



## *The Australian Rangeland Society*

### RANGE MANAGEMENT NEWSLETTER

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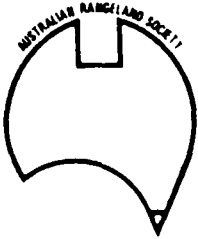
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## FROM THE EDITOR

*Gary Bastin, CSIRO, PO Box 2111, Alice Springs NT 0871*

Welcome to *RMN* 95/2. The main contributions in this Newsletter have a common theme of "land use". In the lead story, Bruce Rose reports, in a non-judgemental manner, on the outcomes of a major investigation into Aboriginal perceptions of land use in central Australia. His focus in this report is on pastoralism, land degradation and feral animals. Aboriginal people have different perceptions to our more traditional European attitudes on some key environmental issues. This is perhaps best demonstrated by the issue of feral animals where some communities, for example, see the rabbit as a food resource and even a form of traditional bush tucker. Rather than allowing differences in perceptions between cultures to develop into conflict, Bruce argues that there is a need for increased exchange of information between Aboriginal and non-Aboriginal land managers. Both sides have a great deal to learn from acknowledging alternative perspectives to environmental issues. In particular, Aboriginal people need to be provided with information appropriate to their current level of awareness and perceptions of a "problem".

Biodiversity, and the implications for land use and rangeland management, is an issue which will be with us for many years yet. At this stage, there is still confusion amongst lay people (and probably even scientists) as to what the term means - let alone what the implications for society are in terms of land use options and land management. In this Newsletter, Craig James and his colleagues within CSIRO provide an insight into biodiversity at the landscape scale and describe some of the difficulties associated with researching this issue in the Australian rangelands.

I first became aware of the bush tucker industry as a potential means of diversification in the rangelands when David and Wendy Phelps presented their poster at the Katherine conference last year. David expands on that poster in this Newsletter by providing background information and describing how he and Wendy got involved in the industry. As with all rangeland uses, sustainable offtake is an issue and David provides some insights into how this might be established in the bush food industry via water harvesting and the development of semi-natural plantations.

We have reports of rangeland activities from various people around Australia. Sarah Strutt and Steve Petty provide an account of the recent Kimberley field days - an enterprising and reportedly successful forum for communication where pastoralists were actively involved in the planning and running of the field days. I hope to follow up on the Kimberley beef industry with an article from Greg Brennan (WA Department of Agriculture, Derby) in the next issue. Greg Campbell reports on a recent meeting in Birdsville focussing on issues relating to the lake Eyre Basin while Ron Hacker provides an update on the activities of the Rangelands Research and Development Group. This group has the purpose of coordinating research in the semi-arid rangelands of eastern Australia. Paul Novelly reports on a recent trip to the

US where he investigated issues relating to the management of public grazing lands and multiple use. Paul is concerned with an apparent US preoccupation in managing the debate over land use conflict, thereby restricting the resources available for managing the land. He also considers that some government bureaucracies have become overly defensive in their stand on land management issues. There are interesting parallels on the perceived US situation apparent in Paul's report and that by Don Burnside in the March *RMN* ("From the Utah Snow").

Federal Council has moved to NSW for the next two-year term so please note the new Council members and their contact details. In line with this move, this Newsletter has the usual Council reports emanating from the AGM.

I trust that you find this Newsletter interesting and, as usual, welcome your views on any issues raised here. I also need your stories for future Newsletters. Please send me news on what you, or your colleagues, are doing in the rangelands. My deadline for the next issue is the end of October.

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## LAND MANAGEMENT ISSUES; ATTITUDES AND PERCEPTIONS AMONGST ABORIGINAL PEOPLE OF CENTRAL AUSTRALIA

*Bruce Rose, Central Land Council, PO Box 3321, Alice Springs NT 0871*

### Introduction

"The country never changes, the trees never change, the stones never change, only one time, dry time, that's a big change, trees die, cattle die."

*Traditional landowner Yuelamu*

Recent research conducted by the Central Land Council has documented Aboriginal people's attitudes and perceptions relating to a range of land management issues in central Australia. The research was undertaken as part of a Cross Cultural Land Management Project funded by the National Landcare Program.

The aim of the research was to provide information for Aboriginal organisations and government departments to better understand Aboriginal perspectives on land management issues and how these relate to mainstream views. This information provides a basis to more productively focus information exchange and extension efforts between Aboriginal landholders and the wider community.

An initial report from the project (Rose 1995a) examined Aboriginal land management issues from a non-Aboriginal perspective, as reported in literature and from researchers working in land management. The second report (Rose 1995b), which forms the focus of this article, canvasses Aboriginal views on land management and key land use issues. A third report, addressing information exchange and extension issues, is currently in preparation.

## Background

Central Australia is home to a number of culturally and linguistically distinct groups of Aboriginal people. In the region serviced by the Central Land Council (see Map 1), which covers some 780,000 sq km (57.6%) of the Northern Territory, there are over 20 linguistic groups (IAD 1990). These people share in common the history of alienation from their traditional lands and the strong desire to regain control of these lands.

Today Aboriginal people are major landowners in the Northern Territory. Under the *Aboriginal Land Rights (NT) Act 1976* Aboriginal people have freehold title to approximately 38% (513,000 sq km) of the Northern Territory and hold a further 10% under other forms of tenure, including pastoral leases. Aboriginal people are involved in a range of land uses including pastoralism, tourism, mining, conservation, living areas, bush tucker collection and a range of ceremonial activities.

## Method

Open-ended interviews were conducted with Aboriginal men and women from communities and outstations across the Central Land Council area (see Map 1). In all, seventy two communities and outstations were visited during the eighteen month research period with around 400 people providing information. Visits ranged from one or two days to repeated visits at different times, adding up to two or three weeks in some larger communities.

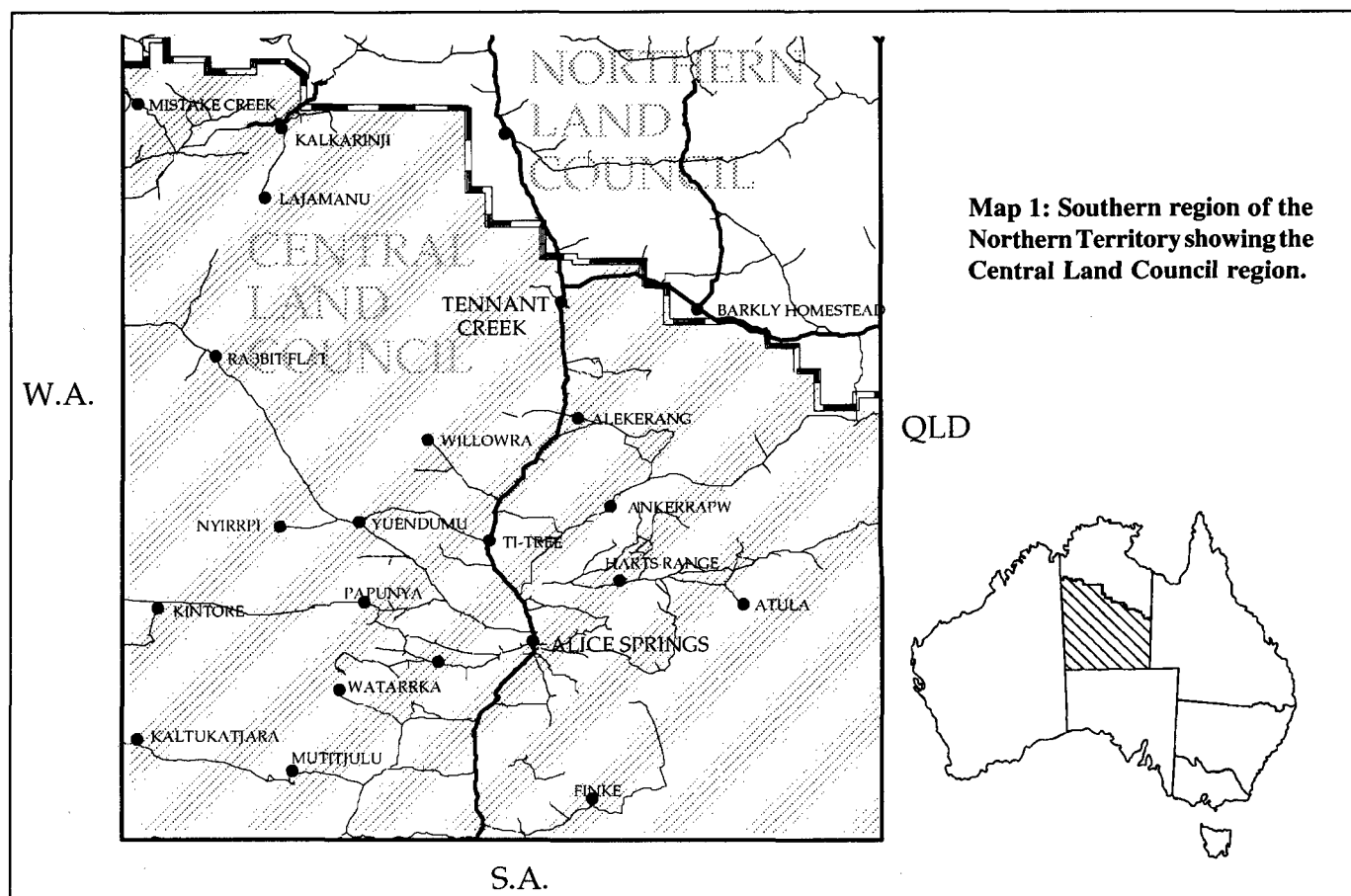
A cross section of community members was involved in the research, although the respondents who were most willing to provide information and who are therefore most highly represented in this research were men of middle age and above.

The interviews were conducted on an informal basis, loosely based around a series of open questions. Interpreters from the local community were used where possible. In practice, the range of responses from different communities resulted in many different interview types ranging from focus groups to unstructured discussion and observation.

The report draws together this large amount of information and where possible presents direct quotes from the Aboriginal respondents. A summary of the findings relating to land management, pastoralism and land degradation is reproduced below.

## Aboriginal perceptions of land management

The notion of land management is a concept that is often translated by and for Aboriginal people to mean the equivalent of "caring for country" or "looking after country" (Young *et al.* 1991). The sorts of Aboriginal activities which are involved in "caring for country" to some extent overlap with the practices of western (scientific) land management but there are also significant differences. Conversely, some of the activities which make up the scientific approach to land management would not be recognised by Aboriginal people as part of "caring for country".



Aboriginal people see caring for country as an integral part of living on their land. Caring for country forms part of the relationship individuals have with each other and with the land. It is not seen as a separate activity which must be "carried out". The clear assertion of Aboriginal people from all areas involved in this study is that looking after country is primarily carried out through Aboriginal "Law" and ceremonial obligations.

The many issues that Aboriginal people raised in discussing caring for country demonstrate attitudes and perceptions that are largely based on a traditional Aboriginal view of the land. From this perspective the most important issues are land ownership and access to land so that people can care for their country. The responsibilities individuals have under Aboriginal Law to take care of the land are then able to be carried out. Sacred sites are looked after and the proper relationship between people and their land can be maintained. The stories for the country can be passed to the younger generation and the land is looked after according to Aboriginal Law.

An important part of "caring for country" is having access to the country, travelling to renew contacts with sites and to see and use the resources that are available. The activities involved in caring for country revolve around being on the land, using resources according to Aboriginal Law, observing the land's response to the seasons and maintaining an intimate knowledge of its resources and significance in terms of the Dreaming.

Increasingly Aboriginal people are admitting "Western" perceptions related to land issues to enter into their world view. Increasing contact with white land managers and the need to face a range of new challenges in the management of their land are the principal reasons for this change. Changes in the ecology of the lands, through the introduction of feral animals and weeds for example, are forces which are beyond Aboriginal control and which require new and different approaches to looking after the land.

People expressed a variety of views about the use of fire in looking after country. On most of the Aboriginal Land Trust areas people said that fire is actively used to protect sacred sites and to maintain those areas that are used for hunting. Using fire is seen as a natural part of being on the country. An issue identified by some respondents on Land Trusts was that lack of access to reliable transport reduced the amount of burning they could do in the more remote areas.

For people with limited control over their land, those living on pastoral properties for example, burning was often seen as a bad thing to do. Stories were recounted where whitefellas had explained that burning country was not an acceptable practice. Some people no longer burned the country because of the damage it might cause to fences, bores and stock.

Aboriginal people have a strong sense of the need to look after their land. Most respondents were firm in the belief that they had the knowledge and ability to look after their country in the traditional Aboriginal way.

## Pastoralism

Aboriginal people have been involved with the pastoral industry from its earliest days. Whilst for many people pastoralism brought dispossession from their traditional lands, it also provided employment and the ability to remain in contact with country. For many Aboriginal groups today pastoralism has become a vital part of living on their country. Pastoral aspirations vary as a result of past experiences with cattle work and with the bureaucracy controlling the funding of Aboriginal cattle enterprises.

One of the main reasons people want to have pastoral projects is that they know cattle work and identify with that lifestyle. In communities associated with cattle projects the benefits in terms of employment and activity are seen as very important. Income generated from a project was also consistently cited as a key benefit.

Many older men involved with cattle projects complain that the young men are no longer interested in carrying on the work because of problems with grog and other interests. However, many pastoral projects are the focus of work and other activities for the young men and are therefore seen as a way to overcome problems such as alcohol or substance abuse. These positive aspects of pastoral projects were often mentioned by the Aboriginal women from a community.

In many situations the expectations of the benefits which might be gained from setting up cattle projects can be unrealistically high. In some areas there also appears to be a lack of knowledge about the responsibilities and requirements of people involved at the various levels of pastoral enterprise. Many cattle company directors are not aware of their legal liabilities and of the roles required of them in the running of the cattle company. Managers often have poor financial management skills and tend to focus on animal management rather than land management. Aboriginal stockmen place an emphasis on animal handling skills but lack the desire to take on further tasks such as those requiring technical expertise.

The Aboriginal cattle projects which were approached during this research were usually small ventures carrying relatively low stock numbers. Discussion about management plans and strategies for management during drought was limited indicating that these issues were of little concern to these projects. There is generally little preparation for management in dry times, as decisions are made on the spur of the moment rather than on the basis of a longer term plan.

The bureaucracy associated with Aboriginal pastoral projects has meant that Aboriginal people have had little experience managing the direction of projects themselves. Very few people have a clear idea of where they fit into a picture which is clouded with a plethora of government departments, each of which has its own area of responsibility and may be represented by a different face each time it visits the community. For many people project funding has meant that a management regime is imposed from outside. Such a situation is not ideal for developing management skills. The

Central Land Council has established a Pastoral Unit which is attempting to provide support services and training to address some of these issues.

## Land degradation

Aboriginal people perceive land degradation differently to western land managers. The level of awareness of land degradation issues (as they are understood by western land managers) among Aboriginal people in central Australia is extremely low. Conversely, Aboriginal people are concerned about "degradation" issues of their own, the nature of which is not well understood by the broader society. For example the issue of sacred site protection was raised as a priority issue for Aboriginal people in looking after their land. The integrity of sacred sites for Aboriginal people can be compromised (and therefore degraded) in a number of ways which non-Aboriginal people are rarely aware of and sometimes find difficult to accept.

The overall priority of land degradation issues for the majority of Aboriginal people is low. There is more emphasis placed on gaining access to a basic level of services such as water, health and housing. While these needs remain, Aboriginal people will not be able to place the same emphasis on land degradation issues as do other sectors of society.

When discussing land degradation issues the terminology usually associated with these issues was often misunderstood by the Aboriginal people who were consulted. For example, it was possible to discuss how the country might change when there are too many cattle but not to discuss the concept of overgrazing. In most areas people said that rain was the most important factor in maintaining the condition of the country. Cattle might "raise a bit of dust" but this was not a concern. The country would recover when there was good rain.

Aboriginal people also expressed some inability to take appropriate action even where they are concerned about land degradation issues. Aboriginal people are not well informed about organisations and institutions that deal with land management issues. In general they are not well resourced to develop land management and landcare programs and the majority of land management organisations are seen as inappropriate for Aboriginal needs.

## Conclusions

This article has been limited to discussing information on Aboriginal perspectives of land management, pastoralism and land degradation. The full report, which is available from the Central Land Council, also examines Aboriginal perspectives of conservation, feral animals, tourism and mining.

The main conclusion of the report is that much more effort needs to go into information exchange between Aboriginal and non-Aboriginal land managers. There are many issues over which there is the potential for disagreement. It is

important that efforts be directed to bridging the gaps between the Aboriginal and non-Aboriginal viewpoints, not only because of the potential to resolve disagreement but because there is a great deal to learn from acknowledging alternative perspectives. Aboriginal people need access to information which is appropriate for their current level of awareness and the current problems they perceive. There have, to date, been few opportunities for Aboriginal people to access this sort of information.

The key lessons for non-Aboriginal land managers come from a greater understanding of how social and cultural factors influence land management practices. All land managers need to be aware of the importance of these issues in determining how they manage their land and how they relate to new practices and ideas.

Enquiries for information from the Cross Cultural Land Management Project should be directed to Bruce Rose on (089) 516 246 or c/- Central Land Council, PO Box 3321 Alice Springs NT 0871.

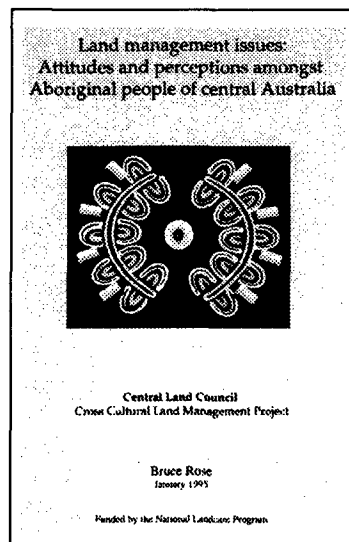
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# AUSTRALIA'S BUSH FOOD INDUSTRY

## A Potential for Sustained Economic and Ecological Development in the Rangelands

David Phelps, DPI Longreach and Longreach Bush Tucker,  
PO Box 519, Longreach Qld 4730

Have you ever eaten a witchetty grub, kangaroo fillet steak or emu? Or perhaps you have sampled the Vitamin C rich Kakadu plum, or the unique taste of a wild orange. If you have tried any of these delicacies, or just seen the latest media presentations on bush foods, then you would be aware of this exciting new industry emerging in Australia.

The bush food industry is currently estimated to be worth \$15-20 million in the domestic market. It has been expanding rapidly over the past 10 years since the establishment of Sydney's Bush Tucker Supply by Vic Cherikoff. There are no signs of the rapid growth slowing, with the potential for the domestic market to double over the next 5 years and the export potential largely untapped. There are now a number of wholesalers, manufacturers and distributors operating throughout Australia, including: Australian Native Produce Industries and Walkabout Foods in South Australia; Robin's Food Store in Victoria; Gundabluey Bush Foods and Yarrabah Native Gourmet Foods in New South Wales; Longreach Bush Tucker in Queensland; and a number of smaller operators, individual pickers and distributors. There are certain to be other companies which we have not yet been in contact with and I would be keen to add to this list.

I have had an interest in bush foods since 1988, when I discovered an article by Tindale sporting a picture of an Aboriginal person about to devour the fattest grub I had ever seen. The article discussed the use of the larvae of *Xyluetes* spp. ("Witchetty Grubs") as a food source by inland Aborigines, and outlined the richness of these larvae as a food. I became even more interested when I moved to Longreach DPI in 1990, and began to discover the diverse range of edible plants scattered throughout western Queensland and the rangelands of Australia.

In 1991 Wendy (my wife) and I formally established a new business (Longreach Bush Tucker) to take advantage of our own interest in bush foods, as well as the growing interest throughout Australia. We began fairly modestly, picking about 20 kg of wild oranges in our first year. At the time we both recognised the need to diversify the production base of the rangelands. The wool industry was suffering a dramatic downturn, and whilst realising there was little a new industry could do to help at the time, we felt that diversification was necessary for the long term survival of landholders in the arid and semi-arid rangelands of Australia.

As a result, our focus has been to establish a successful bush food industry in western Queensland which is based soundly on long term ecological and economic principles. The variable nature of our rainfall is the major concern in terms

of consistent supply of quality produce to manufacturers. The other main concern is the potential to damage the ecosystem through overharvesting. The establishment of plantations of regionally native species based on innovative irrigation and polyculture techniques is seen as the best answer to these problems. In many cases established trees could be brought into production, with new plants interspersed throughout. More suitable harvesting techniques would also need to be developed, with hand picking unlikely to be economically viable in the long term. Recent submissions to the Rural Industries Research and Development Corporation to conduct a pre-feasibility study and to establish a research and demonstration plantation aim to address these issues and to develop the industry in the northern rangelands of Australia.

The interest shown by graziers throughout Queensland has been increasing over the last three growing seasons, with about six properties now supplying us on a regular basis. They have earned an extra \$3,000 to \$4,000 for their efforts so far. One of these properties has trialled ponding-style irrigation of their wild lime crop and this worked reasonably well. Unfortunately, hot dry winds and a large flock of corellas just prior to harvest reduced their yield substantially.

The best limes that we received last year came from the Roma district, where they had been fortunate enough to have about 450 mm of rain during winter. We marketed a total of 950 kg of wild limes over the 1994/95 summer, one third to one half of the domestic supply in Australia. The limes have predominantly been trialled in marmalades, but are also being used by many restaurants around the nation.

Native thyme has been another successful crop to date in which we have thus far filled the total Australian demand. This species has been trialled in a variety of pastas, breads, vinegars and sauces, and we are hoping to see a dramatic increase in demand over the next few months. It is quite promising as a plantation species and could offer good short term returns. Ulcardo melons, or native cucumbers, are also promising as a short term cash crop within a bush food plantation. The melon is only small, but has received a good response in use as a garnish by restaurateurs.

The best established bush food is wattleseed, with the current Australian demand in excess of 10 tonnes per annum. Wattleseed is roasted and ground into a flour where it is then used to make a variety of products: wattleseed anzac biscuits (served on Qantas flights), wattleseed linguini (pasta), coffee substitute (e.g. "wattleccino" instead of cappuccino), wattleseed icecream and wattleseed topping. Some of the major food manufacturers in Australia have expressed an interest in wattleseed, with its future seeming quite promising. Gundabluey (*Acacia victoriae*) is the most popular rangeland wattleseed and *A. holosericea* also has potential. The wattles bearing edible seeds could prove to be a successful plantation crop, yielding medium term returns.

A summary of the types of produce which are currently marketable, or have good potential, is given in Table 1.

Table 1. Some rangeland plants with commercial food value.

Common name	Edible portion	Time of harvest	Current value (\$/kg) (at the farm gate)
bottletree	seed	mid-late summer	12.50
bush banana	fruit	summer	n/a*
bush cucumber	fruit	mid-late summer	3.50
bush tomato	berry	summer	n/a*
emu apple	fruit	late winter-early summer	n/a*
native thyme	leaf	summer	55.00
wattle	seed	summer	5.00
wild lime	fruit	early summer	6.25
wild orange	fruit	mid-late summer	5.00

\* commercial potential but no current price

Trees such as the native lime, wild orange and bottletrees all yield a promising crop, but time to production could be as long as 20 to 30 years. It would be best to bring existing clumps of trees into production where possible, establishing the shorter term crops in the same area. For example, limes tend to grow in clumps. The existing trees could be connected to a dripper system, or perhaps ponded to take advantage of natural rainfall and runoff events. Further plantings of lime seedlings, as well as bottletrees and wild oranges could help to ensure long term production, and native thyme, cucumbers and wattles could add to the short and medium term production.

Unfortunately, overseas interests are already trialling wattles and other Australian natives to meet the expected demand for Australian native cuisine. This could mean that an aggressive approach to marketing is needed, including basing our own industry on sustainable plantations which mimic nature as outlined above. It will certainly mean that this new industry needs a firm direction and a planned approach to the future. This will be achieved to some extent by the recent formation of a bush food steering committee, comprised of the leading industry members and bush food and marketing experts.

The other main activity which we undertake as a business is to act as distributors of manufactured products. We have attempted to strategically target our retail outlets, giving Aboriginal Cultural Centres the preference to sell the range of jams, chutneys, pastas, vinegars, sauces and books which we can supply. Where there are no cultural centres, or the area is large enough to support more than one retail outlet, we have also targeted the main tourist centres. This has proved to be successful to date.

We have also had interest from a number of restaurants throughout Queensland, whom we have been supplying with bulk packages of the jams, chutneys and sauces, as well as a few other exotic items such as kurrajong grubs and emu swags (similar to spring rolls with an emu meat filling rather than the usual cabbage etc.).

We have a number of plans for the future. The most immediate one is to move from our spare bedroom to a new office and packing shed, which we should have achieved by the time this article goes to print. The most important, however, is to continue to stimulate interest in the bush food industry and to head towards the establishment of plantations based on good ecology and a sound market to provide a long term economic base for the bush food industry.

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# **Integrating Grazing and Biodiversity Conservation in Australia's Arid Rangelands**

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The arid and semi-arid rangelands are home to many of Australia's unique animals and plants. Unfortunately, not all of them have fared well since European settlement. In the worst case, one third of the mammal species that formerly lived in these zones are now extinct; many more species of plants and animals are in trouble.

Some problems which beset the native plants and animals of the rangelands are also problems for rangeland production. For example, feral grazing animals such as rabbits and goats are in direct competition with both native grazing animals and domestic livestock, and are a major cause of degradation of rangeland pastures.

There is increasing concern of the effect of pastoral industries on the natural environment in arid and semi-arid regions of Australia (e.g., Special issue of *The Rangeland Journal* 14(2), 1992). Declining distribution and abundance of many plant and animal species has been linked to pastoralism. But much of what is currently being said about conservation problems and pastoralism is based on perception. CSIRO scientists have begun research to determine how grazing affects native plants and animals in an attempt to clarify the problems in this debate. This article explains why this research is necessary and what is being done.

## **Why is Conservation Important?**

Biodiversity is a short-hand way of describing the variety of life. It refers to the variety of different species of plants and animals, to the variation among individuals of each species, to the variety of habitats that the species form, and to the interactions between individuals, species, and habitats. Biodiversity is more than just the number of species of plants and animals in an area and as such cannot be counted. Hence, the word biodiversity attempts to describe the biotic assemblage, similar to the way in which the word "ecosystem" has been used to describe biotic and abiotic characteristics of parts of the natural world.

In arid Australia, the two major landuses, pastoralism and tourism, both depend on biodiversity. For tourists, the natural diversity of rangeland plants, animals and habitats is the main attraction. For pastoralists, the natural diversity of plants, animals and land systems provides the resource on which the industry is based. The health and condition of these systems is dependent on a variety of organisms. At the most obvious level, a healthy cover of palatable perennial grasses is desirable for grazing animals. But, organisms other than

domestic stock have an impact on the condition of the landscape. For example:

- bacteria recycle and convert nitrogenous compounds into a form suitable for plants
- algal and fungal crusts in the top few mm of the soil surface stabilise soil and fix nitrogen
- termites remove and recycle dead grass, leaf litter and wood creating fertile patches where they work
- termites and ants create underground passages and nests which allow rain to penetrate deep into the soil
- ants move seeds around, often depositing them in places where they are more likely to germinate and survive, and
- lizards scrape holes in the soil surface where wind-blown leaf litter and seeds accumulate, and where seeds often germinate best.

## **Coping with the Arid-Zone Environment**

Organisms have a range of different ways of coping with the capricious dry and wet periods that are typical of inland Australia. Ephemeral plants grow and reproduce in response to adequate rainfall and survive dry periods as resistant seeds. These species are seen rarely but may make up a high proportion of the species and are large contributors to the primary production in a habitat. Perennial plants persist through dry periods and are the floristic units by which most habitats are defined. Their activity is reduced during dry periods but they are susceptible to mortality during very dry conditions.

Invertebrates can persist through unfavourable periods by avoiding or ameliorating the impact of harsh conditions. Resistant eggs, diapause of adults, or emigration to more favourable areas are three ways they avoid harsh conditions. Social insects such as ants and termites ameliorate the impact of harsh conditions by creating a modified environment in which to live. Among the vertebrates, reptiles and amphibians excel at persisting through a range of environmental conditions. They can persist with low food supplies and can be inactive in shelter sites or underground for long periods, waiting for conditions to improve. Small mammals also have some capacity to avoid harsh conditions by using torpor, a strategy similar to that used by reptiles. Birds and larger mammals can not use such avoidance strategies and must persist despite fluctuations in food supply and food quality through time. Highly mobile species such as parrots and some kangaroos may do this by moving large distances to areas that are more favourable. Others live in habitats that are generally more reliable, and still others just seem to tough-out the harsh periods.

What is apparent is that during dry times populations of some plant and many animal species may die-out over large areas that they occupied during wet and normal times. This widespread decline in population size and geographic distribution, particularly of animals, often includes areas that are designated as reserves. The long-term survival of species in a landscape that is so vast and so dynamic depends on the survival of core populations in places where they withstand prolonged drought. Core populations of a species may

survive in a range of different habitats, or in just a few pockets over huge areas. Our current thinking is that it is vital that species which become fragmented across the landscape during drought are able to re-populate areas where they formerly occurred after a drought is over.

For some conspicuous species such as medium-sized mammals, the drought-refuge habitats are obvious and sometimes of high scenic beauty. For these species and habitats, specially designated reserves have been set aside. But for most species we do not know what types of refuges or habitats are important during drought, and we do not know how different land uses affect the survival of different types of organisms. However, it is clear that there will never be enough land in reserves to protect the drought refuges of all species across the arid and semi-arid zones of Australia. Also, land outside reserves needs to be in favourable condition for organisms to spread out when good times come.

## Conservation: A Regional Objective

Because of the enormous natural fluctuations in the populations of plants and animals with the seasons, conservation outside reserves is particularly important. Conservation of biodiversity must be a regional objective and not something that is achievable on individual properties. A regional conservation plan will necessitate that some land be in reserves managed specifically for conservation, but also that there be a large network of land outside reserves where management is sympathetic to conservation objectives.

Since the predominant land use outside reserves is pastoralism, we need to identify what levels of grazing are compatible with allowing regional persistence of biodiversity, while recognising that not all native species will be present across all parts of a region, or during all seasons. We believe there is potential for integrating conservation of biodiversity with other land uses in the rangelands. This is the subject of our current research described below.

## Determining Grazing Impact

The main questions we are attempting to answer are:

1. to what extent does the intensity of grazing affect the composition, richness and abundance of native species? and
2. how does this vary in different types of rangeland landscapes and in different seasons?

## Scope

There are insufficient resources to conduct research in all the different types of Australian rangelands. Instead, research efforts are being focussed on two of the main types: chenopod shrublands (saltbush/bluebush); and *Acacia* woodlands (particularly mulga). Chenopod shrublands are predominantly found in southern Australia and mainly grazed by sheep. *Acacia* woodlands include the semi-arid woodlands of eastern

Australia and the arid and semi-arid low shrub woodlands of central and western Australia. They are grazed by sheep on the near-coastal fringes and by cattle in the interior and northern regions.

## Methods

In rangeland paddocks, the intensity of grazing decreases as the distance from permanent watering points increases. Only at very great distances from water (10 or more kilometres for sheep, and further for cattle) will there be land beyond the normal reach of livestock. Other water-dependent grazing animals such as goats, kangaroos and horses may travel farther than domestic stock. Thus, sites far from water are reference areas which support the biodiversity that a region can have under very light grazing.

We are basing our study around such reference areas. We use a variety of sources to help us locate lightly-grazed reference areas, representing the typical landscapes of different regions. When we have found good reference areas, we survey biodiversity at the reference area and at sites closer to water, representing increasing intensities of grazing. We can then compare the condition of these grazed locations with the reference site. This helps us determine how much effect grazing has had on each region's biodiversity.

Finding reference areas in the arid and semi-arid rangelands is not straight forward. We require the following characteristics in the gradients:

- that they be in relatively homogeneous habitat within one land system,
- that they extend around 10 km from artificial water for sheep, and around 15 km from water for cattle,
- that they do not have large populations of rabbits,
- that they do not have an old disused water point near the reference end,
- that they do not have populations of non-domestic grazing animals that cross a fence from a water point in a nearby paddock to graze in the reference area, and
- that they have a long (> 50 yr) history of grazing.

## Experimental study sites

To complement the survey of gradients described above, we are also measuring the effect of different stocking rates applied in experimental grazing trials. There are two long-running grazing trials that we can use. One is run by the CSIRO Division of Wildlife and Ecology on Lake Mere station, in north western NSW. The other has been run by the Department of Agriculture in Western Australia, on Boolathana station near Carnarvon. Surveys conducted in these trials have provided valuable information about the ways in which native animals and plants respond to different stocking rates.

## What we survey

At each gradient site we record perennial plants such as trees, shrubs and long-lived grasses because they are important in themselves, and because they help define the habitat that other species depend on. Ephemeral plants are less easily recorded because they are only present after rain so they have tended to be neglected in traditional surveys. Because the presence of ephemeral plants may only be indicated by seeds in the soil, we take soil samples during our surveys and grow-out the seeds in a glasshouse.

Mammals, birds and reptiles are all recorded in the field and released alive. Invertebrates such as ants, spiders, grasshoppers and beetles are collected from plants and from the ground surface and taken back to the laboratory where they can be identified.

We will attempt to sample each gradient twice: once under the normal dry condition, and again after a period of wet weather. However, wet periods are episodic and rare, so we are unlikely to get a "wet" sample from each gradient.

## Work to date

In the last two years we have sampled gradients in northern NSW, southern Queensland, southern South Australia, central Australia, the Nullarbor Plain, and the grazing trial at Boolathana.

Preliminary work has indicated some interesting results. For example, on the Boolathana grazing trial, reptiles were little affected by different grazing intensities. The situation for other animals and plants is more complex and other gradients will need to be examined before general patterns are clear.

## What next?

With financial support from the Federal Department of Environment, Sport and Territories (DEST), we will continue the surveys on new sites in Western Australia and Queensland over the next three years. If anyone knows of a site that might meet the criteria outlined above, we would like to hear about it. We hope to have some clear patterns in the results by mid 1996, and these are likely to be reported in publications by DEST and in ecological and rangeland journals.

With the results, we will be trying to develop methods for integrating conservation of biodiversity into pastoral management. We see the management plans for this integration applying across large areas of the arid and semi-arid rangelands. A possible template for a plan may be that of sustainably-managed pastoral lands as the main landuse with this landuse surrounding a network of reserves which vary in the degree of protection they offer native species.

The integrity of the biological systems remaining in Australian rangelands demands adequate conservation and we believe that this is dependent upon an adequate knowledge of the interactions between natural fluctuations in populations and the effect of domestic stock.

## KIMBERLEY PASTORALISTS TELL ALL

*Sarah Strutt and Steve Petty, Department of Agriculture, PO Box 19, Kununurra WA 6743*

*"...we're counting a 20% loss in bangtail musters....cattle can't always die up there....started vaccinating for botulism....increased total herd numbers by 3000 and branding up to 1200 more calves."*

*"Don't try and cover up bad grazing management practices with supplementation."*

*"With all-year mating, could not shift mortality rate below 10%."*

*"...total costs are about \$70/head."*

*"...good example of what can be achieved on badly degraded country when the stocking pressure is controlled."*

This is what you would have heard if you were at the "3 Day Field Day" held in the Kimberley back in late April. You would have seen pastoralists standing up and telling other managers why they had adopted particular management innovations, and the mistakes and gains they had made in doing so. The main focus of the field days was to allow Kimberley pastoralists who had developed successful management strategies in particular areas to share their management ideas and experience with fellow pastoralists. It was an occasion where hands-on managers held the floor - or more accurately, the rails in the cattle yard. Department of Agriculture staff were not on their usual "soap boxes" delivering talks in the traditional field day style.

The field days were a joint initiative of the Kimberley Beef Industry Development Team and Department of Agriculture and were conducted as a tour through the Kimberley region with the theme of *Breeding for Profit from the Kimberley Cow*. The specific aim was to provide efficient and productive information in clear and practical ways to help Kimberley pastoralists "cash in" on the lucrative live export market. It was critical that the program was well received or many industry members might be put off attending future field days.

Feedback indicated that the field days were a major success and suggested that most of the producers who attended would be changing at least some aspect of their management. About 75 people attended part, or all, of the 3½ days with 25 stations represented.

## What made it work

- \* Pastoralists from throughout the region were involved in both choosing the topics and sites that would be of most interest and relevance, and in planning when and how the days would be run.
- \* Station owners and managers outlined their management objectives and demonstrated their achievements.

\* Most participants travelled between sites on buses. This provided opportunities for pastoralists to exchange ideas and discuss technical aspects of topics covered at the various stops.

\* "Experts" and producers from Queensland and the NT provided valuable input through the presentation of some technical sessions and participation in discussions. These people reinforced some of the extension messages we are delivering and provided fresh ideas and focus on these topics. Being "outsiders", they tended to be more interesting and credible.

### **What we learnt from it**

Two salient messages emerged from the field days. Firstly, organisers need to have clearly defined objectives in order to effectively evaluate the success of an event such as this. Secondly, identifying specific audiences to target rather than using a "shotgun approach" should result in more effective transfer of information. There were some sectors of the industry that this event did not attract (as hoped) because we targeted a fairly "non specific industry audience".

Despite this failure, the field days were a success. They certainly demonstrated that having producers involved in the planning, organisation and presentation of topics is an effective way of getting extension messages across to the industry. The opportunity to bring both pastoralists and government people together also showed that we can learn a lot from each other.

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## **9TH BIENNIAL RANGELANDS CONFERENCE, PORT AUGUSTA - UPDATE**

### **Focus on the Future... the heat is on!**

*Merri Tothill, Dept. Primary Industries, PO Box 357, Port Augusta SA 5700*

We are very lucky to have a dedicated and inspired committee involved in organising this conference. All members have been working hard; booking the venues, organising transport, seeking sponsorship, planning field trips, developing the program and planning the social part of the proceedings. Much progress has been made, thanks to the industrious efforts of each sub committee. The first promotional brochure has been prepared and is being mailed to all interested parties. If you have not received one, please contact this office.

The theme of the conference is "Focus on the Future". A lot of thought has been given to the program and general conference format. We would like the conference to be an exciting, interactive event. Your ideas and comments will be sought in the very near future with the intention of firming up the program by the end of September 1995.

Please mark the 22nd to 27th September 1996 in your diary as reserved for this conference. We will share further information with you as we approach these dates.

## **LAKE EYRE RIVERS WORKSHOP**

*Greg Campbell, S. Kidman & Co., 183 Archer St, North Adelaide SA 5006*

At a meeting on the 16th and 17th May about fifty people met in Birdsville to discuss issues important to the management of the principal rivers of the eastern parts of the Lake Eyre Basin. An unseasonal 20-50 mm of rain stopped some people from attending, but a wide cross section of interest and stakeholder groups made it to Birdsville. The Queensland outback tourism representative got bogged somewhere, and the local pub is going to put catchment planning workshops on the list of annual events for Birdsville.

The workshop participants discussed many issues such as dam proposals, irrigation licences, tree clearing, the Great Artesian Basin, floodplain grazing, world heritage, and tourism to mention some. It was unanimously agreed that there was a need for improved consultation between stakeholders and interest groups, and a need for more coordination in approaches to land use and planning between South Australia and Queensland. The workshop participants resolved to form a catchment working group for the principal Lake Eyre Basin rivers (Cooper, Diamantina, Georgina/Eyre Creek).

The sixteen-member working group has been given a life of two years to develop a discussion paper with recommendations as to the best mechanisms for achieving coordinated catchment management for these three big rivers in two States. Relevant State Government agencies are represented but it is important to note that the working group is dominated by local and industry people. Indeed the initiative for the workshop itself came from Sharon Bell of Dulkaninna Station. Sharon was well supported in the workshop's organisation by members of the Far North Consultative Committee of the SA Department of Environment and Natural Resources. The Brook family of Birdsville played a pivotal role in providing and arranging accommodation and other details.

The catchment coordinating process for this vast basin is yet in its infancy but a number of committed local people seem certain to tackle the barriers of lack of finances, State legislation and lobby group positions, to achieve better land management and a stronger local input into decisions affecting the region's future.

*(Ed. In a covering note with his report, Greg offered the following additional comments. The current World Heritage debate has created some deep wounds but there are fortunately some tough hides and broad shoulders in the bush, with people still able to see their way into the future. It was good to see a few greenies share a beer with a few pastoralists and others and I was very happy with the eventual outcome. Unfortunately, I was delegated the role of convening the first meeting of the Working Group, which will be no small task. I look forward to further reports from Greg as this issue develops.)*

# **RANGELAND RESEARCH PRIORITIES IN THE SEMI-ARID ZONE OF EASTERN AUSTRALIA**

*Ron Hacker, Chairman, Rangeland Research and Development Group, c/- NSW Agriculture, PO Box 865, Dubbo NSW 2830*

The Rangelands Research and Development Group (RRDG) convened a producer liaison meeting in Bourke on 23 March 1995. The RRDG aims to coordinate research in the semiarid rangelands of eastern Australia and comprises research leaders from NSW Agriculture, NSW Dept. of Land and Water Conservation, CSIRO Division of Wildlife and Ecology, NSW National Parks and Wildlife Service, Queensland DPI and Queensland Dept. of Environment and Heritage. About 40 agency and industry representatives participated in the day, including pastoralists from western NSW and SW Queensland, representatives of the International Wool Secretariat, ABARE and other agencies not formally part of the Group.

The meeting followed a smaller gathering, also at Bourke, in December 1992 at which scientists and producers set priorities for rangeland research and development. The result was the publication of the RRDG's Background and Action Plan. The major areas of research opportunity identified at that meeting were:

## *Ecosystem management of pastoral land*

Goal: To develop grazing management strategies for sustainable pastoralism and incorporate them into appropriate extension packages for whole property management.

## *Rehabilitation of pastoral land*

Goal: To develop integrated rehabilitation procedures capable of restoring productive and sustainable land use practices in degraded pastoral lands.

## *Non-domestic herbivore management*

Goal: To develop effective and acceptable techniques for the management of non-domestic grazing pressure.

## *Cropping and tillage practices*

Goal: To develop sustainable crop/pasture rotations in semi-arid pastoral areas.

## *Post-cropping pasture establishment*

Goal: To identify pasture species and cultivars suitable for cropping rotations in the marginal cropping zone, and to develop appropriate pasture establishment and management techniques.

Other areas of opportunity identified, but with lower attractiveness and/or feasibility (considering the resources of the Group) were:

Socio-economics of pastoral and agro-pastoral enterprises.

Catchment implications of enterprise management.

Multi-species grazing management.

Conservation management in pastoral systems.

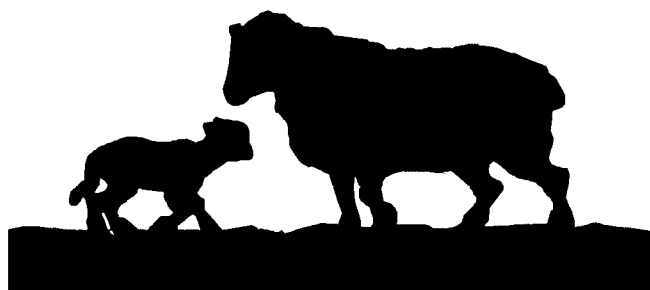
Conservation management in agro-pastoral systems.

Domestication and commercialisation of native flora.

The latest meeting provided an opportunity for the Group to report on progress achieved in the last two years, and to re-assess priorities. A range of speakers from the Group's member agencies outlined the areas of research opportunity listed above, and the extent to which each is now being addressed by research projects either within RRDG member agencies or elsewhere. The Group was able to report considerable progress in some areas. For example, a total of almost \$1 million is now committed to a range of research projects related to the management of non-domestic herbivores, specifically kangaroos and feral goats, in eastern Australia, compared to virtually nothing in 1992. About 75% of this funding is committed to projects within RRDG member agencies, particularly NSW Agriculture and QDPI. The meeting strongly supported a further major proposal in this area with CSIRO as the lead agency.

Considerable discussion occurred following each presentation, and in a general forum session after lunch. Overall the meeting re-affirmed the research priorities established in 1992. However, it also highlighted a need for more comprehensive economic assessment of research results, and for economic appraisals to be explicitly incorporated in project proposals. Strengthened interest was also evident in questions related to water sharing and total catchment management. Providing a scientific basis for policy related to water usage in the rangelands and adjacent catchments was identified as a priority by producers in 1992, under the heading "catchment implications of enterprise management". The importance of this area of research opportunity was reinforced at the March meeting. To meet this challenge the RRDG may need to extend its network to include agencies more closely involved with this field of research.

The meeting provided valuable feedback to Group members as well as informing producers of research progress. It was also a valuable exercise in helping Group members consider how such liaison could best be conducted in the future, especially in 1996 when the Group plans a more formal review of its action plan.



# IS THERE FOOD FOR THOUGHT FOR AUSTRALIA IN U.S. RANGELANDS?

*Paul Novelly, Dept. Agriculture, WA, PO Box 19, Kununurra  
WA 6743*

There appears a need for a broader perspective in range management: one taking social, economic, cultural and political factors as seriously as the biological. This perspective would not presume that the only view of rangeland is vested in biology, and accepts there is a difference between scientific analysis on one hand and a value-laden, emotive view on the other, and that neither is necessarily "correct".

Thanks to the Department of Agriculture, Western Australia, and a Churchill Fellowship, I spent 14 weeks in British Columbia and the western United States last year. It's an interesting time in North America, trying to come to grips with the agenda of public lands management. My aim was to study the debate over public grazing land management and multiple use, and see what relevance it had to Australia's rangelands and, in particular, the public land agencies.

The trip gave me a lot to think about, most of which I am still trying to digest. However, in going through what I gathered, it appears to me that there are lessons for Australian agencies and rangeland users in what's happening there. I don't offer any solutions, rather I raise some points that I believe government agencies and interest groups should consider.

Multiple use policy in the US has become "conflict resolution policy" with all this entails, and is both an invitation to, and a guarantee of, conflict. This includes conflict between competing uses within and between government agencies, while special interest groups continue to identify constituencies and influence politicians and bureaucrats. However, this isn't surprising, given that multiple use implies multiple objectives which must be satisfied.

Rangeland management waters in the US are fairly muddy at present. The public is often unaware of the impacts of a decision, or is being manipulated by one group or another (sound familiar?). Moreover, since "public" opinion is generally expressed by single-interest groups considered to be "the public" merely because they are not the government, agencies fear (sometimes with good reason) that they really represent small group self-interest, and dismiss them out of hand. The converse is where an agency is so fearful of making any decision for fear of "the public" that it does nothing.

The concept of "resource value rating", where the condition of an area is assessed depending on the possible uses to which it could be put, is relevant here. The actual or perceived lack of consideration by US agencies of anything other than commodity use erodes their credibility with some sections of the public. At the very least, this implies that agencies must be very aware of their need to document, to a far greater extent than at present, impacts of their decisions on land

resources. Lack of any firm evidence permits opponents of the commodity use of rangelands to oppose or at least retard any agency initiatives. Opposing interest groups endlessly disagree, leaving agencies the role of conflict mediation rather than resource management, particularly if their research function, and so their ability to gather more information, declines.

It became increasingly obvious to me while in the US that too much time was being spent on managing the debate, leaving insufficient time and resources for managing rangelands. Government agencies, while they are part of the general bureaucracy and are frequently involved in controversy, at times indicated a lack of commitment to their major function still being managing resources, not making controversy. They appear more concerned with due processes rather than the outcome, so that when they end up in court (as they almost always do) their procedures are not found to be at fault. Yet, land management agencies do need to be expert at managing the process, and all this entails. At the very least, agencies have to be far more aware of their own values and the values of their staff members, and how these affect their decision making. Having to defend one's interpretation of the law and the discretionary use of it is not an enviable position in which to be. However, it is one in which I see many Australian government agencies being drawn.

Is natural resource condition driving agency policy and activities, or is land management merely coincidental to the support of the prime commodity being produced from that resource? One of the primary criticisms of land management agencies by US environmentalists (and in Australia for that matter) is that they run "animal management" rather than land resources programs, accepting "trade-offs" between environmental and commodity decisions. Such criticism (and I am only saying it exists, not endorsing it) can only be diffused by developing plans that are truly multiple use if appropriate, and accepting that for some areas of land there is no alternative but to remove stock.

Multiple use as implemented by US government agencies is often criticised as simply a response of agencies to vocal groups, with decisions reflecting the relative group strengths. Others see many uses as difficult to define or representing naive and uninformed concepts about the resource. Both viewpoints hold a certain validity. However, where government agencies act as de facto branches of single user groups, and become fully (in many cases correctly) identified as part of that commodity group, they are considered "captured" by it.

Public land policy is often related directly or indirectly to this "capture conformity debate". This centres around whether public lands policy and decisions should be influenced by one or more interest groups or by professional ("scientific") judgement and statutory law. Government agencies become "captive" to their primary clientele according to some, while others suggest that it is public participation and the group process to which the agencies become captive. How to avoid this is not clear, but because of it agency decisions are often seen to reflect only part of the spectrum of interests, and consequently are subject to challenge.

One point constantly brought home to me, by both sides of the debate, was that had US ranchers been more proactive, directed and professional, and more open to the ideas of the environmental lobby (although not necessarily endorsing them), then the environmental momentum probably would have stopped or at least slowed. Instead, they did just the reverse, and the outcome is there for all to see. Perhaps the Australian pastoral industry should consider an initiative here.

But it's not a one way street. While there is a belief that the public should be involved in decision making on US public lands, there is no stated mechanism to achieve it. Agencies "encourage and facilitate" such involvement, but they must find the means to do so. Obviously, if non-resident stakeholders wish to have a role in rangeland policy decision making, then they must themselves be proactive, and help find the necessary resources.

Multiple use management challenges all stakeholders, particularly government agencies. Rangeland management will only be a success when all interest groups participate in the best interests of the resource. But, as one person said, "The world is subjective to the core". In the end, success will revolve around joint commitment to a desired resource status. Unless all the groups share a similar (although not necessarily identical) "vision" for rangelands, how they should be evaluated and what their current status is, then the argument will remain subjective and based on value judgements. If that point is reached, there is no answer.

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## STATE AND TRANSITION MODELS FOR RANGELANDS

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The proceedings of a Meat Research Corporation sponsored workshop on state and transition models have been published in *Tropical Grasslands*. The papers cover vegetation change in northern Australian rangelands, the value of S&T models for improved land management and enhanced communication about pasture and rangeland management, and include examples of models for the major rangeland communities of northern Australia.

Copies of the proceedings are available for purchase at \$A15.00 plus postage and packaging from:

TGS Book Sales  
306 Carmody Rd  
St Lucia QLD 4067

Postage and packaging costs are \$A4.00 for postage within Australia, and \$A4.80 (surface or sea mail), \$A9.60 (economy air mail) or \$A10.60 (full air mail) to overseas destinations.

## APPLICATION ABSTRACTS THE RANGELAND JOURNAL Vol 17 No 1 1995

### Changes in Grass Density in Australian Semi-Arid Woodlands

A.C. Grice and Idris Barchia

It is widely accepted that palatable perennial grasses are important in the sustainable use of the semi-arid woodlands of eastern Australia. A 5-year experiment using exclosures examined how grazing influences the densities of various perennial grass species. Shortlived grass species such as variable speargrass and wiregrasses dominated most sites. Their densities varied greatly over time reaching more than 200 plants/m<sup>2</sup> during good seasons but generally falling to low densities over summer. Populations of the long-lived woollybutt were more stable but occurred at densities that were generally less than 5 plants/m<sup>2</sup>. Populations of common bottlewashers fluctuated considerably but successive peaks in density were higher and this species increased more in ungrazed areas than in areas destocked of sheep or from which sheep, rabbits and kangaroos had been excluded. Within the short periods that pastoralists are likely to be willing or able to apply such treatments, destocking or even removing all herbivores is unlikely to have a large effect on the density of many palatable perennial grass species. The rate of response to resting pastures will depend on seasonal conditions.

### Speargrass (*Heteropogon contortus*) in Australia: Dynamics of Species and Community

A.C. Grice and S. McIntyre

Black speargrass (*Heteropogon contortus*) is widespread and important as a pasture grass and for its role in the ecology of tropical and subtropical Australia. It often dominates the understorey of *Eucalyptus* woodlands. We have reviewed the information that is available on black speargrass, emphasising the directions and causes of change in speargrass communities. Speargrass communities have changed greatly since pastoral settlement with black speargrass increasing at the expense of other species such as kangaroo grass *Themeda triandra*. Ecological studies sought to explain how speargrass came to dominate large areas but much research focussed on identifying pasture species, particularly legumes, that could replace or supplement what were seen as unproductive native grasses. Other efforts were directed at improving the generally low levels of animal production that resulted from extreme seasonality of forage quality and examining how animal production responded to various management actions. There is recent evidence that, since the 1970s, *H. contortus* has declined over large areas, but this process and its mechanisms are not well documented. The emphasis of research on improving animal production has not provided an ecological

understanding that readily explains the many changes that have occurred in the speargrass lands. The geographic range and variability in time of speargrass communities make it difficult to generalise on the basis of single site, short term experiments that investigate one or a few factors in isolation. There is an increasing awareness of the need for sustainable management of native and natural pastures, including the speargrass lands. Meeting this demand will require the maintenance of the perennial grasses of northern Australian savannas and an ecological knowledge that can predict change in a variety of circumstances and locations.

### **Natural Regeneration of Ground Storey Vegetation in a Semi-Arid Woodland Following Mechanical Disturbance and Burning. 1. Ground Cover Levels and Composition**

*P.J. Walker and T.B. Koen*

Natural regeneration on a cleared corridor in a semi-arid woodland in central-western New South Wales was studied over a period of twelve years following construction of a natural gas pipeline. Ground species composition and total cover were measured over the buried pipe, on areas from which topsoil had been bladed, and on adjacent undisturbed areas and some areas burned by a wildfire.

The disturbed areas took from 18 months to 4 years before total cover approached the levels of undisturbed or burned areas. After 12 years, pasture composition still differed markedly, mainly due to much lower occurrence of perennial grasses and forbs on disturbed areas. Burned areas were little different from undisturbed areas. Highly disturbed areas, such as pipeline routes and abandoned tracks, firebreaks and tank drains will regenerate in this type of country if there is a seed source available and when seasons permit. However, most of the regeneration, at least in the first decade or more, is likely to be by annual species, some of which are regarded as pastoral weeds. Ground cover in such areas will not persist well in drought conditions. It would seem a long time before perennial species again populate the disturbed areas.

### **Natural Regeneration of Ground Storey Vegetation in a Semi-Arid Woodland Following Mechanical Disturbance and Burning. Ii. Response of Individual Species**

*P.J. Walker, T.B. Koen and R. Gittins*

Natural regeneration on a cleared corridor in a semi-arid woodland in central-western New South Wales was studied over twelve years following construction of a natural gas pipeline. Ground species composition and total cover were measured over the buried pipe, on areas from which topsoil had been bladed, and on adjacent undisturbed areas and some areas burned by wildfire. The study indicated which species

increase and which decrease after major disturbance of these types. Similar trends would be expected following cultivation and cropping.

The largest proportion of species (46 of 75) declined on trenched and bladed sites, while 15 increased and 14 showed no clear trend. The main decreaseers were perennial grasses and small annual plants, while the main increaseers were the annual medics, blue crowfoot, and barley grass. The early colonisers can be identified and some idea gained of which plants will follow, given fickle seasonal conditions and soil seed sources. This information can be used in choosing rehabilitation options for disturbed areas in semi-arid pastoral, industrial or urban areas. A wildfire affected species occurrence for only short periods but did encourage some annual species. This supports observations that management burning for woody weed control does not have an adverse effect on ground storey vegetation.

### **Establishment and Survival of Pasture Grasses Surface-Sown into Wheat Stubble in North Western New South Wales**

*M.H. Campbell, A.M. Bowman, W.D. Bellotti, J.J. Friend and H.I. Nicol*

Large areas of western New South Wales have lost their native perennial grasses due to droughts, floods, overgrazing, competition from weeds and cultivation for crops. Re-establishing these grasses or replacing them with exotic grasses is most difficult in this environment. One method of replacement, the aerial sowing of perennial grasses (*Mitchell, Astrebla lappacea*; buffel, *Cenchrus ciliaris*; purple pigeon, *Setaria incrassata*; Bambatsi panic, *Panicum coloratum* var. *makarikariense*) into the stubble of the last crop in a wheat rotation, was examined in four experiments near Walgett between 1987 and 1990.

Grasses established in all four experiments with the help of higher than average rainfall. Best establishment occurred in the 1990 experiment (8 to 31 plants/m<sup>2</sup>) in response to 166 mm of rain in 12 days over a 29 day period in December-January 1990-91, followed by 10 dry days and then 60 mm of rain in February. There is only 14% chance (i.e. 1 year in 7) of receiving 166 mm of rain in a month in summer at Walgett. Based on these figures the prospects for aerial sowing grasses into stubble at Walgett would be restricted. However grass establishment was obtained in other years with lower rainfall indicating the chances of establishment may be better than 1 year in 7.

The experiments did not show that heavy stubble (5 to 7 t/ha) gave better establishment and survival of the sown grasses than low stubble (0.1 t/ha). Heavy stubble did improve the amount of moisture retained in the top 10 cm of the soil profile but this was not reflected in better establishment or survival of grasses. Under flood conditions, and where volunteer wheat from a heavy crop established with the sown grasses, heavy stubble reduced establishment.

Under non-flood conditions Mitchell grass and buffel grass had higher percentage establishments than did purple pigeon and Bambatsi panic. Under flood conditions the establishment of purple pigeon was highest and that of Mitchell grass lowest.

After the six months establishment period in each experiment, grass density declined over the 2 to 5 years survival period due to interspecific competition, frosts, competition from annual weeds in winter and heavy grazing in the 1987 experiment. The density of all populations was still declining at the end of observations.

Allowing mature plants to seed, by preventing grazing, facilitated seedling recruitment. All species recruited under favourable conditions with Bambatsi panic being least successful.

Although we could not show that the amount of stubble influenced establishment and survival of grasses under dry conditions, experiments conducted under more controlled conditions could resolve this problem. In addition, investigations into casual observations by author M.H. Campbell that surface-sown grasses establish more readily on cropped land than on pasture land (due possibly to greater soil compaction and better weed control in cropped land) should be undertaken.

### **Diet of the Red Fox (*Vulpes vulpes*) in South-Western Queensland**

*R.A. Palmer*

Examination of 74 stomach contents of foxes from a south western Queensland sheep grazing property between 1990-1992 revealed a diverse range of prey. Mammalian remains formed the bulk of the diet representing 64% of the total weight of food items and occurred in 80% of stomachs. Sheep and red and eastern grey kangaroo carrion were the main mammalian prey. Insects and other invertebrates were an important component of the diet contributing 16% and 10% of the overall weight, with respective frequencies of 91% and 51%.

Prey abundance was not monitored during this study, so little can be said of prey preference. However, differences identified in diets indicate that prey selection was strongly linked to availability. The main influences on prey availability were human activity, rainfall, season and to a lesser degree habitat.

In the majority of diet studies conducted in southern parts of Australia, rabbits were the staple prey, except in some areas where small to medium sized native species were the staple items. There were no mammals in this size range in the study area that could be classified as staple. Consequently the findings of this study differ considerably, because foxes relied heavily on mammalian carrion, supplemented by relatively high consumption levels of non-mammalian prey categories.

This research highlights the fox's opportunistic scavenging behaviour and ability to utilise a diverse prey base. Dingoes and feral cats exploit a similar range of prey, but the fox stands alone in its scavenging ability.

### **Land Condition in the Tropical Tallgrass Pasture Lands.**

#### **1. Effects on Herbage Production**

*John G. McIvor, Andrew J. Ash and Garry D. Cook*

### **Land Condition in the Tropical Tallgrass Pasture Lands.**

#### **2. Effects on Herbage Quality and Nutrient Uptake**

*Andrew J. Ash and John G. McIvor*

The effects of land condition (i.e. the state of health of the land) on herbage production, herbage quality and nutrient uptake were studied over 2 years at 10 sites on 4 soil types near Charters Towers (northeast Queensland) and Katherine (Northern Territory).

A numerical condition index was developed based on vegetation and soil characteristics. The vegetation characteristics (species composition and productive capacity) indicate the current state of the vegetation. The soil characteristics (erodibility, nutrient status and availability, partitioning of rainfall into infiltration and runoff) indicate the capacity of the soil to provide water and nutrients to plants.

At all sites in both years there was a strong decline in herbage production as land condition declined. Annual grasses increased and most perennial grasses decreased as condition declined although two blue grasses (*Bothriochloa ewartiana* and *B. pertusa*) were most frequent on plots in intermediate condition.

*In vitro* digestibility and nitrogen concentration increased, and phosphorus concentration decreased, in plucked leaf samples as condition declined. The effect of land condition on leaf quality was greatest during the wet season and least during the dry season. Both nitrogen and phosphorus uptake declined as condition declined.

The large decrease in herbage production as condition declines will lower carrying capacity although diet quality may be higher from land in poor condition.



# THE RANGELAND JOURNAL

## Special Issue on Grazing Management: 1996

Allan Wilson, *Journal Editor*, "Cal Col", Deniliquin NSW 2710

A special issue of *The Rangeland Journal* on the topic of **grazing management** is being planned for the second issue in 1996.

Grazing management is a core issue for rangelands. Whilst changes in land use have occurred, by far the greater area remains under grazing. Nevertheless the ideals that we have for the land and the standard of management expected from pastoralists and graziers is higher than ever before. At the same time there has been a considerable advance in our knowledge about the relationships between grazing, livestock productivity and land status. There has also been improvements in practical management systems, involving changes in stocking rate, better ways of managing drought and management of total grazing pressure.

This special issue will capture the essence of the new grazing management, covering matters such as stocking rates, drought management, pasture stability, cell grazing, optimising production in a variable climate and total grazing pressure. It will also include scientific studies on specific regional problems, as well as a number of property case studies.

Many of these papers have already been invited and will be written over the latter part of 1995. An overview paper with authors from USA, South Africa and Australia is also being prepared.

Other contributions are welcome. If you have a paper, whether it be theoretical, a review, a write up of some research, or a case study, please contact me by the end of August (write to the above address or phone/fax 058 823338).

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## MEET THE NEW COUNCIL

*The Federal Council of the Society has moved to New South Wales for the next two year term. Please note the new contact details inside the front cover. Here, the new Council members briefly introduce themselves.*

### Ron Hacker - President

All of the 25 years (is it really that long) of my professional career have been spent in rangeland management. My original training was in agronomy and I graduated with a B. Agr. Sc. from the University of Queensland in 1968. The following year I stayed on for Honours. In 1970 I joined the West Australian Department of Agriculture as an Adviser in

what was then the North West Division, which covered everything outside the wheat belt. Soon after I had my first real introduction to rangelands, on the now famous Gascoyne survey with David Wilcox, which soon gave me an appreciation of the complexity of natural systems and the management challenge they provide which is not to be found in controlled agricultural environments. Four years as an Adviser in the southern rangelands followed, based at Kalgoorlie, after which I was able to undertake PhD studies at the University of NSW on the ecology of two of the Goldfields rangeland types. On return to the west I was based at Kununurra, in the Kimberley region, for a further six years, being involved in a range of research, extension and monitoring programs. A transfer to Perth in 1985 then saw me coordinating the further development of the WA Rangeland Monitoring System. In 1991, I joined NSW Agriculture as Special Officer (Rangelands) before appointment to my current position of Program Leader (Rangelands) in 1992.

My career in rangelands has afforded me a wonderful experience of a large part of Australia, as well as the opportunity to undertake overseas studies and consultancies in the USA, Botswana and Ethiopia.

I am a foundation member of the Society, serving as Editor of the Journal from 1985-91, and subsequently as a member of the Publications Committee.

This is an exciting time to take over as President of your Society. The Draft National Strategy for Rangeland Management will be published later this year. When finalised it will be a defining document for the future of our rangelands, and one to which the Society has already made a significant contribution, both formally and through individual members. The new Council will be keen to provide further comment on the Draft, and subsequently to assist wherever possible in the further development and promotion of the policies and actions that the Strategy will contain, continuing the work of the Policy Group established by the last Council. This is an important opportunity for the Society and Council will give serious consideration to how best to exploit it. At the same time Council will strive to ensure that the Society fulfils one of the fundamental objectives of its founders - to provide a forum for dialogue between all those with an interest in the use and management of rangelands.

### Guy Fitzhardinge - Vice President

I was born into a pastoral family in central NSW, and sent to boarding school at the tender age of seven in Moss Vale and later Sydney. Leaving school I attended University, graduating in 1970 in Agricultural Economics, majoring in economics, farm management and agricultural economics. Following two years working in England, I worked at Adelaide University while enrolled in an MBM. However, due to the expansion of the family business I left and returned to work on the properties. The family business later expanded to western NSW, and hence my association with the rangelands.

Our family has a long history of involvement in the pastoral zone. A cousin of my father was the pastoral manager for Vestys for many years. As well, my great grandfather, C J McMaster, headed up the Commission of Inquiry into the Western Division of NSW in the late 1890s, and was later to become the first Western Lands Commissioner in 1902. Many of the challenges that we face in the rangelands now were recognised then, and reading through copies of the *Sydney Morning Herald* published between say 1895 and 1900, one can only be impressed at the depth of understanding and vision that many community people displayed at that time.

I am currently working for a family grazing business, as well as working on a PhD looking at the ethnographic relationship between the ecosystem and the social system in the rangelands. I am one of the two NSW representatives on the IWS Pastoral Zone Advisory Committee, and also a member of the RASAC Regional Development sub-committee. I am actively involved in Landcare, both at local and regional levels. In 1993 I was a Churchill Fellow, and toured Argentina and some of the rangeland States of the USA looking at technology transfer and woody weeds.

My objectives in the next two years association with the ARS are to promote the fact that the word "rangelands" necessarily includes people and communities. Historically, the social system and the ecosystem have been, and continue to be, inextricably linked in Australian rangelands. The ARS provides an ideal forum for the interchange of knowledge, ideas, attitudes and values in a friendly and non threatening environment. I should like to see the ARS, with its wide diversity of membership, become a recognised reference point for rangeland issues. Finally, I should like to maintain and foster the goodwill and friendship that appears to permeate the diverse membership of the ARS!

### **Bill Tatnell - Secretary**

After completing a degree in agriculture at UNE Armidale I began working in the semi-arid rangelands, first as a farm hand at Fowlers Gap, north of Broken Hill, and later as District Manager with the Department of Conservation and Land Management at Broken Hill. During that time I developed contour furrowing reseeding technology, developed mechanical control of rabbits as a focus for landcare groups and can lay some claim to focussing national attention on total grazing management.

My current position is Regional Operations Manager, Department of Land and Water Conservation, based in Dubbo. My current role is heading up a task force to update environmental assessment procedures in the Western Division of NSW, to manage community based regional planning projects and statutory and policy reform processes.

My ambitions are to live, work and play in the rangelands (next to a good surf break!) with a job as challenging as the one I've got now!

As a member of the ARS for over ten years I consider it is time for me to return back to the Society some of the benefits I have gained as a member.

### **Nick Milham - Treasurer**

I was born and bred in Sydney but have lived and worked in various parts of rural NSW or Canberra since 1983. My association with the rangelands and the ARS began in December 1991, when I took up the position of Rangeland Economist with the semi-arid group of the CSIRO National Rangelands Program in Canberra.

Although I have since joined the NSW Department of Agriculture and moved to Parkes, I have maintained both a personal and work-related interest in the rangelands and their management, particularly in terms of government policy. My most recent research in this area has been into the relative effectiveness of alternative, farm-level, strategic approaches to drought management.

My training is in the area of agricultural economics, holding a B. Ag. Ec. (Hons) and a M. Ec. from the University of New England, specialising in risk analysis, natural resource economics (including benefit-cost analysis) and agricultural policy. I have had previous experience as a treasurer, having acted in that capacity for a trade union and various sporting and social clubs.

### **Rob Richards - Subscription Secretary**

As a relative newcomer I have spent the last six years working in the rangelands of western NSW, after completing a Bachelor of Natural Resources at the University of New England. I developed an interest in rangelands while completing a thesis on Kinchega National Park near Broken Hill.

My work in rangelands has largely been involved with rangeland monitoring and rangeland education in urban schools. I am very enthusiastic about increased future information flow between rural and urban societies and the benefits for both sectors.

Currently I am employed with the Department of Land and Water Conservation (yes, yet another change in name!) being involved with the NSW Rangeland Assessment Program. I am also working on the Federally funded Drought Alert Program - in particular a pasture production model called GRASP.

I have been a committee member of the Western NSW sub-branch of the ARS for two years and I look forward to having involvement with the Council.

I enjoy flying single-engine aircraft, particularly in the rangelands where topography and weather are rarely a problem.

# AUSTRALIAN RANGELAND SOCIETY AWARDS

The Society has two awards to assist members with either:

- \* studies related to the rangelands, or
- \* with travel expenses associated with attending a conference (or some other activity).

Applications for each award close in November and any member of the Society interested in either award is invited to apply.

## Australian Rangeland Society Travel Grant

This grant is intended to assist eligible persons to attend a meeting, conference or congress related to the rangelands; or to assist eligible persons with travel or transport costs to investigate a topic connected with range management or to implement a program of rangeland investigation not already being undertaken. The grant is available for overseas travel and/or travel within Australia. It is not intended for subsistence expenses.

## Australian Rangeland Society Scholarship

This scholarship has the purpose of assisting eligible members with formal study of a subject or course related to the rangelands and which will further the aims of the Australian Rangeland Society. The scholarship is available for study assistance either overseas or within Australia. It is not intended to defray travel expenses.

## How to Apply

Members interested in either grant are urged to apply by submitting a written outline of their proposed activity. Applications should clearly address how the intended activity (i.e. travel or study) meets the aims of the Society. Applications should be brief (less than 1000 words) and should be submitted to Council before November 30.

## Conditions

Applications can be made at any time but will not be considered until the first Council meeting after the November 30 closing date. More than one travel grant and/or scholarship can be awarded but the maximum amount available for distribution with each award is \$2000.

Applications for the **Travel Grant** should include details of the costs and describe how the grant is to be spent. Details of any other sources of funding should be given. Those applying for the **Scholarship** should include details of the program of study or course being undertaken and the institution under whose auspices it will be conducted. Information on how the scholarship money will be spent is required as are details on any other sources of funding.

Applications for either award should include the names of at least two referees.

Finally, on completing the travel or study, recipients are required to fully acquit their grant or scholarship. They are also expected to write an article on their activities or experiences for the *Range Management Newsletter*.

## Eligibility

No formal qualifications are required for either award. There are no age restrictions and all members of the Society are eligible to apply. Applications are encouraged from persons who do not have organisational support.

Travel or study assistance can be made available to a non-member where Council considers that the application meets the aims of the Society, and is of sufficient merit.

## Overseas Travel or Study

There is a restriction on both awards for overseas travel or study assistance in that applicants must have been members of the Society for at least 12 months. Overseas travel can be to Australia, or study within Australia, by overseas members.

So, if you need assistance with travel or study expenses next year in relation to a topic connected with the rangelands, think about applying for a Society grant. Please note that Council has moved to NSW and the new Secretary's address can be found inside the front cover.

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## NEW MEMBERS

Antony Mackinlay  
7 Thomas Avenue  
Roseville NSW 2069

Alekay Bogusiak  
PO Box 170  
Longreach QLD 4730

Peter O'Reagain  
DPI Grazing Lands  
Management Unit  
PO Box 976  
Charters Towers QLD 4820

Bernard T Fitzpatrick  
PO Box 42315  
Casuarina NT 0811

Karen Healey  
Lot 1  
Brisbane Valley Highway  
Blacksoil QLD 4306

Rodd Dyer  
Katherine Research Station  
PO box 1346  
Katherine NT 0851

Janine Kinloch  
CSIRO  
PO Box 2111  
Alice Springs NT 0871

David C Atkins  
PO Box 1448  
Carnarvon WA 6701

Dr Romy Greiner  
21 Macdonnell St  
Yarralumla ACT 2600

Mr Ian Rankine  
2/7-9 Tabourie Close  
Flinders NSW 2529

W.M. Radford  
Wanna Station  
Carnarvon WA 6701

Mr & Mrs Richard Warwick  
Holowiliena Station  
Carrieton SA 5432

Henry W Eabensshade  
Pastoralists and  
Graziers Association  
277-279 Great Eastern Hwy  
Belmont WA 6104

# INCREASING THE SOCIETY'S CREDIBILITY AND DIVERSITY

*Sandra Van Vreeswyk, ex Honorary Secretary, PO Box 718,  
Victoria Park WA 6100*

At the 1993 Visions Workshop held by the former WA Council participants set strategic directions for the Society. One of these was to increase and maintain membership amongst all interest groups. Under this strategy Ian Watson and Dennis Barber proposed that free memberships be offered to targeted groups or individuals. Branches were asked to nominate four individuals or groups from each state. Those who received these memberships are listed below:

Ala Walqhust  
Rural Journalist  
Sydney Morning Herald  
P.O. Box 506, Sydney NSW 2001

Neil Inall  
Chair, Rural Adjustment Scheme Advisory Council  
Cox Inall Communications  
P.O. Box 893, North Sydney NSW 2059

Diane Tyson  
Rural Journalist  
2WEB Community Radio  
Bourke NSW 2840

Peter Austin  
Editor  
'The Land' Newspaper  
Richmond NSW 2753

Karen Benn  
Victorian Department of Agriculture  
PO Box 500, East Melbourne VIC 3002

Peter Kelly  
Coordinator  
Milawa/Carwarp Landcare Group  
Milawa VIC 3500

Northern Land Council  
9 Rowling St, Casuarina NT 0810

Mr Dennis Buckley  
ABC Country Hour  
GPO Box 9994, Darwin NT 0800

Landcare NT  
P.O. Box 344  
Katherine NT 0851

Mr Warren Snowden  
14 Leichhardt Terrace  
Alice Springs NT 0870

The Hon. M.G. House  
Minister for Primary Industries and Fisheries  
20th Floor  
221 St George's Tce  
Perth WA 6000

The Hon. S.G.E. Cash  
Minister for Mines and Lands  
14th Floor  
197 St George's Tce, Perth WA 6000

Phil Jennings  
President  
Conservation Council of Western Australia  
79 Stirling St, Perth WA 6000

Hon. I.F. Taylor  
Suite 3 Maritana Mall  
Kalgoorlie WA 6430

Mr Chris Evenson  
Warrego Landcare Group  
P.O. Box 149, Charleville QLD 4470

Kate Klem  
Longreach Landcare Group  
'Storm Hill', Longreach QLD 4730

Mr Lesley Marshall  
Aramac Landcare Group  
'Swan Lea', Aramac QLD 4725

Ronda Alexander  
Channel Landcare Group  
PMB Marion Downs, Mt Isa QLD 4825

Mr Marcus Moore  
Secretary  
Kingoonya Soil Board  
Bulgunnia Station  
CMB 31, via Port Augusta SA 5701

Sharon Bell  
Secretary  
Maree Soil Board  
Dulkaninna Station, via Marree SA 5733

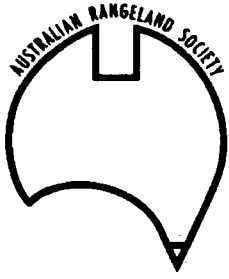
Secretary  
Eastern Districts Soil Board  
C/- Post Office, Burra SA 5417

Geoff Mills  
Secretary  
Gawler Ranges Soil Board  
Myola Station  
P.O. Box 181, Whyalla SA 5600

Mr Beat Odermatt  
Secretary  
North Flinders Soil Board  
ETSA, Leigh Creek SA 5732

Mrs Serena Williams  
Secretary  
Marla/Oodnadatta Soil Board  
Arckaringa Station  
PMB 4, Coober Pedy SA 5723

Mr Garry Sheperd  
Secretary  
North East Soil Board  
Manunda Station, Yunta SA 5440



# *The Australian Rangeland Society*

## REPORTS FROM THE ANNUAL GENERAL MEETING

### PRESIDENT'S REPORT

*Alec Holm, PO Box 718, Victoria Park WA 6100*

It is with pleasure that I present my President's report for the second year of the Western Australian term for the Council of the Australian Rangeland Society.

Firstly I personally thank Council members for their assistance and support throughout the past two years. In particular Sandra Van Vreeswyk, David Pearson and Anne Stammers who have had the job of the handling the business of Council which they have done with great diligence and commitment. I am grateful to the advice and support given by Immediate Past President Bill Low and Incoming Vice President Ron Hacker. I wish to especially thank Vice President Bob Symonds for his enthusiastic, and at all times realistic and practical, contributions without which the Council could not have functioned effectively and which made my position far easier to manage.

Council and the Society have continued to benefit from a very able Publications Committee chaired by Margaret Friedel with outstanding support provided by Allan Wilson (as Editor of the Journal), Gary Bastin (Editor of the Newsletter) and Malcolm Howes (Production Manager). Publication of the Journal and the Newsletter has been identified by members as crucial to the success of ARS and the efforts of these people in continuing to improve the publications of the Society is very highly regarded by all members.

The Society is also well recognised for holding first rate conferences and the Katherine conference, managed by Tom Stockwell and his team, established new standards for the conduct of these events which are so important for the continued development of the Society. I again thank all members who contributed to the success of this conference and at the same time wish Jim Cawthorne and his organising team for the Port Augusta conference, all the best for 1996.

The 1984 International Rangeland Congress in Adelaide was a significant event in the history of the Australian Rangeland Society. Similarly the 1999 Congress to be held in Townsville will also have a major impact on raising the profile of rangelands in Australia and of the Society. Council is working towards this and have commissioned Ken Leighton to mount a campaign to promote the Society and the 1999 Congress at the Salt Lake City Congress in July 1995. We hope to increase the International membership in ARS and their contribution to the Journal. This should strengthen the case for the Journal being included in the *Current Contents*

International Abstracts which is important in attracting high standard journal contributions. We have allocated about \$5000 to this promotion.

Raising the profile of the Society was one of the major goals of this Council set at the Visions Workshop in 1993. Our goal is to raise the standing of the Society so that it is recognised as a source of informed comment on the use of rangelands. To this end we contributed to the National Rangelands Management Strategy. However, it was noticeable that when funds were allocated to community groups to prepare submissions to the Strategy it was the Arid Lands Coalition and not the ARS which received these funds. We have made progress in this area of representing all rangelands users, but not enough. There is an opportunity for ARS to work with the National Rangelands Management Strategy working party in developing action plans for the implementation of the Strategy. The 1996 Biennial conference may be a good place to start. and we are exploring options with the Organising committee.

In line with the objective of providing authoritative comment and "*Speaking for the Rangelands*" Council have canvassed members to identify those who can provide informed comment on a range of topics and to whom we can turn for rapid input or media releases as required.

Another objective of this council was to "*ask what else can be done with rangelands*" and to "*assist and interact with the wider community to encourage appreciation of rangeland values and issues*". Together with the Western Australian branch of the Society we are currently undertaking two surveys of the wider society's appreciation and values of rangelands and how they are used. The WA branch was successful in obtaining a National Landcare Grant for \$3000 and together with \$1500 of Branch funds have commissioned Sue Nichols of Murdoch University to conduct a face to face survey, while Council has provided about \$5000 to the Morgan Gallop Poll for three questions to be included in their National poll. These two surveys will provide, for the first time, data on how society views the rangelands and provide ARS with a new focus for its activities.

In reflecting on the past two years, I am encouraged by what has been achieved but at the same time I realise that a lot more could have been done; one only has to remember Barney Foran's comments at the Katherine Conference to realise that the Society has not "come out in lights". It is apparent to me that, in this increasingly busy and competitive world, few people have the time to provide voluntary support to activities which are "non-core", for example in assisting in the development of a policy statement for ARS. We are all in the same boat and it is reality that the ARS will have to face as

we move forward to the 21st century. You get nothing for nothing; if we want something done, generally we are going to have to pay for it! In this regard the ARS is well placed in that it has accumulated a good asset backing which is a hidden strength of the Society that should be used more effectively to achieve our objectives.

Finally it is with some regret that I pass over the Presidency. It would have been great to have seen through the surveys that this council initiated since they will, I am sure, have a large impact on how the ARS directs its activities in the coming years. Nevertheless I have enjoyed my term and leave knowing that we have both challenged our thinking on what the ARS is all about and left in train projects which will show the results of this thinking in the years to come. I wish Ron Hacker as the Incoming President well and I am pleased to be able to contribute to his committee, as Immediate Past President, over the next two years.

## TREASURER'S REPORT

*David Pearson, PO Box 718, Victoria Park WA 6100*

*(Ed. As reported in the AGM Minutes.)*

David Pearson presented his report with a grand sense of pleasure and relief. He thanked Bruce Strong the outgoing Treasurer for preparing the accounts and records when Council came to Western Australia, and thanked Anne Stammers and Sandra Van Vreeswyk for passing on cheques with the required details.

David thanked the treasurers of the branches for providing their financial statements. The branch accounts have been included in the audit for the first time. As a consequence the audit has taken much longer and has not yet been finalised. A draft audit statement will be presented at this meeting.

David presented the income and expenditure statement for 1994 (see attachment). The income was much higher in 1994 than in 1993 because of the Biennial Conference held in 1994. The Society may have a deficit in the years without conferences, but the conferences make a healthy profit in the years they are held. David presented a summary of accounts for the Katherine conference.

David read the report from the trustees of the Travel Grant account. He thanked David Wilcox and Ray Perry for administering the Travel Grant funds.

David thanked Neil MacDonald for preparing the accounts of the 1994 Biennial Conference in Katherine and then welcomed Nick Milham, the incoming treasurer, to the task ahead.

*(Ed. Details from the Auditor's Report will be included in the next Newsletter.)*

## Draft Income and Expenditure Statement for the Year Ended 31 December 1994

	1994 \$	1993 \$
<b>INCOME</b>		
Conference Income	71,836	130
Subscriptions	27,851	24,530
Reprint Sales	2,460	1,485
Interest	5,480	5,183
Other Income	20	831
	<u>107,647</u>	<u>32,159</u>
<b>Less EXPENSES</b>		
Accounting	500	294
Audit Fee	1,500	625
Bank Charges	177	279
Conference Expenses	64,072	3,755
Depreciation	2,728	896
Freight & Postage	-	766
Honoraria - Production Manager	3,000	3,000
Honoraria - Others	3,000	3,000
Production of Journal	15,523	11,606
Production of Newsletter	7,176	7,716
Fees Paid	-	90
Publication & Printing	296	8,369
Subscriptions	-	500
Travel	1,291	6,115
Scholarships & Grants	1,900	3,000
Stationery	-	150
Petty Cash	100	250
Reimbursements	-	-
	<u>98,263</u>	<u>50,411</u>
<b>Surplus / (Deficit) for the Year</b>	<b>\$9,384</b>	<b>\$(18,252)</b>

## SECRETARY'S REPORT

*Sandra Van Vreeswyk, PO Box 718, Victoria Park WA 6100*

During the current National Council's two year term of office Council has held 18 meetings, approximately every 6 weeks. We have covered a large number of issues in the agenda of these meetings. Some of these issues were:

- \* Implementing outcomes from the Visions workshop, such as offering free memberships to targeted individuals and groups to improve the Society's diversity and credibility. Four individuals or groups were nominated for each state by the branches, or by members in states without branches.

- \* Awarding one Travel Grant and two Scholarships in 1993, and three Travel Grants in 1994.
- \* The success of the bid to hold the 1999 International Rangeland Congress in Australia, and the selection of Townsville as the venue for the Congress. Ray Perry and David Wilcox were appointed as Honorary Consultants to the Council to assist in planning and implementation of the 1999 International Rangeland Congress.
- \* Proposing the development of a promotional package for the Society at the 5th International Congress in Utah in July this year, and seeing this go from a proposal to a package which is underway.

The position of Honorary Secretary has made me aware of the diversity of community interest in Australia's rangelands. I believe the Society's most important role is to keep the relatively few people who work in, and/or are committed to the rangelands in touch. I am grateful for all the contacts made, and I would like to thank the people who were involved in the foundation of the Society.

When Council first came to Western Australia, the WA Department of Agriculture gave its support to employees who are involved with the Australian Rangeland Society. I would now like to acknowledge this support which has come in the form of meeting venues, use of computers, printers, phone and fax.

I would like to thank my husband, Robert Dye, for all his help over the last two years in tasks such as opening and sorting mail.

Also I would like to congratulate the incoming Council members, and would like to remind all members and others who deal with the Society that these people have full time occupations and have volunteered their time for the Society.

With regard to the future, I hope the Society can be a valuable contributor, at all levels, to the future sustainable use of Australia's rangelands.

## SUBSCRIPTION SECRETARY'S REPORT

*Anne Stammers, PO Box 718, Victoria Park WA 6100*

The new computer system which was set up at the beginning of 1994 is now working smoothly after a few minor hiccups. The renewal notices for 1995 subscriptions were posted in January to members who had been financial at any time during the previous three years. Again this resulted in the bulk of subscriptions being received in the first three months of the year.

Subscription rates for all membership categories were increased in 1995. "Individual" or "Family" went up by \$6 for the full membership and \$3 for part membership. The "Company" and "Library" categories increased \$10 for the Journal and \$10 for the Newsletter. There were no complaints received regarding the higher rates.

As at 25th May 1995, memberships totalled 520. Included in this figure were 25 free memberships which were awarded to various organisations in each state in an effort to further promote the society. Also included were five Honorary Fellows, five Society Officers, the Auditor, three Statutory Library Deposits of Publications and 481 Ordinary Members. The following table summarises the break-up of the ordinary memberships.

Member Type	Subscription Type			
	Journal & Newsletter	Journal	Newsletter	Total
Individual	314	-	57	371
Company	38	-	2	40
Library	21	45	4	70
Total	373	45	63	481

During the period June 94 to May 95, 40 new members joined the Society.

Again I would like to take the opportunity to sincerely thank the Secretary, Sandra Van Vreeswyk, for her assistance and thoughtfulness during the year. My work would have been impossible to complete without her help.

The new renewal form contained a section asking members where their main areas of interest lie and this year 287 members replied. Many had more than one interest area but unfortunately the system can only accept one for each member. The following table summarises the interests of our members.

Main Area of Interest	No. of Members with this Interest
Farming / Pastoralism	96
Consulting	11
Teaching	13
Business	1
Research	84
Extension / Advising	28
Administration	9
Environmental	42
Other	3

## REPORT OF THE PUBLICATIONS COMMITTEE

*Margaret Friedel, CSIRO Division of Wildlife & Ecology,  
PO Box 2111, Alice Springs NT 0871*

The Publications Committee met during the Katherine Conference last June, and was joined by Council President Alec Holm and Associate Editor Wal Whalley. This meeting laid the groundwork for activities that have continued in the subsequent months.

At the request of the meeting, a sub-committee was formed to investigate the option of increasing production of *The Rangeland Journal* to three issues a year. The sub-committee, with David Wilcox (Convener), Dave Pearson (Council Treasurer) and Malcolm Howes (Production Manager), explored the costs and benefits. While there was no support for an immediate increase in the number of issues, the implications for future increases in contributions and subscribers were clarified.

Professor John Holmes of the University of Queensland edited the Special Issue for the December 1994 issue of the Journal, entitled "Contemporary Explorations: Values, Goals, Needs and Expectations of Rangeland Users". It was an excellent issue and John is to be congratulated. The task was made difficult for both John and Malcolm by tardy authors.

The next Special Issue, planned for December 1996, is being edited by our Journal Editor, Allan Wilson, and has the theme of grazing management. Allan has already had a number of positive responses to invitations to potential contributors.

David Freudenberger has joined us as an Associate Editor, following Steve Morton's resignation. We welcome his contribution to the Journal.

Production problems which affected the Special Issue have been addressed, and Malcolm Howes expects the June issue to be on time and of good quality. Amongst other quality checks, he has employed a professional proof reader. He has also worked to streamline the printing of reprints.

The Society and its publications will be actively promoted at the IRC, as mentioned by Alec Holm. Allan Wilson has received funding support from the International Wool Secretariat to participate, and other Committee members will also take part. Allan has already supplied numerous ideas on promotion to Council. He has also arranged to meet with Society of Range Management personnel, to discuss mutual interests and in particular the prospect of including *The Rangeland Journal* in their bibliographic data base.

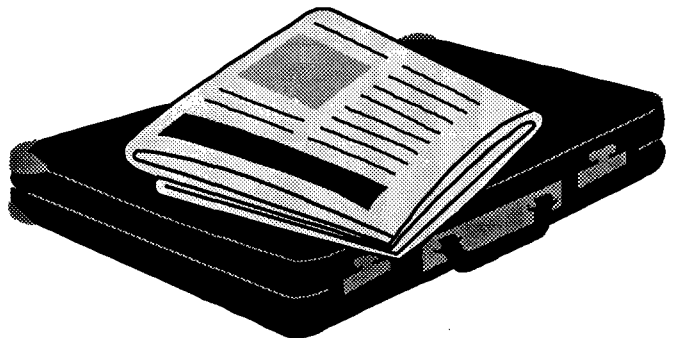
In view of these activities, and after discussion with some Committee members, I deferred any move towards *Current Contents* listing for the Journal until next year. Malcolm Howes, who had been part of earlier bids, felt our case was no stronger than past attempts and, since the January issue had been late, a premature bid might be counterproductive.

*The Range Management Newsletter*, edited by Gary Bastin, continues to be of high standard. Gary is efficient and conscientious, with the result that the Newsletter appears regularly without any apparent problems. The seeming ease with which the Newsletter is produced is a credit to Gary's experience and an enormous amount of hard work. Amongst the diversity of contributors he has enrolled, he has gained a Canberra contact, Mark Howden, to report on policy developments.

Two matters took time to resolve, but are now established for future reference. One was guidance requested by Allan Wilson, on how long the Journal Editor should retain correspondence. Approaches to other journals indicated that a period of two years was reasonable, and no more than five, and then only if space allowed.

The second was the form which proceedings of our biennial conferences should take. Previously, they have been produced as uncitable Working Papers. I have now detailed the requirements of citable Conference Papers and obtained a new ISSN. The information was sent, together with Gary Bastin's guidelines for future editors, to the organisers of the Port Augusta conference. Copies will also be held by me, for future reference.

Once again, I acknowledge with pleasure the contributions of the team which makes the Society's publications what they are: Allan Wilson, Malcolm Howes and Gary Bastin, all members of the Publications Committee and Associate Editors. I also thank Council for its support, and for doing its best to raise the profile of the Society and its publications. It is important to recognise and acknowledge how much is achieved for the Society by people who are fully committed already, and yet find time to contribute.



## AUSTRALIAN RANGELAND SOCIETY MEMBERSHIP APPLICATION FORM

Please complete and return to the Subscription Secretary, Rob Richards, PO Box 235, Condobolin 2877 NSW.

I, [name] .....

of [address] .....

.....

..... Postcode .....

apply for membership of the Australian Rangeland Society and agree to be bound by the regulations of the Society as stated in the Articles of Association and Memorandum.

I enclose \$..... for full/part\* membership for an individual/institution\* for the calendar year 1995.

\* delete as appropriate

Signature..... Date.....

### Membership Rates:

	Australia	Surface Mail	Overseas Air Mail
<b>Individual or Family -</b>			
Full (Journal + Newsletter)	\$46.00	\$56.00	\$66.00
Part (Newsletter only)	\$23.00	\$28.00	\$33.00
<b>Institution or Company -</b>			
Full (Journal + Newsletter)	\$75.00	\$85.00	\$95.00
Part (Newsletter only)	\$35.00	\$40.00	\$45.00

### Note -

Membership is for the calendar year 1 January to 31 December. All rates are quoted in AUSTRALIAN currency and must be paid in AUSTRALIAN currency.

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### For Office Use Only:

Membership Number.....

Date Entered in Member Register.....

Date Ratified by Council.....