



## *The Australian Rangeland Society*

### RANGE MANAGEMENT NEWSLETTER

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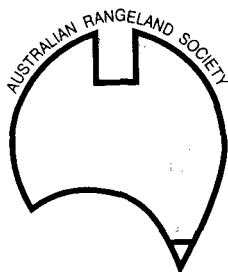
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# **Range management Newsletter**

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## FROM THE EDITOR

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

Welcome to another edition of the *RMN*. This issue has a Background Paper for the 9th Biennial Conference of the Society to be held in Port Augusta in September. I thank John Maconochie for putting together this substantial part of the Newsletter for me. The paper sets the context for the conference theme *Focusing on the Future* and I urge you all to read the paper, even if you are not able to attend the conference. At the end of the Background Paper, Martin Andrew provides a taste of what to expect during the conference - including our involvement in an "exciting and rewarding 'thinking-adventure'". In another article, Merri Tothill supplies further information about the conference organisation - including an innovative program of activities for the kids of conference delegates. For those who forget to bring this Newsletter along to the conference, extra copies have been printed. This means that the background material will also be available for conference delegates who are not (yet) members of the Rangeland Society.

Rabbit Calicivirus Disease (RCD) has been very topical over the last nine months. In this issue, we have a first-hand account by David Lord of how the disease has worked on one station. Such anecdotal accounts of the disease's spread and effectiveness at a local level contribute greatly to scientific understanding at a more regional and national level and I am sure that agency staff are capitalising on these local sources of knowledge and information where they exist.

At the end of his article, David asks that our Society work together with government agencies and landholders to lobby governments for continued assistance with rabbit control - rightly recognising that RCD alone will not eliminate rabbits. David also urges that we do more to inform the urban community about this environmental scourge. The ARS recently released a Press Statement (included in *RMN* 96/1) calling for the earliest possible release of RCD. While some Society members are no doubt actively involved in the rabbit issue through their professional and business interests, we as a Society perhaps should do more to lobby for extra funding and resources to control this pest. I am sure that this is an issue which Council, and its Policy Group, have thought about.

Other major articles in this issue deal with changes recorded at photopoints in central Australia over a 30-year period and community action to control a plant-induced disease of cattle in the Marree district. We also have reports from the recent AGM, a book review, report on an ARS scholarship and other snippets that should be of interest to members.

Pleasant reading and please keep your contributions coming. Remember that without you, the membership, having something to say I cannot produce this Newsletter. My cut-off for the next issue is the end of October.

## RABBITS, MYXO AND RCD

David Lord, Thackaringa Station, via Broken Hill NSW 2880

Thackaringa is a wool-growing property lying in the Barrier Ranges between Broken Hill and the South Australian border. I am the fourth generation in my family to manage the property after my great grandfather settled here a decade before the Broken Hill ore body was discovered.

Rabbits were first observed in the area in 1880. My great grandfather, J.V. Lord, and his peers quickly recognised what pressure the rabbit was putting on the environment. Records from Thackaringa, July 1886, show 400 pounds being spent on rabbit control in that month. This would equate to a manager's annual salary in today's terms. By 1892, to quote again from our records, "the country is overrun with rabbits, which also applies to neighbouring stations".

The section of the now dingo-proof fence which runs along the SA-NSW border to Cameron's Corner, then east along the Queensland border to Hungerford, was originally a rabbit-proof fence - built in a vain attempt to stop the tide of rabbits. In fact, part of Thackaringa is fenced by a "rabbit proof" fence which was another vain attempt to save the country from the ravages of this unstoppable pest.

Then in the early 1950s myxomatosis was released. This relieved what was an enormous unmanaged grazing pressure. Species such as Sturts desert-pea (*Swainsona formosus*, formerly *Clanthus formosus*), which had become extremely rare, began to be observed again on a regular basis and kangaroos, which were uncommon, increased in number in a short space of time to the high population which we have today.

The high rainfall event which much of inland Australia experienced in 1973-4 seems to have been the trigger for the regeneration of many perennial species. With more ground cover, there was better absorption of rainfall and hence more vegetation. The effects of myxomatosis began to snowball and we were partly returning to a better balance of natural vegetation.

### Rabbits on Thackaringa

We have an average warren density on Thackaringa of one warren to 2.5 ha. If only one rabbit lived in each warren, that population would be high enough to prevent the regeneration of native seedlings (rabbits having a preference for seedlings). So despite the very exciting regeneration process I have witnessed in my lifetime, particularly my working life, which began in 1972, the population of rabbits has hampered that process. In fact some species are being threatened by rabbits. Purplewood wattle (*Acacia carnei*), for example, has recently been placed on the Threatened Species List. I have seen stands of this tree die from rabbits burrowing under the canopy and attacking the root system. Again, any suckers are lost due to the preference that rabbits have for this more succulent growth. Loss of native vegetation is only one side of the story - 13

species of native mammals have disappeared in the Broken Hill region since European settlement and rabbits have to be implicated in that decline.

We embarked on a warren ripping program in 1988 and have ripped in excess of 5,000 warrens since then. This has been very successful, and done properly is nearly 100% effective (see box). However given the best-case scenario, it will take over 30 years at that rate to get the last warren. Do we have this much time?

We have strategically released Spanish rabbit fleas at 13 sites on Thackaringa to spread myxomatosis more effectively, hoping to get total coverage of fleas in 2.5 - 3 years. Certainly the early release sites have been very successful, with an unseasonal outbreak of myxomatosis occurring in September 1995.

## RCD

Then on November 1 last year, Rabbit Calicivirus Disease (RCD) arrived. This would have to be the most significant event to the natural environment for nearly half a century (since the release of the myxoma virus). Within two weeks around 80% of the rabbit population died. It very quickly and quietly dispatched over 0.5 million rabbits, with the only evidence being maybe one carcass for every three warrens and a very strong stench from within the warrens. (This is a different and stronger stench than when myxomatosis has a good kill as the carcasses have a higher moisture and fat content because death is quick.)

On odd occasions we would find a "battle zone" where maybe up to 20 rabbits had died on top of the warren. One can only assume they were sitting around in the sun and all died in a short space of time - apparently all having contracted the virus at about the same time.

The above two paragraphs support the view that death is quick. Of all those that the disease claimed, we did not see one rabbit actually dying or near death. Only healthy or dead rabbits were observed.

Over the next six weeks the rabbit population continued to decline as rabbits succumbed to RCD or myxomatosis - reducing the population to approximately 5% of the original population in October 1995. By January 1996 one or two rabbits, if any, were seen per warren. This population seems to have remained fairly static on average since then. However, in some areas there appears to have been a continued slow decline in rabbit activity, whereas in other areas up to 50% of the entrances to warrens are being used.

Sixty millimetres of rain fell on Thackaringa two weeks before RCD arrived and a further 12 mm were recorded ten days after its arrival. The vegetation responded in a way I had not seen before. Foliage on the trunks of rosewood (*Alectryon oleifolius*, formerly *Heterodendrum oleifolium*) went right to the ground in luxurious bunchy growth and suckers were also common. Sadly though, I have since witnessed much of this regrowth

## Warren Destruction by the Pine Creek Rangecare Group

Our Rangecare Group has been using a Komatsu D50A crawler tractor of 120 HP to rip rabbit warrens. This bulldozer has direct-drive transmission, which has proven to be 60% more efficient than the torque-converted transmissions which are usually associated with earth-moving machinery. The power seems to be adequate to pull five ripper tines to a depth of 900 mm. Maximum spacing between tines must not be more than 600 mm. We use Keech Castings winged ripper boots to help break up the warren structure and this eliminates the need to cross-rip.

We can rip 20 warrens an hour at \$4.50 per warren (costed on the basis of plant hire). Members only rip when it is hot and dry (i.e. December to March) because:

- Rabbits are already stressed.
- The dry soil readily collapses making it virtually impossible for rabbits (or foxes) to dig their way back into warrens. We have seen attempts of animals digging down to the 900 mm ripping depth but the soil just keeps running in around them like fine sand.
- Any rabbits left on the surface will be more likely to succumb to either fox predation or the elements than when ripping is done in the more temperate months.

The most common cause of warren re-opening is not ripping a sufficient distance beyond burrow entrances.

## Logging Warren Positions

We are now using a global positioning system (GPS) to locate and mark warrens. Whereas in the past, we had to flag warrens a few days ahead of the tractor, we can now find the warrens at any time of the year. Their locations can then be made available to the operator, increasing the work rate of the machine and reducing the ripping cost per warren.

I recently logged 4,000 warrens, then downloaded their locations into a computer-based geographic information system. Thus far, we have ripped 500 of the 4,000 warrens and the GPS information is proving extremely useful to quickly locate warrens as the ripping operation proceeds.

slowly disappear through grazing by remaining rabbits. I am disappointed also that very few purplewood wattle seedlings have attained any height - most being grazed by rabbits. This tree and rosewood generally grow in soil types favoured by rabbits.

However, many other perennials germinated and established themselves, with only the odd one being lost to a stray rabbit. Examples include bladder saltbush (*Atriplex vesicaria*), low bluebush (*Maireana astrotricha*), pearl bluebush (*M. sedifolia*), black bluebush (*M. pyramidata*) and butter bush (*Pittosporum phylliraeoides*).



RCD first appeared in the Barrier Ranges, which run north-south through the centre of Thackaringa. It filled in areas which it seemed to have missed initially, especially immediately west of the ranges. My theory is that the ranges presented a physical barrier to the vector - in much the same way plague locusts congregate against ranges while trying to get over them.

We also had an abnormally high bush fly population during the spring. This, coupled with green vegetation, may have produced the conditions needed by RCD to spread - I don't know. But as the season dried off in December, so too did RCD begin to slow down. The high rabbit population at the time of RCD's arrival also made the kill fairly dramatic.

It would appear that attempts to spread RCD by artificial means to date have failed. I strongly believe that there needs to be a combination of factors for successful spread - factors which humans cannot manipulate. Therefore it is imperative that a good understanding of what these factors are is made at the local level and then on a district and regional basis. Following that, it needs to be understood when those factors will be present. This will require a good deal of liaison with farmers and graziers by agency staff. Once this information is gained, an informed decision on when to release RCD in a district can be made.

Fox and cat populations also need to be addressed in the correct manner and again this will require a close relationship between landholders and agency staff. So too, do kangaroo numbers need to be watched - work already done in "rabbit free" areas suggests that when rabbits are removed, kangaroo numbers can increase alarmingly. This means that the kangaroo population also needs to be managed to control total grazing pressure.

For those who think farmers will only run more livestock - rest your case. Farmers are pretty smart people and they know that would be foolish. Our landcare group (the Pine Creek Rangecare Group Inc.) has ripped in excess of 50,000 warrens in the last seven years and there are no more livestock in the area as a result.

## After RCD

Our family always knew that RCD would not be the "magic bullet". Despite the huge impact it has had, there are still sufficient rabbits left to do considerable damage to the environment. As I said earlier, we have an average density of one rabbit warren for every 2.5 hectares and if only one or two rabbits live in each of those warrens it is still a lot of rabbits.

RCD is the best tool for rabbit control for 46 years. However, we must not be complacent. Every effort must be made to further research into biological control and, where possible, have funds made available to assist mechanical control.

I have never seen the rabbit population so low. These are very exciting times - watching a change in the environment for the better. How often can mankind do that?

It is very exciting watching what is growing and wondering what species may come back (both flora and fauna) and to what degree we will see a shift in the balance of native vegetation.

I cannot emphasise too strongly that the arrival of RCD has provided a very rare opportunity to make a major difference to sustainable rangeland management. We should not be complacent about the need for government agencies, societies like the Australian Rangeland Society and landowners to work together to gain support from government at state and Commonwealth level to capitalise on this opportunity. I also think it important that the Australian Rangeland Society get the message to the urban community via the metropolitan media. We can then gain a better understanding and appreciation for what RCD can do for the whole community - both economically and environmentally.

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## BOOKS

*Marcel Dekker, Inc. have recently published several books relating to salt-affected land, soil microbial ecology and semi-arid lands. These books include:*

*Halophytes and Biosaline Agriculture* by Redouane Choukr-Allah, Clive Malcolm and Atef Hamdy. This book offers a low-cost approach to reclaiming and rehabilitating saline habitats previously regarded as useless. It focuses on the mechanisms of salt tolerance and adaptation of halophytes, discusses the latest methods for selecting halophytes best suited to particular revegetation projects, reviews valuable experiences in cultivating halophytes and introduces a practical methodology for using brackish water for irrigating halophytes.

*Semi-arid Lands and Deserts - soil resource and reclamation* edited by J. Skujins. The contents cover the soils and biota of arid lands, and methods for the reclamation of degraded areas.

*Soil Microbial Ecology - applications in agricultural and environmental management* edited by F. Blaine Metting, Jr. This book offers detailed discussion of all major groups of soil micro-organisms under major headings of soil microbial ecology, molecular ecology and genetics of soil micro-organisms, applications in agriculture, forestry and environmental management, and practical aspects of soil microbial technology.

Further information can be obtained from Marcel Dekker, Inc., 270 Madison Avenue, New York, N.Y. 10016.

# **CENTRALIA REVISITED**

## **Resurvey of Rangeland Sites in the Alice Springs Area, 1993-1995**

*Geoff Cunningham, Geoff Cunningham Natural Resource  
Consultants Pty Ltd, 9 The Crest, Killara NSW 2071*

### **Introduction**

The idea for this resurvey of rangeland sites originated with the availability of a collection of original notes, descriptions and photographs which I had kept since my involvement in a survey of the drought and erosion problems in the Alice Springs area in late 1965 and early 1966. After initially discussing the idea with staff of the NT Conservation Commission, I was contacted by the Centralian Land Management Association (CLMA) and we subsequently developed a proposal to do the work.

This original work was carried out by a New South Wales Soil Conservation Service team comprising Dick Condon, John Newman and myself for the then Northern Territory Administration. During the course of this work a large number of site descriptions and notes were produced and many photographs were taken for a variety of purposes.

As time progressed, it became apparent that this material would provide a valuable "snapshot" of the lands of the Alice Springs area in the 1960s. I considered that these records could be used to illustrate any changes in the appearance and condition of the various sites over the period from the 1960s to the 1990s. The sites which had been photographed were prime targets for relocation as many had distinguishing background landform features. The written descriptions of sites on the different land systems which had been described by CSIRO in the 1950s were also potentially relocatable as the tracks which had been travelled in 1965 and 1966 had been well documented.

Despite this potential, there was still a real risk that the project may not be successful as the chances of relocating the original sites were unknown, given the road relocations and other changes which had occurred since 1965. After considering the likelihood of success, a decision was made to proceed.

### **Site Relocation**

The first field trip occurred in February 1993, with further trips in September 1993 and March/April 1995 completing the field work. The availability of detailed records of the routes travelled in 1965-66 and a set of old 1:250,000 scale maps showing the roads and tracks of that time assisted greatly in relocating sites. The other essential component was a knowledge of having "been there before", and, since I had prepared most of the land descriptions that had survived and had taken many of the photos which were used, it was a distinct advantage to have carried out the original work. It is an uncanny feeling when you undertake a project like this that you can sense it if you are on the wrong road or in the wrong

place - even though, in this case, almost 30 years had elapsed between visits.

We (the CLMA and I) had agreed that the ideal timing for the resurvey would be following a reasonable rain, if possible, so that the range of plants present at each site could be assessed. The reason for this was that in the 1965-66 period there were many who believed that the trees, shrubs and perennial pasture plants which had been apparently decimated by the long drought of the late 1950s and the 1960s would not reappear when better seasons prevailed.

There was a need to determine whether the "good" perennial pasture species had been able to survive or regenerate after a space of 28 to 30 years. There was also the underlying desire to assess in some detail, and to record for posterity, what changes in soil erosion status, tree and shrub density and species array, and pasture composition had occurred and whether or not useful tree and shrub species had regenerated.

We felt that such information would provide a valuable benchmark for pastoralists and other land managers to assess future changes at the relocated sites and, as an added bonus, provide a pictorial or "written" view of many of the sites at a time almost 30 years past.

With three field trips, it was possible to relocate most sites at a time not long after good falls of rain had been received. Although an assessment after both cool and warm season rains would have allowed the full extent of plant species diversity to be determined, a good listing of the species present (particularly the perennials) was obtained.

The general procedure followed was to plan a number of possible routes of travel well before each field trip and to have details of site locations and copies of the original photographs and/or field descriptions available. Tracks travelled were generally those present in 1965-66 but, on occasions, extensive detours were necessary to relocate sites along old roads which had become overgrown or impassable for one reason or another.

Very few of the sites targeted for resurvey were not able to be found during the 1993 and 1995 field trips. The most notable exceptions were one which had been greatly changed by flood waters and then by winds in dry times and another which could not be reached because of the dense regrowth of mulga which had occurred for kilometres around it and which made travel, except on foot, impossible.

### **Site Records**

There were two types of record available from the 1965-66 period. The first was a photograph of a specific site and the second was a description of the general soils, erosion status, tree and shrub cover and composition on a particular land system where it was intersected by a particular road or track.

Usually, but not always, the record nominated a distance from a station homestead, station boundary, main road, waterpoint, stream or other landmark.

## *The Old Photographs*

When the general location of an old photopoint was found it was necessary to move about the general area until the new photograph matched the original scene as closely as possible. At times, individual trees were still standing and it was possible to relocate the original photopoint to within virtually centimetres. At other times, background features allowed relocation to within a few metres and in a few instances the accuracy was probably within tens of metres.

As a consequence, the photographs provide good **then** and **now** comparisons and allowed the condition of the soil and details of the vegetation as they were in 1965 or 1966 to be assessed in general terms. While the old photographs do not allow accurate descriptions of, for example, tree and shrub spacings or the percentage of ground cover to be derived, they do allow general statements to be made about any changes in the density of trees and shrubs as well as comment on pasture cover and soil erosion status in most instances.

Most importantly, they provide an image of the site almost 30 years ago and contribute to an appreciation of the changes which have occurred.

## *The 1965 and 1966 Landscape Descriptions*

Where earlier descriptions of the landscape were available they allowed a more detailed comparison of the changes between 1965-66 and 1993-95 to be made. In this case, the site to be redescribed was located in general terms rather than as a specific point - which was the case with the photographs. A representative point in the landscape was then selected for description and photography at the 1993 and 1995 visits.

The limited field of view which could be included in a photograph did not always allow all species present at the site to be included. As a consequence, the 1993 and 1995 descriptions often contain notes about species found nearby but not included in the single photo taken at the site.

## *The 1993 and 1995 Records*

As each site was relocated it was marked with a star picket bearing a numbered tag, its position was recorded with a global positioning system and it was photographed, with the direction of the photograph being recorded. A description of the soil condition or health, tree and shrub spacing and pasture cover was then made, along with a listing of the tree, shrub and pasture species present.

In most instances the 1993 and 1995 photographs were taken at ground level, but there were a number of locations where it was necessary to stand on the bumper bar or cab of the vehicle to recapture the desired background as featured in the old photograph.

## *Individual Site Descriptions*

In all, 158 sites were described; 154 of these were sites which had been described or photographed previously while the remainder were new sites which were selected to show a variation of country for future assessment of change. At a number of the relocated sites, up to three separate descriptions of individual landscape units were made so as to provide more accurate information on the changes within these units since 1965-66.

Sites were resurveyed on 47 cattle stations, providing a good sample of the total number of properties in the Alice Springs district. Sites were also relocated on two conservation areas (Chambers Pillar Historic Reserve and Simpsons Gap National Park) and along Larapinta Drive to the west of Alice Springs. In all, 52 land systems were visited, which represents 59% of the 88 land systems described by CSIRO in 1962.

## *Outcomes*

This project has illustrated the value of photographic and written records in quantifying the soil surface stability, tree and shrub cover and pasture composition changes which have occurred in the Alice Springs area over the last 30 years.

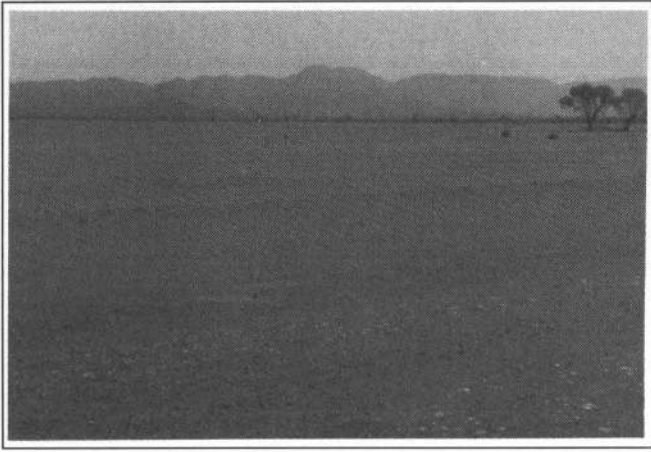
It has shown that a large number of widely scattered sites in an arid landscape can be accurately relocated given the availability of adequate detail on their location. In this case, the involvement of the person who was present when the original records were collected greatly assisted the successful completion of the project.

In addition, the project has shown that in the Alice Springs area:

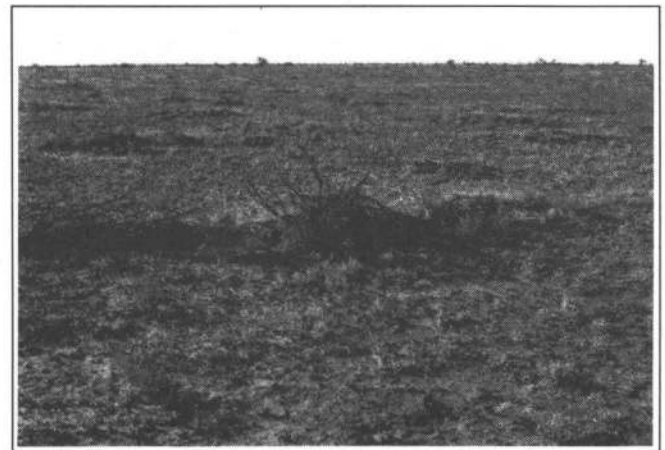
- A considerable improvement in soil surface stability has occurred at a majority of sites (see accompanying photos) - 83% of the sites were eroded in 1965-66 while only 18% showed any erosion at the 1993-95 inspections.
- Pasture cover has greatly improved on the vast majority of sites. There were:
  - 71 sites recording zero pasture cover in 1965-66, but in 1993-95 only two sites were devoid of pasture cover; pasture cover increases were recorded in 1993-95 on 96% of the sites, while 4% of sites showed unchanged levels of pasture cover.
- The pasture cover at 67% of the sites was dominated by perennial species in 1993-95, while another 28% of sites had a perennial component in the pasture.
- Current tree regeneration was recorded at 37% of the sites in 1993-95, while current shrub regeneration was recorded at 8% of sites - 16 species of trees and 7 species of shrubs were observed to be regenerating at the time of inspection.
- Increases in tree cover density between 1965-66 and 1993-95 were recorded at 65% of the sites.
- Increases in shrub cover density between 1965-66 and 1993-95 were recorded at 83% of the sites.
- Increases in both tree and shrub cover density between 1965-66 and 1993-95 were recorded at 58% of the sites.

To sum up, this project has provided a unique glimpse of change in a wide variety of arid land ecosystems over a period of almost 30 years and has provided a series of benchmarks from which to measure future changes in soil condition, pasture cover and composition and tree and shrub density.

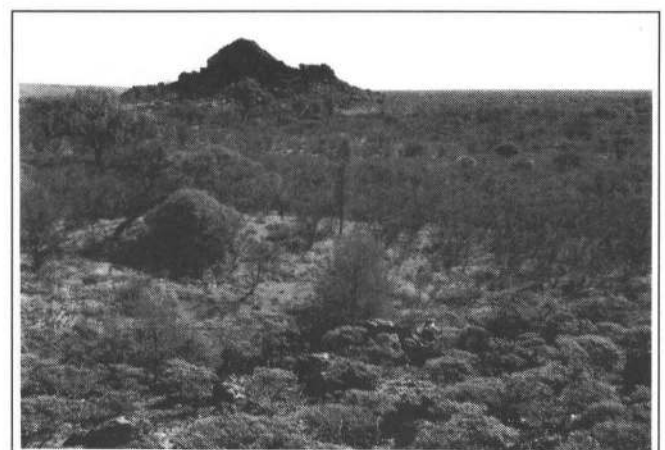
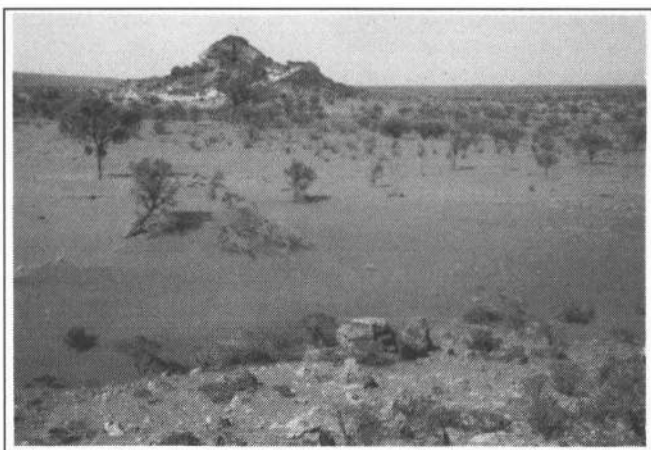




*Level sandy plains at base of hills. The November 1965 photo shows drifting sand with virtually no ground cover. In February 1993 buffel grass (*Cenchrus ciliaris*) and forbs provide good soil stability and pasture production.*



*Level mulga country. In 1965, the area was subject to heavy grazing, drought and severe depredation by rabbits. Although much of the mulga was long dead, there was evidence of rabbits ringbarking branches well up the few remaining live trees. The soil surface has now stabilised, with a current (February 1993) 20% cover of annual and perennial species. Rabbits have recently been controlled and it will be interesting to see if any mulga seed remains to allow regeneration.*



*Dunefield with rock outcrop - scattered desert oak and corkwood. Considerable regrowth of shrubs, spinifex and other ground-cover species present in 1993.*

## PIMELEA POISONING

*Rick Barratt, Secretary, Marree Pimelea Poisoning Subcommittee, Dulkaninna Station, via Port Augusta SA 5710*

Ingesting desert rice flower *Pimelea simplex*, either by eating the plant or inhaling the fluffy flower parts, can lead to pimelea poisoning in cattle. Also known as St. George's Disease or big head, pimelea poisoning produces a variety of symptoms including diarrhoea, weight loss and oedema or swelling below the jaw. In severe cases, gross swelling of the jaw, neck, brisket and forelegs is accompanied by major weight loss. The condition is often fatal and animals that do recover are typically set back for 12 months or more.

What makes pimelea poisoning a particularly frustrating problem for producers in Queensland, New South Wales and here in the Marree district, is the unpredictability of the disease. Desert rice flower is a widely distributed species in the gibber tableland country that dominates much of SA's far north east. This annual herb tends to be more abundant when good autumn rains follow a dry summer. However, lots of pimelea does not mean the disease will be a problem and the reverse is true - poisoning can occur when the herb is apparently sparse in the pasture.

Another interesting feature of the disease points to a behavioural aspect - namely that naive cattle from outside the district brought onto a property with pimelea are highly likely to display symptoms, often when local cattle are doing fine in the same paddock.

Pimelea poisoning of cattle was widespread and severe in the Marree district during 1995. As losses mounted, a workshop was held in November at Marree with speakers and participants from as far afield as Roma and Rockhampton attending. An outcome of the workshop was the formation of a local committee to promote research into pimelea poisoning. About this time, a vaccine developed by Dr. Michael D'Occhio from CSIRO's Tropical Beef Centre at Rockhampton was trialled on four properties in the Marree district. The results of this trial are still being evaluated, however vaccinated cattle produced antibodies to *simplexin*, the toxin thought to be principally responsible for pimelea poisoning. All the cattle used in this trial had previously been exposed to pimelea with some animals already showing symptoms of poisoning. It was suggested that the vaccine may afford greater protection if cattle were vaccinated prior to exposure to pimelea. To test this, a further trial was instigated with 75 cattle from outside the district. Some of the cattle were vaccinated twice over a period of six weeks before the mob was trucked to a property in the Marree district and depastured in a paddock containing desert rice flower. The trial, which is still underway, has been an excellent example of cooperation between the pastoral industry, researchers and government. The cattle were provided by S. Kidman & Co., most agistment and trucking costs were donated by locals while interstate researchers stretched their budgets to the limit to undertake the trial.

Several other avenues are being pursued in the effort to get on top of this elusive problem including the use of appetite

stimulants and feed supplements which have produced some encouraging results. It is also proposed to trial an antidote derived from a compound developed by CSIRO which has shown encouraging results in the treatment of livestock suffering from annual rye grass poisoning.

So, as you can see, there is quite a lot happening on the pimelea poisoning front and I will keep readers of *RMN* abreast of developments as they unfold. In the meantime, we would be very interested to hear from anyone who can shed further light on pimelea poisoning - particularly methods used to combat it. I can be contacted at Dulkaninna Station at the above address or phone (086) 758395, fax (086) 758397.

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## A SACK OF SLITHERING SLIDERS AND THE MYSTERIOUS MARSUPIAL MOLE

### Some Highlights of the Todmorden Field Day, South Australia

*Harald Ehmann, Contract Wildlife Project Officer, Pastoral Management Branch, Dept. Environment & Natural Resources, 284 Portrush Road, Kensington SA 5068*

In early May, pastoralists and their families from South Australia's northern cattle country experienced a rewarding field day presented by the Pastoral Management Branch of the Department of Environment and Natural Resources, generously hosted by Douglas Lillecrap of Todmorden Station. Members of the Pastoral Board, including the new chairman Stephen Mann and Branch manager Leith Yelland, were also there to meet and talk with pastoralists. A total of 46 enthusiastic adults and 25 energetic children appreciated the day which made good advances for pastoralism, the Department's Pastoral Program, and wildlife conservation.

Rodger Tynan presented the most recent developments of the remote sensing program with excellent mapping of several northern stations and land systems, including maps of how the vegetation responded to the heavy rains of 1989. This information will be used to assist the lease assessment process. He raised more than just interest when he contrasted the remote sensing of rangelands (looking for spectral signs of sparse plants on images from space) and assessing the voting eligibility of Papua-New Guinean Highlanders (looking for hair in dark armpits)!

Rick Barratt demonstrated the rangelands monitoring process at a typical site a few kilometres from the homestead, with explanations of the methods that are used. He pointed out that lessees are invited to have substantial input to the initial assessment, and Darryl Bell from Dulkaninna spoke of how well this had worked in the Marree district. Rick also described how pastoralists can use the sites for their own ongoing checks of rangeland condition. He also turned many an admiring eye

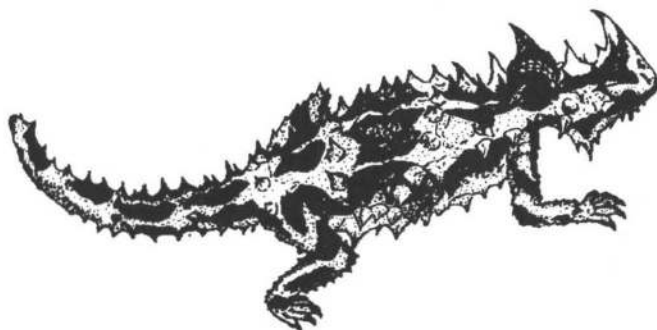
for his latent (and now legendary) talents with wire and tape to keep his new vehicle in service!

I then summarised the important biodiversity issues, described the habits of some interesting local wildlife (from termites to the marsupial mole), and highlighted the payoffs for maintaining biodiversity. There was an initial murmur of "are you serious?" when I asked station people to pick up, freeze and then report any unusual dead animals they might find! Doubts dissipated when I then explained and demonstrated how valuable and easy this can be. Several dead bats have already been collected and frozen: they await pick up or forwarding.

During the morning session of the field day, the children became very involved in a show-and-tell of animals. The sandsliders ("now you see them, now you don't" lizards of the skink family), "the walk on water" burrow-plug geckos, the spider-eating centipede, and the animal search (including the fast black and yellow wolf spider!) were big hits. The kids appreciated the many animals (including their behaviours), and they learnt which ones to leave alone! Parents report their children are still talking about the activities six weeks later. Serena and Louise Williams, Leah McEntee, Geoff Axford and Mike Fleming helped in various ways so that the children got the most out of the day.

That afternoon the adults were also surprised by the many reptiles (amazed by the sliders!) and the Pastoral Management staff were delighted with the wealth of animal knowledge that pastoralists passed on. The Department's planned survey of the Stony Deserts was outlined and received a favourable response. Rob Brandle and his team will survey several sites in the district within the next 18 months.

Everyone left with an improved understanding and image of pastoral management, biodiversity, conservation and the future, together with hopes of seeing a marsupial mole.



## REPORT ON AUSTRALIAN RANGELAND SOCIETY SCHOLARSHIP, 1994

*Christine Schlesinger, School of Biological Sciences, Northern Territory University, Myilly Point, Darwin NT 0800*

In 1994, I was awarded \$500 by the Australian Rangeland Society to assist me with travelling expenses associated with my study of lizard ecology in central Australian pastoral lands. I am a full time PhD student at the Northern Territory University but have been based at CSIRO's Centre for Arid Zone Research in Alice Springs for the past three years so as to be able to access my study sites on a regular basis. Travel to and between my study sites, which are located on Hamilton Downs station north-west of town, has incurred considerable cost and the ARS scholarship has provided welcome assistance.

Among vertebrates, lizards are unique in their ability to slow their metabolism to the extent where energy requirements are extremely low. They can remain inactive for long periods of time and may not reproduce if conditions are unfavourable in a particular year. This flexibility enables them to successfully inhabit areas characterised by low and unpredictable productivity. In this context, I was interested in whether, and how, cattle grazing affects activity patterns and life histories of lizards. By comparing areas close to permanent water with less disturbed areas more distant from watering points, I hoped to better understand how lizards function in arid environments. I also wanted to investigate the conservation value of patches of pastoral land that are relatively infrequently used by cattle.

The main aims of my study were:

- to monitor lizard populations in mulga shrublands over a period of several years, with particular emphasis on how populations and activity levels change in response to temperature and rainfall; and
- to determine whether these effects differ in areas which have had a consistent history of cattle grazing, compared with those that have not.

In order to achieve these aims I chose eight study sites, four of which are within one km of permanent water and four of which are at least six kms away from watering points. Monitoring of lizards was by means of pit traps and drift fences. Trapping at each site took place over four days every month, between October 1993 and December 1995, so as to enable me to get a reasonable idea of seasonal variations in lizard activity and response to rainfall.

I completed fieldwork in January this year and now am in the process of relocating to Darwin, to analyse my data and write. Results are very preliminary at this stage but indicate that there are some significant differences in the abundance/activity of individual lizard species in lightly and heavily grazed sites. As might be expected, certain species are more common in the less disturbed sites, whereas others flourish in the heavily grazed sites close to water. Many of these differences however appear to be overshadowed by individual site variation. As I continue to analyse the data, correlations with the structural and thermal environment at each site and information on seasonal and rainfall effects will shed more light on what is important for each species.

I would like to thank the Australian Rangeland Society for their support and also to express my gratitude to the leaseholder, Gary Prior, for allowing me to work and camp on Hamilton Downs.



## 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. 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. Use the above guidelines to help you frame your application and contact a Council member if you require further information (contact details inside front cover). Make sure your application reaches the Secretary (Bill Tatnell) before November 30.

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## MEETING

### The Role of Remote Sensing in Rangeland Monitoring

*Rodger Tynan, Dept. Environment & Natural Resources,  
GPO Box 1047, Adelaide SA 5001*

The inaugural workshop to discuss "the role of remote sensing in rangeland monitoring" was held in Alice Springs in October 1993. A follow-up meeting was held in conjunction with the 8th Australasian Remote Sensing Conference in Canberra in March this year. At this meeting, one or two representatives from each rangeland State and Territory briefly outlined current remote-sensing activities designed to assist in rangeland monitoring.

We propose to hold a short meeting during the Rangelands Conference at Port Augusta in September to report on the outcomes of the Canberra meeting and to discuss future activities. The meeting is planned for 6-7 PM on Wednesday 25th September - following the General Meeting of the ARS. Further announcements publicising the purpose, timing and venue of this (remote sensing) meeting will be made during the early stages of the Rangelands Conference.

If you require further information, please contact me by phoning (08) 204 8865 or fax (08) 204 8859.

**BACKGROUND PAPER**  
**FOR THE AUSTRALIAN RANGELAND SOCIETY**  
**9TH BIENNIAL CONFERENCE**  
**Port Augusta SA : 24-27 September 1996**  
**Focus on the Future . . . *the heat is on !***



*Compiled by John Maconochie, Pastoral Management Program, Department of Environment and Natural Resources, GPO Box 1047, Adelaide SA 5001*

The Australian Rangeland Society represents a coordinated body of people who have a common interest in the rangelands. Currently that interest base is widening as we witness the emergence of multiple use values and multiple stewardship in the rangelands of the world. This move towards multiple use requires all stakeholders to recognise and understand the cultural, social and economic values of others, and to actively seek land use patterns which are congruent with all stakeholder values. The Australian Rangeland Society recognises the importance of providing an interactive forum to encourage this process and holds a biennial conference where people from many different backgrounds and perspectives get together. The Organising Committee for the forthcoming conference intends this to be a landmark meeting in the development of rangeland strategy in Australia.

### **Focus of the Conference**

The conference is focused on the future of the rangelands in Australia. The management of the rangelands is at a crossroads. Major changes which will impact on the future of the rangelands include:

- The ecological and economic sustainability of the pastoral industry is being questioned.
- Eco-tourism is emerging as an important industry.
- Urban Australia is becoming increasingly aware of the value of the diversity of our rangeland resources.
- Issues of land tenure are under continual scrutiny.
- Recent changes to native title legislation are increasing the opportunities for land to be brought under Aboriginal control.
- Pressure to conserve areas of rangeland of cultural and environmental significance is being mounted through World Heritage listings.
- The presence and influence of the mining industry is increasing.
- The allocation and use of water resources.
- The National Strategy for Rangeland Management is being developed.
- Rangeland populations and government services to rangeland areas are decreasing. At the same time there is increasing pressure on rangeland users to devote more time to landcare.

### **Aims and Outcomes**

The conference aims to:

- discern new and emerging opportunities for the rangelands;
- determine likely needs for policies, research and technologies;
- identify the skills and expertise required to meet these needs;
- develop model strategies which take into account future trends yet allow for flexibility.

### **Purpose of this Background Paper**

The purpose of this paper is to prepare you for the Rangeland Conference and to provide a useful framework for thinking about where the rangelands will be in the year 2010.

We consider there are four groups of issues and a range of stakeholders. We have collated some information about the Australian rangelands today that can fit within this framework.

You are all experts in your own right; we want to encourage you to think more broadly about rangelands than you might otherwise do and couple this thinking with your own expert knowledge.

We hope this paper stimulates your thinking and raises your awareness of the broader challenges facing Australia's rangelands. The paper aims to:

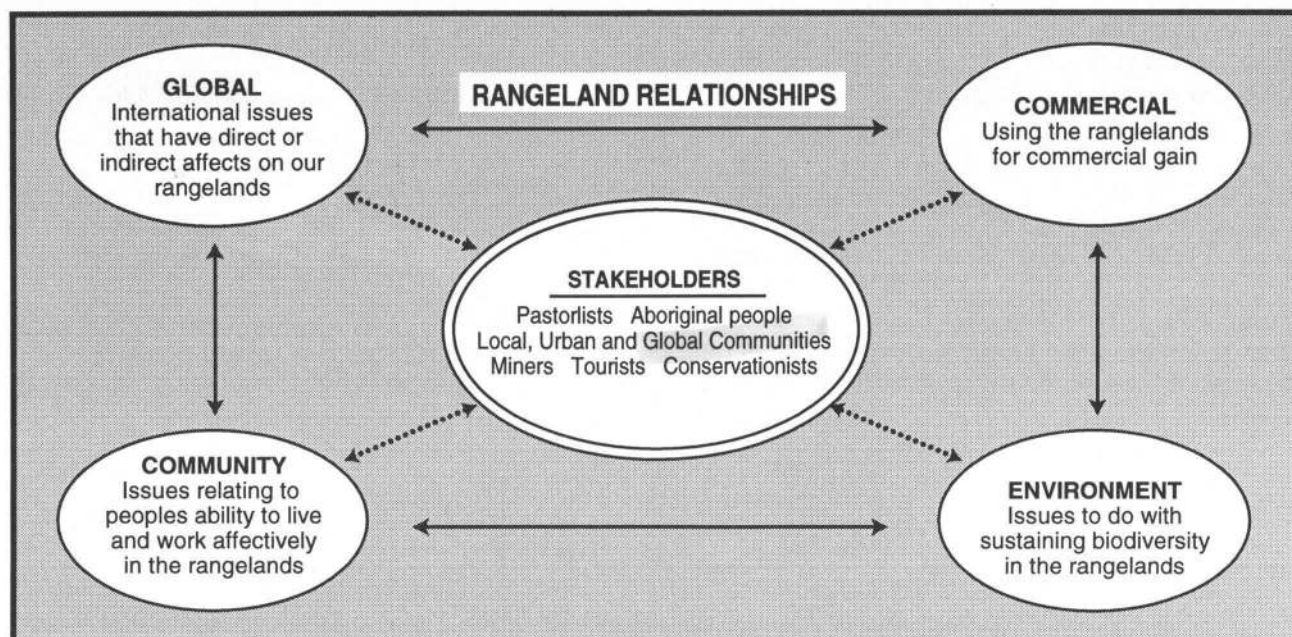
- provide a common database for all stakeholders;
- reflect stakeholders' values and perspectives;
- provide a global perspective;
- be non-partisan and inclusive; and
- give you a rapid overview of selected key issues.

### **Stakeholders in the Rangelands**

Stakeholders come from a range of interest groups including:

- Pastoralists
- Miners
- Aboriginal people
- Tourists and tourism operators
- Emerging alternative land users
- Conservationists
- The urban community
- The global community.





*As a stakeholder in the rangelands, what are your issues?*

*The flow diagram outlines some of the many relationships throughout the rangelands that link people together.*

Note that people from outside the rangelands have a genuine interest in rangeland issues and also need to be recognised as valid stakeholders.

## Definition of Rangelands

**International** - rangelands are those areas of the world, which by reason of physical limitations - low and unpredictable rainfall, rough topography, poor soils, poor drainage or extremes of temperature - are unsuited to cultivation and which are a source of forage for free-ranging native and domestic animals, as well as a source of wood products, water and wildlife.

**Australian** - ABARE defines the Pastoral Zone as the arid and semi-arid regions of Australia, where land use is characterised by extensive grazing of native pastures, and where, although some cropping is undertaken, it is impractical on most farms because of inadequate rainfall.

## Australian Rangelands



*Australian rangelands (unshaded) as defined by ABARE.*

### Area

Approximately 75% of the Australian land mass or 6 million sq km is defined as rangelands.

A large proportion of the drier and less productive areas of the rangelands are virtually unoccupied by humans. Pastoral activities occupy almost all rangelands in New South Wales and Queensland, 38 - 57% of rangelands in South Australia, Western Australia and the Northern Territory, with Aboriginal people owning or claiming a substantial proportion of the rangelands.

Tourism is a major industry in the rangelands, with much of it centred on small areas. Recreational drivers access much of the rangelands and organised tours are now becoming more popular.

### Climate

The climate is unpredictable, characterised by long dry periods with occasional heavy rainfall. Rainfall varies across the continent from summer dominant in the north to winter-dominant in the south. The summer rains of the north are associated with monsoonal rains and higher average temperatures, while in the south the winter rains are associated with the frontal systems around the South Pole and temperatures are generally lower. Occasional cyclonic incursions from the north-west may bring summer rainfall to the southern areas, but these events are erratic.

### Vegetation Types

The vegetation may be divided into woodlands, shrublands and grasslands. Approximately 42% is woodland or open

woodland, another 46% is shrubland, and tussock and hummock grasslands cover only about 9%. Grasses also occur as an understorey across 68% of the rangelands.

## Soils

The rangelands are dominated by shallow sands and loams. These, together with deep sands and hard setting duplex soils, account for nearly half of the rangelands. These soils are infertile, lack resilience and are easily eroded. Twenty percent of the rangelands have fertile soils e.g. cracking clays and calcareous earths. The majority is infertile, with patches of better productivity based either on locally more fertile geology or on pockets of run-on which concentrate extra nutrients along with water.

## Degradation and Biodiversity

The degradation of the rangelands is primarily associated with present and past grazing activity. The loss of ground cover and removal of the soil surface is the result of prolonged, and occasionally excessive, grazing pressure. In some cases the degradation has reached levels that are irreversible.

## Ecological Influences in the Rangelands

These include:

- species competition for space and water;
- irregular rainfall, resulting in sporadic germination;
- changes in vegetation composition due to fire, grazing and timing of rainfall;
- uneven distribution of water and nutrients;
- the stability afforded by the long-lived plant species;
- low fertility due to the age of landscapes;
- ground insects and termites, which contribute to the maintenance of soil fertility and permeability.

## National Issues

Issues which are common to much of the rangelands are:

- increases in woody weeds (by the late 1980s woody weeds had established over 17.3% of the rangelands);
- the continuation of land clearance;
- changes in fire regimes;
- changes in pasture composition, productivity and stability;
- soil degradation, including structural damage, and wind and water erosion;
- a decline in biodiversity through total grazing pressure (including domestic stock, and native and feral animals);
- rabbits and calicivirus;
- the allocation and use of water resources.

# Environmental Activities and Issues

## Issues and activities to do with sustaining biodiversity in the rangelands.

## Biodiversity

Australia's rangelands consist of many ecosystems, from vast deserts to wetlands. Trends in biodiversity cannot be clearly identified due to the limitations of available data sets. The following is an indication of the changes that have occurred since European settlement.

- 12% of arid zone mammal species have become extinct (representing 61% of all Australian mammal extinctions).
- 7% of arid zone flowering plant species have become extinct.
- 22% of arid zone mammal species are considered endangered.
- 5% of arid zone bird species are endangered (representing 22% of the endangered species in Australia).

## Land Degradation

Degradation of the land is an important factor in the management of Australia's rangelands as it reduces both the economic viability and ecological sustainability of the rangelands.

*Area (km<sup>2</sup>) of the extent of land degraded and economically unrecoverable in northern Australian rangelands (Source: Tothill and Gillies 1992).*

	Good Condition	Degraded but recoverable	Degraded and unrecoverable
Queensland	67800	66900	26800
Western Aust.	41600	11600	2200
orthern Terr.	35800	3800	950
<b>Australia</b>	<b>145200</b>	<b>82000</b>	<b>29950</b>

Where assessed, approximately 2% of Australia's rangelands are irreversibly eroded and another 15% require destocking to recover.

## Pest Animals

Rabbits, kangaroos, goats, pigs, camels, foxes, cats and horses are the major pest animals in the rangelands. These pests affect both the productivity and ecological sustainability of the rangelands through competitive grazing, and soil and land degradation. Significant pests include:

- rabbits: the greatest environmental and economically damaging pest;
- goats: present in higher numbers than other introduced pest herbivores (except rabbits);
- kangaroos: some species have increased in number since European settlement;
- foxes and cats: have had a significant impact on mammal, bird and reptile species.

## Global Warming

The increase in greenhouse gas concentrations in the global atmosphere is expected to lead to significant climate change. It is anticipated that the climatic conditions of the rangelands will become more variable from year to year. Some expected changes are:

- an increase in summer rainfall and a decrease in winter rainfall;
- an increase in the size of rain events;
- the dry periods between rainfall events may be longer.

*Estimated temperature increases in the Australian rangelands by the year 2100 in °C.*

Season	Northern Australia	Southerly inland areas
Summer	0.3 - 0.7	0.8 - 1.2
Autumn	0.5 - 0.7	0.8 - 1.2
Winter	0.6 - 0.8	0.8 - 1.2
Spring	0.7 - 0.8	1.2 - 1.5

There is strong evidence that the greatest warming is expected to occur in central Australia during the spring (see table). A shift towards summer rainfall is likely to occur in the south.

## Pastoralism

The early years of pastoral development saw high, unsustainable stocking rates. This, combined with unpredictable seasonal conditions, resulted in high grazing pressures and a change to the natural ecosystem. Today much of the degradation is attributed to the historical damage done many decades previously. Many pastoralists believe that the condition of the rangelands has improved over the last 20 years, but some land continues to deteriorate, and some is being actively rehabilitated.

## Mining

Approximately 0.2% (1500 km<sup>2</sup>) of Australia's land area is occupied by mining sites and petroleum fields, and a significantly greater area is affected by exploration. Environmental considerations facing the mining industry include:

- Mine rehabilitation in the rangelands is expensive and difficult due to environmental constraints such as climate variability and low soil fertility.
- Small mining operations may not be subject to the environmental controls that govern larger ventures.
- Off site impacts such as downstream effects and aquifer/bore draw down extend the impact beyond the mine sites themselves.

## Tourism

The perception of the wide brown land and the associations that many people have with Australia's outback, lead to beliefs that access is an unlimited right.

Environmental degradation associated with tourism is poorly understood and documented. Tourism impacts are varied and are not as widespread as those associated with other rangeland enterprises. The economic significance of tourism is ten times greater than all forms of pastoralism.

The benefits of tourism include:

- Increased knowledge and understanding of Australia's rangelands by Australian and international visitors.
- Economic gains to the local community, which can facilitate the development of reserves and the initiation of projects that benefit the environment.
- The education of site representatives to meet the needs of tourists.

Some examples of the problems associated with tourism are:

- physical damage to sites and objects,
- pressure on resources such as water,
- the erosion of tracks,
- the accumulation and disposal of waste, and
- unlimited access is likely to destroy the natural resources and infrastructure.

## Commercial Activities and Issues

*Any activity that provides a monetary return to an industry or community, and the associated issues concerning the Australian rangelands.*

Historically, the Australian rangelands were perceived as important because of the economic benefits flowing from commercial activities.

The following table describes the value of the industries involved in the rangelands (after Stafford Smith 1994).

*Value of production in the rangelands 1991-92.*

	\$ (million)	Share of Australian total (%)
Cattle sold	527	17
Sheep sold	22	4
Wool sold	274	12
Tourism	3000	8
Mining	10000	38

## Pastoralism

The contribution of pastoralism to the Australian economy over the past 15 years has averaged:

- 7% of the gross value of production for all broadacre agriculture;
- 3-6% of the total value of Australian agricultural production.

## Issues

- Declining terms of trade over the past decade have had an adverse impact on financial performance.
- The proportion of GDP attributed to agriculture is declining but the growth in terms of gross value is increasing (although alternative sectors have also been increasing at relatively higher rates).
- Increasing public awareness of the environment.
- Uncertainty over native title.
- Environmental degradation is a major contributor to declining economic returns.

## *Mining*

In Australia the production of minerals such as iron ore, nickel, gold and base metals occurs predominantly in the rangelands. It is estimated that \$12 billion of Australian mineral production occurred in the rangelands in 1993-4. This is equivalent to 41% of the total value of Australian mine production or 54% of the value of on-shore production.

In broad terms the rangelands are estimated to contribute either directly or indirectly nearly half of the value of Australia's mineral commodities exports.

## Issues

- Environmental and cultural issues pertaining to the development of new mines and associated exploration activities.
- Community attitudes to mining in national parks and the mining of uranium.
- Uncertainties concerning native title.

## *Tourism*

Tourism in the rangelands is a mixture of rural, ecological and cultural activities. Two economic measures of this activity are:

- In 1992-93 rangeland tourism accounted for approximately 14% of Australia's total rural tourism.
- The growth of expenditure in the rangelands was estimated at 5% per year for the four-year period to 1992-93.

## Issues

Tourism activity varies across regions and is dependent on:

- the distance from major cities or townships to the site of activity;
- the infrastructure and facilities at the site of activity;
- the knowledge and expertise of site representatives;
- the perception of remoteness.

## *Alternative Activities*

Many other industries derive an income from the rangelands. These industries are diverse in their nature but are centred on the production and harvesting of wild flora and fauna. Existing data do not enable the differentiation of rangeland and non-rangeland figures, but the bulk of wild fauna and flora products originate in the rangelands.

These industries are generally small, but collectively the total value of products is significant. A conservative estimate of legitimate Australian wild fauna and flora trade in 1992 was \$176 - \$205 million, almost equivalent to the value of wool production. This includes:

- \$132 - \$156 million from wild animal products including native and introduced animals;
- \$44 - \$49 million from wild flora products.

## Issues

- Legislation and the issue of permits vary across States.
- High costs in initial development and establishment of an enterprise.
- Low productivity of flora products.
- Damage to the environment by introduced animals.
- Community attitudes towards harvesting native animals.
- Opportunities for new niche markets.
- Rights of access and intellectual property rights, particularly on Aboriginal lands.

## **People in the Rangelands**

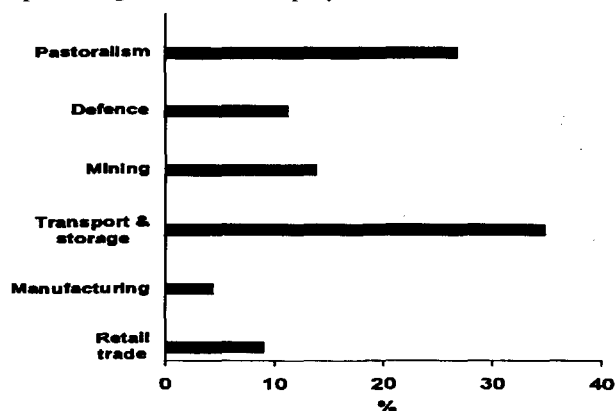
*The ability of people to live and work effectively in the rangelands is affected by these and other issues.*

## *Some Cultural Images*

- Australia's sunburnt country.
- Outback images of drovers and explorers.
- Aboriginal Dreamtime.
- Taming of the wastelands.
- Pioneers of the undiscovered country.
- Caring for country.

## *Employment and Population*

- Localised population growth in some areas has resulted through an increase in mining and tourism activities providing a source of employment.



*Employment in the rangelands (ABS 1995)*

- The migration of young adults to the larger towns and cities of Australia is resulting in an increase in the average age of rangeland residents.
- Although only 3.1% of the Australian population lives in the rangelands, the wider community retains a deep interest in rangeland issues. That community believes it has a right to influence decisions made about those issues.

#### *Population Distribution of Australia (ABS 1991).*

	Percentage
Urban	71.7
Rural	25.4
Remote Towns	1.2
Indigenous settlements	0.4
Other	1.2

*ABS classify "urban" as 80,000 to 1 million people, "rural" as 0 to 80,000 people and "remote towns" as population centres above 5,000.*

#### *Education and Health*

Remote areas are serviced by School of the Air, correspondence education and travelling itinerant teachers. Services vary depending on location, with many Aboriginal communities greatly dependent on State and Federal funding. The lack of sufficient resources generally results in both primary and secondary students attending boarding school for some period during their education, at high personal cost in financial and social terms.

Accessibility to health services and the quality of the service varies throughout the rangelands. Many residents of the rangelands must travel long distances to obtain access to basic medical and dental services. Remote Aboriginal communities in particular suffer from lack of access to health services. Issues affecting these services include:

- equity and equality;
- efficiency and effectiveness of delivery;
- cost of delivery to remote areas.

#### *Aboriginal People in the Rangelands*

(Information from *Still Our Country*, R. Johnston 1994)

*In Aboriginal terms the rangeland areas of Australia belong to Aboriginal people who can trace their ownership back to a time beyond calculation. Aboriginal people today still maintain ownership of their country and have never agreed to their land being alienated from them. Aboriginal ownership of land has now been recognised under Australian law by the Mabo native title judgement by the High Court. In order to inquire into what Aboriginal people feel about the management of rangelands it is necessary to confront the issue of Aboriginal land rights and the factors which brought about changes of land ownership from Aboriginal to non-Aboriginal hands. It*

*is only in this context that Aboriginal people are able to respond to current rangeland management issues.*

*"Aboriginal land management is doing all the things to make sure the spirit of the land is alive and well. When the country is sick then anangu have to make sure it gets well and healthy again. It is the Uwankara Palyanyku Kanyintjaku [Aboriginal well being] for the manta [land] ..... Land management is doing all the things that make the country a good place for anangu and all the animals and plants whose home it is."*

#### *Land Tenure*

Land Tenure	% of Rangelands
Leasehold	52.5
Vacant Crown Land	15.2
Nat. Cons. Res. & Ab. Freehold Nat. Parks	6.8
Aboriginal Freehold	12.2
Aboriginal Reserves	3.4
Aboriginal Leasehold	2.8
Water Supply Reserves & Forestry Reserves	0.2
Other	6.9

*Figures extracted from information published by AUSLIG.*

- Multiple land use is a growing concept in the rangelands of Australia.
- Tenure systems in the rangelands have traditionally been based on a single use - pastoralism. Increasingly, other users work within this framework; miners, Aboriginal people and conservation agencies have all purchased pastoral leasehold properties for their own uses.

## **Global Activities and Issues**

*International issues have many direct or indirect effects on the Australian rangelands.*

There is a growing imbalance between the world's human population and the natural resources needed to sustain it. Land degradation is a global problem which is particularly acute in the developing world, where population growth and farming practices contribute to degradation.

The world's population is growing at the rate of 94 million people a year. The population of the world is predicted to be 6 billion by 1998 and 8.5 billion by 2025.

By the year 2050, global demand for food may be three times greater than today.

Globally it is estimated that 70,000 sq km of farmland is abandoned each year because the soil is exhausted, while productivity on another 200,000 sq km declines. In Australia, some 52% of agricultural and pastoral lands have been degraded since European settlement.



The availability of freshwater has declined from 33,000 cubic metres per person per year in 1850 to 8,300 cubic metres per person per year today. In 1990, about 1.3 billion people in the developing world lacked access to clean water, and about 2 billion lacked safe sanitation.

Increases in population and the increasing demand for food, water and fibre is a fundamental cause of the encroachment of agriculture in areas of natural vegetation and wetlands, resulting in increasing loss of biological diversity and a decline in ecological integrity.

Australia may be protected to some extent from some of these pressures because of our size, geography and level of development.

The international community has recognised and responded to the threats arising from international environmental problems by developing laws, conventions and frameworks for international cooperation and concerted action. These are based on common principles and rules of collaboration among sovereign states, backed by persuasion and negotiation.

A number of basic principles underpin these international agreements. These are set out in the Rio Declaration. One of these is the "Precautionary Principle", which states: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". Also, Principle 25 states: "Peace, development and environmental protection are interdependent and indivisible".

The most important international instruments relevant to the Australian rangelands are:

### ***Agenda 21***

This addresses the combined issues of environmental protection and fair and equitable development for all. It includes issues such as the Planning and Management of Land Resources; Combating Desertification and Drought; Sustainable Agriculture and Rural Development; Conservation of Biological Diversity; and the Role of Indigenous People and their Communities.

### ***Convention on Biological Diversity***

This deals with the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

### ***Framework Convention on Climate Change***

This addresses the stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human-made) interference with the climate system.

### ***World Trade Organisation (WTO, incorporating the General Agreement on Tariffs and Trade, GATT)***

This aims to establish trade and economic relations with a view to raising standards of living, ensuring full employment, expanding production and trade in goods and services, and allowing optimal use of the world's resources in accordance with sustainable development.

### ***United Nations Convention to Combat Desertification***

Through effective action, this convention aims to contribute to the achievement of sustainable development in affected areas. This will involve long-term integrated strategies that focus on improved productivity of the land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, particularly at the community level.

### ***Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR)***

This convention is an inter-governmental treaty which provides the framework for international cooperation for the conservation of wetland habitats.

### ***Convention Concerning the Protection of the World's Cultural and Natural Heritage***

The primary mission of this convention is to define the worldwide natural and cultural heritage and to draw up a list of sites and monuments considered to be of such exceptional interest and such universal value that their protection is the responsibility of all human-kind.

Since the 1972 Stockholm Declaration on the Human Environment the trend is towards the inclusion of principles which recognise consultation and participation rights of indigenous peoples in decision-making for sustainable development; which endorse the value of customary knowledge, innovations and practices; and which encourage the equitable sharing of the benefits arising from the use of customary knowledge, innovations and practices. Explicit references to the rights and needs of indigenous peoples and communities are a feature of the 1992 Rio Earth Summit Instruments.

The following conventions are a sample of those that affect human rights:

- International Covenant on Civil and Political Rights.
- Convention on the Elimination of All Forms of Racial Discrimination.
- International Covenant on Economic, Social and Cultural Rights.
- Draft Declaration on the Rights of Indigenous Peoples.
- Draft Declaration of Principles on Human Rights and the Environment.

## **Planning the Future of our Rangelands**

Clearly there is a broad range of issues affecting the management of Australia's rangelands. This highlights the fact that the management of the rangelands is a complex task. This is because of both the diverse and extensive nature of the

natural rangeland environment and the many and varied interest groups with a concern for the future of the rangelands. The diversity should be viewed as a strength, because it provides a much broader range of ideas and options for future management than would otherwise be the case.

We cannot afford to be complacent about the future of the rangelands. We must actively plan their future, and in doing so, recognise the various values and aspirations of people, to ensure the rangelands continue to fulfil the role the community defines for them. It is important that we acknowledge that the only way to a successful and prosperous future is through open and constructive interaction between the numerous stakeholders concerning the various management options.

We hope you have derived some motivation from this paper to attend the conference and have your say. We ask you to reflect on these issues, and any others that may be important to the rangelands, in the weeks prior to the conference, ready to make your contribution to the future of Australia's rangelands.

*The information presented in this paper has been compiled from a wide range of sources, including rangeland texts, scientific papers and reviews, and government reports. Much of the latter sources of information became more readily available during the process of developing the draft National Strategy for Rangeland Management (soon to be released). We have attempted throughout to use the most recent and credible sources.*

## References

Australian Bureau of Statistics (various). Information cited in this paper compiled from data made available by the Australian Bureau of Statistics following the 1991 census and other surveys.

Johnston, R. (1994). *Still Our Country: Aboriginal perspectives on rangelands management*. Submission to the National Rangeland Management Working Group for the National Strategy for Rangeland Management and Action Plan.

Stafford Smith, D.M. (1994). Sustainable production systems and natural resource management in the rangelands. *Proc. ABARE's National Agricultural and Resource Outlook Conf.*, Canberra, 1-3 February 1994. Outlook 94, Vol. 2 (Natural Resources) pp. 148-159.

Tothill, J.C. and Gillies, C. (1992). *The pasture lands of northern Australia: their condition, productivity and suitability*. Occasional Publication No. 5 by the Tropical Grassland Society of Australia.

## A Comment About the Program

*Martin Andrew, Convenor of Program Committee for the 9th Biennial Rangelands Conference, 6 Bosanquet Ave, Prospect SA 5082*

As stated before, we aim for this to be a landmark conference. At a first glance, it looks to be a conventional conference format, and we have lined up some great speakers (see the program which follows). But what will set this conference apart are the group sessions. This is where each of you gets to make your mark, because the groups are where we will tap the insights of the 400 or so delegate-experts to develop detailed scenarios of what our rangelands might be like 15 years from now, and map out appropriate strategies for us to follow.

This is timely - the National Strategy for Rangeland Management needs strategies to be developed; furthermore, the outcomes of our conference will feed directly into the national Fenner Conference in October which will focus on rangelands.

We will be using a "foresighting" approach quite new to Australia, thanks to the enthusiastic involvement on our committee of Don Blesing, a consultant who is involved in foresighting elsewhere. Foresight is used in many countries for policy and strategy development, and is being trialled by a range of organisations in Australia for long-term strategic planning.

As a conference delegate, you will be allocated to a small group to develop one of the scenarios. Group membership will be deliberately diverse, to include a good spread of stakeholders, attitudes, etc. Each group will have a skilled facilitator. The conference speakers will provide stimulating input into our thinking.

By our own foresighting, and with Barney Foran's help, the committee has identified four broad, contrasting scenarios - plausible political/economic circumstances which the rangelands might face within 15 years. Until 2011, we will not know what actually results, and the reality may be quite similar to one of our scenarios. The key point is that exploring each scenario now will enable us to pick trends as they occur, and give us some guidance as to how to respond.

It is going to be an exciting and rewarding "thinking-adventure", and we look forward to having you with us.

# Preliminary Program ARS Biennial Conference

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

### Monday 23 September

Afternoon and evening registration.

### Tuesday 24 September

- 7:30 Registration.
- 8:50 Opening Session. Chair: Carolyn Ireland.
- 8:55 Official Opening. Dr Ron Hacker (President, ARS).
- 9:10 Introduction to conference program. Dr Martin Andrew.
- 9:20 Vision Statements.
  1. Community concerns: the vision leading to the National Strategy for Rangeland Management. Dr Graeme Robertson (Chair, NSRM).
- 9:50
  2. Sustaining cultural values: a vision for the future. Lois O'Donohue (ATSIC).
- 10:20 Morning Tea.
- 10:50
  3. Enhancing conservation values: a vision for the future. Philip Toyne (DEST).
- 11:20
  4. Recognising production values: a vision for the future.
    - a) mining perspective : Pearce Bowman (WMC).
    - b) a pastoral perspective : David Brooks (pastoralist).
- 12:00 Lunch.
- 1:00 Group session #1 'Develop Rangeland Scenarios from Core Assumptions.'
- 3:00 Poster session #1.
- 4:00
  1. Economic performance of rangelands. Dr Nick Abel (CSIRO).
  2. Sustainable management. Andrew Nicolson (pastoralist).
- 4:20 Questions from the floor.
- 5:30 Official opening of the Australian Arid Lands Botanic Garden.

3:10

Questions from the floor.

3:25

Group session #4 'Develop Strategies' and Afternoon Tea.

5:15

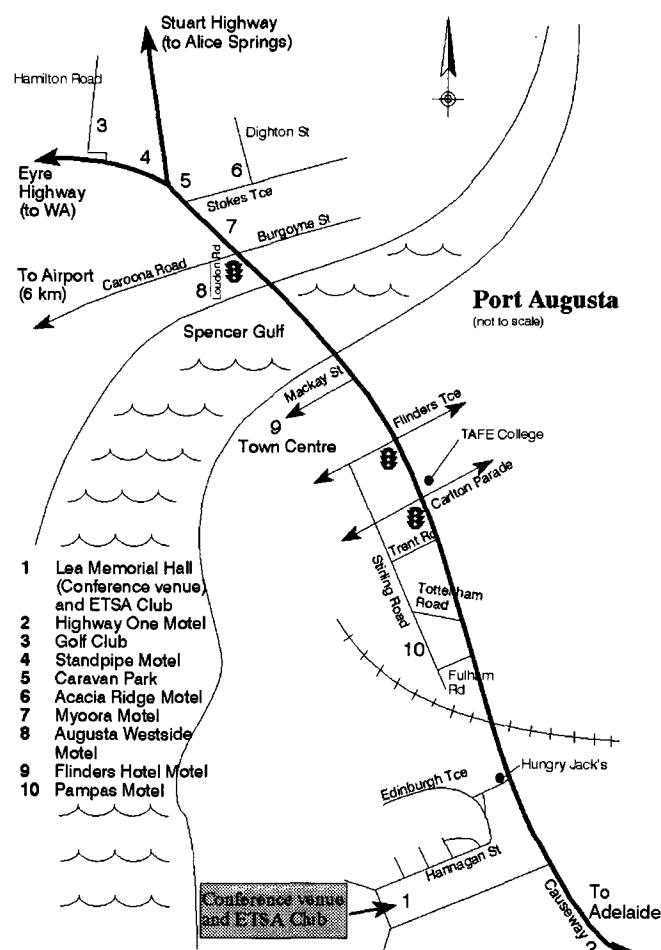
General meeting of the Australian Rangeland Society.

### Thursday 26 September

Field trips.

### Friday 27 September

- 8:50 Open forum: New Ideas (7 papers).
- 10:30 Morning Tea.
- 10:50 Poster session #3.
- 11:50 Presentation of Scenarios.
- 12:30 Lunch.
- 1:30 Continue Scenarios.
- 3:00 Plenary Discussion: Barney Foran (CSIRO).
- 4:00 Conference summary.
- 4:45 Conference close.



### Wednesday 25 September

- 8:30 Group session #2 'Identify Opportunities.'
- 10:00 Morning tea.
- 10:30
  3. Living in the rangelands: servicing people's needs. Robyn Tredwell (ABC/ Telstra Rural Woman of the Year).
- 10:50 Communications in the rangelands: the needs and solutions. Bood Hickson (Cloncurry Computer Consultants).
- 11:10 Questions from the floor.
- 11:20 Group session #3. 'Identify Needs.'
- 12:25 Lunch.
- 1:35 Poster session #2.
- 2:30
  5. Regional Development. Prof John Holmes (Uni. of Qld).
- 2:50
  6. Maintaining Biodiversity. Dr Craig James (CSIRO).

## BOOK REVIEW

### Trees for Saltland

#### *a guide to selecting native species for Australia*

*Reviewed by Clive Malcolm, Consultant in Land Rehabilitation, RMB 1054, Denmark WA 6333*

This 72 page booklet provides a guide to growing trees on salt-affected and/or waterlogged land in Australia. Detailed descriptions and prescriptions are given for 30 species and brief information for a further 30 species. The book includes species recommended for planting on recharge areas to lower watertables elsewhere. The trees for discharge-area planting are differentiated according to their tolerance of groundwater salinity.

The effects of salinity, sodicity and waterlogging on tree growth are discussed, though soil acidity is not dealt with. Gypsum is recommended for replacing exchangeable sodium. Treatment of fertiliser use is minimal possibly because there is insufficient data.

There is a detailed treatment of tree establishment using seedlings, including site preparation, ripping, mounding, weed control, mulching and insect control. Direct seeding for salt-affected areas is dismissed rather too lightly as much of the planting being considered is for relatively low-salinity areas and many people are now using direct seeding for tree establishment on farms. It is also possible to select species which establish relatively easily from seeds. Some of the mounding and tree planting equipment on the market is named in the booklet. A more comprehensive listing giving features of each would be helpful and more equitable.

The susceptibility of trees to insect attack is listed and is a useful guide as to what to expect. This list appears to be influenced by the amount of study and use that a species has been subject to rather than being a means of selecting against insect susceptibility. For example, *Eucalyptus camaldulensis* and *E. globulus* are probably the most widely grown species and have the longest lists of insect pests.

The detailed descriptions and prescriptions for the main 30 species are a very valuable source of information. Maps show the natural distribution for each species and the predicted ranges over which the species can probably be grown. The authors appeal for information to help towards a possible more comprehensive revision of the book. The present book is a very useful reference and a more comprehensive edition will be invaluable. A larger font size and larger and clearer pictures would improve the book.

As it is not possible to cover all species in a book of this nature it would be appropriate to recommend that seeds of local species should be collected and used for revegetation. For some purposes this is preferable to using introduced species.

*Ed. The booklet is titled Trees for Saltland, a guide to selecting native species for Australia and is written by Nico Marcar, Debbie Crawford, Peter Leppert, Tom Jovanovic, Robert Floyd and Roger Farrow. It is published by the CSIRO Division of Forestry and can be obtained by writing to PO Box 4008, Queen Victoria Terrace, ACT 2600.*

## SOME THOUGHTS FROM THE PRESIDENT

*Ron Hacker, ARS President, c/- NSW Agriculture, PO Box 865, Dubbo NSW 2830*

The ARS has a new Vice President from Queensland! Congratulations to Professor Eugene Moll from The University of Queensland, Gatton College who was elected in the postal ballot conducted in April-May. I look forward to his contribution, which has already started, and the different perspective which his background and experience will bring to Council. Congratulations also to the Society's travel award grantees for 1996. Council has awarded travel grants to Sandra van Vreeswyk and Troy Campbell to attend the Port Augusta conference, and to Dionne Maywald to visit the US Forest Service Shrub Sciences Laboratory in Provo, Utah as part of her post graduate research program.

Other highlights of the year's activities are contained in the various reports to the AGM printed in this volume. It is particularly pleasing to note the increase in membership over the past year and the continuing sound financial position of the Society. Our retained profits as of December 31 1995 were \$131,945 compared with \$134,995 for 1994 despite the lack of conference income in 1995 and some significant items of expenditure relating to the Salt Lake City promotion and the Rangeland Awareness Survey.

A couple of other Council items are also worth mentioning. I have recently opened negotiations with the Society for Range Management for the inclusion of abstracts from *The Rangeland Journal* in the data base the SRM is compiling of all papers published in the *Journal of Range Management*. Council is proposing that SRM handle the marketing of the combined data base with orders placed direct with the SRM. This combined data base will be a useful tool for Australian range scientists and will ensure valuable exposure for our Journal internationally. Watch this space for further details! Second, Council has resolved to develop a policy on kangaroo management. Some previous attempts have been made in this direction, including a draft position statement issued by the WA Branch in 1993, but no national policy has resulted. The working group to develop this policy has not yet been appointed but I expect to be able to advise of progress in the next Newsletter.

The biennial conference at Port Augusta will, as usual, include a general meeting of the ARS. Anyone wishing to place a motion on notice for this meeting should communicate with the Secretary, Bill Tatnell. In particular we will need to consider the venue for the next conference. In the normal round, Queensland would be due to host the 1998 conference but available resources may be scarce in the run up to the International Rangelands Congress in Townsville in mid-1999. If you are interested in hosting the 1998 Conference please come along to the Port Augusta meeting with a proposal to put to the business session.

Finally, on a more philosophical note, it is impossible to escape the conclusion, from where I sit, that things are tough

in the bush. Of course many of our producer members hardly need reminding of the fact, and for many of us it is apparent from our daily work experience. It is also difficult to escape the conclusion that the current situation is not just a matter of another unfortunate coincidence of low prices and drought which will eventually pass, as such crises have in the past. There are more fundamental factors at work which will determine how we use and manage our rangelands in the future. Change is certainly required and while as a Society we may not be able to influence many of the factors involved, we can provide a forum for informed discussion and provide to government the views of a sizeable body of rangeland professionals (and I include land holders in that term) concerning future directions and requirements. For this reason the Port Augusta conference is an important meeting. I hope that you will be able to contribute your knowledge and experience to the planned discussions.

## NEW MEMBERS

Tony Smurthwaite 13 Ralstinrd St Kardinya WA 6163	Fiona J Clissold c/- Dept Ecol & Evol Biol Monash University Clayton VIC 3168
Redfire Resources NL GPO Box 3386 Sydney NSW 2001	Ann Sharon Oldfield "Cowarie Station" PMB 123 Port Augusta SA 5710
Miss Kim Morrison "Trewilga" Coonamble NSW 2829	Don Cowan c/- DPI PO Box 976 Charters Towers QLD 4820
Harald Ehmann PO Box 9 Blackwood SA 5051	Erik Dahl 76 Cradock Rd Hawker SA 5434
Philip Lucas Hughes Banchory Station Clermont QLD 4721	Bertie Youtie PO Box 1188 La Grande OR 97850
National Parks & Wildlife Service Western Zone Environmental Planning Unit Level 1, 52 Wingewarra St Dubbo NSW 2840	Royal Botanic Gardens Librarian Mrs Macquarie St Sydney NSW 2000
University of Wyoming Periodicals - Car 1 PO Box 173810 Denver CO 80217-3810	Jamie Pittock World Wide Fund for Nature GPO Box 528 Sydney NSW 2001
USDA Agric. Research Service 4.51 Hwy 205 HC 71 Burns OR 97720	Robert Schiffner 1137 S Telegraph Rd Monroe MI 48161
Trevor Naismith PO Box 19 Hawker SA 5434	

## WHAT TO EXPECT AT PORT AUGUSTA, SEPTEMBER 1996 Latest on the Rangelands Conference

*Merri Tothill, PISA, PO Box 357, Port Augusta SA 5700*

Perhaps, I could start with "*Expect the Unexpected*". Sounds ominous!! So what do I really mean?

Many of you may now be aware that our conference format will be combining traditional-style paper and poster presentations with a series of group sessions. The group sessions aim to explore and develop a range of alternative futures for the Australian rangelands.

Some of the invited speakers include:-

- Pierce Bowman :- Recognising production values from a mining perspective,
- Robyn Treadwell :- Living in the rangelands,
- Dr. Nick Abel :- Economic performance of the rangelands,
- Philip Toyne :- Enhancing conservation values,
- Prof. John Holmes :- Regional development", and
- Dr. Craig James :- Biodiversity.

These and other presented papers will "set the scene" for the development of the group scenarios.

We are also very keen for the children of conference delegates to join in our Children's Program. This will be based at the Port Augusta School of the Air and will coincide with the four-day conference. A comprehensive program has been organised and includes a Mangroves Tour, Bird Mist Netting and a visit to nearby Dutchman's Stern Conservation Park. The Children's Program will be fully catered and supervised by professional staff.

The official opening of the Australian Arid Lands Botanic Gardens will take place on Tuesday 24th September, adding another attraction to the action-packed conference program.

Seasonal conditions around Port Augusta and environs have been extremely dry for the last six months. A number of pastoral properties have been experiencing a severe water drought and carting of water to stock has been necessary. The vegetation, whilst not undergoing severe drought stress, is showing signs of needing some relief. In the Flinders Ranges, rain has been extremely patchy, with some properties experiencing an excellent season. However, there are some areas in the lower Flinders with the natural springs at their lowest level in living memory.

We are expecting good rains at any time - SOON! So in September, the country should be looking spectacular - and as we would expect for that time of the year. Temperatures average at 10 degrees minimum and 20 degrees maximum at that time of year, so be prepared with warm clothing, especially if you are travelling from the north. And as I said, it could rain - so again, be prepared.

For those who have not yet registered, you are not too late. A registration form is available from the address quoted above or ring the office of Primary Industries, Port Augusta on (086) 485 160.



## FENNER CONFERENCE

### Sustainable Habitation in the Rangelands

*Sarah Ryan, CSIRO Division of Wildlife & Ecology, PO Box 84, Lyneham ACT 2602*

People living in the rangelands are facing increasing challenges posed by declining incomes due to weak overseas demand for livestock products, growing pressure for more biological conservation and ecologically sustainable land management, and increasing demands for access to land from indigenous groups. **How do we meet all these challenges and sustain a future for people living in the rangelands?** This is the context for a forthcoming Fenner Conference with the theme of *Sustainable Habitation of the Rangelands*. The conference is being organised by the CSIRO Division of Wildlife and Ecology and will be held in Canberra on 29-30 October this year.

The conference coincides with the imminent release of the draft National Rangelands Management Strategy (NRMS). The draft strategy will provide a framework for the conference, and in turn, the conference will produce specific strategy suggestions for inclusion in the final national strategy.

Keynote speakers will include Dr Brian Walker, Dr Buzz Hollings, Mr Don Blesing, Dr Graham Robertson and Ms Denzil Mills. Mr Blesing (who is a primary producer and member of ASTEC) is closely involved in the Port Augusta Biennial Rangelands Conference and will bring the knowledge gained from the "foresighting" workshops held at that conference to this one.

The two day conference is structured around six case studies of rangeland regions. Following a morning of keynote addresses, contributors from each region will present a briefing paper for their region and then the conference will divide into working groups to develop specific strategies for each region. These will be presented before and after lunch on the second day. The last afternoon will be spent in synthesis and discussion, with additional comments contributed by a stakeholder panel.

Case studies will focus on:

- the Kimberleys, WA
- Goldfields, WA
- Darwin to Katherine, NT
- Western Division, NSW
- Eyre Basin, SA
- Dalrymple Shire, Qld

Due to the workshop nature of this conference, papers are not invited. Conference proceedings will be in the form of a submission to the NRMS.

## Who should attend

A broad audience is sought for this conference. The focus is on rangelands policies and strategies, rather than on detailed technical or scientific issues. The conference will be held at Becker House, Australian Academy of Science, Canberra, from 9 AM on Tuesday 29 October to 4.30 PM the following day. There will be a conference dinner on the Tuesday evening.

Participants will need to make their own accommodation arrangements. Further information regarding registration and accommodation can be obtained by contacting Dr Sarah Ryan at the above address or by:

Phone: 06 2421667

Fax: 06 2413343

Email: S.Ryan@dwe.csiro.au

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## NEWS FROM FASTS

*(Ed. The Australian Rangeland Society is a member of the Federation of Australian Scientific and Technological Societies (FASTS). Through the wonders of modern-day electronic mail (Email) I now receive their monthly newsletter. The following information has been extracted from their recent newsletters.)*

### From the FASTS April and May Circulars

*Joe Baker, FASTS President*

#### *News from the new Government*

The impact that the \$8 billion cuts will have on science and technology are not yet known, but there are some ominous signs. The Universities are clearly going to be in for a difficult time, and the Government is looking hard at all areas of expenditure. This includes the Cooperative Research Centre program and the 150% deductibility for industrial research and development (R&D). The danger is that in its attempts to cut expenditure, the new Government will axe programs or promises which require long-term commitments to make them viable. The Space Program is one such program in doubt, in contrast to the Coalition Science & Technology (S&T) Policy for "a viable space research program". The interests of the science and technology community need to be represented in a vigorous manner, which is a job for FASTS. We also need to remind the new Government that pre-election promises are taken seriously.

#### *The new Ministers*

FASTS has put several matters to Minister Peter McGauran, including a completely new approach to the funding of R&D

by industry, and FASTS' views on how responsibilities between ASTEC (now ASETEC), PMSEC and the Chief Scientist should be divided. We have opened discussion on how scientists and technologists could play a part in the development of Australia, through involvement in the 42 Regional Development Organisations. These matters will be picked up in talks with Senator Grant Tambling, Parliamentary Secretary for Regional Development, and Minister McGauran, together.

#### *Careers for scientists*

The limited career path for younger and middle-ranking Australian scientists existing on "soft" funding is a matter of continuing concern. FASTS have discussed this with Minister McGauran, and recommended that ASETEC undertake a proper examination of the causes and solutions. One change which would help younger scientists would be to increase the size and duration of grants, and couple this with a review process earlier in the term of the grant so that they would have more notice of the extension or termination of programs. The combined expertise of FASTS' Member Societies would make FASTS a valuable member of the working party looking at this problem.

#### *New policy document*

The original FASTS Policy Document was launched in June last year and has since been revised. Some changes were made by FASTS' Council last year, some policies have been adopted or become redundant, and other changes were made necessary with the new national Government. The revised FASTS Policy Document is being launched at Parliament House on Tuesday June 18 at 11 am, with formal presentation to Minister Peter McGauran. Member Societies, relevant MPs and prominent representatives of science and technology organisations will be invited to the launch.

#### *Protests and actions*

FASTS held a media conference at Parliament House on Friday May 31 which brought together science groups and the National Farmers Federation to ward off rumoured cuts to science and technology funding. This sort of "third-party endorsement" by the NFF of the value of S&T is particularly important in Budget discussions, and avoids the charge that science and technology are self-serving.

## **FORTHCOMING WORKSHOPS**

### **3rd International and the 21st Annual Minerals Council of Australia Environmental Workshop**

This workshop will be held in Newcastle (NSW) from 13-18 October 1996. Its objectives are to:

- foster technical exchange between environment professionals involved in the minerals industry;
- discuss environmental management issues for exploration, mining and mineral processing projects in developing countries; and
- demonstrate environmental management skills and technology for the minerals industry in Australia and around the world.

Further details, including a copy of the Registration Brochure, can be obtained from the Minerals Council of Australia, PO Box 363, Dickson ACT 2602.

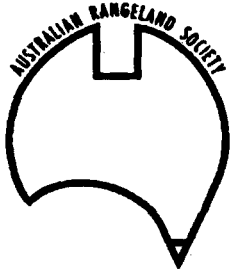
### **2nd National Workshop on Native Seed Biology and Revegetation**

This workshop, also in Newcastle, on 11-12 October will precede the above conference. It has the objectives of:

- presenting the latest research and reviewing the current state of knowledge in native seed biology,
- identifying research and technology transfer needs in native seed biology, and
- determining future market service needs in the use of native plant seeds.

Further information and the registration brochure can be obtained from The Australian Centre for Minesite Rehabilitation Research, PO Box 883, Kenmore QLD 4069. Telephone (07) 3212 4555, Fax (07) 3212 4574, Email C.Bell@mailbox.uq.edu.au





# *The Australian Rangeland Society*

## REPORTS FROM THE ANNUAL GENERAL MEETING

A.C.N. 008 784 414

### PRESIDENT'S REPORT

Ron Hacker, NSW Agriculture, PO Box 865, Dubbo NSW 2830

#### Introduction

It is with pleasure that I present this report of the Council of the Australian Rangeland Society for the first year of the Council's NSW term of office.

First, let me express my personal appreciation to the members of Council who have facilitated the smooth transition from Western Australia to NSW and the effective functioning of the Society for the last 12 months. I am grateful in particular to Rob Richards (Hon. Subscription Secretary), Nick Milham (Hon. Treasurer) and Bill Tatnell (Hon. Secretary) upon whom most of the work load of the Society's operations has fallen. The transfer of Council from one state to another has at times been a difficult business but I believe that in this case the transition has been a smooth one, facilitated by the diligence of the individuals involved and the development by the WA Council of a functional, computerised subscription system. I am also grateful to Guy Fitzhardinge (Vice President) and Alec Holm (Immediate Past President) for their sound advice on a range of issues which have come before Council, and to Alec in particular for providing that link with the affairs of the previous Council so essential in assuring continuity in the Society's administration. It is obvious that the comments made in his report to the last AGM concerning the amount of time that individuals have available to provide voluntary support for organisations such as ours are equally true today, perhaps more so. The commitment of the Society's officers thus deserves our grateful appreciation. The support of their organisations has also been essential to the functioning of the Society in such areas as use of telephones, office facilities, motor vehicles and some commitment of time (despite deliberate attempts to minimise such intrusions) and this support is gratefully acknowledged.

#### Administration

Although transfer of the Society's business operations to NSW proceeded smoothly after the AGM on the 29 May 1995 the operation of Council itself was disrupted by the initial absence overseas of the incoming President. The first formal meeting of the new Council was delayed until 7 September,

1995. Two informal meetings were held in the interim but only essential business was transacted. Council subsequently met five times in the year to May 1996. Throughout this period Council operated with only one Vice President as no Vice Presidential nomination was received from Queensland for the 1995 election. A letter from the President to the Queensland membership in January 1996 resulted in two nominations and an election was conducted by postal ballot in April-May. Results will be announced later in this meeting.

During the year Council has moved to consolidate the finances of the Society by closing a number of accounts in various locations and transferring the funds to the operating account and various fixed deposits with the National Australia Bank. This consolidation should simplify transfer of financial management to subsequent Councils. The Society continues to be in a sound financial position, as outlined in the auditors report to be presented by the Treasurer.

Membership has grown during the past year. As of 15 April membership totalled 590 of whom 480 were financial for calendar 1996. This compares with corresponding figures of 520 and 481 for May 1995. Council has decided that fees for calendar 1997 will be set by late August 1996 and that renewal notices will be distributed with the last *Range Management Newsletter* for the year. A reminder notice will be published in the first Newsletter of 1997 and members will be considered non-financial if subscriptions are unpaid by the end of June. Payment after the end of June will nevertheless reinstate the member's financial standing. Non-financial members will receive one personalised renewal notice for the following year. Adoption of this protocol will remove difficulties in determining when membership has lapsed and distribution of publications should cease. Further details of the Society's membership status will be presented in the Subscription Secretary's report.

Three travel grants were awarded during the year following receipt of applications in the annual round ending November, 1995. Two will support travel to the biennial conference in Port Augusta in September 1996 and the third will support international travel by a young Australian rangeland scientist.

The Society's publications have maintained their high standard throughout the year thanks to the fine efforts of Allan Wilson as Editor of *The Rangeland Journal* and Gary Bastin as Editor of the *Range Management Newsletter*, under the overall supervision of the Publications Committee. During the year I resigned my position on this Committee in order to concentrate on Council matters. Margaret Friedel also resigned after six years as Chair during which she presided over the

transformation of the former *Australian Rangeland Journal* to the current publication with a changed format and editorial policy and increasingly a changed image in the scientific community. Leigh Hunt, a current member of the Committee, accepted appointment as the new Chair while Don Burnside and Ken Hodgkinson were appointed to fill the vacancies created by the resignations. All other members accepted Council's offer of reappointment for a further 12 months. Further details are provided in the report from the Publications Committee.

## Highlights

Council has had the opportunity to build on the work of the WA Council in promoting the Society at home and abroad. Approximately 50 Society members attended the Vth International Rangeland Congress in Salt Lake City in July, 1995. The Society's stand at the Congress, organised by Ken Leighton and funded by an allocation made by the WA Council, was highly successful in bringing the ARS to the attention of international delegates. Most Australian delegates also wore a distinctive ARS tee-shirt, produced as part of the publicity campaign, and were highly visible in Congress sessions. Although the publicity has resulted in few applications for membership, it did raise the Society's profile and created a talking point at the Congress. The stand also provided an opportunity for Allan Wilson to promote *The Rangeland Journal* and the *RMN* to potential subscribers and authors. Contact established at the Conference with the Society for Range Management and the *Journal of Range Management* has resulted in a decision to contribute abstracts of articles published in the Society's journal to a bibliographic data base being prepared by the SRM. Council has accepted a proposal from the Publications Committee regarding the logistics of this operation and has authorised the President to negotiate with the SRM regarding the contribution of past abstracts, annual updating and marketing. This proposal will result in considerably increased exposure for our Journal and will ultimately assist in securing the listing in *Current Contents* which has long been considered essential to its future as a scientific publication of international standard.

The Rangeland Awareness Survey, organised by the WA Council and conducted by the Roy Morgan Research Centre Pty Ltd just prior to the movement of Council to NSW, has been advertised for sale (at a nominal price to members) in the *Range Management Newsletter* as well as the *Bulletin of the Ecological Society of Australia* and the newsletter of the Australian Wildlife Management Society. A number of Rural Research and Development Corporations were canvassed directly. The Survey represents a significant initiative by the Society and provides the first national assessment of community attitudes to rangelands. The data contained have significant policy implications for all organisations concerned with the use and management of these lands. By 15 May a total of 17 copies had been sold, including one international sale.

In keeping with the motto adopted by the WA Council of *Speaking for the Rangelands*, Council issued a national press release in April 1996, the first to be issued by the Society,

urging the earliest practicable release of the rabbit calicivirus and the provision of Federal and State assistance to allow pastoralists to implement follow-up control measures. The statement was released nationally through the Federation of Australian Scientific and Technological Societies and was provided directly to the Ministers for Primary Industry and Environment, the Canberra press gallery, and a number of capital city dailies. Local distribution was also arranged in NSW. The release attracted reasonable media interest, particularly in the eastern states, and resulted in several radio and TV interviews as well as newspaper articles.

In December, 1995 Council appointed the organising committee of the VIth International Rangeland Congress, to be held in Townsville in 1999. A grant of \$1000 has been made to the committee to initiate its activities and Council has approved an initial loan of \$10,000 which will be made available following incorporation of the committee under the NSW Incorporated Associations Act, 1984. Negotiations are continuing to establish an appropriate financial relationship between the Society and the incorporated association. Following several tele-conferences, the organising committee met in Townsville in May to inspect the venue and generally progress the organisation of the Congress. The facilities that we will have available for the Congress are first class and the program being planned is sure to make for a memorable meeting both scientifically and socially.

## Future Developments

Council has resolved to develop a policy on kangaroo management and the Policy Working Group, which has been relatively inactive during the year, will develop Terms of Reference for the development of this policy. A number of new members will be appointed to the Policy Working Group which will then be responsible for progressing the kangaroo policy issue as well as preparing the Society's response to the Draft National Strategy for Rangeland Management which is about to be released for public comment.

The biennial conference will be held in Port Augusta from 24-27 September 1996. This promises to be a landmark gathering thanks to the imaginative efforts of the organising committee, now chaired by Caroline Ireland replacing Jim Cawthorne. The conference will workshop action plans for the future use and management of rangelands which should contribute to the implementation of the National Strategy for Rangeland Management. I expect that this meeting will confirm the Society's role as a major forum for such discussions.

Further press releases can be expected as a result of these activities which will help raise the profile of the Society as a group able to speak authoritatively on issues affecting the rangelands.

We therefore have much to look forward to in the coming year and a bright future for our Society.

# THE AUSTRALIAN RANGELAND SOCIETY

## BALANCE SHEET AT 31 DECEMBER 1995

1994		\$
\$	<b>SHARE CAPITAL AND RESERVES</b>	
134,995	Retained profits	131,945
<u>134,995</u>		<u>131,945</u>
	<b>Represented by:</b>	
	<b>FIXED ASSETS</b>	
7,950	Plant & equipment (at tax value)	2,455
	<b>CURRENT ASSETS</b>	
	Trading account - NAB, Parkes	30,162
24	Trading account - Journal, BWA	880
855	Trading account - Newsletter, WBC	1,697
8,981	Trading account - 1994 Conference, WBC	2,153
-	Trading account - 1995 Conference, WBC	15,180
1,152	Trading account - Cobar, CBA	1,183
3,303	Trading account - Victoria Park, ANZ	4,707
-	Trading account - WBC, Bourke	379
-	Trading account - WBC, Port Augusta	4,304
100	Cash on hand	104
1,000	Sundry debtors	-
226	TFN Tax Receivable	-
<u>15,641</u>		<u>60,749</u>
	<b>INVESTMENTS</b>	
29,975	Term Deposit - Sirocredit	-
23,409	Term Deposit - BSA, Perth	24,854
3,106	Cash Management - NAB, Innaloo	-
29,705	Term Deposit - NAB, Perth	-
14,971	Deposit - NM, Mortgage fund	16,192
14,972	Deposit - NM, Income fund	16,195
-	Term Deposit - NAB, Parkes	15,000
<u>116,138</u>		<u>72,241</u>
<u>139,729</u>	<b>TOTAL ASSETS</b>	<u>135,445</u>
	<b>CURRENT LIABILITIES</b>	
1,734	Trading account - NAB, Parkes	
3,000	Trade creditors	3,500
<u>4,734</u>	<b>TOTAL LIABILITIES</b>	<u>3,500</u>
<u>\$134,995</u>	<b>NET ASSETS</b>	<u>\$131,945</u>

# THE AUSTRALIAN RANGELAND SOCIETY

## STATUTORY STATEMENT OF PROFIT AND LOSS

### FOR THE YEAR ENDED 31 DECEMBER 1995

1994		\$
\$ -	Operating loss for the year	(4,849)
-	Income tax expenses/(benefit)	-
-	Extraordinary items	-
<u>-</u>	<b>NET LOSS FOR THE YEAR</b>	<u>(4,849)</u>
-	Bourke Account found	379
-	SA Branch Account found	1,420
134,995	Retained profits brought forward	134,995
<u>\$134,995</u>	<b>RETAINED PROFITS AT 31 DECEMBER 1995</b>	<u>\$131,945</u>



**THE AUSTRALIAN RANGELAND SOCIETY  
STATEMENT OF PROFIT AND LOSS  
FOR THE YEAR ENDED 31 DECEMBER 1995**

1994 \$		\$
	<b>INCOME</b>	
-	Subscriptions	24,076
-	Grant - National Landcare Program	3,000
-	Interest - NAB, Parkes	73
-	Interest - ANZ, Western Australia	55
-	Interest - SA Branch	23
-	Interest - Sirocredit	1,628
-	Interest - Bank SA	1,445
-	Interest - NAB, Perth	2,716
-	Interest - National Mutual	2,444
-	Interest - CBA, Cobar	31
-	ARS Survey	175
-	Plant Identification Course	2,940
-	Utah IRC	720
-	Net profit/(loss) Journal	(13,656)
-	Net profit/(loss) Newsletter	(6,658)
-	Net profit/(loss) Conferences	15,036
<hr/>		<hr/>
-		34,048
<hr/>		<hr/>
	<b>EXPENSES</b>	
-	Accountancy	3,500
-	AGM expenses	842
-	Bank Charges	364
-	Depreciation	1,692
-	Honoraria	7,500
-	Loss on sale of fixed assets	1,803
-	Printing, stationary & postage	2,831
-	Scholarships & Grants	5,850
-	Subscriptions and donations	318
-	Survey and Research	6,760
-	Travel & accommodation	1,664
-	Utah Congress Expenses	5,773
<hr/>		<hr/>
-		38,897
<hr/>		<hr/>
-	<b>NET LOSS For THE YEAR</b>	<b>(14,849)</b>
<hr/>		<hr/>

## SUBSCRIPTION SECRETARY'S REPORT

*Rob Richards, Dept. Land & Water Conservation, PO Box 235, Condobolin NSW 2877*

Apart from an initial scare of having lost the ARS computer somewhere between Perth and Condobolin, things have run smoothly in the period from July 1995. This period has seen the welcoming of forty two new members to the Society which is a positive sign.

Renewal notices were sent out in January 1996 with most subscriptions having been renewed by now. In the past non financial members remained on the database to receive renewal notices for three years. This will change this year and non financial members will receive only one renewal notice twelve months after their membership has expired. As you are aware (or should be!), subscription rates were increased for the 1996 period in order to cover current costs. Individual or family full membership was increased from \$46.00 to \$50.00 with most other increases being \$5.00. The rates for 1997 rates will be set in August of this year.

Another change to be made this year of interest to members is that the renewal notices will be sent out with the November newsletter. This move will save on postage costs and will enable members to renew their subscription before the end of January. Those who subscribe to the journal only will receive their renewal notice in November also.

Beginning in 1997, members will be considered not financial if their subscription has not been paid by the end of June in that year.

As of 25 May 1996, the Society had 482 financial members - five of these being Honorary members. The table below shows the break-up of membership.

Member Type	Subscription Type			Total
	Journal & Newsletter	Journal	Newsletter	
Individual	307		63	370
Company	49	5		54
Library	24	30	4	58
Total	380	35	67	482

## REPORT OF THE PUBLICATIONS COMMITTEE

*Leigh Hunt, Primary Industries SA, PO Box 357, Port Augusta SA 5700*

As Council President Ron Hacker mentioned in his report, the last 12 months have seen a number of changes in the membership of the Publications Committee. Margaret Friedel resigned as Chairperson and Ron Hacker resigned from his position on the Committee. Ron's resignation comes after 6 years as Editor of the Journal followed by 5 years as a Committee member. I would like to take this opportunity to thank them both for the skilled and dedicated work they have put into overseeing the production, and improving the quality and standing of the Society's publications over many years.

Much of the recent business of the Publications Committee has been covered already in Council's report, so I will not repeat it here.

The *Rangeland Journal* continues to attract a good proportion of the scientific papers dealing with rangelands which originate in Australia, but an increase in the number of papers submitted would be welcomed. The Committee is endeavouring to increase the international exposure of the Journal and attract both authors and subscribers from overseas, thus securing its future as an internationally recognised scientific publication. One method we have chosen for achieving this is the publication of special issues of *The Rangeland Journal*. Work is continuing on the next special issue, which will be on grazing management. It is due for publication in December this year. Edited by Allan Wilson, this issue promises to be a significant contribution to the field of grazing management, with both invited papers from international authorities in the field and contributed papers.

Gary Bastin, as Editor of the *Range Management Newsletter*, continues to produce an interesting, informative and high quality publication with each issue of the Newsletter. I would like to encourage all Society members to submit articles reporting local activities, viewpoints or progress with projects for publication in the Newsletter. If you have some material which you think may be suitable for the Newsletter why not give Gary a ring and discuss it.

During the year we decided to dispense with the practice of publishing the Application Abstracts from Journal papers in the Newsletter. Instead, the usual abstract from the papers will be published and authors will no longer be required to submit application abstracts. This decision was taken in view of the change in our editorial policy (aimed at increasing the scientific standard of the Journal) to no longer require the findings of a journal paper to have an immediate application to management.

Finally, I would like to thank all those involved in the production of the Society's publications, including Allan Wilson (Journal Editor), Gary Bastin (Newsletter Editor), Malcolm Howes (Production Manager), the Associate Editors and members of the Publications Committee, for their efforts during the past year.

**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 1996.

\* delete as appropriate

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

**Membership Rates:**

	Australia	Surface Mail	Overseas Air Mail
<b>Individual or Family -</b>			
Full (Journal + Newsletter)	\$50.00	\$60.00	\$70.00
Part (Newsletter only)	\$25.00	\$30.00	\$35.00
<b>Institution or Company -</b>			
Full (Journal + Newsletter)	\$80.00	\$90.00	\$100.00
Part (Newsletter only)	\$40.00	\$45.00	\$50.00

**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.....