The Australian Rangeland Society

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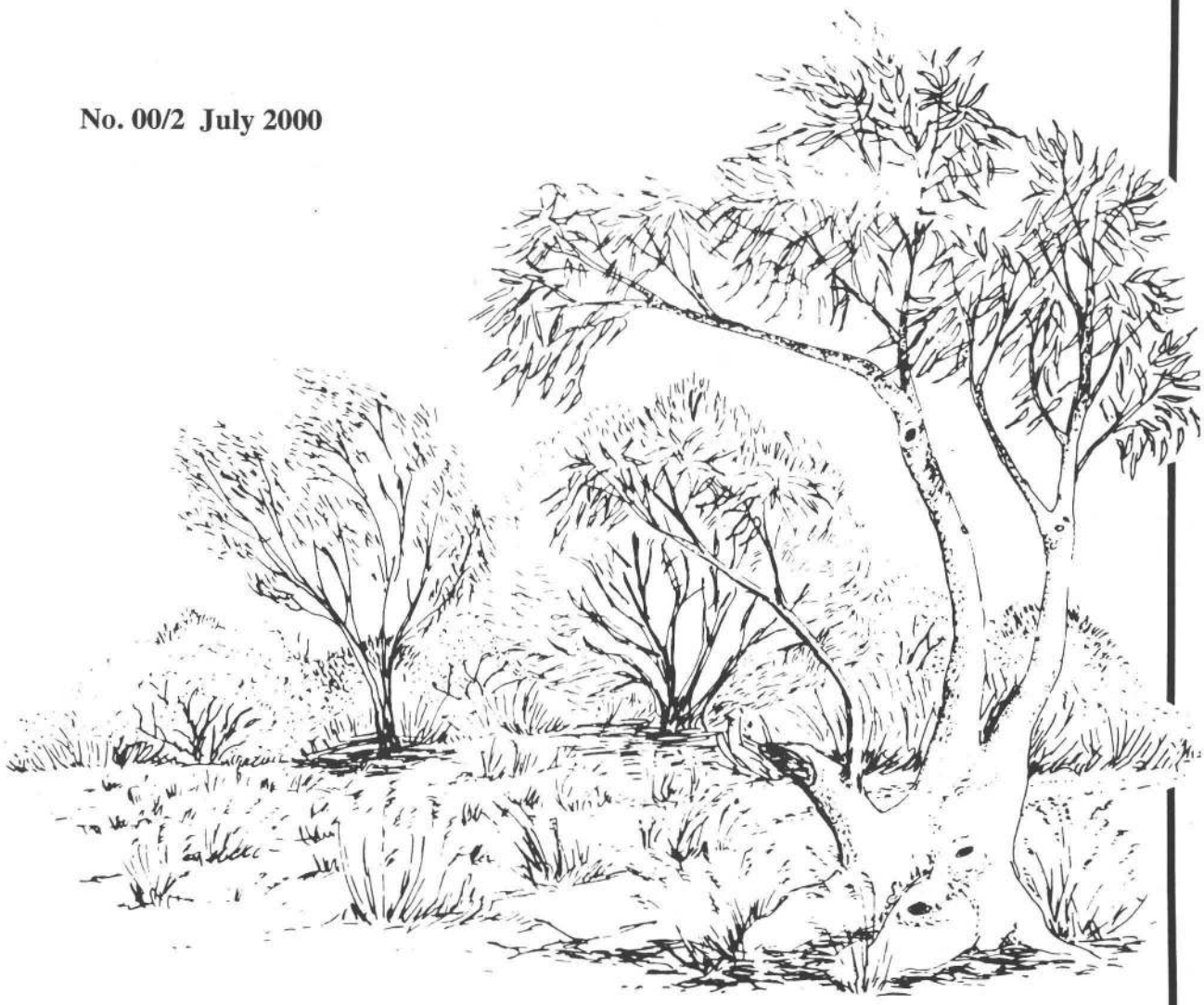
Range management Newsletter

No. 00/2 July 2000



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FROM THE EDITOR

Noelene Duckett, 5 Amery Street, Ashburton VIC 3147

Welcome to the second newsletter for this year, and the first produced under my guidance. I feel privileged to follow in the footsteps of the previous editor, Gary Bastin, and sincerely hope that the newsletter will continue to be a constructive forum about wider rangeland issues. I would also like to thank Gary for his kind offer to arrange the printing and posting of this issue.

Two major articles have been included in this issue. The first of these examines vegetation recovery at exclosure sites on Kidman Springs station in the Northern Territory. This 25 year study of three grassland communities in varying condition has revealed interesting trends in the grass and woody species. Furthermore, the study goes on to discuss the interesting question as to whether long term sequences of photographs can be used as an aid to future management. As suggested in the article "long term photos can tell us much about vegetation change."

Ian Watson has also provided a major article updating us about the Rangeland Theme of the National Land and Water Resources Audit. He outlines the four projects of the rangeland monitoring workplan, the outputs of which will be used to design a framework for ongoing monitoring at a national level. As part of the Audit, Ian is also chasing sets of photos showing long term change in the rangelands. Ian has written a short article outlining the kinds of photos he is after and how they will be used. Many of us have useful photos like those Ian has described – why don't you look through your filing cabinets to see what you can find?

This issue also contains an important short article from our Subscriptions Manager Rob Richards about the future of the Australian Rangeland Society. As indicated in his report to the AGM (see later in this issue) member numbers have fallen to an all time low. This decrease may be because members' expectations and needs are not being met, possibly as a result of poor communication within the Society. Rob suggests that the Society must evolve to continue to maintain and represent the interests of its diverse range of members.

In addition to these articles, we have reports from the recent AGM, news on the upcoming ARS biennial symposium and other activities relevant to the rangelands. I hope you find something of interest.

I am now on the lookout for items for the next newsletter so let me know if you would like to contribute. If you can't volunteer yourself, perhaps you could let me know of others who may have an interesting story to tell. I am also seeking ideas about themes for future issues and any suggestions you may have for regular features to appear in each issue (see my article about this later in this issue).

You can contact me at the above address, by telephone on 03 9885 6986 or via email at nduckett@ozemail.com.au. The deadline for the next issue is mid October.

VEGETATION RECOVERY:
Kidman Springs Exclosure Photos over 25 Years

Gary Bastin, CSIRO Wildlife & Ecology, PO Box 2111, Alice Springs NT 0871; John Ludwig, Robert Eager & Adam Liedloff, Tropical Savannas CRC and CSIRO Wildlife & Ecology, PMB 44, Winnellie NT 0822; Reg Andison, Dept. Primary Industry, Bowen QLD 4805 and Mike Cobiac, Dept. Primary Industries & Fisheries, PO Box 1346, Katherine NT 0851

Last year Ali Valamanesh told us how exclosures can be a valuable tool for studying long term vegetation change (Valamanesh 1999). For those of us who have worked with exclosures, it is often tricky to separate the effects of exclosure (i.e. protection from grazing) from year-to-year variation in rainfall. Fortunately, sometimes, photos alone can tell a powerful story. This is the case with the Kidman Springs exclosures.

Kidman Springs is a research station run by the NT Department of Primary Industry and Fisheries in the Victoria River District, 220 km south west of Katherine. The exclosures were erected in 1973 and measured annually between 1974 and 1979 (see Foran *et al.* 1985). Casual observations continued through the 1980s and the plots were next measured in 1989 (Bastin and Andison 1990) and in 1994 (RA & MC). Two of the exclosures were again measured in May 1999 (GB, JL, RE, AL).

The exclosures, 500 m square, were erected on three sites:

- Calcareous red soil in "good" condition carrying mainly short-lived limestone grass (*Enneapogon* spp.).
- Calcareous red soil in "poor" condition; eroded and growing a sparse pasture of native couch (*Brachyachne convergens*) and other annuals.
- Cracking clay soil dominated by golden beard grass (*Chrysopogon fallax*) and flinders grass (*Iseilema* spp.).

Recovery on Red Soils

Pasture yield increased rapidly in the first few years following exclosure (Photo 1) and the Poor condition exclosure recovered to equal the Good condition area (Photo 2).

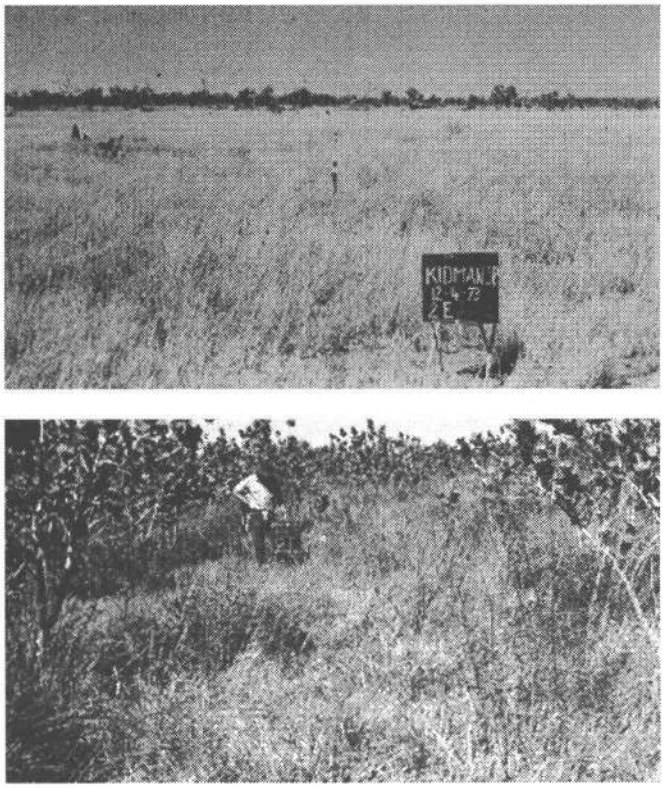

Photo 1. Pasture within the Good Condition exclosure in April 1973 (top) and June 1978 (bottom). Yield had increased over the 5 years and perennial grasses replaced much of the short-lived limestone grass. Rubberbush had invaded the exclosure by 1978 (see following comments).

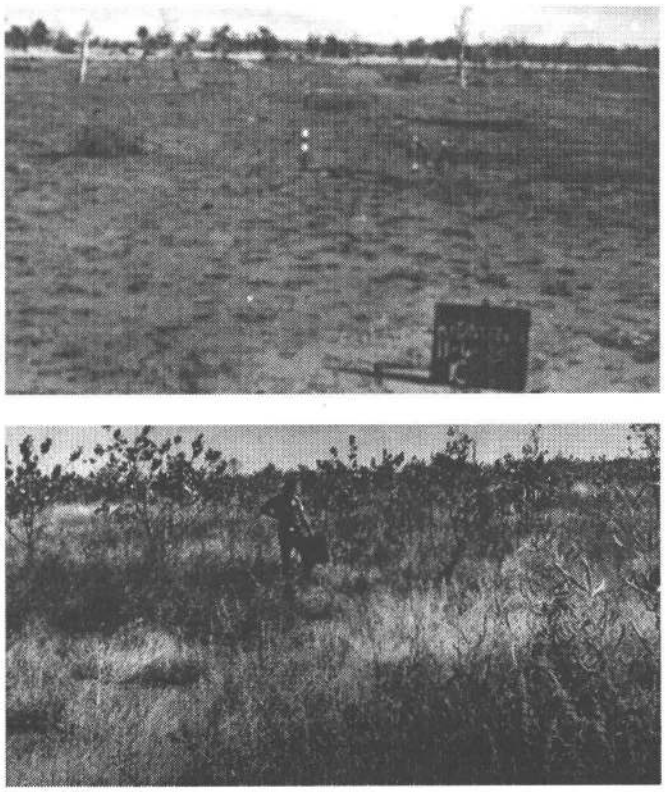

Photo 2. The Poor Condition exclosure in April 1973 (top) and June 1978 (bottom). By the latter date, grasses had reclaimed most of the bare areas and pasture yield equalled that in the Good Condition exclosure (see Photo 1). Rubberbush also invaded this exclosure.

From 1973 to 1978, there was little difference in pasture yield and composition outside exclosures, suggesting a slow recovery on these grazed areas (Photo 3).

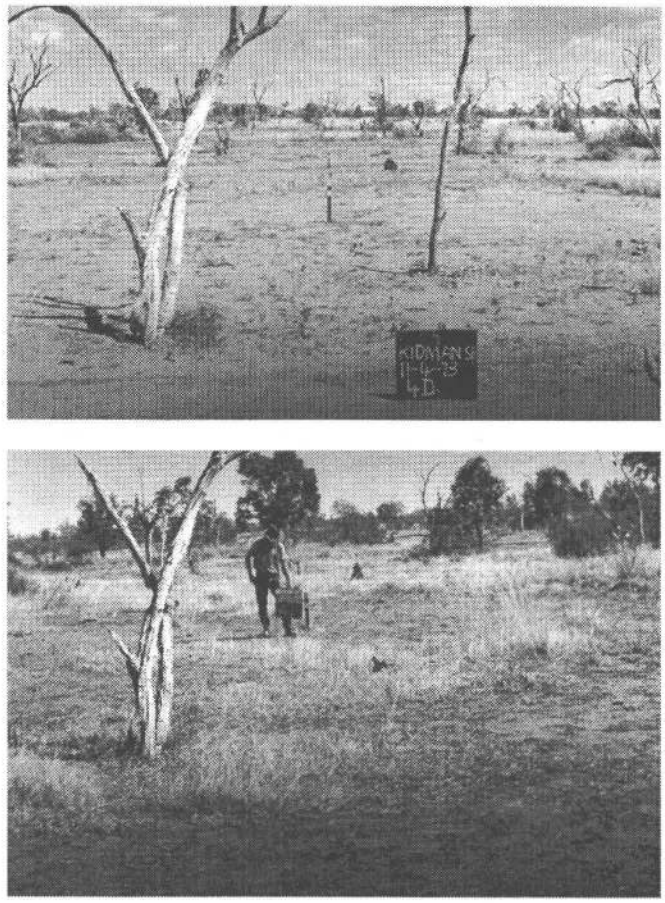

Photo 3. Pasture yield remained low from April 1973 (top) to June 1978 (bottom) on grazed areas outside exclosures. Native couch was the dominant species in 1978. Contrast this photo with the preceding 1978 photos (Photos 1 and 2) taken inside the exclosures.

There was little difference in measured yield inside and outside both red soil exclosures in 1989 and this remained the case over the next ten years (Photo 4). Pastures outside the exclosures have improved because of better cattle management as part of Kidman Springs Experiment Station operations and because of control of feral donkeys and horses.

Within exclosures, tall perennial tussock grasses such as whitegrass (*Sehima nervosa*), bluegrass (*Dichanthium sericeum*) and black speargrass (*Heteropogon contortus*) have covered areas of bare soil (Photo 5).

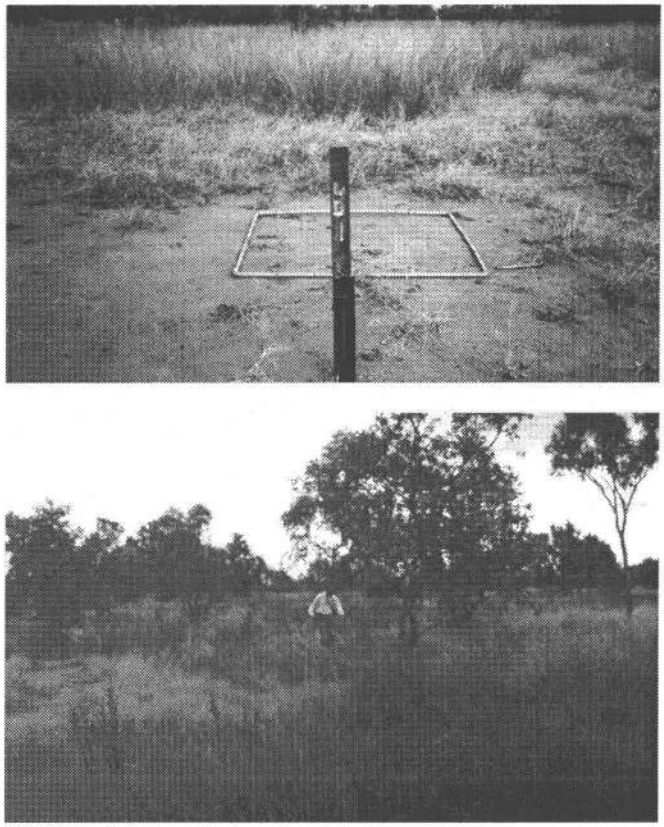

Photo 4. In 1999, pasture yield was similar on grazed (top) and exclosed (bottom) areas. Black speargrass had colonised much of the grazed area producing sharp transitions in yield similar to that visible in the top photo.

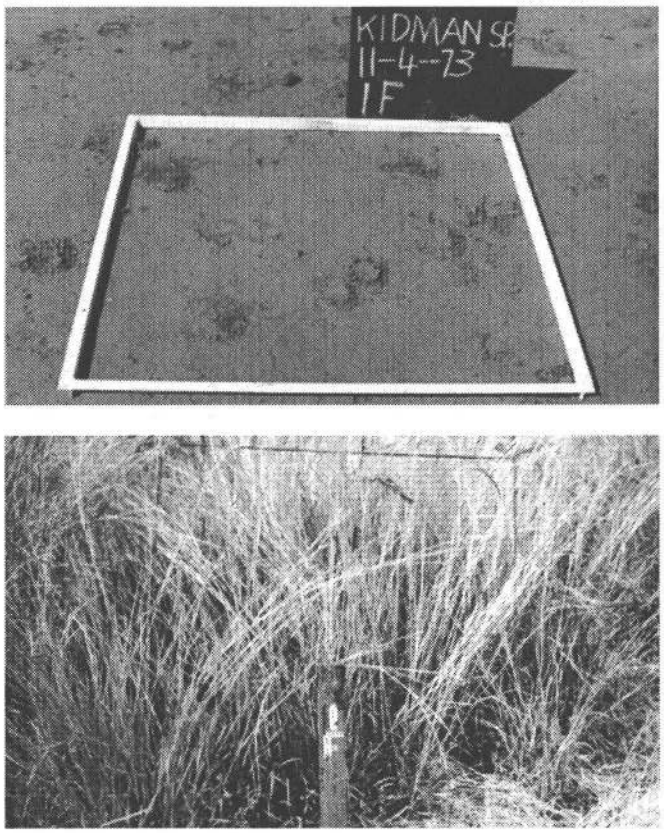

Photo 5. Large areas of bare soil occurred in the early years of exclosure (top). Tall perennial grasses covered these same areas 25 years later (bottom).

Wet-season rainfall was well above average in the mid 1970s (Fig. 1) and this no doubt drove the rapid improvement in pastures within exclosures. Rainfall during the 1980s was more variable with some wet-season totals being well below average. Despite this variability, perennial grasses have continued to increase on both exclosed and stocked areas, which are now more lightly grazed. An important feature of northern Australia is that at least some rain falls during each wet season. This feature, coupled with strategic spelling or lighter stocking, should mean that savanna pastures have an enhanced ability to recover from grazing compared with the more arid rangelands.

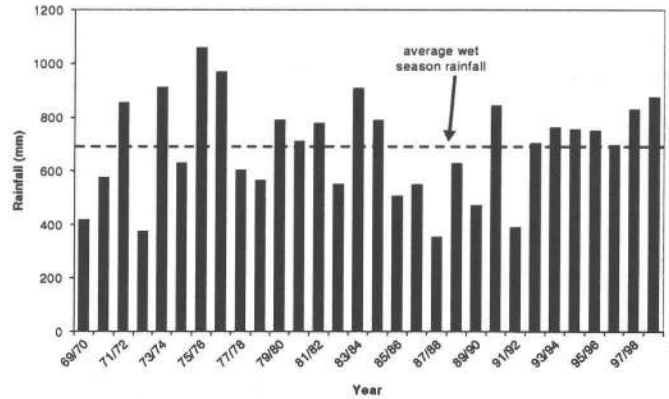

Figure 1. Wet season (October-April) rainfall at Kidman Springs for the period 1969-99.

Numbers can sometimes supplement the story told by pictures. Figure 2 shows how pasture yield has changed in the poor condition exclosure, and on the surrounding grazed area over the last 25 years. The dominant features are:

1. Yield rapidly increased in the first few years following exclosure. (It was depressed in 1976 because cattle broke into the exclosure.)
2. By 1979, yield within the exclosure greatly exceeded that on the grazed area.
3. Since then, yield has increased on the grazed area and is now similar to the destocked area.

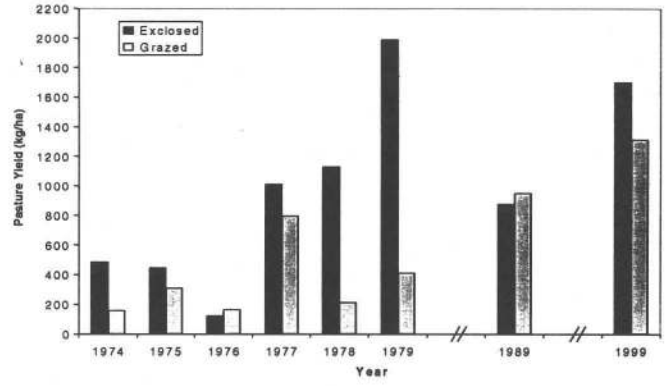

Figure 2. Pasture yield on the exclosed and grazed Poor Condition calcareous red soil areas.

Trees on the March

The density and composition of woody species have changed dramatically within the exclosures over the last 25 years. Initially, rubberbush (*Calotropis procera*) increased rapidly inside both exclosures to approach a density of 1,000 stems per ha (Photo 6). It then declined to obscurity with only five plants being observed within one of the exclosures in 1999.

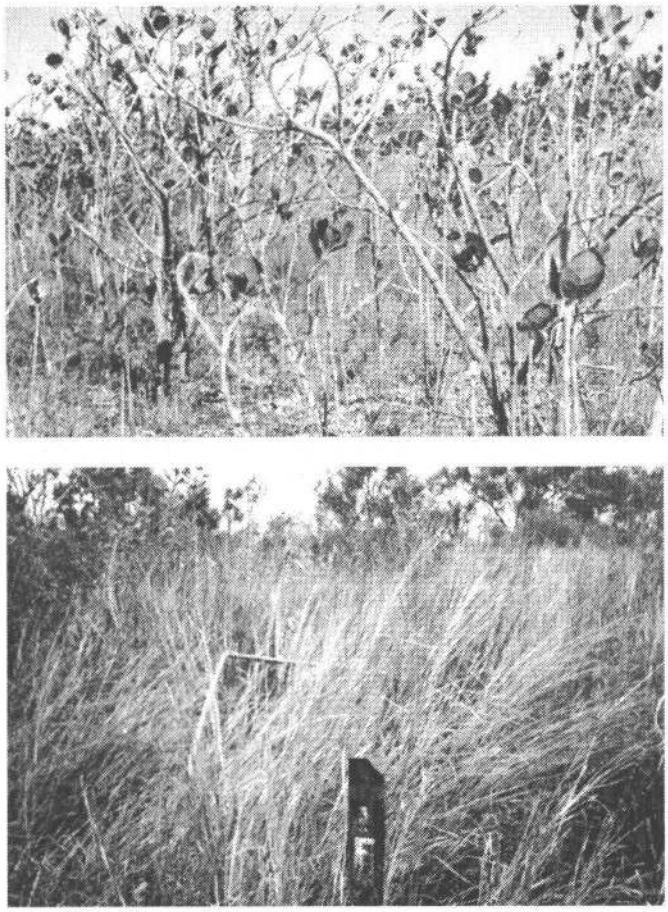

Photo 6. Rubberbush invaded the exclosures in the 1970s to reach a maximum density of about 1,000 stems per ha in 1978 (top). It then declined during the poorer wet seasons of the 1980s, and by 1999 had almost completely disappeared (bottom, same area in 1999).

Native species have replaced rubberbush since 1979 and the woody density remains much higher within the exclosures (Photo 7). Common hakea (*Hakea arborescens*) and conkerberry (*Carissa lanceolata*) comprise the two main species.

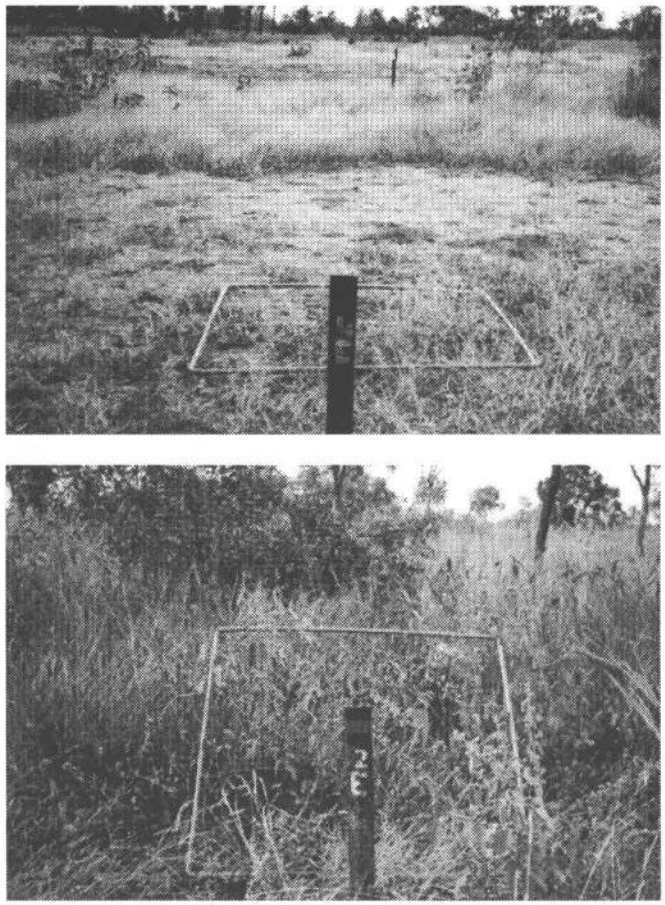

Photo 7. Compared with their original open state (Photos 1 and 2), more native trees and shrubs were present in 1999, with grazed areas outside the exclosure having a lower density of woody species (top) than inside exclosures (bottom).

The thickening of woody species has probably occurred because the exclosures have been ungrazed and unburnt, except for a fire in April 1997 that burnt parts of the grazed paddock and inside one of the exclosure. This early dry-season "cool" fire was patchy and probably had little overall effect on woody density. Fire was an integral component in the evolution of savanna vegetation (Stocker & Mott 1981) and no doubt its absence has contributed to the greatly increased density of native woody species following long term protection from grazing.

Stability of Pasture on Cracking Clay

There have been slight year-to-year variations in pasture yield on the cracking clay site but no significant differences due to exclosure (Photo 8). Golden beard and flinders grasses have dominated throughout. Rosewood (*Terminalia volucris*) has increased in some parts of the exclosure, but not massively. The fire in April 1997 may have reduced tree thickening on this site, and promoted the current abundance of flinders grass.

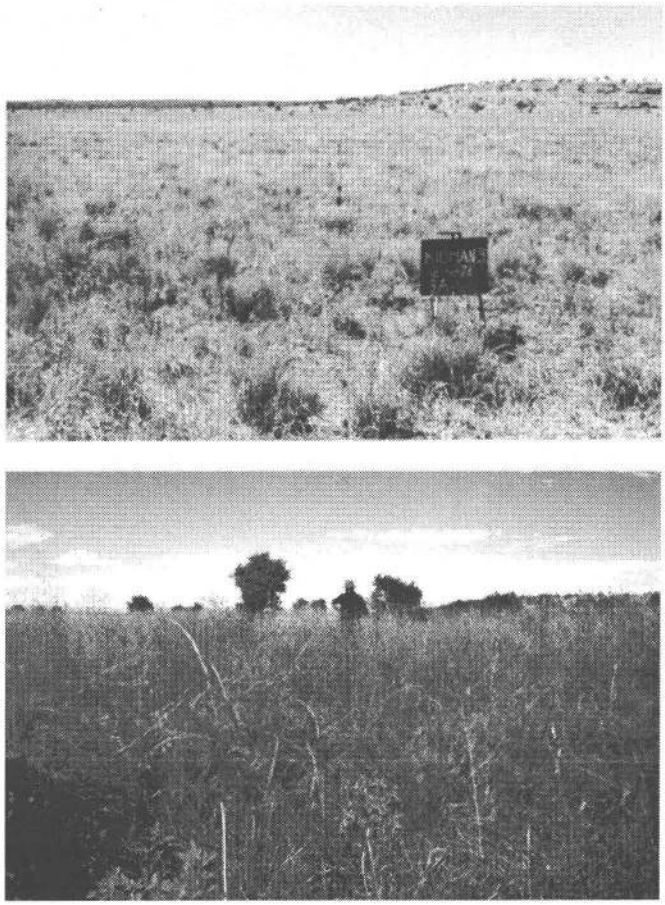

Photo 8. Grazed cracking clay site in April 1973 (top) and May 1999 (bottom). Golden beard and flinders grasses were dominant on both occasions. These photos demonstrate the stability of this landscape type under continuous grazing.

Understanding and Managing Long Term Vegetation Change

Can knowing something about the past through a sequence of photos such as the above help us to manage for the future? We think so.

The photos of the cracking clay site clearly show that the golden beard and flinders grass pasture is stable through time and remarkably resistant to a moderate level of grazing. Further, they suggest that low-level photopoint monitoring and appropriately recorded notes are probably sufficient to guide grazing management decisions for this pasture. The main requirement is that photopoints be strategically placed to detect the most probable type of vegetation change – increase of woody species, particularly rosewood and perhaps bauhinia (*Lysiphyllum cunninghamii*).

A different train of events has occurred on the calcareous red soil. Degraded areas have a considerable propensity to recover in terms of pasture yield where control over grazing is possible. We consider that this is due to the occurrence of at least some rainfall each wet season. However, the outcome in terms of pasture composition is not always predictable. Complete protection from grazing has resulted in a rich variety of perennial grasses, and a composition very different to that originally perceived as being in "good" condition. We note though that composition of the herbage layer within the exclosures still may not truly represent the "good condition state" because of absence of fire. Continuous, but more moderate, grazing has gradually allowed pasture yield to increase - but to the point where this pasture is dominated by the one perennial, black speargrass.

The photos show us how pasture yield has increased and tell us a little about compositional change but they lack the panoramic view and clarity to provide the complete picture. In this case, long term measurement has provided valuable background about how the pasture has changed under grazing. This tells us that photopoint monitoring for management needs to be complemented with at least some data about pasture species composition.

The most striking feature of the photo sequence on the calcareous red soil is the dramatic change in the woody layer. The photos clearly show how rubberbush initially invaded the exclosures and was subsequently replaced by a high density of native woody species. Unfortunately, neither the photos or the collected data explain why this has occurred. We know that fire is a natural part of northern savannas and undoubtedly has an important role in shaping the long term tree-grass balance (Stocker & Mott 1981). We can only speculate on how its absence for 25+ years has influenced the current density of trees and shrubs within the exclosures. The photos tell us that native trees and shrubs have increased in the absence of grazing but it would be naïve to assume that this was the only causal factor.

To conclude, long term photos can tell us much about vegetation change in landscapes. In some cases, change is minimal and continued photographic evidence alone may be sufficient to guide management of the vegetation. Elsewhere, change can be substantial such as a large increase in woody density. Although photos do not explain why these changes occur, they can provide sufficient evidence that direct management intervention is required. The Kidman Springs sequence clearly illustrate both of these examples.

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TOWARDS A NATIONAL RANGELAND MONITORING PROGRAM

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Background

Are the rangelands of Australia improving or degrading? What is happening to biodiversity in our rangelands? What socio-economic factors are having an impact on good land management? Simple questions, often asked, yet frustratingly difficult to answer at a national scale.

The Rangeland Theme of the National Land and Water Resources Audit (the Audit) is well on the way to defining the components of a national monitoring and reporting program for Australia's rangelands.

Unlike other Audit Themes, the Rangeland Theme will **not** be providing an Australia wide status report of its area of interest. Rather, it is designed to develop and implement a process by which the rangelands can be monitored into the future. Success at the end of the Audit will be judged on whether or not Australia can claim to have a National Rangeland Monitoring Program.

The need for such a program is well documented. At a peak level, "The National Strategy for the Conservation of Australia's Biological Diversity" and "The National Principles and Guidelines for Rangeland Management" both call for a national rangeland monitoring program. The trend towards State of Environment Reporting at both a state and Commonwealth level demand that good information on the status of the rangelands and their recent changes become available. Information on changes in the rangelands is also a fundamental part of the tools used by state and Commonwealth agencies involved in natural resource management (i.e. both primary production and conservation agencies).

Traditionally, rangeland monitoring in the states and the NT has been limited to tracking changes in the resource used for commercial livestock grazing on pastoral land. However, it is now clear that rangeland monitoring must do more than this. It should encompass these traditional activities, as well as the changes on land managed by indigenous interests, the monitoring of biodiversity and the monitoring of socio-economic factors which have an impact on improved land management.

Within the Audit's workplan the various activities include the provision of contextual information (e.g. seasonal history), the demonstration of existing research methods in an operational context (e.g. remote sensing), the development of new methods (e.g. biodiversity monitoring) and the need for existing work to have relevance in a national context (e.g. existing pastoral monitoring programs).

This article is an update from that published on pages 14-16 of the July 1999 (99/2) edition of the *Range Management Newsletter*. The previous article provides more detail on the individual projects.

Projects of the rangeland monitoring workplan

Project 1: Assessment of change in ecosystem function, trends in intensity of use and history of climate and fire which impact on ecosystems.

A collaborative project based in Darwin has used satellite imagery (Landsat) to demonstrate methods for broadscale monitoring of the tropical savannas of northern Australia. The work not only demonstrated the wider application of methods that have mostly been used so far in a research and development context but also highlighted the steps necessary to make the technique operational within a state agency. The project area included a 265,000 km^2 area of the East Kimberley and Victoria River Districts, as well as smaller areas in the Sturt Plateau (NT) and the Burdekin River catchment (QLD).

Multi-date Landsat imagery was used to investigate changes in vegetation cover over sequences as long as 11 years. Images were then produced to highlight areas where the change in cover was different to surrounding areas. As well as the identification of these "hotspots" the outputs from the project include cover trend summaries by land type, cover trend summaries by area (e.g. station) and basic land resource stratifications. In keeping with the need to make the technique operational at a broad scale, rapid ground truthing methods were developed to supplement detailed ground truthing in core areas.

In northern South Australia a similar type of project is nearing completion. A different monitoring technique using Landsat imagery is being used to produce summaries for the cattle leases of the Marla-Oodnadatta Soil District. These summaries contain information on how well the landscape responds following episodes of very good rainfall. Those areas that do not respond as well as expected are then mapped out. The application of this "grazing gradient technique" developed by CSIRO in Alice Springs has also highlighted the steps needed to move a technique developed in an R&D context into an operational context within a state agency.

The final stage for both these projects is to provide operational plans and recommendations for the implementation of these techniques within a national framework.

A largely unfunded part of the workplan has been the collation of several sets of sequential photos and records of change over long periods. Two of the best examples come from the work of Geoff Cunningham who has provided data and photos from central Australia, spanning almost 30 years (a previous report of this work, originally done for the Centralian Land Management Association can be found on pages 4 to 7 of the July 1996, 96/2, edition of the *Range Management Newsletter*), and from David Freudenberger who has provided a fantastic set of sequential photos spanning about 50 years from the "Gilruth Plains" research site near Cunnamulla, Qld (see David's article on pages 2 to

4 of the April 1997, 97/1, edition of the *Range Management Newsletter*).

Any interpretation of change in the rangelands must be made within a seasonal context. Two of the Audit's projects are using satellite data to produce images based on the NDVI (Normalised Difference Vegetation Index). This index estimates "greenness" of vegetation. Images can be produced at a continental scale, every two weeks, at a resolution of about 1 km. More sophisticated products rely on the comparison of "greenness" from one period to another, enabling judgements to be made about how the current season compares with previous seasons. Data are available to do this for only a decade so far, but in the future the NDVI work will give us better information as to the range of possible seasons. Much of this work is already available at the web site, <http://www.environment.gov.au/psg/erin/land/monitoring/index.html>.

Changes in attitude, management and enterprise type have meant that the grazing pressure on the rangelands has changed considerably over the last few decades. Most pastoral areas of Australia no longer carry the very high numbers of stock that they did in the past. One of the Audit's projects is collating data reflecting the change in land use intensity, on a Local Government basis, across the rangelands during the last 40 years. This project will provide good contextual information on the pressures being imposed on the base resource.

The various rangeland states and the Northern Territory have all been working towards developing comprehensive monitoring systems for their own purposes. These systems will form a core component any future national rangeland monitoring program. In the Northern Territory, the emphasis has been on the use of remote sensing, with ground based sites being used to inform and help interpret the remotely sensed results. In the rest of Australia, the approach has been to base monitoring systems on sets of ground based sites, using remote sensing where possible to complement the information gained from the point based sites. After a long period of development and installation the various monitoring systems have almost reached maturity. For example, in western New South Wales, the Regional Assessment Program now has close to 3,500 site-by-year recordings. Much of this data is now being turned into information, being summarised and presented at a regional scale (e.g. David Eldridge's article on pages 1 to 7 of the April 2000, 00/1, edition of the *Range Management Newsletter*).

Project 2: Trends in economic, social and institutional factors that influence land use and management in rangelands.

No amount of quantitative biophysical information will be of much benefit if we don't understand the way land managers make decisions affecting the natural resource.

A large project, now close to completion, has investigated the economic, social and institutional factors that influence good land management in the rangelands. Three key factors have been identified. The first of these is the understanding and perception of a problem. The primary drivers for this are knowledge, communication and information. Secondly, the motivation to adopt a particular land management practice, which is driven by the desire to remain on the land, security, peer support and general environmental attitudes. Finally, land managers must have the capacity to adopt, only possible when they possess the appropriate skills, resources and support. Without these three factors being met, adoption of a particular practice is unlikely.

Two types of data are necessary to quantify these indicators. The first comes from existing data, much of it collected and managed by organisations such as the ABS (Australian Bureau of Statistics), ABARE (Australian Bureau of Agricultural and Resource Sciences) and BRS (Bureau of Resource Sciences). The second type of data needs to be collected directly from the pastoral community. To do this, a survey of pastoral land managers has been trialled in three case study areas; the Gascoyne Murchison area of Western Australia, parts of the Mitchell Downs in the Northern Territory and Queensland, and the Port Augusta area in South Australia. The final part of this project will be the compilation of information from existing sources (to complement directly collected data from the surveys) and the identification of a host agency to manage the data and provide sequential summaries into the future.

Social and institutional factors have led to massive changes in land use, and to some extent tenure, across the rangelands over the last few decades. Large and increasing areas are now being managed by indigenous interests, the Defence Forces now manage substantial areas in the north, many pastoral leases have been converted to National Parks or Nature Reserves, while many pastoral stations now gain significant portions of their income from tourism activities. One of the Audit's projects is mapping such change in tenure and land use from the mid 1950s to present. The project will provide decadal maps, inter-decadal change maps, as well as a comprehensive database for specific queries.

Project 3: Developing an adaptive framework for monitoring biodiversity in rangelands

Increasingly, the value of rangelands is judged by their ability to support natural processes and organisms, rather than simply their value for livestock production. Enterprises that rely on livestock production are increasingly being asked to manage (or at least not harm) these processes and organisms. Apart from the ethics of such a view, the ability of the Australian pastoral industry to access overseas markets and receive premiums for their produce will depend on their management of biodiversity. Biodiversity monitoring must be part of any national rangeland monitoring program but the techniques and resources necessary to do it remain elusive.

The Audit has put considerable resources into developing a framework for monitoring biodiversity across the rangelands at a national scale. The challenge was to design a system that was adequate, yet required a level of funding that could reasonably be expected.

While the project is not yet complete, it appears that the monitoring framework will be comprised of a number of elements. Implementing each of these elements will require a staged approach and even with a reasonable amount of funding the monitoring system may take some years to become operational. The elements include (but are not limited to): repeat of "landmark" flora and fauna surveys; regular surveys of populations of selected species; monitoring of threatening processes such as clearing or grazing; meta analysis of existing surveys of exploited, pest and endangered species; information gathered from existing pastoral monitoring systems; increased application of remote sensing and improved linkage to landscape function. Targetted research will also be needed to investigate links between some of the elements and to validate relationships often taken for granted such as that between landscape function and biodiversity.

Project 4: Packaging and presentation of information

Most of the information collated during the Audit will be made available on the Audit's web site, <http://www.nlwra.gov.au>. The rangeland section of the web site will be linked to other Audit activities such as a natural resource atlas. Where possible, the access to information will be interactive, with particular summaries or maps produced "on the fly" in response to specific queries. The detailed data will be kept within the Audit's data library, or in some cases with other organisations who are already data custodians. In time, the web site will also contain the output of the National Rangeland Monitoring Program, in a format that will allow users to query and download information based on specific queries.

Towards a national rangeland monitoring program

Between now and the end of the year, the National Rangeland Monitoring Coordinating Committee (see below) will be evaluating each of the project outputs and using them to design a framework for ongoing monitoring. This framework, and recommendations for its implementation, will be taken to peak bodies early next year. While each of the states and the NT will continue to do their own monitoring for their own purposes, it is clear that for a national approach to be taken, Commonwealth resources will be needed.

National coordination will be needed to extract complementary information from each of the states and the NT, to identify further research and development needs, to broker inter-agency cooperation and to negotiate standards for data quality and reporting. A national sponsor, or host agency, will be needed to provide a "home" for the National Rangeland Monitoring Program.

The elements of such a Program are largely in place, the challenge now is to make the Program operational and to embed it in an institution to ensure regular monitoring and reporting into the future.

The National Rangeland Monitoring Coordinating Committee (NRMCC)

The NRMCC has the task of overseeing the implementation of the workplan and setting up a framework for ongoing reporting. It is made up of representatives of state, territory, Commonwealth and national bodies.

Rod Applegate (Chair), Department of Lands, Planning and Environment, Northern Territory;
Paul Jenkins, Indigenous Land Corporation;
Eric Anderson, Queensland Beef Industry Institute, Queensland Department of Primary Industries;
Sue Walker, National Farmers Federation;
Paul Novelly, Agriculture Western Australia and Tropical Savannas CRC;
Lionel Wood, Agriculture, Fisheries and Forestry Australia;
David Carter, Environment Australia;
Ken Hodgkinson, CSIRO Wildlife and Ecology;
Daryl Green, NSW Department of Land and Water Conservation;
Brendan Lay, Department for Environment, Heritage and Aboriginal Affairs, South Australia;
Colin Creighton, National Land Water Resources Audit.

Further information

The Audit has a web site providing comprehensive information on both the Audit in general and on the Rangeland Monitoring Theme, <http://www.nlwra.gov.au>.

Those wishing more information on the Audit's activities can visit the web site, contact members of the NRMCC or contact either of the following;

Ian Watson
Coordinator - Rangeland Theme
Agriculture Western Australia
PO Box 483
NORTHAM WA 6401
Ph 08 9690 2128
Fax 08 9622 1902
Mob 0408 337 702
iwatson@agric.wa.gov.au

Rochelle Lawson
Project Officer, NLWRA
Level 2, Unisys Building
91 Northbourne Ave
GPO Box 2182
CANBERRA ACT 2601
Ph 02 6257 3109
Fax 02 6257 9518
Mob 0408 604 845
rochelle.lawson@nlwra.gov.au

ARS - FERTILE OR FUTILE?

Rob Richards, Rangeland Ecologist, NSW Department of Land & Water Conservation, PO Box 77, Condobolin NSW 2877

Our Society is under threat. The Australian Rangeland Society will not survive for much longer given current trends – Are you concerned? It is your Society – have your say.

Why are our members leaving? Have you asked yourself why you belong to the Australian Rangeland Society? Are your expectations and needs being met by the Society?

We are a unique and diverse collection of people bonded together more by geography than a specialisation or common interest as in many other societies or groups. The Australian Ornithological Society for example is a collection of people who have a love of birds – to watch them, study them, photograph them, paint them or keep them, but probably not to shoot them, eat them, pluck them or exploit them. The point is that the ARS is made up of people who have different interests and perceived uses from the rangelands – some painters and some pluckers if you like. Maintaining and representing the interest(s) of such a diverse range of people within one Society is a hard task, but one that the ARS has done for many years. Members are perhaps now satisfying their specialist needs of the ARS elsewhere i.e. the Ecological Society, botanical Societies and other agricultural Societies. It is time to metamorphose into a new body representing and communicating to the diverse range of rangeland stakeholders.

We are a society where our strength is invested in our members not in our bank. This synergistic strength is in the fertile, passionate and diverse minds of all members and can only be realised through effective communication. The Society aims to do precisely that – act as a forum for the free exchange of ideas and information between our members and to the wider community. Is it happening? Our membership survey tends to suggest not. Members surveyed suggested that communication is poor within the Society; less than half of the former members surveyed had attended a conference or had been involved in networking within the Society. If this is the case, the new shape of the Society must be focussed on communication.

A workshop discussing the future shape of the Australian Rangeland Society was run after the Annual General Meeting held in Adelaide on May 12, 2000. At this meeting, an attempt was made to identify the core values of the Society, as these were considered as representative of the core function of the Society and critical to its continued existence. After discussion, we arrived at the following list (in no particular order):

- Sustainable use of rangelands
- Integration of people/ecology/economy
- Recognition and use of local knowledge
- Uninhibited exchange of ideas and knowledge
- Egalitarianism
- All knowledge and perspectives are of equal value
- Maintenance of biodiversity.

We also attempted to identify all the likely rangeland stakeholders and came up with a by no means exhaustive list of eighteen main groups including pastoralists, educators, government, defence and aboriginal interests. We then discussed what interest each of the stakeholders may have in each of the core values.

From here, the next logical step when planning the future of the Australian Rangeland Society appears to be deciding what services we can provide to each of the stakeholders. This is a difficult task and would be best completed in the presence of representatives of each of the stakeholder groups. For this reason a workshop will be held at the Broken Hill conference. If you wish to have a say in the future of the ARS please attend - details of where and when the workshop will be held will be available at the conference.

If anyone has any comments before the Broken Hill conference I would be more than happy to receive them. Please email me at rrichards@dlwc.nsw.gov.au.

MEET THE NEW EDITOR

Noelene Duckett, 5 Amery Street, Ashburton VIC 3147

For those of you who don't know me, I have been involved in the rangelands for over 14 years. My interests were first captured whilst an undergraduate and honours student in the Department of Botany at the University of Adelaide. In 1993 I completed my Ph D having studied the autecology of the pearl bluebush *Maireana sedifolia* under the guidance of Drs Bob Lange, Russ Sinclair and Martin Andrew.

Since then I have been involved in rangeland monitoring research at Agriculture Western Australia in Perth. Most of my time has been spent developing ways of analysing and presenting Western Australian Rangeland Monitoring System (WARMS) data to a range of potential end-users. This research was carried out initially using shrubland data from the southern rangelands of WA, but has since been focussed on northern grasslands data following NHT funding of the *Development of Information Products for Reporting Rangeland Changes* project in 1995.

This year has brought another change and I now find myself in Melbourne, following my husband's work transfer. As editor of the Range Management Newsletter I am hoping to continue my involvement with the rangelands, albeit from a distance.

11TH BIENNIAL ARS CENTENARY SYMPOSIUM

Geoff Woods, Chairman, Organising Committee, NSW Agriculture, PO Box 459, Broken Hill NSW 2880

The conference at Broken Hill on 21 to 24 August 2000 is reaching the final stages of organisation. We are pleased with the number of early registrations, and further registrations are welcome.

Dr Tim Flannery, Director of the Adelaide Museum, has been invited to present the keynote address for the conference. Dr Flannery is well known as a speaker internationally.

There are 14 invited speakers, 26 papers from contributed abstracts selected for oral presentations and a good variety of poster presentations. We are confident that the program will be both wide ranging and interesting for those attending.

A feature of the conference will be a facilitated yarn session featuring some of the older identities with a long history of living and working in the rangelands talking about their experiences.

The discount for land managers of 50% of the registration fee is still available. The discount will be available to the first 20 land managers to apply, subject to the approval of the Society Council.

Please contact either of the following if you would like further information:

Sarah Nicolson,
Intercom Event Coordination
7 Almond Street
Goodwood SA 5034
Ph: 08 8357 3378 Fax: 08 8357 3389

Geoff Woods
NSW Agriculture
PO Box 459
Broken Hill NSW 2880
Ph: 08 8087 1222 Fax: 08 8087 3488

LONG TERM PHOTO SEQUENCES

Ian Watson, Agriculture Western Australia, PO Box 483 Northam, WA 6401

Do you know of any interesting sets of long term photo sequences from the rangelands that you would like to see on the national and international stage?

One of the activities of the National Land and Water Resources Audit (the Audit) is the collation of sets of photos showing long term change in the rangelands (see the article on the other Audit activities earlier in this Newsletter).

Such sequences include long term monitoring or trial sites, or historical photos that have been relocated and rephotographed. It also includes photos of old towns showing "then and now" since the number and size of towns in the rangelands have changed dramatically over time, particularly in mining areas.

Our interest in them is to provide "colour and context" for the activities of the proposed National Rangeland Monitoring Program. We all know examples of dramatic changes in the rangelands over time, yet have little that we can physically use to demonstrate it. In other situations, there has been almost imperceptible change over long periods, but again we have few records.

Many such photos exist, but if you are like most of us, only the silverfish inhabiting our filing cabinets ever get to see them. The Audit will be able to provide limited amounts of funding to have the photos scanned. The benefits to their owners will include having digital copies of these precious photos for archiving. More importantly there is a national benefit to making these aspects of our heritage freely available to view on the web, within a national "home".

If you know of any sequences that you would like to see used in this way, please contact me at the address above or by the following; Ph 08 9690 2128, Fax 08 9622 1902, email iwatson@agric.wa.gov.au.

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 normally close in November of each year. 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 should submit 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 30th November 1999.

Conditions

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.

FUTURE IDEAS FOR THE NEWSLETTER:
What do you think?

Noelene Duckett, 5 Amery Street, Ashburton VIC 3147

In addition to the longer types of articles usually published in the Range Management Newsletter such as completed research activities, ARS business news and notices of upcoming conferences, I am considering establishing some regular short features. I intend that these would be briefer and more informal than many of the usual articles published – hopefully this would encourage more contributions!

Although I realise some of this type of information has been published in the newsletter in the past, I am particularly interested in establishing features such as:

- *Member information* – This could include information about changes in employment or project activities and also reports on personal study tours. It could also be a useful avenue for letting people know of changes in contact details such as new phone numbers or email addresses.

- *Descriptions of new projects* – This could include information about successful funding applications and new producer trials, research projects and government programs. In general the descriptions would only contain brief information about the project but contact names and details would be available for anyone interested in following up the work.

- *Descriptions of work in progress* – This could include details of projects currently up and running. Rather than waiting years after work has been completed, analysed and written up, wouldn't you be interested in hearing what is going on now?

- *Conference, meeting and workshop reports* – In additional to promoting conferences and meetings , this column could also include details and outcomes of recently held meetings and workshops which are of broad interest but have restricted audiences.

- *Web-sites* – This section could include details of web sites that may be of interest to readers of the newsletter.

- *New publications* – This could include details of publications such as final reports (e.g. producer trials, research work), book reviews and thesis abstracts. Again, descriptions would be brief but information on how to obtain copies would be made available.

I would be interested in hearing what you think about regularly including this sort of information in the newsletter. Also please let me know if you have any ideas for other features. Feel free to contact me at the above address, by telephone on 03 9885 6986 or via email at nduckett@ozemail.com.au.

NEW MEMBERS

Rachel Nelson
4 Boree Place
Narrabundah ACT 2604

Brigid McCallum
PO Box 976
Charters Towers QLD 4820

Rangelands Australia
C/- Janine Palmer
PO Box 846
Park Ridge QLD 4125

Mark Etheridge
Kalyanka
Via Wilcannia NSW 2836

Christopher Kiernan
PO Box 174
Barcaldine QLD 4725

Michael Yee
Tropical Beef Centre
PO Box 5545
Rockhampton MC QLD 4702

Jo Whelan & Chris Materne
DPI&F NT
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Tennant Creek NT 0861

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Tehran IRAN

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Sue McIntyre
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St Lucia QLD 4067

The Australian Rangeland Society

REPORTS FROM THE 2000 ANNUAL GENERAL MEETING

ACN 008 784 414

DIRECTORS' REPORT

Andrew Nicolson, President, Australian Rangeland Society, Middleback Station, PO Box 555, Whyalla SA 5600

(Ed. The following information has been edited from the complete Directors' report presented at the 2000 AGM.)

In accordance with resolution of the directors, the directors' report on the accounts and operations of the company for the year ended 31st December 1999 as follows:

Principle Activity

The Company's principle activities in the course of the financial year were the publishing and circulation of three newsletters and two journals per year to the Company's members to promote the advancement of the science and art of using Australia's rangeland resources for all purposes commensurate with their continued productivity and stability.

During the financial year there was no significant change in the nature of these activities.

Trading Results

The net loss of the company for the financial year was $12,138 (1998 loss = $20,264).

Review of Operations

The year has been one in which the Society has played a prominent role in rangeland affairs nationally and in which our business affairs have been further consolidated. Council has met 5 times since the 1999 AGM with a quorum present on most occasions.

A number of developments and activities during the year deserve special mention:

South Australia has taken over from the Queensland council and would like to thank all members of the outgoing council for their efforts in running the business of the society.

Gary Bastin has retired from the production of the newsletter after working for the society for 10 years and producing 30 issues of the newsletter. His replacement will be a long time member of the society, Dr Noelene Duckett. A thankyou to Gary from the society and council for his efforts and guidance over the past 10 years and we wish Gary all the best.

Membership of the Society declined slightly with a total membership (including library subscriptions, corporate memberships etc) of 405 as of the 31/12/99, down from 443 in 1998.

The society's publications, *The Rangeland Journal* and *the Range Management Newsletter*, have continued to flourish during the year under the capable guidance of their respective Editors and Associate Editors. The special edition of the newsletter to mark the 25th anniversary of the Society was put together by our guest editor John Morrissey and team; it was a great success.

The updated index for the journal was published in the same format as the journal in 1999 and is a great help to researchers wishing to find past articles published in the journal. A joint initiative between the Australian Rangeland Society and the Society for Range Management (SRM) has produced an electronic bibliographic database covering all articles from the *Journal of Range Management* and *The Rangeland Journal*. Gary Bastin, Leigh Hunt and Charles B. Rumburg (SRM) are to be commended for their efforts in preparing the index of *The Rangeland Journal* and for its publication and inclusion on the SRM database.

Jim Noble remains as the Society's representative on the Federation of Australian Scientific and Technological Societies (FASTS). The Society renewed its membership to FASTS.

Council has provided further funding for the Centenary Symposium to be held in August of 2000 at Broken Hill and will also help in providing financial support for land managers to attend the conference.

Council has continued to be represented by the immediate past President, Ron Hacker, on the Organising Committee of the 6th International Rangeland Congress. The Congress was a great success and the society maintained a stand for international

guests to get a taste of the publications on offer by the society. The society is still awaiting news on the distribution of any surplus assets generated by the running of the Congress (in particular, the $10,000 grant made to the Congress).

The survey of the Society's membership was completed and the final report presented to council. A summarised review of the report was also written to be published in the April Newsletter. Council would like to thank Dr Manda Page and her students for running with the survey and producing a thorough report on the society's membership.

Likely Developments

Some developments currently in train include:

- A workshop following the 2000 AGM to discuss the Society's membership report and the future direction the council and members wish to take to broaden the awareness of the society.

- The Centenary Symposium Broken Hill (21-25 August, 2000).

TREASURER'S REPORT

Craig Baulderstone, Department of Environment, Heritage and Aboriginal Affairs, GPO Box 1047, Adelaide SA 5001

The financial trend of the Society is of serious concern and will be discussed at the AGM. Our balance of $88 691 is down from last year's balance of $100 829 and follows a loss of $20264 the year before. This is due to losses eating away at returned profits and the conversion of a $10000 loan to the IRC into a grant. This is included as a loss on the accounts. No conferences have been run in the calendar year.

Financial Statements

I would like to acknowledge the work of the auditors at Michael Boyce and Co., in particular the work of Patsy Cross. The financial statements produced are a clear and concise record of the Society's financial affairs.

Subscriptions

Moneys in for the calendar year for subscriptions were down, from $28074 last year to $26985. This figure is also down from $33822 the previous year. With the introduction of the GST, subscriptions will need to rise and hopefully this will not further erode the membership. This will need to be addressed at the AGM. Note that previously we have not been able to separate past journal/newsletter purchases from subscriptions. This factor will be dealt with in the new calendar year of 2001.

Journal and Newsletter

Journal subscriptions have increased slightly in line with CPI. The Journal expenses decreased from $23544 in 1998 to $19707 in 1999. The Newsletter expenses also decreased from $7880 in 1998 to $5009 in 1999.

With the introduction of the GST, in consultation with the auditors consideration is being given as to whether we register for GST or just pass our increased cost on to members. The major considerations will be the total costs to the Society and the need to retain members.

Investments

Investments remained stable with a slight increase from $80778 in 1998 to $81242 in 1999.

Purchases

No purchases of equipment have taken place although expenses were incurred in relation to the 6th International Rangelands Congress.

Accounts

The following summarises other In and Outs for the year.

Sale of Past Conference Proceedings	$35
Conference Expenses 1999 IRC Congress (purchase of stand and associated expenses)	$642

The AGM will discuss the possibility of further consolidation of accounts in an effort to reduce costs and simplify dealings. The introduction of the GST may also affect these matters and council will make a decision in consultation with the auditors.

Honoraria

For 1999, the honorariums $7687 are a reflection of true payments which have increase by CPI as approved by council.

The honorariums include payments to Mr Malcolm Howes (two payments totalling $3396.50), Mr Gary Bastin ($1124) and Mr Wal Whalley ($1124) relating to publications and a payment to Mr Rob Richards ($2042) for subscriptions.

SUBSCRIPTION MANAGER'S REPORT

Rob Richards, Department Land and Water Conservation, PO Box 235, Condobolin NSW 2877

The Rangeland Society has entered its fourth decade of existence. The new millennium brings with it great opportunity and great uncertainty. Rangeland issues and societies perceptions of rangelands have changed markedly in the last thirty years since the Society formed. The Society needs to be flexible in catering for these changes.

It has been a disappointing start to 2000 with membership for the end of April at an all time low. There are currently 373 members which is 37 less than this time last year and 94 less than the average for the 1995 to 1999 period (Figure 1). This is particularly disappointing given the success of the International Rangelands Conference last year.

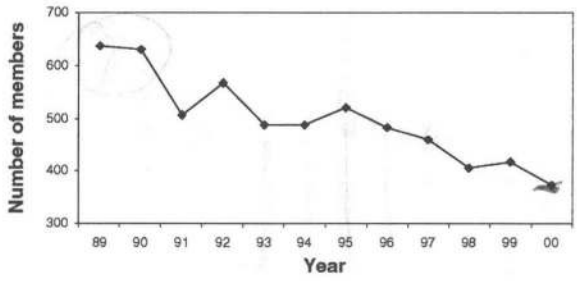

Figure 1. Membership of the ARS as of end May from 1989 to 2000

The good news is that new members continue to join the Society at a steady rate as can be seen from Figure 2 below. The question is therefore why are we losing members at an even faster rate. Results of a membership survey conducted in 1998 will be discussed as part of a workshop to be held aimed at identifying and developing strategies for the promotion and marketing of the Society.

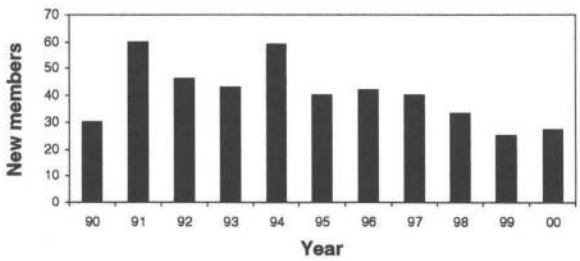

Figure 2. New Members to join the Society 1990 to 2000

There are many interesting points revealed by the membership survey that will form the basis for review of the Societies future operation. In particular the need for more networking and on line access is perceived as being important to members. The Society has made moves to expand our international reputation with the recent acceptance of publications to Current Contents.

Further streamlining and updating of the members' database is needed to keep in line with new accounting standards and GST provisions. Members will need to be sent a tax invoice from the Society and more stringent records kept. An increase in membership to offset GST costs needs to be considered carefully by the Society with recent increases already responsible for many members downgrading their membership.

Effort has been made to make international membership easier with the introduction of credit card facilities, streamlining of postage standards, and increased promotion of the Society.

REPORT OF THE PUBLICATIONS COMMITTEE

Leigh Hunt, Chair, Publications Committee C/- Department of Rangeland Resources, Utah State University, Logan, Utah, USA

The last year has seen a couple of long-term initiatives of the Publications Committee finally come to fruition. One is the Institute for Scientific Information's (ISI) acceptance of *The Rangeland Journal* for coverage in their abstracting publication *Current Contents (CC)* and other abstracting services. This represents an important step in achieving greater international recognition for the journal, the Society, its members and those that publish in the Journal. This is expected to lead to a greater flow of papers to the Journal and increased membership. In terms of the scientific standing of the society and Australian rangeland science in general, this sort of recognition is vital. There have been several attempts in the past 10-15 years to achieve this listing and our final success is a result of the effort put in to raising standards for the journal. This process began about 10 years ago under the guidance of Margaret Friedel and Allan Wilson, at the time Chair of the Publications Committee and Editor of the Journal, respectively. The successful submission to ISI was prepared by Ken Hodgkinson, Allan Wilson and Andrew Ash. I would like to thank them for their efforts in achieving this milestone.

The release of the joint bibliographic database developed in cooperation with the (American) Society of Range Management represents the second successful initiative. The initial release was on CD-ROM but efforts are underway to have the database made available on the World Wide Web. You will probably recall from earlier Publications Committee reports that the database includes citations and abstracts (where available) for all papers published in the *Australian Rangeland Journal*, *The Rangeland Journal*, *Journal of Range Management* and *Rangelands*. Gary Bastin volunteered for the arduous task of compiling all the Australian records for the database, and Bud Rumburg handled the American side of things. On behalf of the Society, I would like to acknowledge their efforts.

Whilst speaking of Gary Bastin, many of you would be aware that he has finally decided to call it a day as editor of the *Range Management Newsletter* (RMN) after 10 years in the job. I am confident that everyone will agree that Gary has done an outstanding job in producing an interesting, relevant and diverse newsletter, and we have indeed been fortunate for his commitment to the task. But Gary has been much more than a newsletter editor. As mentioned earlier, Gary prepared the data for the international bibliographic database and also prepares the Journal abstracts for inclusion on the Society's web page. Another task Gary took on was the compiling of the update for the Journal Index which was produced and mailed to subscribers last year. Gary has also been a valuable contributor to the business of the Publications Committee. On a personal note, I have very much enjoyed the opportunity to work with Gary, and have appreciated him keeping me on my toes about issues that I needed to address as Chair of the Committee.

Of course Gary's departure means we get to welcome a new editor. Dr Noelene Duckett has enthusiastically agreed to be the new RMN editor. I would like to welcome her to the Publications Committee team and encourage all members to submit articles, news snippets and letters to Noelene to assist her in producing a newsletter that includes the type of information and articles that you want to see in it. Noelene has spent the last seven years working in range monitoring and analysis with Agriculture WA and has worked in a diversity of rangeland environments in WA and SA. However, she has recently left WA and moved interstate, and her new contact details will appear in the next Newsletter. As a final word of encouragement to readers, remember that if you do not see the types of articles in the newsletter that you want, it is because no-one is writing or submitting such articles – so it will be up to you to make the effort to write them.

In November, all members would have received the special issue of the Newsletter celebrating the 25th anniversary of the Society's formation. I hope members found looking back on the history and achievements of the Society to be interesting and a useful reminder of how far we have come. I would like to extend thanks to John Morrissey for compiling and editing this issue and the authors who contributed articles.

The production of *The Rangeland Journal* has continued smoothly as a result of the expertise of Wal Whalley (Editor) and Malcolm Howes (Production Manager). The cost of publishing the journal continues to concern us, but Malcolm does an excellent job of maintaining production quality at modest cost. The publishing of special issues of the journal also continues, with the next special issue due out in June this year. This will present papers focussing on the contributions of the Fowlers Gap Research Station to the understanding and management of rangelands in western NSW and adjacent areas.

The Committee met once during the year. We took advantage of the IRC in Townsville in July to meet. All but one of the Committee members were present, as were the majority of the associate editors. One of the main issues we discussed was a proposal for a new international rangeland journal. This proposal revolved around cooperation between the Grasslands Society of Southern Africa, Society for Range Management, CABI Publishing and our Society for the production of a joint journal. Our intention was to investigate some of the pros and cons of this initiative and report on this to the Society's members to seek the general feeling about such a proposal. However, there has been little interest from the other societies so the proposal has been taken no further at this stage.

As always, I would like to acknowledge the work of all those who contribute to the success of the Society's publications. This includes our editors, associate editors, publications manager, referees, authors and the Publications Committee. All are vital to providing you with high quality and up-to-date information on the management of our rangelands.

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.

☐ Enclosed is a cheque for $AU..... for full/part* membership for an individual/institution* for the calendar year 2000

☐ Charge my ..... Mastercard ..... VISA .....Bankcard .....AU$.....for full/part* membership for an individual/institution* for the calendar year 2000

Card No.: ..... Expiry Date: .....

Signature:..... Date: .....

*delete as appropriate

Membership Rates:

	Australia	**Overseas Airmail**
Individual or Family -		
Full (Journal + Newsletter)	$65.00	$85.00
Part (Newsletter only)	$35.00	$45.00
Institution or Company -		
Full (Journal + Newsletter)	$95.00	$115.00
Part (Newsletter only)	$50.00	$60.00

Please Note –

1. 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.**
2. **Year 2000 membership rates include Airmail for all overseas subscribers.**

For Office Use Only:

Membership Number .....

Date Entered in Member Register .....

Date Ratified by Council .....