SUSTAINABLE LAND USE FOR THE DRY TUSSOCK GRASSLANDS IN THE SOUTH ISLAND

SUMMARY VOLUME

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

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PREFACE

Pastoral production has been the principal source of income for the South Island high country communities for over 100 years, and has contributed many thousands of tonnes of fine wool towards New Zealand's export income. Understandably, there is a desire at local, regional and national levels to see this tradition sustained.

In the 1940s land degradation problems were greater than they are today. There was a widespread rabbit plague, tussock grassland was replaced by scabweed and bare ground, and farmers contemplated walking off their land. In the 1950s and 1960s rabbit grazing pressure was controlled through aerial drops of 1080 poisoned bait, on-the-ground follow-up by dedicated pest control workers and topdressing and oversowing to restore the lands. This effort was assisted by a substantial input of taxpayer funding.

In the 1980s the problem returned, although in a smaller area than before. Instead of widespread scabweed, there is hawkweed. The solutions of the 1950s are no longer affordable options, following cuts in taxpayer subsidy. Making rabbit control more affordable with myxomatosis could, given sufficient motivation and funding for land production, give a 'window of opportunity' in the 1990s to again rehabilitate the degraded lands.

However, unless the answers to "why has severe land degradation re-occurred?" and "why has the rabbit come back?" are understood by landholders and institutions, a 'window of opportunity' may be wasted.

Landholders have informed us that land development encouragement loans and catchment board subsidies in the 1970s were responsible for land improvements and increased stock numbers. Land improvements require continual maintenance and without that, and combined with the unsustainable practices such as burning tussock, more fertility has been lost from the land than has been restored. The 'health' of the land has declined and rabbits, hawkweed and bare ground are the result.

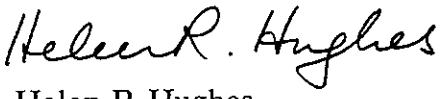
The reasons for the return of the rabbit are also known. Complacency by institutions and landholders alike over the success of aerial poisoning with 1080 and the failure to always follow up poison operations with other methods of control has resulted in selection of rabbit populations resistant to poisoning methods. The necessity to never rely on only one method of control is relevant irrespective of the primary method of control. There will always be pest control costs.

As well as rabbits the land is now invaded by hawkweeds for which effective control is still largely unknown.

The land remains under threat of continuing degradation even if pest control costs are reduced. Changes in land use away from traditional pastoralism are inevitable in some areas. The challenge for New Zealand is to prove that sustainable land use in the dry tussock grasslands of the South Island high country is possible.

This report is not saying anything new. It reinforces the messages my Office has received from many people, organisations and agencies.

Implementing land use change will require cooperation between the landholder, the rural community, and regional and central government. Where the Crown is also the land owner there is a clear responsibility to ensure the health of the land is restored and maintained, and to assist landholders to find their own solutions for land restoration.



Helen R Hughes
Parliamentary Commissioner for the Environment

TABLE OF CONTENTS - SUMMARY VERSION

1.0 INTRODUCTION

1.1 Background to review

The Parliamentary Commissioner for the Environment has a policy of periodically reviewing the implementation of recommendations made to public authorities under the Environment Act 1986. It has been three years since the audit of the proposal to introduce myxomatosis as another means of rabbit control, and this report is a review of the implementation of the recommendations made in that audit.[1]

In response to the Commissioner's 1987 recommendations, a Rabbit and Land Management Task Force was established, reporting to the Minister of Agriculture in 1988.[2] Subsequent to that a Rabbit and Land Management Programme was established with central government, regional government, and landholder funding. This review addresses both the 1987 recommendations and the Programme itself.

This review was also undertaken in response to representations from the MP for Ashburton, members of the Canterbury Regional Council, and members of the public, describing negative environmental impacts from rabbit infestation and concerns about the economic sustainability of current control programmes, and calling for urgent reconsideration of the 1987 recommendations.

The terms of reference for this review, and the recommendations from the 1987 and 1988 reports, are presented in Appendices 2-4.

1.2 Review procedures

The review team visited the problem areas of Central Otago, the Mackenzie Basin and Inland Marlborough in the company of regional staff, councillors and landholders. Well-attended public meetings were held in Alexandra and Twizel.

Information was received and separate meetings were held with the National Advisory Committee and the MAF Technology managers of the Rabbit and Land Management Programme, the South Island High Country Committee of Federated Farmers, the Mackenzie Rabbit and Land Management Action Committee, the Central Otago Pest Management Committee, staff or representatives of the Central Otago, Canterbury, and Nelson/Marlborough Regional Councils, Ministry of Agriculture and Fisheries, Department of Survey and Lands Information (Office of Crown Lands), Landcorp, Ministry for the Environment, Department of Conservation, Ministry of Forestry, Mountain Lands Institute, and Treasury.

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1 Bamford and Hill,1985; APDC, 1987; PCE, 1987.

2 Rabbit and Land Management Task Force, 1988.

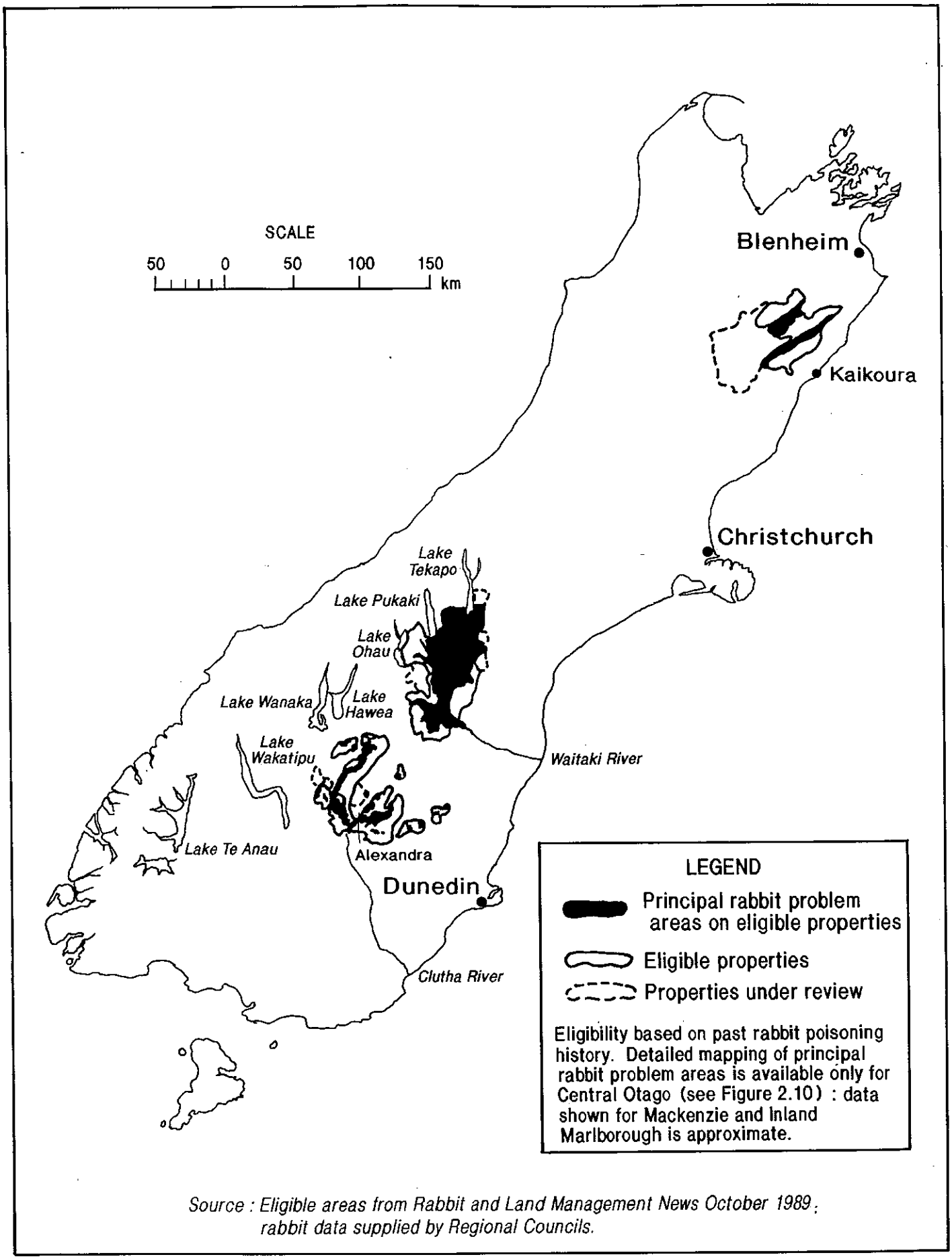
Meetings were also held in Auckland with representatives of environmental and animal rights groups concerned about 1080 use and the proposed introduction of myxomatosis (Greenpeace, Friends of the Earth, Royal Forest and Bird Protection Society, Toxin Action Group, Royal Society for the Prevention of Cruelty to Animals, Save Animals From Exploitation, NZ Conservancy Trust and the Biodynamics Farming and Gardening Association).

The Commissioner visited Australia and met Dr Tindall-Biscoe and colleagues in the Wildlife and Ecology Division of the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and Mr H Moxam of the New South Wales Farmers Association. The review team also met Messrs Tony Jopp and Denis Fastier following their study tour of the Australian rabbit control situation on behalf of high country landholders in Central Otago and the Mackenzie.

Public submissions were not called for, as the 512 submissions received in 1987 on the proposal to introduce myxomatosis were considered relevant to the current review.

A substantial amount of documentation was received and reviewed by the team. Of particular value was the documentation on the Rabbit and Land Management Programme provided by the Regional Councils, the Programme managers in MAFTech, and other consultants contracted by MAFTech. In addition team members attended the Heiracium Workshop at Lincoln and reviewed the Report on Hawkweeds compiled for the Minister for the Environment by the Mountain Lands Institute.

A survey of agencies involved in relevant research was also conducted and the results analysed to ascertain where gaps existed. This material has been summarised and is available from the Commissioner's Office on request.



Source : Eligible areas from Rabbit and Land Management News October 1989; rabbit data supplied by Regional Councils.

Figure 2.9 Principal rabbit problem areas of South Island lands eligible for inclusion in the Rabbit and Land Management Programme.

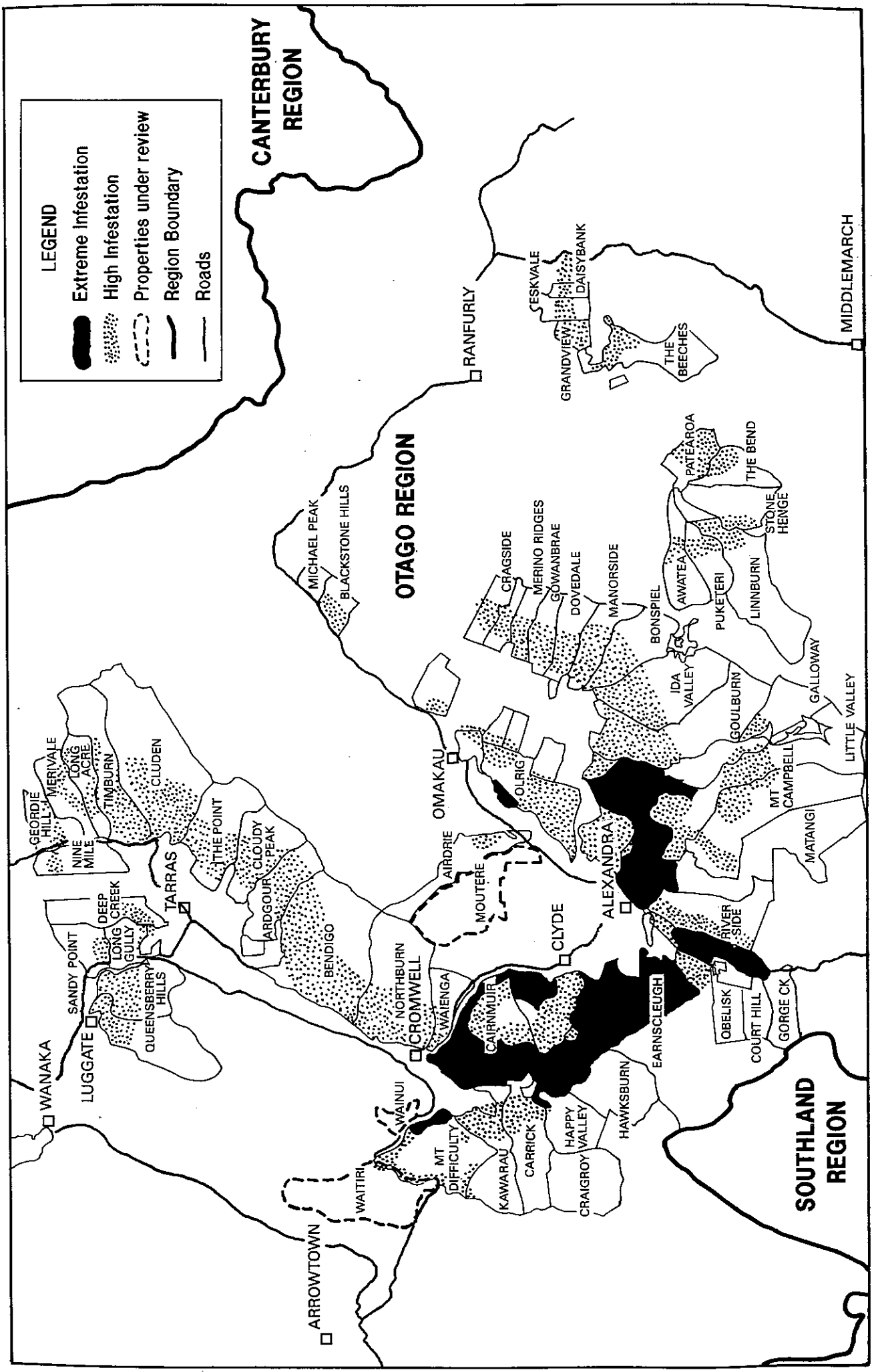


Figure 2.10 Rabbit and Land Management Programme – indicative plan of properties with high and extreme zones of rabbit infestation, Central Otago.
Source : Otago Regional Council

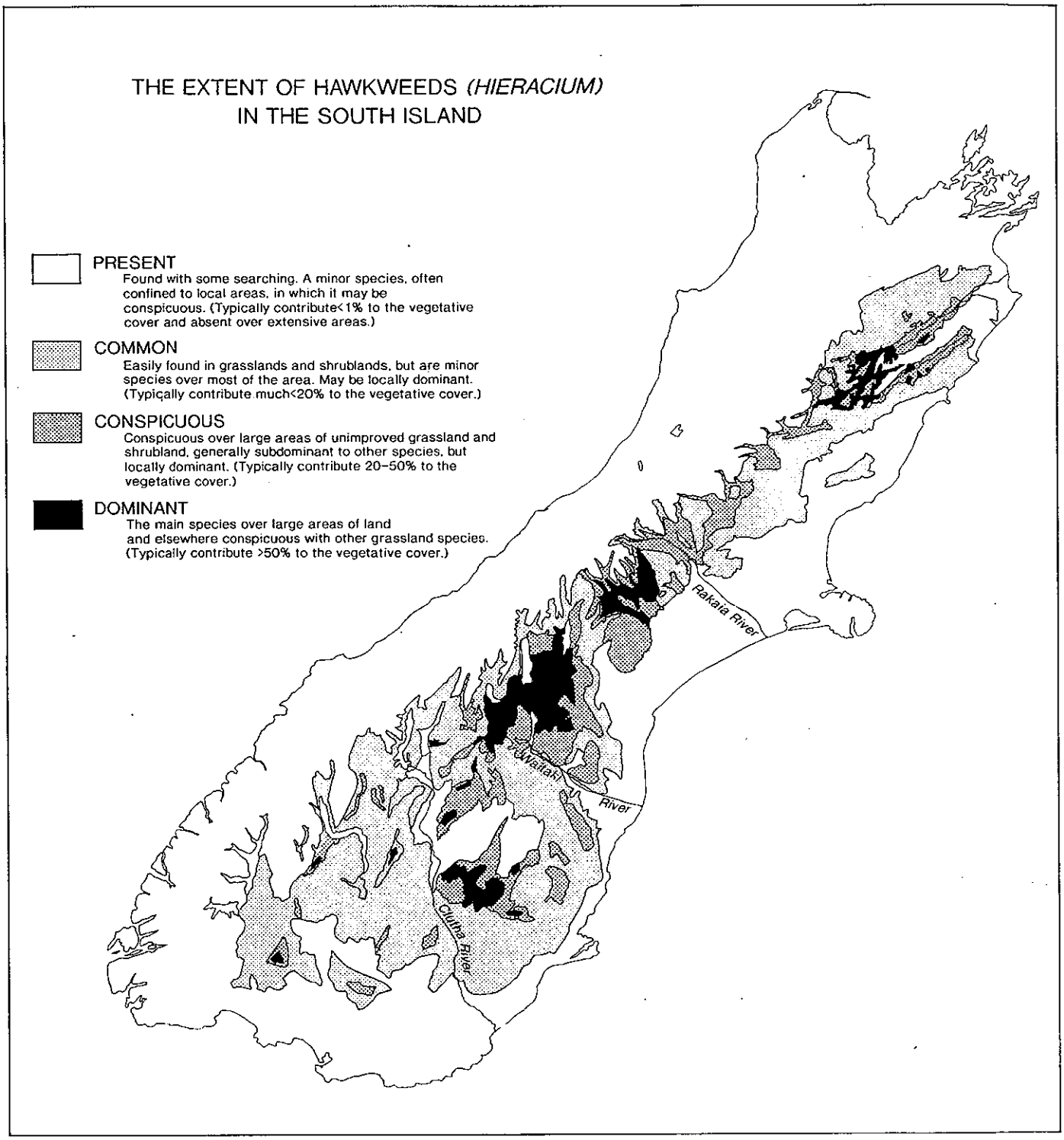


Figure 2.12

Source: Grant Hunter, DSIR Land Resources

TABLE 4.1 : Decision options relating to the Rabbit and Land Management Programme and viral rabbit controls

DECISION OPTIONS	PROBABLE EFFECTS ON RABBIT CONTROL, COSTS, THE LAND RESOURCE
'PROGRAMME STATUS QUO' Viral control not approved. R & LM Programme runs full 5 years.	Rabbit control on marginal pastoral lands will continue to be unaffordable without Programme subsidy. Rabbit over-grazing in all but 'bait shy' areas can be controlled until subsidy stops. 'Bait shy' rabbit populations will not be controlled, and may be induced in new areas if poisoning relied on too heavily. Property plans may encourage land use changes, but change options and funding to implement changes limited. Regional ratepayers may be unable to continue funding their share of the Programme for the full 5 years. Spread of hawkweed will continue. ***Land degradation will continue once the Programme terminates except where rabbit controls can be afforded or property plans encourage effective land use change.***
'PROGRAMME + VIRAL CONTROL' Viral control approved. R & LM Programme runs full 5 years.	Rabbit control costs will not decline until the last 1-2 years of the Programme, as virus introduction will take time. Follow-up controls will still be required to maximise benefits of viral control. Rabbit control on marginal pastoral lands may still be unaffordable long term. Where follow up can be afforded, rabbit overgrazing will be controlled until the virus attenuates. Land degradation will continue if land insufficiently spelled from grazing pressure. Programme funding available to implement land use changes may be inadequate. Regional ratepayers may be unwilling to fund their full share of the Programme. Woody weeds may increase with improved rabbit control. Spread of hawkweed will continue. ***Land degradation will continue or will re-emerge if rabbit grazing replaced by livestock grazing and/or viral controls not followed up or replaced as they attenuate. Property plans may encourage land use changes and arrest land degradation.***

DECISION OPTIONS	PROBABLE EFFECTS ON RABBIT CONTROL, COSTS, THE LAND RESOURCE
'VIRAL CONTROL ONLY' Viral control approved. R & LM Programme abandoned.	Necessary rabbit control will not be affordable for some properties during the virus establishment period; neither will be the necessary follow-up controls, once a virus is working. Woody weeds may increase with improved rabbit control. Spread of hawkweed may continue. ***Land degradation will continue or will re-emerge if rabbit grazing replaced by livestock grazing and/or viral controls allowed to attenuate.***
'DO NOTHING' Viral control not approved. R & LM Programme abandoned.	Rabbit over-grazing unlikely to be sufficiently controlled. Rabbit control on marginal pastoral lands will be unaffordable for many properties. 'Bait-shy' rabbit populations will not be controlled, and may be induced in new areas if poisoning relied on too heavily. Spread of hawkweed will continue. Property plan guidance re land use changes will not be available. Most land use changes (apart from destocking) will not be viable in the presence of high rabbit numbers. ***Land degradation will continue.***

3.0 CONCLUSIONS AND RECOMMENDATIONS

The principal problem of the dry tussock grasslands is *land degradation*, not just rabbits. Rabbits and hawkweeds are symptoms of land degradation, as well as partial causes. Changes to land use and land management are required in some areas to ensure that a human presence can be sustained long-term in the dry tussock grassland environment. The solution to the problem lies principally with landholders who are able to take responsibility for setting and implementing a long-term sustainable strategy for the land.

For many decades prior to 1984, farming of the dry tussock grasslands was subsidised by the taxpayer. Rabbit control efforts were subsidised on a $1 for $1 basis, and a host of development and stocking subsidies encouraged pursuit of high production from the land. Subsidies masked the true economic viability of some properties in this marginal pastoral environment, and as subsidies were progressively removed conventional rabbit control and maintenance of fertiliser inputs became in many cases unaffordable.

In the Commissioner's 1987 audit a five-year programme was recommended to encourage changes toward more sustainable land use through providing a 'window of opportunity' via taxpayer/ratepayer subsidy of rabbit control costs. It is now recognised by all stakeholders that there are constraints to obtaining commitment to these changes during a five-year period. Even with a longer 'window' (through greater subsidy and/or introduction of viral controls), there are still constraints to the necessary changes taking place.

Changes to land management and land use to better adapt to a degraded and naturally harsh environment require landholder cooperation. Landholders are the most important stakeholders in this respect, and they and their local communities have the most to gain over the long term from making these changes. Achieving change is difficult in times of economic hardship, although there is some evidence of initiatives being taken by landholders, and further initiatives would be assisted by practical farm scale demonstration of alternative land management and land use options.

Most of the land in question is Crown land, and Government has a responsibility to halt, and if possible find the means of reversing, degradation of this resource over the long term. The past and present legislative and administrative frameworks have been inadequate to protect this resource, despite the best of intentions by stakeholders. A better framework is required, one that encourages alternative land uses that are sustainable in the long term, ensures land managers can maintain good land condition through times of economic or environmental stress, and holds Crown agencies and landholders accountable for the condition of the land they are managing on behalf of the New Zealand public. A means of measuring and monitoring the condition of the land is essential.

The enormity of the problem makes it imperative that sufficient and appropriate

resources and expertise are available. The problem is not solvable by local communities on their own. Nor is it solvable until local communities identify what changes to present land management and land use must be made.

The onus for land management must be placed on the individual landholder, within guidelines set by Government. Assistance can be provided by the Regional Councils who have many of the necessary skills, a regional focus, and the ability to integrate technical information in a practical manner.

New more affordable options for weed and pest control are required, whether to assist existing land use to continue or to allow new land uses to be established. These new controls need to be used in conjunction with present methods. Denying commercialisation of the feral rabbit is no longer appropriate.

The introduction of a viral control such as myxomatosis is likely to provide savings on rabbit control costs and more effective control of the small pockets of bait-shy and poison-shy rabbits over the short to medium term. It would also remove the resentment among landholders that the larger community is denying them a cost-effective tool. However, unless conventional controls are continued as follow-up and present land use and management is changed, in some areas the land will continue to degrade over the long term.

Myxomatosis remains abhorrent to many people, principally because of a perception that it causes cruelty to rabbits, and a fear that there may be unknown side-effects on New Zealand's native fauna or unwanted viruses brought in with and/or transmitted by the flea.

The decision on whether to introduce myxomatosis and/or other viral rabbit controls is a political choice, and must be made in light of the best information available from the advisors of the Ministers of Agriculture, Lands, Environment, Conservation, and Science. Similar advice is required for decisions on how to control hawkweeds.

There is no simple solution to the degradation of the dry tussock grassland, and solutions must evolve over time through cooperation among the stakeholders. The review team advocates an ongoing sustainable land use programme evolving from the present Rabbit and Land Management Programme. As a beginning, there must be a policy commitment to truly sustainable land use, the design of structures to improve participation of landholders and local communities in land use decisions, and improvements in the practical availability of research results on diversification and land use change options for

the dry tussock grasslands. Legislative encouragement of sustainable land management through passage of the Resource Management Bill is required.

Accordingly, the Commissioner makes the following recommendations.

(Section references below apply to main report.)

TO THE MINISTER OF AGRICULTURE

1. That the Rabbit and Land Management Programme be continued for its full five-year term, but with more realistic expectations about what can be achieved, more precise terms of reference, and measurable objectives. The Programme's terms of reference should include:

   (a) completion of rabbit controls on the balance of the Programme lands not covered in 1990, but only where property plans have been agreed to;
   (b) selection of attainable goals for enhancement of vegetative cover for each class of land in property plans as identified by the Regional Councils;
   (c) collection of rabbit population data from ongoing monitoring programmes on eligible properties;
   (d) 'technology transfer' of available research findings on sustainable land management, alternative land uses, and alternative pest controls, at no charge to those who have signed property plans; and
   (e) establishment of viral rabbit control if approved.

   (Section 3.1)

2. That if introduction of myxomatosis is approved:

   (a) the rabbit flea be thoroughly tested for unwanted 'passenger' viruses so as to help minimise the risks to New Zealand from the introduction;
   (b) flea breeding and introduction be tightly controlled and monitored by a scientific team, borrowing on Australian expertise;
   (c) the timing for release of the myxomatosis virus be only under the advice of the scientific team, so as to obtain the maximum benefit from the introduction;
   (d) ongoing scientific and technical support be provided for monitoring the effectiveness of the virus, its spread throughout the country, and reintroduction of virulent strains as the original introduction attenuates;
   (e) no further taxpayer funds be spent on conventional rabbit controls under the Rabbit and Land Management Programme after all Programme eligible lands with signed property plans have been covered once by rabbit

ERRATUM

Page 10 of the Summary Volume of *Sustainable Land Use for the Dry Tussock Grasslands in the South Island:*

the last line on this page was omitted and should read:

control works under the Programme; and

(f) cost recovery be implemented so that those who will most benefit from myxomatosis will pay for the introduction programme.

(Section 4.1.3, Table 4.2)

3. That if any viral rabbit control is introduced, the costs of protecting commercial and domestic populations of rabbits be funded as part of the introduction programme.

(Section 4.1.3, Table 4.2)

4. That research into alternative rabbit control methods, as well as focusing on primary controls, should also include methods which may act as secondary controls, deterrents, or be useful in lands retired from production. This research should include predator enhancement, fertility control via baits and phytotoxins in red clover, investigation of the possible deterrent effect in biodynamic 'peppering', and pheromones or kairomones of possible use in rabbit control.

(Section 4.1.3, Table 4.2)

5. That in cooperation with Regional Councils the formation of local landholder stewardship groups be encouraged in the dry tussock grassland areas, that they be provided with the latest information on sustainable dryland management techniques in an accessible and practical form as part of an ongoing sustainable land management programme, and that they be consulted in the selection of research topics.

(Section 4.2.1)

6. That section 121 of the Agricultural Pests Destruction Act 1967 be repealed, so as to recommercialise the feral rabbit.

(Section 4.2.2)

TO THE MINISTER OF LANDS

7. That categorisation of Crown lands proceed promptly, that the categorisation be based on New Zealand Land Resources Inventory data so as to focus on land use suitability, and that maps of indicative categorisation be made available to landholders, Regional Councils, and Crown agencies so as to facilitate cooperative ventures for improving the balance of land types between pastoral leases and pursuit of boundary adjustments as appropriate.

(Sections 4.1.1 - 4.2.2)

8. That in all Crown dealings relating to the South Island dry tussock grasslands the Ngai Tahu Trust Board be invited to participate and be kept informed.

(Section 2.5)

9. That no pastoral lease should be sold or reallocated until it has been categorised, and boundaries with adjacent lands readjusted as necessary to improve farm viability.

(Sections 3.1, 4.2.2)

10. That conditions on land use be relaxed in Crown pastoral lease and licence agreements to encourage alternative land uses.

(Section 4.2.2)

11. That regular monitoring of land condition be a condition under pastoral leases, pastoral occupation licenses, and any other contracts for management of Crown land in the dry tussock grasslands, using the method and baseline of land condition established by the monitoring working group set up by the Minister of Science (see recommendation 20); and that compulsory destocking and pest control and if necessary resumption of pastoral leases and licences by the Crown is enforced where monitoring of land conditions shows that land condition has declined.

(Sections 3.1, 4.1.4, 4.2.2)

12. That knowledge of ecological processes and a broad range of land use options including forestry for the dry tussock grasslands be included in training programmes for staff enforcing Crown Pastoral lease and licence condtions.

(Section 4.1.5)

13. That explicit attention be given to the future management of the degraded dry tussock grasslands under Crown control, and that they not be designated for transfer to any agency unless management goals have been identified, those goals align with agency objectives, and explicit and sufficient funding is made available for management and restoration of those lands.

(Section 4.2.2)

14. That biological controls developed for hawkweeds not be introduced into the dry tussock grasslands unless replacement species are available and established in the areas now dominant in hawkweeds, so as not to exacerbate soil erosion problems.

(Section 2.4)

TO THE MINISTER OF SCIENCE

15. That in structuring the Crown Research Institutes, every effort be made to facilitate interdisciplinary cooperation and an ecological 'whole systems' approach in research programmes.

(Section 4.1.5)

16. That all research related to the dry tussock grasslands be formally coordinated.

(Section 4.1.5)

17. That topics for dry tussock grasslands research be finalised after consultation with a research advisory group comprising representatives of all stakeholders.

(Section 4.2.1)

18. That dry tussock grasslands research results be disseminated to the advisory group, landholders and public authorities in readily accessible and practical form.

(Section 4.2)

19. That in consultation with the Ministers of Lands, Agriculture, Conservation, Forestry and Environment, a multidisciplinary research team (an Operational Research Unit within a Crown Research Institute) be set up to support sustainable management of the dry tussock grasslands. Priority should be given to the following:

    (a) synthesis of existing and available data into practically useful form for landholders and land management agencies;
    (b) understanding the processes involved in ecosystem stability in the dry tussock grasslands, including dynamics of organic matter and soil fertility in the unimproved dry tussock grasslands subject to pastoral use, and environmental and land management factors which contribute to dominance of hawkweeds;
    (c) designing monitoring systems that can give early warning of land degradation;
    (d) alternative weed and pest control mechanisms; and,
    (e) development and demonstration of low-maintenance plant species for dry tussock grasslands (including tree, herbage, forage and crop species).

(Sections 3.5, 4.1.5, 4.2.1)

20. That in consultation with the Ministers of Lands and Conservation a working group of scientists and stakeholders be convened to devise a basic method for monitoring land condition (e.g. soil and vegetation) on Crown leases and licences in the dry tussock grasslands, including the identification of early warning signs of degradation and establishment of a baseline below which land condition should not be allowed to degrade.

(Section 4.1.4)

21. That information about the locations of areas recommended for protection in the Protected Natural Areas Programme and endangered species be acquired from the Department of Conservation and be added to the New Zealand Land Resource Inventory.

(Section 3.4)

22. That New Zealand maintain formal links with appropriate Australian research organisations, including the provision of funds, to enable New Zealand to benefit from Australian expertise and development of new dryland management and rabbit control tools.

(Sections 4.1.3, 4.1.4, 4.2.1)

TO THE MINISTER OF FINANCE

23. That the nature of assistance available to farming family units who wish to relinquish their pastoral lease and to make a new start be made known as soon as possible.

(Section 4.3)

24. That cost recovery mechanisms are identified and imposed on those who will benefit the most from introduction of viral control for rabbits.

(Section 4.3)

TO THE MINISTER OF FORESTRY

25. That information on practically tested forestry options for the dry tussock grasslands such as agroforestry, windbreaks for altering microclimates, woodlots, tree crops, and larger scale forestry be disseminated to landholders and Regional Councils.

(Section 4.1.5)

TO THE OTAGO, CANTERBURY, AND NELSON/MARLBOROUGH REGIONAL COUNCILS

26. That each Council establish, preferably under an Environment Planning and Policy arm, a Land Protection Committee including representatives of local groups with delegated authority to make decisions within Council policies and with the responsibility of providing to Council an annual report including a statement on the ecological condition of the land.

(Section 4.2.1)

27. That eligibility criteria for the inclusion in Rabbit and Land Management Programme be based on soil type, vegetative cover and rabbit proneness as well as rabbit poisoning history.

(Sections 3.1, 3.2)

28. That consideration be given to adding local information on landscape values to the land resource inventory system in deriving land classifications.

(Section 3.4)

29. That the formation of local land stewardship groups be promoted, to encourage cooperative local solutions to shared land management problems and evaluate and disseminate new information on land use and management options.

(Section 4.2.1)

30. That the basic method for monitoring land condition in the dry tussock grasslands as devised by the working group set up by the Minister of Science (recommendation 20) be integrated into monitoring programmes in the property plans and in other farm or catchment plans in operation in the region where appropriate.

(Section 4.1.4)

31. That the results of land condition monitoring programmes (recommendation 20) be used in setting differential rates with incentives for good environmental management.

(Section 4.3)

32. That staff training be supported so as to benefit from research findings on locally relevant techniques for sustainable land management, including alternative land uses and where appropriate to update knowledge of rabbit control and dryland management techniques developed in Australia.

(Section 4.2.1)

33. That staff activities focus on planning, supervision and monitoring and that primary and follow-up weed and pest control operations are contracted out to registered contractors.

APPENDIX

TERMS OF REFERENCE

Objective

With the objective of maintaining and improving the quality of the environment, to review the Rabbit and Land Management Programme as approved by Government in May 1989, and report on whether it is likely to assist long term sustainable management of rabbit prone areas of the South Island high country with severe risk of land degradation.

To report on:

1. *Appropriateness of problem definition and recommendations in Parliamentary Commissioner for the Environment's 1987 audit on the proposal to introduce myxomatosis;*

2. *Implementation of the recommendations of the Parliamentary Commissioner for the Environment and the Rabbit and Land Management Task Force in 1987 and 1988;*

3. *Evaluation of the Rabbit and Land Management Programme to date, including constraints on its successful operation; and,*

4. *Additional or revised recommendations which may be required to Parliament, Ministers, agencies or others.*

CRITERIA

In the Commissioner's 1987 audit, the criteria for a solution were:

* *it should be sustainable over the long term*
* *it should be environmentally sound*
* *it should be acceptable to the wider public.*

For this review, the criteria chosen for evaluation of the Rabbit and Land Management Programme and options for addressing land degradation were:

* *Ecological sustainability*
* *Economic sustainability*
* *Equity in allocation of costs and benefits*
* *Ability to arrest, reverse, or prevent land degradation.*