NATIONAL ROCK LOBSTER MANAGEMENT GROUP

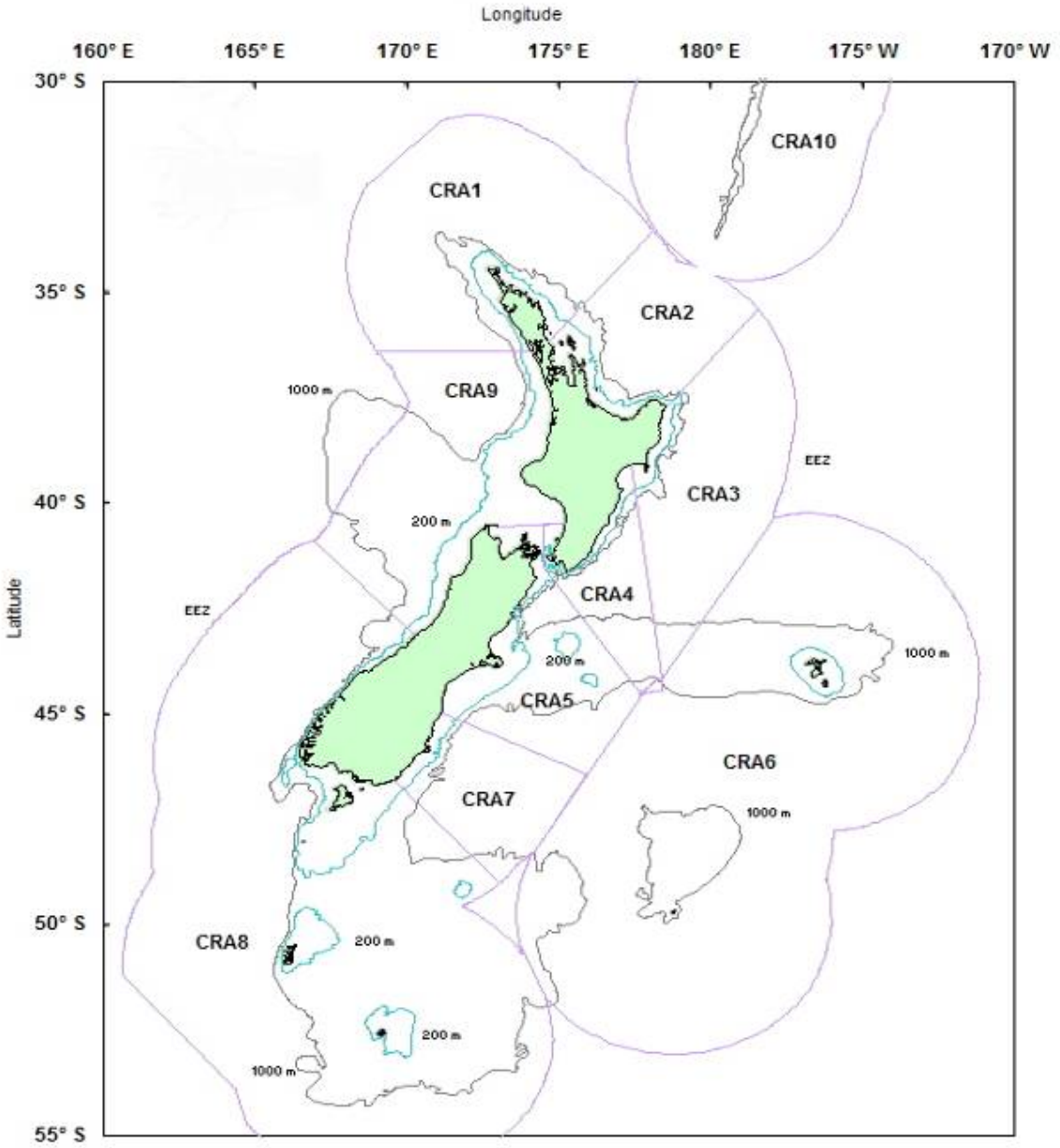
NRLMG 2007 ANNUAL REPORT

To

The Minister of Fisheries

HON. JIM ANDERTON

NEW ZEALAND ROCK LOBSTER FISHERY MANAGEMENT AREAS



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1. SUMMARY OF RECOMMENDATIONS

This report from the National Rock Lobster Management Group (NRLMG) provides you with information on a wide range of matters. For your convenience the recommendations contained in the report are summarised as follows:

REVIEW OF MANAGEMENT PROCEDURES FOR CRA 7 AND CRA 8

1. The NRLMG recommends that you:

   Either

   a) **adopt** the new and separate management procedures to guide TAC setting in CRA 7 and CRA 8 specified in Attachment 1 (**NRLMG preferred option**)

   Or

   b) **continue** using the 2002 NSS management procedure to guide TAC setting in CRA 7 and CRA 8.

2. Note that if you choose option (a) above, a review should be conducted in 2012; if you choose option (b) above, alternative management procedures for CRA 7 and CRA 8 will be identified and evaluated during 2008.

SUSTAINABILITY DECISIONS - CRA 7 AND CRA 8

3. The NRLMG recommends that you:

   For CRA 7, EITHER

   a) **agree** to be guided by the CRA 7 Management Procedure and increase the CRA 7 TAC from 140.16 tonnes to 143.88 tonnes effective 01 April 2008 (**NRLMG preferred option**);

   And either

   b) **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 123.88 tonnes effective 01 April 2008 (**NRLMG preferred option**),

or

c) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

OR

d) **agree** to be guided by the 2002 NSS Management Procedure and increase the CRA 7 TAC from 140.16 tonnes to 175.25 tonnes effective 01 April 2008;

And either

e) **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 155.25 tonnes effective 01 April 2008,

or

f) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

For CRA 8, EITHER

g) **agree** to be guided by the CRA 8 Management Procedure and increase the CRA 8 TAC from 842.24 tonnes to 1053 tonnes effective 01 April 2008 (**NRLMG preferred option**);

And either

h) **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 966.00 tonnes effective 01 April 2008 under both options (e) and (f) above (**NRLMG preferred option**),

or

i) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

OR

j) **agree** to be guided by the 2002 NSS Management Procedure and increase the CRA 8 TAC from 842.24 tonnes to 1052.75 tonnes effective 01 April 2008;

And either

k) **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 966.00 tonnes effective 01 April 2008 under both options (e) and (f) above,

or

l) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing.

m) **note** that the amateur catch issues warrant the NRLMG to make further investigation and seek better information on non-commercial removals to guide future advice.

n) **note** the intention to review the CRA 7 and CRA 8 Management Procedures in 2012.

THE NATIONAL ROCK LOBSTER MANAGEMENT GROUP

4. The NRLMG recommends that you:

a) **renew** your endorsement of the role and function of the NRLMG

INTRODUCTION TO THE 2007 ANNUAL REPORT

2. PURPOSE OF THE NRLMG ANNUAL REPORT

5. The purpose of the NRLMG Annual Report is to provide information on rock lobster fisheries and a comprehensive background to NRLMG advice and recommendations on sustainability measures and management controls for rock lobster fisheries to the Minister of Fisheries.

6. The Report reviews a range of topics considered and activities undertaken by the NRLMG during 2007. The information contained in this report includes:

   a) a description of New Zealand rock lobster fisheries;

   b) the framework for managing rock lobster fisheries;

   c) an explanation of management procedures and harvest control rules;

   d) an outline of stock assessment issues.

7. This Report also contains discussions related to:

   a) the role and function of the NRLMG;

   b) a proposal to remove the CRA 7 commercial closure period;

   c) a proposal for catch identification of rock lobsters legitimately taken by the recreational fishing sector;

   d) the operation of a multi-sector stakeholder group for the CRA 3 fishery.

8. A separate TAC and Sustainability advice paper would fulfil the role of the Ministry of Fisheries (MFish) Initial Position Paper (IPP) and form the basis of the Minister's statutory consultation with stakeholders on rock lobster issues.

9. There were three TAC and Sustainability issues on the NRLMG agenda during 2007 and these are discussed in detail in this Annual Report and recommendations are made. A separate statutory consultation document drawn from the 2007 NRLMG Annual Report is also provided to you.

RECOMMENDED

MANAGEMENT INTERVENTIONS

FOR 2008/09 FISHING YEAR

3. REVIEW OF CRA 7 AND CRA 8 MANAGEMENT PROCEDURES

PURPOSE

10. This paper presents the NRLMG initial advice on management procedures to guide Total Allowable Catch (TAC) and sustainability decisions for CRA 7 (the Otago rock lobster fishery) and CRA 8 (the Southland rock lobster fishery).

EXECUTIVE SUMMARY

11. The NRLMG proposes adopting new and separate management procedures for CRA 7 and CRA 8. The new management procedures are designed to ensure ongoing sustainability of the fisheries in CRA 7 and CRA 8.

12. The 2002 NSS Management Procedure, which has been used since 2002 to guide TAC setting for both CRA 7 and CRA 8, was designed to rebuild the stocks to a specific target level, using standardised commercial catch per unit effort (CPUE) as the agreed indicator within a specified number of years. The target CPUE has been achieved early, and a review of the 2002 NSS Management Procedure conducted in 2007 has concluded that the 2002 Management Procedure is unsuitable as a tool for maintaining the stock above the target level.

13. Key factors considered relevant to your decision on whether to adopt the proposed management procedures for CRA 7 and CRA 8 are as follows:

a) the 2002 NSS Management Procedure is demonstrably unsuitable as a tool for maintaining the stocks above the target level: in evaluations, lags caused by the structure of the management procedure and its subsequent application resulted in unstable oscillations in the TAC and consequently in the stock,

b) the proposed CRA 7 and CRA 8 management procedures meet statutory sustainability criteria,

c) the proposed CRA 7 and CRA 8 management procedures are expected to maintain stocks well above statutory target levels with high probability, and therefore to maintain good fishing opportunities for all sectors,

d) the proposed CRA 7 management procedure gives greater confidence to TAC setting in CRA 7: whereas the 2002 NSS Management Procedure uses CRA 8 data to guide TAC setting for both CRA 7 and CRA 8, the CRA 7 Management Procedure would use CRA 7 data to guide TAC setting in CRA 7, and

e) the proposed CRA 7 and CRA 8 management procedures are much simpler for stakeholders to understand.

TERMINOLOGY: MANAGEMENT PROCEDURES

14. An operational management procedure is a tool used to guide the TAC setting process. Management procedures are becoming more and more widely used, especially in South Africa and North America.

15. A management procedure:

a) specifies what data will be used to make TAC decisions,

b) specifies how the data will be collected, groomed, and analysed,

c) contains a harvest control rule, and

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

16. A harvest control rule is a mathematical specification that determines, for any possible data input(s), what the specific output of the management procedure will be, such as the exact TAC.

17. Under the management procedure approach, agreement is obtained among managers and stakeholders when the management procedure is designed: they agree about the data inputs, the harvest control rule and the period for which the management procedure will be used. Extensive simulation testing of the management procedure is necessary to ensure that it will deliver the desired stock behaviour.

18. 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 rule,

c) managers and participants are forced to take a longer-term view,

d) uncertainty in all facets of the assessment and management process can be addressed,

e) management procedures can be developed that are robust to uncertainty,

f) greater certainty is provided for outcomes,

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

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

19. Once managers and stakeholders have agreed upon a management procedure, it should be used until either the agreed shelf life of the rule has expired or the rule's assumptions have obviously become violated.

SUMMARY OF OPTIONS

20. The following management procedure options are proposed for CRA 7 and CRA 8:

Option	**Description**
OPTION 1	Continue to use the 2002 NSS management procedure to guide TAC setting in CRA 7 and CRA 8 (*status quo*)
OPTION 2	Agree to use separate new management procedures (described below) to guide TAC setting in CRA 7 and CRA 8

OPTION 1 – Continue to use the 2002 NSS Management Procedure (status quo)

21. Under Option 1, the 2002 NSS Management Procedure would continue to guide TAC setting for CRA 7 and CRA 8.

22. A management procedure to guide TAC setting in the NSS (CRA 7 and CRA 8) fisheries was first proposed by the NRLMG and accepted by the Minister of Fisheries in 1996. The management procedure was reviewed, revised, and again accepted by the Minister in 2002. The specifications of the 2002 NSS Management Procedure are described in *Attachment 1*, and in the Mid-Year Stock Assessment Plenary Report (*Annex 2*)

23. Both the 1996 and 2002 NSS management procedures were "rebuilding" procedures designed to achieve a specific target CPUE within a specified number of years. Both management procedures recommended percentage TAC adjustments in response to changes in the agreed abundance indicator, standardised commercial CRA 8 CPUE. The 1996 NSS management procedure resulted in TAC and TACC decreases in 1999 and 2001, and the 2002 NSS management procedure resulted in TAC increases in 2004 and 2006.

24. The harvest control rule within the 2002 NSS Management Procedure uses only CRA 8 data to determine TACs for both CRA 7 and CRA 8. The harvest control rule evaluates how well

the observed CRA 8 CPUE tracks the rebuilding trajectory (through a "status" indicator) and how well the CPUE trend compares with the increasing target trajectory (through a "gradient" indicator).

OPTION 2 – Agree to use new and separate management procedures

25. Under Option 2, separate new management procedures for CRA 7 and CRA 8 would be used to guide TAC setting decisions in CRA 7 and CRA 8. The different specifications for CRA 7 and CRA 8 reflect the different characteristics of the two stocks and the different objectives identified by stakeholders.

26. Whereas the 2002 NSS Management Procedure was designed to increase stock sizes in CRA 7 and CRA 8, the separate CRA 7 and CRA 8 management procedures are designed to maintain stock sizes at levels that ensure statutory sustainability criteria are met.

27. The CRA 7 Management Procedure uses CRA 7 data and recommends TACs based on the standardised CPUE over a specified 12 month period. Likewise, the CRA 8 Management Procedure uses CRA 8 data and recommends TACs based on the standardised CPUE over a specified 12 month period.

RATIONALE FOR MANAGEMENT OPTIONS

28. The management objective of the 2002 NSS Management Procedure is to achieve a target CRA 8 standardised CPUE of 1.9 kg/potlift. The agreed application period for the management procedure ends in 2015.

29. Adoption of the 2002 NSS Management Procedure included an agreement that it would be reviewed after five years. The NRLMG agreed that Objective 4 of the CRA2006-01 research contract would be used in 2007 to conduct that review. The review commenced in early 2007 and was carried out by the rock lobster stock assessment science team.

30. A plot of the observed standardised CRA 8 CPUE indices compared with the agreed CRA 8 rebuilding trajectory is provided in *Figure 1*. The plot shows that the CRA 8 CPUE index for 2006 is considerably higher than the index calculated for 2005, and well above the target CRA 8 CPUE of 1.9kg/potlift, indicating the target CPUE has been met early.

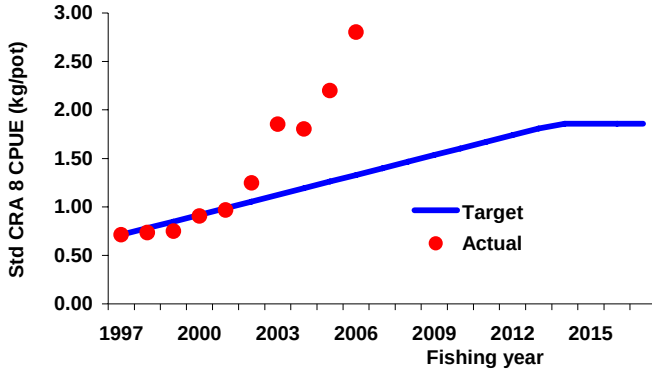


Figure 1: *CRA 8 CPUE indices and the 2002 NSS management procedure's target rebuild trajectory*

31. The review of the 2002 NSS Management Procedure found it to be unsuitable as a tool for maintaining the stocks above the target level. Consequently, it was necessary for the review team to identify alternative management procedures.

ASSESSMENT OF MANAGEMENT OPTIONS

OPTION 1 – Continue to use the 2002 NSS Management Procedure (status quo)

32. As noted above, the management objective of the 2002 NSS management procedure has been achieved and the procedure is considered unsuitable as a tool for maintaining the stocks above the target level. Extensive simulation modelling of the management procedure showed that time lags caused by the structure of the 2002 management procedure and its application resulted in unstable oscillations in the TAC, and consequently in the stock.

33. Option 1 is therefore a suitable option only if you consider the management procedures described in Option 2 to be unsuitable. Under Option 1, the 2002 NSS management procedure would be used to guide TAC setting for CRA 7 and CRA 8 for the 2008-09 fishing year, consistent with the agreed duration of the rule. However, because the 2002 NSS management procedure is unsuitable for use in the long term, further advice on alternatives to the recommended CRA 7 and CRA 8 management procedures would be developed in 2008.

OPTION 2 – Agree to use new and separate management procedures

34. The primary management objective of the proposed CRA 7 and CRA 8 management procedures is to maintain stock size at a level that ensures statutory sustainability criteria are met.

35. 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, which is at or above the 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 *Bmsy*.

36. Estimates of *Bmsy* are not directly available for rock lobster stocks. Instead proxy targets called "reference levels", or *Bref*, are used. *Bref* is the average biomass that was legally available to the fishery (vulnerable biomass) from a specified reference period. In stock assessments, the Rock Lobster Fisheries Assessment Working Group (RLFAWG) compares the status of the stock relative to *Bref* and relative to a minimum stock level indicator referred to as *Bmin*.

37. The accepted target *Bref* for each stock is the average vulnerable biomass from 1979/80 through 1981/82. Over this period both fisheries showed good productivity, and biomass was demonstrably safe. Further, the CPUE indices for these three years were higher than at any subsequent time until the 2006-07 fishing year. *Bmin* is defined as one-half *Bref* for both stocks.

38. Sustainability criteria previously accepted in stock assessments for rock lobster stocks are that biomass should exceed *Bref* at least 50% of the time, and that biomass should exceed *Bmin* 95% of the time. The proposed CRA 7 and CRA 8 management procedures meet these sustainability criteria.

39. Under the proposed CRA 7 management procedure, base case model projections over 20 years indicated the average biomass would be roughly 150% of *Bref*, and the stock would stay above *Bref* with 80% probability and above *Bmin* with 99% probability.

40. Under the proposed CRA 8 management procedure, base case model projections over 20 years indicated the average biomass would be more than twice *Bref*, and the stock would stay above *Bref* with 99% probability and above *Bmin* in all runs of the trial.

41. Sensitivity trials were undertaken to assess the robustness of the management procedures to possible problems in the operating model. In the worst management procedure sensitivity trial for CRA 7 the stock stayed above *Bref* with 67% probability and above *Bmin* with 96% probability. In the worst management procedure sensitivity trial for CRA 8, the stock remained above *Bref* with 87% probability and above *Bmin* 100% of the time.

42. The CRA 7 and CRA 8 management procedures are both conservative management procedures. These rules were chosen, from a large number that were evaluated, after examining performance against a number of criteria, as described by Bentley *et al* (2003). As well as maintaining safe stock levels, they allow reasonable average catches to be taken from stocks with good average CPUE.

43. To ensure responsiveness to changes in stock size, the CRA 7 and CRA 8 management procedures would be operated annually and would use standardised CPUE from the most recent fishing periods: the autumn–winter season of the current fishing year and the spring–summer season of the previous fishing year.

44. An additional objective specified by CRA 7 commercial stakeholders was greater confidence in the relevance of the management procedure to CRA 7. Whereas the 2002 NSS management procedure uses only CRA 8 data to guide TAC setting for both CRA 7 and CRA 8, the CRA 7 management procedure uses CRA 7 data to guide TAC setting in CRA 7.

45. An additional objective specified by the CRA 8 commercial stakeholders was high catch stability. The CRA 8 management procedure features a "plateau", which delivers catch stability by holding the TAC constant over a range of CPUE values. The management procedure is conservative: TAC does not increase as CPUE rises in the range of the plateau, increases slowly when CPUE rises above a threshold and decreases quickly when CPUE falls below a threshold.

46. The NRLMG notes that the CRA 7 and CRA 8 management procedures are expected to maintain stocks well above *Bmsy*, and therefore maintain good fishing opportunities for all sectors. These management procedures are also much simpler for stakeholders to understand than the 2002 NSS Management Procedure.

STATUTORY CONSIDERATIONS

47. The following statutory considerations have been taken into account when forming the management options for CRA 7 and CRA 8:

Purpose of the Act (s 8)

48. The purpose of the Fisheries Act 1996 (the Act) is to provide for the utilisation of fisheries resources while ensuring sustainability.

49. Utilisation is defined in the Act as conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic and cultural well-being. The options presented recognise the development potential of the fisheries and create the potential for people to provide better for their cultural, social and economic wellbeing.

50. 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. The effects of the options presented on stock sustainability have been extensively tested. Results from the testing have been reported and considered in this paper. Effects of the options on the aquatic environment are considered below under Environmental considerations.

Total Allowable Catch (s 13)

51. Rock lobster stocks are managed under s 13 of the Act. Under s 13 there is a requirement to move the stock towards a level or maintain it at a level that is at or above *Bmsy*.

52. The 2002 NSS Management Procedure (Option 1) has been effective as a tool to move the stock towards a level at or above *Bref* (the proxy for *Bmsy*) but a review of the procedure indicates it is unsuitable as a tool to maintain stocks above this target level. Should you choose to retain the 2002 NSS Management Procedure at this time, the NRLMG will undertake further analysis and provide further advice in 2008.

53. The proposed CRA 7 and CRA 8 management procedures are designed to maintain stock size at a level that ensures statutory sustainability criteria are met. Under the proposed CRA 7 management procedure, base case model projections over 20 years indicated the mean biomass would be roughly 150% of *Bref*, and the stock would stay above *Bref* with 80% probability and above *Bmin* with 99% probability. Under the proposed CRA 8 decision rules, the average biomass was more than twice *Bref*, and the stock remained above *Bref* with 99% probability and above *Bmin* in all runs of the trial.

54. The interdependence of stocks was explicitly considered when the proposed CRA 7 and CRA 8 management procedures were evaluated. Movements of lobsters from CRA 7 to CRA 8 were estimated by the stock assessment model and simulated in the operating model projections.

55. Additionally, a small range of species are caught in the target potting fishery for CRA 7 and CRA 8. Known incidental catch species in rock lobster fisheries are octopus, conger eel and some finfish species such as sea perch. There is no information available at this time to suggest that the interdependence of stocks would affect the operation of the management procedures for CRA 7 or CRA 8.

Environmental considerations (s 9)

56. **Section 9(a)** provides that decision-makers must take into account the principle that associated or dependent species (non-harvested species) should be maintained above a level that ensures their long-term viability. There are no known interactions between the existing CRA 7 and CRA 8 potting fisheries and non-harvested species that are of concern or specific to the CRA 7 and CRA 8 fisheries.

57. **Section 9(b)** provides that decision-makers must take into account the principle that the biological diversity of the aquatic environment should be maintained. Potting is the only commercial fishing method used to harvest rock lobsters in CRA 7 and CRA 8. There are no known impacts on biodiversity that are specific to these fisheries.

58. **Section 9(c)** provides that decision-makers must take into account the principle that habitats of particular significance to fisheries management should be protected. The NRLMG notes that 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. No other habitats of particular significance to fisheries management have been identified that might be affected by potting for rock lobster in CRA 7 and CRA 8.

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

59. There are a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). The NRLMG is not aware of any issues concerning New Zealand's international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 that would be affected by the proposed management procedures.

60. The NRLMG recognises that rock lobster (koura) is an important taonga species, and notes that the proposed CRA 7 and CRA 8 management procedures are expected to maintain stocks well above *Bmsy*, and therefore to maintain good fishing opportunities for all sectors. The 2002 NSS Management Procedure poses a higher risk to stock and catch levels over the long term. Should you choose this option, the risk is mitigated by the NRLMG commitment to undertake further analysis and provide further advice in 2008.

Sustainability Measures (s 11)

61. **Section 11(1)(a)**: The Minister must take into account any affects of fishing on any stock and the aquatic environment in his decision. Potting is the only fishing method used to target rock lobsters in the CRA 7 and CRA 8 commercial fisheries. Little is known about impacts of potting on the aquatic environment in New Zealand, however Australian research suggests there is little impact of potting on seaweed and other benthic communities, including fragile coral reef ecology. Consequently, the NRLMG considers that the proposed management procedure options are unlikely to have any affects of fishing on any stock or the aquatic environment.

62. **Section 11(1)(b)**: The Minister must in his decision take into account any existing controls that apply to the stock. Apart from the existing TAC, TACC and allowances, other important existing fisheries management controls for CRA 7 and CRA 8 include the following:

a) In CRA 7, the commercial minimum legal size (MLS) for rock lobster is 127 mm tail length (TL);

b) In CRA 8, the commercial MLS for rock lobster is 54 mm tail width (TW) for males, and 57 mm TW for females;

c) In both CRA 7 and CRA 8, the recreational MLS for rock lobster is 54 mm TW for males and 60 mm TW for females;

d) In recreational and commercial fisheries, egg-bearing females are protected and must be returned to the sea;

e) In both CRA 7 and CRA 8, a daily bag limit of 6 rock lobsters per person applies to recreational fishers;

f) Method restrictions exist for both commercial (potting only) and recreational (a range of methods are specified in the regulations) fishers;

g) Escape gaps are required in lobster pots to allow under-sized lobsters to escape easily;

h) In both CRA 7 and CRA 8, a recreational pot limit of 3 pots per person and 6 pots per vessel applies;

i) The CRA 7 fishery is currently closed to commercial fishers from November 20th to June 19th inclusive;

j) An area in CRA 7 (the "buffer zone") is closed to commercial fishing;

k) Customary fishing in both CRA 7 and CRA 8 is managed under the Fisheries (South Island Customary Fishing) Regulations 1999.

63. The proposed options for management procedures are unlikely to affect the operation of these measures. However, industry reports that the closed season in CRA 7 may limit the ability of commercial fishers to harvest a CRA 7 TACC proposed by either option presented, if the CRA 7 TACC increases beyond its current level. A proposal to extend the CRA 7 commercial season is currently in the MFish internal prioritisation process.

64. **Section 11(1)(c)**: The Minister must in his decision take into account the natural variability of the stock. Recruitment into rock lobster stocks is highly variable. This variability was taken into account by the RLFAWG and the NRLMG when developing and testing the 2002 NSS management procedure and the separate new management procedures for CRA 7 and CRA 8. These new management procedures have been extensively tested to ensure that they will minimise the risks to sustainability of the stock, including risks arising from natural variability in the stock, while providing for utilisation.

65. **Section 11(2)(a) & 11(2)(b)**: There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for CRA 7 and CRA 8.

66. **Section 11(2)(c)**: CRA 7 and CRA 8 fisheries do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations under the Hauraki Marine Park Act 2000.

67. **Sections 11(2A)(a) & 11(2A)(c)**: Before setting or varying any sustainability measure the Minister must take into account any conservation or fisheries services, or any decision not to require such services. The NRLMG does not consider that existing or proposed services materially affect the operation of the proposed management procedures and resulting TAC

increases. No decision has been made not to require a service that would be relevant to the CRA 7 and CRA 8 fisheries.

68. **Section 11(2A)(b)**: A fishery plan could provide another mechanism through which to explore the potential of the CRA 7 and CRA 8 fishery and implement sustainability measures. The NRLMG are aware of MFish's intent to incorporate all fishstocks into fisheries plans over the next five years. It is likely that CRA 7 and CRA 8 would be included in a fisheries plan, however at present no such plan has commenced.

69. **Section 21(1)(a & b) and 4)(i & ii) and 21(4)(ii) and (5)**: The nature of the fishery and the interests of the respective fishing sectors have been considered in the development of the management procedure options. The proposed CRA 7 and CRA 8 management procedures are expected to maintain stocks well above *Bmsy* and therefore deliver good fishing opportunities to all fishery participants.

Information Principles (S 10)

70. **Section 10**: The information principles of the Act 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. The Act also requires that the absence of uncertainty of information should not be used as a reason to postpone, or fail to take, any measure to achieve the purpose of the Act.

71. The information used to evaluate and operate the proposed CRA 7 and CRA 8 management procedures is the best available information. The 2002 NSS management procedure uses lesser quantity and less current information (only CRA 8 data is used and the information inputs are less current by 6 months).

OTHER MANAGEMENT ISSUES

72. Operation of either the 2002 NSS management procedure (Option 1) or the recommended CRA 7 and CRA 8 management procedures (Option 2) for the 2008-09 fishing year would result in TAC increases for CRA 7 and CRA 8. A separate paper provides you with advice on the TAC adjustments for CRA 7 and CRA 8.

RECOMMENDATIONS

73. The NRLMG recommends that you:

Either

a) **adopt** the new and separate management procedures to guide TAC setting in CRA 7 and CRA 8 (**NRLMG preferred option**)

Or

b) **continue** using the 2002 NSS Management Procedure to guide TAC setting in CRA 7 and CRA 8.

74. Note that if you choose option (a) above, a review should be conducted in 2012; if you choose option (b) above, alternative management procedures for CRA 7 and CRA 8 will be identified and evaluated during 2008.

4. CRA 7 AND CRA 8 SUSTAINABILITY DECISIONS

PURPOSE

75. This section presents the NRLMG initial advice on sustainability measures for CRA 7 (the Otago rock lobster fishery) and CRA 8 (the Southland rock lobster fishery).

EXECUTIVE SUMMARY

76. This section proposes that you increase the TACs and TACCs for CRA 7 and CRA 8. In setting new TACs for CRA 7 and CRA 8, the NRLMG recommends that you be guided by the proposed new CRA 7 and CRA 8 management procedures discussed in the previous section of this report.

77. The key factors relevant to your decision on whether and how to amend the TACs for CRA 7 and CRA 8 as proposed are as follows:

a) Since 1996, Ministers of Fisheries have agreed to use a management procedure to guide TAC setting decisions for CRA 7 and CRA 8. Operation of the 2002 NSS Management Procedure, which has been used since 2002 to guide TAC setting in both CRA 7 and CRA 8, results in TAC increases for CRA 7 and CRA 8 in the 2008/09 fishing year.

b) The 2002 NSS Management Procedure was designed to rebuild the stocks to a specified target level (using standardised commercial CPUE as the agreed indicator) within a specified number of years. The target CPUE has been achieved early, and a review of the 2002 NSS management procedure conducted in 2007 found it to be unsuitable as a tool to maintain the stocks above the target level.

c) Separate new management procedures have been developed for CRA 7 and CRA 8 and the NRLMG has recommended they be adopted to guide TAC setting in CRA 7 and CRA8 (refer previous section). Operation of the CRA 7 and CRA 8 Management Procedures results in TAC increases for CRA 7 and CRA 8 in the 2008/09 fishing year.

d) A joint stock assessment was conducted for CRA 7 and CRA 8 in 2006. Both stocks were estimated to be above *Bmsy* and were projected to increase further at current catch levels.

e) The NRLMG is satisfied that increasing the TACs for CRA 7 and CRA 8 is consistent with the purpose of the Fisheries Act 1996.

78. This section proposes allocating the new proposed TACs for CRA 7 and CRA 8 by increasing only the TACCs for each stock and leaving the non-commercial allowances unchanged. The

key factors relevant to your decision on how to allocate the increased TACs for CRA 7 and CRA 8 are as follows:

a) Increased allowances for customary and recreational catches and other sources of fishing-related mortality are probably not required; best available information suggests that existing allowances are not being caught.

b) Past decisions to reduce TACs in CRA 7 and CRA 8 to address stock decline did not result in reduced customary or recreational allowances. All the adjustments to the TACs resulted in changes only to the TACCs.

79. It is likely total customary and recreational catches have fluctuated with changing abundance in CRA 7 and CRA 8 since 1996, because abundance affects fishing success. Recreational representatives to the NRLMG have suggested that increased fishing activity may have increased recreational catches to levels beyond the current recreational allowances.

80. The NRLMG has concluded that the best available information on recreational catch in CRA 7 and CRA 8 is still that provided by the working groups and used in the joint stock assessment model for CRA 7 and CRA 8. However, the NRLMG considers that updating recreational catch estimates for CRA 7 and CRA 8 warrants further investigation.

SUMMARY OF OPTIONS

81. The following TAC options are proposed for CRA 7 and CRA 8:

Stock	**Existing TAC (tonnes)**	**OPTION 1 Proposed TAC operating the new CRA 7 and CRA 8 Management Procedures (tonnes)**	**OPTION 2 Proposed TAC operating the 2002 NSS Management Procedure (tonnes)**
CRA 7	140.16	143.88	175.25
CRA 8	842.24	1053.00	1052.75

Table 1: *TAC Options for CRA 7 and CRA 8*

OPTION 1 – Set TACs based on the operation the CRA 7 and CRA 8 Management Procedures

82. Option 1 is consistent with the NRLMG advice on management procedures provided in the previous section. Under Option 1, the TACs resulting from operation of the new CRA 7 and CRA 8 management procedures would be adopted for CRA 7 and CRA8 respectively.

83. Under Option the TAC would be allocated by either:

a) Increasing the TACCs only; or

b) Pro rating the increased catch across all sectors (i.e., increasing all catch allowances by approximately the same percentage amount).

OPTION 2 – Set TACs based on the operation the 2002 NSS Management Procedure

84. Under Option 2, TACs resulting from operation of the 2002 NSS management procedure would be adopted for CRA 7 and CRA 8.

85. Under Option 2, the TAC would be allocated by either:

a) Increasing the TACCs only; or

b) Pro rating the increased catch across all sectors (i.e., increasing all catch allowances by approximately the same percentage amount).

RATIONALE FOR MANAGEMENT OPTIONS

86. Since 1996, management procedures agreed to by Ministers of Fisheries have been used to guide TAC setting in the CRA 7 and CRA 8 fisheries. Operation of the 2002 NSS Management Procedure results in TAC increases for CRA 7 and CRA 8 in 2008.

87. A review of the 2002 NSS Management Procedure in 2007 found it to be unsuitable as a tool for maintaining the stocks above target reference levels and separate new management procedures have been recommended for guiding TAC setting for CRA 7 and CRA 8 (refer previous section). The operation of these procedures also results in TAC increases for CRA 7 and CRA 8 in 2008.

ASSESSMENT OF MANAGEMENT OPTIONS – TAC SETTING

Current Stock Status

88. Available data on stock status in CRA 7 and CRA 8 indicate stock sizes are above *Bmsy* and trending upwards. The NRLMG therefore considers TAC increases, guided by either the CRA 7 and CRA 8 management procedures or the 2002 NSS Management Procedure, are consistent with the purpose of the Fisheries Act 1996.

89. 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, which is at or above the level that can produce the 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 *Bmsy*.

90. Estimates of the *Bmsy* are not directly available for rock lobster stocks. Instead proxy targets called reference levels, or *Bref*, are used. The accepted target *Bref* for each stock is the average vulnerable biomass from 1979-80 through 1981-82. Over this period both fisheries showed good productivity, and biomass was demonstrably safe. Further, the CPUE indices for these three years were higher than at any subsequent time until the 2006-07 fishing year.

91. A joint stock assessment was conducted for CRA 7 and CRA 8 in 2006, using the new multi-stock length-based model. Both stocks were estimated to be above *Bref* and were projected to increase further at the current catch levels.

92. A management procedure was first agreed by the Minister of Fisheries to guide TAC setting in the NSS (CRA 7 and CRA 8) fisheries. The management procedure was reviewed, revised and again agreed by the Minister in 2002 and is referred to as the 2002 NSS Management Procedure.

93. The 2002 NSS Management Procedure was designed to rebuild the stocks to the target stock level (using standardised commercial CRA 8 catch per unit effort (CPUE) as the agreed indicator) within a specified number of years. It recommends percentage TAC adjustments in response to changes in the agreed abundance indicator.

94. *Figure 1* shows a plot of the observed standardised CRA 8 CPUE indices compared with the agreed CRA 8 rebuild trajectory. The plot shows that the CRA 8 CPUE index for 2006 is considerably higher than the indices calculated for 2005, and well above the target CRA 8 CPUE of 1.9kg/potlift, indicating the target stock level has been met early.

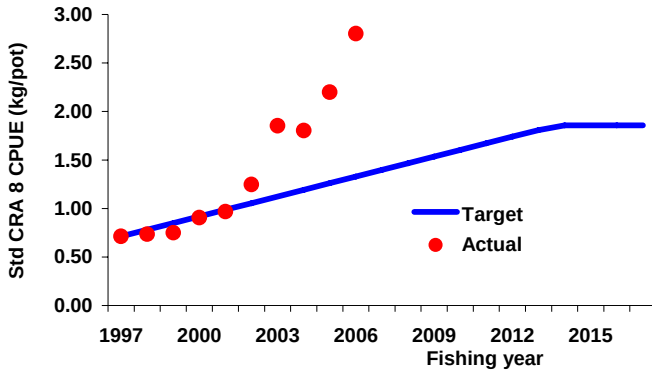


Figure 1: *CRA 8 CPUE indices and 2002 NSS management procedure rebuild trajectory ("target")*

Operation of the Management Procedures

95. The NRLMG has recommended separate new management procedures for CRA 7 and CRA 8. The new management procedures are designed to maintain stock sizes at levels that ensure statutory sustainability criteria are met. Both procedures are responsive to stock variability and are expected to maintain stocks well above *Bmsy*, and therefore maintain good fishing opportunities for all sectors (refer previous section). .

96. Operation of the CRA 7 Management Procedure results in a smaller TAC increase than operation of the 2002 NSS Management Procedure (Option 2). The NRLMG considers the CRA 7 Management Procedure gives greater confidence to TAC setting in CRA 7 because it uses CRA 7 data and is therefore responsive to stock variability in CRA 7. When informing TAC setting in both CRA 7 and CRA 8, the 2002 NSS Management Procedure uses only CRA 8 data therefore is responsive to stock variability in CRA 8 only.

97. Operation of the CRA 8 Management Procedure results in a similar size TAC increase as the 2002 NSS Management Procedure (Option 2). Both management procedure options are responsive to stock variability in CRA 8.

98. If you decide not to adopt the CRA 7 and CRA 8 Management Procedures, then the NRLMG considers the 2002 NSS Management Procedure should be operated to inform TAC setting for CRA 7 and CRA 8 for the 2008/09 fishing year. Operation of the 2002 NSS Management Procedure for 2008/09 is consistent with the agreed operation and duration of the procedure.

99. Because the 2002 NSS Management Procedure has been found to be unsuitable as a tool for maintaining the stocks above the target level (in evaluations, lags caused by the structure of the management procedure and its subsequent application resulted in unstable oscillations in the TAC and consequently in the stock) alternatives to the recommended CRA 7 and CRA 8 Management Procedures could then be developed in 2008 to guide future TAC decisions.

Alternative Management Options

100. You can choose to be guided by neither the recommended CRA 7 and CRA 8 management procedures nor the 2002 NSS Management Procedure.

101. The NRLMG and RLFAWG have identified no reason why you should not use the results of the management procedures to guide your TAC setting decisions for CRA 7 and CRA 8 for the 2008/09 fishing year. If you choose not to accept the results of the management procedures (Option 1 or Option 2) for setting TACs, there would be no clear basis for recommending alternative TAC options for CRA 7 and CRA 8.

102. The NRLMG notes that choosing not to accept the results of an agreed management procedure without an explicit reason would reduce stakeholder confidence in the application of management procedures. Such a decision may also affect development and implementation of management procedures for other fisheries in New Zealand.

ASSESSMENT OF MANAGEMENT OPTIONS - ALLOCATION OF THE PROPOSED INCREASES

103. The Act does not expressly state the factors that must take be taken into account when apportioning a TAC increase between stakeholders. Allocation within a TAC is a matter for the Minister's discretion, taking into account relevant considerations.

104. *Table 2* below shows the current TACs and the non-commercial allowances for each stock. The TACs would increase under application of the recommended CRA 7 and CRA 8 Management Procedures. The two obvious allocation options are: a) to pro-rate all allocations (i.e. increase each allocation by the same percentage amount), or b) to retain the existing non-commercial allowances and increase only the TACCs.

	2007/08 CRA 7	2007/08 CRA 8
TAC	**140.16**	**842.24**
Customary	10	30
Recreational	5	29
Illegal	5	28
Total non-commercial	**20**	**87**

Table 2: Current Allowances – CRA 7 and CRA 8

105. MFish considered and discussed the range of matters relevant to allocation in the October 2005 Sustainability Round Final Advice Paper. The NRLMG has also 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 – i.e., the notion of shared pain when stocks decline and shared gain when stocks rebuild.

Current catch levels

106. The NRLMG considers a pro-rating approach may be appropriate if best available information suggests increased abundance has resulted in improved fishing success for all sectors and has increased catch levels beyond the current allowances. Although it is likely fishing success has improved for customary and recreational, there is no new accepted information to indicate catches for these sectors is exceeding catch allowances. Further, industry members of the NRLMG consider it inappropriate to pro-rate the increases across illegal catches because illegal catch is also a function of compliance effort, and compliance effort should be applied to manage, and preferably reduce, illegal catch levels.

107. Information on current customary, recreational and illegal catch levels in CRA 7 and CRA 8 is scarce and unreliable. *Table 3* shows best available estimates of non-commercial catches for CRA 7 and CRA 8. The information suggests that existing customary and recreational allowances are not being caught and that reported customary catches are significantly below the allowances. Estimates of recreational catches from CRA 7 and CRA 8 are derived from a range of MFish surveys, the most recent conducted in 2001. Details are contained in the appended Report from the Mid-year Plenary (*Annex 2*).

	Estimated Non-Commercial Catches	
Stock	**CRA 7**	**CRA 8**
Recreational	4.51 t	20.10 t
Customary	1.00 t	2.00 t
Illegal	1.00 t	18.00 t
Total Non Commercial	6.51 t	40.10 t

Table 3: *Estimated catches by fishery, discussed and agreed by the RLFAWG, used in the 2006 assessment and assumed in stock projections for CRA 7 and CRA 8.*

108. Anecdotal information from recreational representatives suggests increased recreational lobster fishing activity and that amateur catches may have increased and exceeded allowances as the CRA 7 and CRA 8 fisheries have rebuilt. The sector perceives that this is especially the case in CRA 7. The NRLMG has concluded that the amateur catch issues warrant further investigation and underscore the need to have accurate and reliable catch data.

109. The NRLMG has concluded that the best available information on recreational catch in CRA 7 and CRA 8 is still that provided by the RLFAWG and used in the joint stock assessment model for CRA 7 and CRA 8.

110. It is likely total non-commercial catches have fluctuated with changing abundance in CRA 7 and CRA 8 since 1996, because abundance affects fishing success. It is also likely that legitimate non-commercial users have already benefited from increased CRA 7 and CRA 8 stock abundance. However, it is unknown whether actual recreational catch is below, the same as, or above the allowance provided.

111. In compiling advice to you, the NRLMG has relied on the catch data provided to and accepted by the RLFAWG. In the absence of new information about non-commercial catches accepted by the RLFAWG, the existing information has been used.

112. However, the NRLMG considers that updating recreational catch estimates for CRA 7 and CRA 8 warrants further investigation. Whilst not an entirely satisfactory response, the NRLMG notes that the estimated aggregate non-commercial catches in both CRA 7 and CRA 8 are less than half the current aggregate non-commercial allowances.

Previous decisions

113. Since adoption of an NSS management procedure in 1996, the TACs for CRA 7 and CRA 8 have been amended four times – initially with two reductions and then with two increases. In all cases the changes to the TACs were achieved by amending the TACCs.

Equity of allocation – "shared pain, shared gain"

114. Past decisions to amend the TAC have not explicitly shared either the "pain" or the "gain" of stock variability in CRA 7 and CRA 8. All TAC adjustments have been achieved by adjusting the TACCs.

115. This is not to say that customary and recreational have not shared the pain and gain of stock variability. As noted above, it is likely non-commercial catches have fluctuated with changing abundance because abundance affects fishing success. It is only that non-commercial catch allowances and catch limits have remained unchanged over the period.

116. 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 to levels below individual bag limits in CRA 7 and CRA 8.

117. Having considered the relevant matters, the NRLMG concluded that allocating the recommended TAC increases to the commercial sectors is appropriate. This is because:

a) Increased allowances for non-commercial catches are probably not required; best available information suggests that existing allowances are not being caught;

b) TAC decisions in CRA 7 and CRA 8 since 1996 have not adjusted non-commercial catch allowances or catch limits. All the adjustments to the TACs have been achieved by amending the TACCs.

c) Non-commercial allowances will be reviewed in subsequent TAC decisions. Best available information would be used, including any updated harvest estimates for recreational.

STATUTORY CONSIDERATIONS

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

Purpose of the Act (s 8)

119. 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.

120. The proposed changes to the TACs and TACCs are the result of extensively tested management procedures. These will ensure sustainability of the stocks by making appropriate changes to TACs as abundance changes. These will provide for enhanced utilisation of the stock by maintaining stocks well above *Bmsy*.

TAC Setting Considerations (s 13)

121. 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).

122. Available data on stock status in CRA 7 and CRA 8 indicate stock sizes are above *Bmsy* and trending upwards. The NRLMG therefore considers TAC increases, guided by either the CRA 7 and CRA 8 Management Procedures (Option 1) or the 2002 NSS Management Procedure (Option 2), are consistent with the purpose of the Fisheries Act 1996 and the requirements of s 13.

Environmental considerations (s 9)

123. 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 incidental catch species in rock lobster fisheries are octopus, conger eel and some finfish species such as sea perch. Incidental catch 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 commercial fishing method used to harvest rock lobsters in CRA 7 and CRA 8. 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 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)

124. **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.

125. 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.

126. 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)

127. 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.

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

129. 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 lobster is 127 mm tail length (TL);

b) In CRA 8, the commercial MLS for rock lobster is 54 mm tail width (TW) for males, and 57 mm TW for females;

c) In both CRA 7 and CRA 8, the recreational MLS for rock lobster is 54 mm TW for males and 60 mm TW for females;

d) In recreational and commercial fisheries, egg-bearing females are protected and must be returned to the sea;

e) In both CRA 7 and CRA 8, a daily bag limit of 6 rock lobsters per person applies to recreational fishers;

f) Method restrictions exist for both commercial (potting only) and recreational (a range of methods are specified in the regulations) fishers;

g) Escape gaps are required in lobster pots to allow under-sized lobsters to escape easily;

h) In both CRA 7 and CRA 8, a pot limit of 3 pots per person and 6 pots per vessel applies;

i) The CRA 7 fishery is currently closed to commercial fishing from November 20th to June 19th inclusive;

j) An area in CRA 7 (the "buffer zone") is closed to commercial fishing; and

k) Customary fishing in both CRA 7 and CRA 8 is managed under the Fisheries (South Island Customary Fishing) Regulations 1999.

130. The proposed changes to TACs and TACCs are unlikely to affect these measures. Industry reports, however, that the closed season in CRA 7 may limit the ability of commercial operators to harvest the proposed new TACC. A proposal to extend the CRA 7 commercial season is currently in the MFish internal prioritisation process.

131. Recruitment to rock lobster stocks is highly variable. This variability was taken into account by the RLFAWG and the NRLMG when developing and testing the 2002 NSS Management Procedure and the recommended new management procedures. These new management procedures have been extensively tested to ensure that they will minimise risks to sustainability of the stocks, including risks arising from natural variability in the stock, while providing for utilisation.

132. **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..

133. 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.

134. 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.

135. CRA 7 and CRA 8 fisheries do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations under the Hauraki Marine Park Act 2000.

136. **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 of the Act.

137. 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.

138. 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)

139. **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.

140. 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.

141. Additional information from those with an interest in the issues is also being sought by way of consultation on this proposal.

Administrative Issues

142. 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.

Recommendations

143. The NRLMG recommends that you:

For CRA 7, EITHER

a) **agree** to be guided by the CRA 7 Management Procedure and increase the CRA 7 TAC from 140.16 tonnes to 143.88 tonnes effective 01 April 2008 (NRLMG preferred option);

And either

b) **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 123.88 tonnes effective 01 April 2008 (NRLMG preferred option),

or

c) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

OR

d) **agree** to be guided by the 2002 NSS Management Procedure and increase the CRA 7 TAC from 140.16 tonnes to 175.25 tonnes effective 01 April 2008;

And either

e) **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 155.25 tonnes effective 01 April 2008,

or

f) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

For CRA 8, EITHER

g) **agree** to be guided by the CRA 8 Management Procedure and increase the CRA 8 TAC from 842.24 tonnes to 1053 tonnes effective 01 April 2008 (NRLMG preferred option);

And either

h) **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 966.00 tonnes effective 01 April 2008 under both options (e) and (f) above (NRLMG preferred option),

or

i) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing;

OR

j) **agree** to be guided by the 2002 NSS Management Procedure and increase the CRA 8 TAC from 842.24 tonnes to 1052.75 tonnes effective 01 April 2008;

And either

k) **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 966.00 tonnes effective 01 April 2008 under both options (e) and (f) above,

or

l) **agree** to pro-rate the increase across customary, amateur, other sources of fishing related mortality and commercial fishing.

m) **note** that the amateur catch issues warrant the NRLMG to make further investigation and seek better information on non-commercial removals to guide future advice.

n) **note** the intention to review the CRA 7 and CRA 8 Management Procedures in 2012.

ROCK LOBSTERS

5. ROCK LOBSTERS

144. The spiny rock lobster (*Jasus edwardsii*; koura) has always been important to Maori and for much of this century has supported increasingly important commercial and amateur fisheries. Rock lobsters support one of the country's oldest commercial fisheries, and are one of the seafood industry's top export earners.

145. The commercial fishery has developed through a number of phases as catches have increased with the development of export markets. Management of the resource has changed in response to the changing status of the stocks and the expectations of stakeholder groups.

146. Since 1990 the rock lobster fishery has been managed within the Quota Management System (QMS) and governed by a mix of output controls and fishery regulations, including the provision of a minimum legal size, a prohibition against taking berried females and soft-shelled animals, method restrictions, the requirement that all pots be fitted with escape gaps, and closed seasons in some areas.

147. The current management of the rock lobster fishery is focused on moving stocks to agreed biological reference points and maintaining them at this level or above, primarily through the adjustment of Total Allowable Catches (TACs).

The Species

148. New Zealand's rock lobster species belong to the crustacean family *Palinuridae*. The predominant species, *J. edwardsii*, (koura, spiny or red rock lobster - CRA) occurs from the Three Kings Islands in the north to the Auckland Islands in the south, and east to the Chatham Islands. The main fishery areas are the east coasts of the North and South Islands, the south and south-west coast of the South Island, including Stewart Island, and the Chatham Islands. This species is found in New Zealand and southern Australia.

Spiny Rock Lobster – Koura - *Jasus edwardsii*

149. The less common species *Sagmariasus verreauxi* (pawharu - green or packhorse rock lobster - PHC) is most abundant along the north and east coasts of the North Island from Cape Maria

van Diemen to East Cape. The main fishery is in the northern part of this area. Some individuals are found as far south as Foveaux Strait, but there is no directed fishery for the species south of the Bay of Plenty.

Packhorse rock lobster – Pawharu - *Sagmariasus verreauxi*

Life cycle

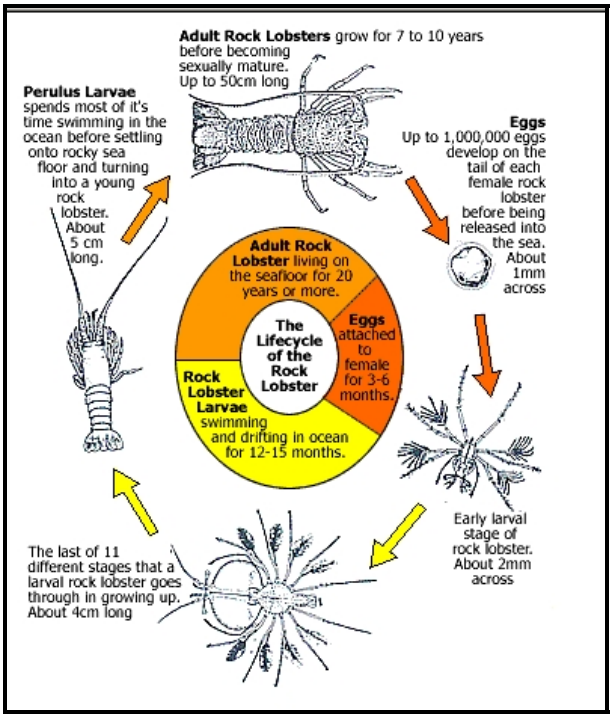
150. Mating occurs in mature females that have recently moulted, although their shells need not be "soft" for mating to occur, a few hours to about five weeks after the female moult. Mating can take as little as 90 seconds, and egg laying occurs immediately afterwards. Fertilisation is external, by way of a spermatophoric mass deposited on the sternum of the female.

151. Most mature *J. edwardsii* females moult and mate some time between February and May. Females carrying eggs occur in greatest numbers from April to October, though a few are found during any month of the year. Females bear eggs only once each year and most mature females carry eggs during the egg-bearing season. Successful reproduction requires mature male and female lobsters of similar size.

152. The number of eggs carried by *J. edwardsii* depends on size, ranging from about 125,000 for a female of 95 mm carapace length (CL) to about 540,000 for one of 170 mm CL.

153. Most mature female *S. verreauxi* moult between July and November, bear eggs during late September to January, and hatch the eggs from December to January. The number of eggs carried by *S. verreauxi* ranges from about 375,000 for a female of 152 mm CL to 2,000,000 for one of 230 mm CL.

154. Rock lobsters of both species develop through a series of stages from egg to adult. Fertilised eggs are attached to pleopods (swimmerets) on the underside of the female's tail. The eggs develop for 3 to 6 months and hatch as small nauplisoma larvae. Within a few days these metamorphose into phyllosoma larvae, which develop through 11 stages during the 10 to 20 months they spend in the ocean. The last phyllosoma stage metamorphoses into the puerulus larva, a strong swimmer that returns to the coast and moults into the first juvenile stage if it finds suitable substrate.



ROCK LOBSTER LIFE CYCLE *Source:* MFish 2005

Larval Distribution and Recruitment

155. An extensive distribution of phyllosoma and puerulus larvae of *J. edwardsii* has been observed in areas along the east coast of the North and South Islands, and the Tasman Sea, to areas outside the EEZ boundary. Information on larval settlement patterns is available from several parts of the country.

156. Most late-stage phyllosoma larvae occur beyond the edge of the continental shelf to 1100 km from the coast. Larvae undergo diurnal vertical migration, moving into the top 150 m of the water column at night and dispersing in deeper water during the day. It is possible that late stage phyllosoma larvae delay metamorphosis to the puerulus stage, perhaps until they encounter an environmental cue such as lower salinity shelf water.

157. Puerulus larvae are most common in the plankton within the shelf edge. They are near the sea bottom during the day and rise in the water column at night. They have been observed to settle on the sea bed at depths to 10 m.

158. The puerulus settlement season varies with locality. Along the east coast of Northland and the Bay of Plenty the main settlement season is probably summer; from East Cape through Cook Strait settlement occurs in both summer and winter. Autumn appears to be the main settlement period in the north-east of the South Island; winter and spring are the main settlement seasons south of Banks Peninsula; year-round settlement is possible along the west coast of the South Island.

159. The highest larval settlements have been seen along the east coast of the North Island south of Matakaoa Point, the northeast and south coasts of the South Island and the north Taranaki coast.

160. Because of the long larval life, the origins of larvae are difficult to determine. Larvae hatched in one area may be retained in that area by local eddy systems carried to other areas by currents, or lost to New Zealand entirely. Eddy systems have been identified off the east coast North Island that may help to retain larvae within this area. However, for most areas larvae may originate a considerable distance from the settlement site.

161. The only known large breeding population of *S. verreauxi* is near Cape Reinga. The larval life is probably similar to that of *J. edwardsii*. The developing phyllosoma larvae are probably carried by the East Auckland Current towards the Bay of Plenty. The puerulus larvae probably settle out of the plankton at various sites along this coast. A few larvae may be transported south of East Cape, but most either settle out before reaching this area or are lost to the north-east, towards the Kermadec Trench.

Age and Growth

162. Rock lobsters, as do all crustaceans, increase in size by moulting. Growth rate is a function of both moulting frequency and moult increment. Because rock lobsters lack structures that would allow them to be aged, growth has been estimated from size-frequency distributions and tagging experiments.

163. Estimates of the growth rates for small *J. edwardsii* are available from the Gisborne area and Stewart Island. Males and females in Gisborne both reach about 38 mm CL one year after settlement and about 58 mm CL after two years. At Stewart Island, after one, two and three years they have reached 33 mm, 52 mm, and 68 mm CL.

164. Growth rates of larger animals have been estimated for a number of areas. The estimates of growth per moult, moult frequency, and annual growth vary between areas and between the sexes for the same area. The estimates come from ongoing tag release and recapture studies across most rock lobster management areas.

165. In most areas moulting is seasonal, with immature and mature animals of both sexes having their own distinct periods, which may vary between areas. Smaller males (between about 70 mm and 80 mm CL) from most areas generally moult twice a year. Large males moult once each year; very large males may moult even less often.

166. Information on the growth rate of *S. verreauxi* is limited mainly to animals between 120 mm and 159 mm CL. Males and females between 120 mm and 139 mm CL moult at least once a year, between July and November, and perhaps twice, with an increment of about 7 mm CL per moult. Animals between 140 mm and 159 mm CL moult once a year between July and November, with an average increment of about 6.8 mm and 6.0 mm CL for males and females respectively.

Size at onset of maturity

167. The size at onset of maturity for female rock lobsters, *J. edwardsii*, has been defined as the size or size class at which 50% of the rock lobsters in a sample are mature. Animals are regarded as mature if they are bearing external eggs attached to the pleopods or if there are well developed setae on the endopodites of the pleopods.

168. Immature females usually moult twice a year until maturity, then annually. Where size at 50% maturity is large, some females may begin moulting once a year before maturity.

169. The size at which 50% of females are mature varies considerably for *J. edwardsii* throughout New Zealand, from 72 mm CL near Gisborne to 121 mm CL in eastern Foveaux Strait. This size appears inversely related to water temperature. No data are available from the Chatham Islands.

170. Size at 50% female maturity in most areas is less than the minimum legal size of 60 mm tail width (TW) (approximately 93 - 98 mm CL). Most females from these areas breed at least once before reaching the minimum legal size. However, from Banks Peninsula through western Foveaux Strait (CRA 7 and part of CRA 8), size at 50% maturity is greater than the minimum legal size. The effects of this are not known, but these areas have sustained high catches over time.

Movements

171. For management, the most important movements would be large-scale migrations or inshore-offshore movements. Extensive tagging of *J. edwardsii* has been conducted in many areas. In most areas fewer than 5% of the returns have moved more than 5 km. Such areas include Tauroa Point, Banks Peninsula, Gisborne, Wellington, and Fiordland.

172. Movement patterns in southern New Zealand appear to involve two groups of animals: “run” rock lobsters that migrate over long distances, and “resident” rock lobsters that do not. In most studies, only up to 4% tagged lobsters moved significantly from the release site. However, when “run” lobsters were tagged, between 27.6% and 38.6% recaptures showed long-distance movements.

173. The long-distance movements of *J. edwardsii* tagged in southern New Zealand tend to be directional: southward along the Otago coast and the east coast of Stewart Island, westward through Foveaux Strait and northward along the west coast of Stewart Island and the Fiordland coast, in opposition to the prevailing current systems. These movements also appear to be seasonal, usually occurring off the Otago coast and through Foveaux Strait from September through November and along the Fiordland coast during November through January. Most migrating females are immature, moving from Otago and Foveaux Strait, which have a large size at 50% maturity to Fiordland, with a smaller size at 50% maturity. These movements may be a “contranatant migration” in which animals migrate against the current that carries the larvae.

174. The long-distance movements of *S. verreauxi* in northern New Zealand also appear directional. All but two recaptures tagged at North Cape moved to the west or southwest, most to near Cape Reinga. Of the female recaptures, only 10% were mature when tagged, but 80% were mature when recaptured. Only 10% of the females tagged at North Cape had setae on the pleopods, but 80% had setae when recaptured. This may be another contranatant migration, with juveniles at about the time of maturation near North Cape moving towards Cape Reinga, where the only large breeding population of this species is known.

175. There may also be a return movement towards the north against the prevailing current system along the east coast of the North Island by juvenile *S. verreauxi*. Most of the sublegal lobsters and immature females tagged between Bream Bay and Mahia moved north or west before recapture. Large numbers of sublegal animals are found on the east coast south of North Cape, but some legal-sized mature females are also found in this area. Thus juveniles from this area may also move towards Cape Reinga just before attaining sexual maturity.

Stock units and fisheries

176. The rock lobster fisheries extend from the Three Kings Islands in the north to the Snares Islands in the south, and to the Chatham Islands in the east. The main fishery is for *J. edwardsii* (CRA), which accounts for nearly all landings. There are currently ten quota management areas for CRA although one (CRA 10) is only an administrative designation and no fishing of any consequence is carried out there.

177. *S. verreauxi*; (PHC) is caught mainly in the north of the North Island and there is only one quota management area for all New Zealand waters.

178. Preliminary morphometric studies conducted on run and resident lobsters near Stewart Island show that the two groups can be distinguished on the basis of the telson length to carapace length ratio, but such differences may be environmentally induced.

179. The lack of genetic differences among areas, the long larval phase and long-distance movements of adults in some areas all suggest a single *J. edwardsii* stock around the mainland.

180. Recent stock assessments have addressed individual CRA areas (CRA 7 and CRA 8 in 2006; CRA 4 in 2003 and 2005; CRA 3 in 2001 and 2004; CRA 5 in 2003; CRA 1 and CRA 2 in 2002).

181. For earlier assessments, the seven principle mainland areas were grouped on the basis of similarities in relation to size at maturity, the timing of biological cycles, and the perceived interchange between areas. CRA 7 and CRA 8 are designated the “NSS” sub-stock. CRA 1 and CRA 2 are called the “NSN”, and CRA 3, CRA 4, and CRA 5 are called the “NSC”.

182. Genetic and morphometric samples have not been collected at the Chatham Islands, and, because of their geographical isolation, the rock lobsters from this area are also treated as a separate stock for management purposes.

183. Genetic and morphometric samples have not been taken for *S. verreauxi*. Because of the limited distribution of mature females near Cape Reinga, and the highly directional movements of tagged animals to this area, the species is considered a single stock.

NRLMG STRATEGIC VISION

AND

FRAMEWORK FOR ROCK LOBSTER FISHERIES

6. NRLMG BACKGROUND

184. The NRLMG is the primary source of advice to the Minister of Fisheries on rock lobster fisheries issues. The NRLMG comprises representatives of the customary Maori, amateur, commercial, environment and conservation interests, and delegated MFish personnel, NIWA, SeaFIC, and other consultant science advisors also assist the NRLMG.

185. In 1992, the then Minister of Fisheries, Hon D L Kidd, endorsed the establishment of a national group, the NRLMG, to revise and develop the Rock Lobster Management Plan devised by the Rock Lobster Steering Committee (RLSC) (1991) and asked sector groups to nominate representatives. The RLSC was established by the same Minister to develop a long-term management plan for the lobster fisheries that at that time were considered to be seriously depleted by overfishing.

186. The NRLMG has since presented fourteen annual reports, containing recommendations for the sustainable management of these most important New Zealand inshore fisheries. The NRLMG seeks technical advice from experts, and develops refinements and improvements to the management regimes currently in place for rock lobster fisheries.

187. The NRLMG strives to provide quality advice to the Minister to assist in the statutory decisions on TACs, TACCs, and other management controls.

Role of the NRLMG

188. The NRLMG operates in accordance with standards and specifications drawn from an extensive review in 2001 of the role and objectives of the NRLMG in consultation with the Minister of Fisheries. The NRLMG and the Minister agreed:

a) to maintain the NRLMG as the primary source of advice to the Minister of Fisheries;

b) to encourage and coordinate the development and implementation of Fishery Plans for rock lobster fisheries;

c) to act as a default regional planner for rock lobster research and management in circumstances where no Fishery Plan proposal was contemplated, or where a lack of organisation and coordination precludes any regional oversight by sector groups;

d) to retain a national coordinating body with well established and identifiable links to and from regional sector groups;

e) to coordinate and provide sector group input to research and information planning processes;

f) to coordinate and provide input to, and maintain an oversight of, the relevant Working Group processes and timetables;

g) to provide well informed, credible, and consistent research and management information and advice to sector groups, Government agencies, and Ministers.

Roles and responsibilities of members and advisers

189. Noting a preference for membership and participant numbers being kept at current levels with some flexibility accorded to need and circumstance, the NRLMG and the Minister also agreed the roles and responsibilities of the participating members and advisers as follows.

190. **Sector Representatives** – TOKM, NZRFC, NZ RLIC, ECO[1]

a) To provide consistent expertise, experience, knowledge, networking – to and from sector constituency. "It is important that each member represents the views of their constituent groups and relays discussions from the Group back to their constituents"… (Hon. Pete Hodgson, March 2001)

191. **MFish** – Fisheries Management, Compliance Advice, Science

a) To facilitate and coordinate information and advice to and from the NRLMG

b) To ensure consistent information and advice to MFish personnel and to tangata whenua.

c) To enable science (including stock assessment and biological), economic, social policy, and other advice deemed necessary by the NRLMG.

192. **Advisory members** – Stock Assessment, Biology and Behaviour, Economic, Social

a) To maintain oversight of NRLMG deliberations and offer advice and guidance, including cautions, to assist the development and implementation of research and information plans, Fishery Plans, or regional harvest initiatives.

193. **Chairman**

a) To facilitate NRLMG meetings and to oversee the development and delivery of the NRLMG Annual Report.

[1] Te Ohu Kaimoana; New Zealand Recreational Fishing Council; NZ Rock Lobster Industry Council; Environment and Conservation Organisations of New Zealand.

194. The NRLMG has not only played a role in developing a significant level of consensus among user groups, which aids the decision making process, but also has encouraged the development of management initiatives throughout the country which have contributed to the improvement in rock lobster stocks over recent years.

195. Stock assessments since 1992 have tracked increasing abundance in most fisheries, and where stock rebuild has been less than optimum, management responses have been implemented which should ensure the sustainable utilisation of those fisheries within acceptable stock rebuild timeframes.

196. The NRLMG advises and informs regional stakeholder groups. This ensures that local issues are addressed within the context of the Fisheries Act and in a manner that is consistent with the overall harvest strategy for rock lobster fisheries.

197. The NRLMG continues to persevere with its efforts to formulate robust and enduring harvest strategies that will not require annual review, rather only fine-tuning when new information indicates that some adjustment is necessary. To that end, the NRLMG continues to develop and refine management procedures incorporating 'harvest control rules' which are designed to guide management actions.

2007 Work Programme

198. Over the past year the NRLMG convened on nine occasions to deliberate on a range of research, planning and management issues with the aim of confirming advice and recommendations for regulatory amendments to meet statutory timetables and to ensure the presentation of this annual report and TAC and Sustainability recommendations to the Minister of Fisheries by 14th December 2007.

199. In addition, some members of the NRLMG have attended and participated in the RLFAWG meetings held during 2007.

200. Also in 2007, the NRLMG again provided the core sector group participation in the annual Rock Lobster Research Planning Group process which culminates in the Research Co-ordinating Committee recommendations to the Minister of Fisheries in relation to required research services.

201. The NRLMG contributed to the development of management procedures and agreed biological reference points for incorporation into fisheries management decisions.

Organisational Arrangements

202. Costs of participation in the NRLMG are borne by the representative organisations, and the NZ RLIC usually supplies venues and facilities. The NZ RLIC and MFish share secretarial and administrative duties.

Attendance During 2007

Representation	*Meetings Attended*	*Apologies*
Chairman / Acting Chairman	9	-
Ministry of Fisheries	9	-
NZ Recreational Fishing Council	9	-
Te Ohu Kaimoana	9	-
Environment and Conservation Organisations	0	0
NZ Rock Lobster Industry Council	9	-
Science Advisors	9	-

In Summary

203. The NRLMG **notes**:

a) that whilst supporting and encouraging the development and implementation of Fishery Plans for rock lobster, the NRLMG will continue to operate the current management framework outlined in this document and will work within the roles and responsibilities confirmed in the most recent review;

b) the NRLMG is supporting and encouraging the development and implementation of Fishery Plans for rock lobster;

c) that previous Ministers have endorsed the NRLMG as the primary source of TAC, TACC and management advice for New Zealand rock lobster fisheries; and

d) that previous Ministers have endorsed the NRLMG as an appropriate body to consult on any matters relevant to the management of rock lobster fisheries.

204. The NRLMG recommends that you:

a) **renew** your endorsement of the role and function of the NRLMG as outlined.

NRLMG MEMBERSHIP IN 2007

Dr Kevin Stokes	Chairman
Dr Kevin Sullivan	MFish
Leigh Mitchell	MFish
David Wood	MFish
Alan Riwaka	Te Ohu Kaimoana Trustees Ltd
Stan Pardoe	Te Ohu Kaimoana Trustees Ltd
Keith Ingram	NZ Recreational Fishing Council
Geoff Rowling	NZ Recreational Fishing Council
Bruce Carter	NZ Recreational Fishing Council
Malcolm Lawson	NZ Rock Lobster Industry Council
Daryl Sykes	NZ Rock Lobster Industry Council
No nominee	Environment & Conservation Organisations

Science Advisers to the Group

Dave Banks	SeaFIC Science Group (also Acting Chairman)
Vivian Haist	Haist Consultancy
Dr Paul Breen	NIWA
Paul Starr	StarrFish

Administrative Support Services

Helen Regan	NZ Rock Lobster Industry Council

7. STRATEGIC VISION

205. The NRLMG has developed a Strategic Vision for the NZ Rock Lobster Fisheries. The vision is consistent with the Fisheries Act 1996, enhances an agreed management framework, and provides a basis for consideration of short, medium, and long term research and management issues, including that:

a) rock lobster stocks will be managed effectively (including cost effectively) to maintain the status of the stocks at or above the agreed biological reference points, consistent with the Minister's legislative responsibility;

b) fisheries will be managed using a property rights/ Quota Management System (QMS) regime with the principal management actions exerted via output controls (TACs) while a range of input controls will still apply where this proves appropriate to individual situations;

c) the strategy will provide for management flexibility, whilst ensuring sustainability, to enable all sector groups to maximise their benefits within a shared fishery;

d) management of the fisheries will take place within a clear policy environment, e.g., there will be clear, explicit, and agreed rules to describe property rights in the fisheries and the allocation between user group sectors. In addition, there will be explicit and agreed decision rules to prescribe management actions that result from monitoring and assessment of fisheries;

e) reliable and cost effective means to monitor and assess fish stocks will be in place. The catches taken and effort deployed by all extractive user groups will be effectively quantified, documented, and managed in accordance with the exercise of rights;

f) adverse environmental effects of fishing activities will be averted or minimised;

g) aquaculture of rock lobsters will be a permissible activity, governed by policies which ensure sustainable use of the wild stock within a rights based framework;

h) a shift of management responsibility to user groups will be promoted within the Fishery Plan framework provided for in the 1996 Fisheries Act; and

i) collaborative/consultative national co-ordination of research and management recommendations and development of policy will continue within the NRLMG or similar organisation; and

j) co-operative management initiatives, which may include the development of regional user groups and Fishery Plans, will be encouraged; and

k) sustainable management and use of rock lobster fisheries will occur in an environment where the New Zealand public are well informed and educated on matters dealing with fisheries in general and rock lobster fisheries in particular.

8. FRAMEWORK FOR MANAGING ROCK LOBSTER FISHERIES

206. The framework for managing rock lobster and the attendant recommendations of the Group are consistent with expectations of a robust and enduring harvest strategy leading to a continuing sustainability of rock lobster stocks, and in the view of the Group are also consistent with the statutory obligations enshrined in the Fisheries Act 1996.

Goal

207. The rock lobster fisheries should be managed and be maintained at or above the assessed and agreed biological reference points, using a comprehensive approach that recognises a range of commercial, customary non-commercial, amateur, and environmental concerns and values.

Strategies to Achieve Goal

208. The strategies will allow the population size to:

a) increase in each fishing year that it is below the target in agreed management procedures; or

b) be maintained at or above that level.

209. The extent of change in population size that can be sought will be determined after consideration of:

a) economic and social factors including:

i. the economic cost and benefits, social factors and rate of adjustment to the fishing industry,

ii. the availability of rock lobster to Maori and amateur fishing groups,

iii. the economic return from the fishery; and

b) biological and environmental factors including:

i. the uncertainty in the assessment of stock size and other biological parameters, and

ii. the risk to the population; and

c) the timeframe over which the management options will have effect.

210. The strategies will identify the effects of fishing on the aquatic environment and provide for the implementation of measures to:

a) avoid, remedy, or mitigate any adverse effects of fishing on the aquatic environment;

b) maintain associated or dependent species above a level that ensures their long-term viability;

c) maintain the biological diversity of the aquatic environment; and

d) protect habitat of particular significance for fisheries management.

Implementing the Strategies

211. The tactics or actions developed to implement the strategies will:

a) be produced through a process that involves all sector groups, minimises conflicting views, and involves all participants in the group disclosing their positions on the issues considered in order to promote co-operation and encourage full and frank discussion;

b) be based on advice from scientists on the steps necessary to achieve the goal within various time frames;

c) consider available management options including but not limited to catch reductions, area closures, gear restrictions, enhancement, legal size changes, measures to maximise egg production, recruitment, and to minimise juvenile mortality;

d) promote and enable effective, including cost effective, compliance with fishery rules;

e) consider the costs and implications of management options including:

i. the resources that are needed and currently available for research, compliance and administration;

ii. the integrity of the research database;

iii. whether the management alternatives can be effectively implemented;

iv. how the impact of the management options are to be measured or estimated;

v. the impact of the management options on industry, customary non-commercial, and amateur fishers and the degree of their acceptance of the measures; and

vi. the impact on other fisheries and the aquatic environment.

f) be based on the best available information;

g) recognise any uncertainty in the available information and be precautionary when information is uncertain, unreliable, or inadequate; and

h) not use the absence of, or any uncertainty in, any information as a reason for postponing or failing to take any measure to achieve the purpose of the Fisheries Act 1996.

212. The NRLMG will provide a timely annual report containing recommendations for management, research and compliance of rock lobster fisheries to the Minister.

Harvest Strategy

213. The NRLMG pursues a dynamic harvest strategy for rock lobster fisheries. It is willing to consider and accept TAC changes in two situations:

a) where stock modelling demonstrates that, after a TAC change, abundance is likely to move towards agreed biological reference points within an agreed period; and

b) where a TAC change is triggered by a fully tested and accepted management procedure (including a harvest control rule), such as the one described elsewhere in this report, designed either to rebuild a stock unit or to maintain the stock unit near an agreed biological reference point.

Assessment and Indicators

214. In accordance with the goal for managing rock lobster fisheries, stock assessment research will continue to be an important component of the management framework. The Rock Lobster Fisheries Assessment Working Group (RLFAWG) continues to refine and improve stock assessment techniques and to identify areas of uncertainty and information needs.

215. For a number of years, MFish has commissioned a major rock lobster stock assessment project incorporating extensive stock monitoring, data grooming and stock modelling, and a rock lobster recruitment project, based on monitoring puerulus settlement at selected sites around the New Zealand coast.

216. Since 1997 NZ RLIC has been contracted to provide stock monitoring and assessments in collaboration with NIWA, Trophia Research, StarrFish, Haist Consultancy and, for the first two periods, the SeaFIC Science Group. Within the overall research programme, the NZ RLIC has contracted NIWA, Lat37 Ltd, and Trophia Research and others to undertake catch sampling and data entry, and to construct and maintain databases for the tagging projects. NIWA holds the MFish contract for the rock lobster puerulus settlement project.

217. Intensive catch sampling (including logbooks) and tagging are undertaken to MFish agreed standards and specifications.

218. Vessel logbook data are now routinely incorporated into the stock assessment process. Logbook programmes supervised by technicians are well established in CRA 2, CRA 5, and CRA 8.

219. NIWA, StarrFish, and Haist Consultancy scientists continue to refine and improve stock assessment methods with routine oversight from the RLFAWG chaired by MFish Science Group. The SeaFIC Science Group provides a useful peer review of the process.

220. An independent peer review of rock lobster stock assessment methodology commissioned by MFish in 2007 again concluded that key aspects of the current assessment model represent state-of-the-art methodology and are appropriate for assessments of the rock lobster stocks.

Rock Lobster tag and release with electronic data recording system

Management Procedures and Decision Rules

221. The NRLMG has established two simple decision rules for the NSN and NSC substocks. Each year, the rule for each substock compares the current estimate of standardised CPUE with the index from 1992-93. The two estimates are considered significantly different if their 1-standard-error bars do not overlap. Under these rules, TAC changes are considered only when the two CPUE estimates differ significantly.

222. For the NSS substock (CRA 7 and CRA 8) the NRLMG recommended, and in 2002 the Minister accepted, a more complex and extensively tested management procedure. This procedure was designed to rebuild the CRA 8 fishstock to the target level. A review of the 2002 NSS Management Procedure was undertaken during 2007 and is reported in Section 3 of this Report.

223. New management procedures designed to maintain the stock near agreed target levels were tested under the stock assessment research contract (CRA2003-02) in 2007. These were designed around a decision rule matrix that enables stakeholders to consider biological, economic and other outcomes, and their associated risks, when choosing fishery goals.

Tactics

224. There are a number of mechanisms by which total removals from the fishery can be adjusted if circumstances dictate. These are:

a) adjusting the TAC;

b) changes in minimum legal size (MLS) limits;

c) adjustments to escapement provisions;

d) closed seasons;

e) fishing method restrictions;

f) effort controls;

g) closed areas;

h) adjustments to commercial quotas and amateur bag limits;

i) limitations on the numbers of participants in the fishery;

j) improved handling to reduce sub-legal mortality;

k) protection of soft-shelled lobsters and berried females;

l) effective enforcement which provides a greater deterrent to illegal fishing;

m) effective compliance services, such as education, which encourages voluntary compliance; and

n) maximised voluntary compliance with fisheries laws by fishers.

MATTERS CONSIDERED BY THE NRLMG IN 2007

9. MATTERS CONSIDERED IN 2007

225. The NRLMG has given consideration to a number of rock lobster fisheries management issues during 2007. The most important of these are:

a) research programme activities, including the review of the 2002 NSS Management Procedure and the development of new CRA 7 and CRA 8 Management Procedures;

b) a proposal to remove the commercial closed season in CRA 7 (Otago rock lobster fishery);

c) a proposal to implement a catch identification initiative previously recommended by the NRLMG;

d) the ongoing CRA 3 Multi-stakeholder Fishing Forum process;

226. In 2007 a primary function of the NRLMG was to conduct Rock Lobster Research Planning, and in that role to consider the full range research activities for the period 2007 to 2009 considered relevant to the agreed plan and strategic vision for rock lobster fisheries.

10. RESEARCH ACTIVITIES

2007 Rock Lobster Research Programme

227. In 2007 the NZ RLIC in collaboration with sub-contracted stock monitoring and stock assessment providers commenced the second sequence of the three year CRA 2006-01 research contract. This contract incorporates extensive stock monitoring coverage, stock assessments, and the maintenance and development of management procedures incorporating harvest control rules.

228. Stock assessment scientists completed the NSS Rule review; updated a CRA 4 Management Procedure that may guide future decisions as to seasonal commercial catch limits for the stock; and commenced development of a similar rule for CRA 5.

229. NIWA continued the annual monitoring of rock lobster larval settlement. Work continues to attempt to establish correlation between settlement and future abundance that may be useful to inform management responses in anticipation of seasonal variability in stock abundance.

Stock Monitoring

230. Industry logbook data from CRA 2, CRA 5, and CRA 8 continue to be incorporated into the stock assessment process. These programmes are supported by individual lobster fishermen who measure and record all rock lobsters in four designated pots each fishing day. The data, which are designed to be representative of the respective fisheries, are providing reliable and consistent information for stock assessments.

231. Sequences of stock monitoring are undertaken as Fisheries Research Services in CRA 1, CRA 2, CRA 3, CRA 4, CRA 5, CRA 7, and CRA 8.

232. Industry-funded technicians and administrative support staff continue to be employed in the Bay of Plenty, Canterbury-Marlborough, Chatham Islands, Otago, and Southern rock lobster fisheries.

233. Regional administrative and support staff are contracted and supervised by the NZ RLIC on behalf of industry. The NZ RLIC contracts Trophia Research to maintain the CRA Logbook database and to analyse and report logbook data to participants and to the annual assessment process.

234. The NZ RLIC and Trophia Research have further refined a web-based tag and release "track and trace" system that enables more timely reporting of tag recapture data by commercial and non-commercial extractive users. The system can be accessed at *http://tagtracker.trophia.co.nz/*.

Research Planning

235. In 2007, MFish again designated the NRLMG as the forum for the Rock Lobster Research Planning process. This process contributes to the MFish Business Plan. The NRLMG was selected as a model for fisheries research planning groups because of its multi-sector representation and participation, and the degree of recognition given by the Minister when seeking TAC and sustainability advice.

236. The NRLMG sought and actively encouraged additional participants to the Rock Lobster Research Planning process that commenced in August and concluded with the Research Co-ordinating Committee submissions in September/October 2007. These included interest groups not directly represented on the NRLMG, and potential service providers.

237. The initial focus was to identify the information needs for rock lobster fisheries. The planning process also took account of the research projects in progress during 2006/07 into 2008.

238. The NRLMG has previously confirmed a range of immediate and medium term research needs, the results of which will inform the Minister when making TAC and sustainability decisions, and may assist stakeholders wanting to develop and implement Fishery Plans.

239. The projects that are considered essential to the stock assessment and modelling, to the management procedures including harvest control rule evaluation and analysis, and to management decisions are:

a) stock assessment;

b) stock monitoring; and

c) better non-commercial catch estimates including estimates of illegal removals.

11. STOCK ASSESSMENT OVERVIEW

Introduction

240. No assessments for CRA stocks were done in 2007. The core stock assessment science activity was the NSS Review – a detailed review of the current NSS (CRA 7 and CRA 8) decision rule which guides TAC/TACC recommendations and decisions for those stocks. Working in the RLFAWG convened by MFish, the stock assessment science team examined alternative management procedures for the two stocks, both of which have reached the rebuild targets inherent in the 2002 NSS Management Procedure.

241. Several candidate procedures for each stock were identified and tested, and after consultation with commercial stakeholder representatives in CRA 7 and CRA 8, were further modified and refined. This Report contains recommendations for the implementation of separate CRA 7 and CRA 8 Management Procedures.

Management Procedures and Harvest Control Rules

242. Harvest control rules for rock lobster fisheries were first implemented following agreement by the Minister in 1993.

243. Generically the main benefit of harvest control rules and management procedures is that they enable the Minister's legislative obligations to be met in relation to sustainable utilisation while providing greater certainty to stakeholders over future management interventions.

244. Specifically, the benefits of harvest control rules are that:

a) they allow users to plan rationally;

b) they force stakeholders and managers to define management goals clearly;

c) they force stakeholders and managers to agree on data used in making decisions;

d) they force stakeholders and managers to establish clear rules in advance to guide management interventions;

e) they incorporate uncertainty into the decision making process formally and objectively; and

f) they may act to increase the user's understanding and acceptance of decisions.

245. There are currently two types of rule in operation.

246. One type is the rule for the NSN and NSC substocks which provides guidance, based on commercial CPUE, on when stock assessments should be undertaken. The decision rule does not provide guidance on management interventions, except that TAC changes should not be considered unless CPUE is significantly different from that in the reference year. The decision rule for NSN and NSC substocks was constructed to allow for increases in TACs where rebuild would not be significantly delayed by taking such an action.

	Objective	**Performance indicators**
Yield	Maximise catch	Mean and median annual catch (t) Probability of falling below current TACC
Abundance	Maintain high abundance – there are economic, biological, and social benefits of high catch rates	Mean of CPUE (kg per potlift)
Stability	Minimise frequency of quota adjustments – a maximum of 3 to 5 years is preferred	Frequency of TAC adjustments Average annual variation in TACC (% AAV)
Safety	Minimise risk of low biomass levels	Probability of CPUE staying above the 1997 level
Diversity	Maintain a wide size range of lobsters – fishers are able to respond to changes in market demand	The proportion of lobsters in the catch that weigh 1kg or greater (%)
Rebuild	Maximise rate of rebuild	Mean annual percentage increase in CPUE Time to rebuild (yrs)

Table 6: **Management objectives and associated performance indicators to be considered in the development of harvest control rule candidates.**

247. The other type is the 2002 NSS Management Procedure that guides TAC and Sustainability decisions for CRA 7 and CRA 8. Under this type of rule, agreement is obtained among managers and stakeholders when the management procedure is designed: they agree about the data inputs, the harvest control rule and the period for which the management procedure will be used. Extensive simulation testing of the management procedure is necessary to ensure that it will deliver the desired stock behaviour.

a) The 1996 and 2002 NSS Management Procedures were the first, and so far the only, examples of this form of management in New Zealand, although it is a management approach which has been widely adopted in South Africa and is also becoming accepted in North America.

b) The 2002 NSS Management Procedure was extremely effective in achieving its stated objective of rebuilding these stocks within a specified time.

c) The 2002 NSS Management Procedure allowed four TAC changes to occur with high consensus and minimum controversy.

d) The 2002 NSS Management Procedure reduced the requirement for frequent stock assessments of these two stocks.

e) The 2002 NSS Management Procedure was reviewed in 2007. The NRLMG is proposing the adoption of new procedures for CRA 7 and CRA 8 from 2008 (refer section 3 of this report).

248. The application of these management procedures results in management action consistent with the Minister's legal obligations.

Reference points

249. In the absence of stakeholder group agreed management strategies, and in the absence of estimates of biomass that could produce the maximum sustainable yield, the NRLMG believes that biological reference periods provide appropriate alternatives for management consideration for the reasons outlined in the discussion that follows.

250. Because estimates of virgin biomass are very uncertain, the status of a stock relative to *Bmsy* is not estimated in rock lobster assessments. To assess the status of a stock, the RLFAWG examines a variety of performance indicators. Several indicators are based on "vulnerable biomass": the pre-season biomass that is legally available and vulnerable to the fishery in the AW season (i.e., at or above the MLS, excluding berried females, and taking selectivity-at-size and seasonal vulnerability into account).

251. The minimum biomass indicator, *Bmin*, is defined as the lowest point (nadir) of the AW vulnerable biomass trajectory. Current biomass, *Bcurr* is defined as vulnerable biomass from AW of the year following the last year of data. Projected biomass, *Bproj*, is taken from the end of a three-year projection.

252. *Bref* is defined as a proxy for *Bmsy* and is taken to be the average vulnerable biomass from a reference period. *Bref* has been calculated as the average start-of-season vulnerable biomass in the AW season during the defined reference period.

253. The choice of reference period is perforce arbitrary and open to debate. When selecting reference periods the RLFAWG and the NRLMG consider a number of important factors:

a) a period for which good data are available from which to estimate vulnerable biomass;

b) a period during which the fishery is well developed, but by no means fully developed – the fishery has continued to produce catches after the end of the reference periods; and

c) a period in which the biomass was relatively stable.

254. The target reference point *Bref* was defined for CRA 8 in 2002 as the biomass from 1979 through 1981. In this period the fishery showed good productivity and the biomass level was demonstrably safe: it subsequently declined to lower levels and then recovered. The 2006 assessments of CRA 7 and CRA 8 used 1979-81 as the reference period.

255. Recent assessments (CRA 3 in 2001 and 2004; CRA 5 in 2003; CRA 4 in 2003 and 2005; CRA 7 and CRA 8 in 2006) provide an indicator that is the average vulnerable biomass from a reference period. For simplicity this is referred to as *Bref*. This is the biomass level calculated from the average start-of-season vulnerable biomass for the reference period. In assessments and model projections, *Bref* is a reference biomass, and can be regarded as the "fishable" biomass.

256. For the CRA 4 assessment completed in 2005, the reference periods from which *Bref* is calculated were selected from the history of the fishery from 1979 onwards, when data are known to be more reliable, and from periods when the stock biomass appeared to be stable. Longer periods of stability indicated that the reference period was better determined. The interpretation of a relatively long period of stability is that a fishery could be considered "sustainable" at the levels of removals existing during the period, especially if removals were stable as well.

257. *Brefs* are neither the highest nor lowest biomass levels that have been experienced and observed in the CRA areas for which reference periods are chosen. In every case, stock abundance has fallen lower than the *Brefs* and biomass has increased from those lower levels.

258. The lowest biomass observed anywhere in the history of the fishery is suggested as the "limit" reference point – *Bmin*. In compiling advice to the Minister, the NRLMG has determined that the probability of being below that reference level should be small (<10%). In simple terms the stock at limit *Bmin* is an undesirable stock status.

259. The NRLMG has therefore adopted *Brefs* as "target" reference points because, in the absence of estimates of *Bmsy,* they provide credible and practical benchmarks of sustainability and utilisation against which management actions that are consistent with legislative obligations can be recommended to the Minister.

STATUS OF THE STOCKS

No new assessments in 2007

260. No formal stock assessments for any of the nine CRA stocks were carried out in 2007. As previously noted in this Report, the focus for RLFAWG was the NSS Review and the refinement of management procedures and decision rules already in use.

261. The status of rock lobster stocks is outlined in the Fishery Assessment Plenary Report appended to this Report (*Annexe 2*).

12. MANAGEMENT PROCEDURE OPERATION

262. This section presents evaluations of the NSN and NSC decision rules for the 2008–09 fishing year, based on CPUE data extracted in October 2007.

263. The operation of the current NSS Rule and recommendations for alternative CRA 7 and CRA 8 Management Procedures are described in Section 3 and Section 4 of this Report.

264. Complexity of management procedures and complexity of evaluation are problematic. The technical complexity is beyond most people unfamiliar with current assessment technology. Therefore, a focus of continuing work should be to develop communication techniques to ensure stakeholders are able to understand the implications of proposed management procedures, and to accept and support their application.

DATA PREPARATION PROCEDURES

265. For decision rule analyses, the data are extracted using method "B4" (Bentley *et al*. 2005) and aggregated by fishing year, month, rock lobster statistical area, and vessel. The standardisation procedure (Maunder & Starr 1995) uses month, statistical area, and fishing year as explanatory variables.

266. The 2002 NSS management procedure uses the data from CRA 8. Procedures are used which scale the standardised indices to CPUE levels consistent with those observed by fishermen.

DECISION RULE FOR NSN (CRA 1 & CRA 2) AND NSC (CRA 3, CRA 4, CRA 5)

267. The decision rule described by Breen *et al.* (1994) was modified by the NRLMG for the NSN and NSC substocks to allow consideration of TAC increases. The original decision rule required that a substock be assessed whenever a "standardised CPUE analysis" (Maunder & Starr 1995) showed a "significant" decrease in the CPUE for a given year relative to the CPUE estimate for 1992/93. A year index is considered "significantly different" from the 1992/93 year index if the standard-error bars do not overlap (*Table 7*).

NSN – CRA 1 & CRA 2

268. The standardised CPUE for the NSN substock increased steadily between the 1992/93 and 1998/99 fishing years. There were four consecutive years of decrease between 1998/99 and 2002/03, but this trend appears to have reversed and the standardised indices since 2004/05 show increases relative to 2003/04. The increase in the NSN series relative to the 2003/04 fishing year extends to both components of the NSN. The standardised index and the simple arithmetic mean show similar trends and both are above the low abundance observed in the late 1980s and early 1990s.

269. Under the NSN decision rule, the 2006 CPUE is "significantly" above the 1992 CPUE.

NSC – CRA 3, CRA 4, CRA 5

270. As in the NSN substock, standardised CPUE for the NSC substock increased steadily between the 1992/93 and 1998/99 fishing years. Since then, there has been a continuous drop in CPUE to a level nearly 50% below the 1998/99 peak. This decline has occurred in all three components of the NSC, although not in synchrony, with CRA 5 dropping from a 2003 peak while CRA 3 and CRA 4 started declining sooner.

271. The CRA 3 decline has plateaued over the last 3 years at a level slightly above the nadir observed in 1992/93. As was noted for the NSN substock, the standardised index for 2006/07 remains above the lowest level, which was observed in 1992/93.

272. Under the decision rule, the 2006 CPUE is "significantly" above the 1992 CPUE.

273. On the basis of these results no stock assessments are invoked for NSN and NSC stocks.

	1992/93	**1992/93**	**1992/93**	**2006/07**	**2006/07**	**2006/07**	
Substock	Index	Lower	Upper	Index	Lower	Upper	**Result**
NSN	0.971	0.938	1.005	1.640	1.574	1.709	*
NSC	0.395	0.387	0.402	0.861	0.840	0.883	*

Table 7. *Decision rule indices for 1992/93 and 2006/07 fishing years (1 April to 31 March) for the NSN and NSC substocks. The index is the year effect from a standardised CPUE analysis using 1984/85 and 1982/83 as base years for the NSN and NSC respectively. The table also shows the upper and lower bounds, which are the index plus and minus one standard error respectively. The final column indicates the significance of change between the two years (* = significant increase).*

13. OTAGO (CRA 7) CLOSED SEASON

274. The NRLMG considered a proposal by the Otago Rock Lobster Industry Association (ORLIA) and it was submitted to the MFish internal prioritisation process in 2005. The proposal failed to achieve enough priority to be progressed due to insufficient resources being available to MFish to run all regulatory proposals under consideration.

275. The Proposal:

The Otago Rock Industry Association recommends the Fisheries (South-East Commercial Fishing) Regulations 1986 Regulation 8 be amended to remove the closed season for commercial rock lobster fishing in CRA 7.

276. Industry representatives then brought the ORLIA proposal back to the NRLMG and it was submitted to MFish's 2006 internal prioritisation process. The proposal failed to progress a second time.

277. The Minister subsequently met with the ORLIA representatives in Dunedin and undertook to look into the proposal. Subsequently the Minister asked MFish to meet with ORLIA and provide advice on how they could improve their proposal so that it could have the best chance of succeeding in the next prioritisation round. MFish advised ORLIA to include information on possible impacts on other fishery participants and include a range of options to avoid remedy or mitigate these potential impacts.

278. ORLIA chose to undertake consultation with non-commercial stakeholders to specifically identify and take account of issues raised by them. That additional consultation was completed in September 2007. In October 2007 the issues related to impacts on recreational fishing for rock lobsters were clarified. ORLIA has addressed those in a revised submission to the MFish internal prioritisation process.

NRLMG Recommendation

279. The NRLMG recommends that you:

a) **note** that ORLIA has again submitted the proposal to the MFish internal prioritisation process for inclusion in the 2008 Regulatory Review rounds.

14. CRA 3 MULTI-STAKEHOLDER FISHING FORUM REPORT

280. In May 2006, representatives of the customary, recreational and commercial Gisborne rock lobster fishing sectors came together to form the CRA 3 Multi-stakeholder Fishing Forum (the CRA 3 Forum). The CRA 3 Forum was set up following the Minister's concurrence with an NRLMG recommendation that a multi-stakeholder group be established to discuss and resolve two perceived utilisation issues in the CRA 3 fishery.

281. The two perceived utilisation issues relate to:

a) "*equity of access to fish in CRA 3*": specifically whether or not commercial fishers are provided an "access advantage" with the winter commercial concession; and

b) "*inter-sector spatial conflict*": specifically whether there is increased spatial overlap between commercial and non-commercial sectors in CRA 3 limiting recreational access to rock lobster.

282. The issues are "perceived" issues in that there is no independent quantitative information to confirm an impact is occurring and fishery participants have differing views about what is causing the problems. Some participants consider current low abundance in the CRA 3 fishery is affecting the fishing success of all fishery participants and no single group is more affected than another, whereas others consider the fishing success of some sectors is more strongly affected than others because of the current management framework. In April 2005, the Minister reduced the TAC by 42% to ensure sustainability.

The CRA 3 Forum

283. On establishment, the CRA 3 Forum set *Terms of Reference* and agreed its purpose. The CRA 3 Forum's stated purpose is wider than the two utilisation issues identified by the Minister – it is "*to develop, implement and manage a CRA 3 Management Plan to rebuild the fisheries stocks and maintain sustainability*".

284. The CRA 3 Forum established two levels of operation:

a) The CRA 3 Forum (comprising tangata whenua and fishery stakeholders representatives), which is the decision making group; and

b) The CRA 3 Working Group (comprising a smaller group consisting of two CRA 3 Forum members from each sector), which researches and analyses topical issues, provides the CRA 3 Forum with recommended courses of action, and drafts CRA 3 Forum documents.

285. The CRA 3 Forum contracted an independent facilitator to run meetings. The contractor was initially paid for by the commercial sector but is now paid for by MFish. The CRA 3 Forum also seeks and is provided information and support from the NRLMG.

286. Despite the commitment of all sectors, the progress of the CRA 3 Forum in the first year was slow. Each sector had strongly held views on the nature of the issues in the fishery and the best way to resolve them. Consequently, it took some time for discussions to move beyond sector-based solutions and focus on developing common goals and designing solutions that would deliver these goals.

CRA 3 Fisheries Management Plan

287. In July 2007, the CRA 3 Forum gained momentum. The CRA 3 Forum agreed to develop a CRA 3 Fisheries Management Plan (the CRA 3 Plan) with MFish, and agreed a process and timeline to develop the Plan. Key milestones in the process included:

a) complete a first draft of the proposed CRA 3 Plan (including fishery objectives, assessment of current management framework, and required management strategies) by 30 November 2007 for CRA 3 Forum members to discuss with those they represent.

b) complete a final proposed CRA 3 Plan by 31 March 2008.

288. The CRA 3 Forum has completed the draft CRA 3 Plan as per the first milestone. The draft Plan identifies the following agreed high-level goals for the CRA 3 fishery:

a) CRA 3 catch is sustainable;

b) Information for decision making is improved;

c) Important rock lobster environments are protected and enhanced;

d) Fishing access for all sectors is protected and enhanced;

e) Illegal catch is reduced.

289. The draft CRA 3 Plan also identifies possible management strategies to ensure these high-level goals are met. These include:

a) a CRA 3 management procedure;

b) a cross-sector voluntary code of compliance for handling of rock lobster;

c) an educational and reporting package aimed at encouraging and supporting tangata kaitiaki and permit issuer reporting of customary catch;

d) research feasibility proposals relating to improving recreational harvest estimates and to assessing value of pre-recruit sampling;

e) a spring-summer closed season for commercial and a spring closed season/voluntary rahui for recreational and customary respectively;

f) phasing out of the winter commercial concession in the long-term;

g) strategic use of fishing media and networks to build awareness and understanding of MFish rules;

h) two proposed closed areas to commercial near Gisborne;

i) telson clipping for recreational catch.

290. Within the CRA 3 Forum there is cross-sector "in principle" agreement for most of these strategies. However, two strategies do not have cross-sector support at this time. Despite this, CRA 3 Forum members have agreed to include all of the strategies in the draft CRA 3 Plan in order to elicit feedback from the wider audience of fishery participants.

291. CRA 3 Forum members from each sector will be seeking feedback on the draft CRA 3 Plan from the groups they represent for 10 weeks from 3 December 2007. The CRA 3 Forum will then consider the feedback and finalise the CRA 3 Plan. The CRA 3 Forum intends to forward the final proposed CRA 3 Plan to the Minister on or before the 31st March 2008.

Forum Challenges

292. The good progress of the CRA 3 Forum since July 2007 has not been achieved without challenges. In mid-September, recreational sector participants announced their withdrawal from the CRA 3 Forum. They expressed frustration with the slow progress in resolving recreational concerns and noted their intention to approach you directly. Although understanding of the recreational sector's frustration, both the Minister and the remaining CRA 3 Forum members encouraged the recreational sector representatives to return to the Forum table. Recreational sector representatives returned at the end of October 2007.

293. Use of the media has also created frustration. The CRA 3 Forum's *Terms of Reference* include agreements about external communications and media that have not always been observed by some members of the recreational sector. This has upset other sector participants who considered the reports to be unbalanced or factually incorrect.

294. Despite these challenges, the CRA 3 Forum and the CRA 3 Working Group have continued to make progress and to meet their agreed milestones.

Recommendations

The NRLMG recommends that you:

a) **note** the contents of this report

b) **note** that the CRA 3 Forum intends to forward the proposed CRA 3 Plan to you for your consideration by 31st March 2008

c) **note** that the NRLMG is available to provide you with advice on the CRA 3 Forum's proposed CRA 3 Plan.

15. CATCH IDENTIFICATION

295. In 2007 the NRLMG again reviewed recommendations that in 2001 and 2002 were deferred by MFish for further consideration. MFish did not assess the recommended telson clipping initiative as having high enough priority to proceed in 2002 or 2003 (when balanced against available resources and all other regulatory amendment proposals).

296. The NRLMG spent considerable time in discussion with MFish during 2007 in an attempt to reconcile the differences of opinion between MFish Compliance and catching sector representatives as to the utility and effectiveness of telson clipping as a mandatory requirement for all recreational rock lobster fishing. The MFish Compliance position on the proposal differs from the view of the sector group representatives.

297. In the October 2007 NRLMG meeting the recreational sector representative advised the NRLMG of a possible change to sector support for telson clipping. The NRLMG agreed that there was even less likelihood of getting the proposal through the MFish Internal Prioritisation Process given the uncertainty of the recreational sector endorsement. The NRLMG agreed to drop the matter for the time being.

298. The recreational stakeholder representatives may progress the telson clipping proposal as part of the Recreational Regulation Review. The Recreational Regulation Review is a commitment made by the Minister of Fisheries to look at 10 regulatory issues of concern to recreational fishers over three years. The third and final year of the review is currently planned to occur in 2008 and the issues to be looked at have not yet been confirmed by the New Zealand Recreational Fishing Council.

Recommendation

299. The NRLMG recommends that you:

a) **note** that recreational stakeholder representatives may progress the telson clipping proposal as part of the Recreational Regulation Review.

ONGOING ROCK LOBSTER ISSUES

16. UNCERTAINTY IN ESTIMATES OF TOTAL REMOVALS

Overview

300. Accurate information about total removals is necessary to enable appropriate management decisions to ensure sustainability. Information on the level of commercial removals is collected by the QMS reporting system. However, the infrastructure for collecting information on amateur, customary, and illegal removals is poorly developed.

301. The lack of accurate information on non-commercial and illegal catch contributes to the uncertainty of the stock assessment, detracts from the effectiveness of agreed harvest strategies and undermines the incentives created by the QMS.

302. In the case of rock lobster fisheries, to allow any or all of the individual catch components to increase without control will jeopardise the rebuild strategy and erode existing harvest rights and opportunities. No control is possible if catch components are unknown. No effective control is possible if catch components are uncertain.

303. Because the catch projections contained in stock assessments are made under the assumption of constant catches fixed at levels used in the assessment, an increase in future catch levels would result in an increased probability of a decrease in biomass and likely lower future biomass.

304. Significant uncertainty is associated with non-commercial removals from rock lobster fisheries. This situation has potential to confound the reliability of stock assessments, and to confound the expectations for, and to compromise the implementation of, Management Procedures, regional harvest initiatives and Fishery Plans.

305. In the case of those stocks generally regarded as "shared fisheries", or those where stock abundance is less than optimum and high levels of non-commercial fishing activity are evident, the need for reliable and credible non-commercial catch data is urgent.

Customary Harvest

306. There is minimal information on customary non-commercial harvest even though customary fishing regulations have been promulgated. In the South Island the Fisheries (South Island Customary Fishing) Regulations 1998 came into force on 20 April 1998. Customary fishing regulations for the North Island and Chatham Islands, the Fisheries (Kaimoana Customary Fishing) Regulations 1998 came into force on 1 February 1999. The regulations become effective in different areas as nominated representatives of the tangata whenua are appointed[2]. Uptake of the North Island and South Island Customary Fishing Regulations has

[2] See Annex 1

been slow. However, MFish has in recent years provided more resource to inform and educate tangata whenua about the Customary Fishing Regulations, and to encourage discussion where disputes about boundaries exist. This has resulted in greater uptake of the regulations, particularly on the east coast of the North Island.

307. The North Island and South Island customary regulations provide for quarterly reporting of permits issued for customary fishing purposes. Information derived from those permits is intended to improve the estimates of the level of customary harvest and although all available information has been presented to the RLFAWG there is no information available from areas still managed under Regulation 27.

Amateur Harvest

308. MFish telephone, diary, and ramp surveys have provided some amateur landing data from which estimates have been derived. Estimates of amateur harvest exist only for recent years and the results of the amateur catch surveys commissioned by MFish in 2000 remain highly uncertain and are not used in stock assessments. They were rejected by the RLFAWG. For the most recent rock lobster stock assessments the RLFAWG has assumed amateur catches and the trends in those catches over time.

309. MFish has sought tenders for research contracts aimed at improving recreational harvest estimates for rock lobster.

Illegal Take

310. The level of illegal removals from NZ rock lobster fisheries, previously estimated to be 378 tonnes nationally, and updated regionally to 64 tonnes and 52 tonnes for CRA 4 and CRA 5 respectively and 89.5 tonnes for CRA 3, remains of concern to the NRLMG.

311. In September 2006 MFish advised the RLFAWG that specific fish stock based information on illegal catches from CRA 7 and CRA 8 was not available and suggested that previous data be used in assessments.

312. In 2005 MFish Compliance provided updated point estimates of 'unreported' illegal removals, advising that "*MFish does not currently have a reliable robust and defensible methodology to estimate illegal fishing. Our approach uses the 'method' employed last year to provide information on the CRA3 fishery.*" In 2004, MFish Compliance advised that "*Difficulties arise in trying to verify and cross check the figures provided and this is a limiting factor of the methodology. Therefore, estimates cannot be verified and have an associated low level of confidence.*"

313. MFish was unable to provide more detailed information requested by the assessment scientists on whether the illegal catch in a season comes mostly:

a) from scrubbed or berried females, or

b) alternatively from undersized fish caught in pots, or

c) from the whole range of fish available to pots.

314. Estimates of illegal take, and associated historical pattern, are highly uncertain. The RLFAWG has very little confidence in them.

315. MFish's "Illegal Estimates Project", which is currently underway, focuses on identifying processes and methodologies to improve estimates of illegal take. The timeline for completing this project is unknown.

In Summary

316. The NRLMG notes:

a) that accurate and reliable data for all sectors are essential to the stock assessment process;

b) that accurate and reliable data for all sectors are essential to the fishery management decision making process, particularly in circumstances where catch reductions are considered necessary to maintain or improve stock abundance;

c) that sufficient resources must be deployed to monitor non-commercial removals from rock lobsters fisheries to maintain the integrity of the TACs set for stocks, to maintain the integrity of the allowances made to extractive users within the TACs, and to maintain the fishing opportunity associated with those allowances;

d) that increased emphasis should be placed on the full implementation of the North and South Customary Regulations.

17. COMPLIANCE AND ENFORCEMENT ISSUES

Illegal Removals

317. The NRLMG has consistently stated over many years that reduced illegal fishing activity will facilitate attainment of the goal of the framework for managing rock lobster fisheries and improve harvest opportunities for legitimate extractive users.

318. Industry, customary, and amateur fishing representatives on the NRLMG have consistently expressed the view that Government should make a greater contribution to the existing Compliance budget and therefore enable more resources to be deployed into minimising illegal removals from the rock lobster fisheries.

319. Industry, customary, and amateur fishing representatives on the NRLMG agree that better compliance could be attained if rock lobster compliance strategies were developed and implemented.

320. MFish representatives on the NRLMG believe that these strategies can be further developed by stakeholders and MFish within the Fisheries Plan process.

In Summary

321. The NRLMG notes:

a) the significance of the illegal catch component and its negative effect both on the stock and on legitimate extractive users;

b) that all user groups recommend that the Minister takes steps to ensure that compliance strategies and services (including enforcement and education services) are sufficient to minimise illegal catch;

c) that sufficient resources must be deployed to constrain illegal unreported removals in the first instance to the levels of the allowances made in setting TACs, and ideally to much lower levels so as to improve the quality of the fishing experience to be enjoyed by legitimate users.

18. ALLOCATION PRINCIPLES

322. The NRLMG is agreed that the current fisheries management regime aims to achieve sustainable utilisation by controlling total removals to levels that allow stocks to move towards optimum levels. Total removals are expressed as the TAC.

323. The Fisheries Act requires that, when recommending any variation in the TACC after having regards to the TAC, the Minister must allow for non-commercial interests in the fishery. However, the Act does not provide guidance on the amount that should be allowed.

324. Courts have determined that legislation does not require the Minister to give priority to amateur fishing over commercial interests or that the allowance must fully satisfy amateur requirements, and that under the Act the Minister may allow a preference to non-commercial fishing when setting TACCs.

325. Courts have also determined that a Minister should not reduce the TACC for conservation reasons unless he is able to take, and he does take, reasonable steps to avoid the reduction being rendered futile through increased amateur fishing.

326. Consistent with those Court decisions, MFish holds the view that, when a TAC is set, the Minister has an obligation to consider controls to constrain amateur fishing limits within that allowance, but that it is not intended to constrain customary harvest.

327. The Courts have held that there is no implied duty for the Minister to fix or vary the amateur allowance at any particular proportion of the TACC or the TAC. The appropriate allocation is a matter for the Minister's assessment, bearing in mind all relevant considerations on each occasion the Minister revisits the issue

328. Unconstrained increases in legitimate take by any sector, or illegal take by fish thieves, have a number of potential consequences. These are:

a) a risk that the TAC will be exceeded;

b) a risk that the stock will decline or that a rate of increase will be reduced;

c) an erosion of other sector groups' fishing opportunity;

d) an erosion of the value and utility of the quota fishing property right;

e) a possible failure of an agreed management plan; and

f) an obstacle to reaching a useful harvest initiative or Fishery Plan agreement among sectors.

329. In the case of rock lobster fisheries, to allow any or all of the individual catch components to increase without control will jeopardise the rebuild strategy and erode existing harvest rights and opportunities.

330. The NZRFC representatives wish to ensure that the amateur fishing right is not further eroded; therefore any increase in TACC should incorporate a concurrent increase in the amateur allowance required by the Act. In addition to such an increase, they consider that the bag limit needs upward adjustment to allow those fishers who take their limit to benefit from the increased abundance. They note that in the past the bag limit was reduced from ten to six rock lobsters for sustainability reasons and for that reason the reverse must occur.

331. The NZRFC representatives also consider that the legislation gives customary Maori rights and amateur fishing interests precedence over commercial rights. It is their submission that after setting a TAC the Minister must first satisfy all Maori and amateur expectations of catch, then make allowance for 'other sources of fishing related mortalities' including illegal catch, and having attended to those matters, allocate any remaining portion of the TAC to commercial users as the TACC for the fishstock.

332. Industry, Customary, and MFish representatives do not believe that the NZRFC view is consistent with the determinations of the Courts. Industry representatives do not agree with the amateur fishing representatives interpretation because they believe it fails to recognise the security of fisheries property rights already held by commercial users, including Maori, and the associated husbandry incentives.

333. Industry contends that, by its very nature, the TAC/TACC setting process allocates defined 'shares' of available harvest to extractive user groups. Further, the principle of proportional allocation of explicit catch allowances has been partially pre-determined by the existence of quota rights and a TAC. However, MFish notes that the Courts held that there was no requirement for proportionality in allocative decisions.

334. Industry is concerned that, in the absence of sufficient information, appropriate measures to constrain amateur catch to an allowance and adequate constraints on illegal removals, a Minister may consider reducing TACCs in an attempt to hold total removals within the TAC to ensure sustainability. If total non-commercial catch is not constrained, any TACC reduction may facilitate only an increase in non-commercial catch and illegal activity, through a relative increase in stock availability.

335. For this reason, industry representatives advocate a proportional allocation arrangement that allows each extractive user group to share in the available stock abundance and would therefore provide each legitimate sector with an incentive to protect and enhance their respective harvest opportunities.

336. These issues also apply to fisheries other than rock lobster fisheries. The debate has raised issues of fairness and equity. In rock lobster fisheries such as CRA 1 and CRA 2, where

industry suggests that an increasing proportion of the total catch is taken by non-commercial extractive users, allocation policies are of strong interest to commercial fishermen. In the absence of allocation principles, industry is concerned that any future actions required to maintain stock sizes could come at the expense of commercial operators and erode the property rights which are the foundation of the QMS.

337. Industry representatives acknowledge that rock lobster fisheries are 'shared' fisheries that have significant social and cultural values in addition to economic values. However, industry cannot support other than a proportional aggregate amateur fishing allowance within the constraints of a TAC. Industry also submits that the initial allowances made in the TAC setting process establish a 'benchmark' for shares of the available yield which can then become the basis for negotiation, between user groups at a regional level, as to future levels of access and use of rock lobster fisheries.

338. Industry submits that a formal allocation of 'shares' to amateur fishing provides an incentive required to bind that stakeholder group into an ongoing co-operative management, compliance, and research planning process at a regional level.

339. The NZRFC has noted the Minister's and MFish's acknowledgements that the amateur fishing right is poorly defined and poorly managed. They further note the acknowledgements that over a period the amateur fishing right has been eroded. The NZRFC accepted a challenge by the Minister and MFish to work jointly towards properly defining that right and setting an appropriate management structure.

340. Representatives of the NZRFC and officials from MFish formed the Recreational Rights Working Group (RRWG) to define the nature and extent of the amateur fishing right. The RRWG report was released for widespread consultation. The RRWG reported to Cabinet with an analysis of the public submissions and recommendations. The Minister then established a Ministerial Consultative Group (MCG) that discussed the outcomes of public consultations and possible solutions.

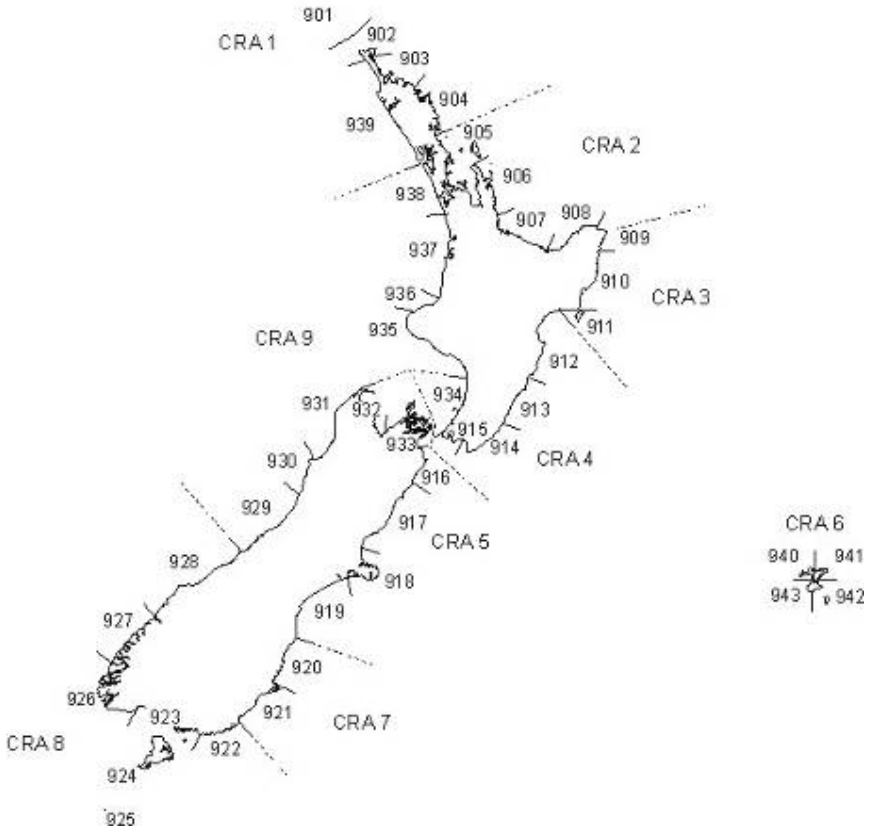
341. Following consideration through the MCG process the Minister reported to Cabinet, who agreed objectives to provide a basis for continuing discussion and development of options for further public consultation. Further discussion occurred within subsequent Ministerial reference groups but no agreement on an acceptable way forward was reached.

342. A new Government initiative to look at allocation issues began in late 2005 and the "Shared Fisheries Public Discussion Paper" was released for consultation in October 2006. The paper and resulting submission from tangata whenua and stakeholders were intended to form the basis for reform proposals during 2007. However, decisions on reform have been deferred pending recommendations from a collaborative working group (involving SeaFIC, NZRFC and TOKM), which is due to report in April 2008.

STOCK SUMMARIES

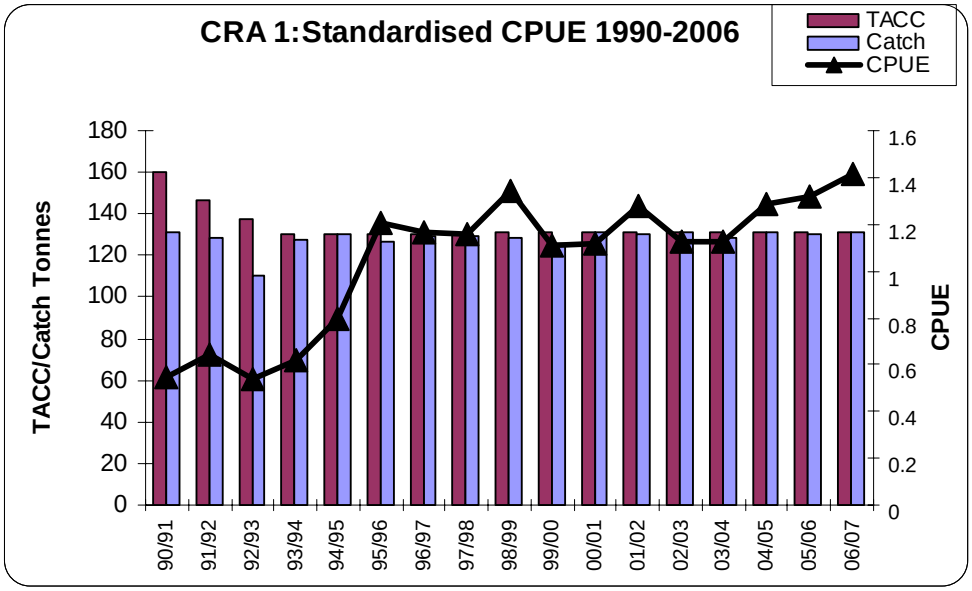
19. STOCK SUMMARIES

343. This section outlines the principal rock lobster fishing activities in each of the quota management areas and a brief summary of stock status taken from the most recent assessments.



Rock lobster fishery management areas (CRA 1 – CRA 9) and statistical areas used for commercial catch and effort reporting.

20. CRA 1



344. The CRA 1 fishery extends from the Kaipara Harbour on the west coast of the North Island around North Cape and then south to Waipu. The commercial fishery extends offshore to the Three Kings, but the bulk of the commercial harvest is taken from waters adjacent to the mainland. No TAC has been set for this fishery. The 130.46 tonnes TACC has remained unchanged since April 1993.

345. The 130.46 tonnes CRA 1 TACC is distributed amongst 23 quota share owners. Fifteen permit holders reported CRA 1 catches in 2006. The landed value of the commercial catch was $3.6 million (based on average port price paid to fishermen), making rock lobster an important contributor to the local and regional economy.

346. Amateur catch of rock lobster is estimated at 51 tonnes (MFish 1996). Diving using UBA is the predominant method used by amateur fishermen and women, although hand gathering, ring potting, and potting from vessels contributes to the amateur catch.

347. A large Maori population in the Northland region ensures that rock lobster retains significant customary value. No reliable estimates are available for customary catch. The progressive implementation of reporting procedures within the North Island Customary Regulations might assist in future evaluations of customary harvest for the CRA 1 fishery.

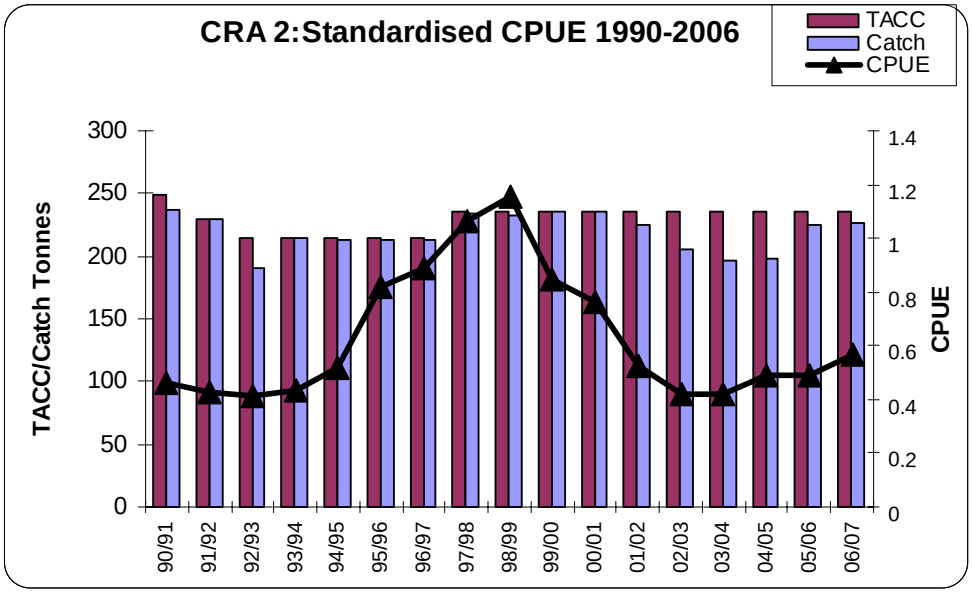
348. CRA 1 is assessed using commercial catch and effort and quota monitoring report data. In addition, the CRA 1 commercial stakeholders group commissioned intensive catch sampling sequences for the fishery in the 1997/98 and 1998/99 seasons. CRA 1 stock monitoring was part of the CRA 1999–01 and CRA 2000-01 Research Services contracts and 60 catch samples and 7000 rock lobster tag and releases were completed from 2001 to 2003 inclusive. The

CRA 2006-01 research contract provides for catch sampling sequences to be done annually until 2010.

349. CRA 1 is part of the NSN substock that was assessed in 2002. The model results showed that the April 2001 stock abundance was higher than in the 1979-88 reference period. Projections at the end of a five year period (April 2006) had a median expected biomass near the 2001 level if catches were constrained to the levels used in the assessment.

350. The assessment noted that these projections should not be considered reliable much beyond two to three years but CPUE has stabilised or increased from 1999 to 2007 suggesting stable or increasing stock abundance.

21. CRA 2



351. The CRA 2 fishery extends from Waipu through the Hauraki Gulf and Bay of Plenty to East Cape. The current 452.6 tonnes TAC for the fishery was set in 1997. The TAC is comprised of 140 tonnes for amateur catch, 16.5 tonnes for customary harvest and 60 tonnes for illegal removals. The current TACC is 236.1 tonnes.

352. The 236.1 tonnes TACC is distributed amongst 46 quota share owners. In 2006 there were 36 vessels reporting commercial catches. The main operating period for commercial vessels generally extends from June to January. The estimated landed value of the CRA 2 catch is $6.3 million (based on average port price paid to fishermen) and the industry sustains a number of processing and export companies in Tauranga, Whitianga, and Auckland.

353. Amateur catch in this fishery is estimated at 140 tonnes (MFish 1996). Potting and diving are the preferred methods, and there is a large recreational charter vessel industry catering to the sector.

354. Customary catch is conservatively estimated at 16.5 tonnes. Anecdotal evidence in recent seasons suggests that the actual harvest may have been much greater. A large Maori population in the Bay of Plenty region ensures that rock lobster retains significant customary value.

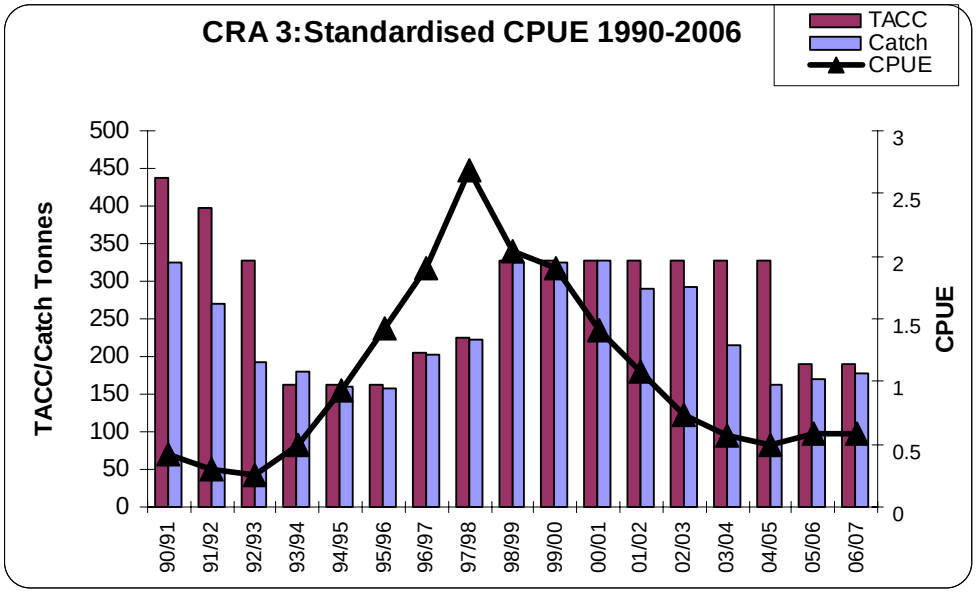
355. The CRA 2 Rock Lobster Company Ltd is the representative commercial stakeholder group for this region. The Company has made significant investments in rock lobster research since its formation in 1995, including a comprehensive vessel logbook programme, tag and release projects, and sequences of intensive catch sampling to MFish standards and specifications. These data continue to be collected.

356. Stock monitoring activities for the 2007/08 season include the continuation of logbook coverage, intensive catch sampling sequences within season, and tag recapture reporting. Similar coverage is contracted forward to 2010.

357. CRA 2 was assessed as part of the NSN substock in 2002. The model results suggested stock abundance in April 2001 was higher than in the 1979-88 reference period. Projections at the end of a five year period (to April 2006) had a median expected biomass near the 2001 level if catches were constrained to the levels used in the assessment. The assessment noted that these projections were less reliable than for CRA 1, as the uncertainty of future recruitment had more impact on the short term projected biomass.

358. CPUE in this fishery has been variable over time since 1979/80. CPUE for this fishery declined from 2001 to 2002, suggesting a decline in stock abundance, but then increased slightly in 2003, 2004, 2005, and again in 2006/07 and appears to be stable and increasing.

22. CRA 3



359. The CRA 3 fishery extends from East Cape south to the Wairoa River.

360. A stock assessment was last carried out for CRA 3 during 2004. The projections from the assessment used a range of commercial catch levels and the then current allowances for non-commercial, including illegal, removals. On the basis of the projections the NRLMG made recommendations to reduce CRA 3 catches to ensure sustainability. In April 2005 the Minister invoked a TAC reduction by way of a 42% reduction to the TACC.

361. The current 319 tonnes TAC is comprised of a 20 tonnes allowance for amateur catch, a 20 tonnes allowance for customary harvest, an 89 tonnes allowance for illegal removals and a TACC of 190 tonnes.

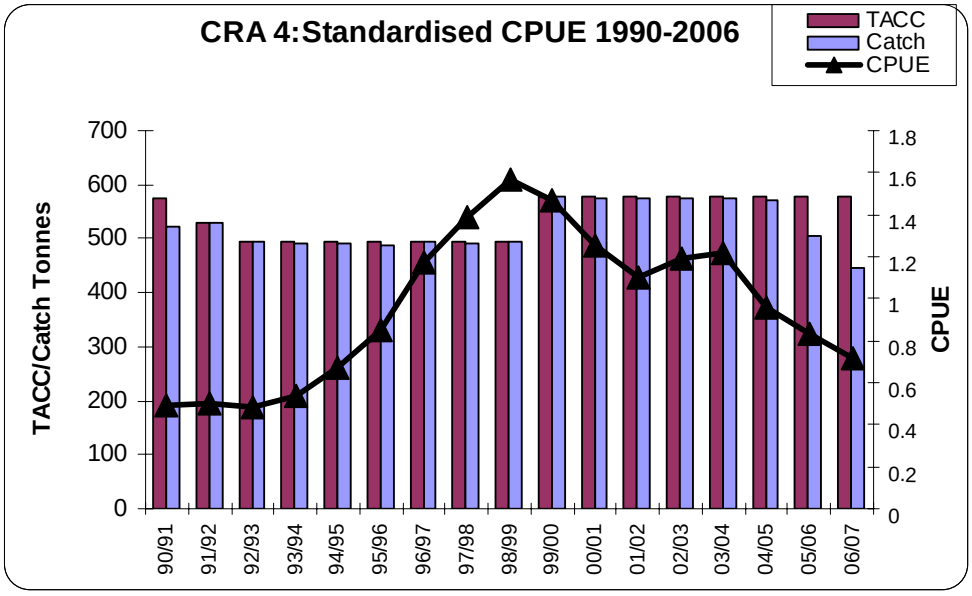
362. The TACC is distributed amongst 39 quota share owners. In 2006 CRA 3 landings were reported by 29 commercial vessels. There is significant Iwi involvement in quota share ownership and fishing. The commercial harvest has a landed value of $5.3 million (based on average port price paid to fishermen). There are two processing plants in Gisborne, and product is also shipped to Wellington, Tauranga and Auckland for processing and export.

363. Amateur catch is currently unknown but was estimated at 14 tonnes (RLFAWG 2001), although an allowance of 20 tonnes was again made in the 2005 TAC decision. Potting and hand gathering are the preferred amateur fishing methods.

364. Rock lobsters have great cultural significance to local Maori and there is a very high level of customary harvest activity. Customary removals are uncertain although an allowance of 20 tonnes was made in the 2005 TAC decision.

365. From May 2006 a multi-sector stakeholder group in Gisborne (the CRA 3 Multi-stakeholder Fishing Forum) has been working to develop a plan of management for the fishery which will improve the status of the stock and resolve competing interests between extractive users. The CRA 3 Forum, assisted by MFish, expects to produce a CRA 3 Fishery Plan in March 2008.

23. CRA 4



366. The CRA 4 fishery extends from the Wairoa River on the east coast, southwards along the Hawkes Bay, Wairarapa and Wellington coasts, through Cook Strait and north to the Manawatu River.

367. A CRA 4 TAC was first set in April 1999 and remains at 771 tonnes. In that 1999 decision, the TACC was increased from 495.3 tonnes to 576 tonnes. Before 1999 the TACC remained unchanged since April 1993. Within the TAC a total of 85 tonnes is allowed for amateur catch and 35 tonnes for customary catch. An allowance of 75 tonnes is made for illegal unreported removals. The most recent (2005) CRA 4 stock assessment is reported in detail in the RLFAWG 2005 Plenary Report.

368. In November 2005 the CRA 4 industry observed changes in stock abundance as measured by CPUE for AW period of the season. CPUE was closely monitored in the AW period of the 2006/07 season and in November of that year the CRA 4 industry sought and received science advice which resulted in the operation of a CRA 4 Decision Rule which set a voluntary commercial catch limit for the 2007/08 season which commenced on 01 April 2007.

369. The industry initiative was taken primarily to arrest further stock decline and to re-set the commercial catches to increase the size frequency distribution and abundance of lobsters at peak catching times when export market prices are most advantageous. The current commercial catch limit is 339 tonnes, a 44% reduction to the CRA 4 ACE generated by the TACC.

370. The CRA 4 Decision Rule is intended to run for three fishing years before being reviewed and will generate recommended commercial catch limits for the 2008/09 and 2009/10 seasons.

Consultation with the CRA 4 industry over the operation of the Rule for 2008/09 commenced in November and the ACE shelving that confirms the commercial catch limit will be concluded by the end of February 2008.

371. The operation of the decision rule and the administrative management of the ACE shelving transactions which secure the commercial catch limit are overseen by the CRA 4 Industry Association (CRAMAC 4) and are coordinated by the NZ RLIC.

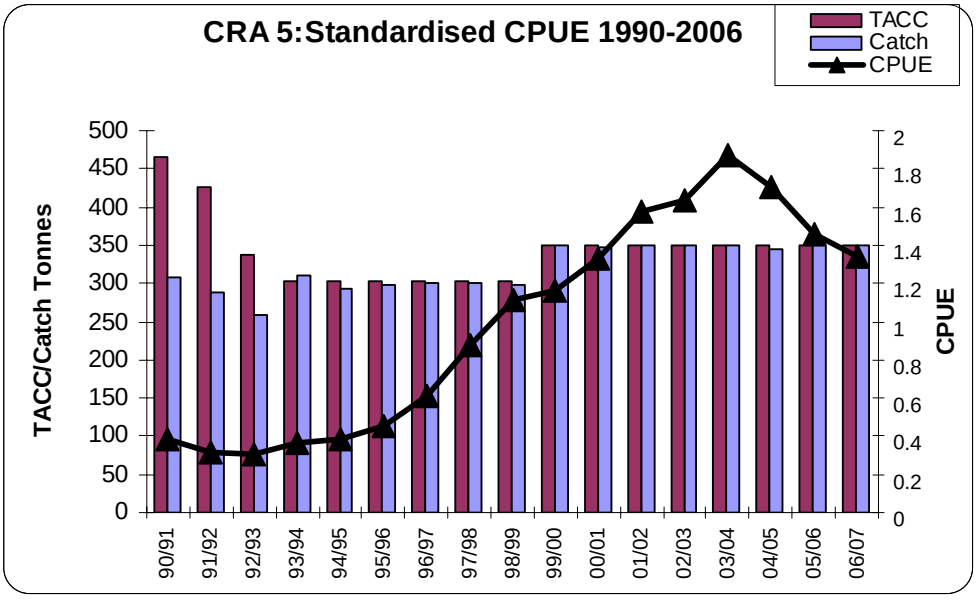
372. The 576 tonnes TACC is distributed amongst 86 quota share owners. The CRA 4 fleet comprised an estimated 54 vessels in 2006. With the implementation of the voluntary commercial catch reduction in April 2007, the "pool" of ACE available to the CRA 4 fleet was considerably reduced and vessel numbers have declined in the current season. The majority of vessels in the fleet operate from coastal bases in isolated rural areas on the Hawkes Bay and Wairarapa coastline. The CRA 4 commercial catch supports several processing and export operations in Napier and Wellington, and Auckland.

373. The amateur catch is estimated at 73 tonnes (MFish 1996). Potting and hand gathering are the preferred methods for amateur fishers in this area. As in most CRA areas, the majority of amateur catch is taken in the summer months. The region sustains a recreational fishing and dive charter industry during those months.

374. Aggregate customary harvest estimates for CRA 4 are not available, but the reporting requirements associated with the implementation of the North Island Customary Regulations should enable more informed decision making in future.

375. A comprehensive stock monitoring programme has been established in the CRA 4 fishery. There is a long time series of intensive catch sampling data from Napier, Castlepoint, Cape Palliser, and the Wellington south coast. This series was extended in the current season with a total of 32 sample days completed for the period May 2007 to January 2008 and further stock monitoring activities are confirmed through to 2010. Puerulus settlement is also monitored at several sites within CRA 4.

24. CRA 5



376. The CRA 5 fishery extends from the western side of the Marlborough Sounds across to Cape Jackson and then southwards to Banks Peninsula. There are three distinct regions of commercial fishing — Picton/Port Underwood, Ward-Kaikoura-Motunau, and Banks Peninsula, although a small number of commercial vessels work the area from Nelson through to D'Urville Island. The bulk of the commercial catch is taken from the area bounded by Tory Channel in the north and Motunau in the south.

377. The 2003 stock assessment for CRA 5 is reported in detail in the RLFAWG 2003 Plenary Report. The current TAC of 467 tonnes was set in April 1999 and has been unchanged since. In that decision 40 tonnes was allowed for amateur catch and 40 tonnes for customary catch. The TACC was increased from 303.7 tonnes to 350 tonnes. The allowance for illegal unreported removals is 37 tonnes.

378. Amateur catch is estimated at 35 tonnes (MFish 1996). The preferred methods for amateur fishing are potting and diving with UBA. Recreational rock lobster fishing and the dive charter industry are both growing in the region. Dive clubs in the region have actively reported tag recapture information and maintain an ongoing interest in the regional research programme.

379. There are low estimates of customary harvest in CRA 5.

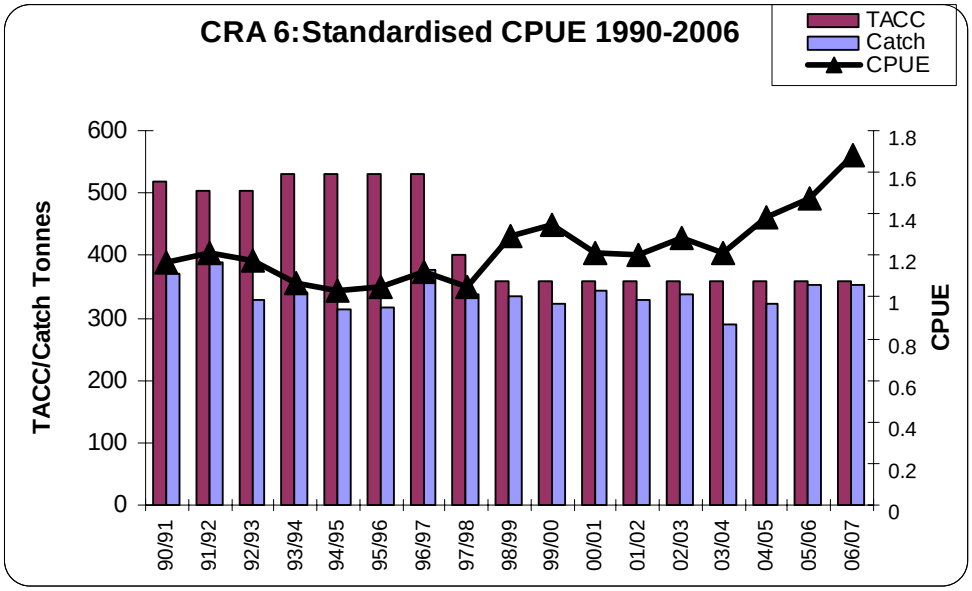
380. There are 43 quota share owners in CRA 5. The fleet comprised an estimated 30 vessels reporting catch in 2006. Many commercial vessels work off beaches between Port Underwood and Motunau. The landed value of the commercial catch was estimated at

$10 million in 2006/07 (based on average port price paid to fishermen), and the fishery supports processing and export facilities in Ward, Kaikoura, and Christchurch

381. The CRA 5 industry members, through membership of their commercial stakeholder group CRAMAC 5, have encouraged and facilitated an ongoing dialogue with amateur fishing and dive clubs and with Iwi groups in the region. The responses to the process have been extremely encouraging in terms of future co-operative research and management initiatives.

382. CRA 5 has an intensive stock-monitoring regime in place. Intensive catch sampling and tag and release projects have been done as Fisheries Required Services, and CRAMAC 5 operates an extensive Vessel Logbook programme that provides data to the stock assessment process. Similar levels of stock monitoring are confirmed through to 2010.

25. CRA 6



383. The region designated as CRA 6 is geographically very large, being all waters within a 200 nautical mile radius of the Chatham Islands and Bounty Islands, but the area being fished is restricted to a relatively narrow coastal margin adjacent to the Chatham Islands coastline.

384. The fishery is unique in that despite declines in landing and CPUE from historical levels; the lobsters caught generally comprise much larger size classes than are found in mainland fisheries. The reasons for the decline in catch and CPUE are unknown, and length frequencies of the landed catch have changed little since the development of this fishery. Previous RLFAWG reports have noted that the CRA 6 data are consistent with a stock model in which the biomass being fished is much smaller than the biomass of the contributing stock.

385. The abundance of the standing stock in CRA 6 is likely to be more dependent on immigration of larger lobsters into the area than it is on recruitment and growth. This reduces the likely effectiveness of management interventions.

386. For the 1998/99 fishing year a TAC of 370 tonnes was set. A total of 6 tonnes was set aside for amateur catch and 4 tonnes was provided for customary catch. The TACC was reduced from 400 tonnes to 360 tonnes in response to MFish concerns over declining landings and declining CPUE. The TAC and TACC remain unchanged since April 1998 and CPUE has stabilised and continues to show incremental improvement.

387. CRA 6 is unique in that unlike all other CRA management areas, two harvest methods are allowed for commercial fishing. The bulk of the TACC is landed from vessels using pots, but

there are limited numbers of method concessions issued for the fishery and divers take large quantities of lobsters in the summer months.

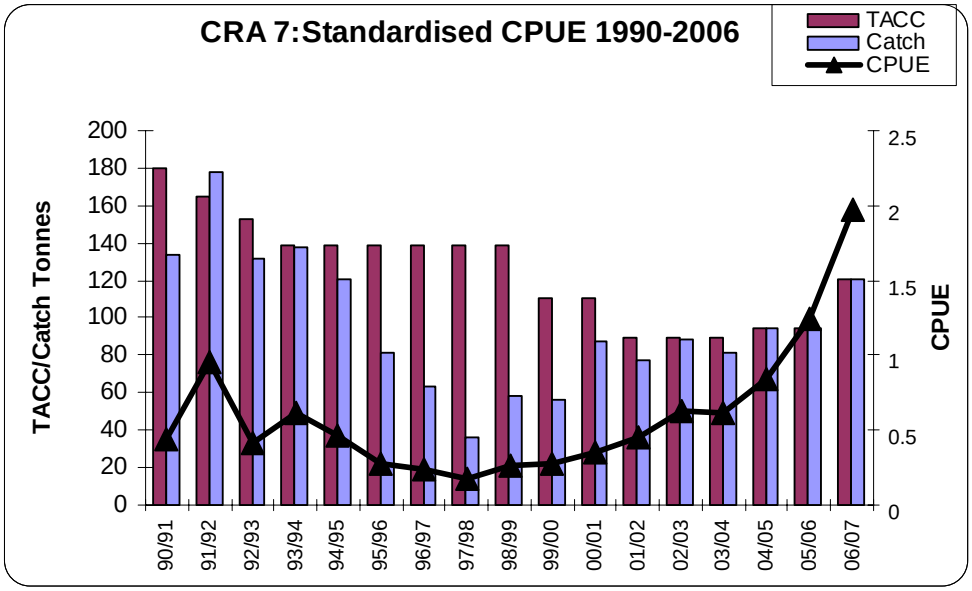
388. There are 48 CRA 6 quota share owners. Mainland New Zealand interests own the majority of quota. There are approximately 35 vessels reporting CRA 6 landings and the number of divers is unknown although only 11 of the original method exemptions issued to qualifying persons between 1990 and 1993 were current during 2005-06. Additional divers operate under the authority of permits in the name of the consent holders.

389. The landed value of the commercial catch in 2006 was approximately $8.8 million (based on average port price paid to fishermen). The fishery supplies processing and export facilities on the Chatham Islands and in Auckland, Wellington, and Christchurch.

390. The CRA 6 Industry Association established a Fishermen's Office at Waitangi in May 2000 and the NZ RLIC contracted an administrative officer trained by FishServe to co-ordinate the distribution and collation of Catch Effort Landing Returns and Monthly Harvest Reports for delivery to FishServe and to provide a range of additional administrative services to the Chatham Islands seafood industry.

391. There is no major research programme currently underway for the fishery because all previous research initiatives — intensive catch sampling, tagging, and juvenile abundance surveys — have delivered similar results. There are also high costs associated with research co-ordinated from the mainland. However, the CRA 6 Industry Association is managing a Vessel Logbook programme, such as used in CRA 2, CRA 5, and CRA 8, to collect size frequency and abundance information.

26. CRA 7



392. The CRA 7 fishery extends from the Waitaki River south along the Otago coastline to Long Point.

393. The CRA 7 fishery is one of the two fisheries that comprise the NSS sub-stock that until 2007 was used for assessment purposes. CRA 8 is the other. The TAC and allowances within the TAC are set for CRA 7 by the operation of a management procedure known as the NSS Rule which was implemented in 1997, revised and updated in 2002 and has been reviewed in 2007.

394. The NSS Rule has generated two TAC/TACC reductions for CRA 7 and two TAC/TACC increases. The operation of the NSS Rule in 2007 has generated another TAC/TACC increase for the 2008/09 season. A proposed alternate management procedure, a CRA 7 "maintenance rule" recommended to the Minister of Fisheries by the NRLMG, and if approved by him, generates a TAC/TACC increase for 2008/09.

395. The CRA 7 TAC is currently 140.2 tonnes. A total of 10 tonnes was provided for customary catch, 5 tonnes was set aside for amateur catch and 5 tonnes for illegal unreported removals. The TACC was set at 120.2 tonnes.

396. There are 33 CRA 7 quota share owners. In the 2006/07 season 14 commercial vessels reported CRA 7 landings. The landed value of the catch is estimated at $1.6 million (based on average port price paid to fishermen). The CRA 7 catch is processed and exported or sold to the domestic market by several Dunedin and Christchurch fishing companies.

397. The most recent estimates of recreational rock lobster catches from CRA 7 are less than 5 tonnes. There are no recent estimates of customary removals but for assessment purposes removals are estimated at 1 tonne for customary and 1 tonne for illegal unreported.

398. Stock monitoring coverage in CRA 7 comprises a scheduled sequence of 18 observer sampling days across all Statistical Areas in every season and during 2007 a rock lobster tag and release programme was updated with 3000 tags deployed between June and September.

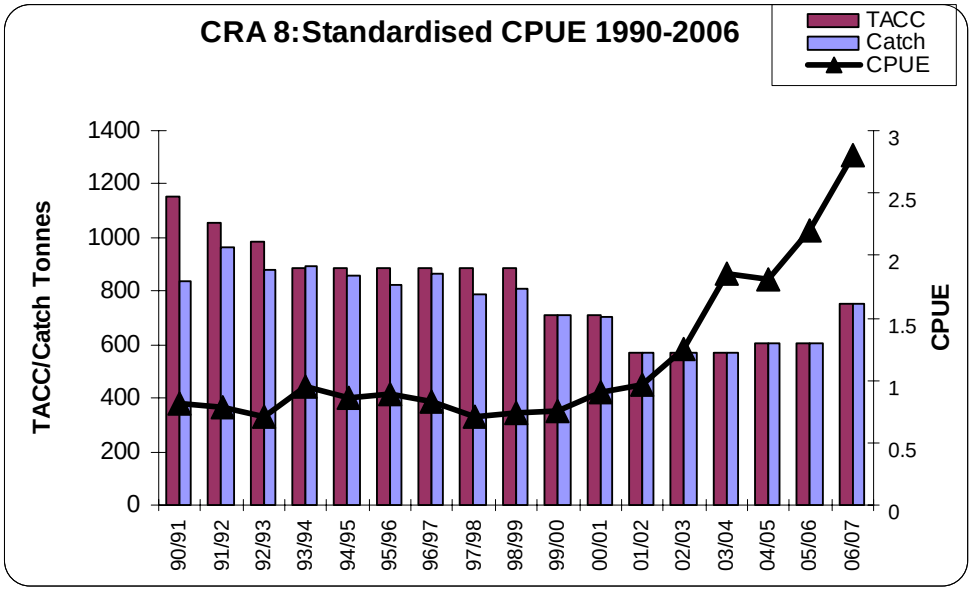
399. For commercial fishing in CRA 7 potting (trapping) is the only method allowed. Recreational users are allowed to use both the potting or dive methods.

400. Regulations prescribe escape gaps to be incorporated into lobster pots; marking of gear; a prohibition on the possession of under-sized, egg-bearing or unmeasurable lobsters; and compliance with catch limits (ITQ) or daily bag limits.

401. The CRA 7 commercial season runs from 20 June to 19 November inclusive and the MLS is a tail length of 127 mm for both male and female lobsters. The fishery is open to amateur fishing all year with a MLS regime of 54 mm TW for males and 60 mm TW for females.

402. The CRA 7 fishery is unique in that there is a 'buffer zone', closed to commercial rock lobster fishing which was incorporated into a regional harvest initiative agreed by amateur and commercial users in 1993 in response to concerns over sustainability of the stock.

27. CRA 8



403. The CRA 8 fishery is the largest mainland fishery geographically. The region extends from Long Point south to Stewart Island and the Snares, the islands and coastline of Foveaux Strait, and then northwards along the Fiordland coastline to Bruce Bay. The CRA 8 fishery is included with CRA 7 in the NSS assessment and management procedure analysis.

404. A TAC of 842.2 tonnes was set in the 2006/07 fishing year. A total of 29 tonnes was set aside for amateur catch and 30 tonnes was provided for customary catch. The TACC was set at 755.2 tonnes. The TAC adjustment was undertaken in response to the triggering of the harvest control rule in the 2002 NSS Management Procedure.

405. The 2002 NSS Management Procedure was operated again in 2007 and invoked a 25% TAC increase for each of CRA 7 and CRA 8. However an alternate management procedure – a 'maintenance', rather than a 'rebuild' procedure - was developed for both those stocks and a new CRA 8 Management Procedure is recommended to the Minister to set the TAC for April 2008.

406. Amateur catch is estimated at 16 tonnes (MFish 1996). The preferred methods for amateur fishing are potting and diving with UBA.

407. The estimates of customary harvest in CRA 8 are significantly lower than the allowance in the current TAC.

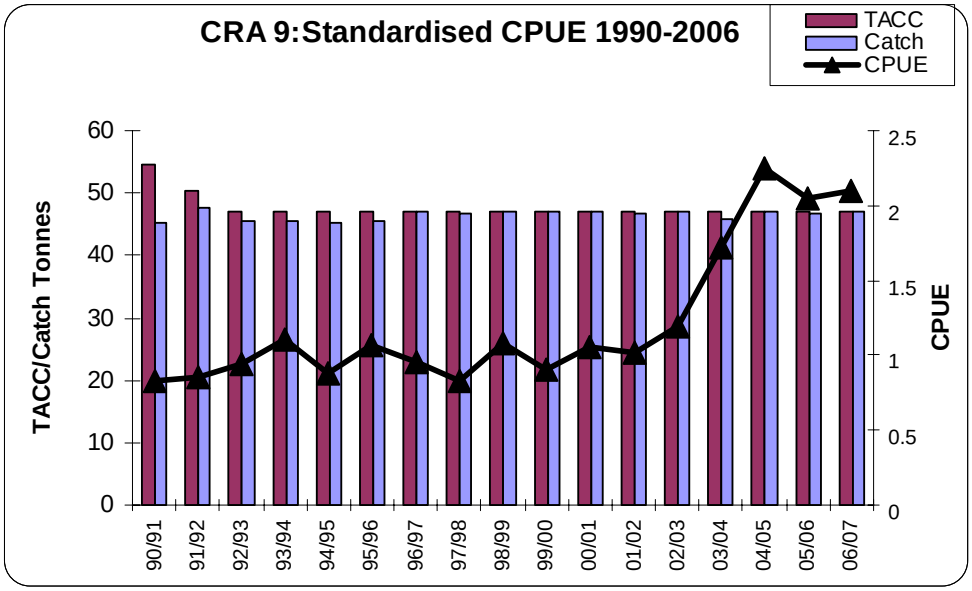
408. There are 104 CRA 8 quota share owners. In the 2005/06 season there were 60 commercial vessels reporting CRA 8 landings. The CRA 8 fleet operates in the most remote coastal areas of South Westland and Fiordland. The estimated value of the landed catch is $18.1 million

(based on average port price paid to fishermen). The industry supplies processing and export operations in Te Anau, Riverton, Stewart Island, Invercargill, Bluff, Christchurch, and Wellington.

409. The CRA 8 Industry has developed and implemented codes of practice in relation to use and disposal of fishing gear and refuse, and as a founding member of the Guardians of Fiordland Fisheries, has contributed to an extensive code of practice for the waters adjacent to the World Heritage area.

410. The CRA 8 Management Committee Inc. is the commercial stakeholder organisation for the fishery. The committee employs a Chief Executive. The committee fully funded an extensive Voluntary Logbook programme until 1998 when it was incorporated as a Fisheries Research Service. The committee also contracts to the NZ RLIC to provide intensive catch sampling and lobster tag and release as part of the Fisheries Research Services contract to the Ministry of Fisheries.

28. CRA 9



411. The CRA 9 fishery is geographically large but has the smallest TACC of any region (with the exception of CRA 10). The fishery extends from north of Bruce Bay to the Kaipara Harbour but commercial lobster fishing is constrained to the north-west coast of the South Island and the area between Patea and Kawhia, in particular the Taranaki coastline. No TAC has been set for this fishery and the 47 tonnes TACC has remained unchanged since 1992.

412. There are no estimates of amateur or customary catch for the CRA 9 fishery.

413. There are sixteen CRA 9 quota share owners. In the 2005/06 season 8 commercial vessels reported CRA 9 landings. The estimated value of the landed catch is $1.4 million (based on average port price paid to fishermen). The industry supplies processing and export operations in Marlborough, Nelson, New Plymouth, Wellington, and Auckland.

414. No stock assessment has been made for the CRA 9 fishery. CPUE was consistent over many years and has shown a significant increase then stabilised since 2001/02. The TACC has constrained commercial landings in every season from 1990, and CPUE has been stable or increasing over the same period suggesting a stable or increasing stock.

29. PACKHORSE ROCK LOBSTER – PHC

415. The packhorse rock lobster management area extends to all of New Zealand.

416. The TACC for this fishery was set at 30 tonnes in 1990, but was increased to 40 tonnes in 1992 as a result of appeals. Historically the fishery has been primarily an incidental catch for many commercial rock lobster fishermen in the Northland/Auckland and Bay of Plenty regions. However several fishermen did successfully target the species prior to 1990 and dependent on environmental conditions have attempted to do so in several seasons since.

417. Because of different biology and behaviour of this species, the MLS is set at 216 mm tail length. Prohibitions on the taking of berried female lobsters apply. In addition, a large area of water to the north-east of North Cape was closed to commercial rock lobster fishing on a year-round basis in 1977 in an apparent effort to protect what was then thought to be a large concentration of sub-legal PHC rock lobsters.

418. Commercial catches have fluctuated since 1990, reaching a peak of 25 tonnes in the two most recent seasons, the highest commercial catches since the 1995/96 season. The more recent reported commercial landings are:

Season	PHC Commercial Landings (tonnes)
1999-00	12.6
2000-01	9.8
2001-02	7.8
2002-03	8.6
2003-04	16.4
2004-05	20.8
2005-06	25.0
2006-07	25.4

419. It is thought that the shortfall of catch against quota reflects the low levels of target effort being directed at the fishery which is known to have variations in abundance possibly determined by weather and sea temperatures.

420. In 2003/04 an estimated 24 commercial vessels reported PHC catch. Less than five are known to be target fishing the species, all of these are operating in either CRA 1 or CRA 2. The value of the landed catch is estimated to be in excess of $500,000.

421. There are no estimates of amateur catches for the species but divers using UBA are known to target PHC in Northland and the Bay of Plenty as “trophy” fish. There are no estimates of customary harvest.

30. ATTACHMENT I: SPECIFICATIONS

CRA7 AND CRA 8 MANAGEMENT PROCEDURE SPECIFICATIONS

422. Both the CRA 7 and CRA 8 proposed management procedures 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 autumn–winter (AW: April–September) season of the current fishing year and the spring–summer (SS: October–March) season of the previous fishing year, 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.

CRA7 Management Procedure Specifications

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

a) The TAC is to be set at 100 times the standardised CPUE (Figure 1);

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.

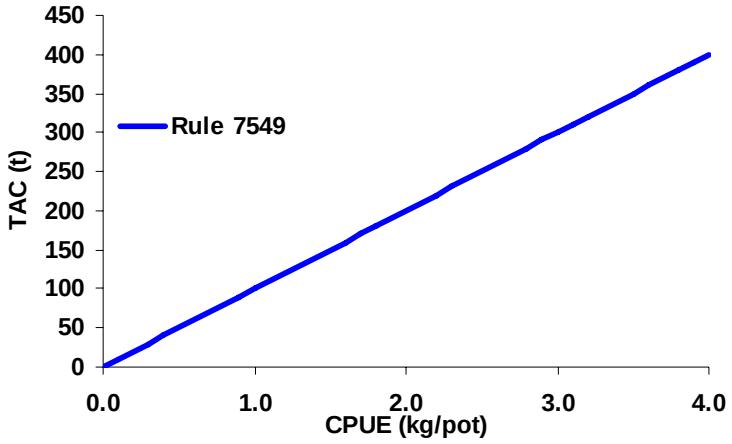


Figure 1: *CRA 7 management procedure*

CRA 8 Management Procedure Specifications

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

425. The relation between CPUE, indicated by C_y , and TAC, indicated by T_{y+1}, is given in *Figure.2* and in the equations below:

a))

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

b) 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*

c) The management procedure is to be evaluated every year (no “latent year”);

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

e) There is no limit to the amount by which a TAC may change.

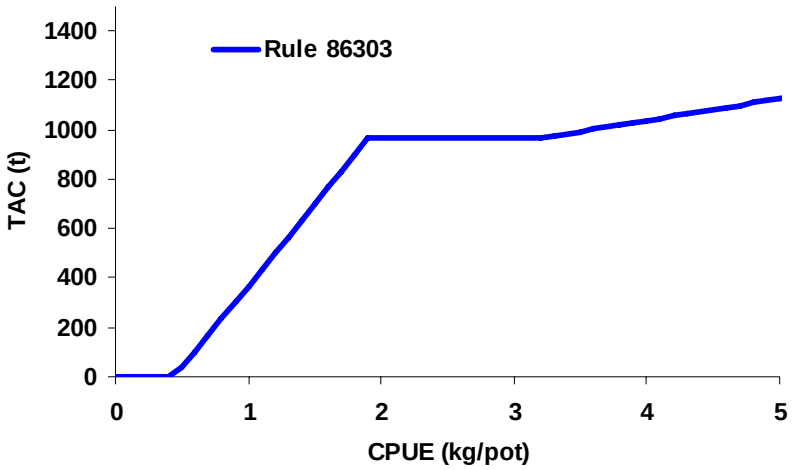


Figure 2: *CRA 8 management procedure*

426. 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 these management procedures take place in 2012.

DEVELOPMENT OF THE PROPOSED CRA 7 AND CRA 8 MANAGEMENT PROCEDURES

427. Adoption of the 2002 management procedure included an agreement that the management procedure would be reviewed in five years' time. The review began in early 2007 and was carried out by the rock lobster stock assessment team.

428. It was accepted at the outset that the review would recommend separate management procedures for CRA 7 and CRA 8, each based on CPUE data from the same fishery.

429. The stock assessment team based their review on the results of the CRA 7 and CRA 8 joint stock assessment that had been undertaken in 2006 using a revised length based model (Haist *et al*. submitted). The assessment model was modified for use as an operating model to make realistic simulations, called forward projections, of the fisheries in CRA 7 and CRA 8.

430. Modifications of the assessment model involved technical changes necessary to simulate the observed variability patterns in recruitment and CPUE, other technical changes resulting from a review of the assessment model conducted in March 2007 by Dr Andre Punt of the University of Washington, and specifications altered from the "base case" version of the model's fits to the data. For instance, movements from CRA 7 to CRA 8 were estimated in the base case operating model while movements were only a sensitivity run in the assessment model.

431. Productivity of the operating model's simulated stocks was cross-checked by the stock assessment team, who used a method proposed by Hilborn (2001) to estimate productivity independently of the length-based model.

432. The stock assessment team altered the way that CPUE is used in the operation of CRA 7 and CRA 8 management procedures, specifically using six months' more recent data than did the 2002 protocol. They proposed to use standardised CPUE from a one-year period that straddled the fishing year and included the most recent data available from the current fishing year. They analysed the quality of data available when using this proposed new protocol, and they used the operating model in a set of trials to explore the effects of the new protocol. These showed better performance from the new protocol. The new protocol was accepted by the NRLMG.

433. Very early during the review, it became evident that the 2002 NSS Management Procedure was unsuitable as a tool for maintaining the stock above the reference level. Lags caused by the structure and application of this management procedure cause unstable oscillations in the TAC and consequently in the stock.

434. It was necessary for the review team to design and test new families of management procedures. After intermediate testing, the team focussed on two management procedures families. The first family, three of whose members were chosen as final candidates for the CRA 7, specified TAC as a simple linear function of CPUE, as illustrated in *Figure 3* below.

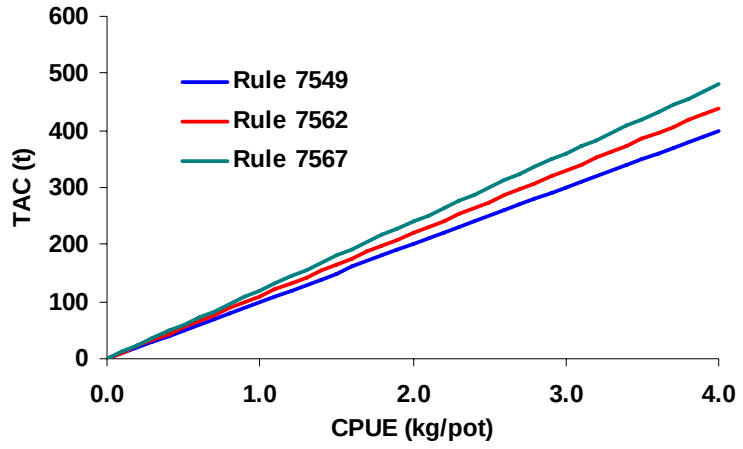


Figure 3: *CRA 7 Management Procedure*

435. The three management procedures illustrated each have a different slope. Rule 7549 specifies that TAC is 100 times the standardised CPUE, 110 times under Rule 7562 and 120 times under Rule 7567.

436. The second family of management procedures also specifies TAC as a function of the most recent standardised CPUE, but the function is more complex and features a "plateau" on which the specified TAC is constant for a range of CPUE values.

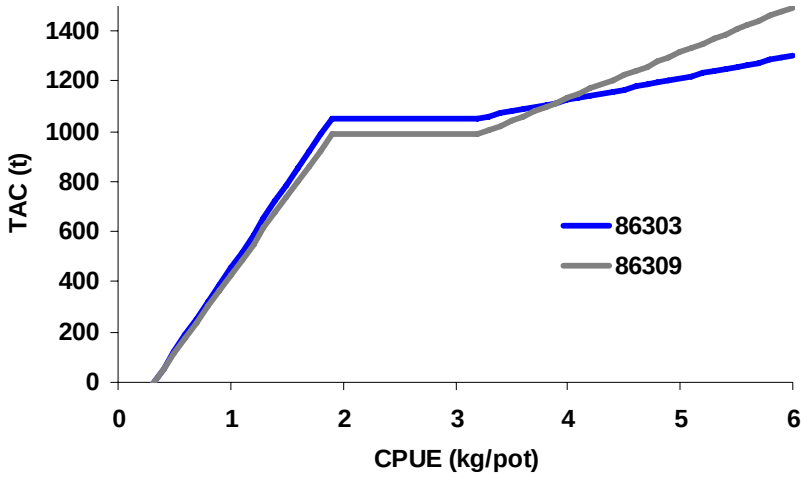


Figure 4: *CRA 8 Management Procedure*

437. In the examples illustrated above (*Figure 4*), TAC is zero if CPUE is less than 0.316 kg/pot. The TAC in Rule 86303 then rises with increasing CPUE to a plateau of 1053 t, and remains on that plateau for all values of CPUE between 1.9 and 3.2 kg/pot, and rises again with CPUE over 3.2 kg/pot. Rule 86309 is similar, but the plateau height is 987 t, and the TAC increases more steeply with increasing CPUE above 3.2 kg/pot.

438. These management procedures specify the TAC. In evaluating the management procedures, the stock assessment team simulated TACC by subtracting the current non-commercial catch allowances (20.t and 87 t for CRA 7 and CRA 8 respectively) from the TAC, but in forward projections used the current levels of non-commercial catches (6.5 and 40.0 t respectively). As in the assessment model, the non-commercial catches were divided into those limited or not limited by the minimum legal size and berried female regulations, and into the spring-summer and autumn-winter seasons.

439. In the review, hundreds of management procedures were defined and evaluated. Evaluation of each management procedures involved 600 simulations, each of 20 years' length. An agreed set of indicators was output from each simulation and summarised over the set of 600. These indicators related to average and minimum biomass, catch limit, catch and CPUE, to average variability in catch limit, and to how frequently biomass had fallen below target and minimum biomass reference levels. Management procedures were evaluated and compared with reference to the suite of indicators for each.

440. The target reference point for biomass, *Bref*, was the agreed proxy for *Bmsy* that was accepted when the 2002 management procedure was accepted, and more recently accepted when the 2006 assessment of CRA 7 and CRA 8 was presented to MFish. For each stock, this is the average biomass from the three fishing years 1979-80 through 1981-82, which are the first years with reliable catch and effort data. In this period the fishery showed good productivity and the biomass level was demonstrably safe: it subsequently declined to lower levels and then recovered. The biomass used is defined as "vulnerable biomass": the pre-season biomass that is legally available and vulnerable to the fishery (i.e., at or above the

MLS, excluding berried females, and taking selectivity-at-size and seasonal vulnerability into account).

441. The minimum reference point, *Bmin*, was defined for the review as half *Bref*.

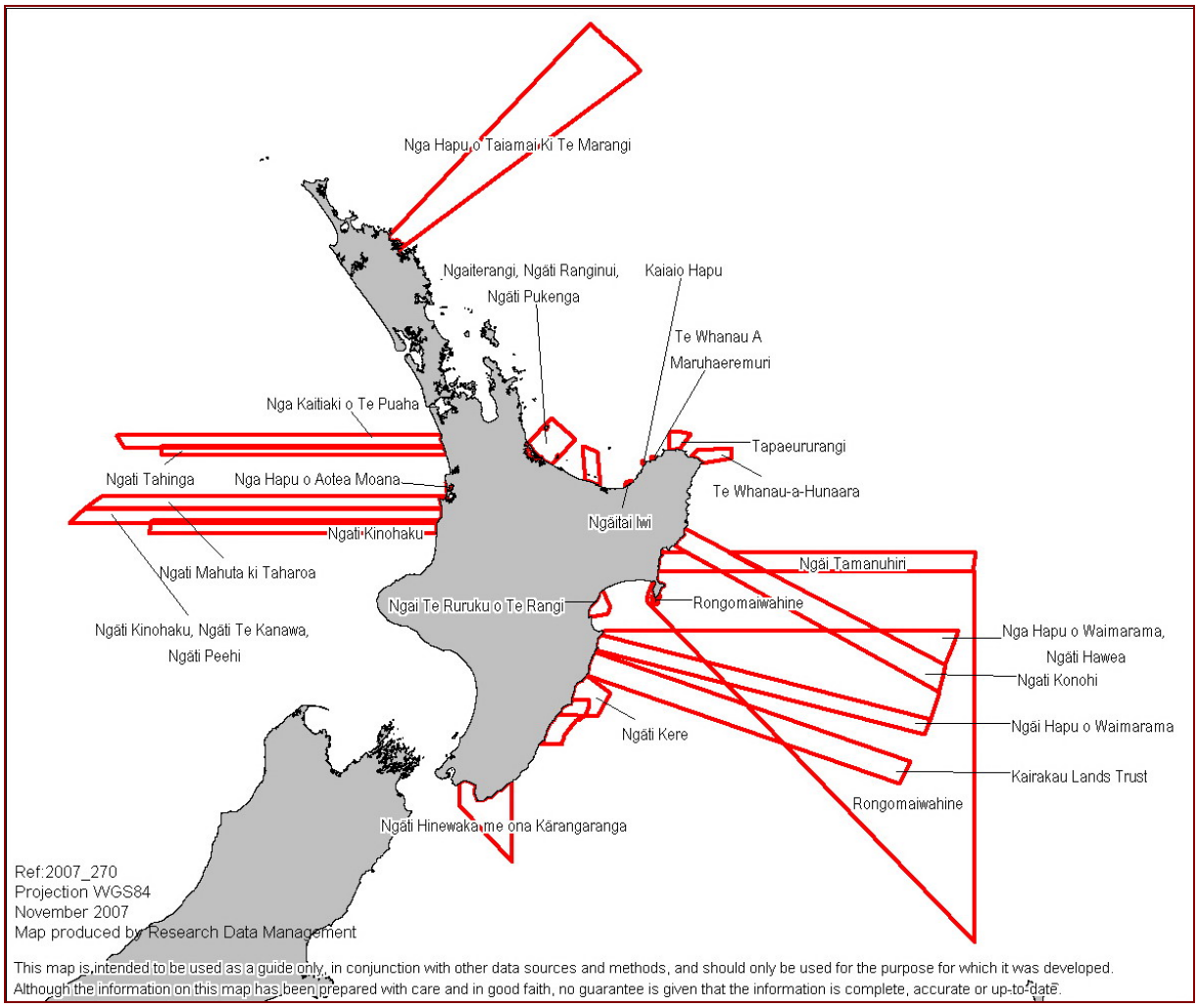
442. Management procedures were initially screened against two criteria: that biomass should exceed *Bref* at least 50% of the time, and that it should exceed *Bmin* 95% of the time. Rules that failed to meet either of these criteria were discarded. In practice, the first criterion was always met if the second criterion was met. This screening removed fewer than half the rules tested.

443. The stock assessment team recognised that the base case operating model might have failings as the basis for 20-year projections. Possible problems include errors in the model (unlikely, given the checking that was carried out, but nevertheless possible), omission of a critical ecological process from the model, misleading data and systematic but unpredictable change in the environment. To ensure that chosen management procedures were robust to such problems, a set of eight sensitivity trials was defined, each being a modification of the base case operating model and involving altered population process, such as recruitment, or altered fishing process, such as increasing catchability of pots.

444. A selection of the satisfactory management procedures was agreed by the NRLMG, and this selection was evaluated in the eight sensitivity trials. The NRLMG then chose two rules for each of CRA 7 and CRA 8, and these were discussed with commercial stakeholders in CRA 7 and CRA 8.

31. ANNEX 1: ROHE MOANA AREAS

Rohe moana areas gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 as at December 2007.



32. ANNEX 2: MID-YEAR STOCK ASSESSMENT PLENARY REPORT