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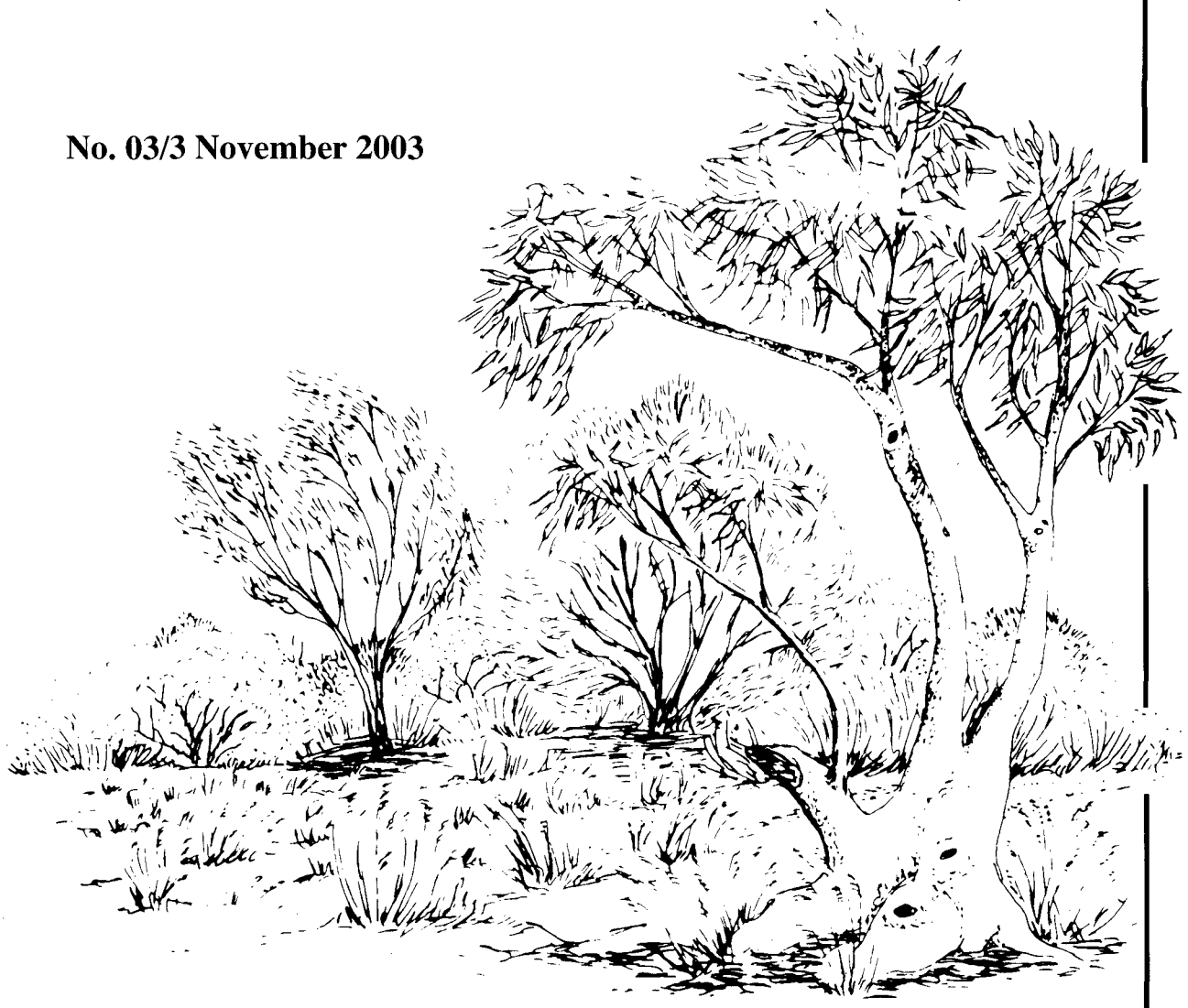

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EDITOR (*RMN*)
Noelene Duckett
7 Belcarra Place
The Woodlands Texas 77382 USA
Ph: 0011 1 281 681 1551
Email: nduckett@ozemail.com.au

EDITOR (*The Rangeland Journal*)
Assoc. Prof. Wal Whalley
School of Rural Science & Natural Resources
University of New England
Armidale NSW 2351
Ph: 02 6773 2477 Fax: 02 6773 3283
Email: rwhalley@metz.une.edu.au

PRESIDENT
David Wilcox
54 Broome Street
Cottesloe WA 6011
Ph: 08 9384 1464 Fax: 08 9384 1464
Email: dgwilcox@cygnus.uwa.edu.au

VICE PRESIDENT
David Lord
Thackaringa Station
Broken Hill NSW 2880
Ph: 08 8091 1638 Fax: 08 8091 1540
Email: thackaringa@bigpond.com

FINANCE & AUDIT OFFICER
Tim Ferraro
WEST 2000 Plus
PO Box 1840
DUBBO NSW 2830
Ph: 02 6883 3000 Fax: 02 6883 3099
Email: Tim.Ferraro@dipnr.nsw.gov.au

SECRETARY
Sandra Van Vreeswyk
Department of Agriculture
Locked Bag No. 4
Bentley Delivery Centre WA 6983
Ph (08) 93683917 Fax (08) 93683939
Email: svanvreeswyk@agric.wa.gov.au

MEMBER SERVICES OFFICER
Robyn Cowley
Department of Primary Industries and Fisheries
PO Box 1346, Katherine NT 0851
Ph: 08 8973 9749 Fax: 08 8973 9777
Email: robyn.cowley@dpif.nt.gov.au

COMMUNICATION OFFICER
Lachlan Pegler
Natural Resources and Mines
PO Box 224, Charleville QLD 4470
Ph: 07 4654 4207 Fax: 07 4654 4225
Email: lachlan.pegler@dnr.qld.gov.au

MEMBERSHIP OFFICER
Neil MacLeod
CSIRO Sustainable Ecosystems
Level 3, Queensland Bioscience Precinct
306 Carmody Rd
St Lucia QLD 4067
Ph: 07 3214 2270 Fax: 07 3214 2266
Email: neil.macleod@csiro.au

IMMEDIATE PAST PRESIDENT
Merri Tothill
PO Box 357
Port Augusta SA 5700
Ph: 08 8648 5170 Fax: 08 8648 5161
Email: Tothill.Meredith@saugov.sa.gov.au

SUBSCRIPTION MANAGER
Ian Watson
Centre for Management of Arid Environments
Department of Agriculture, Western Australia
PO Box 483, Northam WA 6401
Ph: 08 9690 2128 Fax: 08 9622 1902
Email: iwatson@agric.wa.gov.au

CONTENTS Range Management Newsletter 03/3

FROM THE EDITOR

Noelene Duckett, 7 Belcarra Place, The Woodlands, Texas, USA, 77382. Email: nduckett@ozemail.com.au

Thank you for taking the time to read the latest issue of the *Range Management Newsletter*.

This issue begins with two major articles. The first article reports on a recent survey of experienced professional rangeland personnel regarding the relative palatability of a selection of plants found in the southern rangelands of Western Australia. The results are a distillation of years of experience and, as Peter Russell and Wayne Fletcher point out, they provide a great starting point for future discussion and for others working in the rangelands to develop their own judgements. Have a read of their article and see if you agree with the palatability ratings!

Following on, John Taylor, Janet Kieseker and Denise Hart have written an article outlining the educational programs planned by Rangelands Australia, a national body for the exchange of rangeland knowledge and learning based at The University of Queensland's Gatton Campus. They describe the consultative processes undertaken by Rangelands Australia before developing the courses and also include details of short courses and postgraduate coursework programs due to commence in the near future. Topics likely to be covered by short courses include rangeland policy, successful diversification, understanding global and national trends and rangeland monitoring.

This newsletter also includes a number of shorter articles. Firstly, I have included two reports about the International Rangeland Congress held in Durban, South Africa in July – one from a group of experienced rangeland types and the other from a younger person. Additionally, there are several items relating more specifically to the ARS including briefs on the new Council members and their various roles, travel grants and donations to the Society. There is also an update about the 13th Biennial Conference which is to be held in Alice Springs from 5-8 July 2004. The conference organisers are currently accepting abstracts for posters and papers to be delivered at the conference. Please note that the deadline for these abstracts is **28 November 2003.**

I would also like to let our readers know that it is our intention that the financial details of the Society be published in the next *RMN* due out in March 2004. We had hoped to include them in this issue, however, the books were still undergoing the yearly audit at the time of going to press.

As always, I am on the lookout for both long and short articles for the next issue of the newsletter. The deadline will be late January 2004 but don't be afraid to send things in early!.

I wish you all a happy and safe holiday season. See you all in 2004.

RELATIVE PALATABILITY OF SELECTED PERENNIAL PLANTS IN THE SOUTHERN RANGELANDS OF WESTERN AUSTRALIA – RESULTS OF A SURVEY OF RANGELAND PRACTITIONERS

Peter Russell, Centre for Management of Arid Environments, Locked Bag 22, Kalgoorlie WA 6433. Email: p.russell@cmae.curtin.edu.au

Wayne Fletcher, Department of Agriculture, PO Box 483, Northam WA 6401. Email: wfletcher@agric.wa.gov.au

Introduction

A sound understanding of the impact of herbivores on rangeland landscapes is essential for long-term sustainable pastoral production and for both on- and off-reserve biodiversity conservation. One aspect of that understanding concerns plant palatability. Palatability, an intrinsic biological characteristic of plants (Vallentine 1990), is an important factor in the selection and subsequent utilisation of plants by herbivores. It is used here to mean general acceptability of a plant to an herbivore and, in the consideration of which plants are actually eaten, Vesk and Westoby (2001) make it clear that palatability is relative, not absolute.

Despite its importance however, there is a paucity of published, concise information on plant palatability for the southern rangelands of Western Australia. For example, the standard and comprehensive reference *"Arid Shrubland Plants of Western Australia"* (Mitchell and Wilcox 1994), provides only general palatability information (along with 'Indicator Value' and 'Forage Value') for many of the described plants, using terms such as "palatable", "unpalatable", "unknown" or "not relished by stock". In a similar vein, Vesk and Westoby (2001) in their Australia-wide literature review of plant responses to grazing, developed a 5-class ranking of species' palatability to domestic grazers, relying solely on key-words and phrases from the literature.

Clearly then, only very generalised palatability information is available for most species - but in reality, does this level of information provide an adequate contribution to the development of a sound understanding of plant utilisation, the use of plants as indicators of grazing pressure and the broader subject of rangeland ecological health? We feel that more concise or rigorous relative palatability information would be a useful contribution to rangeland knowledge, if it could be obtained.

We chose to undertake a survey of rangeland practitioners to test whether more concise palatability data was actually available, either from 'within practitioner heads' or perhaps in unpublished sources that might come to light. The survey took the form of a ranking task, the details of which are explained below.

Survey Objectives and Methods

This survey had the overall objective of testing whether better palatability information could be captured for a selection of species (see Rank Analysis Results below and the Appendix 1), by tapping into the extensive knowledge of experienced rangeland practitioners. The aim was to produce a list of plants showing:

- Palatability relative to each other; and
- Palatability range for each plant.

In June-July 2003, a survey of a number of professional practitioners, each with broad experience in the southern rangelands of Western Australia, was undertaken on the topic of palatability of perennial plants to grazing animals. Given a hypothetical grazing scenario, the practitioners were asked to numerically rank a selection of 47 plants from the most palatable (rank 1) to the least palatable (rank 47), in other words, to answer the question *"What is the relative order of palatability"*.

Our basic premise in asking this question is that the most palatable ('ice cream') plants are preferentially browsed and therefore reflect early or very low grazing pressure. Then as grazing pressure increases, utilisation of progressively less palatable plants occurs, eventually reflecting very high grazing pressure with utilisation of the least palatable plants. The results of this survey may then allow the testing of this premise as a guide to assessing recent grazing pressure. Plant utilisation by herbivores is a function of several interrelated factors (Vallentine 1990), including:

- Availability of plants (presence in the landscape, growth vigour / response);
- Relative plant palatability, (influenced by edaphic and phenological effects, digestibility and nutrient value, succulence, morphology and toxigenic activity, and presence of other species);
- Stock water quality and quantity; and
- Type of animal (reach and preferences).

This survey was only concerned with acquiring basic palatability data, rather than delving into related aspects such as plant response to grazing (eg "increaser", "decreaser" types), patch-selective grazing, etc. Survey participants were asked to moderate the confounding factors where possible which is not an easy task.

A numerical ranking method was chosen, rather than stratification by classes, so that statistical analysis could be carried out to determine relative palatability of individual species, across the entire list of selected plants. We need to stress however, that the results are practitioner perceptions only, albeit derived from considerable field experience and as such, are not meant to be an irrefutable or infallible assessment of plant palatability. The methodology does however, recognise the value of non-Rothamstead (statistically-validated) knowledge.

Hypothetical Grazing Scenario

Survey participants were asked to rank the palatability of the listed plants for the following hypothetical scenario:

- A very large paddock with all selected plants represented, growing at the densities typically found for each species;
- Mixed herbivores (commercial, feral, native);
- Continuously increasing grazing pressure; and,
- A run of 'fair' seasons prior to this 'thought exercise'.

This grazing scenario was developed so that the order of palatability would coarsely reflect order of utilization and hence, in the field, is able to give some qualitative indication of overall (total) grazing pressure.

Plant Selection

All plants selected for the survey are described in Mitchell and Wilcox (1994). Guidelines for selection were:

- Each species has a reasonably broad distribution, although not necessarily throughout the entire southern rangelands of WA; some species being limited in distribution to only part of this region;
- Each species is reasonably common within its range;
- Only perennial shrubs and trees were included. Grasses and annual or ephemeral plants were not. [grasses could be the subject of another survey]; and
- The selection was limited to less than 50 species (to reduce ranking difficulty).

Collectively, the selected plants encompass the entire palatability spectrum.

Comments on the Survey Returns

The survey was sent to twenty six experienced rangeland practitioners. All are or were government officers whose role, amongst other tasks, was or still is, to assess range condition and the impacts of grazing, using perennial shrubs as one of their major guides. Importantly, each person gained this experience, not on one or several pastoral stations, but across large portions of the entire region.

Responses were received from eighteen people (69%), with one respondent providing 3 ranked lists (one for each of three animals), thus a total of twenty lists were received. Of the twenty lists, seventeen (85%) strictly conformed to the survey format, two (10%) were semi-conforming and one (5%) was completely non-conforming. The conforming and semi-conforming lists (total 19) were used in the rank analysis; the non-conforming list could not be used.

In addition to the ranking exercise, participants were also encouraged to provide comments and these will be further explored in the section Synthesis of Received Comments.

Rank Analysis Method

The analysis was based simply on rank frequencies and means. For each of the 47 plants, the rank counts from the 19 useful returns were graphed against rank to produce a

histogram plot, obvious outliers were removed and mean palatability rank calculated. Based on the mean ranks, an aggregate plot was constructed such that each plant was placed in order of mean palatability (relative palatability), from which five distinct palatability classes were recognised and natural class boundaries selected. Finally, a chart was produced showing all plants in order of relative palatability, and the palatability range and rank profile for each plant, with the five recognised palatability classes also depicted (see Appendix 1).

The total number of counts (data points) used was 787, with individual plants having between 12 and 19 counts. A total of 69 outliers (8% of received counts) were removed, with four respondents contributing 49% of the outliers, another three respondents contributing 28% of the outliers and eight contributing the remaining 23%. Two respondents had no outliers in their rankings.

Rank Analysis Results

Results of analysis of the palatability survey are summarised as a chart (see Appendix 1) showing each of the perennial plants:

- Listed in order of mean palatability (relative palatability);
- The palatability range and smoothed rank profile for each plant; and
- Relative palatability classes.

Relative palatability was based simply on the mean rank for each plant, irrespective of the rank profile (uni-, bi-, multi-modal distribution). Somewhat surprisingly, each plant 'fell' neatly into one of five natural relative palatability classes. Named palatability classes are: "very high", "high", "moderate", "low" and "very low".

In addition to relative palatability, two important attributes for each plant are the shape of histogram (rank profile) and the range of palatability as shown on the Relative Palatability chart (Appendix 1). The relative palatability ranges of most plants cross at least two classes.

Two plants 'fell' strongly into the "very high" palatability class. These very highly palatable plants are ***Maireana platycarpa*** **(shy bluebush)** and ***M. convexa*** **(mulga bluebush).** Both plants have relatively narrow palatability ranges (with mulga bluebush having the narrowest range of all plants in the survey), clearly reinforcing their status as 'ice cream' plants.

Eight plants comprise the "high" palatability class. The first four plants, ***Maireana georgei*** **(golden bluebush),** ***Eremophila latrobei*** **(warty fuchsia),** ***M. planifolia*** **(flat-leafed bluebush)** and ***Ptilotus divaricatus*** **(narrow-leaved mulla mulla),** also show relatively narrow palatability ranges. Given the rank profiles, golden bluebush and warty fuchsia bush are also considered to be very highly palatable plants by some practitioners. An intriguing palatability range is shown by ***Senna (Cassia) chatelainiana*** **(green cassia).** It too, is considered by a majority of practitioners to be a highly palatable plant, however, some perceive its palatability to be considerably lower (low end of "moderate" in this classification). Likewise, ***Brachychiton gregorii*** **(desert kurrajong)** shows an unexpected palatability pattern with some practitioners perceiving a considerably lower palatability than most.

The majority of plants in this survey show a broad range of perceived palatability with ***Maireana amoena*** **(brittle bluebush)** having the broadest range ("very high" to "very low"). Partial explanation for the broad ranges, particularly for the chenopods, probably lies in the effect of confounding factors, as outlined earlier. In the case of ***Ptilotus schwartzii*** **(horse mulla mulla)** the very broad palatability range (almost as broad as for brittle blue bush) was very unexpected and we wonder whether this is a function of confusion with a very similar species *Ptilotus drummondii,* and/or general unfamiliarity with this inconspicuous low shrub.

By contrast, narrow palatability ranges were found for ***Ptilotus obovatus*** **(cotton bluebush),** ***Senna (Cassia) oligophylla*** **(buttercups/bloodbush),** ***Stylobasium spathulatum*** **(pebble bush)** and most of the plants comprising the "very low" class, (in decreasing order of palatability), ***Senna (Cassia) desolata*** **(straight leaf cassia),** ***S. helmsii*** **(blunt-leaf cassia / grey cassia),** ***Hakea preissii*** **(needle bush),** ***Eremophila margarethae*** **(sandbank poverty bush),** ***E. 'crenulata'*** **(waxy-leaf poverty bush)** and ***E. fraseri*** **(turpentine bush).** Turpentine bush was perceived by the majority of practitioners to be the least palatable of all plants in this survey.

Overall, the relative palatability results from this survey agree with the comments on palatability, where given, by Mitchell and Wilcox (1994).

It is also interesting to note that species within individual genera did not always occupy similar palatability ranges. For example, ***Acacia*** **spp.** ranges from "high" (mulga) to "very low" (bardi bush) relative palatability. ***Eremophila*** **spp** and ***Maireana*** **spp.** have even broader palatability ranges, both ranging from "very high" (shy bluebush, mulga bluebush, warty fuchsia bush) to "very low" (three-winged bluebush, turpentine bush); however, *Maireana* spp. tend to have an overall bias towards the more palatable end of the spectrum and the *Eremophila* spp. towards the less palatable end. ***Senna (Cassia)*** **spp.** similarly have very broad palatability, ranging from "high" (green cassia) to "very low" (blunt-leaf cassia) but has an even stronger tendency to the low palatability end of the spectrum than do *Eremophila* spp. The genus ***Ptilotus*** also has a very broad range, from "very high" (narrow-leaved mulla mulla) to "very low" (gascoyne mulla mulla); however, it tends to occupy the "moderate" to "high" parts of the relative palatability spectrum.

Synthesis of Received Comments

Most respondents provided some comments and these ranged in length from a single line to 3 pages. All comments were constructive and, in general the more detailed comments were from practitioners who felt, most with well-argued reasons, unwilling to strictly conform to

the survey format, because of the difficulty in accounting for confounding factors such as stock water quality.

The comments covered three main themes: confounding effects, terminology and interpretation, and survey method. By far the greatest number of comments related to **confounding effects**. For example, differences in foraging behaviour and preferences for different herbivores, including the related aspect of "reach differential" (eg between camels and rabbits) (*pers. comm.* Ken Tinley, June 2003). It was pointed out that edaphic effects cause variation in relative palatability of particular species in different locations. For example, *Atriplex bunburyana* is palatable in the northern parts of the shrublands but unpalatable further south (*pers. comm.* John Stretch, June 2003). Also, the widely recognised variability in relative palatability of *Eremophila forrestii* is supported by the survey results.

Phenological effects also cause variations in relative palatability of some species at different growth stages. Examples highlighted by respondents included mulga *(Acacia aneura)* being unpalatable when immature (approx. less than 1 m height), and other species such as curara *(A. tetragonophylla)* and snakewood *(A. xiphophylla)* showing phenological variations.

In regard to **Terminology and Interpretation** a number of respondents made comments relating to use of the term "palatability" and on the subject of "grazing pressure indicators" in general. Indeed we, in planning this survey, considered other terms such as "preferred", "desirable", "sought-after" etc. However, since this survey was designed to determine relative palatability, that is what we asked for.

One respondent argued strongly for use of the term "degree of utilisation" saying that "palatability as it stands, is purely subjective, depending on circumstances" (*pers. comm.* Ken Tinley, June 2003). Whilst we agree that relative palatability does depend on circumstances, that is, local confounding effects, it is nevertheless, an important factor, though not the only factor, in determining the order of utilisation of a particular plant, in a particular area.

Other considerations mentioned by respondents included the impact of grazing on a species population, that is, "...the capacity to provide some forage without being eliminated from the landscape is not equal for all species..." (*pers. comm.* Kevin Shackleton, June 2003). This is an important point, related to the observation that pre-existing plants, although of high relative palatability, might persist in the landscape even though no recruits might be found and other species of similar palatability may disappear from the landscape. And thinking of longer-term effects, Peter Hennig (*pers. comm.* June 2003) commented "...grazing [utilisation] changes as the [plant] populations change." This also is an important point. Vegetation changes have been detected along grazing gradients from watering points, for example Friedel (1997) cited in Tongway et al (2003), however, at broader landscape scales, it is difficult to separate the impact of grazing from natural environmental variation.

Regarding **Survey Method**, a number of respondents felt that we should have asked for the plants to be placed in palatability classes (suggestions ranged from three to five classes) rather than using the sequential ranking method. We chose not to use a stratification method for data acquisition, simply because it is much more difficult to recognise patterns of palatability when the raw data (individual returns) has already been categorised or stratified. The analysis of sequentially ranked plants does allow natural palatability classes to become apparent, if present, in the raw data.

One respondent who was unhappy with the exercise wrote, "...the ranking gives a false impression of their relative palatability, as species that are all essentially unpalatable are given sequential ranks." Whilst we feel that this would be true for a low number of ranked lists, it is not the case for this survey, since the 'power' lies in the numerous ranked lists (19) returned which potentially provide considerably greater resolution of palatability differences, even for plants within a single class.

Discussion on Grazing Pressure

Experienced rangeland practitioners, when making pastoral condition assessments, apply a species presence-absence model based on comparison with a desired or expected climax botanical composition for a particular land unit, and/or an empirical positive relationship, albeit untested, between relative palatability and degree of utilization, from which is derived a qualitative indication of overall (total) grazing pressure. In both approaches, population structure of particular species is used to infer condition trend.

The former approach relies on knowledge of the botanical composition prior to European grazing or, more realistically, a desired composition that provides good pastoral production, that is, a predominance of palatable plants. With the latter approach, the degree of utilisation of a particular plant population is a function of its availability (locally present and within reach), palatability (subject to local edaphic and phenological effects) relative to other available plants, forage value (nutrient value and digestibility), stock water availability and quality (especially salinity), herbivore mix and numbers, and grazing duration.

For any particular level of grazing pressure, the relative palatability of a plant species should be a reasonable predictor of order of utilisation, and in turn, degree of utilisation. In general, the more palatable plants would be utilised early, followed by progressively less palatable plants as grazing pressure increases (through increased numbers of herbivores and/or grazing duration). That is, relative palatability is perceived to be a sensitive co-factor in determining the degree of utilisation. Figure 1 illustrates our conceptual framework for this relationship. Utilisation is defined here as the proportion of individual plants within a population of that species that have been grazed. At this stage, these untested curves could only be used in a hypothetical situation to either (a) predict % utilisation of particular plant populations for a known grazing pressure, or (b) to estimate the grazing pressure

associated with particular levels of utilisation of a number of plants, that is, to use plants as indicators of grazing pressure.

To further clarify use of the terms "degree of utilisation" and "relative palatability" in the assessment of grazing pressure, consider the beautiful desert kurrajong *(Brachychiton gregorii).* Based on our field observations and the results of this survey, this palatable plant is sought after (selected) by several herbivores. In an ungrazed area, (no herbivores), both juvenile and mature trees with 'pendulous' ground-touching branches occur – clear indication of no utilisation and no grazing pressure. With low grazing pressure, the juvenile plants are consumed along with some of the lower branches of mature trees resulting in the start of a browse-line. With increasing grazing pressure, a well-defined browse-line is formed on the mature trees, effectively reaching 100% utilisation of the desert kurrajong, but not necessarily indicative of high grazing pressure. Another example is *Eremophila latrobei* (warty fuchsia bush), generally of high relative palatability, becomes a woody ball of twigs with remaining leaves inaccessible after only low to moderate grazing pressure.

The key point is that high grazing pressure will only be indicated by other species of much lower palatability that show a reasonably high degree of utilisation.

A further complication in estimating grazing pressure is likely to be the phenomenon of patch-selective grazing. Although little studied in Western Australian shrublands, studies in north-central Texas (Teague and Dowhower 2003), show it to become increasingly pronounced as landscape heterogeneity increased. We need to be aware that in our patchy landscapes, levels of utilisation are likely to be very patchy. Depending on the spatial scale of patchiness, this has implications not just for assessing grazing pressure but also for interpreting monitoring site data.

Conclusions

The majority of species fell neatly into relative palatability positions, many with a narrow range, others with a broad palatability range.

The results provide a powerful distillation of many years experience, affording a useful starting point for those early in their career, as well as providing a reality check for some who already have wide experience. The Relative Palatability chart (Appendix 1) presents a large amount of collective field wisdom in a concise format, more readily assimilated by a wide variety of people. It is a further step towards more comprehensive understanding of a very complex subject.

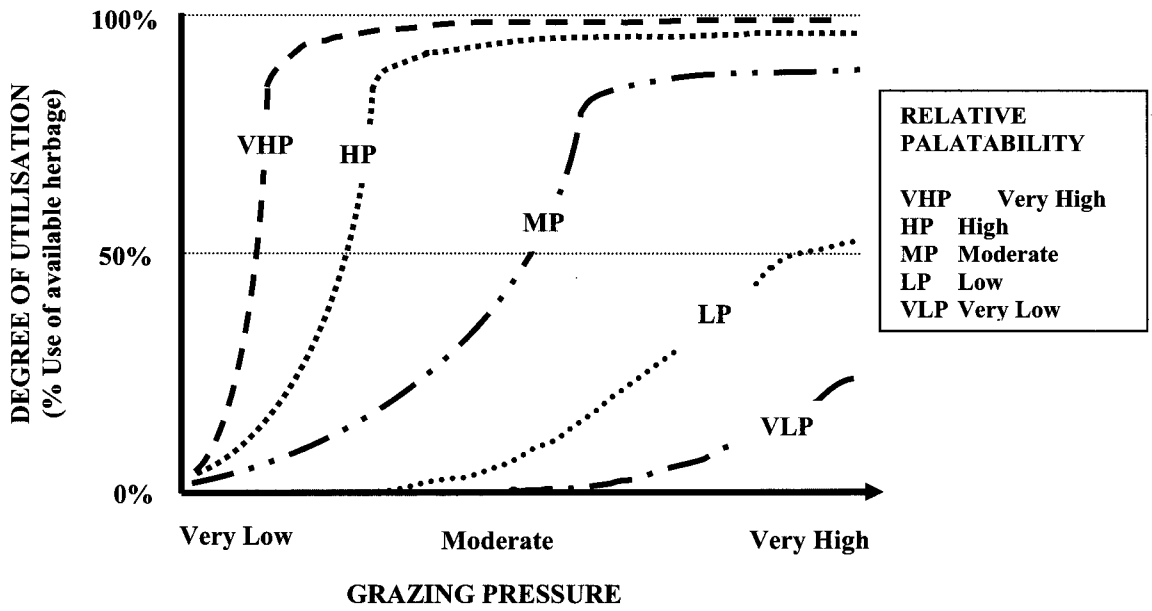

Figure 1. Conceptual utilisation curves for a range of grazing pressures and 5 classes of relative palatability of perennial shrubs.

Range management is as much an art as science. We appreciate that our results are based on practitioner perceptions only, albeit derived from considerable experience and that there are anomalies inherent in the data arising from complex known and unknown factors. Our survey has tapped into the experience of those who have lived and worked in the rangelands and we present the results as a distillation of this experience, rather than as rigorously tested scientific results. Massive experimentation would be required to produce the same results through replicated trial work. Our results will give others working in the field a starting point from which they can build their own experience.

Let each of us who now works in the rangelands, use the list as a basis for our own future experience. Test the validity of the collective perceptions. Use the list to question our own prejudices in the hope that each of us will observe better the interactions between livestock and the environment, and so progress both the art and science of rangeland management.

Acknowledgements

We wish to sincerely thank all respondents, whose effort and collective wisdom, has enabled this exercise to proceed. We also wish to thank Ian Watson who provided advice during planning of the survey, and Jim Addison, Hugh Pringle, Ben Norton, Greg Brennan, Peter-Jon Waddell and especially Ian Watson for constructive comments on earlier drafts.

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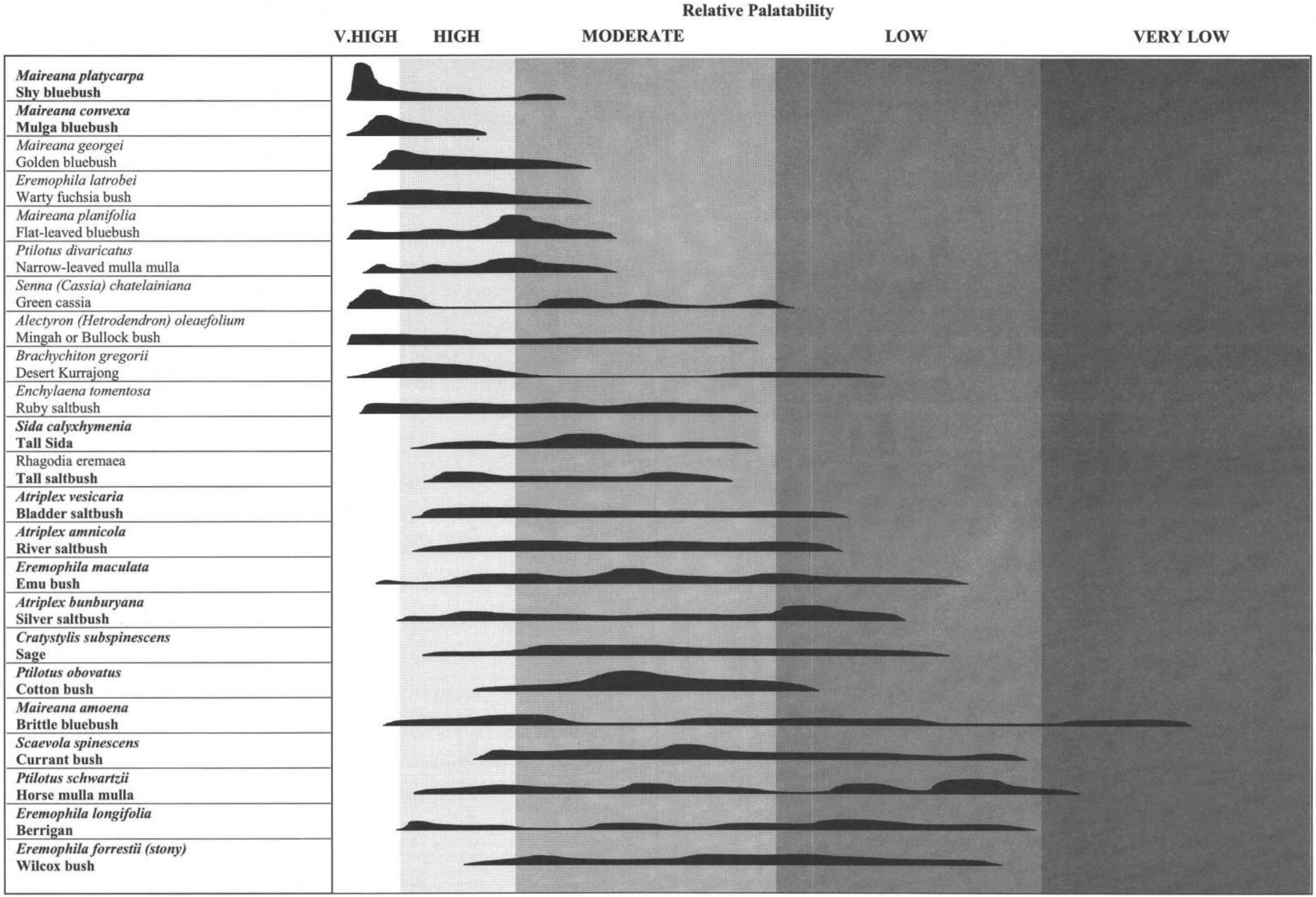
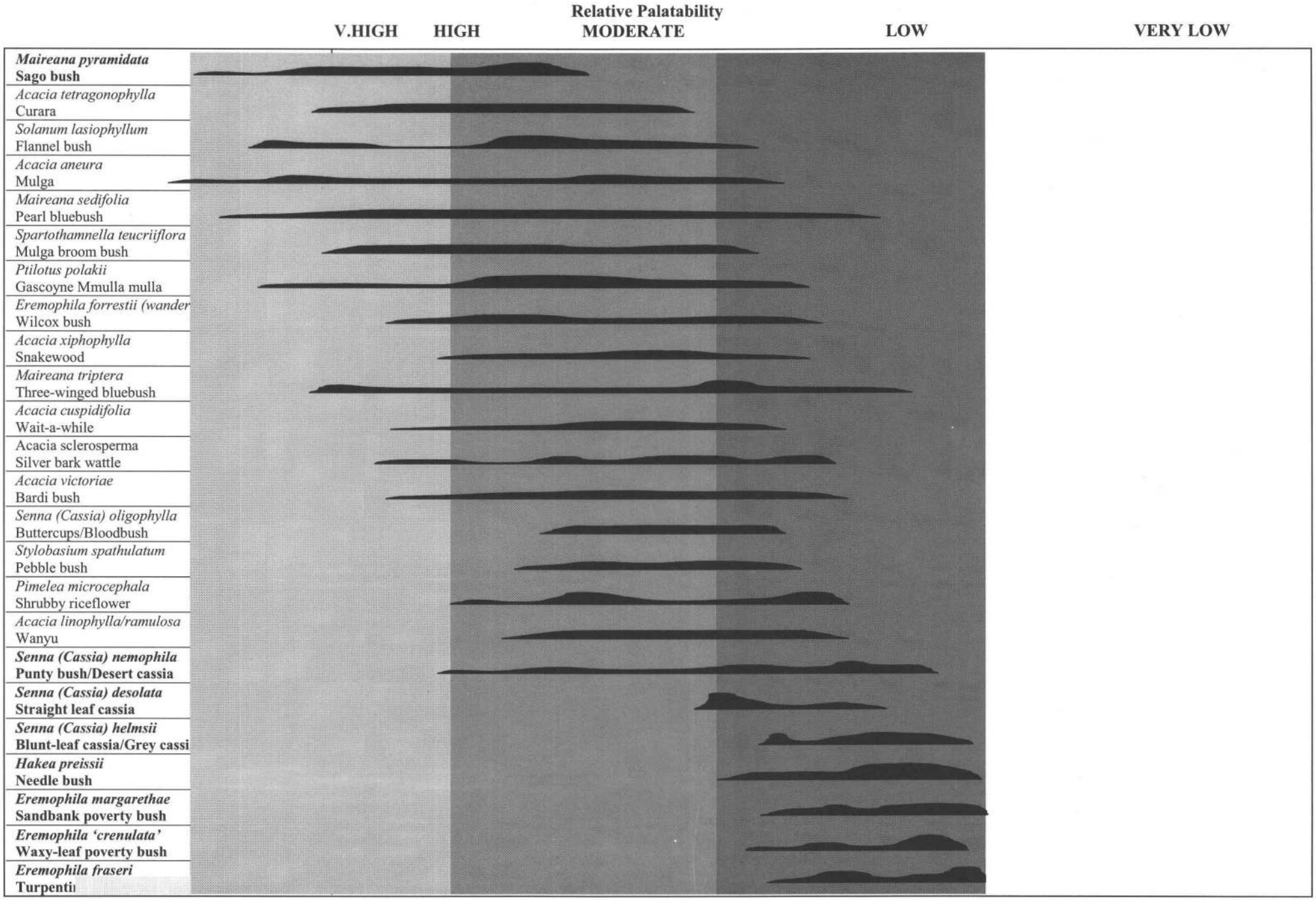
Appendix 1: Relative palatability of selected perennial plants in the southern rangelands of Western Australia compiled from a survey of rangeland practitioners in June-July 2003. Shading of the plant species names has been used to indicate the final palatability groupings from very high to low (see text for details).



Appendix 1 (cont): Relative palatability of selected perennial plants in the southern rangelands of Western Australia



EDUCATION AND TRAINING IN THE RANGELANDS – WHERE TO NEXT?

John A Taylor, Janet Kieseker and Denise Hart; Rangelands Australia[1], The University of Queensland Gatton Campus, Gatton QLD 4070.
Email: john.a.taylor@uq.edu.au

Introduction

ARS members appreciate the extent and the importance of Australia's rangelands, and it is therefore surprising that, until recently, there have not been any vocational, undergraduate or postgraduate programs specifically in rangeland management.

Rangelands Australia (RA), a national body for the exchange of rangeland knowledge and learning based at The University of Queensland's Gatton Campus, is taking a new approach to the development of more rangeland-relevant educational programs. This is in response to concerns about the content and availability of educational programs in agriculture and environmental studies that have traditionally been the foundation for many careers in rangeland management in Australia. While this has worked in the past, it is increasingly recognised that these foundations may not be sufficient for success in the future.

Using a social marketing approach that places the customer at the centre of every strategic decision, RA has undertaken extensive consultation with people in the rangelands to determine their education and skills needs, with special emphasis on skill development for future success in the rangelands.

The feedback is being used to develop short courses and postgraduate coursework programs that:

- develop the critical skills for individual, enterprise and community success;
- prepare people to address future challenges; and
- build capacity for change.

Why bother with education and training?

A number of studies have confirmed that some of the most important benefits of education are higher annual incomes for individuals and farm enterprises, and greater capacity for anticipating future opportunities and managing change.

However, the feedback to RA has also identified three major reasons for developing new and more specific education and training programs to build capacity in the rangelands.

Firstly, land management is becoming more complex with increasing economic, environmental and market pressures, government and community expectations challenging many aspects of traditional production systems. Balancing these will require new ways of thinking and operating, fostered through supportive education and training programs. Those who have the skills to access, utilise and exchange knowledge will be the leaders of tomorrow.

Secondly, despite the significance of the rangelands, access to relevant learning opportunities is limited. Of the 88 postgraduate coursework programs and 156 undergraduate programs available in agriculture and environmental studies in Australia as at March 2003, the 'best' had a 66% alignment with expressed needs, and the vast majority had a very poor match (<33%) with expressed needs. Further, the majority of the more relevant tertiary programs were not accessible to people working and living in the rangelands.

Finally, there is a widely expressed need for more comprehensive, holistic programs in rangeland management that are better aligned with the expectations of stakeholders and the education and training needs of the people who will be managing the future of our rangelands.

Client focus

Cattle and sheep producers and those who support or advise them are the primary targets for Rangelands Australia's education programs.

To understand their education and skills needs, more than 400 forward-thinking individuals with a strong interest in the future of the rangelands were consulted in 24 mixed-stakeholder groups across Australia. Participants included representatives of pastoral, mining and tourism industries; commonwealth, state and local government agencies; stock and station agents; education and training providers, and indigenous, conservation and other community groups.

Further, courses are being developed using the knowledge and experience of people who live and work in the rangelands, e.g. producers, scientists, consultants, etc.

Qualities and knowledge for future success in the rangelands

Three important messages have come from the consultation process:

The future scenario for the rangelands, identified by stakeholders, foreshadows significant change over the next five to ten years in both the nature of enterprises as well as the operating environment. People who are prepared to be proactive will be the most successful in these circumstances.

A wide range of personal qualities were identified as critical for an individual's success. The top five qualities include: commitment and passion for the rangelands; sensitivity to other stakeholder's values and aspirations; interpersonal skills; communication skills and a practical nature.

[1] Rangelands Australia is supported by industries and communities in Australia's rangelands, and funded by Meat and Livestock Australia (MLA), The University of Queensland and the Department of Agriculture Fisheries and Forestry, and is based at the University of Queensland's Gatton campus.

The areas of knowledge necessary for successful rangeland managers were defined as "the things that people would need to know about and be able to do" in the future. Surprisingly, none of the top five involves production-related issues. They are instead: business planning & management; marketing; understanding of natural resources; cultural and historical appreciation, and understanding other stakeholder's values, perceptions and aspirations.

What's holding key players back – Producers and advisors

Following this face-to-face consultation, the gaps in producer and support staff qualities and skills were identified through over 200 stakeholder surveys.

Overall, the results suggest that attitudes and personal qualities are the factors most limiting the capacity of many producers and their advisors to work in partnership, and their ability to negotiate an agreed sustainable future for the rangelands with other stakeholders. Strengthening capacity in these areas will not be easy, but this is a challenge that RA's educational designers are grappling with.

To be successful in 5-10 years time, many of our beef and wool producers will need to strengthen a number of personal qualities. In descending order of importance, these include:

- a positive attitude to change
- open-mindedness
- communication skills
- sensitivity to other stakeholder's values and aspirations, and
- willingness to learn.

According to stakeholders, which includes producers, many producers will also need to strengthen their knowledge of:

- environmental management systems
- multiple-use management
- sustainable production systems, and
- people management.

The stakeholder surveys also identified that 'most' of our advisors/agency staff need further development in several areas: being more practical; communication skills; sensitivity to other values and aspirations; open mindedness and interpersonal skills. According to stakeholders, many support staff will also need to strengthen their knowledge in systems/holistic management, self-awareness and self-management, sustainable production systems, other stakeholder's values and perceptions, and marketing.

The new programs and courses

Rangelands Australia is developing short courses and coursework programs to address the identified needs and skill gaps, and is being careful to add value and not duplicate existing courses. The first of the short courses will be released in late 2003 and postgraduate coursework programs in rangeland management will be rolled out from early 2004.

Short courses

The short courses include topics such as:

- Being heard in the rangelands – How to hear and be heard;
- Rangeland monitoring – Collecting and using data to improve enterprise profitability and demonstrate sustainability;
- Success in diversification in the rangelands – Options, financial and personal implications and risks;
- Being in the rangelands for the long run – Balancing economic and environmental outcomes;
- No surprises in the rangelands - Understanding global and national trends that may influence you and your business; and
- Rangeland policy – The power of policy.

Descriptions of the short courses under development are on the Rangelands Australia web site at www.rangelands-australia.com.au (developments in the postgraduate coursework programs, see below, can also be followed on this site).

Postgraduate coursework programs

The University of Queensland has recently approved the introduction of new postgraduate coursework programs, available by distance education, from first semester 2004. The courses are:

- Graduate Certificate in Rangeland Management (8 units, i.e. four 2-unit courses)
- Graduate Diploma in Rangeland Management (16 units, i.e. eight 2-unit courses)
- Masters of Rangeland Management (24 units, i.e. twelve 2-unit courses which may include a major project).

These postgraduate programs include examples of effective management and are designed to position people to meet the future social, economic and environmental needs of industry and rangeland communities. Participants in these programs can choose entry and exit levels according to their needs.

The Graduate Certificate will build capacity for learning and develop essential and practical skills and knowledge in use and management of rangelands. The program is specifically designed to:

- assist someone who may not have participated in formal education for a long time, or
- improve knowledge and skills in a specialised areas.

The Graduate Diploma provides an introduction to the social, economic and environmental concepts, processes and skills involved in integrated systems management. It is designed to meet the need for application of multi-

disciplinary concepts and skills in the use and management of rangelands.

The Masters integrates all aspects of management using problem-based learning to achieve leadership in rangeland management. It is designed to meet the need for knowledge and skills in managing complex inter-disciplinary issues in the rangelands. Direct entry at this level would normally require a degree relevant to rangeland management.

Rangelands Australia is developing a suite of course options, from which a number of courses could be chosen to meet a particular individual's needs and program requirements. These will be developed/revised and rolled out over the next two years. A single course might involve around 40 hours contact time, and might be delivered in the rangelands in a number of one or two day sessions as appropriate to the subject and student's availability.

We are currently developing some completely new courses to meet needs, and negotiating with a number of institutions about updating some existing courses that seem well aligned with stakeholder expressed needs. The latter would involve RA educational designers working with the institution to include the latest information from R&D, incorporation of learning activities that will develop the critical personal qualities as well as knowledge, and developing course materials for delivery in a variety of ways **in** the rangelands. These courses would be accessed through the institution participating in the network of supply.

Access to the postgraduate programs will be facilitated by recognition of prior learning. Here are four scenarios:

1. If you have a 3 or 4 year degree in a field relevant to rangeland management, entry to the Graduate Diploma or Masters is straightforward. Credit may be given for some courses.

2. If you have a post-secondary qualification (eg. Diploma or Advanced Diploma) plus 5 or more years experience in managing a property, then entry is relatively straightforward.

3. If you have no qualifications but a good deal of experience (i.e. 5+ years of management experience), you have three options:

i) test the water by enrolling in a postgraduate course at a non-award level to see if study at this level is for you. If you wish to continue further, this subject will then be credited towards your postgraduate award on full enrollment.

ii) undertake an assessment process, with a Registered Training Organization (RTO), to assesses the degree to which you have gained the 'equivalent experience' of a Diploma/Advanced Diploma graduate. You will be required to provide the RTO with a CV and an account of your responsibilities, knowledge and experience and any short courses that you have undertaken.

iii) undertake an assessment process, with a University, to assess the degree to which you have gained the 'equivalent experience' of a degree graduate. You will be required to provide the University with a CV and an account of your responsibilities, knowledge and experience and any short courses that you have undertaken.

Conclusions

By developing a comprehensive picture of future skills needs, by involving clients and experienced practitioners, and by moving away from traditional models of course development, Rangelands Australia is taking an innovative approach to capacity building. Given the enthusiasm, diversity and experience of the people who have contributed to the needs analysis and course development processes to date, Rangeland Australia's innovative products will have currency now and in the future. Contact RA if you would like to map out an exciting future in Australia's rangelands.

Further Reading

Taylor, J.A. (2003). Building capacity in Australia's rangelands. Proceedings of the VIIth International Rangeland Congress. (Eds N. Allsop, A.R.Palmer, S. J. Milton, K.P. Kirkman, G.I.H. Kerley, C.R.Hunt and C.J Brown). pp 1801-1808.

REPORT FROM COUNCIL

Lachlan Pegler, Communications Officer ARS, PO Box 224, Charleville QLD 4470.
Email: lachlan.pegler@nrm.qld.gov.au

The Council of the Society was able to meet face-to-face in Adelaide in late August as a follow-up meeting to the AGM. This meeting gave the new Council members Neil MacLeod and Sandra Van Vreeswyk - with Tim Ferraro on the telephone - a chance to get into some in-depth discussions of a range of issues that have been put on hold with Council for some time. There was also a changeover dinner and the past-president, secretary and treasurer reluctantly handed over the reins to David Wilcox (President), Sandra Van Vreeswyk (Secretary) and Tim Ferraro (Finance and Audit Officer). All other positions remained unchanged, with Neil MacLeod taking over from David Wilcox as Membership Officer. Robyn Cowley remained as Member Services Officer; David Lord kept the Vice Presidents position, while I remained Communications Officer. Merri Tothill remains on Council as Immediate Past President.

Some of the main issues from Council from this meeting and previous teleconferences are:

- Don Blesing presented a report to the Council on a range of financial issues related to the Society. Don also prepared a financial policy and procedures manual that should set up the new treasurer and the Society with a framework for future financial management of the Society and a smooth transition to appropriate accounting and financial processes. Don made a range of recommendations to the Council on measures to enable more businesslike functioning of the society.

- A wide range of financial issues were discussed in the meeting, most aimed to produce a more streamlined means of accounting, and simplifying GST and other reporting requirements.

- The publications committee, through Leigh Hunt have been discussing the possible transition to electronic publication of the Journal. The Council supported the initiative, but was keen to ensure all issues were fully investigated before any decision was made.

- The Council is proceeding to investigate the development of a new logo for the society; a graphic artist will be approached to provide alternative interpretations of the Society's image, following a brief from the members of Council.

- The Society awarded a travel grant for this year, to Cathy Waters to travel to the IRC in South Africa.

- The planning for the 13th Biennial Conference to be held in Alice Springs in 2004 has commenced. The Conference Committee will be asked to present some options to the Council on innovations to attract students and land managers to the conference. The conference for 2006 will be held in South Australia, possibly in the South East.

ROSEMARY PURDIE'S GENEROUS GIFT OF JOURNALS AND NEWSLETTERS GOES TO NAMIBIA

Ian Watson, ARS Subscriptions Manager, c/- Department of Agriculture Western Australia and Centre for Management of Arid Environments, PO Box 483, Northam, WA 6401. Email: iwatson@agric.wa.gov.au

Following a note in the March issue of the Newsletter seeking back issues of The Rangeland Journal and Newsletter I received a number of replies and managed to replace some of the gaps in our subscription backorders. Thank you to those who responded.

One donation was especially generous. Dr Rosemary Purdie (photographed below), member of the Society since 1976, offered a complete set of Journals and Newsletters back to the Society. It seemed wrong to break up the collection simply to pick up the odd missing issue so after discussion with Council it was decided to donate the entire set to a tertiary institution overseas. We chose the Polytechnic of Namibia because of its strong work in teaching land management to local people, its excellent postgraduate program and because we knew the collection would be well looked after in the Polytechnic's library.

Ken Hodgkinson, another long-time member, picked up the collection and packed it off to Namibia.

There may well be others in the Society who no longer have an ongoing need for the Society's older publications yet don't want to simply throw them out. If so, I would encourage you to contact me. Before selecting the Polytechnic of Namibia we identified a number of other institutions around the world that would appreciate a donation of ARS Journals and Newsletters. Now that current issues are being abstracted on international databases through the internet, the worth of our older publications has probably increased. Many of you would agree that some of the best work published in the Journal goes back to the 70s and 80s and it would be great if these issues ended up in institutions overseas (or even in Australia) rather than at the local tip.

Again thanks to those members who offered back issues to me, to Rosemary for her generous donation and to Ken for handling the logistics. For those who want more information on the Polytechnic of Namibia try http://www.polytechnic.edu.na.

Australian Rangeland Society

ABN Number: 43 008 784 414

13th Biennial Conference

5th - 8th July 2004

Living in the Outback – what's it all about?

The next Society Conference will be focussing on issues of importance to all, living and working in the rangelands.

It will also be addressing questions such as:

- How can we continue to thrive in this unique but highly variable region?
- How do people in the rangelands learn to incorporate wider community values into their management programs?
- How do we establish viable business systems and better manage risk?

It is an opportunity for the widely dispersed people of the outback to come together and explore and learn more about what we have in common, recognise and celebrate our differences and diversity and to leave the conference with renewed energy, commitment and knowledge to undertake the challenge of "living in the Outback".

Interested in attending? – What's the next step?

You can register you interest now, by sending your contact details to:

Conference Secretariat, Sarah Nicolson
Intercomm Event Co-ordination
22 Edmund Ave, UNLEY SA 5061
Fax 08 8357 3378
Email – intercom@ozemail.com.au

The full registration brochure will then be sent to you, including the full program and other information to assist you. It will also be available on the Society's website from January 2004 – www.austrangesoc.com.au.

If you are thinking of **presenting a paper or poster** that is relevant to the conference theme and program, abstracts should also be sent to the Conference Secretariat, for consideration by the conference committee.

The committee must receive abstracts before 28th November 2003.

- At least one author must attend the conference if the paper is accepted.
- Indicate your preference for a poster or spoken paper (please note that the final decision is at the discretion of the committee).
- Abstracts must be limited to 300 words for the body of the text and can be submitted by email to intercomm@ozemail.com.au or as files on an IBM compatible disk. Disks should be labelled with the author's name and should not include extraneous files.
- Abstracts should be prepared in Microsoft Word, Times New Roman 12pt font with 1.5 line spacing.
- Six key words should be included at the bottom of the abstract.
- The title of the paper should be in bold capitals.
- Include the first and last names, organisations, addresses and contact information for all authors (identify the presenting author with an asterisk*).

Both **students and land managers** are being encouraged to attend, with the Society's offer of heavily **discounted registration fees**. ARS is very keen to attract students to the conference and has included a specific student session in the program as well offering a Student Prize. Society members can apply for the ARS Travel Grant (see details at the back of this newsletter; the application form is also available on the website).

PERSPECTIVES ON THE VII[TH] INTERNATIONAL RANGELAND CONGRESS – DURBAN, SOUTH AFRICA

Ron Hacker, NSW Agriculture, Trangie Agricultural Research Centre, Trangie NSW 2823.
Email: ron.hacker@agric.nsw.gov.au

Don Burnsid, URS Sustainable Development, Level 3, Hyatt Centre, 20 Terrace Road, East Perth WA 6004.
Email: don_burnside@urscorp.com

Martin Andrew, URS Sustainable Development, 25 North Tce, Hackney SA 5069.
Email: martin_andrew@urscorp.com

In late July, we attended the *VII[th] International Rangeland Congress (IRC)* in Durban, along with 520 rangeland scientists and managers from 50 countries around the world. In this article we outline some of our separate and collective impressions of the current state of rangeland science reflected there. In doing so we recognise that other participants will have come away with different impressions and that ours are just one set among many.

Before proceeding, though, we congratulate the South African Organising Committee on a first class effort. The Congress was very well organised, with attention to detail that made life easy for delegates – and the venue was excellent. The two of us who were on the Townsville OC had more than a passing interest in how the VIIth IRC would run – it ran very well indeed.

The Congress had a very strong multi-disciplinary focus on *Rangelands in the New Millennium*, with less attention to technical matters than to management, social and economic/policy issues. Of the poster presentations (almost all contributions were by poster) there were 142 on basic science, 94 on social issues, and 270 on land/enterprise management.

Given its location, much of the discussion was focused on African rangelands and their users. Some of the major themes that impressed us follow.

The big drivers

- The value of rangelands as an economic resource varies greatly across the world. In developed countries, rangeland products (meat, fibre) are important regionally, but make only a small net contribution to national economic performance. However, in many developing countries in Africa and Asia rangeland grazing systems are essential components of national economic and social wellbeing. It is there that the efforts of range scientists and managers matter most.

- The failure of 'western rangeland management' to improve the lot of traditional pastoral communities in Africa (particularly) is widely accepted. There are numerous examples of 'rangeland development' recipes involving western technology (new genotypes, increased water points, fencing etc) resulting in serious land degradation, social dislocation and economic inequality.

- The impact of external forces is an important driver of rangeland management. One example, from Botswana, involved increasing access to EU markets for beef, resulting in greater development for cattle production, land degradation around watering points in communal lands, and an 80 per cent reduction in the wildebeest population due to the impact of fencing on migration routes. While a minority of the people benefit from increased beef exports in the short to medium term, the potential for a much greater long-term loss of tourism income due to the erosion of the wildlife resource is concerning.

- Conversely, external influences are driving increasing diversity in animal type, with much African range management now devoted to wildlife conservation and exploitation for food and tourism.

Disequilibrium and diversity

- The concept of 'disequilibrium' in rangeland systems - due to the uncoupling of vegetation production and consumption in a variable climate - evident at both the Salt Lake City and Townsville Congresses, is now widely accepted by rangeland scientists and sociologists working in developing countries. The major theoretical developments in this field, arising from the study of communal pastoral systems in Africa particularly, have gone largely unnoticed in Australia.

- In developing countries, the 'new' approach to rangeland science is emphasising the spatial and temporal heterogeneity in the rangelands, and the need to accommodate this in designing land tenures and grazing systems. Exploitation of spatial diversity through nomadic or transhumant grazing allows more efficient use of the vegetation than sedentary occupation. This is not news to traditional African and Asian pastoralists but the lack of a scientific basis to challenge the prevailing western 'equilibrium' paradigm, probably exacerbated by political and economic imperatives to 'settle the nomads', has led to the situation we outlined in a previous point. The implications of the new ecology seem now to be appearing in development policies (for example in Ethiopia).

- Our efforts in Australia, within the context of sedentary pastoralism, have been devoted to the development of a parallel stream in disequilibrium ecology – the 'state and transition' concept. The implication of the latter is that management needs to be able to respond tactically to changing environmental conditions within an overall grazing strategy. Determining the average carrying capacity of a paddock for average rainfall conditions (while

useful in negotiating with the 'external' economic system) means less 'on the ground' than understanding spatial patterns of use and responding to changing seasonal conditions. The recent Australian literature is reflecting this view.

- A consequence of the development of disequilibrial ecology (perhaps with some infusion from conservation biology) is the current interest in 'fragmentation' of pastoral systems. Progressive fragmentation of landscapes by fences, private holdings, cropping etc is thought to detract from the capacity of pastoralists or wildlife to utilise spatial and temporal heterogeneity, and thus also from the capacity to maintain both livestock/wildlife populations and the natural resource base. A general relationship has been postulated in which fragmentation will proceed until landscape 'continuity' drops below a critical threshold that accelerates resource degradation, after which policy action will be initiated to reduce fragmentation. Results from related research, including a large-scale global study (with Australian representation), will no doubt be evident at the next Congress.

- Such developments mean that rangeland science and practice are now putting a high value on diversity as a feature of rangelands and as a means of developing resilience to stress. Diversity needs to be valued, and then managed at all scales. At the paddock scale, diversity in vegetation types needs to be considered in setting targets for management, and in strategic and tactical decision-making. There are opportunities for 'precision grazing' (as in grain-growing systems) to focus management on the most productive bits. Diversity in production systems across space builds resilience into the system, but a capacity for temporal adjustment is essential. Regional differences in diversity and resilience should be reflected in different tenure systems. In short, 'one size does not fit all'.

- The spatial dimension of grazing systems has been largely neglected in traditional grazing management research. The widely observed benefits of short-term rotational grazing systems in recent years can be largely explained in terms of more uniform utilisation of forage resources across the landscape through use of smaller paddocks of the location of additional watering points. While this benefit is generally accepted we remain somewhat sceptical about claims that rotational grazing allows higher stocking rates to be sustainably carried '*without the degree of reduction in production per head that would be predicted by the Jones & Sandland (1974) model*' (Norton 2003).

Building management capacity

- A tool for enabling spatially-precise grazing in a flexible, dynamic way is the concept of 'virtual fencing' (i.e. the control of cattle remotely via satellite). A poster by one of the pioneers, Prof. Dean Anderson (from New Mexico, who has been working on this for some 20 years), showed this is getting closer to practical reality, and we are aware of the work that Robert Rouda is doing in WA. The benefits will be both for natural resource management (precision control of grazing according to land unit and time since last grazing) and for animal production (potentially controlling which animals mate). It is being trialed for keeping elephants under control in Kruger National Park.

- There is clear recognition around the world that stakeholders must be included in the R&D process - the participative R&D model - and that the social, political and economic aspects of production systems must be understood if research is to lead to beneficial change. Indeed, production systems must be defined in terms of their socio-economic features as well as their biological characteristics. An Australian program stood out in this regard – Sustainable Grazing Systems (which had 6 posters and displays in the Meat & Livestock Australia stand) had a very large impact through engaging with producers from the outset and being guided by them[2].

- There is a real challenge for education, training and skill development. John Taylor (Director of *Rangelands Australia*) presented the findings of their recent survey of Australian stakeholders [Ed - see John's article earlier in this newsletter]. Most of the attributes that the industry requires of its members are attitudes that one develops like open-mindedness, rather than skills that one is taught like fat-scoring. How to impart such attitudes across a significant proportion of the industry was a topic of keen discussion. There was a lot of talk about how to create 'learning organisations', and how to develop real engagement and partnerships with producers, with examples presented from Australia (Sustainable Grazing Systems and the Rangeland Management Action Plan in western NSW), Uruguay ('Circle learning') and the USA (using complex models to derive straightforward displays of relationships of importance to ranchers).

The Congress finished with 3 synthesis papers by Ben Cousins, Mark Stafford Smith, and Sue Milton. These are available at the IRC website:
http://www.ru.ac.za/institutes/rgi/irc2003/IRC2003.htm

In summing up ....

Our feeling is that rangeland science and practice has emerged from a paradigm of simple, easily manipulated systems based on successional dynamics to an appreciation of a 'rangeland mess' (our term) that is challenging for both scientists and land users, and for which we have no unified model. The various alternatives currently available (disequilibrial dynamics, state and transition, multiple stable states, catastrophe theory) all incorporate the elements of:

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[2] SGS has just been written up in a special edition of the Aust. J. Exper. Agric. Vol. 43 (Nos 7-8).
The contents and abstracts are available on-line at www.publish.csiro.au/nid/72/issue/726.htm

- spatial and temporal heterogeneity in forage production and livestock distribution;
- hysteresis (differential trajectories depending on the direction of change) and
- ecological thresholds,

but all either ignore or deal inadequately with the human and economic dimensions.

The time seems right to attempt the development of a new conceptual model of how rangelands ('the 'mess') function as a biological and human system. Such a model would allow identification of the critical points for further research, efficient extrapolation of the results, and for management intervention at all scales. Our feeling is that we have sufficient insights into the relationships within the system to develop such a model, at least at the conceptual level. It is a challenge for the rangeland profession in Australia to tackle over the next few years.

The next IRC will be a joint one with the International Grassland Congress in Huhhot, Inner Mongolia, July-August 2008. It will be a good one to get to. Who is bold enough to make a prediction about what the main issues will be then?

Reference

Norton, B.E. (2003). Spatial management of grazing to enhance both livestock production and resource condition: a scientific argument. Proceedings of the VIIth International Rangeland Congress. (Eds N. Allsop, A.R.Palmer, S. J. Milton, K.P. Kirkman, G.I.H. Kerley, C.R.Hunt and C.J Brown). pp 810-20.

THE INTERNATIONAL RANGELAND CONGRESS – A YOUTHFUL PERSPECTIVE

Sheree Bradford, Rangeland Management Action Plan Inc, PO Box 305, Wentworth NSW 2648.
Email: rmap@hotkey.net.au

As a young Natural Resource Manager, I attended the International Rangelands Congress in Durban to learn how other project officers and coordinators approach similar issues to those I deal with in my daily work.

As the Implementation Officer for the Rangeland Management Action Plan in New South Wales, I work with landholders on a daily basis looking at best management practice, alternative grazing systems, social, economic and environmental issues.

The International Rangelands Congress was the first international conference of its kind I have attended. I took part in the pre-Congress workshop "Learning from Landusers" looking for some insight into how other coordinators deal with issues and what we can learn from listening to landholders. The workshop was structured as an open space learning environment between all the participants and workshop conveners. Working in with other facilitators from around the world, I gained an international knowledge base as we debated research and implementation of programs, participatory learning approaches, and challenges and successes in project experience. With input from only one landholder, from the Lower Murray Darling Catchment of New South Wales, my initial expectations of the workshops were mistaken, however outcomes from the workshop were still valuable.

Throughout the formal sessions of the Congress I was looking to gain further information about a number of issues. The conference sessions had some interesting discussions on grazing management systems, conservation farming practices, rehabilitating rangelands and conflict management which certainly helped to build my knowledge base in several areas. Overall, I was introduced to a number of ideas and concepts which I hope to be able to utilise with landholders in the Lower Murray Darling community.

The most interesting aspect of the conference for me was the discussions on the market value of wildlife in South Africa. Although I did not find an answer to my question of 'How to develop a market for our (Australian) wildlife', I was inspired by the market value system currently operating in South Africa. I believe that if a similar market value system could be applied to some Australian wildlife, there would be improved incentives for people to control wildlife numbers and therefore reduce impacts from total grazing pressure.

Overall the International Rangelands Congress was a learning experience and a worthwhile conference to attend as a young facilitator working in the rangelands. The Congress provided contacts and networks with other facilitators, researchers, consultants and scientists from a variety of backgrounds.

MEET THE NEW ARS COUNCIL

President – David Wilcox

David has worked all his professional life in the rangelands. He was employed by the Department of Agriculture in Western Australia for 32 years before becoming a private consultant. He has worked in a number of Middle East countries for the World Bank and the FAO, and has also worked on mining rehabilitation and land capability assessment in relation to land development in the near urban setting. David is responsible for numerous rangeland publications including coauthor of the *Arid Shrubland Plants of WA* book which is currently in its third impression.

David was the first President of the Society in 1975 and was appointed a Member of the Order of Australia in 1995 for services to the environment.

When asked to describe his role as President, David suggested:

- It is important that the Society be recognised as an independent and authoritative voice in matters dealing with the rangeland. I will try to foster this through encouraging members to be involved in specific debates. The council's task will be to find suitable platforms for this to occur.

- The age of pastoral land use being the only form of land use on the rangelands has gone forever. If the Society is to develop as it should it has to become the"home' for a much wider range of scientists, rangeland workers and land users than in the past. We have to consider ways in which we can widen our appeal to those people who have interests away from the production aspects of land use. This will mean that we have to be recognised as being a disinterested or impartial body with no earlier baggage influencing our judgments. We have done this to an extent in our recent conferences and I think that the Journal is showing that it has a more universal appeal through its issues on Tree Clearing, on Conservation some time ago and in the coming issue on changing views of the rangeland.

- We need to exploit the electronic communication channels available to us both in the web site and as a medium of publication.

Contact: David Wilcox
54 Broome Street
Cottesloe WA 6011
Ph: 08 9384 1464 Fax: 08 9384 1464
Email: dgwilcox@cygnus.uwa.edu.au

Vice President – David Lord

David is a woolgrower from Thackaringa Station, 40 km west of Broken Hill in New South Wales. He is the fourth generation to manage Thackaringa, with his family having settled the area before the ore body was discovered at Broken Hill. In addition to his interest in the ARS, David is also involved with Landcare at a local level and is the Chair of the Lake Eyre Basin Coordinating Group which covers nearly one sixth of Australia.

David has a particular interest in TPG (Total Grazing Pressure) especially rabbit control. He completed ripping all the warrens on Thackaringa in March this year, having ripped 27756 warrens over the last 15 years since he started the program..

David's role as Vice President is to:

- support the President; and
- chair meetings and represent the Society in the President's absence.

Contact: David Lord
Thackaringa Station
Broken Hill NSW 2880
Ph: 08 8091 1638 Fax: 08 8091 1540
Mobile 0428 279 657
Email: thackaringa@bigpond.com

Finance and Audit Officer – Tim Ferraro

After completing school in Mackay North Queensland, Tim graduated with honours from Hawkesbury Agricultural College. After graduation, Tim worked on a

range of projects in and around Sydney before moving to Dareton in the far south west of NSW, coordinating natural resource management activities in the Lower Murray Darling Catchment. Tim then returned to Sydney as the NSW Coordinator for the Natural Heritage Trust's Bushcare program before moving to Western NSW in his current position as Executive Officer of WEST 2000 Plus. This position has responsibility for the implementation of a structural adjustment program for the Western Division of NSW and sees Tim working with stakeholders to help build a profitable, sustainable and self-reliant Western Division. Tim has also completed a Master of Business Administration (MBA) in strategic management and is involved in a number of community organisations.

As a new Council member and the Society's Finance and Audit Officer, Tim has responsibility for a range of matters relating to the effective management of the Society's finances. These include:

- meeting reporting requirements to the Australian Taxation Office (ATO) and the Australian Securities and Investment Commission (ASIC);
- ensuring appropriate procedures are in place for managing the Society's funds;
- convening the Finance and Audit committee;
- coordinating annual audits;
- reporting to members on financial matters; and
- ensuring the society remains solvent.

Contact: Tim Ferraro
WEST 2000 Plus
PO Box 1840
DUBBO NSW 2830
Ph: 02 6883 3000 Fax: 02 6883 3099
Email: Tim.Ferraro@dipnr.nsw.gov.au

Secretary - Sandra Van Vreeswyk

For the past fourteen years Sandra has been a member of the Western Australian Department of Agriculture's rangeland survey team. This position provides a great opportunity to work throughout WA's rangelands. The team is currently working on the Nullarbor and prior to that undertook a survey in the Pilbara.

Sandra has been a member of the Australian Rangeland Society since 1989 and has held positions on Society committees since that time, including as a member of the Organising Committee of the Society's 2002 Biennial Conference held in Kalgoorlie, and in her current position as the President of the Western Australian Branch. This is Sandra's second stint as National Secretary with the first being from 1993 to 1995. Through the Society Sandra has developed a strong network of people involved in the rangelands and has had the opportunity to learn from many rangeland champions.

The key activities of the Secretary position are:

- act as the front-line person for correspondence between the public, Society members and Council;
- support all Council members in their positions;
- act as liaison between individual Council members and Council as a whole;
- prepare the agenda for Council meetings and take the minutes;
- undertake any follow-up activities; and
- Director of the Society and signatory on the cheque account.

Contact: Sandra Van Vreeswyk
Department of Agriculture
Locked Bag No. 4
Bentley Delivery Centre WA 6983
Ph (08) 93683917 Fax (08) 93683939
Email: svanvreeswyk@agric.wa.gov.au

Member Services Officer – Robyn Cowley

Robyn works with Northern Territory Department of Business, Industry and Resource Development in the Pastoral Production group. She has been an ARS Council member since 2001 and member of the Society since 1994. She currently works as a Rangelands Research Officer in Katherine, looking at rangeland management issues such as fire, biodiversity and sustainable cattle grazing systems in tropical savannas. She grew up on a sheep and cattle property in southwest Queensland, and worked for a couple of years with the South West Strategy in the Queensland Departments of Primary Industries and Natural Resources. Robyn is currently on the ARS 2004 Alice Springs Conference Committee, with primary tasks to develop a student package for the conference and to organise a session titled The Next Generation.

The role of the Member Services Officer is to:

- overview and ensure implementation of ARS member services;
- coordinate member services initiatives with membership initiatives;
- research and develop new member services; and
- communicate member services and initiatives to ARS members through the Range Management Newsletter, email and the ARS Website.

Current Services available to members

To provide a forum for the interchange of ideas and information among people with interests in rangelands, the ARS provides a number of services to its membership:

- Biennial ARS conferences with discounts on registration for ARS members;
- Eligibility to apply for ARS travel and study grants;
- The Rangeland Journal – peer reviewed, internationally recognised, 6 monthly journal; and
- Range Management Newsletter – quarterly update on rangelands news, projects and people from around the continent

Robyn is keen to hear from members with ideas about the kinds of services they would like to see the Society deliver to its membership.

Contact: Robyn Cowley
PO Box 1346
Katherine NT 0851
Ph: 08 89739750 Fax: 08 89739777
Email: robyn.cowley@nt.gov.au

Communication Officer - Lachlan Pegler

Lachlan is currently a Senior Natural Resource Officer with the Queensland Department of Natural Resources and Mines in Charleville. He has been a Council member of the Society since mid 2001, and a member of the Society since 1995. He was the manager of the South West Strategy for 2 years, and his main interests lie in land management, monitoring and extension. Lachlan works in a range of extension and planning areas, including vegetation management, the Great Artesian Basin Sustainability Initiative and catchment management. He originates from a property near Quilpie in South West Queensland, and has also worked in property management, oil exploration, and the Queensland Department of Primary Industries.

As the Communications Officer for the Society, Lachlan has the primary tasks of:

- Assisting internal communication within the Australian Rangelands Society Council, by:
  - Developing protocols for internal communication;
  - Developing protocols for communication with members; and
  - Reporting Council activities and decisions to members of the Society.
- Improving communications within the Society, through:
  - Newsletters, journal, conferences, forums, web site and providing services for existing members; and
- To improve communications between the society and the wider community, through:
  - Media; and
  - Attracting new members.

Contact: Lachlan Pegler
Natural Resources and Mines
PO Box 224
Charleville QLD 4470
Ph: 07 46544207 Fax: 07 46544225
Email: lachlan.pegler@nrm.qld.gov.au

Membership Officer – Neil MacLeod

Neil joined the Australian Rangeland Society in 1986 shortly after joining CSIRO (then) Division of Wildlife and Rangelands Research and commencing work at the Rangelands Research Centre, Deniliquin. He was at the time working as the range economist with the multi disciplinary group conducting the grazing trial at Lake Mere near Louth in western NSW. He transferred to CSIRO Division of Tropical Crops & Pastures in Brisbane in 1990 to work with the GLASS trial (1990-96) at CSIRO Narayen (Mundubbera) that explored the impact of a range of grazing and vegetation management practices on landscape resources in sub-tropical woodlands.

Neil now works within the Brisbane Group of the Rangelands and Savannas Program, CSIRO Sustainable Ecosystems. The team undertakes innovative research to support sustainable resource management with strong emphasis on landscape scale processes, evaluating R&D impacts at the property scale, and balancing production and conservation. It promotes adoption through active engagement with stakeholders and strategic communication activities. Neil has experience in cost-benefit analysis, economic modelling and rangeland restoration technologies.

As Membership Officer, Neil's role is to improve ways of maintaining and expanding the Society's base.

Contact: Neil MacLeod
CSIRO Sustainable Ecosystems
Level 3, Queensland Bioscience Precinct
306 Carmody Rd
St Lucia QLD 4067
Ph: 07 3214 2270 Fax: 07 3214 2266
Email: neil.macleod@csiro.au

Immediate Past President – Merri Tothill

As indicated in the ARS Articles of Association, Merri remains on Council as the Immediate Past President of the Society. She is currently employed as facilitator and trainer with Rural Solutions SA. Merri has worked in rangeland management for the past 16 years, and has been involved in resource assessment and monitoring and landcare.

Contact (until March 2004):
Merri Tothill
PO Box 357
Port Augusta SA 5700
Ph: 08 8648 5170 Fax: 08 8648 5161
Email: Tothill.Meredith@saugov.sa.gov.au

Subscription Manager – Ian Watson

For the last 18 years Ian has worked for the Department of Agriculture Western Australia on rangeland activities. Currently he manages the Western Australian Rangeland Monitoring System (WARMS) and work in a couple of climate variability and seasonal forecasting projects.

Although not an official ARS Council member, Ian performs a very important task for the Society. His role as Subscriptions Manager is to:

- manage the membership database;
- process new subscriptions and renewals;
- prepare mailing labels; mail out missing issues if members don't receive Journals or Newsletters;
- liaise with subscription agents; prepare invoices and mail Conference Proceedings, special issues of the Journal and other ARS publications: and
- generally make sure that members and subscribers get what they paid for.

Contact: Ian Watson
Department of Agriculture Western Australia and Centre for Management of Arid Environments
PO Box 483
Northam WA 6401
Ph: 08 9690 2128 Fax: 08 9622 1902
Email: iwatson@agric.wa.gov.au

Some of the members of the new ARS Council get together at the General Meeting of the Society on August 30, 2003. Photographed are from left: David Wilcox, Robyn Cowley, Merri Tothill, Sandra Van Vreeswyk, Neil MacLeod and Lachlan Pegler

INFORMATION SNIPPETS

Revamp for the Society for Range Management website

The Society for Range Management (SRM) recently unveiled its revamped website at www.rangelands.org. This website includes several information sources that may be of interest to ARS members. Abstracts of papers found in the *Journal of Range Management* are available online for issues dated 1995 onwards while lists of articles found in the society's newsletter *Rangelands* are available for 1997 on. There are also links to other SRM publications, as well as membership and education information.

Website for regional services

Did you know that there is a website that provides information and links to Commonwealth Government programmes and services relevant to people living in non-metropolitan, rural and remote Australia? It can be found at www.regionalaustralia.gov.au/.

The primary objective of the regional portal (website) is to make accessing programmes and services easier without people needing to know the structure of Government or portfolio responsibilities. The site features a resource centre where you can browse for government information by subject, portfolio or agency (it's a great way to find phone numbers or email addresses for many government agencies) and check on recent media releases. The website also includes information about forthcoming events or you can contribute to a discussion group about issues affecting regional Australia.

Volunteer science research assistants wanted

Exciting opportunities exist for volunteers to assist Science postgraduate research students in the Faculty of Education, Health and Science at Charles Darwin University (formerly Northern Territory University) with different aspects of their projects. Assisting on these studies will

provide you with chance to work with native flora and fauna, appreciate the ecology of the Northern Territory, learn about the impacts of exotic plants and feral animals, understand the effects of major pollution events and much more! No experience is necessary but you would have to get yourself to the Northern Territory.

Volunteer positions are listed on the University's website - www.ntu.edu.au/faculties/site/research/pgresearch/volunteer.htm.

Projects currently looking for volunteers include:

- The effectiveness of fencing riparian zones for biodiversity conservation
- How is country changing? Investigating rainforest dynamics in Kakadu National Park.

New biodiversity report released

The report *Biodiversity monitoring in the rangelands: A way forward by* Anita Smyth, Craig James and Grant Whiteman from CSIRO Sustainable Ecosystems has just been published.

This report aims to help people plan effective biodiversity monitoring in the rangelands. It is based on the outcomes of an expert technical workshop on the monitoring of biodiversity in Australia's rangelands that was held from 29 October to 1 November 2002 in Alice Springs, Northern Territory and builds on a previous report entitled *Developing and analytical framework for monitoring biodiversity in Australia's rangelands* by John Woinarski.

The latest report includes:

- consideration and review of recent, and most importantly, often unpublished research relevant to biodiversity monitoring in the rangelands;
- development of a common 'state-of-the-art' view and an understanding of the complexity of biodiversity monitoring in the rangelands;
- development of a shared view on the most appropriate 'sufficient and necessary' set of attributes and techniques for use now by different clients to monitor changes in biodiversity;
- highlighting of the limitations of particular sets of attributes and techniques;
- identification of interim guiding principles for rangeland biodiversity monitoring; and
- identification of knowledge gaps and research needs.

The report is aimed largely at technical audiences and regional level groups, however a future publication is planned that will serve the needs to land users.

Free hard copies of the report can be obtained from Environment Australia. You can also download a copy of the report from either the Environment Australia website (www.ea.gov.au/biodiversity/publications/index.html) or from the Tropical Savannas CRC website (www.savanna.ntu.edu.au/publications/books_reports/biodiversity_in_the_rangels.html).

NEW MEMBERS

Ian Chivers
Native Seeds
PO Box 133
Sandringham VIC 3191

David B. Croft
UNSW Arid Zone Research Station
Fowlers Gap
via Broken Hill NSW 2880

Leeanne Goody
'Pigeon Hole' Station
c/-VRD
via Katherine NT 0852

Dr Beverley Henry
QLD Dept of Natural Resources & Mines
80 Meiers Road
Indooroopilly QLD 4069

Leonard W Jolley
445 Union Blvd
Suite 230
Lakewood Colorado 80228
USA

Chris Kahler
PO Box 5391
Townsville MC QLD 4810

Graham Kenny
PO Box 1243
Roma QLD 4455

Kieren McCosker
Katherine Research Station
PO Box 1346
Katherine NT 0851

Allan Padgett
120 Grand Promenade
Bedford WA 6052

Jane Prider
4 Wilpena Terrace
Aldgate SA 5154

Peter-Jon Waddell
c/- Dept. of Agriculture
PO Box 417
Kalgoorlie WA 6430

Penny Wurm
Tropical Savannas CRC
Northern Terrritory University
Darwin NT 0909

AUSTRALIAN RANGELAND SOCIETY AWARDS

The Society has two awards to assist members with either:

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

Applications for each award close in June of each year. Any member of the Society interested in either award is invited to apply. Students are particularly encouraged to apply to assist their attendance at the 2004 ARS Conference in Alice Springs.

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 June. Application forms and guidelines can be downloaded from the ARS website at http://www.austrangesoc.com.au. For further information contact the ARS Member Services Officer robyn.cowley@nt.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 overseas members to for 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) 9690 2000: Fax (618) 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 2004.

☐ Charge my Mastercard VISA Bankcard AU$.....for full/part* membership for an individual/student/institution* for the calendar year 2002

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

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

*delete as appropriate

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:	**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.

For Office Use Only:

Membership Number ..... Date Entered in Member Register .....

Date Ratified by Council .....