03, the current CRA 2 TAC of 452.583 tonnes would be retained for the 2014-15 fishing year.

This option is not preferred by the NRLMG. Maintaining the current TAC could result in a further decline in CRA 2 stock abundance and this could affect the utilisation benefit for all fishing sectors. At a multi-stakeholder meeting in Tauranga in May 2013, all fishery participants expressed a desire to improve abundance in the CRA 2 fishery.

### **Setting of non-commercial allowances and the TACC**

#### Allowances for customary Maori, recreational interests and other mortality

Table 5.2 below provides you with information on current non-commercial allowances for CRA 2 and stock assessment model assumptions of non-commercial catch.

**Table 5.2: Current CRA 2 allowances and model assumptions of non-commercial catches**

<b>CRA 2</b>	<b>Customary</b>	<b>Recreational</b>	<b>Other mortality</b>	<b>Total</b>
Current allowances	16.5 tonnes	140 tonnes	60 tonnes	216.5 tonnes
Non-commercial catch assumptions for the 2013 stock assessment	10 tonnes (constant)	Assumed to vary with changes in biomass. Estimated 56.37 tonnes for 2012.	88 tonnes (constant)	154.37 tonnes in 2012

Based on the non-commercial information provided above and an analysis of submissions, the NRLMG proposes that the allowances set for customary Maori, recreational interests and other sources of fishing-related mortality (e.g. illegal fishing) do not change under Options CRA2\_01 and CRA2\_02 for the following reasons:

1. Best available information suggests existing customary Maori catch is within the allowance allocated for this interest at this time. Although incomplete, reported customary catches under the Fisheries (Kaimoana) Regulations 1998 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013<sup>12</sup> suggest between 100 to 1000 rock lobsters (below 1 tonne) were harvested per year from 2005-2012.
2. Model assumptions of recreational catch suggest that current recreational removals are within the allowance allocated for this interest at this time. Also, the large-scale multi-species survey estimated CRA 2 recreational catch at 40.86 tonnes for the period 1 October 2011 to 30 September 2012.
3. The allowances made for customary Maori and recreational interests do not constrain their overall harvest.
4. The existing other mortality allowance may be smaller than current removals. There is, however, considerable uncertainty associated with the 88 tonne illegal catch estimate that was used in the stock assessment model to calculate illegal catches from 1996 to 2012. This is because there is currently no robust or defensible methodology that MPI can use to accurately estimate illegal catches and the catches cannot be verified. In the model, a sensitivity test was carried out using lower illegal catch and this had generally

<sup>12</sup> Previously regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986.

small effects on the model results. The NRLMG proposes no change to the other mortality allowance until illegal catches can be better quantified. In the meantime, the NRLMG sector members recommend that every effort is made to reduce illegal take in the fishery.

An option to reduce the CRA 2 recreational allowance was not explicitly consulted on in the IPP because it was not considered the right time. However, the NRLMG advises that sector members of the group agreed in late 2013 that a 20 tonne recreational allowance decrease was appropriate for the following reasons:

1. A recreational allowance decrease in conjunction with a decrease to the TACC reflects the shared fishery nature of CRA 2 and the desire for fishery participants to enhance stock abundance;
2. It is doubtful that CRA 2 recreational fishers are currently catching the 140 tonne allowance, therefore, it is not unreasonable for recreational fishers to receive a 20 tonne decrease to their allowance;
3. The allowance made for recreational fishers does not constrain their actual harvest;
4. There were no proposals to vary the CRA 2 recreational daily bag limit or minimum legal size.

The NRLMG proposes to consider a change to the CRA 2 recreational allowance in the future.

### TACC

It is proposed that the CRA 2 TACC is reduced by 36.083 tonnes under Option CRA2\_01 and by 26.083 tonnes under Option CRA2\_02.

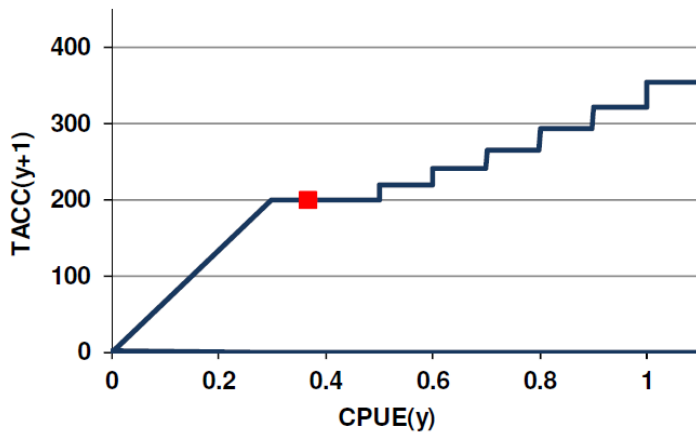
The NRLMG considers that the proposed TACC reductions for CRA 2 will help to stimulate a rebuild of the CRA 2 fishery. The CRA 2 TACC has been set at its current level since 1999.

The NRLMG considers that reducing the TACC provides greatest certainty of benefit to the stock, particularly because catch from the commercial sector can be more directly controlled. However, modelling suggests that a decrease in commercial catch could result in greater average catch for recreational fishers. But the extent of this recreational catch increase is dependent on several factors, including the number of recreational fishers, fishing success and the weather. The commercial NRLMG members consider that there would be an immediate impact in terms of improving recreational fishing success, whereas recreational members disagree because it is largely unknown.

*Option CRA2\_01 – Be guided by the new Rule 4 CRA 2 management procedure and decrease the TACC by 36.083 tonnes*

A graphical representation of the new *Rule 4* CRA 2 management procedure is provided in Figure 5.2. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year. The 2013 standardised offset year CPUE was 0.37 kg/potlift. When the harvest control rule was operated with this CPUE it resulted in a TACC of 200 tonnes (shown by the square in the graph).

**Figure 5.2: The new Rule 4 CRA 2 management procedure, showing the TACC resulting from the rule evaluations performed in 2013 for 2014-15 fishing year.**



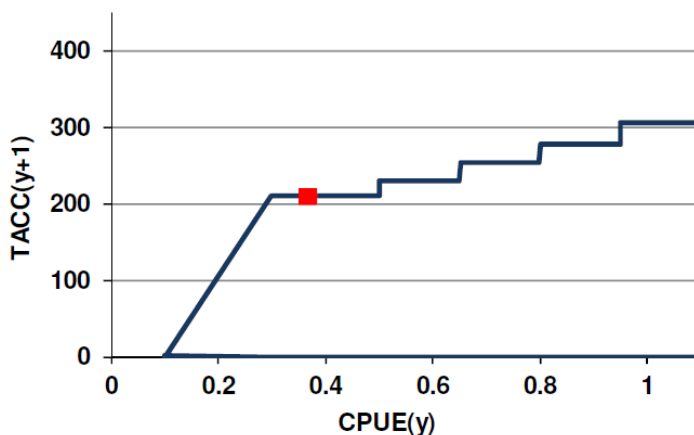
The proposed 36.083 tonne TACC decrease has the potential to reduce the revenue for the commercial sector by approximately \$2.4 million (based on average 2013 port price information).

The NRLMG notes that the industry is generally accepting of the greater TACC reduction for the 2014/15 fishing year. As outlined in the NZ RLIC’s submission, CRAMAC 2 consulted with CRA 2 annual catch entitlement and quota share owners and the clear preference from the industry was to take the most conservative TACC reduction (Option CRA2\_01).

*Option CRA2\_02 – Be guided by the new Rule 6 CRA 2 management procedure and decrease the TACC by 26.083 tonnes*

A graphical representation of the new Rule 6 CRA 2 management procedure is provided in Figure 5.3. When the harvest control rule was operated with a CPUE of 0.37 kg/potlift it resulted in a TACC of 210 tonnes (shown by the square in the graph).

**Figure 5.3: The new Rule 6 CRA 2 management procedure, showing the TACC resulting from the rule evaluations performed in 2013 for 2014-15 fishing year.**



The proposed 26.083 tonne TACC decrease has the potential to reduce the revenue for the commercial sector by approximately \$1.7 million (based on average 2013 port price information).



While this option would have less economic impact on the industry in comparison with Option CRA2\_01, there is unlikely to be a significant difference in commercial catches under the two options beyond this.

#### 5.4.5 Additional comments

The NZSFC discusses a number of technical details relating to the recent CRA 2 stock assessment and management procedure design in their submission. They oppose the CRA 2 stock assessment and consider that it is significantly underestimating the decline of the CRA 2 stock. As mentioned in the previous section, the NRLMG will be encouraging the NZSFC to participate in the Rock Lobster Fisheries Assessment Working Group process.

The NRLMG has every confidence in the management approach for rock lobster. Research information and experience is showing that the current approach is working to rebuild and maintain healthy rock lobster abundance levels.

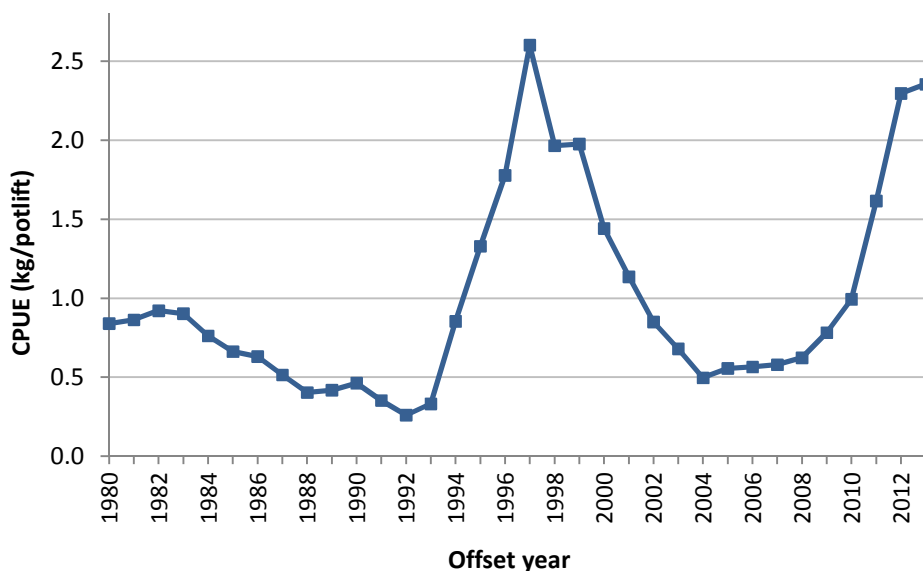
### 5.5 CRA 3 rock lobster fishery

#### 5.5.1 CRA 3 stock status

CRA 3 stock biomass in 2013 was very likely (> 90%) to be above *Bmsy*.

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 5.4. Since 2008, CRA 3 CPUE has increased steadily and is now 10% below the 1996/97 peak.

Figure 5.4: The history of offset CPUE in CRA 3<sup>13</sup>



The CRA 3 management procedure is evaluated against a desired target stock level (90% *Bref*), which has a CPUE equivalent of 1.14 kg/potlift in the autumn-winter season. CRA 3 autumn-winter standardised CPUE was 2.35 kg/potlift in 2013 (this is well above the target).

<sup>13</sup> Based on the 2003 *B4\_L* procedure for preparing data for CPUE standardisation.

## 5.5.2 Final proposals

The NRLMG proposes that you consider two options for CRA 3 (Table 5.3). These options are the same as those in the IPP.

**Table 5.3: Final proposed CRA 3 TAC, allowance and TACC options**

Option	TAC	Customary	Recreational	Other mortality	TACC
<b>CRA3_01:</b> Be guided by the CRA 3 management procedure and increase the TAC and TACC	389.95 t ↑	20 t	20 t	89 t	260.95 t ↑
<b>CRA3_02:</b> Retain the current CRA 3 TAC, allowances and TACC	354.5 t	20 t	20 t	89 t	225.5 t

## 5.5.3 Overview of CRA 3 submissions

### *Support for Option CRA3\_01*

Commercial and customary submitters CRAMAC 3, Ngati Porou, NZ RLIC, Ruamano and Te Ohu support Option CRA3\_01 – be guided by the existing CRA 3 management procedure and increase the TAC and TACC by 35.45 tonnes.

CRAMAC 3, Ngati Porou and NZ RLIC all consider that the current management approach for CRA 3 is working and is helping to rebuild CRA 3 abundance to healthy levels. CRAMAC 3, Ngati Porou and Ruamano are supportive of the proposed review of the CRA 3 management procedure in 2014.

### *Support for Option CRA3\_02*

Recreational and customary submitters Ngati Oneone, NZSFC, NZUA and Tamanuhiri support Option CRA3\_02 – retain the current CRA 3 TAC, allowances and TACC.

The NZSFC opposes any TACC increase until the CRA 3 management procedure is reviewed in 2014 and while commercial fishers are allowed to take smaller male rock lobsters over the winter months. The NZSFC considers that there is a disconnect between trends in commercial CPUE and what recreational fishers are experiencing because some struggle to find legal sized lobsters in places where they have historically been.

Tamanuhiri does not consider that the current management approach for CRA 3 is sustainable and expresses concerns that historic CPUE data indicates a trend towards a peak which is sure to be followed by a devastating decline. Tamanuhiri note traditional harvesters close to shore have had little success in catching legal sized lobsters in the last few years, but those who have had access to boats have made no complaints over abundance and size.

The NZRFC acknowledges that the CRA 3 fishery is showing increases in abundance under the CRA 3 management procedure. But they express concerns about the review of the procedure and the potential for industry to extract more fish from the water.

## 5.5.4 Analysis of CRA 3 final proposals

### TAC setting

Best available information suggests the current CRA 3 stock is well above *Bmsy*. Accordingly you may set or vary the CRA 3 TAC to maintain the stock at or above *Bmsy* (section 13(2)(a)).

*Option CRA3\_01 – Be guided by the CRA 3 management procedure and increase the TAC*

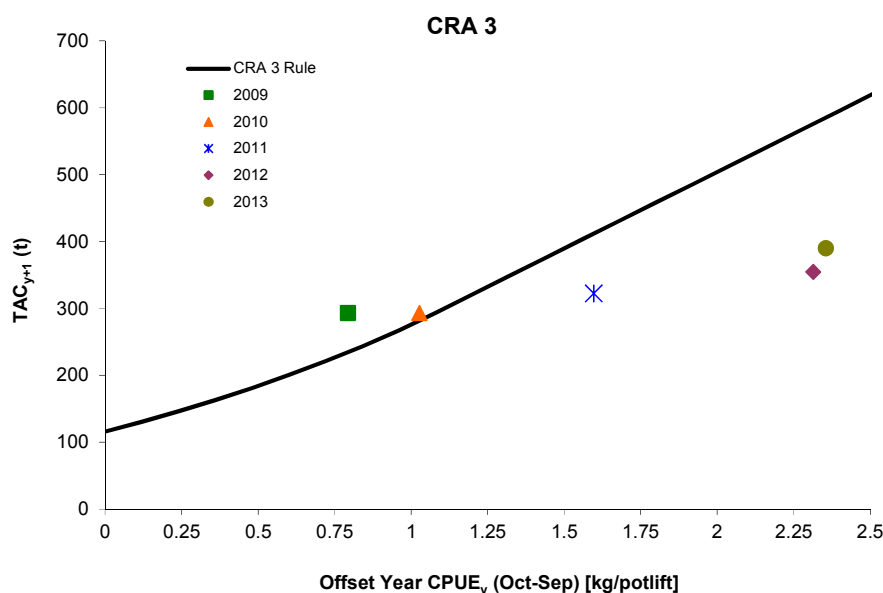
The CRA 3 TAC would be set at 389.95 tonnes under Option CRA3\_01. The proposed TAC increase is specified by the CRA 3 management procedure that a previous Minister agreed to use in March 2010 to guide TAC setting in the fishery until the 2015-16 fishing year.

Since the CRA 3 procedure has been in use, CPUE (a reliable indicator of abundance) has increased substantially from 0.79 to 2.36 kg/potlift. The NRLMG considers that this information shows the conservative and safe aspects of the procedure have assisted a rebuild of the CRA 3 fishery. The management procedure approach is responsive to changes in stock abundance and helps to prevent the TAC from lagging behind available abundance.

The operation of the CRA 3 management procedure enables the stock to be maintained above the target, 90% *Bref*. Ongoing application of the CRA 3 management procedure is expected to move the stock towards and then maintain it above the target, 90% of *Bref*.

A graphical representation of the CRA 3 management procedure is provided in Figure 5.5 (refer to Appendix 3 for further technical details). The graph shows the proposed TAC for the next year as a function of offset-year CPUE in the current year, after operation of all components of the management procedure including minimum and maximum change thresholds.

**Figure 5.5: The CRA 3 management procedure, showing the TACs resulting from the rule evaluations performed in 2009 through 2013 for the 2010-11 through 2014-15 fishing years (shown as coloured shapes).**



Standardised offset year CPUE was 2.36 kg/potlift in 2013. When the harvest control rule was operated with this CPUE it resulted in a TAC of 585.54 tonnes. This was a greater increase than the maximum increase of 10% allowed under the rule, so the TAC could increase only by 10% to 389.95 tonnes (shown by the circle in the graph).

Table 5.4 provides further information on the history of the CRA 3 management procedure for the 2010-11 through 2014-15 fishing years.

**Table 5.4: History of the CRA 3 management procedure. ‘Rule result’ is the result of the management procedure after operation of all its components including thresholds; ‘–’ to be determined by you.**

Year of analysis	Applied to Fishing Year	Offset-year CPUE at time of analysis (kg/potlift)	Rule result: TAC (t)	TAC (t) set by the Minister	TACC (t) set by the Minister
2009	2010–11	0.794	293	293	164
2010	2011–12	1.027	293	293	164
2011	2012–13	1.597	322.3	322.3	193.3
2012	2013–14	2.314	354.53	354.5	225.5
2013	2014-15 (Option CRA3_01)	2.355	389.95	–	–

Option CRA3\_01 should increase the current utilisation benefit of the fishery. How the benefits are accrued will depend on allocation decisions. Historically, only the TACC has been varied to give effect to variations in the TAC. If this occurs, the commercial sector will benefit from receiving an explicit share of the proposed TAC increase.

Utilisation benefits for customary Maori and recreational interests should be at least maintained under this option because best available information suggests CRA 3 stock size is increasing (as expected under application of the CRA 3 management procedure). Experience has shown that as stock size increases, non-commercial fishing success generally improves.

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

Under Option CRA3\_02, the current CRA 3 TAC of 354.5 tonnes would be retained for the 2014-15 fishing year.

Retaining the current TAC could result in increased short-term abundance in the CRA 3 fishery. This may result in:

- Increased non-commercial catch rates compared to Option CRA3\_01;
- Higher CPUE for commercial fishers which may reduce harvesting costs (but there would be a loss of revenue from not being able to take advantage of the proposed higher TACC).

## Setting of non-commercial allowances and the TACC

### Allowances for customary Maori, recreational interests and other mortality

Table 5.5 below provides you with information on current non-commercial allowances for CRA 3 and stock assessment model assumptions of non-commercial catch.

**Table 5.5: Current CRA 3 allowances and model assumptions of non-commercial catches**

CRA 3	Customary	Recreational	Other mortality	Total
Current allowances	20 tonnes	20 tonnes	89 tonnes	129 tonnes
Non-commercial catch assumptions for the 2008 stock assessment	20 tonnes	20 tonnes	89.5 tonnes	129.5 tonnes

Based on the non-commercial information provided above and an analysis of submissions, the NRLMG proposes that the allowances set for customary Maori, recreational interests and other sources of fishing-related mortality (e.g. illegal fishing) do not change under Option CRA3\_01 for the following reasons:

1. Information suggests existing CRA 3 customary Maori catch is within the allowance allocated for this interest at this time. Although incomplete, reported customary catches under the Fisheries (Kaimoana) Regulations 1998 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013<sup>14</sup>, from 2000 to 2008, suggest the maximum catch in any fishing year was roughly 10 tonnes.
2. Model assumptions of recreational catch suggest that current removals are in the vicinity of the existing recreational allowance.
3. The large-scale multi-species survey estimated CRA 3 recreational catch at 8.07 tonnes for the period 1 October 2011 to 30 September 2012. There is considerable uncertainty associated with CRA 3 recreational catch estimates, however. The NRLMG does not propose to vary the recreational allowance for CRA 3 until better information on recreational catches is available.
4. The allowances made for customary Maori and recreational fishers do not constrain their overall harvest.
5. There is no reliable information on levels of other sources of fishing-related mortality. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates for illegal catches from 1990 to 2003 to determine an appropriate estimate for other mortality (e.g. illegal fishing). There is little confidence in the estimates of illegal catch because the estimates cannot be verified. The NRLMG sector members are concerned about the high level of estimated illegal take in the CRA 3 fishery and again recommend that every effort is made to reduce this. If illegal catches can be effectively constrained this should result in benefits of increased abundance for all legitimate users of the fishery.

<sup>14</sup> Previously regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986.

## TACC

The NRLMG proposes that the TAC increase proposed under Option CRA3\_01 should result in an increase only of the TACC, with allowances remaining at current levels. The proposed 35.45 tonne TACC increase has the potential to generate approximately \$2.4 million in additional revenue for the commercial sector (based on average 2013 port price information).

No change is proposed to the TACC under Option CRA3\_02. This option would constrain utilisation in the commercial fishery and result in a loss of additional revenue compared to Option CRA3\_01.

### **5.5.5 Additional comments**

#### *Recreational fishing success*

In response to the NZSFC's concerns that recreational fishers struggle to find legal sized lobsters in traditional fishing areas, the NRLMG notes that a number of factors can influence local variation in the number of lobsters within a management area, including environmental factors, local overfishing, and seasonal availability due to moulting or migration.

Anecdotal reports from CRA 3 recreational fishers suggest recreational fishing opportunities are exceptional in the Mahia component of the fishery and increased numbers of legal sized lobsters are available in the popular Gisborne city area. The NRLMG has requested that MPI fund an amateur survey within CRA 3 so that a better understanding of the recreational fishery is gained.

#### *CRA 3 stock assessment and management procedure development*

The NRLMG proposes that a CRA 3 stock assessment is performed in 2014 and new management procedures are evaluated. Management procedures are generally reviewed every five years to ensure TAC setting remains compliant with the Act. It is proposed that MPI will invite representatives from each sector to participate in discussions on CRA 3 management during 2014.

#### *CRA 3 differential size limit*

In response to concerns expressed about the CRA 3 differential size limit, the former Minister decided to retain the smaller commercial size in CRA 3 in 2012 and it is not proposed to review this decision at this time.

The recreational NRLMG members request that the size inequity issue is resolved this year along with this year's CRA 3 stock assessment and management procedure review. The commercial NRLMG members do not support an increase to the CRA 3 commercial winter size limit because a decision was made to retain it in 2012. However, MPI members note if there is strong consensus from representatives from all sector groups within CRA 3 to increase the CRA 3 commercial size limit during winter, a review of the regulations could be considered subject to available resources.

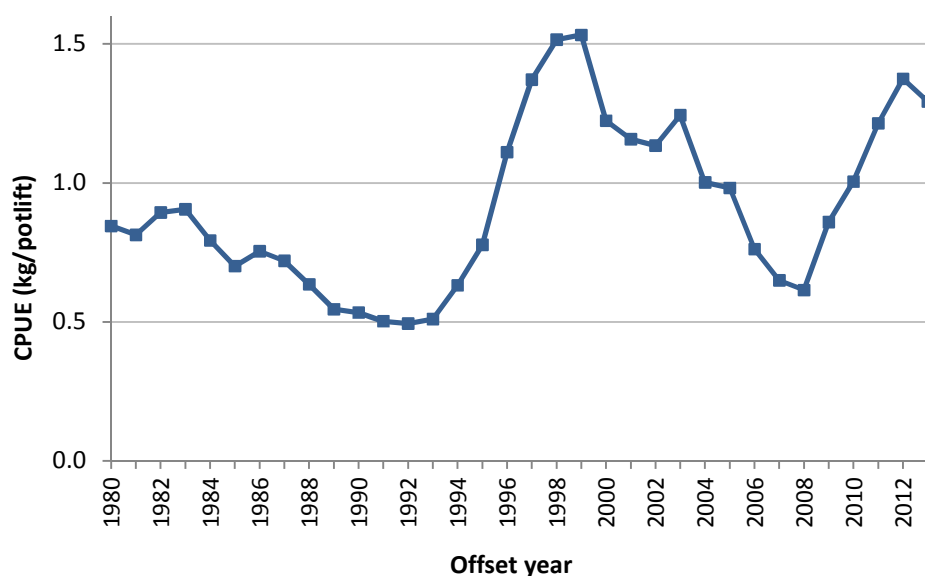
## 5.6 CRA 4 rock lobster fishery

### 5.6.1 CRA 4 stock status

CRA 4 stock biomass in 2013 was virtually certain (> 99%) to be above  $B_{ref}^{15}$  and very likely (> 90 %) to be above  $B_{msy}$  ( $B_{ref}$  is larger than  $B_{msy}$ ).

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 5.6. Since 2008 CRA 4 CPUE has increased steadily, except for a 6% decrease in 2013. The 2013 CPUE decrease is considered by industry to be related to poor fishing in autumn-winter due to weather and market prices, rather than a reflection of available abundance.

Figure 5.6: The history of offset CPUE in CRA 4<sup>16</sup>



### 5.6.2 Final proposals

The NRLMG proposes that you consider two options for CRA 4 (Table 5.6). These options are the same as those in the IPP.

Table 5.6: Final proposed CRA 4 TAC, allowance and TACC options

Option	TAC	Customary	Recreational	Other mortality	TACC
<b>CRA4_01:</b> Be guided by the CRA 4 management procedure and decrease the TAC and TACC	662 t ↓	35 t	85 t	75 t	467 t ↓
<b>CRA4_02:</b> Retain the current CRA 4 TAC, allowances and TACC	694.7 t	35 t	85 t	75 t	499.7 t

<sup>16</sup> Based on the 2003  $B4\_L$  procedure for preparing data for CPUE standardisation.

### 5.6.3 Overview of CRA 4 submissions

All of the submissions received for CRA 4 supported Option CRA4\_01 – be guided by the existing CRA 4 management procedure and decrease the TAC and TACC by 32.7 tonnes. Submissions on CRA 4 were received from Ngati Porou, NZ RLIC (with support from CRAMAC 4), NZSFC, NZUA and Te Ohu.

No detailed comments were made on CRA 4 TAC setting or allocation.

### 5.6.4 Analysis of CRA 4 final proposals

#### **TAC setting**

Best available information suggests the current CRA 4 stock is well above *Bmsy* (and *Bref*, which is larger than *Bmsy*). Accordingly you may set or vary the CRA 4 TAC to maintain the stock at or above *Bmsy* (section 13(2)(a)).

#### *Option CRA4\_01 – Be guided by the CRA 4 management procedure and decrease the TAC*

The CRA 4 TAC would be set at 662 tonnes under Option CRA4\_01. The proposed TAC decrease is specified by the CRA 4 management procedure that a previous Minister agreed to use in March 2012 to guide TAC setting in the fishery until the 2017-18 fishing year. Important elements of the CRA 4 management procedure are set out below and in Appendix 4.

Ongoing application of the CRA 4 management procedure is expected to maintain the stock above *Bref* with greater than 50% probability. Simulation testing indicates it would maintain the stock above *Bref* with 99% probability.

Option CRA4\_01 will decrease the current utilisation benefit of the fishery. Historically, the TACC has been varied to give effect to variations in the TAC. If this occurs, commercial utilisation would be constrained and there would be a loss of revenue (compared to Option CRA4\_02).

Utilisation benefits for customary Maori and recreational interests are expected to be at least maintained over time because ongoing application of the CRA 4 management procedure is designed to maintain stock size well above *Bref*.

#### *Option CRA4\_02 – Retain the current CRA 4 TAC*

The current CRA 4 TAC of 694.7 tonnes would be retained for the 2014-15 fishing year under Option CRA4\_02.

The NRLMG considers that retaining the current CRA 4 TAC for the 2014-15 fishing year is unlikely to pose a risk to stock sustainability in the short-term. However, if you choose not to follow the results of the CRA 4 management procedure in 2014, 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 no good information to advise on management of the stock until a stock assessment is performed (currently scheduled for 2016).



## Setting of non-commercial allowances and the TACC

### Allowances for customary Maori, recreational interests and other mortality

Table 5.7 below provides you with information on current non-commercial allowances for CRA 4 and stock assessment model assumptions of non-commercial catch.

**Table 5.7: Current CRA 4 allowances and model assumptions of non-commercial catches**

CRA 4	Customary	Recreational	Other mortality	Total
Current allowances	35 tonnes	85 tonnes	75 tonnes	195 tonnes
Non-commercial catch assumptions for the 2011 stock assessment	20 tonnes (constant)	Assumed to vary with changes in biomass. Estimated 54.4 tonnes for 2010.	40 tonnes (constant)	114.4 tonnes for 2010

Based on the non-commercial information provided above and an analysis of submissions, the NRLMG proposes that the allowances set for customary Maori, recreational interests and other sources of fishing-related mortality (e.g. illegal fishing) do not change under Option CRA4\_01 for the following reasons:

1. Information suggests existing CRA 4 customary Maori catch is within the allowance allocated for this interest at this time. Although incomplete, reported customary catches under the Fisheries (Kaimoana) Regulations 1998 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013<sup>17</sup>, from 2000 to 2008, suggest the maximum annual catch was roughly 6 tonnes.
2. Model assumptions of recreational catch assume current recreational removals are within the allowance allocated for this interest at this time. Also, the large-scale multi-species survey estimated CRA 4 recreational catch at 44.17 tonnes for the period 1 October 2011 to 30 September 2012.
3. The allowances made for customary Maori and recreational fishers do not constrain their overall harvest.
4. There is no reliable information on levels of other sources of fishing-related mortality. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates for illegal catches from 1990 to 2004 to determine an appropriate estimate for other mortality (e.g. illegal fishing). There is little confidence in the estimates of illegal catch because the estimates cannot be verified.

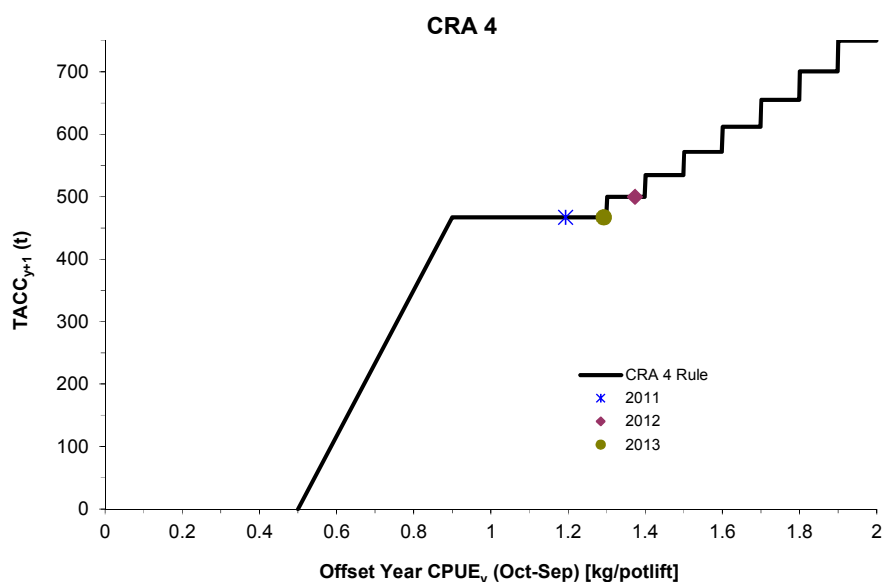
### TACC

The NRLMG proposes reducing only the TACC under Option CRA4\_01. The CRA 4 industry in the past has received both increases and decreases to the TACC, while allowances to other sectors have remained constant. Varying only the TACC is considered an appropriate approach at this time, particularly given that assumptions of non-commercial catch are below set allowances.

<sup>17</sup> Previously regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986.

A graphical representation of the CRA 4 management procedure is provided in Figure 5.7. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year.

**Figure 5.7: The CRA 4 management procedure, showing the TACCs resulting from the rule evaluations performed in 2011 through 2013 for the 2012-13, 2013-14 and 2014-15 fishing years (shown as coloured shapes).**



The 2013 standardised offset year CPUE was 1.29 kg/potlift. When the harvest control rule was operated with this CPUE it resulted in a TACC of 467 tonnes (shown by the circle in the graph).

The proposed 32.7 tonne TACC decrease has the potential to result in a loss of revenue for the industry by approximately \$2.2 million (based on average 2013 port price information).

Table 5.8 provides further information on the history of the CRA 4 management procedure for the 2012-13 through 2014-15 fishing years.

**Table 5.8: History of the CRA 4 management procedure. 'Rule result' is the result of the management procedure after operation of all its components including thresholds; '-' to be determined by you.**

Year of analysis	Applied to Fishing Year	Offset-year CPUE at time of analysis (kg/potlift)	Rule result: TACC (t)	TAC (t) set by the Minister	TACC (t) set by the Minister
2011	2012-13	1.194	466.9	661.9	466.9
2012	2013-14	1.374	499.69	694.7	499.7
2013	2014-15 (Option CRA4_01)	1.293	467.0	-	-

No change is proposed to the TACC under Option CRA4\_02. Although this option would maintain the current utilisation benefit of the commercial fishery, not following the results of the CRA 4 management procedure could create uncertainty in future stock sustainability. This option is not preferred by the NRLMG.

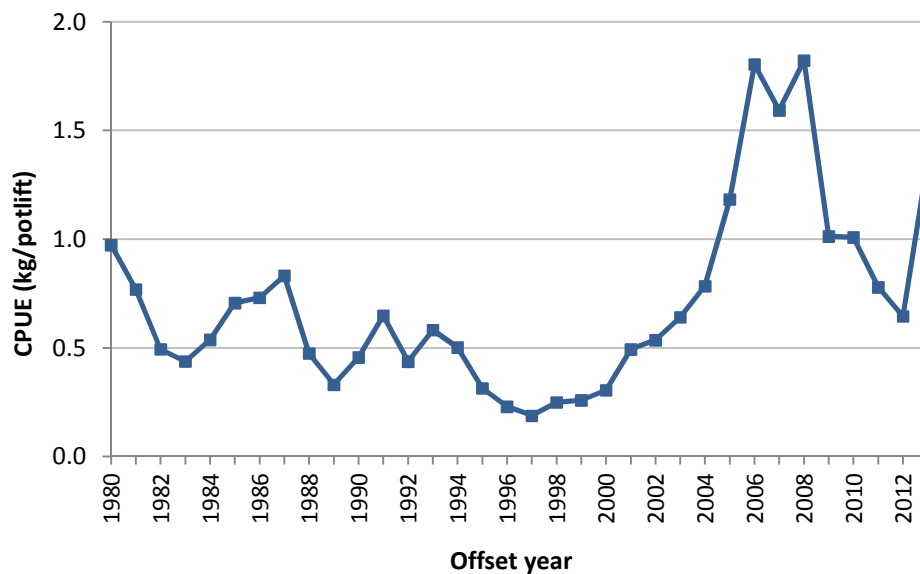
## 5.7 CRA 7 rock lobster fishery

### 5.7.1 CRA 7 stock status

CRA 7 stock biomass in 2013 was about as likely as not (40-60%) to be above *Bref*<sup>18</sup>.

Standardised commercial 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 5.8. Between 2008 and 2012 CRA 7 CPUE declined by 67%, but it increased substantially in 2013.

Figure 5.8: The history of offset CPUE in CRA 7<sup>19</sup>



### 5.7.2 Final proposals

The NRLMG proposes that you consider two options for CRA 7 (Table 5.9). These options are the same as those in the IPP.

Table 5.9: Final proposed CRA 7 TAC, allowance and TACC options

Option	TAC	Customary	Recreational	Other mortality	TACC
<b>CRA7_01:</b> Be guided by the CRA 7 management procedure and increase the TAC and TACC	86 t ↑	10 t	5 t	5 t	66 t ↑
<b>CRA7_02:</b> Retain the current CRA 7 TAC, allowances and TACC	64 t	10 t	5 t	5 t	44 t

<sup>18</sup> *Bref* for CRA 7 is the 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 is no reliable *Bmsy* estimate available for CRA 7.

<sup>19</sup> Based on the 2012 *F2\_LFX* procedure for preparing data for CPUE standardisation.

### 5.7.3 Overview of CRA 7 submissions

#### *Support for Option CRA7\_01*

Commercial and customary submitters CRAMAC 7, NZ RLIC and Te Ohu support Option CRA7\_01 – be guided by the existing CRA 7 management procedure and increase the TAC and TACC by 22 tonnes.

CRAMAC 7 considers that the CRA 7 management procedure represents a conservative approach to management of the CRA 7 fishery. This submitter notes further that CRA 7 has always been a cyclical fishery. However, strong showings of puerulus settlement in recent years (2009-2013) at Moeraki, combined with a high abundance of legal sized rock lobsters in the 2013 catch, give the industry confidence for the future.

CRAMAC 7 is also surprised at the catch level attributed to the recreational sector, particularly since there has been a very low abundance of 54/60 mm tail width rock lobsters on the Otago coast since 2009. NZ RLIC also adds that CRAMAC 7 does not consider that there is any reliable information available to support any reconsideration of non-commercial allowances at this time, unless information is presented that meets science working group standards.

#### *Support for Option CRA7\_02*

Recreational submitters NZRFC, NZSFC and NZUA support Option CRA7\_02 – retain the current CRA 7 TAC, allowances and TACC.

NZSFC specifically opposes any CRA 7 TACC increase while commercial fishers can continue to take smaller rock lobsters below 54/60 mm tail width (the CRA 7 commercial minimum legal size in is 127 mm tail length).

### 5.7.4 Analysis of CRA 7 final proposals

#### **TAC Setting**

There is a reliable estimate of current biomass, but no reliable estimate of  $B_{msy}$ <sup>20</sup>. Because of this you must set a TAC for CRA 7 under section 13(2A)<sup>21</sup>.

#### *Options CRA7\_01 – Be guided by the CRA 7 management procedure and increase the TAC*

The CRA 7 TAC would be set at 86 tonnes under Option CRA7\_01. The proposed TAC increase is specified by the CRA 7 management procedure that you agreed to use in March 2013 to guide TAC setting in the fishery until the 2018-19 fishing year. Important elements of the CRA 7 management procedure are set out below and in Appendix 5.

The NRLMG considers that the use of the existing CRA 7 management procedure for TAC setting is more conservative than previous management approaches. This is because the procedure has been designed to hold the TAC/TACC at lower levels through a range of CPUEs and improve stability in the TACC rather than enabling large fluctuations.

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<sup>20</sup> The Rock Lobster Fisheries Assessment Working Group agreed that  $B_{msy}$  and  $SSB$  indicators were not useful for CRA 7 because of the high level of out-migrations estimated for the stock and that  $B_{ref}$  should be used for CRA 7.

<sup>21</sup> Section 13(2A) requires the Minister 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,  $B_{msy}$ .  $B_{ref}$  is used as a proxy for  $B_{msy}$ .

The TAC resulting from the operation of the CRA 7 management procedure is “not inconsistent” with the objective of maintaining the stock at or above the accepted proxy, *Bref*. Ongoing application of the CRA 7 management procedure is expected to maintain the stock above *Bref* with greater than 50% probability. Simulation testing indicates it would maintain the stock above *Bref* with greater than 89% probability.

Option CRA7\_01 should increase the current utilisation benefit of the fishery. How the benefits are accrued will depend on allocation decisions. Historically the TACC has been varied to give effect to variations in the TAC. If this occurs, the commercial sector will benefit from receiving an explicit share of the proposed TAC increase.

Utilisation benefits for customary Maori and recreational interests are expected to improve under the CRA 7 management procedure approach. Best available information suggests CRA 7 stock size is increasing (as expected under application of the CRA 7 management procedure) and this can result in an increase in non-commercial fishing success.

#### *CRA7\_02 – Retain the current CRA 7 TAC*

Under Option CRA7\_02, the current CRA 7 TAC of 64 tonnes would be retained for the 2014-15 fishing year.

Retaining the current TAC could result in increased short-term abundance in the CRA 7 fishery. This may result in:

- Increased non-commercial catch rates compared to Option CRA7\_01;
- Higher CPUE for commercial fishers, which may reduce harvesting costs (but there could be a loss of revenue from not being able to take advantage of the proposed higher TACC).

### **Setting of non-commercial Allowances and the TACC**

#### *Allowances for customary Maori, recreational interests and other mortality*

A comparison of model assumptions of non-commercial catch and the current allowances for CRA 7 are shown in Table 5.10 below.

**Table 5.10: Current CRA 7 allowances and model assumptions of non-commercial catches**

<b>CRA 7</b>	<b>Customary</b>	<b>Recreational</b>	<b>Other mortality</b>	<b>Total</b>
Current allowances	10 tonnes	5 tonnes	5 tonnes	20 tonnes
Non-commercial catch assumptions for the 2012 stock assessment	1 tonne (constant)	Assumed to vary with changes in biomass. Estimated 8.7 tonnes for 2011.	1 tonne (constant)	10.7 tonnes for 2011

Based on the non-commercial information provided above and an analysis of submissions, the NRLMG proposes that the allowances set for customary Maori, recreational interests and other sources of fishing-related mortality (e.g. illegal fishing) do not change under Option CRA7\_01 for the following reasons:

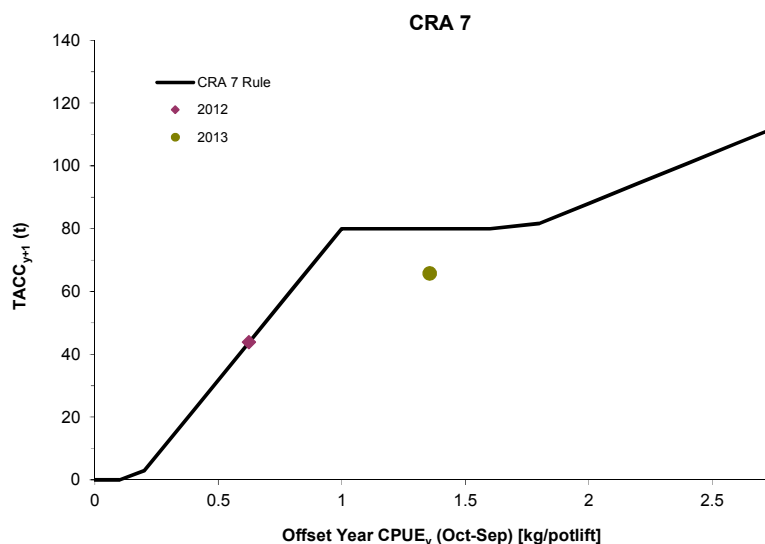
1. Information suggests existing CRA 7 customary Maori catch is within the allowance allocated for this interest at this time. Reports of customary harvest under the Fisheries (South Island Customary Fishing) Regulations 1999 suggest there are low levels of rock lobster harvest from CRA 7.
2. Model assumptions of recreational catch suggest that the existing allowance may be smaller than current removals. There is considerable uncertainty associated with the recreational catch estimate, however, because it is based on uncertain historical recreational harvest surveys (1992, 1996, 2000 and 2001). A change to the recreational allowance may be considered when new quantitative recreational catch information becomes available.
3. The allowances made for customary Maori and recreational fishers do not constrain their actual harvest.
4. There is no reliable information on levels of other sources of fishing-related mortality. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates for illegal catches from 1990 to 2002 and a constant illegal catch of 1 tonne/year from 2003 to 2010 to determine an appropriate estimate for other mortality (e.g. illegal fishing). There is little confidence in the estimates of illegal catch because the estimates cannot be verified.

### TACC

The NRLMG considers that the TAC increase proposed under Option CRA7\_01 should result in an increase of only the TACC, with allowances remaining at current levels. The proposed 22 tonne TACC increase has the potential to generate approximately \$1.5 million in additional revenue for the commercial sector (based on average 2013 port price information).

A graphical representation of the CRA 7 management procedure is provided in Figure 5.9. The graph shows the proposed TACC for the next year as a function of offset-year CPUE in the current year.

**Figure 5.9: The CRA 7 management procedure, showing the TACC resulting from the rule evaluations performed in 2012 and 2013 for the 2013-14 and 2014-15 fishing years (shown as a coloured shapes).**



The 2013 standardised offset year CPUE was 1.36 kg/potlift. When the harvest control rule was operated with this CPUE, it resulted in a TACC of 80 tonnes. This was a greater increase than the maximum increase of 50% allowed under the rule, so the TACC could increase only to 66 tonnes (shown by the circle in the graph).

Table 5.11 provides further information on the history of the CRA 7 management procedure for the 2013-14 and 2014-15 fishing years.

**Table 5.11: History of the CRA 7 management procedure. ‘Rule result’ is the result of the management procedure after operation of all its components including thresholds; ‘–’ to be determined by you.**

Year of analysis	Applied to Fishing Year	Offset-year CPUE at time of analysis (kg/potlift)	Rule result: TACC (t)	TAC (t) set by the Minister	TACC (t) set by the Minister
2012	2013–14	0.625	43.96	64.0	44.0
2013	2014-15 (Option CRA7_01)	1.356	66.0	–	–

No change is proposed to the TACC under Option CRA7\_02. This option would constrain utilisation in the commercial fishery and result in a loss of additional revenue compared to Option CRA7\_01.

### 5.7.5 Additional comments

In response to concerns expressed about the CRA 7 differential size limit, the former Minister decided to retain the smaller CRA 7 commercial size in 2012 and it is not proposed to review this decision at this time.

While the size inequity continues, the recreational NRLMG members will not support any increases to the CRA 7 TAC/TACC. The commercial NRLMG members do not support an increase to the CRA 7 commercial size limit because a decision was made to retain it in 2012. However, MPI members note if there is strong consensus from representatives from all sector groups within CRA 7 to increase the commercial size limit, a review of the regulations could be considered subject to available resources.

## 5.8 CRA 9 rock lobster fishery

### 5.8.1 CRA 9 stock status

2013 CRA 9 surplus-production modelling results indicated that 2012 stock biomass was 40% above *B<sub>msy</sub>*. The model also estimated that current fishing intensity is low (12%), which is consistent with the numerous large rock lobsters that have been observed in commercial log book sampling and through sector catches.

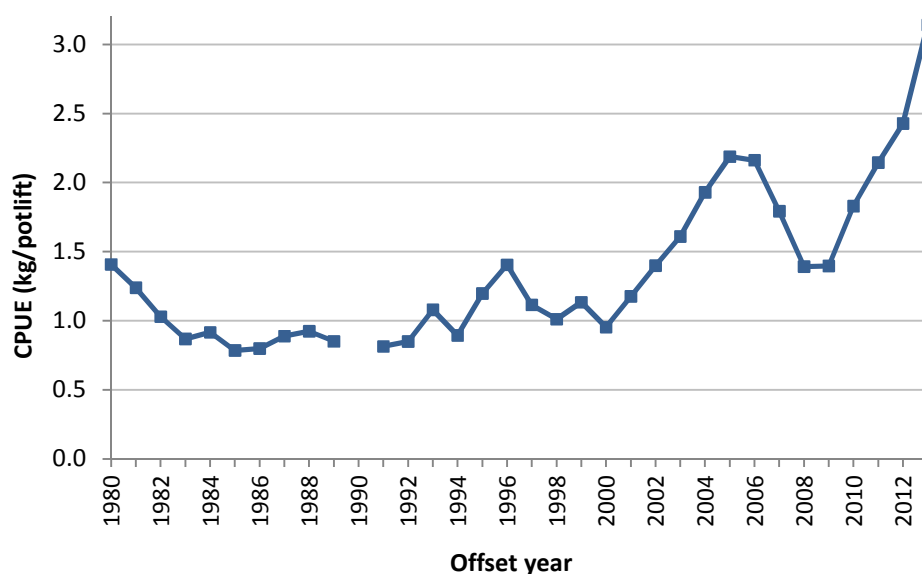
Standardised commercial CPUE is considered to be a reliable indicator of relative stock size in rock lobster fisheries. For CRA 9 there is a small amount of commercial catch data available for CPUE analysis<sup>22</sup>, which may result in CPUE indices that are sensitive to different

<sup>22</sup> In 2012-13 the CPUE analysis was limited to just five commercial vessels that reported more than 1 tonne of rock lobster landings from CRA 9.

catching patterns rather than changes in stock size. Despite this sensitivity, CRA 9 CPUE has been used as the abundance indicator in the new CRA 9 management procedure.

The history of offset year (i.e. October through September) CRA 9 commercial CPUE is shown in Figure 5.10. Since 2009 CRA 9 CPUE has increased strongly.

**Figure 5.10: The history of offset CPUE in CRA 9<sup>23</sup>**



### 5.8.2 Final proposals

The NRLMG proposes that you consider two options for CRA 9 (Table 5.12).

Based on NRLMG feedback and an analysis of submissions Options CRA9\_01, 03 and 04 have been excluded from the final proposals. No submissions were received in support for Options CRA9\_03 and 04 – be guided by the new *Rule 4144* CRA 9 management procedure, set a TAC of either 98.6 or 122.6 tonnes and increase the TACC by 21 tonnes.

**Table 5.12: Final proposed CRA 9 TAC, allowance and TACC options**

Option	TAC	Customary	Recreational	Other mortality	TACC
<b>CRA9_02:</b> Be guided by the <u>new Rule 4041</u> CRA 9 management procedure, set a TAC of 115.8 t and increase the TACC	115.8 t	20 t	30 t	5t	60.8 t ↑
<b>CRA9_05:</b> Retain the current CRA 9 TACC (no TAC or allowances have been previously set for CRA 9)	N/A	N/A	N/A	N/A	47.008 t

<sup>23</sup> Based on the 2012 *F2\_LFX* procedure for preparing data for CPUE standardisation.



### 5.8.3 Overview of CRA 9 submissions

#### *Support for Option CRA9\_01*

Commercial submitter the NZ RLIC supports Option CRA9\_01 – be guided by the new *Rule 4041* CRA 9 management procedure, set a TAC of 91.8 tonnes and increase the TACC by 13.792 tonnes.

NZ RLIC support for this option is based on the implementation of a modification to the rule to make it more conservative in relation to future TACC increases (refer to section four). The intention of the CRA 9 management procedure was to provide a possible opportunity for a CRA 9 commercial harvest strategy to target very large and less valuable commercial grades of rock lobsters which are otherwise being routinely discarded. The CRA 9 industry believes that even limited landings of larger lobsters will significantly increase CPUE and that this would result in a proposal to substantially increase the TACC (which is not desired for economic reasons).

NZ RLIC note in their submission that they are willing to reconsider their position on CRA 9 non-commercial allowances subject to best available information being presented in submissions.

#### *Support for Option CRA9\_02*

Commercial and customary submitters CRAMAC 9, Te Ohu and Te Hoiere support Option CRA9\_02 – be guided by the new *Rule 4041* CRA 9 management procedure, set a TAC of 115.8 tonnes and increase the TACC by 13.792 tonnes. Support for this option by these submitters is based on the implementation of a modification to the rule (section four).

CRAMAC 9 advises that the reason for the procedure modification is to restrain the TACC and to prevent large leaps in the volume of rock lobsters which would create logistical issues for processors of CRA 9 rock lobsters.

Te Ohu and Te Hoiere express concerns about the small amount of information there is to manage the CRA 9 fishery. While not directly relevant to this paper, these submitters suggest that a subdivision of the CRA 9 quota management area should be considered in the future to better serve sustainability of the fishery.

#### *Support for Option CRA9\_05*

Recreational submitter NZUA supports Option CRA9\_05 – retain the current CRA 9 TACC (no TAC or allowances have been previously set for CRA 9).

#### *Other*

Recreational submitter the NZSFC did not explicitly express support for a CRA 9 option, but noted in their submission that they supported reasonable allowances for non-commercial fishers to account for the uncertainty in the current harvest estimates. This included 20 tonnes for Maori customary interests, 30 tonnes for recreational interests and 5 tonnes for other mortality.

## 5.8.4 Analysis of CRA 9 final proposals

### **TAC setting**

Best available information suggests the current CRA 9 stock is above *Bmsy*. Accordingly you may set or vary the CRA 9 TAC to maintain the stock at or above *Bmsy* (section 13(2)(a)).

*Option CRA9\_02 – Be guided by the new Rule 4041 CRA 9 management procedure and set a CRA 9 TAC for the first time*

No TAC has been previously set for CRA 9. For the 2014-15 fishing year it is proposed that the CRA 9 TAC would be set at 115.8 tonnes under Option CRA9\_02.

The proposed TAC variation is guided by results from the operation of the proposed new *Rule 4041* CRA 9 management procedure. Important elements of the new procedure are set out further below, in section four and in Appendix 6.

Ongoing application of the CRA 9 management procedure is expected to maintain the stock above *Bmsy* with greater than 50% probability. Simulation testing indicates the new procedures would maintain the stock above *Bmsy* with greater than 93% probability.

The proposed TAC has the potential to increase the current utilisation benefit of the fishery. If the TACC is varied, the commercial sector will benefit the most from the change.

Utilisation benefits for customary Maori and recreational interests should be maintained over time because ongoing application of the management procedure is expected to maintain stock biomass well above *Bmsy*.

*Option CRA9\_05 – Retain the status quo*

Under Option CRA9\_05, the *status quo* would be maintained. The CRA 9 fishery would continue to have no set TAC, which has been this way since rock lobster entered the Quota Management System in April 1990. This option is not preferred by the NRLMG.

### **Setting of non-commercial allowances and the TACC**

#### Allowances for customary Maori, recreational interests and other mortality

No non-commercial allowances have been previously set for CRA 9. Under Option CRA9\_02 it is proposed that the TACC should be increased, which would result in non-commercial allowances being proposed for the first time.

Table 5.13 below provides you with information on current non-commercial allowances for CRA 9 and stock assessment model assumptions of non-commercial catch.

**Table 5.13: Current CRA 9 model assumptions of non-commercial catches and proposed non-commercial allowances**

CRA 9	Customary	Recreational	Other mortality	Total
Non-commercial catch assumptions	1 tonne (constant)	Assumed to vary with changes in biomass. Estimated 20.22 tonnes for 2011 <sup>24</sup>	1 tonne (constant)	22.22 tonnes in 2011
Non-commercial allowances proposed under Options CRA9_02	20 tonnes	30 tonnes	5 tonnes	55 tonnes

The NRLMG proposes that the allowances for customary Maori, recreational interests and other sources of fishing-related mortality (e.g. illegal fishing) are set for the first time as follows.

#### Customary Maori allowance

Little is known about customary Maori catch in CRA 9 apart from reported customary catches under the Fisheries (Kaimoana) Regulations 1998, Fisheries (South Island Customary Fishing) Regulations 1999 and regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013<sup>25</sup>. Information from these sources suggests between 40 to 380 rock lobsters (below 1 tonne) were harvested per year from 2007-2012.

Despite available information suggesting customary harvest is in the vicinity of 1 tonne, the NRLMG proposes that you set a customary Maori allowance of 20 tonnes for the following reasons:

- There are roughly 23 Iwi and 100 marae with links to the CRA 9 fishery;
- The customary catch information that is available to MPI relates only to areas where mandatory customary reporting is required; the majority of Iwi are outside these areas;
- The CRA 9 fishery spans roughly half the North and South Island West Coasts.

#### Recreational allowance

The NRLMG proposes that you set a CRA 9 recreational allowance of 30 tonnes.

It was assumed that CRA 9 recreational catch was 20.22 tonnes in 2011. There is considerable uncertainty associated with this estimate, however. This is because of the low number of fishers and fishing events captured in the large-scale multi-species survey for CRA 9 and the high CV (coefficient of variation).

The NRLMG proposes that the allowance is set at a slightly higher level than the model estimate to cover the uncertainty in information.

<sup>24</sup> This estimate is based on a revised large-scale multi-species estimate for CRA 9 and recreational landings from commercial vessels. In September 2013, MPI became aware of an error made by the recreational survey research provider in assigning CRA 9 catch. The Rock Lobster Fisheries Assessment Working Group agreed to let the work stand as reported because the effect of the error on total catch was small, there was no time to re-work the project, and the revised CRA9 catch estimate was greater than the low catch sensitivity trial. The modelling assumed that CRA 9 recreational catch was 27.42 tonnes for 2011.

<sup>25</sup> Previously regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986.

## Other mortality allowance

The NRLMG proposes that you set an allowance for other sources of fishing-related mortality (e.g. illegal fishing) of 5 tonnes.

There is no reliable information on levels of other sources of fishing-related mortality. The Rock Lobster Fisheries Assessment Working Group used available MPI estimates for illegal catches from 1989 and a constant illegal catch of 1 tonne/year from 2001 to determine an appropriate estimate for other mortality (e.g. illegal fishing). There is little confidence in the estimates of illegal catch because the estimates cannot be verified.

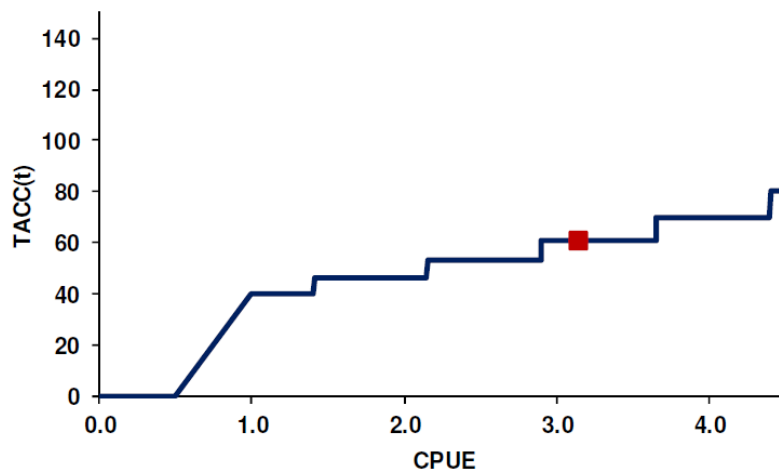
The NRLMG proposes that the other mortality allowance is set at a slightly higher level than the model estimate to cover the uncertainty in information.

## TACC

The NRLMG proposes to increase the CRA 9 TACC by 13.792 tonnes under Option CRA9\_02. The proposed TACC increase has the potential to generate approximately \$920K in additional revenue for the commercial sector (based on average 2013 port price information).

A graphical representation of the new Rule 4041 CRA 9 management procedure is provided in Figure 5.11. The graph shows the proposed TACC for the next year is a function of offset-year CPUE in the current year. The 2013 standardised offset year CPUE was 3.14 kg/potlift. When the harvest control rule was operated with this CPUE it resulted in a TACC of 60.8 tonnes (shown by the square in the graph).

**Figure 5.11: The new Rule 4041 CRA 9 management procedure, showing the TACC resulting from the rule evaluations performed in 2013 for 2014-15 fishing year.**



As discussed in section four, the NRLMG supports the modification of the *Rule 4041* CRA 9 management procedure to make it more conservative and restrain large increases in the TACC in the future. This modification is a responsible addition while ways are explored to further develop the commercial fishery.

No change is proposed to the TACC under Option CRA9\_05.

### 5.8.5 Additional comments

The NRLMG acknowledges there is a small amount of CRA 9 commercial catch data available for management decisions in comparison to other fisheries. The CRA 9 fishery is not fully utilised with only five commercial vessels fishing a small part of the management area. Despite this limitation, the NRLMG considers that the conservative nature of the CRA 9 management procedure will help to mitigate against some of this risk while further information is collected.

The NRLMG notes that a spilt of the CRA 9 quota management area is something the industry is likely to consider in the future development of the fishery.

## 5.9 NRLMG recommendations

The NRLMG reached agreement on single recommendations for CRA 3, CRA 4 and CRA 9 rock lobster fisheries, but were unable to reach a consensus recommendations for CRA 2 and CRA 7.

### CRA 2

The NRLMG notes there is very little difference in the two options proposed for CRA 2 with respect to the rate that a rebuild of the CRA 2 fishery is proposed to occur.

*Be guided by the new Rule 4 CRA 2 management procedure and decrease the TAC/TACC*

Recreational, commercial and MPI members of the NRLMG recommend that you agree to be guided by the new *Rule 4* CRA 2 management procedure and decrease the TAC and TACC by 36.083 tonnes (Option CRA2\_01). These members support the most conservative TAC/TACC reduction to halt a decline of CRA 2 abundance and stimulate a rebuild of the CRA 2 stock for the benefit of all fishing sectors.

OR

*Be guided by the new Rule 6 CRA 2 management procedure and decrease the TAC/TACC*

Customary NRLMG members recommend that you agree to be guided by the new *Rule 6* CRA 2 Management Procedure and decrease the TAC and TACC by 26.083 tonnes (Option CRA2\_02). These members support this option because they consider that it would have less economic impact on commercial sector in comparison to Option CRA2\_01. As with Option CRA2\_01, Option CRA2\_02 is also expected to stimulate a rebuild of the CRA 2 stock.

### CRA 3

The NRLMG recommends that you be guided by the existing CRA 3 management procedure and increase the TAC and TACC by 35.45 tonnes (Option CRA3\_01).

NRLMG recreational members continue to express serious concerns about the ongoing inequity in the size limit between recreational and commercial fishers and request that this issue is resolved immediately. These members express support for the CRA 3 TAC/TACC increase because abundance appears to be increasing in the fishery.

### CRA 4

The NRLMG recommends that you be guided by the existing CRA 4 management procedure and decrease the TAC and TACC by 33 tonnes (Option CRA4\_01). This decrease will ensure the CRA 4 stock is maintained above the target (*Bref*).

## **CRA 7**

*Be guided by the CRA 7 management procedure and increase the TAC/TACC*

Commercial, customary and MPI members of the NRLMG recommend that you agree to be guided by the existing CRA 7 management procedure and increase the TAC and TACC by 22 tonnes. These members consider that once a management procedure has been agreed for use, its result should be followed unless there are compelling reasons in a particular case not to follow it.

OR

*Maintain status quo*

NRLMG recreational members recommend that you agree to retain the current CRA 7 TAC, allowances and TACC (Option CRA7\_B). These members consider that it is too early to increase the TACC and the current management approach in the fishery is not working because there is a lack of legal sized rock lobsters for recreational fishers.

## **CRA 9**

The NRLMG recommends that you agree to use the new *Rule 4041* CRA 9 management procedure to guide TAC setting in CRA 9 (Option CRA9\_02) and:

- a) Set a CRA 9 TAC of 115.8 tonnes for the first time;
- b) Set an allowance for customary Maori interests of 20 tonnes;
- c) Set an allowance for recreational interests of 30 tonnes;
- d) Set an allowance for other sources of fishing-related mortality at 5 tonnes;
- e) Increase the TACC by 13.792 tonnes.

## 6 APPENDIX 1: STATUTORY CONSIDERATIONS

In considering the proposals set out in sections four and five of this paper, you are required to take into account the following statutory considerations for CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9:

### **International obligations and Treaty of Waitangi (Section 5)**

In setting or varying sustainability measures, you must act in a manner consistent with New Zealand's international obligations relating to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

The NRLMG considers that the proposed management options for rock lobster stocks are consistent with a wide range of international obligations that relate to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The NRLMG notes that Maori have customary, commercial and recreational fishing interests. All proposals seek to maintain utilisation or improve stock health and, therefore, improve fishing opportunities for all sectors.

### **Purpose of the Act (Section 8)**

The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. The TAC and TACC options presented in this paper for CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9 provide for the utilisation of these stocks while ensuring sustainability.

### **Environmental principles (Section 9)**

When making any decision under the Act, you must take into account the following environmental principles:

- a) *Associated or dependent species should be maintained above a level that ensures their long-term viability*

Rock lobster is taken by potting and hand gathering fishing methods which have a relatively low level of by-catch. The levels of incidental catch landed from commercial rock lobster potting have been analysed for the period 1989 to 2003 (Bentley, Starr et al. 2005). Non-lobster catch landed ranged from 2 to 11% of the estimated rock lobster catch weight per quota management area (QMA) over this period. The most frequently reported incidental species caught (comprising on average greater than 99% of the bycatch per QMA) were, in decreasing order of catch across all stocks: octopus, conger eel, blue cod, trumpeter, sea perch, red cod, butterflyfish and leatherjackets. The proposed TAC variations are unlikely to substantially change the incidental bycatch that occurs from commercial rock lobster potting. Overall, the effect of the proposed changes to the TAC and TACC will allow these species to be maintained above a level that ensures their long-term viability.

- b) *Biological diversity of the aquatic environment should be maintained*

Potting is the main method of targeting rock lobster and is usually assumed to have very little direct impact on the aquatic environment. Several Australian studies have looked at the impacts of lobster pots on the environment. These studies suggest there is little impact on seaweed and other benthic communities, including fragile corals from rock lobster potting. Consequently, the TAC options proposed are unlikely to have a demonstrable adverse effect on biological diversity.

- c) *Habitats of particular significance for fisheries management should be protected*  
No habitats of particular significance to fisheries management have been identified that would be affected by the TAC and TACC options proposed.

### **Information principles (Section 10)**

You must also take into account certain information principles when making decisions under the Act, including that decisions should be based on the best available information, that any uncertainty in the information available should be considered, and caution should be applied when information is uncertain, unreliable, or inadequate, but the absence of, or uncertainty in, information should not be used as a reason for postponing or failing to set a TAC.

The TAC and TACC options presented in this paper are based on best available information and the NRLMG has endeavoured to set out the relevant uncertainty in, and inadequacy, of any information so that the appropriate caution can be applied in assessing the proposed management options.

### **Sustainability measures (Section 11)**

Before setting or varying a sustainability measure such as a TAC, you must take into account the following:

- a) *Any effects of fishing on any stock and the aquatic environment* – The NRLMG considers the proposed TAC options for rock lobster stocks do not significantly affect any stock or the aquatic environment. Non-commercial methods (diving and potting) and the commercial potting method is assumed to have very little direct impact on non-target species and the aquatic environment.
- b) *Any existing controls under the Act that apply to the stock or area concerned* – A range of management controls apply to the stocks discussed in this paper including minimum legal sizes, daily bag limits for recreational fishers, method restrictions, and protection of egg-bearing females. No changes are proposed to these existing controls.
- c) *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. This was done using Bayesian methods to deal with uncertain recruitment in constructing the operating model and by projecting uncertain recruitment forward when evaluating management procedures.
- d) *Any conservation or fisheries services; and any decisions not to require these services* – The NRLMG is not aware of any conservation or fisheries services – or any decisions not to require conservation or fisheries services – that would be affected by the proposed TAC and TACC options.
- e) *Any relevant fisheries plan approved under section 11A* – The NRLMG is not aware of any relevant fisheries plans approved under section 11A.

You must also have regard to any provisions of the following that apply to the coastal marine area that you consider relevant:

- a) *Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991* – There are several regional councils with jurisdictional boundaries covering CRA 2, CRA 3, CRA 4, CRA 7 and CRA 9. The NRLMG is not aware of any policy statements, regional plans or draft regional plans for these councils that are specifically relevant to TAC or TACC setting for rock lobster stocks.



- b) *Any management strategy or management plan under the Conservation Act 1987* – The NRLMG is not aware of anything in any conservation management strategies or plans that are relevant to TAC or TACC setting for rock lobster stocks.
- c) *Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000* – The CRA 2 rock lobster fishery intersects with the Hauraki Gulf Marine Park. The options presented for CRA 2 in this paper to decrease the TAC/TACC by 26 or 36 tonnes are consistent with the objectives stated in these provisions. [Note: you must also have particular regard to sections 7 & 8 of the Hauraki Gulf Marine Park Act when setting the TACC].
- d) *A planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011* – The NRLMG is not aware of any planning documents that apply to the rock lobster stocks discussed in this paper.

### **TAC setting considerations (Section 13)**

Your section 13 considerations are discussed in section five of this paper. However, in addition, you must also have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock, when setting a TAC under section 13.

- 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. Survey and experimental work in north-eastern New Zealand has shown that predation by rock lobsters in marine reserves is capable of influencing the demography of surf clams of the genus *Dosinia*. Predation by rock lobsters has also been implicated in contributing to trophic cascades in a number of studies in New Zealand and overseas. For example, in the Leigh marine reserve rock lobsters and snapper preyed on urchins, the densities of urchins decreased and kelp beds re-established in the absence of urchin grazing. This implies that rock lobster fishing is one of a number of factors that may alter the ecosystem from one more dominated by kelp beds to one more dominated by urchin barrens. Trophic cascades are hard to demonstrate however, because controlled experiments are difficult, food webs are complex and environmental factors are changeable.

Predation upon rock lobsters is known from octopus, blue cod, groper, southern dogfish, rig and seals; no evidence exists to suggest that the availability of rock lobster as prey determines the size of any of these populations.

Although there is uncertainty, the TAC 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.

### **Setting of non-commercial allowances and the TACC (Sections 20 and 21)**

Sections 20 and 21 of the Act require you to allow for Maori customary non-commercial fishing interests, recreational fishing interests and all other sources of fishing-related mortality within the TAC when setting or varying the TACC. These considerations are discussed in section five of this paper.

## 7 APPENDIX 2: NEW CRA 2 MANAGEMENT PROCEDURE SPECIFICATIONS

In 2013 a new version of the multi-stock length-based stock assessment model was developed for CRA 2. This assessment model was used to set the operating model for evaluating new CRA 2 management procedures.

Nine different CRA 2 management procedure options were considered by the NRLMG in November 2013. The NRLMG have put forward two of these ‘final’ rules for consideration which when operated result in a TAC decrease for the 2014-15 fishing year. These rules are called *Rule 4* and *Rule 6*.

Some important elements of the CRA 2 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:
  - 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),
  - 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;
- e) The minimum change threshold for the TACC is 5%.

The CRA 2 management procedures are based on a generalised ‘step’ rule.

For *Rule 4*: between a CPUE of zero and 0.3 kg/potlift, the TACC increases linearly with CPUE to a plateau of 200 tonnes, which extends to a CPUE of 0.5 kg/potlift. As CPUE increases above 0.5 kg/potlift, the TACC increases in steps with a width of 0.1 kg/potlift and a height of 10% of the preceding TACC.

For *Rule 6*: between a CPUE of zero and 0.3 kg/potlift, the TACC increases linearly with CPUE to a plateau of 210 tonnes, which extends to a CPUE of 0.5 kg/potlift. As CPUE increases above 0.5 kg/potlift, the TACC increases in steps with a width of 0.15 kg/potlift and a height of 10% of the preceding TACC.

## 8 APPENDIX 3: CRA 3 MANAGEMENT PROCEDURE SPECIFICATIONS

In March 2010 a previous Minister agreed to use the *Rule 2a* CRA 3 management procedure from the 2010-11 fishing year.

Some important elements of the CRA 3 management procedure are:

- a) It proposed a TAC of 293 tonnes for 3 years (2010–11, 2011–12 and 2012–13) unless offset-year CPUE fell below 0.75 kg/potlift or increased above 1.08 kg/potlift. If the CPUE fell outside these limits, the harvest control rule equations would lead to a TAC recommendation (this occurred for the 2012-13 fishing year);
- b) After the 2012–13 fishing year it is proposed that the harvest control rule equations will lead to a TAC recommendation;
- c) Offset-year standardised CPUE is used as an input to the rule to determine the TAC for the fishing year that begins in the following April;
- d) CPUE is calculated using the 2003 *B4\_L* procedure. This procedure sums all landings (to a licensed fisher receiver) and effort for a vessel within a calendar month and allocates the landings to statistical areas based on the reported area distribution of the estimated catches;
- e) The management procedure is to be evaluated every year (no “latent year”), based on offset-year CPUE;
- f) When the conditions referred to in a) above do not apply: if the procedure results in a TAC that does not change by more than 5%, no change will be made; and if the procedure results in a TAC that changes by more than 10%, the TAC will be changed by 10% only.

The CRA 3 management procedure is based on a generalised plateau rule with a plateau of zero width.

## 9 APPENDIX 4: CRA 4 MANAGEMENT PROCEDURE SPECIFICATIONS

In March 2012 a previous Minister agreed to use the *Rule 28a* CRA 4 management procedure from the 2012-13 fishing year.

Some important elements of the CRA 4 management procedure 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 2003 *B4\_L* procedure. This procedure sums all landings (to a licensed fisher receiver) and effort for a vessel within a calendar month and allocates the landings to statistical areas based on the reported area distribution of the estimated catches;
- d) The management procedure is to be evaluated every year (no “latent year”), based on offset-year CPUE;
- e) It has no thresholds for minimum and maximum change, except a maximum 25% increase limit below the first plateau.

The CRA 4 management procedure is based on a generalised ‘step’ rule. Below a CPUE of 0.5 kg/potlift, the TACC is zero; between a CPUE of 0.5 and 0.9 kg/potlift, the TACC increases linearly with CPUE to a plateau of 467 tonnes, which extends to a CPUE of 1.3 kg/potlift. As CPUE increases above 1.3 kg/potlift, TACC increases in steps with a width of 0.1 kg/potlift and a height of 7% of the preceding TACC.

## 10 APPENDIX 5: CRA 7 MANAGEMENT PROCEDURE SPECIFICATIONS

In March 2013 you agreed to use the *Rule 39* CRA 7 management procedure from the 2013-14 fishing year.

Some important elements of the CRA 7 management procedure 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:
  - 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),
  - 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;
- e) The minimum change threshold for the TACC is 10% and the maximum change threshold is 50%.

The CRA 7 management procedure is based on a generalised plateau rule. Below a CPUE of 0.17 kg/potlift, the TACC is zero; between a CPUE of 0.5 and 1.0 kg/potlift, the TACC increases linearly with CPUE to a plateau of 80 tonnes, which extends to a CPUE of 1.75 kg/potlift. As CPUE increases above 1.75 kg/potlift, TACC increases linearly.

## 11 APPENDIX 6: NEW CRA 9 MANAGEMENT PROCEDURE SPECIFICATIONS

In 2013 a surplus-production model was developed for CRA 9. This model was used to set the operating model for evaluating new CRA 9 management procedures.

Five different CRA 9 management procedure options were considered by the NRLMG in November 2013. The NRLMG have put forward one of these ‘final’ rules for your consideration which when operated it is recommended that the TACC increases for the 2014-15 fishing year. This rule is called *Rule 4041* and is based on a generalised ‘step’ rule.

Some important elements of the CRA 9 management procedure 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:
  - 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),
  - 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;
- e) The minimum change threshold for the TACC is 5%.

For the *Rule 4041* CRA 9 management procedure: below a CPUE of 0.5 kg/potlift the TACC is zero. Between a CPUE of 0.5 kg/potlift and 1.0 kg/potlift, the TACC increases linearly with CPUE to a plateau of 40 tonnes, which extends to a CPUE of 1.4 kg/potlift. As CPUE increases above 1.4 kg/potlift, the TACC increases in steps with a width of 0.75 kg/potlift and a height of 15% of the preceding TACC.

As proposed, there is a maximum allowable increase of 15% in TACC; there is no maximum allowable decrease.

# 12 APPENDIX 7: SUBMISSIONS RECEIVED ON INITIAL ADVICE