Consultancy Report on LWRRDC Involvement in National Research and Development on

# Remnant Vegetation in the Rural Landscape

Prepared by

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# Summary

## OVERVIEW

> 'To live in any way other than nomadic gatherer-hunters or pastoralists, requires the conversion of some of the original landcover to crops and pastures. The question is not whether or not but how much.'
>
> (D. Graetz, *Looking Back: The changing face of the Australian continent,* 1992, p. 65)

The 57 interviews conducted in the process of preparing this report reveal a national picture of remnant vegetation research and development (R&D) that is broad-ranging, but largely confusing. National coordination between government departments, other research bodies, conservation groups and landholders is non-existent. Coordination at a state level is less than adequate. Researchers are working in isolation from each other and from the land management practitioners and their advisers. Government departments are developing and administering programs without consultation. A few farmers are accessing individual scientists, but the vast majority have no interaction with research bodies. Where the level can actually be determined, funding for remnant vegetation R&D, and particularly ecological research, is low and consistently outranked by funding for research into the productive aspects of agriculture.

The report concludes that the Land and Water Resources Research and Development Corporation (LWRRDC) should enter into this area, but that it should do so alert to these constraints and with a great deal of caution. The overwhelming impression gained in the preparation of this report is that the key stakeholders will welcome LWRRDC's greater involvement in this area.

Research into remnant vegetation is a significant aspect of any strategy designed to achieve other objectives such as salinity control, restoration of degraded lands and the broader goals of ecologically sustainable development in the rural sector and the maintenance of Australia's biological diversity. LWRRDC has already demonstrated its ability to bring together key stakeholders in other areas, for example, the riparian zone. To do so again in the area of remnant vegetation R&D is clearly desirable.

A combination of strategies is recommended including several collaborative undertakings. These include approaching the Australian Nature Conservation Agency (ANCA) to jointly establish criteria for determining priorities for research and together approaching the National Landcare Advisory Committee regarding the establishment of a national strategy on remnant vegetation; establishing a Remnant Vegetation Research Advisory Service in collaboration with ANCA and CSIRO; and undertaking targeted research into social, legal and institutional factors that will increase protection and improve management of remnants. Ongoing processes for consultation with stakeholder groups at the state level, and provision of strategic advice at the national level, are also recommended.

## BACKGROUND

LWRRDC's mission statement says that its goal is:

> 'To improve the long-term productive capacity, sustainable management and conservation of Australia's land, water and vegetation resources through a directed, integrated and focused research and development effort'.

Strategies LWRRDC adopts to bring about that goal include identifying R&D needs, raising community awareness and adoption of land, water and vegetation R&D issues, developing an evaluation strategy to review LWRRDC programs and their effectiveness and monitoring R&D activities, assessing outcomes and improving the efficiency, focus and balance of land, water and vegetation R&D.

A range of agreements are available for the LWRRDC to fund and manage its own activities including R&D grants, R&D partnership agreements, joint R&D agreements, innovative R&D grants and postgraduate R&D scholarships.

The LWRRDC Research and Development Plan 1992–97 states that:

> 'In respect of vegetation R&D, the LWRRDC will fund work which addresses vegetation resources as they affect, or are affected by, primary industries'.

## OBJECTIVES

The objectives of the consultancy undertaken by Community Solutions which resulted in this report were:

1. To identify and report on ongoing R&D programs, and other policies and programs which relate to the following:

   (a) rural productivity aspects of the rehabilitation and management of remnant vegetation

   (b) ecological aspects of the rehabilitation and management of remnant vegetation

   (c) legal, social and institutional aspects of the rehabilitation and management of remnant vegetation.

2. To identify the key players, individuals, groups and institutions, who are concerned with the above programs and policies.

3. To identify a process for ascertaining national priorities for R&D programs relating to the rehabilitation and management of remnant vegetation, with a particular emphasis on R&D programs which are 'outcome-oriented'.

4. To make recommendations on the role that the LWRRDC might play in facilitating the above process, and in focusing on national priorities which are not addressed by current R&D programs, including the potential for collaborative R&D projects with the identified key players.

## METHODOLOGY

1. Contact has been with public servants, academic and research scientists and community groups representing both environmental interests and farmers, who have an involvement in programs and policies concerned with the rehabilitation and management of remnant vegetation.

2. Where possible, face-to-face interviews have been conducted using a standard reporting sheet to record outcomes. Others not easily visited have been interviewed by phone.

A large number of other relevant contacts have been identified during preparation for the project and from almost every interview conducted.

3. Information collected from each contact has been entered into a database, along with information collected from on-line computer searches through access to university library catalogues around Australia and from a literature search provided by LWRRDC.

4. This information has been used to prepare the full report.

## CONCLUSIONS

### 1. A greater focus on ecological research in the rural landscape is necessary

Less than 6 per cent of the National Landcare Program's budget is directed towards the protection and management of remnant vegetation, and only approximately $220 000 of this was targeted at ecological research in 1992–93. There is no general agreement on priority areas for ecological research, however, it was well recognised that the relationships between a remnant's condition and viability, and its size, shape, composition, environment and adjacent disturbances are not yet well established. In many cases, the ecological information base is deficient at an even more fundamental level than this, with the composition of important remnant communities, species interactions and the interactions between remnants and physical factors such as geology, soils and climatic conditions still remaining largely unstudied. Despite 'corridor' establishment being a significant part of spending in the National Landcare Program and related programs, there is little agreement on the requirements for effective corridors and indeed, whether the level of funding to this area is justified.

LWRRDC's R&D Plan states that the focus of its research and development work should be on the production-oriented aspects of remnant vegetation protection and management, with the ecological side of the research at the Commonwealth level being the prime responsibility of ANCA. However, given the limited resources allocated to ANCA and the need, as expressed by many of those interviewed, for research to combine ecological and production aspects of remnants research, there is a strong argument for LWRRDC and ANCA to develop a coordinated, and preferably collaborative, approach.

*Recommendation 1*

*That LWRRDC and ANCA jointly establish a set of criteria which ensures that priority funding for remnant vegetation research work outside protected areas is directed towards programs and projects having a strong ecological component integrated with agricultural production.*

**2. The results of scientific research and development into remnant vegetation need to be communicated more effectively to end users**

Criticism of existing research into remnant vegetation focused on its lack of accessibility by those charged with the on-the-ground management of remnants—landholders and their advisers. It was pointed out that many landholders and Landcare groups are embarking on projects without the benefit of scientific, particularly ecological, input, which is probably undermining considerable amounts of well-intentioned work.

The success of the Landcare model in increasing individual commitment to sustainable land management has sprung largely from the fact that effective groups have good leaders, member involvement and interesting meetings, and provide satisfaction and practical fulfilment.

The report concludes that the communication of scientific information needs to heed the lessons of Landcare and attempt more than the production of leaflets, brochures and other written information. Tapping into existing networks, relying to a greater degree on personal communication, and having a greater practical orientation is likely to be far more successful. A central repository for information on scientists carrying out research, and landholders who might be interested in obtaining the results or even participating in practical research, would provide a more easily accessible focus for information distribution and 'marketing' of scientific information.

*Recommendation 2*

*That LWRRDC initiate and participate in the establishment of a Remnant Vegetation Research Advisory Service.*

**3. Social research is needed into factors influencing landholder attitudes towards vegetation retention and appropriate management, including the role of incentives and regulations, and into ways of changing attitudes towards rural production among landholders, government agencies and urban dwellers**

Land managers appear to be taking individual initiatives to protect or manage remnants, or acting as part of Landcare groups to protect remnant vegetation. However, there is no clear indication why one farmer will take action and another will not; relevant social research is almost non-existent. This means that advisers and others who are attempting to change attitudes or practices using scientific information as a base are working in the dark.

Similarly, the interviewees reported that incentives are currently under-utilised or incorrectly utilised. While many, including most landholders and their representative bodies, believe that incentives, for example fencing subsidies, can play a significant role in changing behaviour, there are no proposals that can demonstrate effectiveness without incurring huge costs to government.

On the other hand, regulations to protect remnant vegetation were also the subject of criticism by those interviewed. Present regulation is a mix of simple coercive strategies, compulsory acquisition strategies, and consensus strategies. Concern lies not so much with the mechanisms themselves, but with the level of state government commitment to enforcement, although all those interviewed believed that current regulations were certainly

better than none at all. However, research is needed into why existing regulations are not effective.

*Recommendation 3*

*That LWRRDC fund its own targeted research into the social, legal and institutional factors, including the provision of incentives, that will lead to more farmers retaining and managing their vegetation for conservation and production purposes.*

**4. Research efforts in the area of remnant vegetation should be collaborative, involving all relevant stakeholders, including scientist and researchers from several disciplines, government agencies, landholders and conservation organisations**

Most of those interviewed saw real benefits in involving more than just scientists in research. Linking research into rural production with ecological research was perceived to be beneficial, particularly in terms of eventual landholder acceptance. It is now accepted wisdom that the movement of land management techniques towards sustainability will only occur with the full participation and cooperation of the land managers themselves.

A number of those interviewed focused on the incentive effects of demonstrating economic values associated with retaining, managing or replanting remnant vegetation. The inclusion of economic research in collaborative research projects would lead to a greater degree of interest and acceptance by landholders and their extension officers and advisory services who, quite naturally, put economic considerations as a high priority.

LWRRDC can assist with state-based coordination. A list of key stakeholders in each state has been provided, and it is likely that these stakeholders would welcome the opportunity to exchange information in a seminar format. LWRRDC should, however, place considerable emphasis on establishing seminar processes which will ensure the involvement of all stakeholders.

*Recommendation 4*

*That LWRRDC organise regular, state-based consultative seminars between land managers, advisory services and research bodies.*

**5. Greater coordination is need between government, scientific and community projects and policies which have a focus on remnant vegetation protection and management**

The interviews demonstrated a strong perception that current approaches to remnant vegetation retention and management are severely fragmented and suggested that current levels of national coordination are inadequate. There is general consensus among the conservation scientists interviewed that bioregional planning for remnants management is necessary.

At present the Commonwealth does not have a specific policy on remnant vegetation on rural lands; this appears to be contributing to the fragmented approach reflected by the interviewees. A national strategy for vegetation protection and management, including research and development, which clearly articulates the responsibilities of governments,

landholders and other stakeholders would assist with processes of review and monitoring. The strategy being developed for the Save the Bush (ANCA) program will be an important contribution.

LWRRDC's role in remnant vegetation research can be enhanced by the provision of regular briefings of key national stakeholders. Such briefings should include an overview of remnant vegetation research and development that is occurring, and reports on LWRRDC's own research activities, and should highlight projects that are particularly recommended for funding.

*Recommendation 5*

*That LWRRDC approach ANCA with a view to organising a joint approach to the National Landcare Advisory Committee regarding the need to develop a national strategy for remnant vegetation protection and management.*

*Recommendation 6*

*That LWRRDC provide regular reports to national funding agencies and other key stakeholder organisations on priorities for research into remnant vegetation on rural lands, and on projects that are particularly recommended.*

*Recommendation 7*

*In view of the degree of interest in this project, that LWRRDC circulate the summary report of this report to all contacts who have been interviewed, and to others who have been identified, but not yet contacted.*

# Context and Purpose of the Study

## THE LAND AND WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION

The Land and Water Resources Research and Development Corporation (LWRRDC) was established in July 1990 under the *Primary Industries and Energy Research & Development Act 1989*. Under the Act, funding is provided to the LWRRDC for the funding and administration of research and development (R&D) relating to primary and energy industries with a view to:

- increasing the economic, environmental or social benefits to Australia's primary industries and the community in general
- achieving the sustainable use and management of resources
- effectively using community and scientific resources
- improving the accountability for expenditure upon R&D.

As LWRRDC's areas of involvement overlap with those of other research funding bodies, the LWRRDC Research and Development Plan 1992–97 states that LWRRDC will 'actively seek to increase funding of interdisciplinary R&D, will foster and expand collaborative work with other R&D funding bodies and will endeavour to reduce duplication in the overall R&D effort' (p. 6).

LWRRDC's mission statement says that its goal is:

> 'To improve the long-term productive capacity, sustainable management and conservation of Australia's land, water and vegetation resources through a directed, integrated and focused research and development effort.'

Strategies to bring about that goal include identifying R&D needs, raising community awareness and adoption of land, water and vegetation R&D issues, developing an evaluation strategy to review LWRRDC programs and their effectiveness and monitoring R&D activities, assessing outcomes and improving the efficiency, focus and balance of land, water and vegetation R&D.

A range of agreements are available for LWRRDC to fund and manage its own activities including R&D grants, R&D partnership agreements, joint R&D agreements, innovative R&D grants and postgraduate R&D scholarships.

The LWRRDC has established a program, managed by a Corporation Working Group, which focuses on the sustainable management of vegetation.

Issues covered by the Vegetation Program include:

- rehabilitation and management of riparian vegetation
- maintenance of condition, productive capacity and environmental values of rangelands
- rehabilitation and management of remnant vegetation

- use of agroforestry to sustain natural resources.

## THE STUDY

This study is primarily focused on the third of the above issues, rehabilitation and management of remnant vegetation. The LWRRDC Research and Development Plan 1992–97 states that:

> 'In respect of vegetation R&D, the LWRRDC will fund work which addresses vegetation resources as they affect or are affected by primary industries'. (p. 6)

### Aims

The aims of this study are:

1. To identify and report on ongoing R&D programs, and other policies and programs which relate to:

   (a) rural productivity aspects of the rehabilitation and management of remnant vegetation

   (b) ecological aspects of the rehabilitation and management of remnant vegetation

   (c) legal, social and institutional aspects of the rehabilitation and management of remnant vegetation.

2. To identify the key players, individuals, groups and institutions, who are concerned with the above programs and policies.

3. To identify a process for ascertaining national priorities for R&D programs relating to the rehabilitation and management of remnant vegetation, with a particular emphasis on R&D programs which are 'outcome-oriented'.

4. To make recommendations on the role that the LWRRDC might play in facilitating the above process, and in focusing on national priorities which are not addressed by current R&D programs, including the potential for collaborative R&D projects with the identified key players.

### Methodology

1. In line with initial correspondence (appendix 2, no. 42) and terms of reference setting the scope of this project, interviews and information gathering have been restricted to the rural landscape, with rangelands, national parks, reserves and urban areas explicitly being excluded from project considerations. There is clearly a strong link between revegetation programs and programs connected with remnant vegetation protection. However, the terms of reference limited this consultancy to the rehabilitation of remnant vegetation, rather than the rehabilitation of land using revegetation.

2. Contact has been with public servants, academic and research scientists and community groups, representing both environmental interests and farmers, who have an involvement in

programs and policies concerned with the rehabilitation and management of remnant vegetation.

Where possible, face-to-face interviews have been conducted using a standard reporting sheet (appendix 3) to record outcomes. Others not easily visited have been interviewed by phone.

A full list of people providing information is at appendix 2.

In most instances, initial contact has been made at a senior level within the agency or organisation. In many cases this person has referred Community Solutions to an officer within the agency with particular expertise. In some cases the senior officer has proven hard to contact, and Community Solutions has independently contacted the agency officer who has the expertise.

Farmer organisations in Western Australia and South Australia have been contacted, and personal interviews conducted. Philip Eliason from the National Farmers' Federation was also interviewed. However, in this instance, the degree to which the farmer organisations represent the views of farmers varies. Individual farmers who are working on the protection and management of native vegetation tend to do so independently of the representative farmer organisations, although they are frequently involved with Landcare, Greening Australia or other community groups. Due to the time and resource constraints, Community Solutions was not able to interview individual farmers about their work, or about their interaction with scientific research bodies. Reliance has been placed primarily on the reports of Landcare support officers; on input from Landcare coordinating officers; on interviews with other officers who have day-to-day interaction with farmers, for example, Greening Australia officers and rural liaison officers; and on written materials provided by farmers who have a long standing involvement in this area, for example, Bert Farquhar, Tasmania, Rowan and Claire Reid, Victoria, John and Ciceley Fenton, Victoria, David Watson and Judith Turley, New South Wales, and Jim Burston, South Australia.

Conservation groups have been contacted where they are involved in remnant vegetation work. The Australian Conservation Foundation and the WorldWide Fund for Nature both work on the issue from a national perspective. The Australian Conservation Foundation has rural liaison officers in Western Australia, Victoria and South Australia, and the Queensland Conservation Council supports a rural liaison officer in that state.

This report contains an extensive list of contacts who have not been interviewed, but whose views and activities are important contributions to the national picture (appendix 4). These people have been unable to be contacted for various reasons including their location, their absence on leave, interstate or overseas work, failure to respond to repeated requests for information, and the relative lateness of their identification.

3. Information collected from each contact was entered into a database, along with information collected from on-line computer searches through access to university library catalogues around Australia and from a literature search provided by Dr Price of LWRRDC.

4. The information thus collated was used to prepare the full report.

5. A summary report has been prepared for consideration by members of the LWRRDC Board. It is also recommended that this summary report be distributed to participants in the project, many of whom gave generously of their time and information.

**Definition of research and development**

Throughout this project a broad concept of R&D has deliberately been adopted, to include applied work, systematic baseline data collection and ongoing monitoring. This approach was taken because many of the participants expressed serious concerns at the purist scientific approach that excludes baseline monitoring and applied research from consideration in this field.

# Breadth of Work in Progress

As is clear from the contact lists at appendices 2 and 4, there are large numbers of people active in what might be considered research and development relevant to the rehabilitation and management of remnant vegetation in the rural landscape.

These range from scientists in CSIRO and tertiary education institutions, through government scientists at both state and Commonwealth level, to conservation organisations, local community groups and individual farmers, as well as a small number of corporate bodies.

The work is largely fragmented, with many scientists not even aware of related work in other locations, and little coordination across disciplines, across agencies or between levels of interest—Commonwealth, state and local government, farmers and conservation organisations. Appendix 1 provides a tabulated overview of R&D in this area. It is produced only to provide a general picture, rather than claiming to be comprehensive.

The emphasis of much of the work is placed most heavily on agricultural production and soil restoration aspects of remnants protection and management rather than on ecological research, although again there are some notable exceptions.

Extensive mapping studies defining just what remains of native vegetation are under way in various regions across the country, for example, in the southwest of Western Australia, the Murray Darling Basin and the east coast of New South Wales, and along roadsides in several states. Others, including the Environmental Resource Information Network (ERIN), Queensland's Paul Sattler and Henry Nix at the Centre for Resource and Environmental Studies at The Australian National University, have taken a broader approach, mapping biogeographic regions or environmental domains, although these only have direct relevance to small areas of remnant vegetation where they can accurately be applied at a local scale.

Basic ecological studies defining the survival needs of species and ecological communities form another strand of R&D work on remnant vegetation, with research being done by CSIRO's Wildlife and Ecology scientists, the Departments of Conservation and Land Management and Agriculture in Western Australia and Kirkpatrick and Gilfedder in Tasmania.

The work being done by Saunders and Hobbs in the Western Australian wheat-belt is outstanding, both for the extent to which it seeks to 'reintegrate' remnant vegetation with an otherwise substantially altered landscape, and the level of farmer and community participation.

# Funding

In almost all cases it has been difficult to ascertain the levels of funding being directed to R&D on remnant vegetation in the rural landscape, the main exception being the Save the Bush national funding program. Funding comes from a variety of sources, with few projects specifically or exclusively targeted towards remnant vegetation. Many of the projects identified are not formally designated as 'remnant vegetation R&D' within the organisation in which they are being conducted, but rather form one strand of a larger project or program, or are being done by interested parties whose primary responsibility is to another project or program.

Major sources of funding include CSIRO program budgets, the National Landcare Program, including the Save the Bush program, and corporate sponsorship of projects being conducted by a range of organisations either directly or through conservation organisations such as the WorldWide Fund for Nature or through Greening Australia.

At the Commonwealth level, the funding emphasis has been on the production-oriented aspects of sustainable land management. This is quite clearly demonstrated by the difference between the funding allocations to the production-oriented part of the National Landcare Program, and those finding their way to the ecologically-oriented part of the program. More than $28 million was spent in the National Landcare Program in 1992–93. It is virtually impossible to determine how much of this has been allocated to the protection and management of remnant vegetation, but all those interviewed considered it to be only a very small proportion. By comparison, the 1992–93 budget for the Save the Bush program was $1.64 million (5.85 per cent of the National Landcare Program), with approximately $250 000 being targeted at research.

In 1991–92, $9.6 million was spent nationally on priority production-oriented research on natural resources via LWRRDC. Of that, 31 per cent was targeted to research into 'ecological systems', 16 per cent of which went to 'vegetation processes'. Dr Phil Price of LWRRDC estimates (pers. comm.) that in 1992–93 approximately $250 000 to $300 000 in both direct and indirect funding went to LWRRDC research and development on remnant vegetation.

State agencies interviewed during this consultancy generally indicated a declining budget for R&D, although in some cases they retain very active centres conducting research in this area.

# Key Issues Identified

**1. A greater focus on ecological research in the rural landscape is necessary**

Less than 6 per cent of the National Landcare Program budget is allocated to the protection and management of remnant vegetation and the majority of this goes to areas other than research and development. The Save the Bush component of the National Landcare Program is the largest allocation of funds specifically directed to ecological research on remnant vegetation.

The report of the Ecologically Sustainable Development (ESD) Agriculture Working Group reflects the frequently expressed view of those interviewed as part of this review that:

> 'It is more of the ecological side of agriculture that current knowledge is inadequate to be confident that correct decisions are being taken for sustainability'.
>
> (Ecologically Sustainable Development Agriculture Working Group Final Report, Nov 1991, p. xi)

Jason Alexandra from the Australian Conservation Foundation pointed out the lack of basic information, fundamental to even a rudimentary management program:

> 'I have been managing a...NSCP-funded project, 'Assessing Ecological and Economic Trends in the Upper Darling Catchment...As part of this project, we have been attempting to determine significant trends in this vast catchment, including changes to vegetation. Despite extensive literature searches and contact with numerous government departments, the best figures we could get were next to useless having been arrived at by a 1988 telephone survey of bulldozer operators throughout Queensland...It has become apparent that getting an accurate handle on important issues, such as rates of clearing, is not easy even though large sums of government money have been spent on mapping, data collection and assessment of land resources and land degradation.'
>
> (Letter, 29 June 1993).

The type of ecological research that those interviewed considered to be a priority varied fairly widely. There was, however, general agreement among scientists interviewed that the relationships between a remnant's condition and viability, and its size, shape, composition, environment and adjacent disturbance are not well established. The requirements for conservation of representative communities and key species is not yet well defined. While this is a major emphasis of work by both Saunders and Hobbs in the Western Australian wheatbelt and Kirkpatrick and Gilfedder in Tasmania, these two groups certainly recognise the substantial lack of information available to date.

In many cases the ecological information base is deficient at an even more fundamental level than this, with the composition of important remnant communities, species interactions and the interactions between remnants and physical factors such as geology,

soils, and climatic conditions still remaining largely unstudied. Work by Greg Beeston (Department of Agriculture, Western Australia), by the Department of Conservation and Land Management in NSW, and by the Environmental Resource Information Network is addressing these issues, but much remains to be done. Ecological assessments of the major threats to the continuing survival of remnants and of threatened species also remain far from complete.

This lack of basic ecological understanding of native species relevant to agricultural lands extends to a very limited knowledge of the impacts of fire management and of browsing on native species within remnant areas.

There is also almost no knowledge of the requirements for effective corridors, this despite corridor establishment being a significant part of spending in Landcare and related programs. Some of those interviewed questioned the emphasis placed on corridor research, one interviewee likening it to the prospect of aiming for well-polished corridors in a hospital without rooms or an operating theatre. Work by roadsides committees in Western Australia and Victoria, by Kirkpatrick and Hickie in Tasmania and a WorldWide Fund for Nature consultancy are all addressing the values and functions of corridors, but again much remains to be done. As a result of a recent ANCA-sponsored national conference on roadside management, Quentin Farmar-Bowers of the Australian Road Research Board is drafting a National Strategy on Roadside Management. Part of that work is to draw together relevant information and research.

Until such issues are discussed in a national, cooperative fashion, the ecological research that is being done will remain fragmented, thus diminishing both its cost-effectiveness and its eventual end use. Concern was also expressed about the relatively short funding cycles for ecological and other research. Currently, funding extends, at best, over three years in an area in which sound results may take five to ten years to achieve, whether for ecological work or in studying rural productivity. Linked to this are the constantly changing, or inadequately expressed, sets of priorities developed by governments. This means that the emphasis for research is also changed on relatively short cycles.

According to its plan, the focus of LWRRDC research and development should be on the production-oriented aspects of remnant vegetation protection and management, with the ecological side of the research at the Commonwealth level being the prime responsibility of ANCA. However, given the limited resources allocated to ANCA and the need, as expressed by so many of those interviewed, for research to combine ecological and production aspects of remnants research, there is a strong argument for LWRRDC and ANCA to develop a coordinated, and preferably collaborative, approach.

*Recommendation 1*

*That LWRRDC and ANCA jointly establish a set of criteria which ensures that priority funding for remnant vegetation work outside protected areas is directed towards programs and projects having a strong ecological component integrated with agricultural production.*

Such projects should demonstrate involvement of key stakeholders, including ecologists and agricultural production scientists and landholders, and should provide for extension and other communication work to facilitate dissemination of results. It has been suggested

that the general thrust of research should be on 'major threats' to remnant vegetation, in order that it is transferable nationwide.

**2. The results of scientific research and development into remnant vegetation need to be communicated more effectively to end users**

Criticisms of existing research into remnant vegetation focus on its lack of accessibility by those charged with the on-the-ground management of remnants. Others point out the fact that many landholders and Landcare groups are embarking on projects without the benefit of scientific, particularly ecological, input. The fact that scientific input is not seen to be an essential factor in project development may be constraining the results of considerable amounts of well-intentioned work.

One example of a successful exception to this is the Gunnedah koala project in New South Wales in which uncleared road easements on private land have been retained as remnant koala habitat, providing networks between larger habitat areas. This project has good links with scientists and a strong farmer commitment. The project evolved out of the 1990 BearCare Program run by the New South Wales National Parks and Wildlife Service and the Soil Conservation Service, who had local landholders survey the distribution and health of koalas in the Gunnedah area, as a prerequisite to determining habitat needs in the area.

Another example is the Mantung Maggea work on mallee fowl and rabbit controls in South Australia.

It appears that it is not only landholders who claim difficulty in accessing biological data. Andrew Chisholm from the Tasman Institute, who is conducting economic research into how biodiversity can be ascribed economic values, has also cited difficulties for economists in accessing basic data as a constraint to further work.

Dr Andrew Burbidge from Western Australia suggests that scientists who receive government funding for remnant research be required to tithe 10 per cent of their time to promoting the results through community education campaigns and education programs.

However, effective communication of scientific information will not result simply from additional efforts. The actual vehicles for communication are extremely important. Anne Jensen of South Australia's Department of Environment and Land Management stressed the need for new communication techniques which would convey current R&D on remnant vegetation to all interested parties. Her emphasis was on the need for appropriate newsletters, computer bulletin boards and a coordinating body to promote awareness of these.

The success of the Landcare model in increasing individual commitment to sustainable land management has sprung largely from the fact that effective groups have good leaders, member involvement and interesting meetings, provide satisfaction and fulfilment and 'do things on the ground' (Campbell, *Taking the long view in tough times: Landcare in Australia,* p. 22). Personal involvement and effective group dynamics are intrinsic to the communication of information via Landcare groups. There is a good argument to say that the conveying of scientific information needs to include more than the production of leaflets, brochures and information. It must tap into existing networks, rely to a greater degree on personal communication, and be practically oriented. While there are a number of good publications on remnant vegetation protection and management, including the Save the Bush newsletters and publications, *Managing Your Bushland—A Guide for Western*

*Australian Landowners* and *Growback*, the overwhelming impression received from those interviewed was that a more creative, people-oriented approach to information transfer was necessary.

*Recommendation 2*

*That LWRRDC initiate and participate in the establishment of a Remnant Vegetation Research Advisory Service.*

The results of scientific research are not being communicated adequately to either landholders or land managers, or to government agencies who provide advice and coordination services. A central repository for information on scientists carrying out research, and landholders and agencies who might be interested in obtaining the results or even participating in practical research, would provide a more easily accessible focus for information distribution and 'marketing' of scientific information.

Research bodies often lack expertise in communicating with landholders and need assistance in reaching those people who will implement the results of their work. There is growing concern that much of the well-intentioned work being carried out by Landcare groups needs to be based on solid scientific information in order for it to achieve the successful outcomes desired.

A Remnant Vegetation Research Advisory Service would need to adopt a proactive and, to a large extent personal, approach to distributing information and establishing links between scientists and land managers.

The contacts collected as part of this report would provide the initial building blocks of an information database, the staff associated with the Remnant Vegetation Research Advisory Service would need to travel widely and make personal contacts with scientists, farmers and other relevant bodies—local government, Landcare agencies and so on—and the presence of the advisory service would need to be advertised widely through farmer magazines and via Landcare and farmer organisations.

A 008 information line would be a key communication link. Once the existence of the Remnant Vegetation Research Advisory Service was widely known, farmers would ring in to request information about suitable scientific contacts; researchers would be provided with farmer contacts who would assist with practical research, or other scientists who might be able to engage in collaborative research.

The advisory service might also consider establishing a fee-for-service system for facilitating research projects with farmer input.

The budget for the Remnant Vegetation Research Advisory Service would be approximately $200 000 per annum, covering the cost of a scientist/communicator and support staff, infrastructure costs, extensive travel costs and production of information.

LWRRDC is in an ideal position to initiate the establishment of such a service. The corporation has good links with the National Landcare Program, and responsibility for research into resources management, but is seen to be somewhat distant from the central Landcare bureaucracy. However, LWRRDC should consider the benefits of establishing the advisory service collaboratively with CSIRO. CSIRO would be an appropriate collaborative partner as it plays a significant role in the area of remnant vegetation R&D, particularly through the work of Denis Saunders in Western Australia, it has a corporate interest in better exchange of scientific information, and it provides access to scientific

centres around Australia. Furthermore, research databases such as CSIRONET would be significant information sources for the Remnant Vegetation Research Advisory Service.

It is, however, not generally part of CSIRO's charter to provide such ongoing communication services. This might more appropriately be done through a government agency with relevant expertise. Given the high degree of concern about the lack of adequate ecological input to R&D work on remnant vegetation in the rural landscape, ANCA would seem the appropriate agency to provide that link. Not only does it have ecological expertise and responsibility for distribution of Commonwealth funding relevant to remnant vegetation, but it already has other expert units, such as the Endangered Species Unit, which bring together a nature conservation perspective in an area intersecting with rural production, research and community information and education. The success of a specialist Remnant Vegetation Research Advisory Unit located within ANCA and designed to bring together all aspects of relevant R&D would depend, to a large extent, on a statutory requirement for collaborative participation by ANCA, LWRRDC and CSIRO.

**3. Social research is needed into factors influencing landholder attitudes towards vegetation retention and appropriate management, including the role of incentives and regulations, and into ways of changing attitudes towards rural production among landholders, government agencies and urban dwellers**

*Social factors*

Some land managers appear to be taking individual initiatives to protect or manage remnants, or acting as part of Landcare groups to protect remnant vegetation. However, there is no clear indication why one farmer will take action and another will not; relevant social research is almost non-existent.

Many interviewees bemoaned this lack of social research, which scanning of library and research databases re-emphasised. Practitioners working in the field have anecdotal evidence of social trends—for example, the fact that the woman in a farmer couple is frequently the better able to make the shift from traditional farming methods, including vegetation clearance, to a more diversified form of farming with a stronger conservation perspective—but very little in the way of reproducible scientific evidence.

In fact, the role played by women may be a key to the introduction of more sustainable land management techniques.

The ESD Agriculture Working Group, in its final report, notes that:

> '...it is becoming increasingly evident that women are critical in the farm decision-making process. Those who have off-farm employment provide alternative income to enable the family farm to maintain financial viability through difficult times. There is evidence to suggest correspondingly higher levels of formal education in this group.
>
> The traditional roles of rural women are changing and they are taking a more prominent role in the more formal and public decision-making processes. Their importance in providing the organisational and leadership skills in many community-based groups is evidence of this.'
>
> (ESD Agriculture Working Group Final Report, Nov 1991, pp. 116–117)

However, such assertions are usually made as unreferenced observations. Work in the area of attitudinal and behavioural change to date is very limited. David Goldney at Charles Sturt University, Bathurst, and Anne Coates from the southwest of Western Australia are both reported to have surveyed factors influencing farmer attitudes, but at the time of writing, Goldney's work had not been published and attempts to locate reports on Coates's work have been unsuccessful.

This lack of research means that those people attempting to change attitudes or practices using scientific information as a base are working in the dark. They have no real idea where to target their work, or how to convey it in a way that will result in action. This difficulty is compounded by the reported distrust of nature conservation agencies in rural communities. This needs to be investigated and overcome if ecologists are to be effective collaborators in integrated projects.

Moves towards ecological sustainability in rural areas continue to be plagued by ongoing attitudes in both rural and urban Australia that favour traditional (that is, wool, beef, grain) agricultural patterns.

Shifting towards sustainable agriculture will be greatly assisted by diversification, but many of those interviewed lamented the insufficient attention being paid to this process, either practically, through programs like Landcare, or in scientific research. The Canberra office of the National Landcare Program stated that the program is in fact addressing this issue; that a 'production systems' approach is the desired direction and that this is gradually being achieved. The National Farmers' Federation indicated that this is an issue for their agenda in coming years. As the ongoing economic squeeze places a greater financial imperative on producers in marginal or transitional areas, and thus forces diversification, attention is shifting to specialist produce which may be based on native plants.

The Queensland Conservation Council's rural liaison officer, Lindsay Fairweather, saw city consumers as having a responsibility to support rural diversification and to accept that they, like the landholders, have a role to play in achieving this.

*Incentives*

Incentives were identified by a number of those interviewed as an important but under-utilised or incorrectly utilised mechanism to bring about sustainable land management. While many people, including most farmers and their representative bodies, believe that incentives can play a significant role, no-one appears to have a clear idea as to how they can be used without incurring huge costs to government.

The practical result of this confusion can be seen in Western Australia, where Dr Graeme Robertson of the Department of Agriculture reports that farmers would be willing to cooperate in withdrawal of land from production in order to achieve nature conservation objectives provided they receive some financial incentive to do so, but that governments are unwilling or unable to pay appropriate compensation (in this case, the incentive required).

Cameron and Elix concluded in *Recovering Ground* in the chapter titled 'Achieving rural land management and conservation objectives' that economic incentives will be most effective in situations where:

- they are aimed at capital investments

- any benchmark established can be easily monitored without entering the property
- there are a small number of clearly defined techniques for action which will achieve ecological sustainability, for example, lowering a stocking rate or fencing out a remnant area.

They also concluded that grants are a good alternative to taxation measures in situations where a specific technique or region will benefit from financial incentives and a rapid rate of change in technique is required.

The majority of the ESD Agriculture Working Group favoured the use of section 75D of the *Income Tax Assessment Act 1936* to allow write-off of expenditures on the improvements identified in the year of expenditure. Others believed that such assistance should be provided through more targeted mechanisms like the former National Soil Conservation Program.

Generally, those interviewed for this report believed that incentives should be provided for the protection and management of remnants where there is no direct financial advantage to the landholder in doing so. The cost of fencing is a major disincentive to the protection of remnant vegetation. Fencing subsidies were the most commonly proposed solution, but most people foresaw this to be a political impossibility. The point was made, however, that the cost of fencing is normally perceived to be prohibitive because remnant vegetation has little perceived economic value. If remnants were seen to have higher value, fencing may become a wise investment.

Henry Nix, from the Centre for Resource and Environmental Studies at The Australian National University, maintained that research into an effective cheap fencing system was the most practical form of research that LWRRDC could support. His view is supported by Andrew Campbell, former National Landcare Facilitator, in his November 1992 report:

> '…if we rely on current fencing technologies the job will never get done. Ted Lefroy (pers. comm.) suggests that the Australian government could put up a million dollar prize for anyone who invents a viable alternative to fencing, at, say, less than 10 per cent of the cost of the cheapest current option. This is not a flippant suggestion. There may well be boffins in laboratories here or overseas with potentially relevant ideas who have never considered the challenge of protecting vegetation from grazing animals. If such a breakthrough could be made, the benefits in

terms of protecting sensitive lands, watercourses, wetlands and remnant vegetation alone would dwarf the million dollars seed money.'

(Campbell, *Taking the long view in tough times: Landcare in Australia*, p. 49)

*Legal protection*

The legal protection of remnant vegetation has been a controversial issue over recent years, although there appears to be growing acceptance of the need for strong regulatory controls to protect remnants.

The ESD Agriculture Working Group recommended that:

'management of removal of remnant native vegetation in the future should be against clearly defined criteria which take into account environmental and economic aspects, including the potential for land degradation, the need to maintain the integrity of ecosystems and biodiversity, and long-term land capability'.

(ESD Agriculture Working Group Final Report, Nov 1991, p. xxviii)

and that the state and territory governments should review their regulatory procedures in this area to ensure strict application of the criteria by requiring authorisations for clearing.

Jason Alexandra, from the Australian Conservation Foundation, commented that sufficient research had already been carried out to demonstrate the importance of retaining and protecting remnants, and that Australia has reached the point where clear-cut decisions should be made on the best available information. He strongly supports research into better legal mechanisms and policy initiatives to protect remnant vegetation, rather than the collection of more biophysical data.

Recently presented papers by John Bradsen and by David Farrier claim that the current legal mechanisms for remnant protection are inadequate. Their concerns lie not so much with the mechanisms themselves, but with the level of state government commitment to putting them into effect. As Farrier points out, present regulations are a mix of simple coercive strategies, compulsory acquisition strategies and consensus strategies. Landholders are generally resistant to restrictions imposed on them, with success often depending on compensation which governments are reluctant to pay.

Combined with this, the past emphasis on clearing controls has been on soil conservation, with controls traditionally not being applied vigorously. In fact, as Dr Graeme Robertson from the Western Australian Department of Agriculture noted in passing, the legislation in that state still requires that in evaluating clearance applications the Department of Agriculture can consider only soil degradation criteria. Reliance on voluntary agreements, existing use exemptions from control and a lack of adequate incentives combine to bring what are often disappointing results in this area. In a recent paper Farrier (Regulation of rural land use: Coercion or consensus? Current Issues in *Criminal Justice*, 2(1), July 1990) concluded that 'We cannot, then, conclude that coercive legal regulation of vegetation destruction to protect wildlife habitats and plant communities has failed, because such a policy has never been fully implemented'. At interview, Farrier went on to suggest that a full review of these mechanisms and their application is necessary.

Dr Graeme Robertson points to the difficulties of reconciling the views of different interest groups on this issue. The landholders recognise that the 'economics' of retaining remnant vegetation mean that the farmer still incurs a cost—largely because of the high cost of fencing. Conservationists want all remaining remnants protected and fenced, but government will not pay compensation to the farmers for this to occur.

It is worth highlighting the fact that many of those interviewed considered existing legislation and its enactment as 'better than nothing', and even greater concerns were expressed at the prospect of any 'watering down' of existing legislation.

*Recommendation 3*

*That LWRRDC fund its own targeted research into the social, legal and institutional factors, including the provision of incentives, that will lead to more farmers retaining and managing their vegetation for conservation and production purposes.*

The goals of this research would be to establish the factors which influence landholder attitudes to remnant vegetation and to determine the optimal mechanisms for converting an appreciation of remaining native vegetation into actions which ensure that such vegetation is retained and rehabilitated as part of an integrated rural landscape. It is not yet clear why some farmers accept the new 'landscape ethic' while others in the same district do not.

The factors influencing attitudes among rural men and women, the conversion of those attitudes to appropriate actions and the role of urban attitudes to the rural community should all be determined. There is also a clear need for research into why incentives and regulations are not effective, but it is likely that the results of this will show that the determining factor here is government commitment. Research in these areas might well build upon the small amount already available in these areas.

**4. Research efforts in the area of remnant vegetation should be collaborative, involving all relevant stakeholders, including scientists and researchers from several disciplines, government agencies, landholders and conservation organisations**

Most of those interviewed saw the benefits of involving more than scientists in research. Linking research into rural production with ecological research was perceived to be beneficial, particularly in terms of eventual landholder acceptance. The DCNR program at Bendigo, Victoria, which is studying optimal understorey species for use as pasture, appropriate tree spacing, the best native species for maximising both grazing productivity and later commercial tree products and possible uses of native shrub species, brings together scientists from ecological and rural production disciplines. To the extent that local seed collection and the establishment of a seed bank are key elements of the work, the Bendigo work is perhaps the best example presented during the course of this project of bringing these various elements together. It was a matter of disappointment to many of those interviewed that such integrated research projects are not given priority by the funding bodies.

Landholder 'ownership' of projects and programs is a key catchcry for landholders themselves, for representative farmer organisations, and for the Landcare program. It is now accepted wisdom that the movement of land management techniques towards sustainability will only occur with the full participation and cooperation of the land managers themselves. In this context, it is clearly important to involve landholders in all stages of

remnant vegetation project development to ensure that research is acceptable to, and preferably requested by, landholders and that it is eventually implemented.

The traditional role of extension officers has tended to be overtaken by Landcare facilitators in the area of natural resource management. However, both extension officers and Landcare facilitators are key audiences for the transmission of information about scientific research, although again, considerable attention needs to be paid to the methods of transmission of information. Many of the same problems facing scientist/landholder information transfer will also be relevant to the scientist/Landcare facilitator situation. Regular seminars and other meetings which bring facilitators and others together are likely to be most effective in overcoming this problem, in combination with the production and distribution of written information. The establishment of a central information point, such as that provided by the Remnant Vegetation Research Advisory Service, will again be of advantage to Landcare facilitators and extensions officers.

A number of those interviewed focused on positive impacts of demonstrating the economic values associated with retaining, managing or replanting native vegetation. For instance, Dr Bob Crouch from the Department of Conservation and Land Management in New South Wales suggested that the interaction between pasture production and tree production for commercial use was an example of a new research direction that would be of significance in encouraging farmer involvement in remnants management.

It seems clear that if economic research can demonstrate clear economic advantages to landholders of retaining and managing remnants, for either nature conservation or limited production purposes, significant attitude changes will result. However, this research is extremely challenging as it is generally accepted that present methods of conducting economic analysis, such as contingent valuation and opportunity costing, are inadequate. Economic research to establish satisfactory methods of assessing both short-term and also longer-term costs and benefits of native vegetation retention and re-establishment is needed. The inclusion of economic research in collaborative research projects would lead to a greater degree of interest and acceptance by landholders and their extension officers and advisory services, who quite rightly put economic considerations as a high priority.

CSIRO scientists indicated that there are some problems associated with the scientist/landholder interface in such research projects. The end users tend to want ‘cut and dried’ answers, whereas scientists are often unwilling to provide ‘best guesses’ based on incomplete scientific information. Philip Eliason of the National Farmers’ Federation pointed out that in their experience, bringing landholders and scientists together did not always achieve successful outcomes as the landholders were frequently overawed by scientists and scientific jargon. Attention needs to be paid to processes which will allow the different stakeholders to work together effectively.

*Recommendation 4*

*That LWRRDC organise regular state-based consultative seminars between land managers, advisory services and research bodies.*

These seminars would bring together stakeholders with differing perspectives of the needs and priorities in remnant vegetation research. They would provide an opportunity for exchanges of views within a structured forum, and would also serve as one of several sources of input about research priorities which LWRRDC can access.

Facilitation of such meetings would be an important role for LWRRDC to play. Currently, discussions about remnant vegetation research are low priorities for almost all stakeholders, although the impression has been gained during the preparation of this report that, if provided with the opportunity, stakeholders would welcome the opportunity to exchange information in a seminar format.

A list of key stakeholders in each state can be found at appendix 5.

LWRRDC should place considerable emphasis on establishing seminar processes which would ensure the involvement of all the stakeholders.

LWRRDC might also provide assistance to practical research projects where it is clear that such projects provide sound models for integrated multidisciplinary work and where additional funds are required. However, a major criterion for LWRRDC participation in such a project is that communication strategies are inbuilt, and that the benefits of combining research with practical outcomes are clearly demonstrated.

It is also recommended that LWRRDC refrain from involving itself in on-the-ground collaborative projects until after the establishment of the Remnant Vegetation Research Advisory Service. The staff of the advisory service should make recommendations to the LWRRDC Board on suitable projects that require funding injections

**5. Greater coordination is needed between government, scientific and community projects and policies which have a focus on remnant vegetation protection and management**

> 'The Commonwealth does not have a specific policy as such on native vegetation on rural lands. Native vegetation falls within the Commonwealth's more general policies and programs relating to the environmentally sustainable and economically viable management of Australia's resources of land, water and related vegetation.'
>
> (Letter, Bernard Wonder, Department of Primary Industries and Energy, 6 August 1993)

The interview reports show that current approaches to remnant vegetation retention and management are severely fragmented and suggest that current approaches to national coordination are insufficient. For example, ANCA, formerly the Australian National Parks and Wildlife Service, which administers the national remnant vegetation projects is currently developing a strategy which will identify future priorities for the program and appropriate delivery mechanisms. In the interim, Dr P. Bridgewater, Chief Executive Officer of ANCA, states that 'The funding decisions in respect of Save the Bush research are based on the merit of projects, as well as compliance with priority research areas identified by ANCA'. (Letter, Dr P. Bridgewater, ANCA, 9 August 1993). In 1992–93 ANCA's priority guidelines for research grants under the Save the Bush program were for projects which investigate:

- the relationship between land-use practices affecting remnant vegetation and the maintenance of biodiversity
- the maintenance of biodiversity at the landscape scale
- the value or potential of critical habitats or key species as bio-indicators.

The impression gained from the interviews would suggest that ANCA has little communication with other sections of the National Landcare Program, which also fund projects with components focused on remnant vegetation, or with the Department of the Environment, Sport and Territories, which theoretically has some policy overview role in this area. However, ANCA denies this, stating:

> 'ANCA's communication has occurred via the National Landcare Advisory Committee, the Landcare Liaison Group, through the review of the 'one-stop shop' community grants process from last year, through ongoing communication with DPIE, the Murray Darling Basin Commission and DEST, and with state agencies also involved in the NLP'.
>
> (Letter, Dr P. Bridgewater, ANCA, 9 August 1993)

It has been suggested to Community Solutions that such interactions or communication have been extremely difficult for Save the Bush officials, as they are usually perceived to be the minor funding body, the less important player, particularly in the state assessment panels (SAPs) which make the final recommendations on state funding to the National Landcare Program. As noted earlier, of some $28 million spent in the National Landcare Program in 1992–93, the Save the Bush program received $1.64 million (5.86 per cent) for allocation to the protection and management of remnant vegetation.

The Save the Bush program will presumably be reviewed as part of the development of its new strategy. LWRRDC's funding program will presumably be reviewed following this consultancy and Landcare's community-based programs have been reviewed by Andrew Campbell in his November 1992 report. However, the fragmentation of programs, which has an impact on remnants R&D, means that it is very difficult to present a clear picture of the success or otherwise of current remnant vegetation programs, including R&D.

It would be extremely useful if the 1994, 1997 and 2000 reviews of the Decade of Landcare plans being undertaken by the Commonwealth (and presumably similar reviews being conducted by the states) provided an overview of progress towards the protection and sustainable management of remnants and the extent to which research programs are adopting integrated projects.

In large part, the funding allocations to remnant vegetation research are small. Mainstream researchers, such as David Farrier, tend to fit remnant vegetation research in with their other work where this is possible. Remnant vegetation research is frequently tacked on to research into revegetation, as is the case with the Kent catchment study in Western Australia and the work of Greening Australia. Again, frequently work on remnant vegetation occurs as part of research into habitat protection for rare and endangered species, but again this is not coordinated with other aspects of remnant vegetation work.

Although funding for the Save the Bush program may be relatively small when compared with other components of the National Landcare Program, Save the Bush is important in that its primary focus is on the retention and management of remnants. It is one of the principal sources of funding for work on ecological processes and the maintenance of biodiversity; in this context its greater integration with more production-oriented programs is important in achieving a more ecological approach to remnant vegetation nationally.

There is general consensus among the conservation scientists interviewed that bioregional planning for remnants management is necessary. Plant and animal species do not recognise either cadastral or catchment boundaries, with ecosystems and communities being influenced more by the physical and biological context in which they occur. Policy and institutional frameworks currently focus on catchment boundaries—Total Catchment Management in New South Wales, Integrated Catchment Management in Queensland—which are of significance in a productive agricultural sense and in hydrological management, but which are less significant in managing vegetation. ANCA agrees that strategic planning should be conducted at a bioregional scale, but makes the point that, if conservation management is to be effective, a scale smaller than that relevant to whole bioregions must also be considered.

A number of those interviewed, in particular, Richard Hobbs from CSIRO, Greg Siepen from the Queensland Department of Environment and Heritage and Ray Nias from the WorldWide Fund for Nature, highlighted the need for a national strategy for vegetation protection and management that would clearly articulate the responsibilities of governments, landholders and other stakeholders. Such a strategy would also provide a much needed measuring stick against which to check progress towards agreed objectives. Part of such a strategy would need to focus on remnants R&D, as it appears to be proceeding in an isolated fashion, according to varying sets of priorities developed by the auspicing bodies.

Dr Andrew Burbidge from the Western Australian Department of Conservation and Land Management identified five critical areas for such a national strategy to address:

- the adequacy of protected areas
- 'off-reserve' management for conservation
- the conservation of threatened species and communities
- the impacts of alien species and problem indigenous species
- the need to make research more applied.

*Recommendation 5*

*That LWRRDC approach ANCA with a view to organising a joint approach to the National Landcare Advisory Committee regarding the need to develop a national strategy for remnant vegetation protection and management.*

The development of a national strategy requires a bioregional approach that brings together whole farm, district and regional plans. It will also need to involve the whole range of stakeholders in its development, including federal and state government departments, CSIRO and other research bodies, tertiary institutions, landholder groups, local government bodies and community and conservation groups. It will need to extend beyond rural production lands to rangelands, wetlands, protected areas and urban areas. The Save the Bush strategy which is currently being developed will obviously be an important component of such a national strategy.

The National Landcare Advisory Committee provides advice on national issues, strategic directions and policy priorities to be addressed in the National Landcare Program.

It is therefore the most appropriate body for LWRRDC, and other relevant government agencies like ANCA, to target.

Remnant vegetation needs may be being addressed through other national programs and strategies such as the National Landcare Program, the national biodiversity strategy (currently being finalised with the states), the national strategy for the conservation of threatened species and their habitats, and the national rangelands strategy currently being developed. Experience to date demonstrates, however, that these programs and strategies do not provide an integrated approach to remnant vegetation protection and management. Given the significant role which remnant vegetation has in all these other strategies, it would seem important that an agreed national approach to remnant vegetation research and management be developed. Such a strategy need not detract from, and in fact should complement, other relevant work.

*Recommendation 6*

*That LWRRDC provide regular reports to national funding agencies and other key stakeholder organisations on priorities for research into remnant vegetation on rural lands, and on projects that are particularly recommended.*

Following the establishment of the Remnant Vegetation Research Advisory Service and the holding of consultative seminars around the country, LWRRDC will be able to provide national funding bodies and other key national stakeholders with strategic advice on remnant vegetation R&D, and how such R&D could or should interact with their funding programs or other activities.

It is recommended that LWRRDC provide this information at an annual round table meeting of national stakeholders, at which LWRRDC provides an overview of remnant vegetation R&D that is occurring; reports on its own research activities; and highlights projects that are particularly recommended for funding as demonstrative of multidisciplinary research or likely to more rapidly achieve the goals identified as part of a national strategy.

Appendix 5 lists the national stakeholders who might find such a round table briefing informative and useful. The briefing should be timed to provide the relevant information at an appropriate stage in the annual funding timetables of Commonwealth departments.

# Conclusions

There are a large number of constraints acting to prevent the development and delivery of effective programs to rehabilitate and manage remnant vegetation. They impact particularly against the effective implementation of R&D into remnant vegetation, and the transfer of the resultant information to those who could use it on the ground. The constraints include the:

- fragmented nature of current approaches (national, state and local) to remnant vegetation protection and management, which is reflected in the ad hoc approach taken to R&D in this area
- paucity of ecological research, and the lack of agreement on methodology and priorities
- lack of collaboration on research projects, that is, the involvement of all stakeholders including end users
- difficulties in communicating the results of scientific research to end users, both individually, and through wider communication methods
- ongoing attitudes in both rural and urban areas favouring traditional production patterns (wool, beef and grain production) at the expense of low input, low impact, diversified production; this is reflected in research priorities and funding
- virtual non-existence of social research into the factors influencing vegetation retention and appropriate management
- lack of practical updated research into the most effective legal and institutional mechanisms to protect remnants
- lack of understanding of the role of financial and other incentives in the protection and management of remnants
- low level of research into the economic valuing—short, medium and long-term—of remnants.

The interviews conducted in the process of preparing this report reveal a national picture of remnant vegetation R&D which is broad-ranging, but largely confusing. National coordination between government departments, research bodies, conservation groups and landholders is non-existent. Coordination at a state level is less than adequate. Researchers are working in isolation from each other, and from the land management practitioners. Government departments are developing and administering programs without consultation. A few farmers are accessing individual scientists, but the vast majority have no interaction with research bodies. Where it can actually be determined, the level of funding for native vegetation R&D is low and consistently outranked by funding for research into the productive aspects of agriculture.

These results are not unexpected. It has been recognised for some time that the emphasis on sustainable agriculture that has emerged over the past five years has focused primarily on improving the productive aspects of rural land management, and that vegetation protection and management has come a very poor second.

This is in itself not unexpected. The decline in productivity of our rural lands is reasonably well documented, as are the predictions for its continuing degradation. This clearly has, or will have, a dramatic impact on the financial situation of individual landholders, on the community in general and on Australia's overall economic performance. Significant government resources and support have been allocated to halt and redress the situation.

The status of our remnant vegetation, on the other hand, has not been considered with anywhere near the same degree of urgency. Although there are ecological imperatives, there are no immediate economic imperatives and, as some of those interviewed pointed out, the Australian attitude towards 'scrub' has traditionally been alternatively exploitative or dismissive. The interviews highlight the lack of even basic information about many aspects of native vegetation and changes to it since European settlement.

However, the lack of resources is only a part of the problem. Perhaps the greater deficit is the lack of a national approach, or even clear guidelines, to allow funding bodies to prioritise or even target their research work. The minimal amount of resources put into remnants research has been allocated in an ad hoc manner, responding primarily to the priorities identified by the researching bodies in their applications. There are also glaring omissions in the areas of social and institutional research, which inevitably constrain the effectiveness of any extension and demonstration work that results from the original R&D.

Coordinated approaches are of course difficult in a country the size of Australia, with its variety of agro-ecological zones. However, individuals interviewed in the course of this consultancy have identified specific areas which they believe to be in crisis, and there is currently no accepted method available to compare these in an objective manner.

The report concludes that the LWRRDC should enter into this area alert to these constraints and with a great deal of caution. That is not to say that LWRRDC should not be involved. In fact, quite the contrary. Many of those interviewed during this consultancy, as in the broader community, recognise that remnant vegetation is a significant aspect of any strategy to achieve other objectives such as salinity control, restoration of degraded lands and the broader goals of ecologically sustainable development in the rural sector and the maintenance of Australia's biological diversity.

There was also a high level of recognition of the need for greater information exchange both between disciplines and between government agencies and programs.

LWRRDC has already demonstrated its ability to bring together key stakeholders in other areas, such as management of the riparian zone. To do so again in the area of remnant vegetation management will serve to overcome a number of the constraints identified in this report.

A major purpose of this report was to 'identify organisations which are, or may be, interested in joining with the corporation in developing a jointly funded R&D program'. Many, if not most of the representatives of the organisations interviewed, would willingly entertain the prospect of collaborative projects. The report advises very careful consideration of appropriate collaborative projects, as LWRRDC's limited resources could

easily be subsumed into the projects of funding bodies with far greater resources, and its energies could be completed exhausted by battles to ensure that remnants research receives its fair share of attention.

In a recent paper to the Australian Society of Limnology, LWRRDC Director, Dr Phil Price, stated (in relation to R&D into riparian vegetation):

> 'the corporation sees its role as a rather limited one of facilitating the process whereby all these interests [local communities, government agencies, scientists] are brought together, and achieve consensus and agreement on what is most important'

and

> 'our corporation...is also required to take a national view of natural resource issues and to seek, wherever possible, to assist collaboration between the states, between organisations and between government and non-government groups'.

Using these comments for direction, the recommendations guide LWRRDC towards targeted collaborative projects, specific research into social, legal and institutional factors, the provision of strategic advice and improving consultation and communication among remnant vegetation stakeholders.

LWRRDC has a strong commitment to practical outcomes for its activities—ensuring that R&D results in changes on the ground. This report concludes that LWRRDC has a pivotal role to play in improving national approaches to R&D in this area, but that is should retain a high level of control over the projects which it funds.

# Recommendations

*1. That LWRRDC and ANCA jointly establish a set of criteria which ensures that priority funding for remnant vegetation work outside protected areas is directed towards programs and projects having an integrated approach to nature conservation and agricultural production.*

*2. That LWRRDC initiate and participate in the establishment of a Remnant Vegetation Advisory Service.*

*3. That LWRRDC fund its own targeted research into the social, legal and institutional factors, including the provision of incentives, that will lead to more farmers retaining and managing their native vegetation for conservation and production purposes.*

*4. That LWRRDC organise regular state-based consultative seminars between land managers, advisory services and research bodies.*

*5. That LWRRDC approach ANCA with a view to organising a joint approach to the National Landcare Advisory Committee regarding the need to develop a national strategy for remnant vegetation protection and management.*

*6. That LWRRDC provide regular reports to national funding agencies on priorities for research into remnant vegetation on rural lands, and on projects that are particularly recommended.*

*7. In view of degree of interest in this project, that LWRRDC circulate the summary report of this report to all contacts who have been interviewed, and to others who have been identified but not yet contacted.*

**Appendix 1**

# Overview of Current Research and Development on Remnant Vegetation in the Rural Landscape

Note: This overview is not intended to be a complete coverage of the R&D being carried out on remnant vegetation. In many cases, the R&D work is part of other extension work and there is great difficulty in separating the R&D component. This makes the assessment of funding for R&D almost impossible to determine, except in the case of funding allocations provided by national funding bodies.

| Location | Key agency or organisation | Summary of R&D projects |
|---|---|---|
| **NATIONAL** | | |
| | LWRRDC | Program funding for dryland salinity, drought, sustainable production, pesticide impacts, agroforestry, nutrient management, irrigation, land resources, water resources and vegetation. Vegetation R&D receives only 5% of LWRRDC's total funding (see below). |
| | National Landcare Program | Funds (except those allocated to Save the Bush) not directed to R&D, which is covered by LWRRDC, CSIRO, BMR and the MDBC Natural Resources Management Strategy. |
| | ANCA: Save the Bush | 1992–93 projects, with approx. $250 0000 budget, ranged from descriptions of patterns of biodiversity during restoration of degraded farmland to research on the movements, roosts and foraging ecology of bats. Recipients were tertiary institutions, museums or botanic gardens (see below). |
| | ANCA: Endangered Species Program | Priority given to species and communities considered nationally endangered or vulnerable. $$ allocated to R&D not known. |
| | CSIRO, Wildlife & Ecology | Conservation mapping for reserve design, including specific area studies. |
| | - Canberra | Funding from DEST ($100 000 for land-use study), other funds from StB and from CSIRO general research funding (for example, the Wog Wog study).<br>Rural dieback and insect damage in remnant woodlands.<br>Mapping of land-use capability across Australia. |

| | |
|---|---|
| - Western Australia | Major program on revegetation and landscape reintegration in WA wheat-belt. Budget of $522 000 over life of program to date, from ANCA, StB, State Roadsides funding, WWF, Earthwatch, and industry sponsorship. |
| Plant Industry | Work on grassy box woodlands, ecology, genetics and conservation profile. |
| Greening Australia | Mainly revegetation work, covering catchments, communities, and 'Corridors of Green'. $10m per annum national budget—unclear as to how much goes to remnant vegetation, virtually none to research. In NT, Greening Australia works with the Environment Centre on an inventory of clearing, and with Conservation Commission on fragmentation. |
| Australian Conservation Foundation | Rural liaison officers in Vic, SA and WA. Facilitation of information flow on research.<br>NSCP-funded projects—Upper Darling catchment—ecological and economic trends and 'Recovering Ground' (1991) case study research plus policy research and recommendations. |
| WorldWide Fund for Nature | $150 000–$200 000 per annum on a variety of projects across Australia, including vegetation on stock-routes in Qld; Mitchell grasslands, central Qld; lowland grasslands, SA; Myoporum woodlands, Vic; and habitat fragmentation studies in New England region, NSW. |
| CRES, ANU | Research group looking at fragmentation of habitat and impacts on wildlife.<br>Also major work on environmental domain mapping. |
| Macquarie University School of Biological Sciences | Broad range of research projects on biodiversity and bioresources. |
| Adelaide University Faculty of Law | John Bradsen's review of state and federal legislation on biodiversity protection. |
| Wollongong University Faculty of Law | David Farrier's review of regulations for conservation of vegetation on private land (in print). No $$ allocated. |
| University of New England Depts of Ecosystem Man. and Zool. | Work on habitat fragmentation. Funding from WWF, postgraduate student scholarships and industry sponsorship. |

| | | |
|---|---|---|
| | Charles Sturt University Johnstone Ctr of Parks, Rec. and Heritage | David Goldney and colleagues—mapping of remnant vegetation in central western NSW, habitat studies on various species, and studies on landholder attitudes. |
| | Murray-Darling Basin Commission | Major vegetation mapping program. |
| | Alcoa | Extensive involvement in Landcare projects in WA & Vic. Unknown $$ to R&D. |
| **STATES** | | |
| (Major legislation) | | |
| **Queensland** | | |
| Nature Conservation Act, Soil Conservation Act | NP&WS | Bioregional mapping research work towards a national biodiversity strategy. |
| | Qld Cons. Council | Rural liaison officer application pending with NLP to do work on 'best practice' for nature conservation on farms. |
| **New South Wales** | | |
| Soil Conservation Act, Env. Planning & Assessment Act | Dept Cons. & Land Management | Surveys and mapping of remnant vegetation. Funding from LWRRDC, OBT, StB, NRMS and State programs (R&D unspecified).<br>Threatened species modelling project. Funding from CALM, NP&WS, and University of New England. |
| Nat. Parks & Wildlife Act | NP&WS | Vegetation mapping in NSW wheat-belt.<br>MDBC mapping.<br>NP&WS mapping of east coast vegetation funded by StB and other sources.<br>Threatened species and habitat work. |
| **Victoria** | | |
| Flora & Fauna Guarantee Act, Planning & Env. Act | Dept Cons. & Nat. Resources | No specific budget allocation to remnant vegetation. Small projects throughout the state, most addressing rural production and remnant vegetation (for example, direct seeding of steep slopes using native fodder species, native grasses and productive capacity).<br>Bendigo-based projects—<br>Browse work $14 000,<br>Seed orchard $8000,<br>Reseeding $30 000 per annum for three years<br>+ $36 000 from Salinity Program |

| | | |
|---|---|---|
| | - Land for Wildlife | + $96 000 from MDBC. |
| | - Roadsides Cons. Committee | Other projects on threatened species and habitat. |
| Soil Cons. Act | Salinity Bureau | Not directly involved in remnant vegetation work, but the salinity management plans make reference to the role of vegetation and the need to retain it. |
| | Threatened Species Network | Community projects on threatened species and habitat, including collaborative research with conservation scientists. |
| | National Parks Association | Habitat protection work involving a diverse range of community interests—includes a small amount of research. |
| **Tasmania** | | |
| | University of Tasmania Dept Geog. & Env. Studies | Work progressing from broadscale survey to species studies (including WWF work on the ten rarest species, and ANCA work on interactions between species and processes). Emphasis now shifting towards invertebrates in agricultural areas. |
| | Dept Roads & Transport | Roadsides survey and assessment. |
| **South Australia** | | |
| Soil Cons. & Land Care Act, Native Veg. Act, Heritage Act | Dept Primary Industries, & Dept. Env. & Land Management | Revegetation Strategy—R&D work includes optimising tree growing, optimal native plant selection, vegetation use in salinity control, habitat protection and management including understorey work and development of revegetation systems.<br>Work on wetlands including restoration.<br>Seeking to place $$ values on wetlands and other nature conservation. |
| **Western Australia** | | |
| Cons. & Land Management Act | Dept Cons. & Land Management | Many small research projects including environmental weeds, direct seeding and Salmon Gum research, impacts of fire, work on wetlands restoration, work on Sandalwood, edge effects on remnants, nest hollows in wheat-belt trees, collaborative mapping studies, and work on agroforestry.<br>'Managing Your Bushland'—aims to get the results of research out to landholders. |

| | | |
|---|---|---|
| | Roadside Cons. Committee | Mapping work, involving local communities in identification of areas of high conservation value and linking these to other available databases.<br>Work on environmental weeds which are encroaching on remnant vegetation. |
| Soil & Land Cons. Act | Dept of Agriculture | Extensive mapping work, including collaborative Natural Resources Zone Study in southwest.<br>Determination of priority areas based on habitat values and monitoring. Dept Ag. provides funding and management of program done by Curtin University and landholders. |
| Env. Protection Act | Env. Protection Authority | Major work—Natural Resource Zone Study in southwest. |
| **Northern Territory** | | |
| | Conservation Commission | Collaborative work with Greening Australia, Env. Centre and Landcare groups<br>- Impacts of fragmentation on remnants<br>- 'Corridors of Green' mapping and assessment project. |

**Projects funded under the save the bush program research component, 1991–92**

| Project | 91–92 | 92–93 | 93–94 | Total |
|---|---|---|---|---|
| | $ | $ | $ | $ |
| **Curtin University of Technology/CSIRO**<br>Assessment of the conservation status of native remnants in the wheatbelt of WA using LANDSAT TM imagery | 6 707 | 1 493 | | 8 200 |
| **University of Tasmania**<br>Influence of remnant size, age and management on native and exotic plants in the northern midlands, Tasmania | 24 300 | 7 700 | | 32 000 |
| **University of New England**<br>Ecological functional groups in grassland vegetation: a strategy for the study and management of native plant diversity in an agricultural landscape | 32 757 | 6 173 | 4 115 | 43 045 |
| **CSIRO Division of Wildlife and Ecology (WA)**<br>Effect of temporal and spatial isolation on animal communities | 16 000 | 4 855 | | 20 855 |
| **James Cook University**<br>The role of riparian corridors in the dispersal of indicator species | 20 787 | | 6 529 | 27 316 |
| **WA Department of Conservation and Land Management**<br>Production of habitat hollows by wheatbelt eucalypts | 10 123 | 3 177 | | 13 300 |
| **WA Department of Agriculture**<br>An investigation of the factors of size, shape and ecological processes affecting the long-term viability of fenced remnant native vegetation on private land, using a subset of the 470 remnant vegetation protection scheme sites | 17 148 | 5 152 | | 22 300 |
| **SA Woods and Forests Department**<br>Understorey species establishment | 17 178 | | 5 872 | 23 050 |
| **Qld Department of Environment and Heritage**<br>Northern Woody Weeds Study ($175 000 over 3 years) | 55 000 | | | |
| **Total** | **200 000** | **28 550** | **10 644** | |

**Projects funded under the Save the Bush Program research component, 1992–93**

| Project | 92–93 | 93–94 | 94–95 | Total |
|---|---|---|---|---|
| | $ | $ | $ | $ |
| **Museum of Victoria**<br>Development of invertebrate indicators of remnant grassy woodland ecosystems | 25 000 | 15 000 | 9 100 | 49 100 |
| **Mawson Graduate Centre for Environmental Studies (Luminis P/L)**<br>Edge effects in the open forest remnants of the southern Mt Lofty Ranges, South Australia | 31 450 | 5 500 | | 37 000 |
| **James Cook University**<br>The role of riparian corridors in the dispersal of indicator species | 32 148 | | 5 673 | 37 821 |
| **Charles Sturt University**<br>Patterns of biodiversity during the restoration of degraded farmland—implications for management | 14 025 | 2 475 | | 16 500 |
| **University of New South Wales**<br>Managing rainforest remnants for the maintenance of biodiversity; size, shape and edge effects | 27 411 | 4 837 | | 32 248 |
| **University of Melbourne**<br>Biodiversity, fire and heathland survival | 3 600 | 650 | | 4 250 |
| **University of Adelaide**<br>Pollinator assemblages and reproductive performances of native plants in remnant vegetation | 27 816 | 4 184 | | 32 000 |
| **La Trobe University**<br>Management impacts on remnant woodlands and techniques to promote plant reestablishment | 3 000 | | | 3 000 |
| **La Trobe University**<br>Restoration of a species-poor *Themeda triandra* grassland | 18 000 | 2 000 | | 20 000 |
| **Adelaide Botanic Gardens**<br>Weed control strategies for heavily invaded bushland with nationally significant plant communities | 25 000 | 15 000 | 10 000 | 50 000 |
| **Vic Department of Conservation and Natural Resources**<br>Fauna in a remnant vegetation-farmland mosaic: movements, roosts and foraging ecology of bats | 14 000 | | 2 560 | 16 560 |
| **Qld Department of Environment and Heritage**<br>Northern Woody Weeds Study ($175 000 over 3 years) | | 60 000 | 60 000 | |

| | | | |
|---|---|---|---|
| **Totals** | **221 450** | **109 646** | **87 333** |
| **Prior commitments (from 1991–92)** | **28 550** | **10 644** | |
| **Total commitment** | **250 000** | **120 290** | **87 333** |

**Appendix 2**

# List of People who Provided Information for the Report

LWRRDC

(1) Ms Lyn Allen
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(2) Dr Ann Prescott
SA Department of Environment and Land Management (on leave)
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(3) Dr Phil Price
Land & Water Resource R&D Corporation
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NATIONAL CONTACTS

Note: Mr Bernard Wonder, Land Resources Division, Department Primary Industries and Energy; Dr Peter Bridgewater, Australian Nature Conservation Agency; Mr Phillip Eliason, National Farmers Federation; and Mr Jason Alexandra, Australian Conservation Foundation were each asked for their feedback on the draft final report.

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(20) Dr Ray Nias/Simon Habel
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GPO Box 528
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(21) Prof. Henry Nix
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Australian National University ACT 0200
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(22) David Parker
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(23) Dr Suzanne Prober
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Canberra ACT 2601
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Ph (06) 246 4911
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(24) Dr Harry Recher
Department of Ecosystem Management
New England University
Armidale NSW 2351
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(Jeff Barrett and Steve Falconer—graduate student and project officer with Dr Recher also interviewed)

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STATE CONTACTS

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**Australian Capital Territory**

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**Victoria**

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(38) Russell Costello
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Department of Conservation and Natural Resources
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(39) Graham David
Salinity Bureau, Premier's Department
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**South Australia**

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**Appendix 3**

# Reporting Sheet used at Interview

PHOTOCOPY AND INSERT
(TWO PAGES)

**Appendix 4**

# List of Other Relevant Contacts Identified but not Interviewed

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Dr Judy West
Australian National Herbarium
Black Mountain Laboratories
GPO Box 1600
Canberra ACT 2601
Clunies Ross Drive & Barry Drive, Canberra
Ph (06) 246 4911; Fax (06) 246 5000
Box woodlands and other relevant work

Dr Jill Landsberg
Division of Wildlife & Ecology
PO Box 84
Lyneham ACT 2602
'Gungahlin', Barton Highway, Gungahlin
Ph (06) 242 1600; Fax (06) 241 3343
Until recently, extensive work on rural dieback and now working on rangelands

Dr Roger Farrow
CSIRO Division of Entomology
Black Mountain Laboratories
GPO Box 1700
Canberra ACT 2601
Ph (06) 246 4000; Fax (06) 246 4001
Entomologist recommended by LWRRDC, but unavailable for interview during the period of the consultancy

Sue McIntyre
CSIRO Division of Tropical Crops & Pastures
306 Carmody Road
St Lucia Qld 4067
Studies on landscape mosaics and the impacts of grazing

Ian Thompson
Land Resources Division
Department of Primary Industries & Energy
GPO Box 858
Canberra ACT 2601
(Feedback has been received through Lionel Wood)

Peter Cochrane
Adviser, Office of The Hon. Simon Crean
Parliament House
Canberra ACT 2600
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Ros Prinsley
Agroforestry & Extension Group
Rural Industry Research & Development Corporation
Canberra ACT
Ph (06) 272 4033; Fax (06) 272 5877
Has worked and published in the area of trees on farms

Dr Richard Thackway
ERIN
GPO Box 636
Canberra ACT 2601
Lakeview Terrace, 152 Emu Bank
Belconnen ACT
Ph (06) 250 0200; Fax (06) 250 0360
Mapping studies and integration of environmental databases

Maria Simonelli
CouncilNet
Department of Environment, Sport & Territories
GPO Box 878

Canberra ACT 2601
Ph (06) 274 1906
An electronic network for the dissemination of environmental information and research to local governments

Mark Richardson/Geoff Butler
Australian Network for Plant Conservation
Australian National Botanic Gardens
GPO Box 1777
Canberra ACT 2601
Ph (06) 250 9540; Fax (06) 250 9599
A network bringing together community organisations, scientists and others working for the conservation of rare, threatened and endangered plants

May Maher & Associates
17 Katrine St
Westend Qld 4101
Ph (07) 844 9183; Fax (07) 844 3357
Coordinator of recent work to produce a 'Greening Plan Handbook', a guide for councils and communities to manage vegetation and biodiversity

Phillip Toyne
Centre for Environmental Law
The Australian National University
Canberra ACT 2601
Ph (06) 249 3396; Fax (06) 249 0103
Former Director of Australian Conservation Foundation and an 'architect' of the ACF/NFF proposals which initiated the Decade of Landcare program

David Baker-Gabb
Royal Australian Ornithological Union
21 Gladstone St
Moonee Ponds Vic 3039
Ph (03) 370 9194
Work on and funding for bird conservation programs, including the Regent Honeyeater studies in northeast Victoria

Quentin Farmar-Bowers
Australian Roadsides Network
Australian Road Research Board
PO Box 156
Nunawading Vic 3131
Ph (03) 881 1629; Fax (03) 887 8104
Preparing a draft National Strategy on Roadside Management, to be completed by December 1993

Prof. Jamie Kirkpatrick
Department of Geography & Environmental Studies
University of Tasmania
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Hobart Tas 7001
Ph (002) 20 2101; Fax (002) 20 2989
Extensive work in nature conservation in Tasmania, member of Federal Biodiversity Advisory Committee, Endangered Species Advisory Committee—see interview with research collaborator, Louise Gilfedder (Prof. Kirkpatrick is on study leave and was not contactable)

STATE CONTACTS

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Landcare Coordinator
Department of Primary Industries
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State Landcare coordinator

Hunter Brownscombe
Greening Australia (Qld)
11 Wicklow St
Kangaroo Point Qld 4169
Ph (07) 391 6655
Greening Australia's community information and education work is valuable to dissemination of remnant vegetation R&D

Dr Carla Catterall
Division of Environmental Sciences
Griffith University
Nathan Qld 4111
Studies on the distribution and ecological significance of remnant bushland in southeastern Queensland

Jim Davie
Centre for Landscape Ecology
Queensland University of Technology
Gardens Point
GPO Box 2434
Brisbane Qld 4002
Ph (07) 864 1749
Recommended by both Steering Committee member Lyn Allen and Richard Ledgar as being a useful contact

Karen Smith
PO Box 29
Bowenville Qld 4404
Recent work at University of Queensland at Gatton into the role of Landcare groups in nature conservation in southern Queensland

Jock Douglas
'Wyoming'
via Roma Qld 4455

As chair of the Landcare State Assessment Panel, he is reported to have worked hard at liaison with a wide range of relevant stakeholders

**New South Wales**
Dr Hugh Ford
Department of Zoology
University of New England
Armidale 2351
Effects of habitat fragmentation and degradation on bird communities in the New England Tableland region of NSW

Dr Marilyn Fox
School of Geography
University of NSW
Kensington NSW 2033
Extensive work on the biota of western NSW, impacts of introduced species and human disturbance

Dr Dan Lunney
National Parks & Wildlife Service
PO Box 1967
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Ph (02) 585 6444
Extensive work on wildlife habitat and endangered fauna in NSW

Liz Dovey
National Parks & Wildlife Service
PO Box 733
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Floor 1
34 Lowe St
Queanbeyan NSW 2620
Ph (06) 297 4851; Fax (06) 297 6144
Work on temporal and spatial management of whole landscapes to protect vulnerable habitat

Steve Woodhall

‘Disappearing Islands Group’
National Parks & Wildlife Service
154 Russell St
Bathurst NSW 2795
Ph (063) 31 9777; Fax (063) 32 3735
Coordination of the ‘Disappearing Islands Group’, which brings together state and local government agencies, conservation groups, Landcare groups, local academic institutions and individual farmers for the protection and wise management of remnant vegetation in central western NSW

Peter Barker
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Department of Conservation & Land Management
PO Box S146
South Wagga Wagga NSW 2650
Ph (069) 31 1777; Fax (069) 31 4184
Research to improve growth of Casuarina trees in groundwater discharge areas.

W. Semple
Regional Research Officer
Department of Conservation & Land Management
PO Box 53
Orange NSW 2800
Ph (063) 63 8301; Fax (063) 61 3289
Work on native shrubs of the Central West which may have potential for on-farm planting and factors affecting their establishment from seed

Syed Rizvi
Soil Conservationist
Department of Conservation & Land Management
PO Box 462
Gunnedah NSW 2380
Ph (067) 42 0300; Fax (067) 42 3129
Work to identify native tree and shrub species suitable for treating gully erosion areas

John Benson
Royal Botanic Gardens
Mrs Macquarie’s Road
Sydney NSW 2000
Ph (02) 231 8149
Extensive work on plant distribution and on threatened species across NSW

Dr Stuart Hill
Formerly of:
School of Agriculture & Rural Development
University of Western Sydney (Hawkesbury)
Richmond NSW 2753
Until recently, lecturer at University of Western Sydney, conducting research into psychological, institutional and political barriers to the conservation of biodiversity
(Currently travelling in New Zealand—not contactable)
Anne-Marie Wilson
School of Agriculture and Rural Development
University of Western Sydney (Hawkesbury)
Richmond NSW 2753
Current work on the ecological values of artificially created vegetation corridors

Denis Brooks
Renison Goldfields Consolidated
1 Alfred St
Circular Quay Sydney NSW 2000
Ph (02) 934 8888
Renison identified by the Australian Mining Industry Council as a company involved in remnant rehabilitation in NSW

David Curtis
Greening Australia NSW
PO Box 1467
Armidale NSW 2351

Work with others on habitat fragmentation and its impact on birds and other species, and on landholder information about this work; also methods work for monitoring of regeneration.

Paul Cruickshank
Greening Australia NSW
GPO Box 9868
Sydney NSW 2001
122c Percival Rd
Stanmore NSW 550 0720
Ph (02) 550 0720
Greening Australia's community educational work is important to the distribution of remnant vegetation R&D

Louise Brodie/Graeme Quint
National Trust of Australia (NSW)
GPO Box 518
Sydney NSW 2001
Ph (02) 258 0123
Conducts bush management programs (initially in urban areas, but extending to rural areas) on conserving, restoring and regenerating indigenous species and controlling alien and invading species

Landscape Services Manager
Roads & Traffic Authority
PO Box 5198
Haymarket NSW 2000
Ph (02) 662 5136
Extensive planting of native plants on roadside reserves; funding of research projects on production of native grasses

David Watson & Judith Turley
'Millpost'
Bungendore NSW 2621
Eleven-year program to revegetate and 'rehabilitate' this 1100-hectare property, 20 kilometres east of Canberra (past problems included erosion, salinity, rural dieback and feral pigs)

**ACT**
Colin O'Keefe
ACT Department of the Environment, Land & Planning
Landcare Extension Officer
Ph (06) 207 2145
Educational work on 'off-reserve' management of remnant vegetation in the ACT

Val Wiseman
Greening Australia ACT
Yarralumla Nursery
Banks St
Yarralumla ACT 2600
Ph (06) 282 3214
Greening Australia's community educational work is important to the distribution of remnant vegetation R&D

**Victoria**
John Cooke
Department of Conservation & Natural Resources
250 Victoria Pde
East Melbourne Vic 3002
Extensive work on economic, land protection and environmental benefits of remnant vegetation and its management, especially on public lands in Victoria; highlighting the need for improved dissemination of available information

Graham Hunter
Land Protection Branch
Department of Conservation & Natural Resources
250 Victoria Pde
East Melbourne Vic 3002

Ph (03) 412 4697
Formerly of Premier's Dept Salinity Bureau and currently coordinating the drafting of Victorian Land Protection legislation

Hamilton Vic 3300
Working on alley cropping and tree growing by direct seeding and the economics of these; some work being done in collaboration with Steve Burke of Greening Aust (Vic)

Kim Lowe/Andrew Bennett
Department of Conservation & Natural Resources
Arthur Rylah Institute
123 Brown St
Heidelberg Vic 3084
Ph (03) 450 8666 (KL); (03) 450 8687 (AB)
Extensive work on conservation of threatened fauna species and habitat in Victoria; habitat studies and work on the role of corridors as habitat

Diana Paterson
Department of Conservation & Natural Resources
250 Victoria Pde
East Melbourne Vic 3002
Work on land protection and catchment management

Meredith Mitchell
Department of Agriculture
Rutherglen Vic 3685
Work on native grassland species and their pasture potential; soon to do collaborative work with DCNR Bendigo group on water utilisation by these species

Dr Rod Bird
Department of Agriculture
Hamilton Institute of Rural Learning
333 North Boundary Rd

Robyn Watson
Victorian College of Agricultural Horticulture
Burnley Gardens, Swan St
Richmond Vic 3121
Ph (03) 810 8858; Fax (03) 819 1383
Co-editor of *Growback*, an annual print forum for the exchange of information and ideas relating to managing remnant vegetation and re-establishing native vegetation in Australia, and editor of the Field Naturalists Club of Victoria magazine (including Box & Ironbark woodland conservation conference); also research on genetic processes and life histories of grassland species

Dr Malcolm Calder
School of Botany
University of Melbourne
Parkville Vic 3052
Extensive research (and graduate students) on Box, Ironbark and other threatened species in Victoria

Ian Lunt
La Trobe University
Bundoora Vic 3083
Work on the management of remnant lowland grasslands and grassy woodlands

Ballarat University College
Department of Biological & Chemical Sciences
Various students have undertaken vegetation mapping and identification work as part of undergraduate courses

Alistair Phillips
Municipal Conservation Association
Ross House
Ground Floor
247 Flinders Lane
Melbourne Vic 3000
Ph (03) 654 1322; Fax (03) 650 3689
Guided by the principles of ESD, the Association works to provide communication on conservation and environment issues to local agencies

Ian Morgans
Association of Victorian River Management Authorities
1st Floor
247 Flinders Lane
Melbourne Vic 3000
Ph (03) 650 8316
An organisation which recognises strong farmer interest in the riparian zone and its importance to remnant vegetation

Steve Burke
Greening Australia (Vic)
National Herbarium
Birdwood Ave
South Yarra Vic 3141
Ph (03) 654 1800
Note work with Dr Rod Bird (Hamilton Institute) on tree farming, as well as general Greening Australia community work

Australian Trust for Conservation Volunteers
Box 423
Ballaarat Vic 3353
Ph (053) 33 1483
Through its hands-on approach to conservation, the Trust is involved in a variety of projects with landholders and other land managers—tree planting, fencing, flora and fauna surveys, and restoration of natural heritage sites all have relevance to remnant vegetation

Phillip Sutton
Green Innovations
3 Madden Grove
Kew Vic 3101
Ph & Fax (03) 853 9983
(Formerly of Victorian Dept of Env. Flora & Fauna Guarantee Unit)

John & Ciceley Fenton
'Lanark'
Branxholme Vic 3302
In 32 years at 'Lanark' the Fentons have planted some 25 000 trees on their western Victorian farm and have re-established 120 acres of water; they combines successful stud sheep and Shetland pony breeding with visual and habitat restoration

Rowan & Claire Reid
Post Office
Bambra Vic 3241
Developing an agroforestry demonstration project on 1113 acres at Bambra; combining multi-species agroforestry with traditional sheep production

**Tasmania**

Simon Boughey
Department of Primary Industry & Fisheries
St Johns Ave
Newtown Tas 7008
Ph (002) 78 4383
State Landcare coordinator

Penny Wells/Jill Hickie
Department of Parks, Wildlife & Heritage
GPO Box 44A
Hobart Tas 7001
Ph (002) 33 6218
Note especially, work on the remnant values of roadsides in Tasmania—extensive survey work

Don Thompson
Greening Australia (Tas)
169 Campbell St
Hobart Tas 7000
Ph (002) 31 3622
Greening Australia's community educational work is important to the distribution of remnant vegetation R&D

Peter McQuillan
Department of Geography & Environmental Studies
University of Tasmania
Ph (07) 20 2840
Extensive work on the role of insect species in the rural Midlands area of Tasmania

Tim Kingston
Director
Queen Victoria Museum
Launceston Tas 7250
Research on earthworms in rural areas of the Midlands in Tasmania

Richard Donaghey
TAFE
Burnie
Myalla Tas 7325
Work on biological diversity on farms, and is preparing a workshop on this topic for August 1993

Bert Farquhar
Scottsdale Tasmania 7260
Conservation farming on his properties, 'Wyambi', 'Miegunyah' and 'Rushy Lagoon' in northeast Tasmania, with a strong emphasis on restoration of water storage and introduction of earthworms

**South Australia**

Dr Bob Inns
Department of Environment & Land Management
GPO Box 67
Adelaide SA 5001
Head of native vegetation management branch

Julianne Venning
Department of Environment & Land Management
GPO Box 667
Adelaide SA 5001
Extensive work on growing trees on farms, methods for rural vegetation re-establishment and so forth

Enid Robertson
Native Vegetation Council
SA
Ph (08) 278 4045
Biologist on the Native Vegetation Council

Meg Lewis
Roseworthy College
Ecologist on leave from Roseworthy College, and member of Pastoral Board in South Australia

Stefan Gabronowicz
Department of Environment & Land Management
Consultant economist doing work on the economics of remnant vegetation and rehabilitation of vegetation in South Australia

Dr David Paton
Department of Zoology
University of Adelaide
Adelaide SA
Doing applied ecology on threats to bird and animal species and the variability of habitat across seasons and locations

Mr Malcolm Campbell
Greening Australia SA
GPO Box 9868
Adelaide SA 5001
Ph (08) 207 8757
Greening Australia's community educational work is important to the distribution of remnant vegetation R&D

Trees for Life
PO Box 341
Glenside SA 5065
Ph (08) 337 8033
Encouraging rural planting of local species through the Free Tree scheme and through free advice to landholders

Jim Burston
'Cut Hill'
Fleurieu Peninsula SA
Conservation farming since 1967, with development of whole farm plan and extensive direct seeding and natural regeneration since then

**Western Australia**

Dr Ted Lefroy
Department of Agriculture
3 Baron-Hay Court
Adelaide SA 6151
Ph (09) 368 3870
Extensive work on integrating production and nature conservation needs in the wheat-belt; also involved provision of information and educational materials to farmers

John Bartle
Department of Conservation & Land Management
Ph (09) 334 0321
Planting and cultivation techniques for rapid growth of trees (especially for firewood) in rural production areas; also a recently commenced project for production of oils from mallee species

Alex Campbell/Wayne Reynolds
WA Farmers' Federation
239 Adelaide Terrace
Perth WA 6000
Ph (09) 325 2933; Fax (09) 325 4197

Rachel Siewart
Conservation Council of WA
79 Stirling St
Perth WA 6000
Ph (09) 220 0652; Fax (09) 2200653

Ken Wallace
Department of Conservation & Land Management
PO Box 100
Narrogin WA 6312
Ph (098) 81 1444
Production of Sandalwood and other specialty timbers in the wheat-belt region of Western Australia; also work on formation of breeding hollows in trees

Patrick Piggott
Western Australian Herbarium
George St
South Perth WA 6151
Ph (09) 334 0333
Working on environmental weeds; previously worked on direct seeding, and on regeneration of Salmon Gum in the wheat-belt region.

Gordon Friend
Department of Conservation & Land Management
Described as having an excellent overview of work in progress on ecological aspects of remnant vegetation in Western Australia; working on impacts of fire and other activities on fauna and flora

Bronwen Keighery
Department of Conservation & Land Management
Studies on the adequacy of remaining remnant native vegetation for future conservation in the Swan Plain

Tony Friend
Department of Conservation & Land Management
Working on numbats and phascogales and their habitat

Jack Kinnear
Department of Conservation & Land Management
Working on the impacts of ferals, especially foxes; this has interactions with remnant vegetation work/habitat and so forth

John Watson
Albany WA 6330
Ph (098) 41 7133
A recent heritage grant to look at the heritage values of river corridors (extending over 25–125km) as connections between National Parks

Trevor Bourne
Wheatbelt Aboriginal Corporation
PO Box 526
Northam WA 6401
Ph (096) 22 5944
Involved in a project to commercially produce mallee species preferred for didgeridoo making.

AR (Bert) & BY (Barbara) Main
Department of Zoology
University of Western Australia
Nedlands WA 6009
Barbara—research on the social history of the Western Australian wheat-belt and its impacts on the landscape;
Bert—work on ecological disturbance of landscape since European settlement and the options for reintegration

Anne Scougall
Curtin University
GPO Box U1987
Perth WA 6001
Ph (09) 351 2000
PhD student with John Majer, working on the edge effects of grazing on remnant vegetation

Ann Coates
Formerly of Department of Conservation & Land Management
Work on remnant vegetation mapping; also work on social aspects of conserving remnant vegetation in Western Australia

Jos Chatfield
c/- Post Office
Tammin WA 6409
Ph (096) 37 1075; Fax (096) 37 1017
Conservation farmer, key player in Landcare and other local programs

Theo Nabben

Department of Agriculture
PO Box 1231
Bunbury WA 6230
Ph (097) 25 5255
Formerly Australian Conservation Foundation
Rural Liaison Officer, Western Australia

**Northern Territory**

Mr Rod Applegate
Land Conservation Unit
Conservation Commission of the Northern Territory
P O Box 496
Palmerston NT 5787
Ph (089) 89 4568; Fax (089) 89 4403
Territory Landcare coordinator

Dr Steve Morton
CSIRO Division of Wildlife & Ecology
Centre for Arid Zone Research
PO Box 2111
Alice Springs NT 0871
Ph (089) 52 4255; Fax (089) 52 9587
Extensive research into wildlife habitat

Dr Tony Press
Australian Nature Conservation Agency
PO Box 1260
Darwin NT 0801
Ph (089) 81 5299
Work both on vegetation management within protected areas and also interactions between protected area management and impacts of management in surrounding areas

**Appendix 5**

# Key Contacts for Proposed LWRRDC Seminars on Remnant Vegetation

STATE CONTACTS

LWRRDC can play an important role in bringing groups and individuals together at a state level. Work done in preparing this report gives a fairly clear picture of the key stakeholders in most states.

Note: Contact addresses and phone numbers are included at appendices 2 and 4.

**Western Australia**

Western Australia provides the best example to date of progress towards integration across disciplines, interest groups and the various stakeholders at state level.

A seminar might involve CSIRO's Denis Saunders and Richard Hobbs, the Department of Agriculture's Greg Beeston and Ted Lefroy, Department of Conservation & Land Management's Penny Hussey, Ken Wallace and Roadside Conservation Committee representative, David Lamont.

Greening Australia's Martine Scheltema and the Australian Conservation Foundation's new rural liaison officer (replacing Theo Nabben) should be included as an important bridge between the scientists and the landholders.

The plethora of conservation farmers in the wheat-belt region makes selection of key individuals difficult. Jos Chatfield has had long-standing involvement, but it may be informative also to include others active in Landcare groups such as Tammin, Kellerberrin or Trayning. The Department of Agriculture can provide advice on appropriate landholder representatives and the benefits of involving representative farmer organisations.

In Western Australia, and in all other states, efforts should be made to include at least one relevant local government representative.

**South Australia**

Dr Ann Prescott should be included, given her role on the LWRRDC remnant vegetation consultancy steering committee and her long-standing work in this area.

Government representatives should include the following: Ross Britton/Andrew Johnson, DPI Landcare section; Dr Brian Gepp, DPI Forests Branch, researcher into impacts of fire and other management practices on remnant vegetation; Paul Moran, DPI State Tree Centre, whose work focuses on biological conservation; Dr Bob Inns, DELM,

Head of native vegetation management branch and active researcher in this field; Ann Jensen, DELM, who has an active involvement in remnant vegetation aspects of integrated work on lower reaches of Murray Darling Basin.

Mark Wilkins, Australian Conservation Foundation rural liaison officer; Malcolm Campbell of Greening Australia (SA) and a representative from Trees for Life will be useful participants because of their 'extension' and educational work.

Jim Burston or other active conservation farmers already working to restore native vegetation should also be included, with relevant representatives being identified through active Landcare groups or by the South Australian Farmers' Federation. The Farmers' Federation should also be invited to send a representative.

Research input might best come from Dr David Paton and/or Mrs Enid Robertson; while John Bradsen's legal perspective would be invaluable to discussions.

**Tasmania**

Given the limited number of interviews conducted in Tasmania, it is more difficult for this consultancy to make strong recommendations regarding key players in that state.

Professor Jamie Kirkpatrick and Louise Gilfedder are undoubtedly the key research workers in the field. Others might include State Landcare coordinator, Simon Boughey, Department of Primary Industry & Fisheries; Penny Wells, Department of Parks, Heritage & Wildlife and/or Jill Hickie, Roadside Conservation program; Don Thompson, Greening Australia; Richard Donaghey, Burnie TAFE, Myalla campus; and Bert Farquhar, long-time conservation farmer.

**Victoria**

Although R&D in remnant vegetation has declined due to constraints on funding and personnel available within government, key participants should include the following.

From government departments and agencies: John Cooke and/or Graham Hunter, Department of Conservation & Natural Resources (DCNR)—long-standing involvement in the issues; Kim Lowe and /or Andrew Bennett, DCNR researchers on threatened species, habitats and so on; Craig Clifton and/or Ian Higgins, DCNR Centre for Land Protection Research at Bendigo; Stephen Platt, DCNR Land for Wildlife program (which brings farmers directly into relevant projects); and Andrew Straker, Roadsides Conservation Committee (which involves a broad range of land managers and others having a stake in roadside vegetation).

Robyn Watson of the Victorian College of Agricultural Horticulture should be included, especially as editor of *Growback* but also as an ecological researcher in this field.

Dr Malcolm Calder, from the School of Botany at Melbourne University, would bring together extensive academic research in this field with a recognition for practical 'on-ground' applications.

Although his broad-ranging skills and expertise in this area extend beyond Victoria, Jason Alexandra of the Australian Conservation Foundation, being Melbourne-based, should also be included in a seminar in this state. Steve Burke from Greening Australia (Vic), Doug Humann and/or Charlie Sherwin from Victorian National Parks Association and a representative from the Australian Trust for Conservation Volunteers would also bring

valuable community participation, extension and educational perspective, as would Phillip Sutton, now of Green Innovations but formerly of the Flora & Fauna Guarantee Unit DCNR. Conservation farmers with long-standing involvement include John & Ciceley Fenton from Branxholme and Rowan & Claire Reid from Bambra, but additional educational value might result from involving someone from active Landcare groups in the Broken River catchment (northeast Victoria—See report entitled 'The Broken Web'). The Victorian Farmers' Federation may also be interested in participating.

**New South Wales**

Government representatives should include Dr Margaret Bailey, State Landcare coordinator; Dr Bob Crouch, Head of R&D Branch, Department of Conservation & Land Management; David Papps, Deputy Director NP&WS, who has a long involvement in threatened species and habitat protection and management; and Steve Woodhall, of the NP&WS, who is coordinator of the 'Disappearing Islands' groups in the Central West region of NSW.

Academics involved in applied research highly relevant to this issue and who might be included in a seminar are Dr Harry Recher and/or Dr Hugh Ford, New England University, Armidale; Dr David Goldney of Charles Sturt University, Bathurst and Dr Marilyn Fox of the School of Geography, University of NSW. Dr Andrew Beattie of Macquarie University, who has wide-ranging involvement in biodiversity issues, including remnant vegetation, and Dr David Farrier of University of Wollongong, who has done legal research in this area, would also prove valuable.

Greening Australia's Paul Cruickshank and the National Trust's (NSW) Louise Brodie would provide important community liaison/education and involvement perspectives. Although involved in more wide-ranging rural nature conservation issues, WWF's Dr Ray Nias should also be involved in a NSW forum.

Landcare coordination within the state should also be used to identify relevant conservation farmer(s).

**Queensland**

Government representatives at a Queensland seminar should include Brian Venz, DPI Integrated Planning Resource Division and/or Sam Brown, DPI State Landcare Coordinator, Greg Siepen, QNP&WS, and Tracey Adams of the Department of Environment & Heritage's recently formed community nature conservation program.

The Queensland Conservation Council's rural liaison officer, Lindsay Fairweather, and Greening Australia's Hunter Brownscombe would contribute strong extension, networking and information flow skills to the forum.

Relevant academic expertise should come from Dr Carla Catterall of Griffith University, Dr Jim Davey of QUT's Centre for Landscape Ecology and Karen Smith from the University of Queensland Gatton campus.

Landholder representation might come from Jock Douglas of 'Wyoming', Roma who, as Chair of the NLP's State Assessment Panel, interacts widely with relevant interests.

**Others**

Neither the Northern Territory nor the ACT have been addressed in this short evaluation. This is because they each have far less rural landscape relevant to this report. Should it be considered important to run seminars in the territories, then the contact lists provided with this report will form a useful starting point for recruitment.

## NATIONAL CONTACTS

The following list represents the key contacts in national stakeholder organisations who should be invited to participate in annual LWRRDC round-table briefings.

Dr Phil Price, Director LWRRDC
Dr Peter Bridgewater/Dr Bill Phillips, Australian Nature Conservation Agency
Wayne Fletcher, Biodiversity Unit, Department of Environment, Sport & Territories
Ian Thompson, Land Resources Division, Department of Primary Industries & Energy
Helen Alexander, National Landcare Facilitator, Department of Primary Industries and Energy
Dr Jill Landsberg, CSIRO Division of Wildlife & Ecology, Gungahlin
Dr Chris Margules, CSIRO Division of Wildlife & Ecology, Gungahlin
Prof. Jamie Kirkpatrick, Department of Geography & Environmental Studies, University of Tasmania (Also on Endangered species & Biodiversity Advisory Committees)
Winsome McCaughey, Director, Greening Australia
Jason Alexandra, Australian Conservation Foundation
Dr Ray Nias, WorldWide Fund for Nature
Phillip Eliason, National Farmers' Federation
An Australian Local Government Association representative
and/or Maria Simonelli, CouncilNet, Department of Environment, Sport & Territories