



The Australian Rangeland Society

RANGE MANAGEMENT NEWSLETTER

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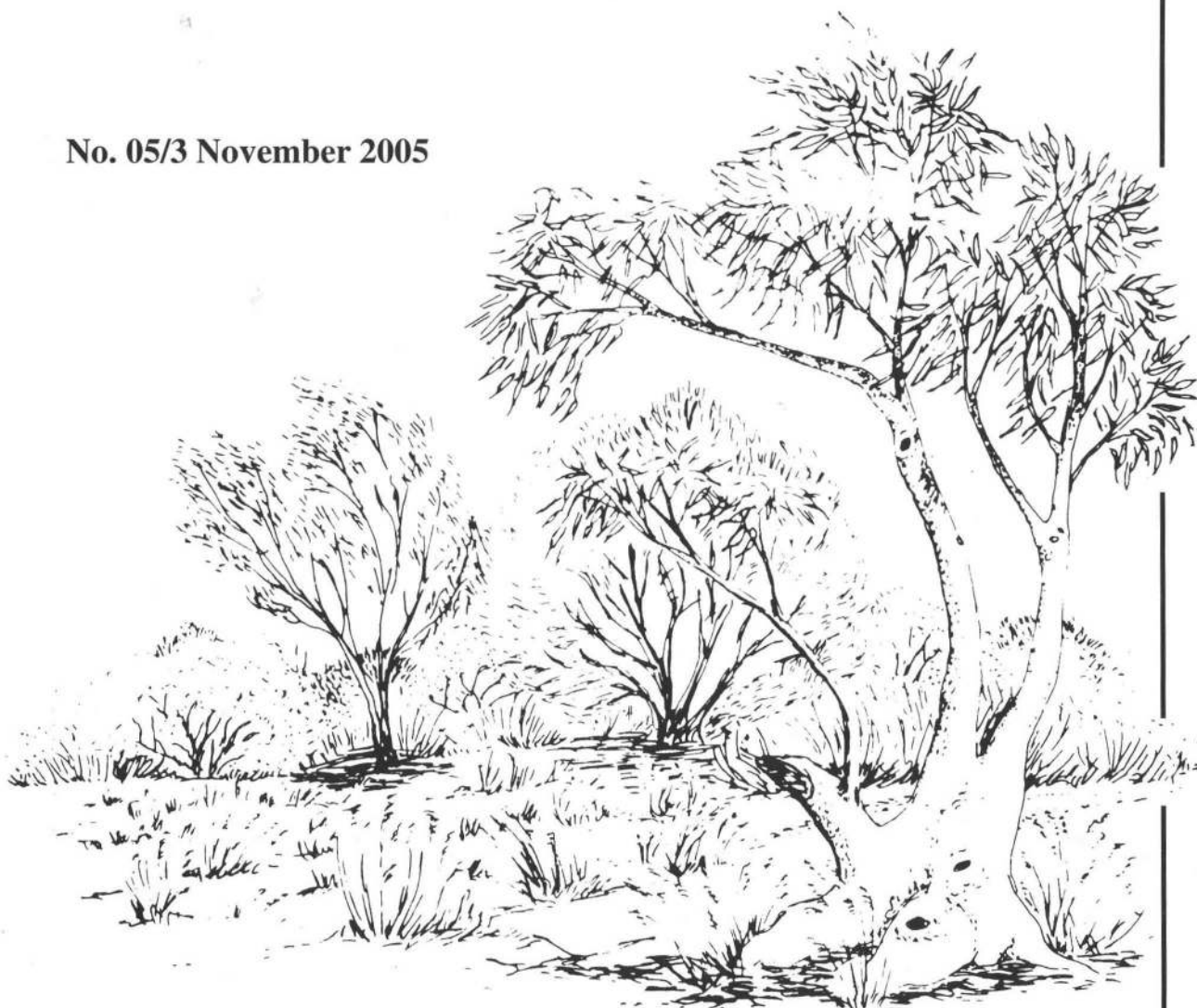
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FROM THE EDITOR

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Welcome to the last issue of the *Range Management Newsletter* for 2005.

In the last *RMN*, Gary Bastin and Ruth Coates briefly outlined the first phase of ACRIS (the Australian Collaborative Rangeland Information System) across five pilot regions. In this issue, Ian Watson and others have prepared a more detailed summary of the Western Australian pilot project, which focused on the Gascoyne – Murchison region of Western Australia. In addition to supporting the general outcomes of the first phase of ACRIS (that it was possible to use a range of indicators, from several different data sets, to address the specific questions about change in rangelands), this study also indicated that changes in the test region over recent years have generally been positive. Read on to find out why many pastoral managers in the Gascoyne-Murchison may be more confident about their future.

Management practices carried out on Barnong Station, a pastoral property run by Rob and Kathryn Mitchell in the Murchison region of WA, are the subject of the second paper. When he submitted this article for publication, Mark Alchin, a Department of Agriculture Development Officer in Meekatharra, succinctly summarised this story – “it describes the journey a producer has travelled along and the role training and observation has played in aiming to actually achieve the all too often buzzword of sustainability. It is a candid account of how they freely admit their mistakes and are learning from them.”

This issue of the *RMN* also includes a number of interesting shorter articles including updates on what is happening with *The Rangeland Journal* and with the Lake Eyre Basin Community Advisory Committee as well as a report from the International Grasslands Conference (where among other things I hear the beer was great!).

Important dates to remember include the Australian Rangeland Society 14th Biennial Conference which will be held in Renmark, South Australia from the **4-7 September 2006**. Further details are provided on page 13 of this newsletter: note that the Registration of Interest and Call for Abstracts brochure will be sent out to all members at the end of November. Please note also that the closing date for applications for the ARS Awards is very close – they should be submitted to Council by **30 November 2005**. Additional information about the awards is given on page 19 of this issue.

The next newsletter is due out in March 2006 and I would appreciate receiving your articles by late January if possible.

I hope you all have a great summer break, and a happy and safe festive season.

CHANGE IN THE RANGELANDS OF THE GASCOYNE - MURCHISON

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Part of an Australia – wide project

In the last *Range Management Newsletter* (July 2005) Gary Bastin and Ruth Coates reported on the results of a group of pilot projects done as part of the Australian Collaborative Rangeland Information System (ACRIS).

Over the last 15 years there has been considerable interest at state/NT and Commonwealth level for combined reporting of change in rangelands. However, progress has been slow. ACRIS was formed as a co-ordinating mechanism to attempt the task, but rather than attempt to report on ‘everything & everywhere’ the management committee chose to begin by producing reports on pilot regions in each rangeland state and the Northern Territory and by addressing a limited set of five attributes.

These were change in;

- (i) *critical stock forage productivity* – for Western Australia this specifically referred to perennial species known to decrease under grazing.
- (ii) *native plant (& animal) species* – this is an indicator of biodiversity. Animal species were included where data were available.
- (ii) *landscape function* – how well water and nutrients are regulated across the landscape.
- (iii) *capacity for people to change* – indicates ability to address environmental issues. Includes individual pastoral managers, the pastoral industry and government.
- (iv) *cover* – a basic measure of protection against erosion.

The aim of this was to explore how well information from disparate data sets could be combined into a single report for each pilot area and then to explore how well these could be synthesised into a national report. The nominal reporting period was 1992 to 2002, although data outside this period were used for some purposes.

This article is a summary of the Western Australian pilot project, focused on the Gascoyne – Murchison region of Western Australia (Figure 1). Note that no references to

the original data sources are given in this article – they are included in the full report which can be obtained directly from Ian Watson or preferably from the following website: <http://www.deh.gov.au/land/management/rangelands/acris/index.html>.

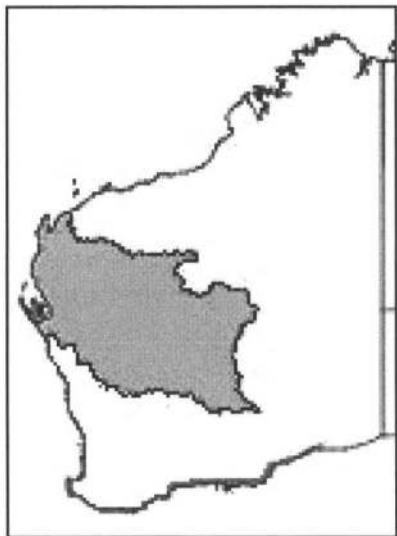


Figure 1. The Gascoyne – Murchison region used in the ACRIS pilot project. It was made up of the Carnarvon, Gascoyne, Murchison and Yalgoo bio-regions and part of the Geraldton Sandplain bio-region.

The region

The Gascoyne - Murchison region, as defined for the ACRIS project, is 596,520 km² and stretches from North West Cape through almost to Kalgoorlie. It is bounded to the south-west by the agricultural areas and to the east by the Little Sandy and Great Victoria deserts. The region is sparsely populated with an average of one person for every 22.6 km². The climate is arid, with an average annual rainfall throughout much of the region of between 200 and 250 mm. It contains much of the mulga lands of Western Australia, as well as chenopod shrublands and a range of other vegetation types. Even though it represents nearly 8% of Australia's area, there are only about 290 pastoral stations in the region. Pastoral leasehold land covers about 76% of the area and is the dominant land use.

Change in vegetation critical to stock productivity

The intent of this question was to focus on vegetation that is known to be important for livestock productivity and known to decline in response to heavy grazing (termed Decreaser species). The Western Australian Rangeland Monitoring System (WARMS) provided the primary data to address the question, based on results from 700 shrubland sites and 71 grassland sites.

A prolonged and severe drought was experienced throughout much of the pilot region from mid 2000. Dry conditions alone should only have a small impact on the species recorded on WARMS sites, because they are long-

lived and therefore drought resistant. However dry conditions and excessive grazing together have the potential for large impacts and substantial loss of vegetation has occurred in previous droughts.

Results from our study suggest that such losses were not observed during the recent drought except on isolated sites. In fact, changes in those perennial species most related to stock productivity were generally positive in the pilot region, although undue grazing pressure had a negative impact on some sites, particularly during drier conditions.

Total shrub density remained the same or increased on 70% of sites. For those sites which experienced above average seasonal conditions, there was little difference between Decreaser species and other species. However, under average or below average seasonal conditions the decline in Decreaser species was greater than for Increaser (i.e. those species in which plant numbers increase in response to grazing) or Intermediate species (i.e. those species which show little response to grazing). The difference in response between species types suggests that grazing had a negative impact during the drier periods. However, this negative impact was not found on all sites. For example, even with below average seasonal conditions there were still 20% of sites in which the density of Decreaser species increased by at least 5% (Table 1). This is 'good news' given the severity of the drought in the Murchison and Yalgoo bioregions. Of more concern is that despite above average conditions, the frequency of Decreaser grass species declined by at least 10% on almost one third of grassland sites.

When examining just the presence/absence of Decreaser species, a large majority of of Decreaser species (70%) were found on more sites at reassessment than at installation, suggesting that their local distribution had increased (data not shown here). This was a lower percentage than for Increaser or Intermediate species. However on average, Decreaser species were found on 10% more sites at reassessment - a similar increase to Increaser and Intermediate species. These are mixed results. Clearly a high percentage of Decreaser species increased their local distribution, although there is evidence that without grazing this might have been higher.

Across the region, recruitment of Decreaser species was common even on those sites that had experienced below average seasonal conditions.

Table 1. Population growth rate (i.e. change in density). Percentage of sites in each seasonal quality category showing decline, no change or improvement during the five years prior to the year in which the site was recorded. Several rows add to 101% due to rounding.

Seasonal Quality	Species included	Decline PGR < 0.95 (density < 95%)	No change 0.95 ≥ PGR < 1.05 (density between 95% and 105%)	Improvement PGR ≥ 1.05 (density ≥ 105%)	Number of sites
Above average	All	12	12	77	428
	Decreaser	15	13	72	412
	Intermediate	17	17	67	403
	Increaser	11	21	68	284
Average	All	28	27	45	166
	Decreaser	37	20	43	163
	Intermediate	20	34	46	158
	Increaser	17	30	53	99
Below average	All	58	21	22	106
	Decreaser	60	20	20	106
	Intermediate	42	30	29	101
	Increaser	18	34	48	73

Change in native plant (& animal) species

The intent of this question was to explore how well ACRIS could report on biodiversity, recognising that the state and NT pastoral monitoring programs were not originally designed to do so and that there was no wide-area biodiversity monitoring system operating in any of the jurisdictions. While the focus was on native plant species, the question was expanded to include animal species where information was available. The primary data sets were WARMS, the Department of Conservation and Land Management's (CALM's) recent biodiversity audit and information on changes to the conservation estate and potential improvements in off-reserve conservation within the pilot project region.

CALM's recent biodiversity audit summarised information on the status of both ecosystems and species at the level of sub-bioregion. As its title suggests, the work is an audit rather than monitoring of recent change. Where change information was provided, the timing of change was typically at some unknown period since European settlement, rather than the recent change identified by WARMS.

Within the pilot project region there are 18 wetlands of national significance and 18 wetlands of sub-regional significance. There is only one endorsed Threatened Ecological Community¹ but a further 112 ecosystems are considered at risk. Of these ecosystems, 2% are considered to be improving (at less risk) and 41% declining (risk increasing).

At least four mammals are extinct from the region with 13 others considered threatened or Priority 1 or 2. Of the 48 threatened and priority 1 and 2 vertebrate species populations (mammals, reptiles, birds and fish) only 15% are considered in good condition, 29% are degraded and 48% are considered fair. Only 4% of these species are considered improving whereas the trend for 52% is declining or rapidly declining. For all the vertebrate groups combined, feral animals are considered an important threatening process in 29% of cases; grazing pressure (22%) and changed fire regimes (20%).

There is only one instance of improving trend in the status of a threatened or priority species, the mallee fowl.

Of the 3,557 vascular plant species in the region, 333 are considered threatened or of conservation priority. A subset of these (threatened or priority 1 or 2) was used to develop an understanding of condition and status within the Biodiversity Audit. While the condition of 59% of this sub-set is unknown, 18% are in good condition and 22% in fair condition. The trend in condition is largely unknown for 70% but 17% are thought to be in decline and 11% are static. Grazing pressure from livestock and feral animals, exotic weeds and altered fire regimes are all thought to be responsible.

The potential for biodiversity conservation in the pilot region has been significantly enhanced by the acquisition since 1998 of almost 4 M ha of pastoral leasehold land for inclusion in the conservation estate. The acquisition is, however, biased towards land of lower pastoral productivity and there are about 110 of 259 vegetation associations that remain to be included in the estate. Despite this, there has been a large increase in the number

¹ CALM uses a standard set of categories to describe the status and priority of ecological communities and species.

of vegetation associations represented. This increased from 74 in 1998 to currently more than 144. About 18% of the vegetation associations now have at least 10% of their area represented. There are also a number of areas on pastoral leases that have been nominated for exclusion in 2015.

Three leases have been bought since 2000 for the purposes of privately funded conservation. Two of these comprise part of an area of close to 1 M ha which is increasingly being managed for conservation. This area sits across the junction of four bio-regions (Avon, Coolgardie, Murchison and Yalgoo).

The extent of off-reserve conservation on commercial pastoral leases is difficult to quantify but it is known to have improved during the time of the Gascoyne-Murchison Strategy, partly through the work of the Ecosystem Management Unit (EMU) project.

The EMU project worked with managers to enhance ecological literacy, improve understanding of landscape processes and develop ways to better manage biodiversity on-station. The project engaged pastoralists on about 65 leases, covering an area of 15 M ha. It helped put in place pastoralist management of nationally listed wetlands, management of a range of habitats containing rare or threatened flora, catchment restoration work and protection of fragile river frontage and coastal dune areas. There were 13 specific biodiversity projects implemented. At the regional scale the EMU project also worked to identify and set priorities for biodiversity conservation both on-station and as part of the reserve system.

The results from WARMS were generally favourable when summarised across the entire pilot region and all shrub species, at least on those areas represented by the monitoring sites². For example, the population growth rate (i.e. change in density) increased or remained the same on 70% of sites (Figure 2). On only 16% of sites did the density decline by more than 10%.

When considering individual species (rather than the individual sites shown in Figure 2), 87% increased in density and only 7% declined by more than 10% (Figure 3).

The majority of species (82%) were found on more sites at reassessment than at installation, suggesting that their local distribution had expanded. The majority of sites (80%) had the same or an increased number of species at reassessment, i.e. species richness increased. Recruitment of new individuals, critical for population maintenance, was found on almost all sites and for almost all species.

While these were generally good results overall, less favourable results were found on sites that experienced a drought, principally in the Murchison and Yalgoo areas. In

these areas, there was evidence that grazing had a negative impact during drought, since Decreaser species were more adversely affected than Increaser or Intermediate species.

Results for grassland species were more mixed. Despite above average seasons the frequency of perennial species decreased by more than 10% on almost a quarter of sites. On a sub-set of 40 sites that had been sampled three times, 28 (70%) of them showed an increased frequency during at least one reassessment interval

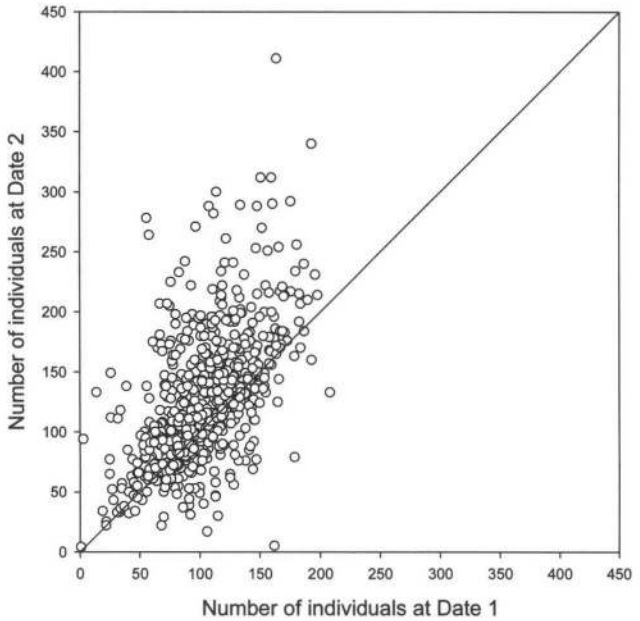


Figure 2. Population growth rate (i.e. change in density) for each site – number of individuals on each site at Date 2 compared to number of individuals on each site at Date1 (n=700).

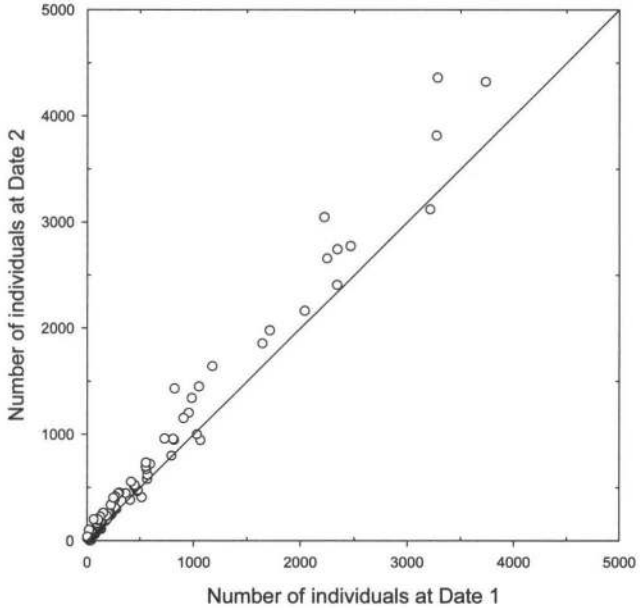


Figure 3. Population growth rate (i.e. change in density) for each species - number of individuals on each site at Date 2 compared to number of individuals on each site at Date1 (n=138).

² This is an important caveat when considering the use of WARMS data to report on changes in biodiversity. WARMS site locations are deliberately biased to represent vegetation important for pastoral purposes and do not represent restricted habitats or other areas such as wetlands which may be important for biodiversity conservation.

Watering point distribution

An interesting aspect of the project was the use of some historical maps to investigate changes in the number of watering points between about the time of the Second World War and the 1990s.

During the War the (then) Department of Lands and Surveys commissioned a set of infrastructure maps for Western Australia at a scale of 1:10 mile. These maps were eventually released throughout the 1950s, using data collected during the War. The amazing aspect about these maps is that they detail individual paddocks and watering points for most of the pastoral leases in the state (Figure 4). The maps provided an opportunity to compare watering point distribution then, with watering point distribution now.

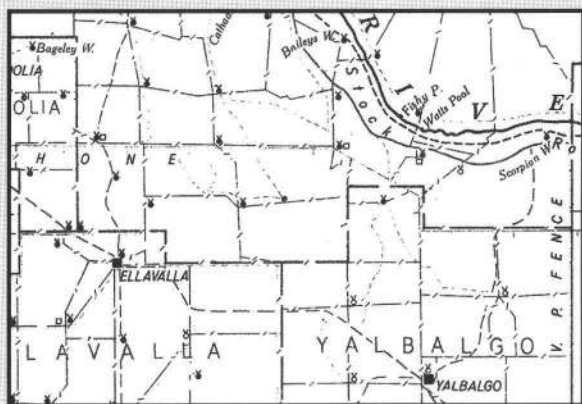


Figure 4. A sample of the 1:10 mile infrastructure map produced by the Dept of Lands and Surveys following World War II.

An area of about 1.8 M ha on one of the old maps was compared with current station maps held by the Department of Agriculture. While some of the current maps are a little out of date they accurately recorded the location of all fences and watering points up until 1990s. The old maps show that much of the land was already well developed by the time of the War. For example, about two-thirds of the land was within 6 km from permanent water. However, by the 1990s there was a large increase in the number of waters, particularly along river systems where permanent and semi-permanent river pools had previously been the only water available. By the 1990s, 90% of the land was within 6 km from water.

The pattern of increased number of waters was found for all but one of 10 land types in the sample area (two examples are shown in Figure 5). This has resulted in a greater percentage of the land being closer to water, and correspondingly, less land is now remote from water. Significantly, there is now very little land beyond 15 km from permanent water. The greatest intensification occurred on some of the highly productive and fragile systems.

The increased density of watering points has two major implications for the region. On the one hand, pastoral managers are now able to use more of the land, more evenly and with better control over where the livestock are grazing. On the other hand, more of the land is under pressure from livestock and the decline in the proportion of land remote from water is likely to have a detrimental effect on biodiversity and off-reserve (i.e. on-station) nature conservation.

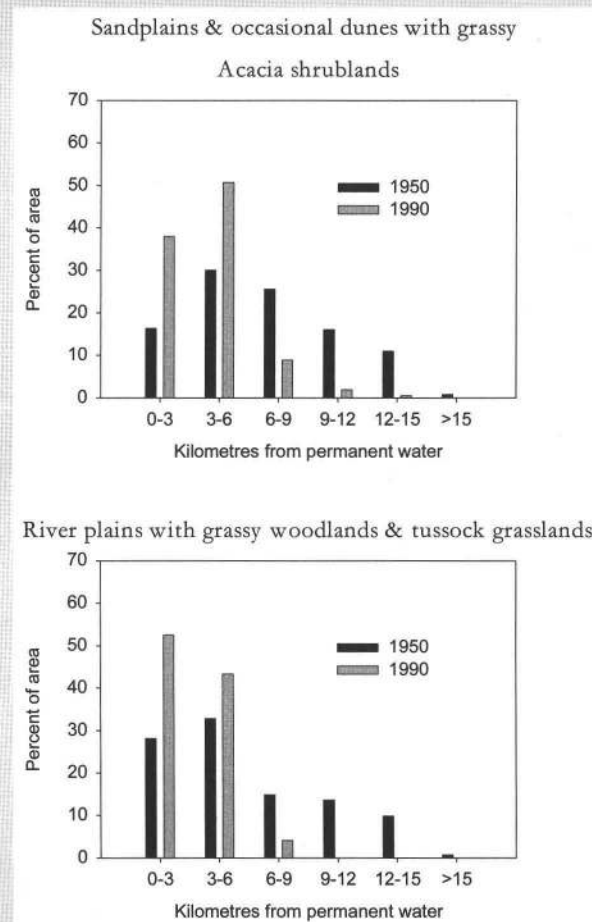


Figure 5. Distance from water (c. 1950 and c. 1990) for two land types in the sample area

A separate analysis of all the pastoral leasehold land in the ACRIS pilot project region showed that there was only one land type of 29 in the region (Eucalypt woodlands with non-halophytic undershrubs) where more than 50% of the area was beyond 6 km from permanent water. All land types except this one had 10% or less of their area beyond 15 km and seven land types had no land beyond 15 km.

Change in landscape function

Landscape function refers to the way resources (water and nutrients) move across the landscape; i.e. the extent to which they are either captured by the landscape or shed into drainage lines and lost to the system.

The WARMS data set was used to report change in landscape function, using standard techniques developed by David Tongway and Norm Hindley of CSIRO. Good quality data were available from 398 shrubland sites and 47 grassland sites.

In general the results from the landscape function assessments on WARMS sites were worse than from the vegetation assessments. For example, on 69% of shrubland sites and 64% of grassland sites there was a decrease in the proportion of resource capturing patches on the sites, suggesting a decreased ability to trap water and nutrients. This result was largely independent of whether the sites had experienced above average, average or below average seasonal conditions.

Subjectively assessed landscape function attributes were also combined into standard indices representing stability, infiltration and nutrient cycling. These indices, particularly the latter two, tend to be more driven by recent seasonal conditions than by longer-term change in the rangelands. The stability index remained the same or increased on 51% of shrubland sites and 62% of grassland sites (Figure 6). The infiltration index remained the same

or increased on 47% of shrubland and 53% of grassland sites. The nutrient cycling index remained the same or increased on 36% of shrubland and 51% of grassland sites. For all three indices the results were most favourable on sites that had experienced above average seasonal conditions and least favourable on sites that had experienced below average seasonal conditions.

Capacity for change

The capacity of managers to adapt to change is a critical indicator of their ability to address environmental issues as well as improve their enterprise viability. Capacity for change is not only important for individual managers, but also for the industry as a whole and for government. Finding consistent, time sequential data that indicates a capacity for change has always been difficult, so the ACRIS management committee deliberately left the question broad in scope, while at the same time trying to ensure at least some consistent data across jurisdictions.

In Western Australia, much of the source information was taken from various Gascoyne-Murchison Strategy reports, particularly an independent evaluation of the Strategy's outcomes as well as information on pastoral lease sales and change in livestock numbers.

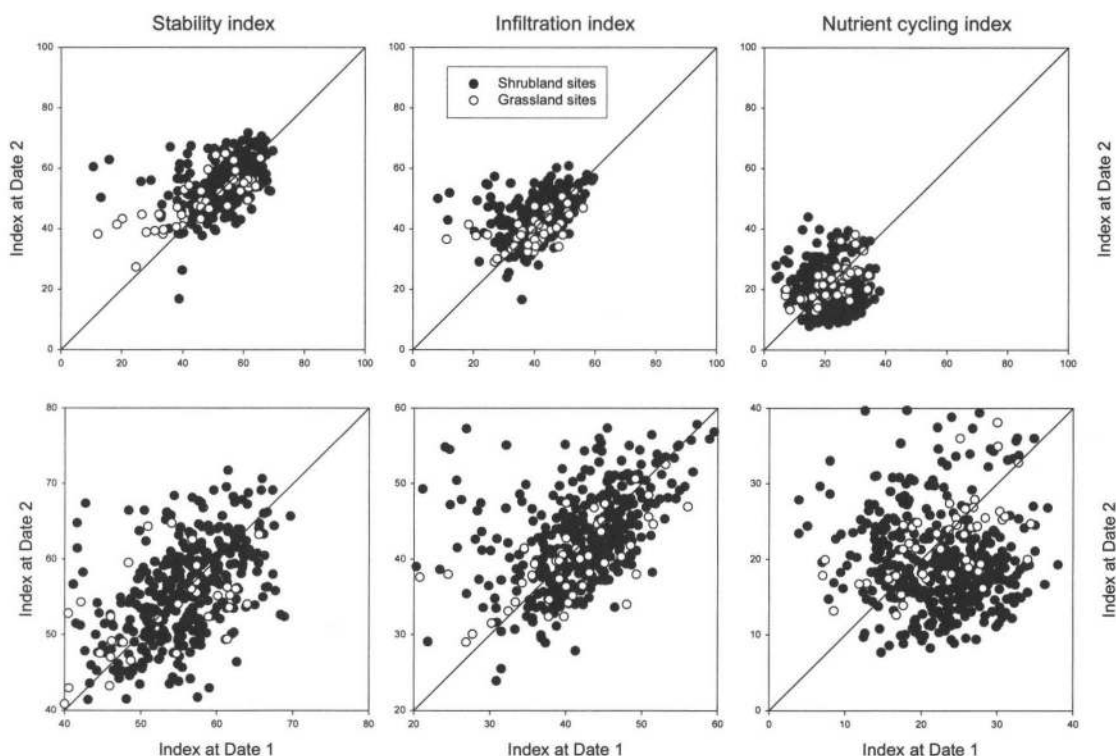


Figure 6. Proportional landscape function for the three indices at each site. The top three panes show all data on common axes. The bottom three panes provide expanded views. The diagonal lines show 1:1 equality between Date 1 and Date 2 and points above these lines represent improvement.

The evaluation of the GMS concluded that there was improved managerial capacity on about 50% of the pastoral businesses in the region since the GMS began in 1998. This judgement was based on perceptions of viability, commitment to business planning, increased confidence in the future and a feeling that personal capacity to manage had improved. Importantly, 58% of those managers interviewed thought that their own capacity to manage had increased. While there may have been some improvement, a financial benchmarking project within the GMS considered that business management skills in the pastoral industry were poor and that even basic tasks like record keeping were poorly managed.

There have been substantial changes to enterprises as well as shifts in enterprise type across the region over the last five to ten years. Many of those stations that ran Merino sheep for wool production now run cattle and/or a range of meat sheep and rangeland goats.

Structural adjustment continues to be needed in the region. While a program of voluntary lease adjustment during the Strategy was largely unsuccessful, 18 whole leases and 19 part leases (totalling nearly 4 M ha) were acquired for inclusion in the conservation estate. However, the GMS evaluation concluded that structural adjustment was still necessary and that a number of businesses remained unviable. However, viability is difficult to judge and many enterprises are now geared to receiving substantial proportions of their income from off-station activities. Information from a range of sources suggests that about 90% of enterprises received off-station income and that about one in eight enterprises received more than one third of their income from off-station pursuits. This may be reflected in the prices paid recently for some of the less productive leases which were high-priced on pastoral value alone and have presumably been bought as a base for a more varied income stream than simply livestock production.

There was mixed reporting of the financial capacity of the industry. Information from a financial benchmarking project suggested that there were good levels of profitability across the region while information summarised from grant applications suggested that the financial situation within many businesses was poor. Both sets of data showed that there was large variation in financial capacity. Some businesses were managing very well and some very poorly. This large range suggests that managerial capacity and the amount of debt are primary determinants of financial health and that generalisations about the economic health of the industry need to be viewed with caution.

The capacity to manage for improved natural resource management outcomes also appears to have increased. Several examples of environmental management systems were developed during the GMS although there has been little uptake by industry. Artesian bore capping and reticulation has drastically improved the capacity to manage the underground water resource, saving an estimated 8.35 gigalitres of water per annum at the surface.

There is also good evidence of improved landscape and ecosystem management based on an independent report of the Ecosystem Management Unit (EMU) project. This project engaged with pastoralists on about 63 stations and led to a broad array of improved environmental outcomes including the relocation of watering points and fencelines, catchment restoration, improved management of wetlands and habitats containing rare and/or threatened species and a generally better understanding of how management decisions can have an impact on the natural environment.

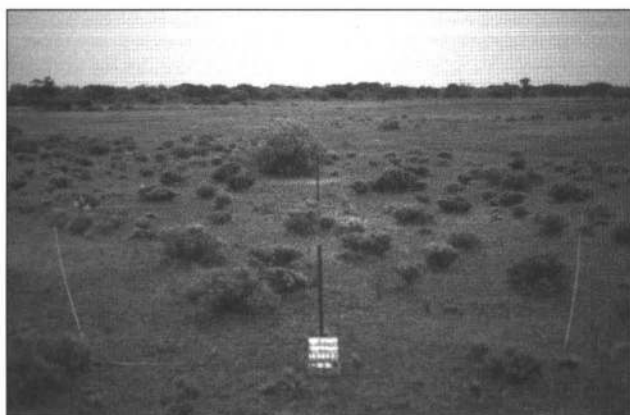
The GMS also helped develop and fund total grazing management yards, with at least 1,350 built during the life of the Strategy. This has improved the industry's ability to control grazing pressure on at least 10% of the artificial watering points, affecting at least 17 M ha on 64 stations. About 170 additional watering points and over 1,000 km of new fencing also has the potential to improve grazing distribution and protect fragile landscapes.

In the eight year period 1997 to 2004 nearly 40% of leases in the pilot region changed hands (excluding internal transfers and sales of part leases). While it is not possible to determine the extent to which this represents new owners and managers coming into the region or existing owners and managers buying and/or selling stations it does show considerable turnover in lease management, which has implications for the capacity of managers to manage recently bought leases.

One of the most important indicators of pastoralists' ability to manage the land is that of making decisions that 'get the stocking rate right'. Much of the ACRIS pilot project region experienced a prolonged period of below average rainfall from 2000 or 2001, with some areas experiencing four sequential failed winter seasons. This led to a large proportion of the region being declared for Exceptional Circumstances and provided a good test of how well pastoralists managed the drought.

While some of the financial benchmarking work in the Gascoyne-Murchison suggested that managers did not destock fast enough as conditions dried out during the drought and that in 2001/02 stocking rates were about double what they should have been given the dry conditions, there is also good evidence that there was more emphasis by managers on destocking in this recent drought than in previous ones.

Livestock figures from six of the worst affected shires showed that the number of livestock (expressed as Dry Sheep Equivalents, DSEs) fell from an average of about 1,200,000 DSE (1981/82 to 1996/97) down to about 760,000 DSE by 2002/03, i.e. a drop of about 37%. Large reductions in livestock numbers during drought do not necessarily imply good management. Previous droughts have shown that stock reductions are often due to losses on-station due to starvation.



October 1998

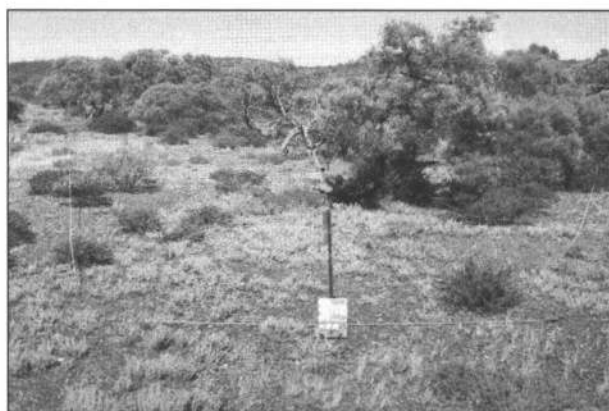


August 2003

Photo 1. The obvious scalding on this WARMS bluebush site in the Murchison suggests that it has been heavily utilised at some stage in the past. However, during the four years between the first WARMS assessment in 1998 and the second assessment in 2003 shrub densities increased slightly despite the fact that the site experienced four failed winter seasons in a row. Other indicators, such as canopy area and the two of the landscape function indices, declined.

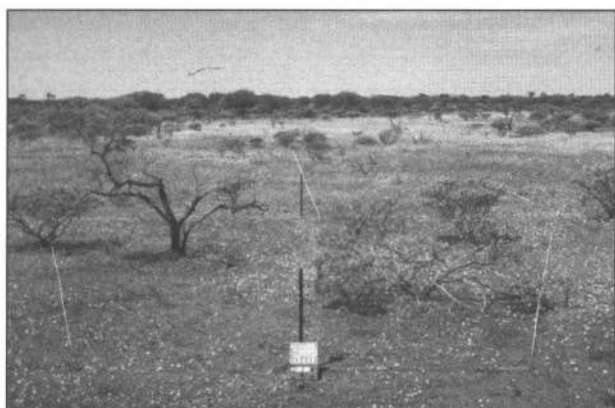


July 1994



June 2000

Photo 2. Good seasonal conditions were experienced on this WARMS stony snakewood site in the Gascoyne. Density, canopy area and species richness all increased substantially between 1994 and 2000.



September 1998



September 2003

Photo 3. On this WARMS stony mulga shrubland site in the Murchison, shrub density and canopy area increased between 1998 and 2003 despite the fact that the site experienced an average to below average rainfall. Species richness and two of the landscape function indices declined.

However, losses during the first two years of the drought were comparable with losses over the period 1981/82 to 1996/97 (Figure 7). Even losses of nearly 22% in 2002/03, although high, were much less than the losses reported in earlier severe droughts. This was almost certainly due to the high proportion of livestock that were sold or agisted from 1999/00 onwards. While the average between 1981/82 and 1996/97 was 18% of stock on hand, in the four years from 1999/00 to 2002/03 the equivalent percentages were 27%, 37%, 50% and 47%. Good prices for livestock over this period undoubtedly made the decision to sell rather than hang-on an easier one. The true test will come during a drought in which livestock prices are low.

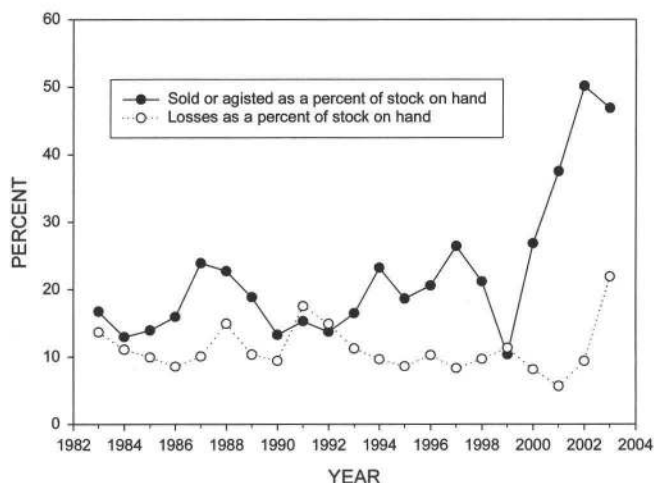


Figure 7. Livestock reductions in the Carnarvon, Cue, Mount Magnet, Murchison, Upper Gascoyne and Yalgoo Shires. The x-axis year is the second year of each financial year couplet.

Change in cover

Change in cover was included in the ACRIS work because it is a fundamental measure of how well the land surface is protected from erosion and is an attribute that is assessed by all state and NT jurisdictions, although in different ways.

WARMS data were used to address this question in Western Australia and cover was therefore defined as perennial vegetation cover. On shrubland sites this was measured as canopy area and on grassland sites as crown cover estimates of all woody species taller than 1 m.

Canopy area increased on 82% of WARMS shrubland sites and the average increase in canopy area for each site was 50%. This was due to both an increase in size of individual plants as well as an increase in the number of plants. Similar results were obtained when individuals taller than 1.5 m high were excluded in order to remove the effect of tall, relatively stable shrubs and trees such as mulga.

Nearly all species recorded an increase in canopy area. When averaged over the entire period the increase for Decreaser species was similar to Increaser and

Intermediate species, suggesting that grazing was not having a large impact on cover. However, during the drought there was a disproportionate impact on Decreaser species showing that the impact of grazing was greatest during the dry period.

On grassland sites, crown cover of woody species increased on 71% of sites and on 21% of sites the cover decreased by more than 10%. It is more difficult to judge change in terms of 'good' or 'bad' in grassland areas because many of the species are considered woody invaders and because fire can have a large, but often short-term, impact on cover.

Conclusions

The ACRIS pilot project showed that it was possible to use a range of indicators, from a number of disparate data sets, to address the ACRIS questions about change in rangelands. The attempt to provide common information across the states and NT for inclusion in a national synthesis proved challenging. However, the experience of the pilot project proved sufficiently fruitful to at least 'have a go' at the rest of the rangelands throughout 2006.

Not surprisingly, because the indicators covered such a broad range of attributes and the area is so large (nearly 8% of Australia), many of the results were mixed. There was also a large range in the data for most indicators, providing both favourable and unfavourable results. This limits the number of generalisations that can be made and also suggests that a 'one size fits all' policy response will be insufficient.

The region experienced an increased capacity for change during the period of the pilot project. However, this increased capacity for change needs to be tempered by observations that show that more work needs to be done to improve business management and the difficult task of 'getting the stocking rate right'.

Perennial vegetation as assessed on Western Australian Rangeland Monitoring System (WARMS) sites generally showed improvement. However, the results were mixed. Shrub populations generally indicated improvement while perennial grass populations and landscape function attributes provided more unfavourable results.

The potential for biodiversity conservation has also increased due to the recent acquisition of almost 4 M ha of pastoral land for inclusion in the conservation estate, an increased interest in off-reserve conservation and better control of grazing pressure. However, it is not known whether these measures will reverse the long term decline seen in many ecological communities and for many threatened or priority species.

At the risk of generalising, the ACRIS pilot project has shown that in the Gascoyne-Murchison region, many of the pastoral businesses remain profitable, much of the land (although historically degraded) is showing signs of improvement, the potential for biodiversity conservation has increased and pastoral managers remain confident in their own future.

WE CANNOT AFFORD YESTERDAY'S LOSSES

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The heart of Barnong Station, located near Yalgoo in the Murchison region of Western Australia, has always been pastoralism. The introduction of sheep in 1872 by Mick Morrissey heralded the beginning of a dynasty which has spanned more than 4 generations. Throughout its 133 year history one of the major challenges Barnong has had to encounter is the erratic nature of the rainfall. During a few of the major droughts there were losses in excess of 6 000 sheep. Its present owners, Rob and Kathryn Mitchell are determined to learn from the mistakes of the past and are learning to be proactive with their stocking rate decisions.

In 1900 Rob's great grandfather Charles Mitchell resumed Barnong station along with 2 other leases and immediately set about developing a network of mills. Within 10 years 400 km of fencing was completed and 40 mills were erected. During this period the sheep numbers steadily increased and were shepherded across the station based on the availability of feed. Charlie Mitchell (Rob's grandfather) took over from his father in 1930 and continued to develop Barnong through additional fencing and more watering points. Sheep numbers continued to rise as they continued to be shepherded across the station. Rob stated that the mindset in those days was very much "as long as there was feed available then keep increasing the numbers". It was not until the 1930's that this approach to stocking rate and carrying capacity caught up with Barnong.

Coming into the 1930's, due to the high wool prices Barnong had never sold off a single sheep and was carrying over 35 000 head. This approach to stocking rate was certainly like a barreling freight train hurtling down the tracks towards a gap in the bridge. Indeed the inevitable accident did occur and over 6 000 head died during the major 1930's drought which started at the end of 1935 and persisted for a grueling 6 years. Throughout this period Charlie fought simply to keep enough numbers to stay afloat without any real management strategy. Due to the lack of annual herbage the sheep relied heavily on the perennial grasses and shrubs which inevitably resulted in a major reduction in their density and diversity.

The baton of Barnong station was passed onto Neil Mitchell (Rob's father) in 1950 and after seeing the impact of the 1930's drought he was determined to make some significant changes in the way in which stocking rate was managed on the station. Neil was not alone in his determination to seek answers; in 1951 the Department of Agriculture was drawn to the area in response to demands to deliver a service which focused on determining "what made the country work and how should it be managed". In 1955 David Wilcox was the first rangeland advisor

deployed and commenced a partnership with Neil to develop strategies which sought to improve production.

One of the first jobs Neil and David set out to do was construct a number of fenced exclosures across Barnong to act as benchmarks in order to assist them in their stocking rate decisions. Prior to this the Mitchell's had based their decisions on historical numbers in paddocks which were usually higher than what a paddock could carry in the long-term. Leading on from what Neil had learnt through using the exclosures, a stocking rate trial was conducted during the mid 1960's in conjunction with the Department of Agriculture. The aim of the trial was to increase perennial grass production in sandplain bowgada country through the use of chaining and grazing management. The results from the trial were not overly successful although it continued to feed Neil's aspirations of improving his grazing management and long-term productivity.



Photo 1. Rob and Kathryn Mitchell (right) discuss observations with Ben Norton (Centre for the Management of Arid Environments, Kalgoorlie) during a field visit to one of Barnong Station's exclosures. These were erected in the 1950's by the then Department of Agriculture Advisor David Wilcox.

Prior to the mid 1950's the station was set-stocked and averaged 55 to 60% lambing. Continuing on from what Neil had learnt about the need for paddocks to have a spelling period for reseeding and regeneration, he began to develop a simple rest-based grazing system. Although specific paddocks were targeted more frequently, most paddocks received a rest for two years. Despite this shift in grazing management, mortality was still high (especially weaners). Rob recalls that in his father's journal he had noted that in one year "they had 18% mortality and my father had written *normal* next to it". Indeed, the stock journals indicate that 15 – 20% mortality was quite a common occurrence in those days.

Despite taking a number of positive steps forward in managing stock numbers Barnong was caught out again in 1976 when another major drought persisted for four years. The losses were similar to the 1930's drought, in the first year they lost 4 000 sheep. It was so severe that they could not get them to market and therefore the many sheep

had to be shot. By the end of 1980 there were no sheep left on Barnong station and it was not until Rob's father had died that Rob returned to the station with 2 000 ewes.

After spending countless hours pouring over his father's management records Rob set out to stock the paddocks and model his management strategies on the way in which it had been done in the past. The major losses of the past caused Rob to be very hesitant and conscious not to over-stock. He went about building the numbers back up to 7 000 over a period of 5 years. It was through the formation of the Yalgoo LCDC in 1987 that both Rob and Kathryn started to become increasingly more "aware of the way in which their management directly impacted on their business cashflow and rangeland condition". It was also during this time that Rob realised that he would never be able to sustainably run the numbers his father did.

Heading into the 1990's Rob's focus was to "conservatively set-stock paddocks and focus on the perennial shrubs". Rob states that everyone considered that, "saltbush was the key and all we had to do was conservatively stock it, provide fresh water and we would improve production". Therefore, Rob set about opening up saltbush country that had not be used before through the establishment of mills and fencing. Following on from the good relationship formed in the past with the Department, the concept of pasture monitoring was suggested by advisors and sites were installed across Barnong. Various other workshops and observations continued to build Rob's understanding of the dynamics of stocking rate and carrying capacity, however Barnong's carrying capacity continued to be based on historical long-term averages.

One of the major breakthroughs in Barnong's management was the integration of Total Grazing Management (TGM) yards. The suggestion of using TGM yards by James Wright in 1994 coincided with the release of the land systems maps which enhanced Rob's perspective of managing areas of Barnong differently. Through the Gascoyne-Murchison Strategy (GMS) Barnong installed 50 TGM yards and since their introduction Rob and Kathryn have been able to reduce overall operating costs and have significantly improved their capacity to manage total grazing pressure. Despite these improvements Rob continued to be disappointed with Barnong's lambing and weaning percentage which caused him to look intensively at his production issues. Rob states that this, "really was the start of a mindset in which we saw the station as a production business and not just a *lifestyle* in which we were ticking over and counting plants through monitoring". Many other members of the Yalgoo Land Conservation District Committee (LCDC) concurred with this revelation that they "could not be green if they were in the red".

The dissatisfaction with poor station performance led to Rob and Kathryn's involvement with a Bestprac group. Through participating in various benchmarking exercises and evaluating the drivers of their production system it became obvious that nutrition was one of the main issues. The Bestprac process coincided with involvement in the Ecosystem Management Understanding (EMU) workshops

which Rob credits as "increasing his environmental awareness in terms of water flow and water infiltration as a result of ground cover". Comments made by Ken Tinley from the EMU team concerning an adjustment of his grazing management to match its various land systems further encouraged Rob to investigate new ways to manage his stocking rate. As a consequence Barnong applied and received funds from the Natural Heritage Trust (NHT) for an Envirofund project which sought to improve grazing management through relocating mills and fencing to different land systems.

One of the major milestones in the change of grazing management at Barnong was the attendance of RCS *Grazing For Profit*TM course (GFP) in 2004. Rob considered the real value in the GFP course was that it "actually drew together all that he had been learning with the exclosures, LCDC, Bestprac and EMU over the last 20 years into coherent guidelines for profitable management". Since the course, Barnong has been using the RCS grazing chart and Rob describes it as "flight deck of controls to assist him in the management of his numbers".

Rob and Kathryn consider the key to improving lambing percentage and growth rates on Barnong is through applying many of the principles that they learned at the GFP course. One of the main aims was to move away from estimating carrying capacity based on historical long-term averages and to calculate stocking rate by making regular estimates of the available food-on-offer (FOO) and by using the concept of DSE Days per ha/100 mm (DDH/100 mm)³. Rob considers the value of using DDH/100 mm to monitor stocking rate is that "in the past we were not capitalizing on good seasons and causing damage in the bad seasons – we were basically getting it wrong on both ends, but with using DDH/100 mm we are alerted to these periods". Because the value of DDH/100 mm involves a combination of rainfall and the associated feed, it allows the Mitchells to be more time-specific and to see "how they are going in terms of the overall trend".

Undoubtedly, one of the major shifts that has occurred in the Mitchell's management is that they are spending an increasing amount of time scrutinizing the available feed they have in the form of grasses, shrubs and herbage in order to decide whether it will be adequate to meet their animal production objectives. Rob and Kathryn have been making regular estimates of their FOO and using the grazing chart for over a year now and readily recognize that the "benefits of the grazing chart and mapping the DDH/100 mm of Barnong will not come in the first year and will take a long time, just as the misjudgments of the past also occurred over a long time". What Rob is sure of is that, "we can not afford to lose the numbers we did in the past and if we are serious about running a station we need to be as accurate as we can be at matching our stocking rate to the seasonal carrying capacity through using all means possible."

³ Further information about the DDH/100 mm concept is available by contacting Mark Alchin (his contact details are given at the start of this article).



Photo 2. This photo shows Rob Mitchell setting up for random weighings of his flock. Rob uses these measures to get an idea of how food on offer relates to animal performance.

Figure 1 illustrates the DDH/100 mm averages for Barnong over the past 16 years (1987 – 2003). Mapping the DDH/100 mm is similar to that of a stock market report in which it allows the Mitchells to identify emerging

seasonal trends and adjust stock numbers accordingly. The DDH/100 mm benchmark in the figure below is a value which is used to identify whether the station is effectively adjusting their stocking rate to rainfall and the related amount of feed available. The results below suggest that there may have been instances when Barnong exceeded the seasonal carrying capacity (particularly the late 80's and early 90's) and did not capitalize on the good run of seasons (mid 90's).

Barnong has come a long way since it was first settled in 1872 and undoubtedly there will be many new challenges that lie ahead of it. However, the Mitchells are confident that provided they hit another good run of seasons through monitoring DDH/100 mm they will be well prepared to make full use of it and respond accordingly to the return of the poor runs.

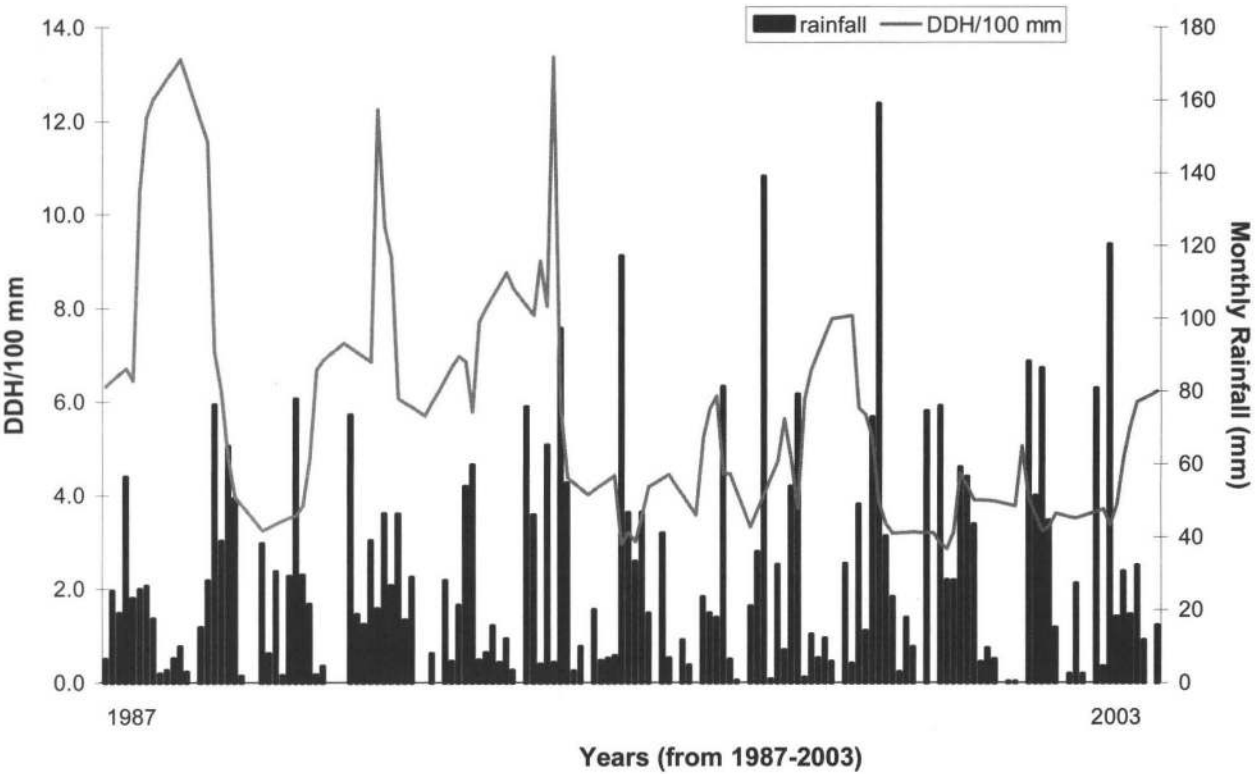


Figure 1. Stocking rate (based on DSE Days per ha/100 mm (DDH/100 mm)) averages for Barnong Station over a 16 year period (1987 – 2003).

AT THE "CUTTING EDGE"

THE AUSTRALIAN RANGELAND SOCIETY 14TH BIENNIAL CONFERENCE

4-7 SEPTEMBER 2006
RENMARK, SOUTH AUSTRALIA

*Merri Tohill, Secretary, Conference Organising Committee, PO Box 357 Port Augusta 5700.
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The Australian Rangeland Society is hosting its 14th Biennial Conference in Renmark, South Australia, from Monday 4 September through to Thursday 7 September 2006. The conference theme, 'The Cutting Edge' is a play on words which refers not only to Renmark's location on the edge of the South Australian Rangelands, but also refers to the region's unique biodiversity, current management practices and new innovative thinking that will shape the future of the Rangelands. We will look beyond the edge into the future – and take stock of the work that we did 10 years ago at the 9th Australian Rangelands Conference held in Pt Augusta.

The 2006 Australian Rangelands Conference promises an exciting mix of 'Place,' 'People,' and 'Possibilities.'

- | | |
|----------------|---|
| Place: | Refers to landscapes, physical and ecological assets – the physical context of the Rangelands. |
| Possibilities: | Refers to the future, emerging trends and markets, demands and drivers, models and land-uses, and influencing factors such as climate change and opportunities. |
| People: | Refers to the social components of rangelands – landusers, stakeholders, along with governance, politics, power, institutional change and service delivery. |

These 3 threads will integrate a diverse range of session topics, which will create a rich tapestry of presentations within this year's theme of 'The Cutting Edge'

We plan to examine the management of our Rangelands where it has been effective in sustaining ecosystems that provide services to the natural ecology, our industries and our livelihoods. The Conference will also explore some of the possible influences that climate change, governance and services might have on the biology, the industries and the people of the region and envisage new ways of thinking about natural resource management that incorporates what we currently do well with new science and technology and new approaches to social issues, policy and institutions.

The Field Tour Program has been developed to support the Conference theme and will look at examples of rangelands history and changing land use, and showcase innovation and enterprise among rangeland managers.

However, we want this to be your conference – and there will be many ways to contribute, whether you are a land manager, student, business operator, researcher, government manager – or a member of the public with a love of and concern for the well-being of our rangelands.

The Registration of Interest and Call for Abstracts brochure will be sent out to all members at the end of November, inviting you to submit contributions – posters or spoken papers. There will also be opportunity for informal sessions on topics of interest - please let us know your suggestions. The deadline for receipt of abstracts is **17th February 2006**.

Please put the conference dates in your diary and spread the word. We hope to see you there for another great ARS conference.

UPWARD TREND FOR THE RANGELAND JOURNAL

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President David Wilcox announced earlier this year that the ARS Council had entered into an agreement for *The Rangeland Journal* to join the CSIRO Publishing stable of scientific journals. The ARS, through the Editor, retains control of the content of the Journal but it is now produced in both electronic and paper format. The first issue under the new arrangements appeared in June, 2005 and the second is being assembled for December. These new arrangements mean that we have the advantage of the marketing power of CSIRO Publishing and they have already produced some attractive brochures. If any members are attending national or international conferences where papers relevant to *TRJ* are being presented and would like some brochures for distribution to drum up some more papers for us, then please contact the Editor.

The Rangeland Journal has been international for some years with its inclusion in Current Contents and other international abstracting bodies, and we are already experiencing an upward trend in papers submitted from outside Australia. With the added backing and publicity from CSIRO Publishing, we expect the number of papers accepted from overseas will grow steadily. The journal is now very competitive with alternative international journals and had an impact factor of 0.625 in 2004. We hope that this will grow with the added availability because of *TRJ*'s inclusion in the journal package sold by CSIRO Publishing to many overseas libraries. Under the new arrangements it will be more readily accessible to overseas readers than when it was only available in paper form.

The Publications Committee has also expanded the list of topics for papers that the Journal will consider in order to keep abreast with changes in the subject matter discussed at both the Australian and International rangeland conferences and Congresses. It is hoped these changes will attract more high quality papers. It is essential that the Journal remain at the cutting edge of the broad context of rangeland science at both the national and international levels. We ask members of the Society to give us a boost by submitting their best papers to *The Rangeland Journal*. The number of issues per year can be raised if more papers are received and this would further raise the status of the Journal and its impact factor.

At the same time, we have changed the Journal from A5 to cropped A4 format to be in line with present trends in scientific journals. We have also added a bit of colour to the front cover and increased the amount of explanatory

text. Other possible changes are the inclusion of a colour photograph on the front cover and a small photograph plus some text on the back cover, illustrating a point from one of the papers in each issue. Either or both of us would welcome feedback on these matters from members interested in the design of the covers of the Journal.

The electronic publishing is also increasing the availability of past issues of the Journal throughout the world. Issues back to 2001 (Vol. 23 (1), 2001) are available on the CSIRO Publishing website and soon all papers from previous issues will be there too. The papers of these back issues are being scanned now. This means that any interested person, anywhere in the world, will be able access all papers electronically.

The Journal, therefore, not only targets the entire ARS population but also people interested in rangelands worldwide. It provides technical information for those interested in rangeland science and/or the theoretical aspects behind the day to day activities of rangeland managers and members of regulatory agencies. As such it is of interest to researchers, bureaucrats, educators and students. On the other hand, more practical 'on the ground' rangeland managers will find the *Range Management Newsletter* to be of particular value to them.

In summary, we want to encourage more allegiance to the Journal in the future by members of the ARS. The Publications Committee has worked hard over a number of years, to raise the scientific standard of the Journal and to have it published electronically. These aims have been achieved. We now ask members to promote the Journal as much as they can in their own sphere of influence with the aim of increasing the flow of excellent papers and consequently its readership and impact factor.

INTERNATIONAL GRASSLAND CONGRESS REPORT

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I attended the 20th International Grassland Congress in Dublin, Ireland in late June/early July and later a post congress satellite workshop in Glasgow. Ireland, emerald green throughout from sown pastures and a lot of nitrogen fertiliser I suspect, was far from Australian rangelands but it was still very enjoyable, in part, because I have a bit of the Irish in me.

The reason I went to this latest IGC was to accept invitations to chair two sessions, "Biodiversity in Grasslands" in Dublin and "Multifunctional Pastoral Systems: Biodiversity, Landscape and Social Issues" in Glasgow. I used the opportunity to present a couple of papers about the dynamics of grass populations "Back-of-Bourke".

I have attended many of these congresses since my first, the 11th, held in Surfers Paradise, Queensland in 1970. This congress turned out to be of special significance to rangeland research because at it, the International Rangeland Congress was devised by Ray Perry (Australia) and Harold Heady (USA) and probably others. The IGC never got over this breakaway and is still striving to get rangelands back into its fold. At the opening session in Dublin we were told how much the two congresses had in common and that the combined IGC/IRC to be held in Huhote, Inner Mongolia, China in 2008 would highlight this. My response to hearing this was disappointment because I think a congress, at least at the plenary level, should challenge by focussing on the uncomfortable interfaces between issues, disciplines, processes, scales, institutions etc and the main drivers of change for people in farmed and pastoral land.

The theme for the Congress was "Grasslands: a global resource". As usual researchers, educators, policy makers and farmers were invited. The focus was to be on current knowledge and understanding of this complex ecosystem, the ways in which it can be enhanced and where the research challenges are for the future. The listed themes were efficient production from grassland, grassland and the environment and delivering benefits from grassland.

My impressions of the very large meeting in Dublin were mixed. The social program was great and it was enjoyable to meet known and new people from around the world. The beer of course was fantastic. The organisers did well here. The scientific plenary program though, was in my view, somewhat ordinary. There were gems in the offered papers for me, like the 69 papers on biodiversity. At the previous congress (in Brazil) there were few biodiversity papers. However, the Dublin congress focussed on the issues concerned with raising productivity of farms and specialist stuff. No big thinking was presented and little integrated social, economic or ecological contexts for grassland matters. The interfaces, say between science and policy, were avoided. In summary, the main congress kept the status quo. I was disappointed scientifically but it was fun.

In contrast, thank goodness, the Glasgow workshop on "Pastoral systems in marginal environments" was a gem. Organisers, Professor John Milne and his team, did a great job. It was memorable. Andrew Ash and John McIvor from Australia, presented an excellent overview paper on the constraints brought on by complexities in rangelands. There were many other intellectually challenging presentations and I found talks by Tim Lynam (ex Zimbabwe), Roy Behnke (United Kingdom) and Andrew Illius (Scotland) to be particularly valuable. The most powerful "drivers" of rangelands, people and money, were discussed well.

The field trip was to a Hill & Mountain Research Centre, run as a research farm. Here we learned about the damage to important plant communities caused by too many deer in the wrong places, the push to re-establish forests and to encourage sustainable grazing for native woodland and biodiversity objectives, and the need for maintaining social capital. These issues in different forms confront us in

Australia, so I found how the local issues addressed in Scotland of great interest.

Other rangelander's from Australia who attended will have different perspectives but for me the Congress was worthwhile and I returned from two countries very different from Australia, with some new perspectives.

UPDATE FROM THE LAKE EYRE BASIN

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Community representatives, scientists, Government employees and State and Federal Ministers were in Adelaide on 13th and 14th October for meetings under the Lake Eyre Basin (LEB) Intergovernmental Agreement.

The LEB Community Advisory Committee (CAC) and LEB Scientific Advisory Panel (SAP) met on Thursday 13th October, and the LEB Ministerial Forum met on Friday 14th October.

A strong theme of the Adelaide meetings was the achievement of the Lake Eyre Basin Agreement in creating space for trust, respect and open communication, not only across State and Territory borders, but also between people from different backgrounds, including scientists, government officers, and community members.

LEB Rivers Assessment

The Lake Eyre Basin (LEB) Rivers Assessment is a monitoring program designed to assess the condition of watercourses and catchments within the Basin. The LEB Agreement requires the assessment to be completed as soon as possible after the commencement of the Agreement, and thereafter every ten years.

Following completion of a methodology project for the Rivers Assessment in 2004, the Ministerial Forum has approved commencement of the second phase of the Rivers Assessment, including on-ground pilot projects such as floodplain salinity mapping methods and water-bird breeding assessment in the Basin.

A full-time Project Officer, to be located within the SA Department of Water, Land and Biodiversity Conservation in Adelaide, has been appointed for twelve months, with responsibility for progressing the Rivers Assessment work. Plans will now begin for immediate monitoring work and pilot studies.

LEB Social and Economic Review Project

A 3-year project has been funded under the National Competitive Component of the Natural Heritage Trust:

People, communities and economies of the Lake Eyre Basin - Their characteristics and trends, and the roles of their institutions in sustainable natural resource management in the Basin.

The project is founded on the premise that optimum natural resource management is aimed at obtaining the best possible balance of environmental, social and economic outcomes, requiring information about the people and communities who rely on and interact with natural resources, as well as information about the natural resources themselves.

The project will parallel the LEB Rivers Assessment, and will lay foundations for monitoring future social and institutional trends in the Basin. The project will focus on community/government/ industry interactions, and will be based on case studies, including Indigenous case studies.

2006 Biennial LEB Conference

The 3rd Biennial LEB conference will be held in the Basin in late 2006, the International Year of Deserts and Desertification.

The conference will have six broad purposes:

1. Knowledge - What we know of the Basin: An overview of the state of our knowledge.
2. Success stories - Showcasing the Basin: Reporting practical achievements and activities on the ground.
3. Our Institutions - How well are they working? Review some of our key institutions, their principles, what makes them work, what challenges they face.
4. The scheme of things - Where do we fit in? Provide the opportunity for attendees to clarify how they and their organisations fit together and they relate to others.
5. Diversity - Our cultures, economies and societies. Convey the great social, cultural and economic diversity of the Basin.
6. Beyond our boundaries - International input and reflection. Celebrate the uniqueness of the Basin on a world scale, and learn from international challenges and approaches relevant to those we face in the Basin.

Port Augusta, Longreach and Alice Springs are potential locations for the conference.

Strategies under the Lake Eyre Basin Agreement

The LEB Ministerial Forum has agreed to implement twelve priority strategies under the LEB Agreement addressing the following issues:

1. Weed and feral animal control - Improve coordination and consistency of approach to weed

and feral animal management activities across the Basin.

2. Communications Strategy - Develop and implement a communication strategy for the LEB Agreement
3. Assessment of water resource development proposals - Develop principles to guide the comprehensive assessment of water resource development proposals in the Basin
4. Rivers Assessment outcomes - Promote the integration of LEB Rivers Assessment outcomes into water and natural resource management policy in the Basin.
5. Water resource management regimes - Scope the need for convergence and/or alignment of legislation, policy and planning for water resource management in different jurisdictions across the Basin.
6. Data management - Scope need for consistent and complementary data management frameworks across jurisdictions to enable data collation, analysis, comparison and reporting at regional, catchment and whole-of-basin scales.
7. Roads and engineering works - Encourage best practice in road and other engineering works that have potential to significantly affect the distribution and timing of surface water flows.

Aboriginal consultation and involvement

The Ministerial Forum has agreed to increase the Indigenous representation on the CAC from the current 2 members to up to 6 Indigenous members (up to 2 per State/Territory). The Ministers also approved funding for further work to engage Aboriginal people in the LEB Agreement, including funding for an Aboriginal consultation project in the Basin in 2006, and funding for the second Lake Eyre Basin Aboriginal Forum, to be held in South Australia in late 2006, before the 3rd LEB Biennial Conference.

INFORMATION SNIPPETS

Desert Knowledge Cooperative Research Centre welcomes new Managing Director

The Desert Knowledge CRC recently welcomed a new Managing Director. Jan Ferguson joined the CRC at the end of September, taking over from departing CEO, Mark Stafford Smith. Jan previously worked for the South Australian public service, where her last job was Executive Director of the Department for Administration and Information Services. Supporting Jan will be the newly appointed General Manager, Murray McGregor, Professor of Agribusiness at Curtin University of Technology.

More information about the Desert Knowledge CRC is available from their website:

<http://www.desertknowledge.com.au/crc>

2006 Veg Futures Conference

The *Veg Futures 2006: The conference in the field* will be held in Albury-Wodonga from 19-23 March 2006.

This is a participatory conference on the role of vegetation in productive landscapes - from policy to regional planning and into practice. It will provide an opportunity for anyone involved in vegetation management at the regional level to have their say, pass on their knowledge and experience to others, and pick up some new ideas.

This is a conference for tree planters, regional planners, bush managers, policy makers, direct seeders, researchers, seed collectors, extension agents, botanists, teachers and trainers, bush regenerators and sustainable farmers and graziers.

The conference will be discussing several issues relating to native vegetation in Australia including:

1. What is the role and value of vegetation in the regional landscape?
2. Who pays for vegetation management?
3. How do we balance competing demands for conservation and production?
4. What are we doing about the threats to native vegetation (action and on-ground works)?
5. How do we know if we are making a difference (monitoring and evaluation)?

Veg Futures 2006 is being organised by Greening Australia in partnership with Land & Water Australia, CSIRO, the Joint Venture Agroforestry Program, Charles Sturt University, and the Australian Government's Department of Agriculture, Fisheries and Forestry and the Department of the Environment and Heritage.

Further information about the conference is available from the Greening Australia website – www.greeningaustralia.org.au

Australian Soil Resource Information System Launched

In October, the Australian Soil Resource Information System (ASRIS) was officially launched. This system is a product of the Australian Collaborative Land Evaluation Program (ACLEP), a partnership between CSIRO, the National Land and Water Resources Audit and all Australian States and Territories.

ASRIS provides online access to the best available soil and land resource information in a consistent format across the country. It has been developed for a broad range of users including natural resource managers, educational institutions, planners, researchers, and community groups.

ASRIS provides information at seven different scales. The upper three levels provide descriptions of soils and landscapes (soil types, landforms and regolith) across the complete continent. Lower levels provide more detailed information where field surveys have been completed (data includes information on soil depth, water storage, permeability, fertility, carbon and erodibility). A consistent set of land qualities is described for map units (tracts). Descriptions from the lowest level feed into summaries at higher levels. ASRIS includes a soil profile database with fully characterized and representative sites.

ASRIS is being released in stages. At the end of 2006 the upper levels will be completed across the country but there will be a restricted coverage at lower levels. By this time, data will also be available for approximately 10,000 representative profiles.

If you want to find out more go to the ASRIS website at - www.asris.csiro.au.

Planning for Country Book wins National Planning Award

The book *Planning for Country* was recently awarded the 2005 Planning Institute of Australia's National Award for Planning Excellence. This book records the experience, passion and knowledge of people working in landcare, land management and community development in Central Australia. It was edited by researchers Fiona Walsh and Paul Mitchell and produced with the support of Land & Water Australia, the Indigenous Land Corporation and the World Wildlife Fund Australia. The book was published by Alice Springs-based indigenous publisher IAD Press in conjunction with the Central Land Council.

According to the Land & Water Australia website, in making the presentation of the Award the judges said: 'This is a very special text which presents, in an accessible and attractive fashion, an excellent guide to involving Aboriginal communities in a range of different contextual circumstances. This book should be compulsory reading for all students of planning and for all planning practitioners.' Executive Director of Land & Water Australia, Andrew Campbell, also added that the book has made a significant contribution to the management of

Aboriginal Lands in Central Australia. 'The on-ground work of the researchers Fiona Walsh and Paul Mitchell has helped traditional owners to learn about the possibilities that land management and planning can open up'.

Planning for Country is available from bookshops or online from IAD Press at www.iad.edu.au/press.

Overseas Volunteer Opportunities

Australian Volunteers International is Australia's largest and most experienced international volunteer sending agency. Every year, they recruit, prepare and support hundreds of Australians who volunteer to live alongside people of other cultures and work towards the sustainable development of communities.

Australian Volunteers International currently has a wide range of exciting positions available including:

Farm Manager - Cambodia, 12 months

Contribute to the livelihood of orphaned and disadvantaged children in Cambodia by developing, managing and supervising a 6 hectare farm that feeds over 100 children. If you have practical farming experience, desire to share your knowledge with young people and supervisory skills this could be a rewarding next step.

Farm Manager - Papua New Guinea, 2 Years

An amazing opportunity to support young men develop their agricultural, vocational and life skills as they live and work at this 35 acre farm, 20km from Port Moresby. They are looking for someone with demonstrated farm management and supervisory experience, combined with a strong desire to impart skills to underprivileged youth.

Agricultural Research & Curriculum Advisor - Timor-Leste, 2 years

Assist the lecturers in the Agromony and Animal Science faculties of the National University of Timor Loro Sae to develop land and field practicals for students, small research projects and advise on the use and maintenance of equipment. You will need multi-functional laboratory experience, field work exposure or an agricultural background to succeed in this assignment.

Horticulture/Crop Production Trainer - Timor-Leste, 12 Months

Build the capacity of local teachers by working together on curriculum and classes on horticulture and crop production for agricultural students. You will have well rounded experience in horticulture and crop production, combined with a strong desire to develop the horticulture and English language skills of staff and students.

Academic and Research Advisor – Agribusiness – Vietnam, 18 months - 2 Years

Assist the An Giang University review and further develop their Agribusiness curriculum. This will involve developing appropriate teaching materials and assisting student activities for field trips/research activities. You will hold a Masters in Agribusiness and have exceptional teaching and curriculum development experience.

Capacity Building Advisor, Sustainable Agriculture - Solomon Islands, 2 Years

Work alongside the Baetolau Farmers Network to design and implement agriculture/livelihood projects in North Malaita, to promote self reliance and food security amongst rural communities in the Solomon Islands. You will have relevant qualifications and/or extensive experience in agricultural practice together with experience in managing and building the capacity of small community based organisations.

Agricultural Training Officer - Timor-Leste, 2 Years

In this role you will be working with the local government, NGO and community organisations to provide training and education activities around environment and watershed assessment and agricultural food production. You will have relevant tertiary qualifications, experience in the training of trainers, combined with the development of community-based marketing of agricultural produce.

Agricultural Extension Worker – Vietnam, 12 Months

Provide farmers and members of the Binh Tay Agriculture General Trading Co-Operative with knowledge in agricultural production and management, ideally in growing paddy rice, vegetable and fruit trees. You will have experience in providing leadership and training in Agriculture production, relevant tertiary qualifications and a desire to learn the local language.

All volunteers placed in the above positions will be provided with a living allowance, accommodation, language training, insurance and airfares.

For more information on the above positions, contact Renee Archer at AVI; Tel: 03-9279-1757 or Email: rarcher@australianvolunteers.com. Positions in a wide range of sectors will be advertised in the next recruitment round commencing 12 November 2005. See www.australianvolunteers.com for details.

NEW MEMBERS

D S Alphen
PO Box 71545
DUBAI UNITED ARAB EMIRATES

Rachel Greenfield
74 Foxglove Street
Mt Gravatt East QLD 4122

South West NRM Ltd
PO Box 630
82 Alfred Street
Charleville QLD 4470

Mr John Morley
Dept Of Environment and Heritage
GPO Box 787
Canberra ACT 2600

AUSTRALIAN RANGELAND SOCIETY AWARDS

The Society has two awards to assist members with either:

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

Applications for each award will be considered on a yearly basis. 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 (ie. 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 2005**. Application forms and guidelines can be downloaded from the ARS website at <http://www.austrangesoc.com.au>. Those requiring further information should contact the ARS Secretary, Sandra Van Vreeswyk, Phone (08) 9347 5120 or sandra.vanvreeswyk@dpi.wa.gov.au.

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 and Study

There is a restriction on both awards for overseas travel or study assistance in that the applicants must have been members of the society for at least 12 months. The grants can be for Australian members travelling overseas or for overseas members to study within Australia.

MEMBERSHIP APPLICATION FORM



The Australian Rangeland Society

TAX INVOICE / RECEIPT ABN 43 008 784 414

Please complete and return to the Subscription Manager, Ian Watson, PO Box 483, NORTHAM WA 6401
Ph (618) or (08) 9690 2179: Fax (618) or (08) 9622 1902: iwatson@agric.wa.gov.au

I, [name]

of [address]

Postcode..... Email address

Phone Fax

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/student/institution* for the calendar year 2005.

(* delete as appropriate)

☐ Charge my Mastercard VISA Bankcard AU\$.....for full/part* membership for an individual/student/institution* for the calendar year 2005

Card No.:_____ Expiry Date:

Signature:..... Date: Cardholders Name:.....

If you were introduced to the Society by an existing member please include their name here

Please list details of your institution & student number if you are applying for student rates

Membership Rates; GST inclusive

Australia

Overseas Airmail

Individual or Family -

Full (Journal + Newsletter)/Student

\$80.00/\$60.00

\$100.00/\$80.00

Part (Newsletter only)/Student

\$45.00/\$30.00

\$55.00/\$35.00

Institution or Company -

Full (Journal + Newsletter)

\$110.00

\$135.00

Part (Newsletter only)

\$60.00

\$70.00

- All rates are quoted in AUSTRALIAN currency and must be paid in AUSTRALIAN currency.
- Membership is for the calendar year 1st January to 31st December. Subscriptions paid after 1st October will be deemed as payment for the following year.

Australian Rangeland Society Privacy Statement. Consistent with national privacy legislation, the Australian Rangeland Society (ARS) will only use members' personal contact information for keeping its records up to date, and enabling member access to ARS products and services e.g. meetings, events, newsletters, journals and conferences. ARS will not use members' information as supplied to ARS for any other purpose and it will not disclose the information to any other party without the member's consent. This will be achieved through email communication or any other means as appropriate.