

# **NRLMG 2005**

## **TAC and SUSTAINABILITY ADVICE CRA 7 and CRA 8**

# SUSTAINABILITY DECISION - CRA 7 & CRA 8

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## **Purpose**

1. The paper presents the National Rock Lobster Management Group's (NRLMG) initial advice on sustainability measures for CRA 7 (the Otago rock lobster fishery) and CRA 8 (the Southland rock lobster fishery).
2. This paper proposes that you increase the Total Allowable Catches (TAC) and Total Allowable Commercial Catches (TACC) for CRA 7 and CRA 8. The proposed increases are outlined in Table 1.

Table 1: Proposed TAC and TACC increases

Stock		Existing Catch Limit	Proposed Catch Limit
CRA 7	TAC	114.9 t	140.2 t
	TACC	94.9 t	120.2 t
CRA 8	TAC	690.4 t	842.2 t
	TACC	603.4 t	755.2 t

3. No changes to the allowances made for customary, recreational or other sources of fishing-related mortality in CRA 7 and CRA 8 are proposed.

## **Executive Summary**

4. The key factors relevant to your decision on whether to amend the TACs and TACCs for CRA 7 and CRA 8 as proposed are as follows:
  - a) The CRA 7 and CRA 8 stocks were assessed as being well below  $B_{MSY}$  in 1996. A need to rebuild was recognised and an agreed rebuild target of 1.9 kg/potlift commercial catch per unit effort (CPUE) was adopted. The rebuild target is regarded as an indicator of biomass being at or above  $B_{MSY}$ .
  - b) Ministers of Fisheries have agreed to use a “decision rule” to guide management for CRA 7 and CRA 8, specifically TAC decisions.

- c) Decision rules are agreed procedures to determine catch levels. They use agreed data from the fishery to specify what action will be taken. Decision rules are intensively tested to ensure they will deliver desired stock behaviour in the face of uncertainties and are regularly reviewed to ensure their use is still fitting and intended results are being achieved.
- d) The CRA 7 and CRA 8 decision rule is designed to achieve the specified target 1.9 kg/potlift within a specified timeframe.
- e) The decision rule guided decisions to reduce TACs in CRA 7 and CRA 8 by 20% in both 1999 and 2001 and to increase TACs by 5.4% in 2004. Continued application of the rule appears to be achieving the desired results: CPUE is increasing, which indicates stock size is increasing.
- f) Operation of the decision rule for the 2006-07 fishing year results in a 22% increase in TACs for CRA 7 and CRA 8. The NRLMG is satisfied the rule remains robust and the TAC increases should be implemented.
- g) This proposal allocates the increase in catch to the commercial sector (i.e. increases the TACCs). Increased allowances to recreational, customary and other sources of fishing-related mortality are probably not required as best available information suggests the existing allowances are not being caught.

### ***Rationale for the Proposal***

- 5. Since 1996 a decision rule agreed to by Ministers of Fisheries has been used to manage the CRA 7 and CRA 8 fisheries, in particular to guide TAC decisions. Application of the decision rule for the 2006-07 fishing year results in a 22% increase in TACs for CRA 7 and CRA 8 from 1 April 2006.

### ***Current Stock Status***

- 6. The CRA 7 and CRA 8 stocks were jointly assessed in 2000. At that time the stock was assessed to be less than half  $B_{MSY}$  (the stock size that could produce maximum sustainable yield).
- 7. In 2002, the Minister agreed that an appropriate target CPUE was 1.9 kg/potlift, which is the average of the CPUE indices from CRA 8 for the 1979–80 to 1981–82 fishing years. CPUE provides a relative index of stock size for rock lobster fisheries, and is the best information available on current stock size. These are the first three years for which reliable CPUE data are available and the average CPUE for these years was higher than at any subsequent time. The agreed 1.9 kg/potlift is therefore regarded as an indicator of biomass being at or above  $B_{MSY}$ .

8. CPUE in both CRA 7 and CRA 8 has increased since 2000, suggesting the stock sizes are increasing. In CRA 8, CPUE has increased from 0.93 kg/potlift in 2000-01 to 1.83 kg/potlift in 2004-05. In CRA 7, CPUE has increased from 0.35 kg/potlift in 2000-01 to 0.75 kg/potlift in 2004-05.

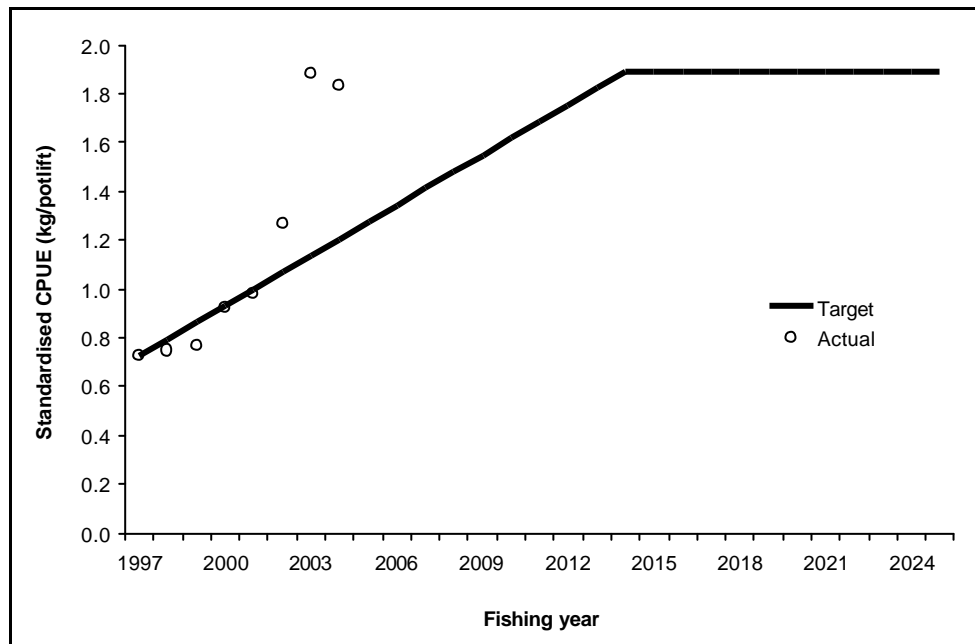
### ***Decision Rules***

9. A decision rule is an agreed procedure to determine catch levels. It uses agreed data from the fishery, and it specifies what action will be taken, dependent on the data. Under this approach, prior agreement is obtained among managers and stakeholders about the indicator data, the decision rule and the period for which the rule will be used. Simulation testing of the rule is used to ensure that it will deliver the desired stock behaviour in the face of known uncertainties.
10. The advantages of this approach over the conventional pattern of periodic stock assessments, each followed by a decision process, are:
  - a) the process leads to explicit definition of management objectives,
  - b) all participants in the fishery can become involved in the choice of rule,
  - c) a long-term view is forced,
  - d) uncertainty in all facets of the assessment and management process can be addressed,
  - e) decision rules can be developed that are robust to uncertainty,
  - f) greater certainty is provided for outcomes,
  - g) decision rules move away from regular assessments, freeing resources for other research and
  - h) the process is more understandable to fishers than the conventional approach.
11. Once managers and stakeholders have agreed upon a decision rule, it ideally should be used until either the agreed shelf life of the rule has expired or the rule's assumptions have become violated.

## The NSS Decision Rule

12. A decision rule (called the NSS decision rule) was first established for CRA 7 and CRA 8 in 1996. Since then, the decision rule has been revised twice, to incorporate improved knowledge and changing circumstances. Previous Ministers of Fisheries have accepted the decision rule (and its subsequent revisions), and agreed to continue to use it to guide sustainability decisions in CRA 7 and CRA 8.
13. The decision rule is a “rebuild rule” designed to achieve a specific target CPUE within a specified number of years. The rule evaluates how well observed CPUE compares with rebuild CPUE (i.e. is it higher or lower than the rebuild target for the same period) and how well observed CPUE tracks against the target rebuild trajectory (i.e. is observed CPUE increasing or decreasing).
14. The target CPUE is 1.9 kg/potlift, which is regarded as an indicator of biomass being at or above  $B_{MSY}$ . The target trajectory is linear between observed CPUE in 1997-98 and the target CPUE in 2014-15. Figure 1 shows the target rebuild trajectory. Observed CPUE from 1997-98 to 2004-05 is also shown.

Figure 1. The CPUE rebuild trajectory for CRA 7 and CRA 8 and observed standardised CPUE for CRA 8 from 1997-98 to 2004-05.



15. The rule is a simple set of arithmetic procedures used to calculate TACs. The full description of the rule is provided in section 4(c) of the Plenary Report and is attached as Annex A.
  
16. The rule represents a compromise between maximising harvest and minimising risks to sustainability of the stocks, while staying within the rebuild timeframe. It provides a high probability of achieving the following in the face of a variety of uncertainties:
  - a) It is expected to rebuild the fishery to the target CPUE with a median time of 8 years and within 14 years with a high probability;
  - b) It is expected to result in a CPUE higher than the starting CPUE in at least 17 of the next 25 years with a high probability;
  - c) It is expected to result in an average annual variation in catch of less than 10% with a high probability.
  
17. The decision rule guides sustainability decisions for both CRA 7 and CRA 8 but is based entirely on CRA 8 data. In the extensive computer evaluations of the NSS decision rule, various hypotheses about the links between CRA 7 and CRA 8 were explored. These hypotheses, the results of evaluations, and decisions made at the time of adopting the NSS decision rule are described in the report by Bentley et al. (2003) annexed to this report (Annex B).

### ***Operation of the Decision Rule for 2006-07***

18. Operation of the decision rule results in a 22% increase in the TAC from 114.9 tonnes to 140.2 tonnes for CRA 7, and from 690.4 tonnes to 842.2 tonnes for CRA 8.
  
19. The NRLMG notes that the strong increase in CPUE observed in 2003-04 has been corroborated by the still high, observed CPUE for 2004-05.
  
20. The NRLMG is satisfied that the assumptions of the rule are still robust and there are no reasons why the NSS decision rule should not be used to determine catches for CRA 7 and CRA 8 for 2006-07.

### ***Alternative Management Options***

21. The Minister can choose not to be guided by the NSS decision rule. However, if the Minister chooses not to accept the results of the rule for setting TACs in 2006 - 07 there

would be no clear basis for making management decisions for CRA 7 and CRA 8. The NRLMG believes that to do so would reduce stakeholder confidence in the application of decision rules and could affect development and implementation of decision rules for other fisheries in New Zealand.

### ***Allocation of the Proposed Increase***

22. The Act does not expressly state the manner in which, or the factors, that must take be taken into account when apportioning a TAC increase between stakeholders. The allocation of the TAC is a matter for the Minister’s discretion, taking into account relevant considerations.
23. The table below shows the current TACs and allowances for each stock. The TACs would increase by 22% under application of the NSS decision rule. The two obvious allocation options are: a) to increase all allocations proportionally, or b) to retain the existing non-commercial allowances and to increase only the TACCs (the non-proportional option).

	2005 CRA 7	2005 CRA 8	proportional		non-proportional	
			2006 CRA 7	2006 CRA 8	2006 CRA 7	2006 CRA 8
<b>TAC</b>	114.89	690.37	140.16	842.24	140.16	842.24
<b>TACC</b>	94.89	603.37	115.76	736.10	120.16	755.24
<b>Customary</b>	10	30	12.200	36.600	10	30
<b>Recreational</b>	5	29	6.100	35.380	5	29
<b>Illegal</b>	5	28	6.100	34.160	5	28
<b>total non-commercial</b>	20	87	24.400	106.139	20	87

24. MFish considered and discussed the range of matters relevant to allocation in the October 2005 Sustainability Round final advice paper. The NRLMG has considered all these matters and believes the following are most relevant to the Minister’s decision on how to allocate the proposed CRA 7 and CRA 8 TAC increases:
- a) Current catch levels;
  - b) Previous decisions;
  - c) Equity of allocation – the notion of shared pain when stocks decline and shared gain when stocks rebuild.

25. Information on current non-commercial catch levels in CRA 7 and CRA 8 is scarce and unreliable, particularly for recreational catch. Best available information suggests existing customary and recreational allowances are not being caught and reported customary catches are significantly below the allowance.
26. Since application of the decision rule in 1996, the TACs have been amended three times – two reductions and one increase. In each case the changes to the TACs were achieved by amending the TACCs.
27. It is likely total non-commercial catches have fluctuated with changing abundance in CRA 7 and CRA 8 over the same period, since abundance affects fishing success. However, past decisions to amend the TAC have not explicitly shared the “pain” and “gain” by way of amendments to catch allowances or other catch restrictions.
28. In a separate compliance-related decision, pot limits were introduced for recreational fishers in all New Zealand rock lobster fisheries in 2004. The NRLMG has no information on whether the pot limits are constraining recreational catches in CRA 7 and CRA 8.
29. Having considered the relevant matters, the NRLMG concludes a non-proportional allocation of the proposed TAC increases to the commercial sector is appropriate. This is because:
  - a) Increased allowances for non-commercial are probably not required; best available information suggests the existing allowances are not being caught;
  - b) Past decisions to reduce TACs in CRA 7 and CRA 8 to address issues of stock decline did not explicitly “share the pain” of the TAC cuts:
    - i.) Two reductions (20% in 1999 and 20% in 2001) and one increase (5.4% in 2004) in TACs have been made since 1996;
    - ii.) All the adjustments to the TACs have been achieved by amending the TACCs; no changes to non-commercial allowances have been made.

### ***Statutory Considerations***

30. In considering this proposal, the following statutory considerations have been taken into account.



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

31. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Ensuring sustainability means to maintain the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying or mitigating any adverse effects on the aquatic environment. Utilisation of fisheries resources is defined as conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic and cultural well-being.
  
32. The proposed changes to the TACs and TACCs are the result of an agreed rebuild decision rule for CRA 7 and CRA 8. The rebuild decision rule ensures the sustainability of the stocks by working to increase commercial CPUE to an agreed target level within a specific timeframe. The rebuild decision rule provides for greater utilisation of the stock when rebuild targets are being exceeded.

### ***TAC Setting Considerations (s 13)***

33. Rock lobster stocks are managed under s 13 of the Act. Under s 13 there is a requirement to maintain the stock at a target stock level, being at or above a level that can produce the maximum sustainable yield (MSY). MSY is defined as the greatest yield that can be achieved over time while maintaining the stock's productive capacity. The stock level that can produce MSY is referred to as  $B_{MSY}$ .
  
34. Where a stock is below the target stock level, there is a requirement under s 13(2)(b) to set a TAC that will result in the stock being restored to the target stock level, and in a way and rate that: (i) has regard for the interdependence of stocks; (ii) takes into account any environmental conditions that may affect the stock; and (iii) takes into account the biological characteristics of the stock. The Act does not set a rate, or timeframe, within which a rebuild of a stock must be achieved. In determining the way in which, and the rate at which, a stock is altered to achieve the target stock level, the Minister must have regard for social, cultural and economic factors as he or she considers relevant s 13(3).
  
35. The CRA 7 and CRA 8 stocks were assessed as being below  $B_{MSY}$  in 1996, 1999 and 2000. The decision rule was adopted to move the stocks towards a stock size associated with 1.9 kg/potlift in CRA 8. The current CPUE is 1.83 kg/potlift, suggesting that substantial rebuilding has occurred. The CPUE is also well above the target trajectory (see Figure 1). The proposed changes in TACs and TACCs are consistent with the agreed rebuild decision rule and uncertainties about stock size have been taken into account.

36. The specific relationships between rock lobsters and other species, and the environmental conditions and biological characteristics affecting rock lobster stocks, were considered by previous Ministers when the rebuild decision rule was adopted in 1996 and when subsequent revisions were made in 2001 and 2003. Previous Minister's also considered social, cultural and economic factors when agreeing to the rebuild timeframe.
37. The NRLMG has no new information about the relationships between rock lobsters and other species, or about environmental conditions and biological characteristics affecting rock lobster stocks (discussed in Section 1 of the NRLMG Annual Report), that would impact the rebuild strategy. The proposed changes to TACs and TACCs will provide economic benefits to the commercial sector in the short term, but are unlikely to affect the social, cultural and economic well-being of non-commercial fishers. Based on the current port prices, industry estimate the economic benefit will exceed \$5 million per annum.
38. The rebuild strategy assures commercial economic benefits are achieved in the long-term also, although returns may vary (up and down) as a result of future applications of the decision rule. Non-commercial fishers are also likely to achieve benefits in the long-term, as fishing success is likely to improve with increased abundance.

### ***Environmental considerations (s 9)***

39. 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 should be maintained above a level that ensures their long-term viability. The NRLMG has little information to determine the impact on associated and dependent species. Known bycatch species in rock lobster fisheries are octopus, conger eel and some finfish species like sea perch. Bycatch quantities are likely to increase slightly with the proposed changes in TACs and TACCs.
  - b) Section 9(b) requires the maintenance of biological diversity of the aquatic environment be taken into account. Potting is the only method used by commercial fishers to harvest rock lobster in CRA 7 and CRA 8. Little information is available on the impact of this method on the aquatic environment but Australian research suggests there is little or no 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 7 or CRA 8.

- 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; identified habitats of significance have already been provided protection through mechanisms such as the Fiordland Marine Management Act 2005, which prohibits all commercial fishing within the internal waters of Fiordland and introduces protection in an area that is recognised as being internationally important.

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

- 40. Section 5 requires that the Act shall be interpreted and all persons exercising or performing functions, duties or powers under the Act shall act in a manner consistent with New Zealand's international obligations relating to fishing, and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.
- 41. A wide range of international obligations relate to fishing, including use and sustainability of fishstocks and maintaining biodiversity. The NRLMG is not aware of any international obligations affected by the proposed changes to TACs and TACCs.
- 42. The NRLMG recognises that rock lobster (koura) is an important taonga species. The NRLMG does not believe the proposed changes will affect customary harvest of koura in CRA 7 and CRA 8; existing customary allowances provide for current catches.

### ***Sustainability Measures (s 11)***

- 43. When setting or varying a sustainability measure, s 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.
- 44. The adverse effects of fishing on the aquatic environment are discussed under the *Environmental Considerations* section.

45. Apart from the existing TAC, TACC and allowances, other important existing management controls include the following:
- a) In CRA 7 the commercial minimum legal size (MLS) for rock lobsters is 147mm tail length;
  - b) In CRA 8 the commercial MLS for rock lobsters is 54 mm tail width (TW) for males. Between 1 January and 31 April the MLS for females is 57 mm TW. At all other times the MLS for females is 60 mm TW;
  - c) The recreational MLS is 54 mm TW for males and 60 mm TW for females in both CRA 7 and CRA 8;
  - d) Method restrictions exist for both commercial (potting only) and recreational (a range of methods specified in the regulations) fishers;
  - e) The CRA 7 fishery is closed to commercial fishers from November to June;
  - f) An area in CRA 7 is closed to commercial fishing.
46. The proposed changes to TACs and TACCs are unlikely to impact on these measures, excepting the closed season in CRA 7. Industry reports the closed season in CRA 7 may affect the ability of commercial fishers to harvest the proposed new TACC.
47. Recruitment into rock lobster stocks is highly variable. This variability was taken into account by the RLFAG and the NRLMG when developing and testing the rebuild decision rule. Parameters used in the decision rule seek to minimise the risks to sustainability of the stock, including risks arising from natural variability in the stock, while providing for utilisation.
48. Sections 11(2) requires regard for: (i) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; and (ii) any management strategy or management plan under the Conservation Act 1987 that apply to the area and are considered relevant.
49. There are three regional councils with jurisdictional boundaries covering CRA 7 and CRA 8 (Otago, Southland and West Coast). The NRLMG is not aware of anything in the proposed coastal plans for these councils that would be affected by this proposal.

50. There are three Department of Conservation Conservancies with jurisdictional boundaries covering CRA 7 and CRA 8 (Otago, Southland and West Coast). The NRLMG is not aware of anything in the proposed strategies for these conservancies that would be affected by this proposal.
51. Section 11(2A) requires the Minister to have regard for: (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 of the Act.
52. 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.
53. The NRLMG notes the Fiordland Marine Management Act 2005 requires the Minister must have regard to any advice or recommendations provided by the Fiordland Marine Guardians on any matters covered by the Act. The NRLMG notes the Fiordland Marine Guardians will be consulted on this proposal.

### ***Information Principles (S 10)***

54. Section 10 requires all persons exercising or performing functions, duties or powers under the Act to take into account the following information principles: (i) decisions should be based on the best available information; (ii) decision makers should consider any uncertainty in the information available in any case; (iii) decision makers should be cautious when information is uncertain, unreliable or inadequate; and (iv) the absence of, or uncertainty in, any information is not a reason for postponing or failing to take measures to achieve the purpose of the Act.
55. The information provided in this advice paper is considered the best available information relevant to consideration of reviewing the TACs and TACCs for CRA 7 and CRA 8. Uncertainties in the information have been considered and taken into account.
56. Additional information from those with an interest in the issues is also being sought by way of consultation on this proposal.

## ***Administrative Issues***

57. 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.

## **Preliminary Recommendation**

58. The NRLMG recommends that you:
- a) **note** operation of the CRA 7 and CRA 8 decision rule results in TAC increases for the CRA 7 and CRA 8 stocks;
  - b) **agree** to increase the CRA 7 TAC from 114.9 tonnes to 140.2 tonnes effective 01 April 2006;
  - c) **agree** that the allowances made for customary, amateur, and other sources of fishing related mortality should remain unchanged, and that the CRA 7 TACC should increase to 120.2 tonnes effective 01 April 2006;
  - d) **agree** to increase the CRA 8 TAC from 690.4 tonnes to 842.2 tonnes effective 01 April 2006;
  - e) **agree** that the allowances made for customary, amateur, and other sources of fishing related mortality should remain unchanged, and that the CRA 8 TACC should increase to 755.2 tonnes effective 01 April 2006.