

**SUSTAINABLE MANAGEMENT**  
**of the**  
**CHATHAM RISE**  
**ORANGE ROUGHY FISHERY**

**SUMMARY**

*Office of the*  
**PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT**  
**Te Kaitiaki Taiao a Te Whare Pāremata**

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## PREFACE

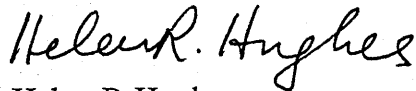
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This report details the findings of an investigation into the Crown's management of the Chatham Rise Orange Roughy Fishery. There is no doubt the fishery is at risk and that more courageous decisions are required if collapse is to be avoided. Legislative action is now necessary to remedy the decision which has been taken for the 1992/93 fishing year.

The Minister of Fisheries' determinations of Total Allowable Commercial Catches must be made in accordance with the law. This report indicates changes are needed to Fisheries legislation and administrative procedures in order to assist the Minister.

Sustainable management of the fishery will be achieved only if necessary information on stock assessments can support the advice on quota allocations and if cooperation exists between the industry and the Government's scientific advisers.

The Total Allowable Catch/Total Allowable Commercial Catch decision to be made for the 1993/94 fishing year must ensure that the orange roughy stock can rebuild to a level which enables sustainable management of the fishery.



Helen R Hughes  
Parliamentary Commissioner for the Environment

# **CONTENTS OF THE FULL REPORT**

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## **1 INTRODUCTION**

1.1	Purpose of investigation	1
1.2	Authority for investigation	1
1.3	Terms of reference	1
1.4	Background to investigation	2
1.5	Methodology	2
1.6	Process for setting TAC/TACC	3

## **2 THE CHATHAM RISE ORANGE ROUGHY FISHERY**

2.1	Description	5
2.2	Orange roughy research	5
2.3	Management history	6

## **3 THE STATUTORY BASIS FOR DETERMINING THE TOTAL ALLOWABLE COMMERCIAL CATCH**

3.1	Part IIA of the Fisheries Act 1983	13
3.2	Opinion by Dr Taylor on Chatham Rise Orange Roughy Fishery	14
3.3	Significant issues	36

## **4 ASSESSMENT OF THE CHATHAM RISE ORANGE ROUGHY FISHERY**

4.1	Fishery assessment plenary	39
4.2	Information and advice provided to the Minister	39
4.3	Reasons for the 1991/92 TAC/TACC decision	44

## **5 CONCLUSIONS AND RECOMMENDATIONS 45**

## **REFERENCES**

## **APPENDICES**

1	Letter from Minister of Fisheries dated 23 April 1992
2	Correspondence with the Minister of Fisheries, August/September 1992
3	Guide to Biological Reference points for the 1992 Fisheries Assessment Meetings

## **IMPORTANT NOTE**

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**This report is a summary of a full report which is available on request from the Office of the Parliamentary Commissioner for the Environment.**

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## **CONTENTS OF SUMMARY REPORT**

### **PREFACE**

#### **1 INTRODUCTION**

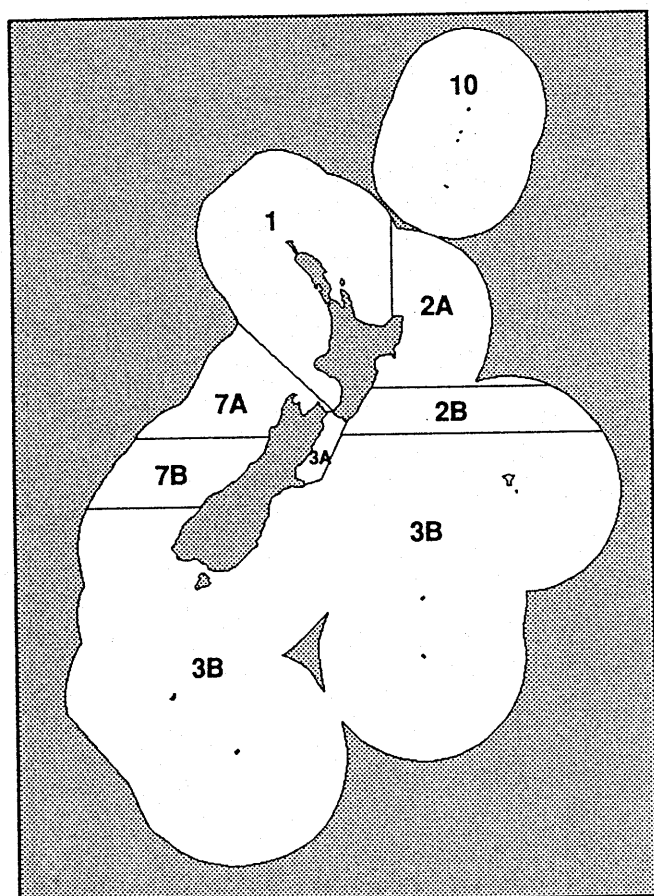
- 1.1 Purpose of investigation
- 1.2 Authority for investigation
- 1.3 Terms of Reference
- 1.4 Background to investigation
- 1.5 Methodology
- 1.6 Process for setting TAC/TACC
- 1.7 History of the ORH 3B Orange Roughy Fishery

#### **5 CONCLUSIONS AND RECOMMENDATIONS**



**FIGURE 1**

**Orange roughy quota management areas**



**Auckland (East),  
Auckland (West),  
Central (Egmont)  
combined**

**ORH 1**

**Central (Gisborne)**

**ORH 2A**

**Central (Wairarapa)**

**ORH 2B**

**Central/Challenger/  
South-East (Cook  
Strait/Kaikoura)**

**ORH 3A**

**Challenger (North)**

**ORH 7A**

**Challenger (South)**

**ORH 7B**

**South-East (Strathallan),  
South-East (Chatham  
Rise), South-East  
(Otago)/Southland, and  
Sub-Antarctic combined**

**ORH 3B**

**Kermadec**

**ORH 10**

*Source:* Ministry of Agriculture and Fisheries.

## GLOSSARY

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B <sub>0</sub>	Virgin (unfished) biomass of a fish stock.
CAY	Current Annual Yield. The amount of fish that can be taken in any one year with the population staying much the same at the end of the year. CAY would vary from year to year.
ITQ	Individual transferable quota.
MAF	Ministry of Agriculture and Fisheries.
MAY	Maximum Average Yield. The recognition that fish populations fluctuate in size from year to year. In order to get the best yield from a fishery it is necessary to alter the catch each year. The maximum average yield is how fisheries scientists generally interpret MSY.
MCY	Maximum Constant Yield. The yield of fish that could be taken each year if the catch was constant each year, i.e. the lowest CAY.  Refer to Appendix 3 for relationship of CAY, MCY and MAY.
MSY	Maximum Sustainable Yield. Discussed in Section 3.2.
ORH 3B	The Chatham Rise Orange Roughy Fishery, comprising the South-East (Chatham Rise), the SE (Strathallan), the SE (Otago/Southland) and the Sub-Antarctic Areas combined. (Refer to Figure 1.)
Stochastic process	Any process in which there is a random variable.
TAC	Total Allowable Catch (defined in the Fisheries Act 1983 as "... the amount of fish, aquatic life, or seaweed that will produce from [a] fishery the maximum sustainable yield, as qualified by any relevant economic or environmental factors, fishing patterns, the interdependence of stocks of fish, and any generally recommended sub-regional or regional or global standards").
TACC	Total Allowable Commercial Catch ("in relation to a fishery subject to a quota management system under Part IIA of the Act, the total allowable commercial catch for that fishery specified pursuant to [section 28]").



# **1 INTRODUCTION**

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## **1.1 Purpose of investigation**

The purpose of the investigation is to ascertain whether decisions of the Minister of Fisheries, in relation to the Chatham Rise Orange Roughy Fishery (ORH 3B), are in accordance with the Fisheries Act 1983.

The focus for the investigation was the decision of the Minister of Fisheries not to reduce the Total Allowable Commercial Catch (TACC) for ORH 3B for the 1991/92 fishing year. In order to place this decision in context, decisions on setting or reducing the TACC for other years were examined.

## **1.2 Authority for investigation**

The Environment Act 1986 (Section 16(1)(c)) mandates the Parliamentary Commissioner for the Environment to investigate "any matter in respect of which, in the Commissioner's opinion, the environment may be or has been adversely affected, whether through natural causes or as a result of the acts or omissions of any person or body, to an extent which the Commissioner considers warrants investigation. The Commissioner is to advise, where necessary, the appropriate public authority and any other person or body the Commissioner thinks appropriate of the preventive measures or remedial action which the Commissioner considers should be taken." The results of the investigation are to be reported to the House of Representatives.

## **1.3 Terms of Reference**

The Terms of Reference for the investigation were to:

- 1 Set out the current state of knowledge about the Chatham Rise Orange Roughy Fishery, identifying uncertainties and differences in interpretation of findings by the Ministry of Agriculture and Fisheries and the fishing industry, and to identify the risk to sustainability of the resource.
- 2 Summarise the legislative framework for setting TACCs, and the matters the Minister must consider (Fisheries Act 1983).
- 3 Outline the Minister of Fisheries' decision on TACCs for the 1991/92 year.
- 4 Assess the Minister's decision in terms of the Fisheries Act 1983.

- 5 Comment on the consequent risk to the sustainability of the Chatham Rise Orange Roughy Fishery.
- 6 Assess the adequacy of the Fisheries Act 1983 in achieving sustainable management of the Chatham Rise Orange Roughy Fishery.
- 7 Make, if appropriate, recommendations for changes to the procedures followed, and to the legislation.

## 1.4 Background to investigation

A joint report on *Marine Fisheries Management* (Controller and Auditor-General and Parliamentary Commissioner for the Environment, 1990) concluded that exceeding the total allowable catch by whatever means threatens the integrity of the system and the sustainability of the stock.

On 31 January 1991, Greenpeace New Zealand Inc. wrote to the Commissioner about the management of New Zealand orange roughy fisheries. They expressed concern about sustainable harvesting of orange roughy, the practice of "saturation" fishing of spawning grounds, the Minister of Fisheries' performance in setting high Total Allowable Catches (TACs) in the absence of basic but critical biological information, the Minister's advisers' interpretation and application of the Fisheries Act 1983 and the legality of the Minister's phased reduction decisions.

The Commissioner's preliminary investigation of the complaint (completed February 1992) concluded that an explanation should be sought from the Minister of Fisheries for his decision not to reduce the TACC for ORH 3B for 1991/92. Following receipt of the Minister's explanation dated 23 April 1992 (Appendix 1 in the full report), the investigation was continued.

In anticipation of the TAC/TACC setting process for the 1992/93 fishing year, the Commissioner notified the Minister on 27 August 1992 of the preliminary findings of this Report. The correspondence is attached as Appendix 2 in the full report.

## 1.5 Methodology

The investigation has relied, in part, on information obtained during the 1990 joint report on *Marine Fisheries Management*, carried out by the Controller and Auditor-General and the Parliamentary Commissioner for the Environment, and on an investigation by staff. In addition, the Commissioner sought a legal opinion on a number of questions relating to the TAC/TACC setting process and the Minister of Fisheries' decision on the 1991/92 TACC for the Chatham Rise Orange Roughy Fishery. This opinion comprises Section 3.2 of the full report.

During the course of the investigation, the Commissioner commented on Government reviews of fisheries legislation and fisheries research. Neither review affects the conclusions of this report, although relevant advice was submitted to the Minister of Fisheries and the Minister of Research, Science and Technology respectively.

## **1.6 Process for setting TAC/TACC**

Since 1989, fisheries scientists, industry people, Maori and conservationists have reviewed the TACs in a formal Plenary Session process facilitated by MAF Fisheries (Research) in April/May each year. Groups are established for each of the stocks which are being assessed for the following fishing year. The information from the Plenary Session is then used by a working group, comprising MAF Policy (Fisheries) and MAF Fisheries (Research) staff, to develop a position paper on TACCs for quota management species for the coming fishing season. This Position Paper is sent out by the Minister to interested parties inviting them to provide comments on the proposed TACCs.

Comments received are incorporated into a final briefing paper for the Minister setting out, in summary form, the views expressed by interested parties and MAF Policy (Fisheries) advice. The briefing paper makes recommendations on TACCs for each quota management species. Sometimes these recommendations can be in the form of options, as was the case for the ORH 3B fishery in both 1991 and 1992. This briefing paper is given to the Minister of Fisheries who accepts, rejects or varies the recommendations. The Minister of Fisheries then makes decisions on the TACCs for the fishing season which, for most commercial species, commences on 1 October.

## **1.7 History of the ORH 3B Orange Roughy Fishery**

Since 1987, MAF scientists have advised the Fishery Assessment Plenaries and the Minister of Fisheries that a reduction in TACC for ORH 3B is needed if the maximum sustainable yield (MSY) is to be achieved. Table 2 summarises the MAF scientific assessment of the ORH 3B fishery together with the TAC set and other Ministerial actions to limit the amount of orange roughy caught over recent years.

The table shows that from 1989 the scientific assessment has been that significant reductions in TACC were needed to avert the collapse of the fishery. Although the TAC has been reduced slowly since 1988, it has not reduced to the levels advised by MAF that are necessary to maintain a sustainable fishery.

Table 2: The Orange Roughy Fishery (ORH 3B) 1986/87 to 1992/93: Scientific assessment, Ministerial decisions, and catch estimates (all figures in tonnes)  
 Bold line indicates drop of population below 20% of estimated virgin biomass; fishery in serious decline.

Fishing Year	MAF SCIENTIFIC ASSESSMENT			MINISTERIAL DECISIONS		
	Est. B <sub>0</sub> <sup>3</sup>	Fishery Collapse Risk <sup>4</sup>	Est. MSY tonnes <sup>1</sup>	TAC tonnes <sup>5</sup>	Change to TAC	Est. Actual Catch <sup>2</sup>
1978	100 %					
1981/82				23,000		28,200 <sup>6</sup>
1984/85				30,000		29,340 <sup>6</sup>
1986/87				38,065	Agreed to reduce by 4000 t.	39,896
1987/88		TAC needs to be reduced by 50% to avoid collapse		38,065	No change to TAC. Quota swap agreed. 12,000 t. from Chatham Rise transferred to Challenger Plateau over 2 yrs.	31,478
1988/89	19 %	Minimum safe level of B <sub>0</sub> is 20 %	15,300	38,300		42,621
1989/90		TAC needs to be reduced by 75 % to avoid collapse	9,750	32,787	Cancellation of Crown quota. Quota reduction = 4000 t.	41,170
1990/91	16.7 %	Reduction of 9000 t. = 19 % risk	11,250	23,787	Reduction of 9000 t.	25,848
1991/92	15.0 %	Reduction of 5000 t. = 54 % risk in the next 5 years.	8,700	23,787	No change to TAC. 18,787 t. from Chatham Rise 5,000 t. from Puysegur Bank	28,038
1992/93	13.5 %	Reduction of 5000 t. = 32 % risk in the next 10 years. Considered TAC should be limited to 6,100 t.	5000-8000	21,300	14000 t. limit on Chatham Rise 5000 t. limit on Puysegur Bank Closure of main spawning ground	-

## Notes to Table 2

- 1 **MSY - Maximum Sustainable Yield.** Calculation made on the basis that MCY = two-thirds MSY.
- 2 **Total Reported Catch** plus estimated percentage of overrun (30% for 86/87-89/90; 20% for 90/91-91/92; 15% for 92/93).
- 3 **B<sub>0</sub>** = estimated virgin biomass. The percentage of B<sub>0</sub> should remain between 20% and 80% for a healthy fishery. *Levels below 20% are an indication the catches must be sharply reduced to allow the fish population to recover.* Data from Fishery Assessment Meeting 1988, p.110, Francis et al. 1992, p.21 (previous estimate was 10.6% B<sub>0</sub>); Francis and Robertson 1991, p.16; and Francis et al. 1992. p.17.
- 4 **Fishery "collapse"** = recruited biomass less than TAC. Catches continue to decline (e.g. MCY cannot be sustained). Data from Report from Fishing Assessment Plenary 1990, pp. 114-116; Francis and Robertson 1991, Table 9, p.15 (at this stage scientists also noted that current catch levels were only being sustained by discovery and exploitation of new areas); and Francis et al. 1992, p.21.
- 5 **TAC - Total Allowable Catch.** TACC - Total Allowable Commercial Catch and is derived from TAC after making allowance for any Maori, recreational and international harvest. In this fishery there is only the commercial catch so TAC = TACC. Data source for 1986/87 to 1990/91: Francis et al. 1992 Table 1, p.3 (these are post-appeal not gazetted values); for 1991/92 no gazetted change; for 1992/93 gazette notice SR 1992/252 set a new TAC/TACC for ORH 3B.
- 6 **Reported catch.**



## 5

**CONCLUSIONS AND RECOMMENDATIONS**

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The focus of this investigation is the Crown's long-term management of the Orange Roughy Fishery in quota management area ORH 3B.

I find that successive Ministers have failed to respond appropriately as new scientific information on the state of the fishery has emerged.

The available evidence suggests the present catch rates for orange roughy from the Chatham Rise are not ecologically sustainable and, if continued, will no longer be economically sustainable. In addition, the genetic diversity of the population is at risk, which would further reduce sustainability.

Ministerial decisions on TACCs are crucial to the sustainability of the ORH 3B Orange Roughy Fishery. There are a number of possible scenarios for management of the fishery:

- An industry worth \$145 million a year for the next four to five years, then no industry for the next twenty years. After this, the industry could only be resurrected if a viable spawning population remains.
- An immediate reduction in quota with compensation paid until 1994. This would result in a long-term smaller scale orange roughy fishery employing less capital and fewer people, but with a higher likelihood of long-term commercial sustainability.
- A phased reduction with compensation ceasing from 1 October 1994. This would mean more risk to the fishery but more time for the industry to move resources to other fisheries.

Having decided what the policy for sustainable management of a fishery will be, then the intent of that policy needs to be made quite clear in legislation. The present legal arguments then become irrelevant if the legislation is appropriately amended.

## **TO THE MINISTER OF FISHERIES**

### **Ministerial decisions**

According to one legal opinion, the basis for decision making provided by Part IIA of the Fisheries Act 1983 has not been applied. This is one reason why an important fishery is not being maintained on a sustainable basis.

The decisions on TAC/TACC for the Chatham Rise Orange Roughy Fishery in 1991/92 and 1992/93 were unlawful.

### **Recommendation**

- 1 That legislative action is required to remedy the situation where an unlawful decision was made to set the TACC for quota management area ORH 3B at 21,300 tonnes for the 1992/93 fishing year.

### **Interpretation of TAC/TACC, MSY**

The situation which leads to different legal interpretations of how the Minister may determine the TAC must be resolved.

### **Recommendation**

- 2 That either a declaration is obtained from the High Court on the meaning of TACC, TAC, MSY and the related aspects of statutory interpretation,

and/or (preferably)

a working group is established to ensure present ambiguities are not carried forward into new fisheries legislation.

### **Determination of TAC/TACC**

Changes to the fisheries legislation are needed to clarify the process and make explicit the requirement to derive the TAC/TACC from the MSY, and ensure that the MSY is not exceeded.

The Fisheries Act 1983 becomes an ineffective measure for achieving sustainable management of commercial fisheries if a Minister may disregard the TAC and its link with MSY in setting TACCs. Any scientific uncertainty over the MSY does not give the Minister discretion to ignore the TAC. The reasons for the Minister's decisions should always be made public.



TAC is defined in the Fisheries Act 1983 as being qualified by any relevant economic or environmental factors, fishing patterns, the interdependence of stocks of fish and any generally recommended standards.

In setting the TACC for quota management area ORH 3B, the Fisheries Act 1983 requires that an assessment be based on the best scientific advice as to the MSY from the fishery. From this, the TAC, and thence the TACC, are to be derived.

In deriving the TAC, the effect of the relevant qualifying factors must be to modify the TAC by *reducing* the amount of fish which may be taken from the fishery.

### **Recommendation**

- 3 That an amendment to the Fisheries Act 1983 is needed to :
  - (a) clarify that the TAC is the basis for the TACC; the TAC is not merely a matter for consideration in deriving the TACC and may not exceed the MSY;
  - (b) ensure that the Minister discloses the reasons for decisions on the TACCs.

### **Fishery Assessment Plenary**

The Working Groups set up as part of the Fishery Assessment Plenary sessions are an excellent way to help resolve differences between the stakeholders. The Minister of Fisheries is to be commended for establishing a consultative process which attempts to identify and if possible reconcile the views of commercial and non-commercial interests within the context of section 28D(2) of the Fisheries Act 1983. There is however a need to ensure that the MSY is set on the basis of the best assessment of the scientific information. Where agreement on interpretation of the scientific data cannot be reached, there is a case for Working Groups to be heard by an independent technical panel. The panel, after hearing all the evidence, would estimate the MSY for the fishery.

### **Recommendation**

- 4 That an independent panel be appointed to hear the evidence and advise on the MSY for the fishery where the annual Fishery Assessment Plenary is unable to obtain agreement.

## **Phased reductions**

The Fisheries Act 1983 does not provide for phased reductions where there is overfishing. Therefore merely reducing the TACC so as to give the fishery an improved chance of recovery is not in accordance with the purpose of Part IIA. The purpose of the quota management system is to maintain commercial fisheries at the level which will produce the (rebuilt stock) MSY. However, phased reductions which take account of scientific advice and which effectively move the stock to a level which will produce the MSY do appear to be lawful.

The phased reductions agreed to in the 1989 Accord would have lessened the risk to both the industry and the fishery if continued.

## **Recommendation**

- 5 That provision be made in future legislation for phased reductions where initial stock assessments for new fisheries have been set too high.

## **Separation of stock**

The issue is how best to achieve the MSY for the quota management area. The identification of separate stocks of orange roughy on the Chatham Rise and the Puysegur Bank within quota management area ORH 3B means the MSY should be assessed for each stock and separate TACs and TACCs set for each. This would lead to better management of each population and help ensure that fishing levels will not jeopardise the MSY.

The Fisheries Act 1983 does appear to allow the Minister to specify separate TACCs for separately defined parts of an existing quota management area in order to achieve the MSY for the whole area. However this would create difficult legal and administrative problems associated with existing property rights and any attempt to split them.

## **Recommendations**

- 6 That Quota Management Area ORH 3B be reviewed and a separate Quota Management Area established for the Puysegur Bank Fishery.
- 7 That the problems relating to setting separate TACs and TACCs for each stock are resolved in future legislation.

## **Fisheries research**

Management of fisheries within a quota system based on an assessment of MSY requires extensive information. Management systems based on research findings will only be as good as the information provided. This is largely dependent on retention of a deepwater research vessel. Research funding needs to reflect the needs of the TAC/TACC system.

Exploitation of orange roughy fisheries should not continue at current levels so long as major gaps in knowledge about biomass and rates of aging remain, and agreement cannot be reached as to the MSY.

## **Recommendation**

- 8 That sufficient funding for research to eliminate gaps in scientific knowledge is ensured so that the quota management system has an adequate information basis for decision making.
- 9 That the scientific observer programme be extended to achieve full coverage of the orange roughy fishery and improve the accuracy of assessment of overruns, and thus improve the procedure for setting TACCs.

