NEW ZEALAND RED ROCK LOBSTER FISHERIES

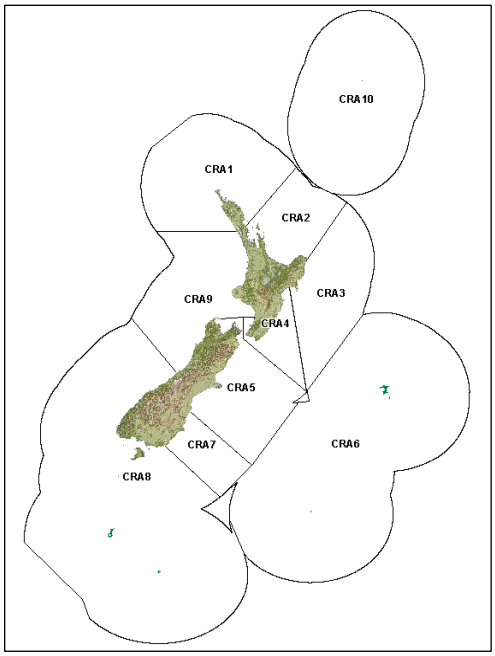
PUBLIC CONSULTATION DOCUMENT

CONSULTATION 1

PROPOSAL TO ADOPT A MANAGEMENT PROCEDURE FOR CRA 3

CONSULTATION 2

CATCH LIMIT REVIEWS FOR CRA 3, CRA 4 AND CRA 7 AS A RESULT OF OPERATION OF MANAGEMENT PROCEDURES



17 DECEMBER 2009

1. PROPOSAL TO ADOPT A MANAGEMENT PROCEDURE FOR CRA 3

EXECUTIVE SUMMARY

1. The National Rock Lobster Management Group (NRLMG) proposes that the Minister adopt a management procedure to guide his Total Allowable Catch (TAC) setting in the Gisborne rock lobster fishery (CRA 3).

2. When the Minister of Fisheries (the Minister) reduced the CRA 3 TAC and Total Allowable Commercial Catch (TACC) in April 2009 he considered that the TAC cut, when combined with a management procedure to guide future TAC setting, should secure the necessary rebuild in the CRA 3 stock to the benefit of all fishery participants. The Minister noted that he would be provided with a management procedure to guide TAC setting in CRA 3 from April 2010.

3. The CRA 3 Multi-stakeholder Fishing Forum (the CRA 3 Forum), a group comprising customary Maori, amateur and commercial fishing stakeholders in CRA 3, initiated development of a CRA 3 Management Procedure. During 2009, the CRA 3 Working Group (a smaller group of Forum representatives) worked with the stock assessment scientists and the Rock Lobster Fisheries Assessment Working Group (RLFAWG) to develop a management procedure to guide TAC setting decisions for CRA 3 from 1 April 2010.

4. Two alternative CRA 3 Management Procedure options are proposed to guide CRA 3 TAC setting. The two CRA 3 Management Procedure options, called “Rule 2a” and “Rule 5”, both:

   a) use offset year (1 October to 30 September) commercial catch per unit effort (CPUE) to drive the procedures;

   b) specify the management objective as being to rebuild the stock abundance to an acceptable level at or above the agreed sustainability indicators, while delivering an acceptable annual catch;

   c) contain a harvest control rule that calculates a provisional TAC for each fishing year the procedures are operated; this provisional TAC varies with changes in the abundance indicator;

   d) contain minimum change, maximum change and initial TAC components; and

   e) would be used for five years to guide TAC setting and would then be reviewed.

5. The NRLMG believes that using either of the proposed CRA 3 Management Procedures to guide TAC setting is consistent with the Fisheries Act 1996 (the Act). The central consideration is whether the procedures meet the TAC setting requirements of s 13 of the Act. Section 13 requires the Minister 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 that is not inconsistent with this objective. This stock size that can produce the maximum sustainable yield is commonly called *Bmsy*.

6. The NRLMG is confident the CRA 3 Management Procedures are consistent with s 13 because the procedures are expected to rebuild the stock size towards or above a target stock size currently accepted by the Ministry of Fisheries (MFish) as a proxy for *Bmsy* (called *Bref*).

7. Rock lobsters are important taonga to tangata whenua in CRA 3, are prized by amateur fishers, and have high commercial value. Therefore the second key consideration is the impact of the proposed procedure on utilisation.

8. The distinguishing factors between the two proposed CRA 3 Management Procedure (Rule 2a and Rule 5) are the way in which and the rate at which stock targets will be met, and the social, cultural and economic impacts associated with TAC changes that may be invoked by either rule over its five year term of operation.

9. The NRLMG believes that customary Maori, amateur and commercial utilisation values would increase with application of either of the CRA 3 Management Procedures. This is because the procedures would improve fishing opportunities for all sectors by increasing the stock from its current size. The procedures would also improve the "safety" of the CRA 3 stock by increasing TAC responsiveness to changes in abundance of the stock.

10. CRA 3 Working Group members and the NRLMG would like to adopt an approach to TAC setting that is more responsive to changes in observed abundance in the CRA 3 fishery than the current approach which relies on periodic stock assessments. However, sector members of both groups are divided on which of these two management procedure options should be adopted.

11. CRA 3 Working Group commercial representatives and one customary representative are in favour of Option 1: adopt the "Rule 2a" CRA 3 Management Procedure to guide TAC setting in CRA 3. On the other hand, CRA 3 Working Group recreational representatives and one customary representative are in favour of Option 2: adopt the "Rule 5" CRA 3 Management Procedure to guide TAC setting in CRA 3. The NRLMG has a majority preference for the "Rule 2a" CRA 3 Management Procedure (Option 1).

PURPOSE OF THIS PAPER

12. This paper sets out the NRLMG's initial advice on proposals to adopt a CRA 3 Management Procedure (Rule 2a or Rule 5) to guide TAC setting in CRA 3. It includes the best information available to the NRLMG to inform decision-making.

13. The purpose of the paper is to seek information and comments from CRA 3 tangata whenua, CRA 3 fishery stakeholders and other interested parties on the proposals.

TERMINOLOGY IN THE PAPER

Management Procedures

14. A management procedure is a tool used to guide the setting of catch limits. Management procedures are becoming more widely used, especially in South Africa, Australia, Europe and North America, and in 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 (a mathematical equation that determines what the specific output of the procedure will be, such as the exact TAC or TACC); and

d) has been extensively simulation-tested using an operating model that is a model of the fishery system being managed.

15. Under a management procedure approach, 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. Extensive simulation testing of the procedure is undertaken to ensure it will deliver the desired outcomes.

16. The advantages of a management procedure approach, over the conventional approach of periodic stock assessments followed by decision making, are:

a) the process leads to explicit definition of management objectives;

b) all participants in the fishery can become involved in the choice of procedure;

c) uncertainty in all facets of the assessment and management process can be addressed;

d) greater certainty of achieving outcomes is provided;

e) management procedures reduce the need for regular stock assessments, freeing resources for other research; and

f) the process is more understandable to fishers than the conventional approach.

Sustainability Indicators (Bmsy, Bref, Bmin)

17. The NRLMG uses sustainability indicators to report on stock health and to evaluate the effectiveness of management options. For most rock lobster stocks, performance is reported against a "target" stock size and a "minimum" stock size.

18. Three sustainability indicators are relevant to evaluation of the two alternative CRA 3 Management Procedures (Rule 2a and Rule 5):

a) The statutory target stock size, **Bmsy**. Section 13 of the Act requires the Minister to set a TAC for a rock lobster stock that move the stock to, or maintains the stock at, a level at or above Bmsy, or that is not inconsistent with this objective. *Bmsy* is not straightforward to estimate and is uncertain when estimated.

A *Bmsy* reference point was calculated for CRA 3 in 2008. The *Bmsy* calculation was sensitive to the period chosen to represent mean recruitment, which varies substantially over the period for which estimates are available; which in turn caused uncertainty in *Bmsy*. The NRLMG and MFish Plenary therefore considered this *Bmsy* estimate unreliable for use as a target biomass level for this stock.

b) The proxy target stock size, ***Bref***. When a *Bmsy* estimate is absent or unreliable, alternative and proxy targets are used. In 2009 the RLFAWG agreed to use the historical target period, previously used in the 2000 and 2001 CRA 3 stock assessments, as the management procedure target because it could be estimated with greater reliability and described a period when the stock was considered to be healthy. This target stock size is the autumn-winter (April through September) vulnerable stock size associated with the reference period 1974-79. CRA 3 stakeholders collectively agreed on this target level because 1974-79 was a period when the stock showed good productivity and was demonstrably safe, having gone below this level and then recovered.

Bref $_{1974\text{-}79}$ needed adjustment because the growth rate of rock lobsters in CRA 3 has changed significantly since 1974-79 (as demonstrated in the 2008 assessment) and the target biomass needed to reflect the current growth rate, legal size and escape gap regulations. A technical procedure based on fishing mortality rates was used to adjust *Bref* $_{1974\text{-}79}$ to reflect these changes. This adjustment procedure has been reviewed and accepted by the RLFAWG.

The RLFAWG then agreed that the CRA 3 Management Procedure rules should be evaluated against 90% of the *adjusted Bref* (called *Bref*$_{90\%}$ hereafter), to address the potential that a 'regime shift' resulting in lower productivity may have occurred and that reference points based on historically higher productivity may be inappropriate if recruitment were to continue at this historically low level. The CPUE associated with the *Bref*$_{90\%}$ is a standardised autumn-winter CPUE of 1.14 kg/potlift.

c) The minimum stock size, ***Bmin***. *Bmin* is the stock size associated with lowest abundance in the observed history of the fishery. The CRA 3 stock has previously recovered from this low point.

19. For all these indicators, CRA 3 stock size is measured in terms of the autumn-winter vulnerable biomass. "Vulnerable" biomass is the total quantity of lobsters available to the fishery (i.e., it does not include lobsters that cannot be harvested such as undersize lobsters and berried female lobsters).

20. The desired performance in relation to these sustainability indicators is:

a) stock size that fluctuates around the target (*Bref*) with at least 50% probability of achieving the target;

b) stock size remains above the minimum (*Bmin*) with 90% probability; and

c) spawning stock size remains above 20% of its unfished level.

21. In October 2008, MFish released the Harvest Strategy standard for New Zealand fisheries (the HSS) that specifies performance standards for Quota Management System species. The NRLMG considers the management procedures proposed for CRA 3 are consistent with the HSS. All management procedures tested maintained the spawning stock biomass well above the 20% unfished level.

22. The Guidelines for Harvest Strategy Standards (MFish 2008) 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]

SUMMARY OF PROPOSED MANAGEMENT OPTIONS

23. The NRLMG is seeking comments on the following management options for CRA 3:

Option	Description
Option 1	Adopt the "Rule 2a" CRA 3 Management Procedure to guide TAC setting in CRA 3
Option 2	Adopt the "Rule 5" CRA 3 Management Procedure to guide TAC setting in CRA 3

24. If the Minister chooses not to adopt the alternative CRA 3 Management Procedures proposed above, periodic stock assessments (which are relatively infrequent because of resource constraints) would continue to guide TAC setting for CRA 3.

Option 1 – Adopt the "Rule 2a" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

25. Under Option 1, the Minister would use the "Rule 2a" CRA 3 Management Procedure to guide statutory TAC setting decisions for CRA 3. The "Rule 2a" CRA 3 Management Procedure is described in detail in *Attachment 1* to this consultation paper.

26. Under this option the Minister would be guided by the operation of the "Rule 2a" Management Procedure when setting the TAC for CRA 3 until the 2015-16 fishing year. During 2014, the management procedure would be reviewed.

Option 2 – Adopt the "Rule 5" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

27. Under Option 2, the Minister would use the "Rule 5" CRA 3 Management Procedure to guide statutory TAC setting decisions for CRA 3. The "Rule 5" CRA 3 Management Procedure is described in detail in *Attachment 1* to this consultation paper.

28. Under this option the Minister would be guided by the operation of the "Rule 5" Management Procedure when setting the TAC for CRA 3 until the 2015-16 fishing year. During 2014, the management procedure would be reviewed.

RATIONALE FOR MANAGEMENT OPTIONS

CRA 3 Stock Status

29. A stock assessment was last undertaken for CRA 3 in 2008. The 2008 stock assessment results indicated that stock size was just above *Bmin* and well below its target level. Under 2007 catches and recent recruitments, the 2008 assessment predicted a 75% probability that stock size would decline over the four years up to 2012.

30. On the basis of this assessment, the Minister reduced the CRA 3 TAC from 319 tonnes to 293 tonnes from April 2009.

31. CPUE is considered to be a reliable indicator of relative stock size in CRA 3. The NRLMG notes that, based on recent CPUE information, stock size may have increased more than predicted by the 2008 stock assessment model. Autumn-winter CPUE increased from 0.60 kg/potlift in 2007 to 0.68 in 2008, and then to 0.94 kg/potlift in 2009. Offset year CPUE also increased from 0.59 kg/potlift in 2007 to 0.63 in 2008, and then to 0.80 kg/potlift in 2009. CPUE is still below the CPUE associated with $Bref_{90\%}$ - a standardised autumn-winter CPUE of 1.14 kg/potlift.

32. There is considerable uncertainty with respect to the level of current recruitment and some uncertainty with respect to current growth rates in CRA 3. As noted above, two adjustments to the *Bref* target have been made to address the potential that slow growth and low recruitments will persist into the future. These adjustments will be reviewed at the time of future stock assessments and management procedure reviews. The model's estimated recruitment in CRA 3 shows a declining trend since 1979, with a lot of short-term volatility. The cause is not known, but larval settlement also shows a declining trend since 1991 with much short-term volatility. The cause of slow growth seen in the tag-recapture data from 1996-2008 compared to earlier data is also unknown: it does not appear to relate to density of the stock or handling of lobsters, nor is it present in adjacent rock lobster fisheries (CRA 2 and CRA 4). The base case model used to evaluate rules therefore has low stock productivity, caused by assuming that the low recruitments in the last 10 years will persist into the future as will the slow growth observed from 1996-2008. These assumptions result in a level of productivity that may not be able to sustain future catches as high as historical catches.

Rationale for Option 1 and Option 2

33. The CRA 3 Forum developed a draft CRA 3 Fisheries Management Plan (the Plan) in 2008. Although the Plan has not been finalised and approved by the Minister, the CRA 3 Working Group are progressing priority elements of the Plan because they are likely to have a positive impact on the health of the fishery and would therefore benefit all fishing sectors. One of the priority elements of the Plan is to develop a management procedure to guide TAC setting in the CRA 3 fishery.

34. During 2009, the CRA 3 Working Group worked with the stock assessment scientists and the RLFAWG to develop a management procedure to guide TAC setting decisions for CRA 3 from 1 April 2010. When the Minister reduced the CRA 3 TAC and TACC in April 2009, he considered

that the TAC cut when combined with a management procedure to guide future TAC setting, should secure the necessary rebuild in the CRA 3 stock to the benefit of all fishery participants. The Minister noted that he would be provided with a management procedure to guide TAC setting in CRA 3 from April 2010.

35. Management procedures are in place for several New Zealand rock lobster fisheries. Management procedures have been successfully used to guide TAC setting in CRA 7 (Otago) and CRA 8 (Southern) since 1996. Management procedures were used first to rebuild the CRA 7 and CRA 8 fisheries from a state of low abundance and then to maintain the stocks at target levels with high probability. A voluntary management procedure was used by CRA 4 (Wellington/Hawkes Bay) to shelve Annual Catch Entitlement (ACE) for two years (2007-08 and 2008-09) to initiate a rebuild of the fishery and this was adopted by the Minister in 2009 to guide TAC and TACC setting in CRA 4. A recent increase in CRA 4 CPUE indicates success of this approach. A voluntary management procedure to shelve ACE if CPUE becomes low has also been adopted by CRA 5 (Canterbury/Marlborough), and the development of management procedure for CRA 6 (Chatham Islands) is well advanced.

36. Adopting either the "Rule 2a" (Option 1) or the "Rule 5" (Option 2) CRA 3 Management Procedures would provide a mechanism to rebuild the CRA 3 fishery from a state of low abundance and provide greater certainty of achieving this outcome. The CRA 3 Management Procedures are designed to move the stock towards the target, $Bref_{90\%}$, and maintain stock size above *Bmin* with high probability. Use of the CRA 3 Management Procedures are viable because:

a) the proposed procedures were chosen from a large selection of procedures that were evaluated for performance against sustainability criteria (refer Breen *et al* (2009));

b) the procedures have been tested using a model of the CRA 3 fishery system based on the 2008 CRA 3 stock assessment model (which was accepted by the MFish Plenary in 2008); and

c) the procedures have been tested for robustness to uncertainties in information, including uncertainties in recruitment and growth, in the level of non-commercial catches and in the stock assessment results. The procedures are robust to these uncertainties in that desired performance against the sustainability and performance indicators was maintained.

ASSESSMENT OF MANAGEMENT OPTIONS

37. Assessment of the management options against statutory criteria is set out and discussed in *Attachment 2* to this consultation paper. Key considerations and impacts are discussed below.

Sustainability

38. Simulation-testing of the "Rule 2a" and "Rule 5" CRA 3 Management Procedures show them to be safe with respect to sustainability indicators. The management procedures are expected to

move the stock towards the target, $Bref_{90\%}$, and maintain stock size above *Bmin* with high probability. The management procedures maintain spawning stock biomass well above 20% of its unfished level.

39. The NRLMG is confident the proposed application of the CRA 3 Management Procedures are consistent with the statutory target because $Bref_{90\%}$ has previously been accepted by the MFish Plenary as a suitable proxy for *Bmsy* and the procedures are expected to rebuild the stock size towards or above this proxy target, $Bref_{90\%}$, with high probability. As noted, the procedures have been tested and are robust to uncertainties in information on the CRA 3 fishery.

Option 1 - Adopt the "Rule 2a" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

40. The "Rule 2a" CRA 3 Management Procedure specifies an initial "fixed" TAC for the first three years (the fishing years 2010-11, 2011-12 and 2012-13). This "fixed" TAC is the current CRA 3 TAC of 293 tonnes (refer *Consultation Paper 2*). However, the current CRA 3 TAC is retained only whilst CPUE stays within specified upper (1.08 kg/potlift) and lower (0.75 kg/potlift) limits. This ensures that variations can be made to the TAC if CRA 3 stock size changes considerably from its current size during the three year period. This increases the safety of achieving the target stock size, $Bref_{90\%}$.

41. The NRLMG notes that seasonal autumn-winter CPUE information suggests the CRA 3 stock size may have increased more than predicted by the 2008 stock assessment.

42. "Rule 2a" provides a median rebuild year of 2016 (i.e., rebuild to a $Bref_{90\%}$ of 1.14 kg/potlift in the autumn-winter season). This is one year later, on average, than "Rule 5" (*Option 2*).

Option 2 - Adopt the "Rule 5" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

43. The "Rule 5" CRA 3 Management Procedure specifies an initial "fixed" TAC for the first two years (the fishing years 2010-11, and 2011-12). This "fixed" TAC is a reduced CRA 3 TAC of 273 tonnes (refer *Consultation Paper 2*).

44. However, under Option 2, the reduced TAC of 273 tonnes is retained for two years and no response is proposed to the TAC if CPUE declines or increases in 2010 or 2011 – even if CPUE declines below the lower limit (0.75 kg/potlift) specified for "Rule 2a".

45. "Rule 5" provides a median rebuild year of 2015 (i.e., rebuild to a $Bref_{90\%}$ of 1.14 kg/potlift in the autumn-winter season). This is one year earlier than "Rule 2a" (2016).

Utilisation & Value

46. Simulation-testing of the "Rule 2a" and "Rule 5" CRA 3 Management Procedures suggests that, as well as rebuilding the stock to the target level, the CRA 3 Management Procedures would provide for good utilisation.

47. The testing indicates that the management procedures would improve fishing opportunities for all sectors over the long-term, and would improve certainty of outcomes by being more responsive to changes in abundance of the stock, which improves the "safety" of the CRA 3 stock.

48. The harvest control rules in the CRA 3 Management Procedures, with allowances made for non-commercial catches, generate recommended TACs; the recommended TACCs are the TAC minus these allowances.

49. The distinguishing factors between the two CRA 3 Management Procedure options proposed (Rule 2a and Rule 5) are the way in which and the rate at which stock targets will be met, and the social, cultural and economic impacts associated with TAC changes that may be invoked by either rule over its five year term of operation. These are discussed under each option below.

Option 1 - Adopt the "Rule 2a" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

50. Under Option 1, the current CRA 3 TAC is "fixed" for the first three years, unless CPUE goes outside the specified upper and lower limits of 1.08 and 0.75kg/potlift respectively. This option would have the least short-term impact on commercial stakeholders.

51. The current utilisation value of the fishery will be maintained for three years unless CPUE falls below 0.75 kg/potlift or increases above 1.08 kg/potlift. The NRLMG notes that the ongoing application of the management procedure would increase customary Maori, amateur and commercial utilisation values. This is because the procedure would improve fishing opportunities for all sectors by increasing the stock from its current size.

52. "Rule 2a" also provides responses to observed variations in stock abundance after the initial fixed TAC expires – the rule allows for minimum 5% or maximum 10% adjustments to the TAC in any one year. The NRLMG considers these responses will provide for less variation in catch year-to-year than Option 2.

Option 2 - Adopt the "Rule 5" CRA 3 Management Procedure to Guide TAC Setting in CRA 3

53. Under Option 2, the CRA 3 TAC would be reduced from 293 tonnes to 273 tonnes from April 2010. The TAC will then be fixed for two years with no response proposed to the TAC if CPUE declines or increases in 2010 or 2011.

54. The current utilisation value of the fishery will be reduced under this option from 1 April 2010 because of the proposed reduction to the TAC. The extent of the impact of this rule on the

benefits derived from the fishery by any one sector will depend on allocations decisions (refer *to Consultation Paper 2*). The NRLMG notes the ongoing application of the management procedure would increase customary Maori, amateur and commercial utilisation values. This is because the procedure would improve fishing opportunities for all sectors by increasing the stock from its current size.

55. "Rule 5" also provides responses to observed variations in stock abundance after the initial fixed TAC expires – the rule allows for minimum 10% or maximum 25% adjustments to the TAC in any one year. The NRLMG considers these responses will provide for greater variation in catch year-to-year than Option 1.

Credibility and Acceptance

56. Management procedures are simpler for people to understand than stock assessments. They therefore tend to attract more interest and support.

57. The CRA 3 Forum initiated the development of a CRA 3 Management Procedure. Therefore, the use of a management procedure to guide TAC setting in the CRA 3 fishery from April 2010 has a very high degree of acceptance and support among CRA 3 tangata whenua and fishing stakeholders. This acceptance and support for a management procedure approach is shared by the NRLMG.

58. Adopting either of the CRA 3 Management Procedures reduces the frequency of stock assessments and frees resources for other research.

OTHER MANAGEMENT ISSUES

59. *Consultation Paper 2* provides advice on TAC setting options for CRA 3 for the 2010-11 fishing year. If "Rule 2a" Management Procedure (Option 1) is adopted, its application would result in no change to the current CRA 3 TAC, whereas if the "Rule 5" Management Procedure (Option 2) is adopted, its application would result in a TAC decrease of 20 tonnes for CRA 3.

INITIAL POSITION

60. CRA 3 Working Group members and the NRLMG would like to adopt an approach to TAC setting that is more responsive to changes in observed abundance in the CRA 3 fishery than the current approach which relies on periodic stock assessments. Either of the proposed CRA 3 Management Procedures will serve in that regard. The NRLMG notes CRA 3 fishery issues have been challenging to resolve and an approach needs to be adopted that rebuilds the fishery to the benefit of all fishery participants.

61. However, sector members of both groups are divided on which of these two management procedure options should be adopted.

62. CRA 3 Working Group commercial representatives and one customary representative are in favour of Option 1: adopt the "Rule 2a" CRA 3 Management Procedure to guide TAC setting in CRA 3. They note CPUE information is showing an upwards trend and consider it would be premature to reduce the TAC (and the TACC) unnecessarily without further information on how CPUE will perform during the next few years. CRA 3 Working Group recreational representatives and one customary representative are in favour of Option 2: adopt the "Rule 5" CRA 3 Management Procedure to guide TAC setting in CRA 3. These representatives consider a TAC reduction in April 2010 would leave some fish in the water to ensure a rebuild of the fishery with greater safety, which may result in increased fishing opportunities for non-commercial fishers.

63. The NRLMG has a majority preference for the "Rule 2a" CRA 3 Management Procedure (Option 1). This is because some NRLMG members:

a) consider a TAC reduction in 2010 (i.e., Rule 5) would be inconsistent with an observed increase in CRA 3 stock abundance, which is confirmed by increasing CRA 3 CPUE in recent years;

b) are less inclined to support "Rule 5" because, after the initial application of the procedure for 2010-11, it is unresponsive to observed changes in CRA 3 stock abundance until April 2012;

c) do not believe that achieving the rebuild to Bref90% one year earlier under "Rule 5" warrants the opportunity cost to the commercial industry of the initial TAC reduction; and

d) prefer smaller adjustments to the TAC (i.e., Rule 2a) than larger adjustments (i.e., Rule 5) because they would provide less variation in catch year-to-year.

64. The NRLMG emphasises that this position is provided as a basis for consultation with tangata whenua and stakeholders. All submissions received on the proposal will be considered and discussed in final advice to the Minister. A copy of the final advice will be made available to iwi and stakeholders who make a submission on the proposal following announcement of the Minister's decision.

ATTACHMENT 1:

SPECIFICATIONS OF THE PROPOSED CRA 3 MANAGEMENT PROCEDURES

65. During 2009, the CRA 3 Working Group worked with the stock assessment scientists and the RLFAWG to develop a management procedure to guide TAC setting decisions for CRA 3 from 1 April 2010.

66. A large set of management procedure evaluations were made, using an operating model based on the CRA 3 assessment model (Breen *et al.* 2009). The CRA 3 assessment model was based on a generalised state-of-the-art lobster model (Haist *et al.* 2009). Of the thousands of rules developed, nine final rule candidates were presented to the CRA 3 Working Group for consideration.

67. The CRA 3 Working Group was unable to reach agreement on one rule option for use in the CRA 3 Management Procedure. The Group instead agreed on two final rule options, called Rule 2a and Rule 5, to be considered for use in the CRA 3 Management Procedure.

The "Rule 2a" CRA 3 Management Procedure

68. The "Rule 2a" CRA 3 Management Procedure is specified as follows:

a) A conditional initial fixed TAC applies for 3 years, set at the current CRA 3 TAC (293 tonnes), unless offset-year CPUE falls below 0.75 kg/potlift or increases above 1.08 kg/potlift;

b) The conditional initial fixed TAC will expire after the 2012-13 fishing year, or when offset-year CPUE used as input to the rule falls below 0.75 kg/potlift or increases above 1.08 kg/potlift, whichever comes sooner;

c) Offset-year CPUE is the standardised CPUE from the period 1 October through 30 September, calculated in November for input to the rule to determine the TAC for the next fishing year, beginning in the following April;

d) The management procedure is to be evaluated every year (no "latent year"), based on offset-year CPUE;

e) The provisional TAC (before minimum and maximum change rules operate, and exclusive of considering the initial fixed TAC) determined by the rule), is given by:

$$TAC'_{y+1} = 275\left(\frac{I_y + 3}{4}\right)^3 \qquad \text{for } 0 < I_y \leq 1 \text{ and}$$

$$TAC'_{y+1} = 275\left(1+\frac{0.5\left(I_y - 1\right)}{0.6}\right) \qquad \text{for } I_y > 1$$

where TAC'_{y+1} is the provisional TAC result from the rule and I_y is the input offset-year CPUE.

e) After the initial fixed TAC expires, , if the procedure results in a TAC that does not change by more than 5%, no change will be made; and

f) After the initial fixed TAC expires, if the procedure results in a TAC that changes by more than 10%, the TAC will be changed by 10% only.

69. The relation between CPUE and provisional TAC (before minimum and maximum change limits operate, and ignoring the initial fixed TAC) is illustrated in *Figure A* for "Rule 2a".

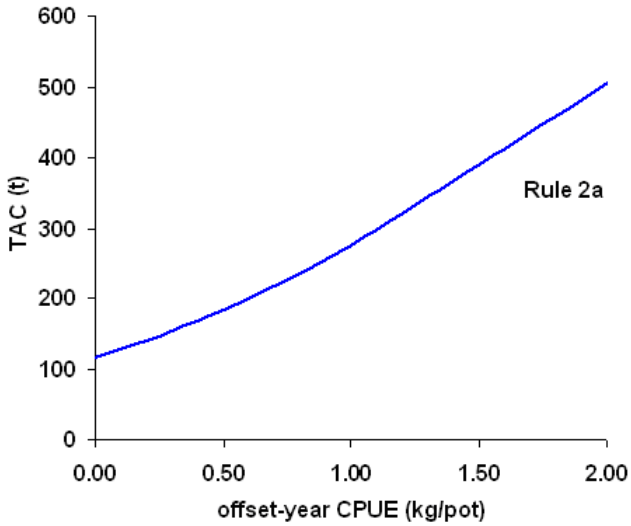


Figure A: The "Rule 2a" CRA 3 Management Procedure

The "Rule 5" CRA 3 Management Procedure

70. The "Rule 5" CRA 3 Management Procedure is specified as follows:

a) An unconditional initial fixed TAC of 273 tonnes applies for 2 years (i.e., no response is proposed to the TAC even if CPUE declines or increases in 2010 or 2011);

b) The conditional initial fixed TAC will expire after the 2011-12 fishing year;

c) Offset-year CPUE is the standardised CPUE from the period 1 October through 30 September, calculated in November for input to the rule to determine the TAC for the next fishing year, beginning in the following April;

d) The management procedure is to be evaluated every year (no "latent year") , based on offset-year CPUE;

e) The provisional TAC (before minimum and maximum change rules operate, and exclusive of considering the initial fixed TAC) determined by the rule), is given by:

$$TAC'_{y+1} = 230\left(\frac{I_y + 3}{3.9}\right)^{2.5} \qquad \text{for } 0 < I_y \le 0.9 \text{ and}$$

$$TAC'_{y+1} = 230\left(1 + \frac{0.5\left(I_y - 0.9\right)}{0.4}\right) \qquad \text{for } I_y > 0.9$$

where TAC'_{y+1} is the provisional TAC result from the rule and I_y is the input offset-year CPUE.

f) After the initial fixed TAC expires, if the procedure results in a TAC that does not change by more than 10%, no change will be made; and

g) After the initial fixed TAC expires, if the procedure results in a TAC that changes by more than 25%, the TAC will be changed by 25% only.

71. The relation between CPUE and suggested TAC (before minimum and maximum change limits operate, and ignoring any initial fixed TAC) is illustrated in *Figure B* for "Rule 5".

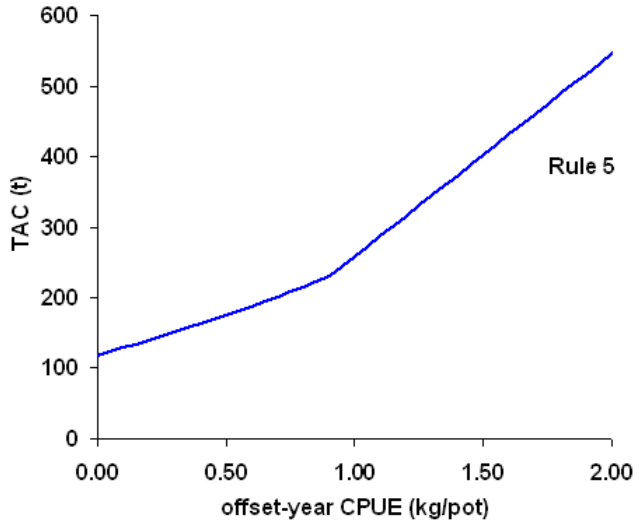


Figure B: The "Rule 5" CRA 3 Management Procedure

Comparative plots of "Rule 2a" and "Rule 5"

72. So that the CRA 3 Working Group, and other stakeholders, could compare rule options, calculations were made from each rule with the same sets of arbitrary hypothetical future CPUE values, from decreasing to static, to increasing very quickly. Three of these are shown in *Figure C* (CPUE decreasing by 0.05 per year), *Figure D* (increasing by 0.05 per year) and *Figure E* (increasing by 0.15 per year). Each figure shows the TACC (not TAC) that would result from the operation of the two rules under differing CPUE scenarios.

73. In reality, future CPUE will not be independent of the TAC. For example, setting a lower TAC would result in a higher CPUE the following year than would setting a higher TAC. Therefore the comparisons of the rule results shown here are somewhat artificial.

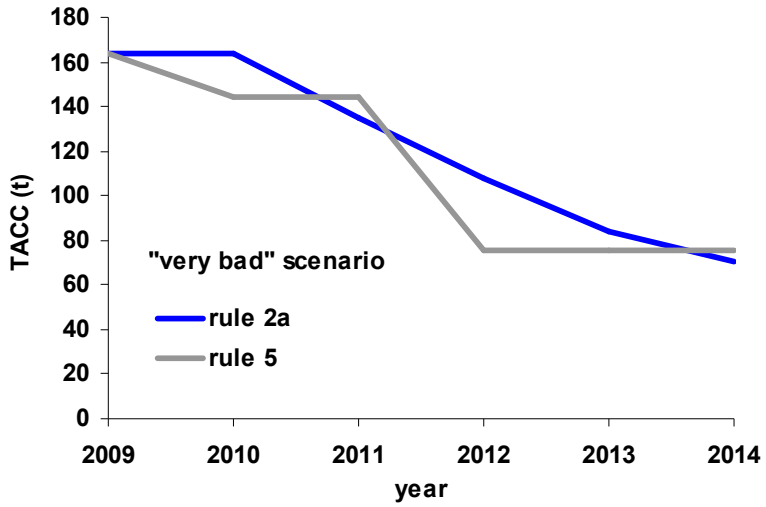


Figure C: TACCs set by the two rules from CPUE decreasing by 0.05 per year.

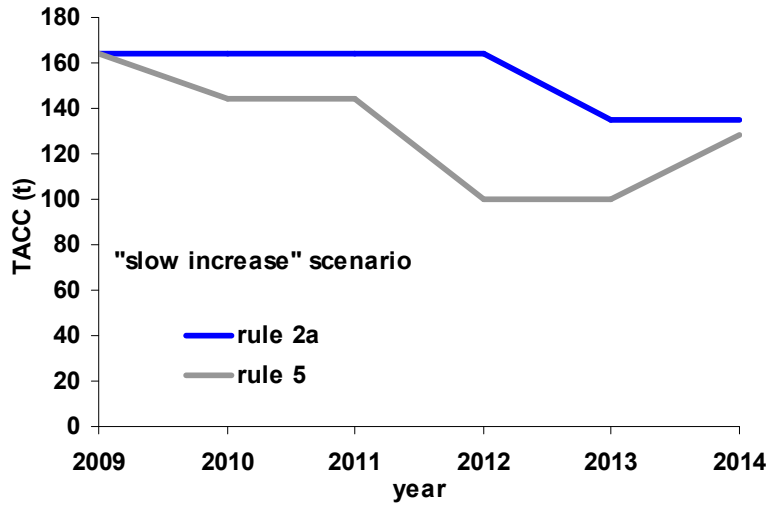


Figure D: TACCs set by the two rules from CPUE increasing by 0.05 per year.

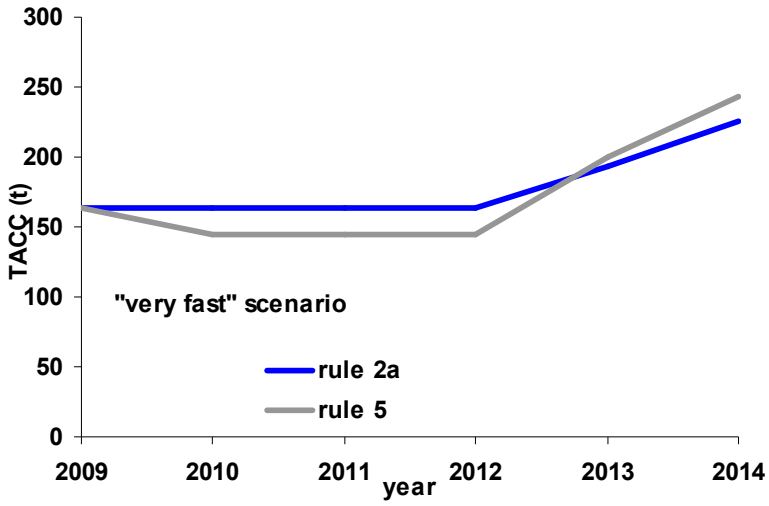


Figure E: TACCs set by the two rules from CPUE increasing by 0.15 per year.

Further Information

74. For further technical information on the Management Procedure Evaluations for CRA 3, please refer to:

Breen, P.A., V. Haist, P.J. Starr & T.H. Kendrick 2009. Development of a management procedure for the CRA 3 stock of rock lobsters (*Jasus edwardsii*). Final Research Report - CRA2006-01 Objective 4 – unpublished manuscript available from the Ministry of Fisheries, Wellington, New Zealand.

Haist, V., P.A. Breen & P.J. Starr 2009. A new multi-stock length-based assessment model for New Zealand rock lobsters (*Jasus edwardsii*). *New Zealand Journal of Marine and Freshwater Research 43(1)*: 355-371.

ATTACHMENT 2:

STATUTORY CONSIDERATIONS

75. The following statutory considerations have been taken into account when forming the management options for CRA 3:

International Obligations and Treaty of Waitangi Settlement Act 1992 (s 5)

76. **Section 5** of the Act requires the Minister to act in a manner consistent with New Zealand's international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. To this end, the provisions of general international instruments such as UNCLOS and the Fish Stocks Agreement have been implemented through the provisions of the Act. The NRLMG is not aware of any specific international obligations relating to rock lobster fisheries that would be affected by the proposals.

77. The NRLMG considers the proposed options are consistent with the obligations relating to the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The NRLMG recognises that rock lobster (koura) is an important taonga species. The proposals seek to improve stock health and therefore improve fishing opportunities, for all sectors including commercial and customary Maori.

78. The NRLMG notes that some regional-level CRA 3 customary Maori interests have had opportunities to input into the development of the CRA 3 Management Procedures through membership of the CRA 3 Forum. The NRLMG hopes to receive more information and input in response to this consultation document.

Purpose of the Act (s 8)

79. **Section 8** of the Act describes the purpose of the Act as being to provide for the utilisation of fisheries resources while ensuring sustainability, and defines the meanings of utilisation and sustainability. The management options presented seek to achieve the purpose of the Act. The proposals seek to achieve sustainable TACs and take into account the respective costs of management versus utilisation benefits.

Environmental considerations (s 9)

80. **Section 9** of the Act prescribes three environmental principles that the Minister must take into account when exercising powers in relation to utilisation of fisheries resources and ensuring sustainability:

a) **Section 9(a)** requires that associated or dependent species (i.e., those that are not harvested) should be maintained above a level that ensures their long-term viability. Potting and hand gathering fisheries have a relatively low level of by-catch and the

NRLMG is not aware of any interactions between the fisheries and non-harvested species of concern;

b) **Section 9(b)** requires the maintenance of biological diversity of the aquatic environment be taken into account. The decision on whether to adopt a management procedure to guide TAC setting in CRA 3 does not directly impact on the long term viability and biological diversity of the aquatic environment in CRA 3. Analysis of the impact of a TAC reduction from application of the proposed "Rule 5" management procedure (Option 1) is undertaken in *Consultation Paper 2*; and

c) **Section 9(c)** requires the protection of habitats of particular significance to fisheries management. The NRLMG is not aware of any such habitats that are affected by the CRA 3 fishery.

Information Principles (S 10)

81. **Section 10** of the Act sets out the information principles, which require that decisions be based on the best available information, taking into account any uncertainty in that information, and applying caution when information is uncertain, unreliable, or inadequate. In accordance with s 10, the absence of information should not be used as a reason to postpone, or fail to take, any measure to achieve the purpose of the Act, including providing for utilisation at levels considered to be sustainable.

82. A thorough review of available information has been undertaken by the NRLMG and the best available information has been used to evaluate the management options presented. The NRLMG has endeavoured to set out the relevant uncertainty in, and inadequacy of, that information so that the appropriate caution can be applied in assessing the proposed management options.

Sustainability Measures (s 11)

83. **Sections 11(1)(a), (b) and (c)** set out matters the Minister must take into account when varying the TAC for CRA 3, including any effects of fishing on any stock and the aquatic environment, any existing controls under the Act that apply to the stock or area concerned, and the natural variability of the stock. Such matters will be addressed directly in *Consultation Paper 2* that seeks quantum variations to the TAC as a result of application of the proposed "Rule 5" management procedure (Option 2). The NRLMG notes, however, that recruitment into rock lobster stocks is highly variable and that this variability is taken into account by stock assessment scientists when developing and testing management procedures for CRA 3. Existing controls under the Act are also considered during these processes.

84. **Sections 11(2)(a) and (b)** require the Minister to have regard to any provisions of any regional policy or plan under the Resource Management Act 1991 and any management strategy or plan under the Conservation Act 1997 that apply to the coastal marine area and are considered relevant when varying the TAC for CRA 3. The NRLMG is not aware of any such provisions that should be taken into account.

85. **Section 11(2A)(b)** requires the Minister to take account of any relevant and approved fisheries plans when varying the TAC in CRA 3. There is no approved fisheries plan in place for CRA 3.

86. **Sections 11(2A)(a) and (c)** require the Minister to take into account any conservation or fisheries service, or any decision not to require such services, when varying a TAC. The NRLMG is not aware of any proposed services that affect the CRA 3 stock. No decision has been made to not require such a service in CRA 3 at this time.

TAC Setting Considerations (s 13)

87. Rock lobster stocks are managed under Section 13 of the Act. Under s 13(2) the Minister must set a total allowable catch that:

a) maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or

b) enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered—

(i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

(ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or]

c) enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

Before a TAC could be set under the above provisions the Minister must be provided with an estimate of both current biomass and the biomass that can produce the maximum sustainable yield (*Bmsy*). Current biomass estimates are available for CRA 3. A *Bmsy* estimate is also available but is considered unreliable and is not used. Instead, a reference biomass is used as a proxy for *Bmsy*. Where proxies are applied, Section 13 (2A) of the Act is used for TAC setting.

88. Section 13(2A) states that:

(2A) For the purposes of setting a total allowable catch under this section, if the Minister considers that the current level of the stock or the level of the stock that can produce

the maximum sustainable yield is not able to be estimated reliably using the best available information, the Minister must—

a) not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock; and

b) have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and

c) set a total allowable catch—

(i) using the best available information; and

(ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

89. It is the NRLMG's view that the measures advanced in this paper meet the requirement of being "not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield."

90. In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield under subsection (2)(b) or (c), or (2A) (if applicable), the Minister shall have regard to such social, cultural, and economic factors as he or she considers relevant. The CRA 3 Management Procedures are rebuilding procedures and would act to move the stock quickly towards the target. The NRLMG notes that the procedures are expected to rebuild the stock size to the target level, $Bref_{90\%}$, with high probability.

TACC Setting Considerations (s 20 and 21)

91. **Sections 20 and 21** specify a number of matters that must be taken into account when setting or varying a TACC. **Section 21** requires the Minister to allow for non-commercial Mäori and amateur fishing interests, and other sources of fishing-related mortality when setting or varying the TACC. These allowances will be considered and provided for when quantum changes to the TAC are proposed (refer *Consultation Paper 2*).

92. **Section 21(4)** also requires that any mätaitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. No mätaitai reserves or s 186A closures are located within CRA 3.

93. **Section 21(5)** also requires that any regulations to prohibit fishing made under s 311 be taken into account when setting allowances for amateur fishing interests. The NRLMG is not aware of any restrictions under s 311 that have been placed on fishing in any area within CRA 3.

2. CATCH LIMIT REVIEWS FOR CRA 3, CRA 4 AND CRA 7 AS A RESULT OF OPERATION OF MANAGEMENT PROCEDURES

EXECUTIVE SUMMARY

94. The National Rock Lobster Management Group (NRLMG) proposes to vary the Total Allowable Catches (TACs) and allowances for CRA 3 (Gisborne), CRA 4 (Wellington/Hawkes Bay) and CRA 7 (Otago) rock lobster fisheries for the 2010-11 fishing year. The proposed variations are based on the operation of management procedures, and would be applied from 1 April 2010.

95. The CRA 3 TAC options presented are the result of the operation of the management procedures presented for consideration in *Consultation Paper 1*. The NRLMG has reviewed best available information and has found nothing that would warrant the Minister of Fisheries (the Minister) choosing not to be guided by one of the management procedures (Rule 2a or Rule 5) for the 2010-11 fishing year. Implementing procedure "Rule 2a" would result in an initial "fixed" TAC of 293 tonnes for the 2010-11 fishing year, whereas implementing "Rule 5" would result in a TAC decrease of 20 tonnes from 293 tonnes to 273 tonnes.

96. The proposed variation to the CRA 4 TAC is the result of the operation of a management procedure adopted by the Minister in March 2009 to guide TAC setting for this stock for the 2009-10, 2010-11 and 2011-12 fishing years. The NRLMG has reviewed best available information and has found nothing that would warrant the Minister choosing not to be guided by the procedure for 2010-11. Implementing the procedure would result in a TAC increase of 199.5 tonnes.

97. The proposed variation to the CRA 7 TAC is also the result of the operation of a management procedure adopted by the Minister in March 2008 to guide TAC setting for this stock. The NRLMG has reviewed best available information and has found nothing that would warrant the Minister choosing not to be guided by the procedure for 2010-11. Implementing the procedure would result in a TAC decrease of 104.5 tonnes.

98. An agreed management procedure has also been adopted for CRA 8. The operation of the CRA 8 Management Procedure in 2009 results in no change to the TAC. The calculation of the decision rule resulted in a 0.5% reduction, however, because this is less than the minimum change of 5%, there is no proposed change to the CRA 8 TAC for the 2010-11 fishing year.

99. The NRLMG propose that the various revised TACs for CRA 3, CRA 4 and CRA 7 be allocated as follows:

a) For CRA 3, if the "Rule 5" CRA 3 Management Procedure is adopted, the NRLMG recommends decreasing the Total Allowable Commercial Catch (TACC) only. If the TACC option for "Rule 5" is chosen, the NRLMG considers there is greater certainty of benefit to the stock associated with a reduction to the TACC as long as the catch reduction is not taken by other sectors.

b) For CRA 4, the NRLMG recommends increasing the TACC only because the commercial sector received a significant reduction in catch in April 2009 while allowances to other sectors remained constant.

c) For CRA 7, the NRLMG recommends decreasing the TACC only because the commercial sector received increases and decreases in the past while allowances to other sectors remained constant. The NRLMG considers reducing only the TACC provides greatest certainty that stock size will increase because catch from the commercial sector can be more directly controlled.

PURPOSE OF THIS PAPER

100. This paper sets out the NRLMG's initial advice on proposals to vary the TACs and allowances for CRA 3, CRA 4 and CRA 7 based on the operation of management procedures. It includes the best information currently available to the NRLMG to inform decision-making.

101. The purpose of this paper is to seek information and comments from tangata whenua, fishery stakeholders and other interested parties on the proposals.

TERMINOLOGY IN THIS PAPER

Management Procedures

102. A management procedure is a tool used to guide the setting of catch limits. A general description of management procedures is provided in *Consultation Paper 1*.

Sustainability Indicators (Bmsy, Bref, Bmin)

103. The NRLMG uses sustainability indicators to report on stock health and to evaluate the effectiveness of management options.

104. Three sustainability indicators are relevant to the evaluation of the proposals in this paper:

a) The statutory target stock size, ***Bmsy***. Section 13 requires the Minister to set TACs for rock lobster stocks that move the stocks to, or maintain the stocks at, a level at or above the biomass that can produce the maximum sustainable yield (*Bmsy*), or that is not inconsistent with this objective. *Bmsy* is not straightforward to estimate and is often uncertain when estimated.

b) The proxy target stock size, ***Bref***. When a *Bmsy* estimate is absent or unreliable, alternative and proxy targets are used. *Bref* is generally a 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 either the stock size associated with lowest abundance in the observed history of the fishery or ½ *Bref*.

105. For all the stocks considered in this paper, stock size is measured in terms of the vulnerable biomass. "Vulnerable biomass" is the total quantity of lobsters available to the fishery (i.e., it does not include lobsters that cannot be harvested such as undersize lobsters and berried female lobsters).

106. The desired performance in relation to these sustainability indicators is:

a) stock size fluctuates around the target (*Bref*) with at least 50% probability of achieving the target;

b) stock size remains above the minimum (*Bmin*) with 90% probability; and

c) spawning stock size remains above 20% of its unfished level.

107. Extensive simulation-testing based on operating models of the stocks and associated fisheries suggest that all the management procedures achieve the desired performance in relation to the sustainability indicators.

108. In October 2008, MFish released the Harvest Strategy standard for New Zealand fisheries (the HSS) that specifies performance standards for Quota Management System species. The NRLMG considers the management procedures previously agreed for CRA 4 and CRA 7, and proposed for CRA 3, are consistent with the HSS.

109. The Guidelines for Harvest Strategy Standards (MFish 2008) 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]

SUMMARY OF PROPOSED MANAGEMENT OPTIONS

110. *Tables 1* and *2* set out the variations to TACs and allowances in rock lobster fisheries proposed for the 2010-11 fishing year beginning 1 April 2010.

111. The NRLMG is seeking comments on the following proposed TACs and allowances for CRA 3:

CRA 3	**Option 1** **2010-11 Catch Limits from Operation of the "Rule 2a" CRA 3 Management Procedure (*No Change to Current Catch Limits*)**	**Option 2** **2010-11 Catch Limits from Operation of the "Rule 5" CRA 3 Management Procedure**
TAC	293 tonnes	273 tonnes
TACC	164 tonnes	144 tonnes
Customary Allowance	20 tonnes	*Unchanged*
Recreational Allowance	20 tonnes	*Unchanged*
Other Fishing Mortality	89 tonnes	*Unchanged*

Table 1: *TAC and Allowance Options for CRA 3.*

112. The NRLMG is seeking comments on the following proposed TAC and TACC variations for CRA 4 and CRA 7:

Stock		**Option 1** **Adopt Catch Limits from Operation of Management Procedures**	**Option 2** **Retain Current Catch Limits**
CRA 4	**TAC**	660.5 tonnes	461 tonnes
	TACC	465.5 tonnes	266 tonnes
	Customary Allowance	*Unchanged*	35 tonnes
	Recreational Allowance	*Unchanged*	85 tonnes
	Other Fishing Mortality	*Unchanged*	75 tonnes
CRA 7	**TAC**	104.5 tonnes	209 tonnes
	TACC	84.5 tonnes	189 tonnes
	Customary Allowance	*Unchanged*	10 tonnes
	Recreational Allowance	*Unchanged*	5 tonnes
	Other Fishing Mortality	*Unchanged*	5 tonnes

Table 2: *TAC and Allowance Options for CRA 4 and CRA 7.*

OPERATION OF MANAGEMENT PROCEDURES FOR THE 2010-11 FISHING YEAR

113. Three agreed (CRA 4, CRA 7 and CRA 8) and two alternative proposed (CRA 3) management procedures have been operated to guide TAC setting for the 2010-11 fishing year.

114. Operation of the CRA 8 management procedure resulted in no proposed changes to the CRA 8 TAC for 2010-11 (refer to *Attachment 3* for a detailed description of the CRA 8 Management Procedure).

115. The NRLMG believes that implementing the catch limits generated by the management procedures is consistent with the Fisheries Act 1996 (the Act). In all cases, operation of the relevant management procedure results in a TAC that will move the stock to a level at or above *Bmsy* (or the accepted proxy), in a way and rate considered appropriate for the stock given, interdependence of stocks, biological characteristics and any environmental factors affecting the stock, and social, cultural and economic factors.

116. The Minister may, of course, choose any alternative TAC within the range consulted on. However, the NRLMG considers that there is considerable benefit in consistent implementation of TACs generated by agreed management procedures. Such an approach provides certainty to stakeholders over management actions, reduces conflict over management decision-making and meets legislative obligations.

CRA 3 (GISBORNE ROCK LOBSTER FISHERY)

Summary of Management Options and Rationale for CRA 3

117. The management options for CRA 3 are summarised in *Table 1* above. Two alternative options for TAC setting are being proposed, based on two different management procedures proposed for the CRA 3 fishery. Both of the rules meet sustainability criteria by moving the stock towards the target, $Bref_{90\%}$, and maintaining stock size above *Bmin* with high probability. The key difference between the rules is the way and the rate at which they move the stock to the agreed target level.

118. It is proposed that the Minister will be guided on the TAC option by his decision on a preferred management procedure (refer *Consultation Paper 1*). If the Minister adopts the "Rule 2a" CRA 3 Management Procedure no change to the CRA 3 TAC is proposed for 2010-11, whereas if the Minister adopts the "Rule 5" CRA 3 Management Procedure it is proposed that the CRA 3 TAC will be reduced by 6.8 % for 2010-11.

119. If the Minister chooses not to adopt one of the two CRA 3 Management Procedures proposed in *Consultation Paper 1*, periodic stock assessments (which are relatively infrequent due to resource constraints) would continue to guide TAC setting for CRA 3. A revised stock assessment was not completed in 2009, therefore there is no clear alternative basis for recommending alternative TAC setting options for CRA 3 in the 2010-11 fishing year.

120. Should the Minister not support either management procedure, the NRLMG recommends that the Minister either:

a) adopt the 20 tonne TAC reduction as specified by the "Rule 5" Management Procedure; or

b) make no change to the CRA 3 TAC for the 2010-11 fishing year; and

c) that he request further work to be commissioned during 2010 to support consideration of alternative management measures for CRA 3 for the 2011-12 fishing year.

Option 1 – Maintain the current TAC and allowances for CRA 3 (Status quo)

121. Under Option 1, the current CRA 3 TAC and allowances would be retained for the 2010-11 fishing year (refer *Table 1*).

122. This proposal results from the operation of the proposed "Rule 2a" CRA 3 Management Procedure (refer *Consultation Paper 1*). The operation of this CRA 3 Management Procedure is based on best available information to guide TAC setting for the CRA 3 fishery in the 2010-11 fishing year using extensive simulation-testing based on an operating model that represents the CRA 3 stock and associated fishery.

Option 2 – Set the CRA 3 TAC using the "Rule 5" CRA 3 Management Procedure

123. Under Option 2, the TAC for CRA 3 would be reduced from 293 tonnes to 273 tonnes from 1 April 2010 (refer *Table 1*). The NRLMG proposes the following allocations of the TAC:

a) Reduce the TACC from 164 tonnes to 144 tonnes only; and

b) Retain the current allowances for customary Maori, amateur and other fishing mortality.

124. However, the Minister may, of course, choose an alternative catch allocation of the TAC. Feedback from tangata whenua and stakeholders on alternative catch allocations for Option 2 is welcomed by the NRLMG.

125. This TAC proposal results from the operation of the proposed "Rule 5" CRA 3 Management Procedure (refer *Consultation Paper 1*). The operation of this CRA 3 Management Procedure is based on best available information to guide TAC setting for the CRA 3 fishery in the 2010-11 fishing year using extensive simulation-testing based on an operating model that represents the CRA 3 stock and associated fishery.

Assessment of Management Options for CRA 3

126. Assessment of the management options against statutory criteria is set out and discussed in *Attachment 1* to this consultation paper. Key considerations and impacts are discussed below.

CRA 3 Sustainability Indicators and Stock Status

127. A *Bmsy* reference point was calculated for CRA 3 in 2008. The *Bmsy* calculation was sensitive to the period chosen to represent mean recruitment, which varies substantially over the period for which estimates are available; which in turn caused uncertainty in *Bmsy*. The NRLMG and MFish Plenary therefore considered this *Bmsy* estimate unreliable for use as a target stock size for this stock.

128. A *Bmsy* proxy target, *Bref*, was agreed by the Rock Lobster Fisheries Assessment Working Group (RLFAWG) in 2009 as the management procedure target because it could be estimated with greater reliability and described a period when the stock was considered to be healthy. This target stock size is the autumn-winter (April through September) vulnerable stock size associated with the reference period 1974-79. CRA 3 stakeholders collectively agreed on this target level because 1974-79 was a period when the stock showed good productivity and was demonstrably safe, having gone below this level and then recovered.

129. $Bref_{1974\text{-}79}$ needed further adjustment because growth had changed significantly since 1974-79 (as demonstrated in the 2008 assessment) and the target stock size needed to reflect the current growth rate, legal size and escape gap regulations. A technical procedure based on fishing mortality rates was used to adjust $Bref_{1974\text{-}79}$ to reflect these changes. This adjustment procedure has been reviewed and accepted by the RLFAWG.

130. The RLFAWG then agreed that the CRA 3 Management Procedure rules should be evaluated against 90% of the *adjusted Bref* (called $Bref_{90\%}$ hereafter), to address the potential that a 'regime shift' resulting in lower productivity may have occurred and that reference points based on historically higher productivity may be inappropriate if recruitment were to continue at this historically low level. The CPUE associated with the $Bref_{90\%}$ is a standardised autumn-winter CPUE of 1.14 kg/potlift.

131. *Bmin* for CRA 3 is the stock size associated with lowest abundance in the observed history of the fishery. The CRA 3 stock has previously recovered from this low point.

132. A stock assessment was last undertaken for CRA 3 in 2008[1]. The 2008 stock assessment results indicated that stock size was just above *Bmin* and well below its target level. Under 2007 catches and recent recruitments, the 2008 assessment predicted a 75% probability that stock size would decline over the four years up to 2012.

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[1] The updated 2008 stock assessment model provided the basis for the operating model which was used to conduct management procedure evaluations for CRA 3.

133. On the basis of this assessment, the Minister reduced the CRA 3 TAC from 319 tonnes to 293 tonnes, from April 2009.

134. CPUE is considered to be a reliable indicator of relative stock size in CRA 3. The NRLMG notes that, based on recent CPUE information, stock size may have increased more than predicted by the 2008 stock assessment model. Autumn-winter CPUE increased from 0.60 kg/potlift in 2007 to 0.68 in 2008, and then to 0.94 kg/potlift in 2009. Offset year (1 October to 30 September) CPUE also increased from 0.59 kg/potlift in 2007 to 0.63 in 2008, and then to 0.80 kg/potlift in 2009. CPUE is still below the CPUE associated with $Bref_{90\%}$ - a standardised autumn-winter CPUE of 1.14 kg/potlift.

135. There is considerable uncertainty with respect to the level of current recruitment and some uncertainty with respect to current growth rates in CRA 3. As noted above, two adjustments to the *Bref* target have been made to address the potential that slow growth and low recruitments will persist into the future. These adjustments will be reviewed at the time of future stock assessments and management procedure reviews. The model's estimated recruitment in CRA 3 shows a declining trend since 1979, with a lot of short-term volatility. The cause is not known, but larval settlement also shows a declining trend since 1991 with much short-term volatility. The cause of slow growth seen in the tag-recapture data from 1996-2008 compared to earlier data is also unknown: it does not appear to relate to density of the stock or handling of lobsters, nor is it present in adjacent rock lobster fisheries, CRA 2 and CRA 4. The base case model used to evaluate rules therefore has low stock productivity, caused by assuming that the low recruitments in the last 10 years will persist into the future as will the slow growth observed from 1996-2008. These assumptions result in a level of productivity that may not be able to sustain future catches as high as historical catches.

136. The stock assessment was not updated for CRA 3 in 2009 except that the model was updated from recent data for use as the operating model to test management procedures.

Assessment of Option 1 – Maintain the current TAC and allowances for CRA 3 (Status quo)

Sustainability

137. Under Option 1, it is proposed that the current CRA 3 TAC of 293 tonnes will be retained for the 2010-11 fishing year. The NRLMG considers this to be consistent with the Minister's statutory obligation to rebuild a stock that is below *Bmsy* or an agreed proxy target (i.e., $Bref90_{\%}$).

138. The proposed maintenance of the TAC at the current level is specified by the "Rule 2a" CRA 3 Management Procedure. The NRLMG notes that ongoing application of the management procedure is expected to meet sustainability criteria by moving the stock towards the target, $Bref_{90\%}$, and maintaining stock size above *Bmin* with high probability

139. Retaining the TAC may result in stock size increasing to $Bref_{90\%}$ at a slightly slower rate than under Option 2. On average, "Rule 2a" rebuilds the stock to $Bref_{90\%}$ by 2016 compared to Option 2, which rebuilds the stock to $Bref_{90\%}$ by 2015.

140. The NRLMG notes that an observed increase in the autumn-winter CPUE between 2008 and 2009 suggests that the CRA 3 stock size may have increased more than predicted by the 2008 stock assessment and considers that retaining the current TAC for 2010-11 does not pose a risk to stock sustainability for CRA 3 and will likely enable the stock to increase in size towards $Bref_{90\%}$.

Utilisation & Value

141. Retaining the CRA 3 TAC and allowances maintains the current utilisation value of the fishery. Option 1 would therefore have the least short-term impact on commercial stakeholders.

142. Ongoing application of the "Rule 2a" Management Procedure would increase customary Maori, recreational and commercial utilisation values. This is because the procedure would improve fishing opportunities for all sectors by increasing the stock from its current size.

143. "Rule 2a" also specifies responses to observed variations in stock abundance after the initial period of fixed TAC expires in 2012-13 or if CPUE falls below 0.75 kg/potlift or increases above 1.08 kg/potlift before this year. The NRLMG notes that these responses, along with the lower values for minimum and maximum change associated with the rule, will provide for greater stability in catch than Option 2.

Assessment of Option 2 – Set the CRA 3 TAC using the "Rule 5" CRA 3 Management Procedure

Sustainability

144. Under Option 2, it is proposed that the CRA 3 TAC will be reduced from 293 tonnes to 273 tonnes from 1 April 2010. The NRLMG considers this reduction to be consistent with the Minister's statutory obligation to rebuild a stock that is below *Bmsy* or the agreed proxy target (i.e., $Bref_{90\%}$).

145. The proposed reduction in TAC is specified by the proposed "Rule 5" CRA 3 Management Procedure. Ongoing application of the management procedure is expected to meet sustainability criteria by moving the stock towards the target, $Bref_{90\%}$, and maintaining stock size above *Bmin* with high probability

146. The proposed TAC reduction, under this option, may result in stock size increasing to $Bref_{90\%}$ at a slightly faster rate than under Option 1 (which maintains the *status quo* if CPUE remains above 0.75kg/potlift). On average, "Rule 5" rebuilds the stock to $Bref_{90\%}$ in 2015 compared to Option 1, which rebuilds the stock to $Bref_{90\%}$ in 2016.

147. The NRLMG notes that the autumn-winter CPUE has increased between 2008 and 2009, which may indicate that the stock is rebuilding under the current TAC and that the difference in the rate of rebuild by one year sooner under this option, is small.

Utilisation & Value

148. Decreasing the CRA 3 TAC would reduce the current utilisation value of the fishery.

149. The NRLMG proposes reducing the CRA 3 TACC only from 164 tonnes to 144 tonnes. If this TACC option is chosen, the NRLMG considers there is greater certainty of benefit to the stock associated with a reduction to the TACC as long as the catch reduction is not taken by other sectors. This is because catch from the commercial sector can be more directly controlled.

150. The NRLMG proposes no change to the current allowances for customary Maori and recreational because best available information suggests they are not taking their current allowances and there is no new information available to recommend adjustments to the current allowances. The NRLMG notes information on customary Maori and recreational harvest is scarce and uncertain (although information on customary catch is improving).

151. This option is expected to provide greater variation in catch year-to-year than Option 1 because "Rule 5" allows for minimum 10% or maximum 25% adjustments to the TAC after the initial fixed two year TAC expires for the 2011-12 fishing year compared to a minimum 5% and maximum 10% adjustment for Option 2.

152. As with Rule 2a, ongoing application of the Rule 5 CRA 3 Management Procedure would increase customary Maori, amateur and commercial utilisation values. This is because the procedure will improve fishing opportunities for all sectors by increasing the stock from its current size.

153. Using 2009 landing price information (which is based on average port price paid to fishers), the 20 tonne decrease in commercial catch of rock lobster would result in approximately $1.04 million loss in revenue for the commercial industry. In the 2008-09 fishing year, the CRA 3 ACE price was $17,818.70 per tonne. The ACE price represents the price commercial fishers are willing to pay for the right to harvest rock lobster in CRA 3. Using 2008-09 ACE price information, the proposed 20 tonne decrease in TACC could potentially result in a net economic loss of approximately $360 K to CRA 3 quota share owners.

Option 1 & Option 2 – Credibility and Acceptance

154. Management procedures can be simpler for stakeholders to understand than stock assessments. They therefore tend to attract more interest and greater support.

155. The CRA 3 Multi-stakeholder Fishing Forum (CRA 3 Forum) initiated the development of a CRA 3 Management Procedure. Therefore, the use of a management procedure to guide TAC setting in the CRA 3 fishery from April 2010 has a high degree of acceptance and support among CRA 3 tangata whenua and fishing stakeholders. This acceptance and support for a management procedure approach is shared by the NRLMG.

156. Adopting either of the CRA 3 Management Procedures reduces the frequency of stock assessments and frees resources for other research.

Initial Position on CRA 3

157. The CRA 3 Working Group (a smaller group of CRA 3 Forum representatives) and the NRLMG attempted to reach consensus on a single preferred CRA 3 Management Procedure option to guide TAC setting from April 2010. However, sector members from both groups are divided on which option to support:

a) CRA 3 Working Group commercial representatives and one customary representative are in favour of Option 1: maintain the current TAC and allowances for CRA 3. The proposed retention in TAC is specified by the "Rule 2a" CRA 3 Management Procedure.

b) CRA 3 Working Group recreational representatives and one customary representative are in favour of Option 2: set the CRA 3 TAC and allowances using the "Rule 5" CRA 3 Management Procedure. They did not however have a preferred allocation of the reduced TAC.

c) The NRLMG has a majority preference for Option 1 (Rule 2a).

158. The NRLMG has identified no reason why the Minister should not use the results of a Management Procedure to guide statutory TAC setting decisions for CRA 3. It is recommended that the Minister adopt a CRA 3 Management Procedure based on the available information and the evaluations set out in *Consultation Paper 1*, and then choose the TAC setting option that corresponds to the adopted CRA 3 Management Procedure in this *Consultation Paper*.

CRA 4 (WELLINGTON/HAWKES BAY ROCK LOBSTER FISHERY)

Summary of Management Options and Rationale for CRA 4

159. The management options for CRA 4 are summarised in *Table 2*. Two alternative options for TAC setting are being proposed: vary the CRA 4 TAC based on the operation of the CRA 4 Management Procedure, or maintain the current TAC and allowances for CRA 4.

Option 1 – Vary the CRA 4 TAC and TACC based on the operation of the CRA 4 Management Procedure

160. Under Option 1, the TAC for CRA 4 would increase from 461 tonnes to 660.5 tonnes from 1 April 2010. The NRLMG proposes the following allocation of the TAC:

a) Increase the TACC from 266 tonnes to 465.5 tonnes (as specified by the CRA 4 Management Procedure); and

b) Retain the current allowances for customary Maori, amateur and other fishing mortality.

161. The CRA 4 Management Procedure was adopted by the Minister in March 2009 to guide TAC setting in CRA 4 for the 2009-10, 2010-11 and 2011-12 fishing years. During 2011, the management procedure will be reviewed.

162. The procedure is described in detail in *Attachment 2* to this consultation paper.

Option 2 – Maintain the current TAC and allowances for CRA 4

163. Under Option 2, the current CRA 4 TAC and allowances would be retained for the 2010-11 fishing year (refer *Table 2*).

164. If the Minister chooses not to use the CRA 4 Management Procedure to guide TAC setting for CRA 4 from 1 April 2010, there is no clear basis for recommending alternative TAC options for CRA 4 in the 2010-11 fishing year. A stock assessment was last performed for CRA 4 in 2005; consequently, under Option 2, the management approach to CRA 4 TAC setting would need to be revised in 2010.

Assessment of Management Options for CRA 4

165. Assessment of the management options against statutory criteria is set out and discussed in *Attachment 1* to this consultation paper. Key considerations and impacts are discussed below.

CRA 4 Sustainability Indicators and Stock Status

166. No reliable estimate of *Bmsy* is currently available for CRA 4. The MFish Plenary has agreed a *Bmsy* proxy target, *Bref*, which is the autumn-winter vulnerable stock size associated with the period 1979-88. 1979-88 was a period when the CRA 4 stock showed good productivity and was demonstrably safe: it subsequently declined to lower levels then recovered.

167. *Bmin* for CRA 4 is defined as the autumn-winter vulnerable stock size associated with the lowest observed abundance in the CRA 4 fishery.

168. A stock assessment was last performed for CRA 4 in 2005[2]. The 2005 stock assessment results indicated stock size in 2004-05 was well above *Bmin* and *Bref*. The median expectation was that stock size would decline slightly over the subsequent three years but would remain above *Bref.* Uncertainty around these median projections was very high.

169. 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. Standardised autumn-winter CPUE has increased in the last three fishing years to 0.871kg/potlift (refer *Figure 1*).

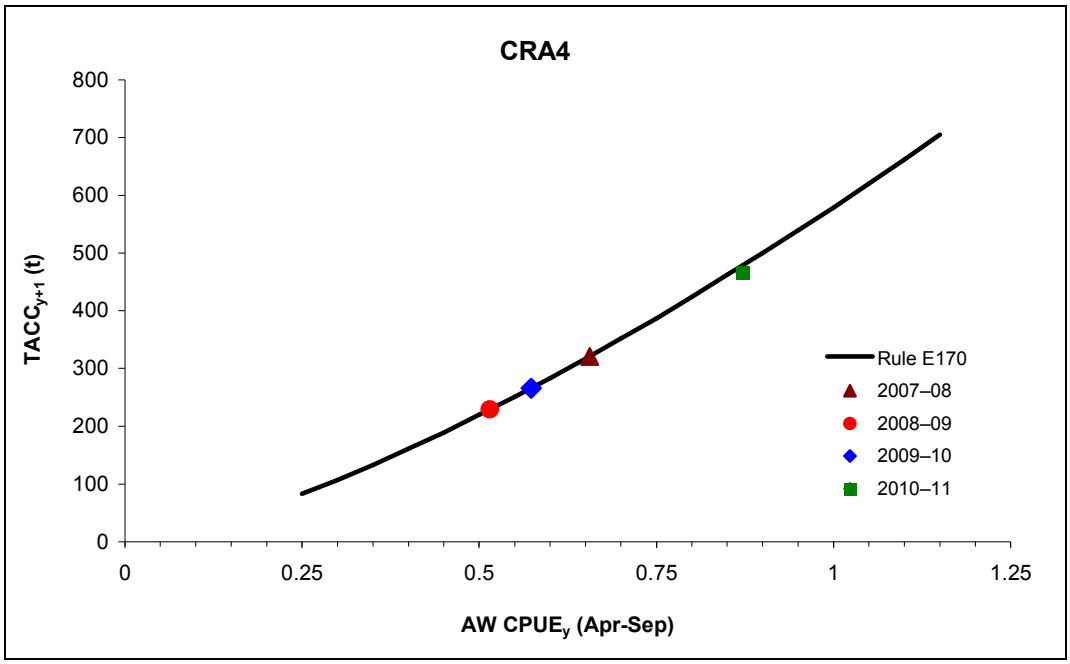

Figure 1: ***Graphic representation of the CRA 4 management procedure. Catch limits in the next fishing year are a function of CPUE in the current year. For example, the catch limit generated for the 2010-11 fishing year is based on autumn-winter CPUE from the 2009-10 fishing year (0.871 kg/potlift). The CPUE values that generated the catch limit proposals for the 2007–08, 2008–09, 2009–10 fishing years are also shown.***

[2] The 2005 stock assessment model provided a basis for the operating model which was used to conduct management procedure evaluations for CRA 4.

170. CRA 4 commercial stakeholders operated the CRA 4 Management Procedure in 2007 and 2008 to guide voluntary commercial catch reductions with the express purpose of halting declining abundance to ensure the ongoing economic viability of the fishery. The Minister formally adopted the management procedure in March 2009, to guide the setting of the TAC and TACC in CRA 4. Based on the operation of the management procedure, the Minister reduced the CRA 4 TAC from 771 tonnes to 460 tonnes, and set a TACC of 266 tonnes from 1 April 2009.

Assessment of Option 1 – Vary the CRA 4 TAC and TACC based on Operation of the CRA 4 Management Procedure

Sustainability

171. Under Option 1, it is proposed that the CRA 4 TAC will increase from 461 tonnes to 660.5 tonnes from 1 April 2010. The NRLMG considers this increase is consistent with the Minister's statutory obligations to maintain the stock size at or above *Bmsy* or an agreed proxy target (i.e., *Bref*).

172. The proposed increase in TAC is specified by the CRA 4 Management Procedure. Ongoing application of the management procedure is expected to meet sustainability criteria by maintaining stock size above *Bmin* and *Bref* with high probability.

Utilisation & Value

173. Increasing the CRA 4 TAC would increase the current utilisation value of the fishery.

174. The NRLMG proposes allocating the full TAC increase only to the commercial sector because in 2009-10 the commercial sector received a significant reduction in commercial catch (54% decrease) while allowances to other sectors remained constant. The NRLMG notes, however, that the Zone 5 Big Game Fishing Council Clubs (Zone 5 encompasses the CRA 4 area) have implemented a voluntary bag limit reduction over the last two years (from 6 lobsters per person per day to 4) to support efforts to increase abundance in the fishery.

175. The proposed TACC increase from 266 tonnes to 465.5 tonnes does not exceed the level in place before the 2009-10 TACC reduction; therefore it is reasonable for the commercial sector to receive the full benefit of this TACC increase up to the point of the historical catch level (the previous TACC was 577 tonnes).

176. The NRLMG proposes no change to the current allowances for customary Maori and recreational because best available information suggests they are not taking their current allowances and there is no new information available to recommend adjustments to the current allowances. Zone 5 fishing clubs may wish to review their voluntary bag limit reduction, however. The NRLMG notes information on customary Maori and recreational harvest is scarce and uncertain (although information on customary catch is improving).

177. Ongoing application of the CRA 4 Management Procedure is designed to maintain stock size well above the target stock size and consequently meet customary Maori, recreational and

commercial utilisation values over time. This is because the management procedure will improve fishing opportunities for all sectors by increasing the stock size.

178. Using 2009 landing price information (which is based on average port price paid to fishers), the 199.5 tonne increase in commercial catch of rock lobster would result in approximately $10.4 million increase in revenue for the commercial industry. In the 2008-09 fishing year, the CRA 4 ACE price was $22,997.30 per tonne; the ACE price represents the price commercial fishers are willing to pay for the right to harvest rock lobster in CRA 4. Using 2008-09 ACE price information, the proposed 199.5 tonne increase in TACC could potentially result in a net economic benefit of approximately $4.6 million to CRA 4 quota share owners.

Credibility and Acceptance

179. The NRLMG believes that choosing to implement the results of an agreed management procedure increases stakeholder confidence in the application of management procedures for other rock lobster fisheries.

180. CRA 4 commercial stakeholders support statutory TAC and TACC increases for the 2010-11 fishing year (as guided by the CRA 4 Management Procedure).

Assessment of Option 2 – Maintain the current TAC and allowances for CRA 4

Sustainability

181. Under Option 2, it is proposed that the CRA 4 TAC would be retained at 461 tonnes for the 2010-11 fishing year. Retaining the current TAC for CRA 4 would likely result in the stock increasing at a faster rate than under Option 1. This would not pose a risk to sustainable utilisation.

Utilisation & Value

182. Retaining the current TAC and allowances for CRA 4 would constrain utilisation in the commercial fishery and result in an opportunity cost of $13.7 million in export revenue for New Zealand and approximately $4.6 million in net economic benefits to CRA 4 ACE/quota holders. However, this would likely result in increased catch rates in the CRA 4 non-commercial fisheries and would also likely result in increased CPUE for commercial fishers compared to those under Option 1.

Credibility & Acceptance

183. The NRLMG believes that choosing not to implement the results of an agreed management procedure without an explicit reason would reduce stakeholder confidence in the application of management procedures for this and other rock lobster fisheries. Such a decision would also affect development and implementation of management procedures for other fisheries in New Zealand.

NRLMG Initial Position on CRA 4

184. Based on the available information and the evaluation set out above, the NRLMG's initial position is in favour of Option 1: increase the TAC for CRA 4 and allocate the increased catch to the TACC only.

185. The NRLMG has identified no reason why the Minister should not use the results of the previously agreed CRA 4 Management Procedure to guide statutory TAC setting decisions.

CRA 7 (OTAGO ROCK LOBSTER FISHERY)

Summary of Management Options and Rationale for CRA 7

186. The management options for CRA 7 are summarised in *Table 2*. Two alternative options for TAC setting are being proposed: vary the CRA 7 TAC based on the operation of the CRA 7 Management Procedure, and maintain the current TAC and allowances for CRA 7.

Option 1 – Vary the CRA 7 TAC based on the operation of the CRA 7 Management Procedure

187. Under Option 1, the TAC for CRA 7 would reduce from 209 tonnes to 104.5 tonnes from 1 April 2010, as specified by the CRA 7 Management Procedure. The NRLMG proposes the following allocation of the TAC:

a) Decrease the TACC from 189 tonnes to 84.5 tonnes; and

b) Retain the current allowances for customary Maori, amateur and other fishing mortality.

188. The CRA 7 Management Procedure was adopted by the Minister in March 2008 to guide TAC setting in CRA 7. It is proposed that the CRA 7 Management Procedure will be reviewed during 2012.

189. The procedure is described in detail in *Attachment 3* to this consultation paper. The NRLMG notes that the operation of the CRA 7 Management Procedure in 2009 actually delivered a specified TAC of 80.3 tonnes. This would represent a decrease of 61.6%. However, since the maximum change allowed under the rule is +/- 50%, the proposed CRA 7 TAC for 2010-11 is 104.5 tonnes.

Option 2 – Maintain the current TAC and allowances for CRA 7

190. Under Option 2, the current CRA 7 TAC and allowances would be retained for the 2010-11 fishing year (refer *Table 2*).

191. If the Minister chooses not to use the CRA 7 Management Procedure to guide TAC setting for CRA 7 from 1 April 2010, the NRLMG recommends that the Minister either:

a) adopt the 104.5 tonne TAC reduction as specified by the CRA 7 Management Procedure; or

b) make no change to the CRA 7 TAC for the 2010-11 fishing year; and

c) that he request further work to be commissioned during 2010 to support consideration of alternative management measures for CRA 7 for the 2011-12 fishing year.

Assessment of Management Options for CRA 7

192. Assessment of the management options against statutory criteria is set out and discussed in *Attachment 1* to this consultation paper. Key considerations and impacts are discussed below.

CRA 7 Sustainability Indicators and Stock Status

193. No reliable estimate of *Bmsy* is currently available for CRA 7. The MFish Plenary selected a *Bmsy* proxy target, *Bref*, which is the vulnerable stock size associated with the period 1979-81. 1979-81 was a period when the CRA 7 stock showed good productivity and was demonstrably safe. *Bref* represents a larger stock size than the uncertain *Bmsy* estimate and therefore is a more conservative target stock size.

194. The *Bmin* used for stock assessment and management procedure evaluation was considered to be one half of *Bref*.

195. A stock assessment was last performed for CRA 7 in 2006[3]. The 2006 stock assessment results indicated stock size in 2005-06 was well above *Bmin* and was approximately 1.7 times *Bref*.

196. Standardised CPUE is the abundance indicator used in the CRA 7 Management Procedure. Standardised offset year CPUE decreased in the last year to 0.803 kg/potlift (refer *Figure 2*).

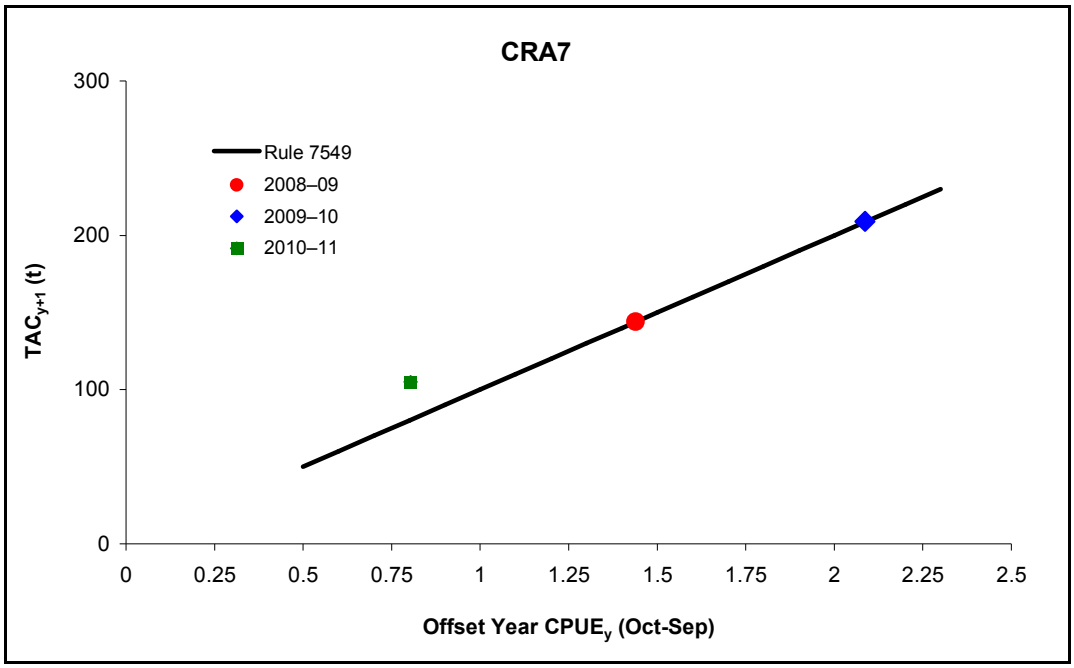

Figure 2: ***Graphic representation of the CRA 7 management procedure. Catch limits in the next fishing year are a function of CPUE in the current year. For example, the catch limit generated for the 2010-11 fishing year is based on offset year CPUE from the period 1 October 2008 to 30 September 2009 (0.803 kg/potlift). The CPUE values that generated the catch limit proposals for the 2008–09 and 2009–10 fishing years are also shown.***

[3] The 2006 stock assessment model provided a basis for the operating model which was used to conduct management procedure evaluations for CRA 7.

Assessment of Option 1 – Vary the CRA 7 TAC based on Operation of the CRA 7 Management Procedure

Sustainability

197. Under Option 1, it is proposed that the CRA 7 TAC will decrease from 209 tonnes to 104.5 tonnes from 1 April 2010. The NRLMG considers this decrease to be consistent with the Minister's statutory obligations to maintain the stock size at or above *Bmsy* or the agreed proxy target (i.e., *Bref*).

198. The proposed decrease in TAC is specified by the CRA 7 Management Procedure. Ongoing application of the management procedure is expected to meet sustainability criteria by maintaining stock size above *Bmin* with greater than 98% probability and above *Bref* with 79% probability. On average the management procedure maintains a stock size of 1.5 times *Bref.*

Utilisation & Value

199. Decreasing the CRA 7 TAC will reduce the current utilisation value of the fishery.

200. The NRLMG proposes reducing the CRA 7 TACC only as they consider there is greater certainty of benefit to the stock associated with a reduction to the TACC. This is because catch from the commercial sector can be more directly controlled and existing customary Maori and recreational allowances form a small component of the TAC. The NRLMG is therefore proposing that no change is made to the current allowances for customary Maori and recreational.

201. The CRA 7 Industry has also agreed in the past to receive both increases and decreases in commercial catch, while allowances to other sectors have remained constant. It is proposed that the TACC will decrease from 189 tonnes to 84.5 tonnes, which is the lowest TACC since the stock was introduced to the Quota Management System in April 1990. The NRLMG consider it reasonable that the sector that faces the costs of reductions via adjustment to the allowance(s) receives the benefit from any increases to stock via adjustment to the allowance(s) (at least up the point where the allowance is restored to levels prior to the reduction).

202. Ongoing application of the CRA 7 Management Procedure is designed to maintain stock size well above the target stock size and consequently increase customary Maori, recreational and commercial utilisation values. This is because the management procedure will improve fishing opportunities for all sectors by increasing the stock from its current size.

203. Using 2009 landing price information (which is based on average port price paid to fishers), the 104.5 tonne decrease in commercial catch of rock lobster would result in approximately $4.4 million loss in revenue for the commercial industry. In the 2008-09 fishing year, the CRA 7 ACE price was $13,927.80 per tonne; the ACE price represents the price commercial fishers are willing to pay for the right to harvest rock lobster in CRA 7. Using 2008-09 ACE price information, the proposed 104.5 tonne decrease in TACC could potentially result in a net economic loss of approximately $1.46 million to CRA 7 quota share owners.

Credibility & Acceptance

204. The NRLMG believes choosing to implement the results of an agreed management procedure increases stakeholder confidence in the application of management procedures for other rock lobster fisheries.

205. CRA 7 commercial stakeholders support, and are anticipating, statutory TAC and TACC reductions for the 2010-11 fishing year (as guided by the CRA 7 Management Procedure).

Assessment of Option 2 – Maintain the current TAC and allowances for CRA 7

Sustainability

206. Under Option 2, it is proposed that the CRA 7 TAC will be retained at 209 tonnes for the 2010-11 fishing year. The NRLMG considers it likely that if the current CRA 7 TAC was retained stock size could decline further. CPUE is an indicator of relative stock size in CRA 7 and has declined considerably between 2007-08 and 2008-09 fishing years (from 2.09 to 0.803 kg/potlift). Retaining the current CRA 7 TAC would therefore pose a risk to sustainable utilisation.

Utilisation & Value

207. Retaining the current CRA 7 TAC for the 2010-11 fishing year could result in a reduced stock size that would affect utilisation value by reducing fishing opportunities in the non-commercial and commercial fisheries.

208. Not responding to changes in abundance in a timely matter (as proposed under Option 1) may also create uncertainty in future stock size, which would also affect utilisation value obtained from the fishery by all fishing sectors.

Credibility & Acceptance

209. The NRLMG believes that choosing not to implement the results of an agreed management procedure without an explicit reason would reduce stakeholder confidence in the application of management procedures for this and other rock lobster fisheries. Such a decision would also affect development and implementation of management procedures for other fisheries in New Zealand.

NRLMG Initial Position on CRA 7

210. Based on the available information and the evaluation set out above, the NRLMG's initial position is in favour of Option 1: reduce the TAC for CRA 7 as specified by the CRA 7 Management Procedure by reducing only the TACC.

211. The NRLMG has identified no reason why the Minister should not use the results of the previously agreed procedure to guide statutory TAC setting decisions.

FINAL REMARKS

212. The NRLMG's initial positions are noted for each fishery. These initial positions are based on the available information and the evaluations set out above.

213. The NRLMG emphasises that this position is provided as a basis for consultation with tangata whenua and stakeholders. The NRLMG invites submitters to provide their comments, with supporting information, for inclusion in this advice. The NRLMG is particularly interested in:

a) any information that might be relevant to the Minister's decision on whether to operate the management procedures for CRA 3, CRA 4 and CRA 7 for the 2010-11 fishing year;

b) any information on customary Maori and amateur catches that might provide a basis for alternative catch allocations; and

c) any other information that might address current uncertainties in information.

214. All submissions received on the proposals will be considered and discussed in final advice to the Minister. A copy of the final advice will be made available to iwi and stakeholders who make a submission on the proposal following announcement of the Minister's decision.

ATTACHMENT 1:

STATUTORY CONSIDERATIONS

215. In considering the proposals set out in this paper, the following statutory considerations have been taken into account.

International Obligations and Treaty of Waitangi Settlement Act 1992 (s 5)

216. **Section 5** of the Act requires the Minister to act in a manner consistent with New Zealand's international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. To this end, the provisions of general international instruments such as UNCLOS and the Fish Stocks Agreement have been implemented through the provisions of the Act. The NRLMG is not aware of any specific international obligations that would be affected by the proposed TACs and allowances.

217. The NRLMG considers the proposed options are consistent with the obligations relating to the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The NRLMG recognises that rock lobster (koura) is an important taonga species. All proposals seek to maintain good fishing opportunities, or improve stock health and therefore improve fishing opportunities, for all sectors including commercial and customary Maori. For CRA 3 and CRA 7 *status quo* options represent a risk to short-term and long-term customary value. These risks are set out in the main body of the paper.

218. The NRLMG notes that national-level representatives of customary fishing interests are members of the NRLMG and have contributed to the development of the proposals. Some regional-level CRA 3 customary Maori interests have helped to identify the TAC-setting options presented for CRA 3. The management procedure for CRA 4 was consulted on in 2008; and the management procedure for CRA 7 was consulted on in 2007; the NRLMG looks forward to receiving the views of tangata whenua on the operation of these procedures to guide TAC setting for the 2010 - 11 fishing year.

Purpose of the Act (s 8)

219. **Section 8** of the Act describes the purpose of the Act as being to provide for the utilisation of fisheries resources while ensuring sustainability, and defines the meanings of utilisation and sustainability. The management options presented seek to achieve the purpose of the Act. The options presented seek to achieve sustainable TACs and take into account the respective costs of management versus utilisation benefits.

Environmental considerations (s 9)

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

a) **Section 9(a)** requires that associated or dependent species (i.e., those that are not harvested) should be maintained above a level that ensures their long-term viability. Potting and hand gathering fisheries have a relatively low level of by-catch and the NRLMG is not aware of any interactions between the fisheries and non-harvested species of concern.

b) **Section 9(b)** requires the maintenance of biological diversity of the aquatic environment be taken into account. Potting is the only commercial fishing method used to harvest rock lobsters in CRA 3, CRA 4 and CRA 7. Some information is available on the impact of this method on the aquatic environment, and Australian research suggests there is little impact on seaweed and other benthic communities, including fragile coral reef ecology, from rock lobster potting. Consequently, the NRLMG considers it unlikely the proposed changes to the TACs and TACCs will have a demonstrable adverse effect on biological diversity in CRA 3, CRA 4 and CRA 7.

c) **Section 9(c)** requires the protection of habitats of particular significance to fisheries management. The proposed changes to TACs and TACCs are unlikely to affect habitats of particular significant to fisheries management.

Information Principles (S 10)

221. **Section 10** of the Act sets out the information principles, which require that decisions be based on the best available information, taking into account any uncertainty in that information and applying caution when information is uncertain, unreliable, or inadequate. In accordance with s 10, the absence of information should not be used as a reason to postpone, or fail to take, any measure to achieve the purpose of the Act, including providing for utilisation at levels considered to be sustainable.

222. A thorough review of available information has been undertaken by the NRLMG and the best available information has been used to evaluate the management options presented. The NRLMG has endeavoured to set out the relevant uncertainty in, and inadequacy of, that information so that the appropriate caution can be applied in assessing the proposed management options.

Sustainability Measures (s 11)

223. When setting or varying a sustainability measure, **Section 11(1)** of the Act requires the taking into account of: (i) any effects of fishing on any stock and the aquatic environment; (ii) the existing management controls that apply to the stock or area concerned; and (iii) the natural variability of the stock.

224. The adverse effects of fishing on the aquatic environment are discussed under the Environmental Considerations section.

225. Apart from the existing TAC, TACC and allowances, a range of management controls apply to rock lobster fisheries including minimum legal sizes, daily bag limits for amateur fishers, method restrictions, protection of egg-bearing females, closed areas and closed seasons (CRA 3 and CRA 7 only). The proposed changes to TACs and TACCs are unlikely to affect these measures.

226. Recruitment to rock lobster stocks is highly variable. This variability was taken into account by the RLFAWG and the NRLMG when developing the management procedures for CRA 3, CRA 4 and CRA 7.

227. **Sections 11(2)** requires regard to: (i) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; (ii) any management strategy or management plan under the Conservation Act 1987 that apply to the area and are considered relevant; and (iii) sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000.

228. There are five Regional Councils with jurisdictional boundaries covering CRA 3, CRA 4 and CRA 7 (Gisborne, Hawkes Bay, Horizons, Greater Wellington and Otago). The NRLMG is not aware of anything in the proposed coastal plans for these councils that would be affected by this proposal.

229. There are three Department of Conservation Conservancies with jurisdictional boundaries covering CRA 3, CRA 4 and CRA 7 (East Coast/Hawke's Bay, Wellington and Otago). The NRLMG is not aware of anything in the proposed strategies for these conservancies that would be affected by this proposal.

230. CRA 3, CRA 4 and CRA 7 fisheries do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations under the Hauraki Marine Park Act 2000.

231. **Section 11(2A)** requires the Minister to have regard to: (i) any conservation services or fisheries services and any decision not to require conservation services or fisheries services; and (ii) any relevant fisheries plan approved under s 11(2A) of the Act.

232. The NRLMG does not consider that existing or proposed services materially affect this proposal. No decision has been made not to require a service in these fisheries. The NRLMG is not aware of any relevant fisheries plans approved under s 11 of the Act. The NRLMG is aware that Ngati Kahungunu is in the process of developing a fisheries plan relating to Ngati Kahungunu fisheries, which intersect with CRA 4, and that the CRA 3 Forum has developed a draft CRA 3 Fisheries Management Plan.

TAC Setting Considerations (s 13)

233. Rock lobster stocks are managed under **Section 13** of the Act. Under s 13(2) the Minister must set a total allowable catch that:

a) maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or

b) enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered—

(i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

(ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or]

c) enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

Before a TAC can be set under the above provisions the Minister must be provided with an estimate of both current biomass and the biomass that can produce the maximum sustainable yield (*Bmsy*). Current biomass estimates are available for CRA 3 but are not available for CRA 4 and CRA 7. *Bmsy* estimates are available for all three fisheries, but are considered unreliable and are not used. Instead, reference biomasses are used as a proxy for *Bmsy*. Where current biomass or biomass that can produce the maximum sustainable yield estimates are not available or not directly comparable, or where proxies are applied, Section 13 (2A) of the Act is used.

234. Section 13(2A) says that:

(2A) For the purposes of setting a total allowable catch under this section, if the Minister considers that the current level of the stock or the level of the stock that can produce the maximum sustainable yield is not able to be estimated reliably using the best available information, the Minister must —

a) not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock; and

b) have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and

c) set a total allowable catch —

(i) using the best available information; and

(ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, *Bmsy*.

235. It is the NRLMG's view that the TAC variations guided by operation of the CRA 3, CRA 4 and CRA 7 Management Procedures meet the requirement of being "not inconsistent with" the objective of maintaining the stock at or above, or moving the stock towards or above, *Bmsy*.

236. In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield under subsection (2)(b) or (c), or (2A) (if applicable), the Minister shall have regard to such social, cultural and economic factors as he or she considers relevant. Regard is given to social, cultural and economic factors in assessing the TAC options put forward to rebuild these fisheries.

TACC Setting Considerations (s 20 and 21)

237. **Section 20 and 21** specify a number of matters that must be taken into account when setting or varying a TACC. Section 21 requires the Minister to allow for non-commercial Maori and amateur fishing interests and other fishing mortality when setting or varying the TACC. The NRLMG notes that information on non-commercial harvest is scarce and uncertain. For CRA 3, Option 2 (the "Rule 5" CRA 3 Management Procedure) one allocation option is proposed: reduce the TACC only, which results in a greater proportion of the TAC being allocated to customary Maori and amateur fishing interests. For CRA 7, the proposal to reduce only the TACC results in a greater proportion of the TAC being allocated to customary Maori and amateur fishing interests

238. When considering allocation of the proposed TAC increases for CRA 4, best available information on the harvest needs of customary Maori and amateur fishers is considered, along with risks associated with uncertain information.

239. Allowances for other fishing mortality are left unchanged. The allowances are based on best available, but highly unreliable, information about illegal unreported catch in each of the fisheries.

240. **Section 21(4)** also requires that any mātaitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. Mātaitai reserves and section 186A closures are located within CRA 3, CRA 4 and CRA 7 – the Moremore (Hawke's Bay), Puna wai-Toriki (Otago) mātaitai reserves and the Pukerua Bay 186A closure (Wellington). The NRLMG considers that the management options presented in this paper will contribute to sustainable utilisation of rock lobster fishstocks and may benefit abundance both inside and outside mātaitai reserves and s 186A closures. The risks posed to sustainability and utilisation values, including customary Maori utilisation are set out in the body of the paper.

241. **Section 21(5)** also requires that any regulations to prohibit fishing made under s 311 be taken into account when setting allowances for amateur fishing interests. The NRLMG is not aware of any restrictions under s 311 that have been placed on fishing in any area within CRA 3, CRA 4 or CRA 7.

Administrative Issues

242. To implement this proposal would require the publishing of Gazette Notices under s 13 (TACs) and s 20 (TACCs) of the Act, together with some publicity to ensure fishers are aware of the changes.

ATTACHMENT 2:

SPECIFICATIONS OF THE CRA 4 MANAGEMENT PROCEDURE

243. After a stock assessment for CRA 4 (Breen *et al.* 2006), a large set of management procedure evaluations (MPEs) were done, using an operating model based on the CRA 4 assessment model (Breen & Kim 2006b).

244. The 2005-06 catch in CRA 4 was 504 tonnes; this was less than the TACC of 577 tonnes. In the latter part of 2006 it was obvious that the catch for 2006-07 would be even further below the TACC (in the event it turned out to be 445 tonnes). A series of industry meetings discussed options that included adoption of a management procedure or decision rule that would specify annually how much ACE should be voluntarily shelved.

245. The Breen & Kim (2006b) study was used as the basis for choosing a management procedure. One of the obvious requirements, not considered by Breen & Kim, was that the 2007-08 catch limit should be set low enough that it actually constrained the catch. A rule was chosen that specified a low catch limit (321 tonnes) when using the most recent CPUE estimate. This rule, E170 (*Figure A*), is specified as follows:

$$SCC_{y+1} = 500\left(\frac{I_y}{0.9}\right)^{1.4}$$

where $TACC_y$ is the specified catch limit in year y and I_y is standardised CPUE from the most recent autumn-winter season. There is no latent year[4]; the maximum allowable change is 75% and the minimum change is 5%.

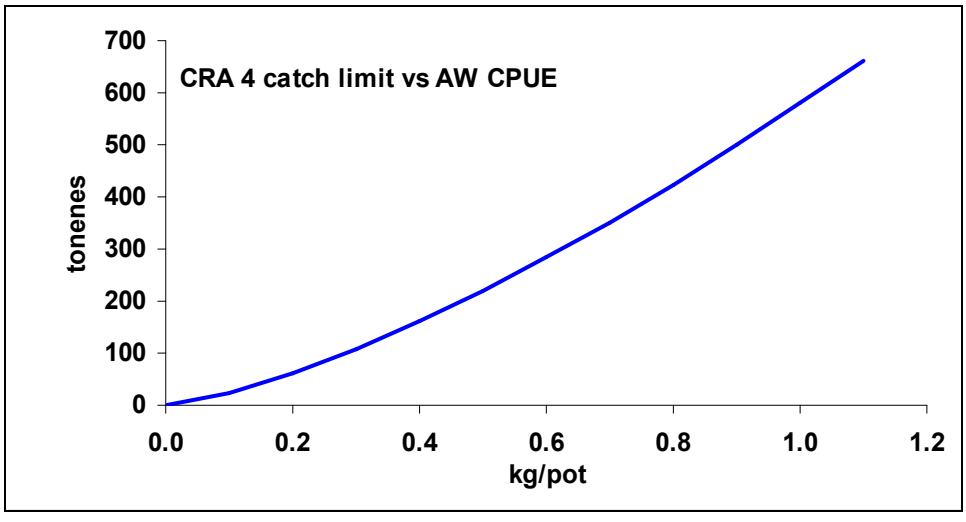

Figure A: ***The CRA 4 Management Procedure.***

[4] The original MPEs described by Breen & Kim (2006b) used an asymmetric latent year, in which a decrease could be made, but not an increase, in a year following a change. The latent year was dropped before a rule was adopted, at the request of NZ RLIC Ltd., after examination of the performance of the rule without a latent year.

246. *Table A* below shows the history of the rule.

Year	Applied to fishing year	Autumn-winter CPUE	Rule result	Operational limit
2006	2007-08	0.656 kg/potlift	321.1 tonnes	339 tonnes
2007	2008-09	0.515 kg/potlift	228.9 tonnes	240 tonnes
2008	2009-10	0.573 kg/potlift	265.9 tonnes	266 tonnes
2009		0.871 kg/potlift	477.59 tonnes	

Table A: *History of the CRA 4 Management Procedure, showing proposed limits to the commercial fishery.*

247. In late 2006, the rule delivered a specified catch limit of 321 tonnes. Not all quota owners shelved the requisite ACE, resulting in an operational limit of 339 tonnes, a 41% reduction from the TACC.

248. In late 2007, the rule delivered a specified catch limit of 228.9 tonnes. Not all quota owners shelved the requisite ACE, resulting in an operational limit of 245 tonnes, a 57% reduction from the TACC.

249. In late 2008, the rule delivered a specified catch limit of 265.9 tonnes. The Minister formally adopted the rule to guide statutory TAC setting in CRA 4 from the 2009-10 fishing year. This resulted in an operational limit of 266 tonnes, a 55 % reduction from the TACC.

250. In late 2009, the rule delivered a specified catch limit of 477.59 tonnes. This would represent an increase of 79.5%. However, the maximum change allowed under the rule is +/- 75%, thus the proposed TACC for 2010-11 becomes 465.5 tonnes under the CRA 4 Management Procedure.

251. Management procedures should not remain in place for longer than about five years without a review, because in five years the operating model used to evaluate management procedures will be obsolete and fishery performance should be re-evaluated. During 2011, it is proposed that the management procedure will be reviewed.

ATTACHMENT 3:

SPECIFICATIONS OF THE CRA 7 AND CRA 8 MANAGEMENT PROCEDURES

252. Both the CRA 7 and CRA 8 management procedure specify that:

a) the output variable is TAC (tonnes) and that standardised CPUE (kg/pot) is to be used as the input variable;

b) standardised CPUE is to be based on the offset year from 1 October; and

c) CPUE is to be standardised according to the recent usage described in annual Fishery Assessment Reports (FARs), using a data extract obtained in November to ensure that sufficient data from the most recent AW season have been entered.

CRA 7 Management Procedure Specifications

253. For CRA 7, the management procedure is specified as follows:

a) The TAC is to be set at 100 times the standardised CPUE (*Figure B*);

b) The management procedure is to be evaluated every year (no "latent year");

c) If the procedure results in a TAC that changes by less than 5%, no change will be made; and

d) If the procedure results in a TAC that changes by more than 50%, the TAC will be changed by 50% only.

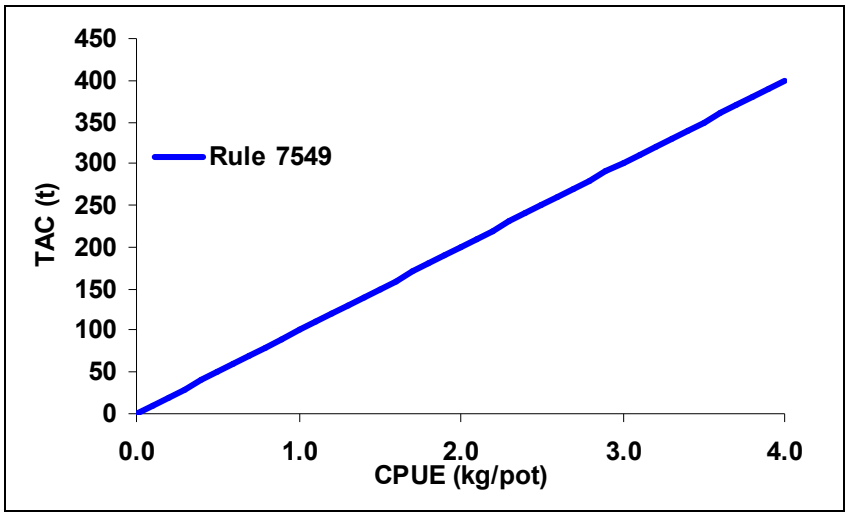

Figure A: *CRA 7 Management Procedure.*

CRA 8 Management Procedure Specifications

254. For CRA 8, the management procedure is specified as follows:

255. The relation between CPUE, indicated by C_y, and TAC, indicated by T_{y+1}, is given in *Figure C* and in the equations below:

$$T_{y+1} = \begin{cases} h - s_1\left(p_1 - C_y\right)\dfrac{h}{p_1}, & C_y < p_1, \\ h, & p_1 \le C_y \le p_2, \\ h + s_2\left(C_y - p_2\right)\dfrac{h}{p_1}, & C_y > p_2. \end{cases}$$

256. The parameters referred to in the equations above for this management procedure are:

h	p_1	p_2	s_1	s_2
1053	*1.9*	*3.2*	*1.2*	*0.16*

a) the management procedure is to be evaluated every year (no "latent year");

b) if the procedure results in a TAC which changes by less than 5%, no change will be made; and

c) there is no limit to the amount by which a TAC may change.

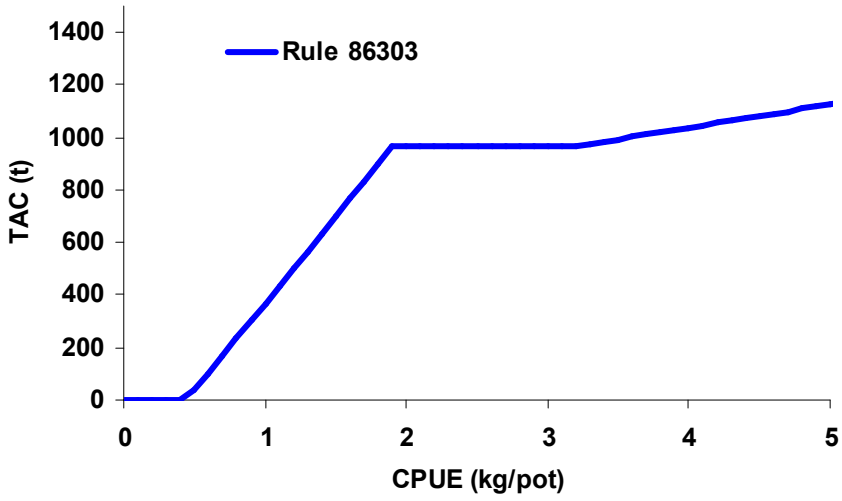

Figure B: *CRA 8 Management Procedure.*

257. Management procedures should not remain in place for longer than about five years without a review, because in five years the operating model used to evaluate management procedures will be obsolete, and fishery performance should be re-evaluated. Such a review was written into the 2002 NSS Management Procedure (Bentley *et al.* 2003). The NRLMG recommends that a review of the CRA 7 and CRA 8 Management Procedures take place in 2012.