The Australian Rangeland Society

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Range Management Newsletter

Official newsletter of the Australian Rangeland Society

Editor – Mr G. Tupper, CSIRO, Private Bag,
P.O., Deniliquin, N.S.W. 2710

No. 75/4 December, 1975

EDITORIAL

David G. Wilcox, President, The Australian Rangeland Society

In the last edition of the Range Assessment Newsletter, Mr. E. G. Hughes of the Clifton Pastoral Company, and a member of the Society, wrote in a colourful way about the need to establish lines of communication between all types of rangeland users in Australia. I want here to reinforce Mr. Hughes' views on the need there is for dialogue between all rangeland workers.

I can vividly remember my first encounter with the pastoral industry. In those days, over 20 years ago, it was not fashionable to wear beards, but I'm sure that I spoke quite unintelligibly to the clients I was sent to serve in outback Western Australia. On their part too, they weren't going to have some young inexperienced fellow teaching them, as one put it to me, "to suck their own eggs".

The wool boom then was in full spate. A great avalanche of this world's goods was pouring into the area which had been deprived of them for so long. Air-conditioners, Ferguson tractors with a myriad of attachments, portable gas, and even aeroplanes and motor cycles which were going to collapse the tyranny of distance, were all going to make the pastoral business more efficient. In those balmy days there weren't many who talked about the dreaded marginal dollar or about inputs and outputs, or about the number of sheep carried per man employed.

In the face of this commercial competition there wasn't much that one could offer a pastoralist to help him running his operation. We were in any event largely trading on the results of investigations into production problems gained from the wetter parts of Australia. While in principle the conclusions held, their operation in the much more difficult and complex environment of the pastoral situation often defied definition.

So it was at about this time research into arid zone problems was undertaken by a number of authorities who could guarantee the continuity of the effort required. In the nature of arid zone investigations it is only in the past few years that the data are becoming available which could initiate change in pastoral management practice. How fortunate this is, for if in no other time of pastoral history in Australia there is now a need for communication between operators, administrators, researchers and extension workers. For many operators their mere survival in the future is an unpleasant reality. For these there is an urgent need to increase the productivity of each animal unit in order to halt and force apart the narrowing gap between inputs and returns.

Research and extension workers in Australia have a large amount of subjective as well as objective information on animal, plant, or even total ecosystem behaviour which has application in the grazing field. If this Newsletter is used as forum through which information can be exchanged, the Society will be fulfilling one of its objectives. Pastoralists are not a

gullible mob as Mr. Hughes suggests they are. They are able to evaluate the information they are given in terms of its operational utility. Hopefully they will be innovative enough to employ the new strategies and approaches to management which will be proposed in these columns and, even more importantly, constructively criticise the suggestions.

Perhaps I have dwelt too much on the management side of the Society in this editorial and haven't discussed the other aspects of its activities. It is not because I consider them less important, but rather because I feel that there is a need to consider the ultimate users of the results of research and extension effort. In Australia so far they have been largely neglected.

CONTRIBUTIONS TO THE NEWSLETTER

Contributions for the Newsletter are sought on the following and related matters:

1. Range assessment
2. Details of proposed experiments and investigations
3. Research problems
4. Letters and other contributions from pastoralists
5. Management strategies for pastoralists
6. Articles on administration
7. Alternative uses for rangeland
8. News and views
9. Personal paragraphs
10. Financial situations as they affect rangeland managers

The Newsletter comes out in March, June, September, and December. Copy for the next issue is required in Deniliquin by 1st February 1976. All contributions should be sent to Mr. Graeme Tupper, Editor, Range Management Newsletter, CSIRO, Private Bag, P.O., Deniliquin, N.S.W. 2710.

JOURNAL OF THE AUSTRALIAN RANGELAND SOCIETY

The first issue of the Journal is due out in March 1976. Future Journal numbers will appear in May and November each year, and No.2 will be published in November 1976. People hoping to have manuscripts included in that issue will need to have same submitted by the end of April 1976.

The object of the Journal is to develop an Australian approach to all aspects of rangeland science and art. Council is particularly keen to include papers on administrative, social and operational aspects of rangeland use as well as scientific papers. Contributions could fall under the following headings or others -

(a) Scientific research or review papers on any aspect of rangeland use.

(b) Papers on administrative or social aspects of rangeland use.

(c) Discussion or case history papers in the operational field of rangeland use.

The Journal contents will include:-

scientific papers	book reviews (invited)
communications	thesis summaries
articles	editorials (guest)
society business	editorials (Editorial Board members)

All communications should be addressed to: Dr. G. N. Harrington, Chairman, Editorial Committee, The Australian Rangeland Society, CSIRO, Private Bag, P.O., Deniliquin, N.S.W. 2710. Copies of "Instructions to Authors" are available from the Chairman of the Editorial Committee.

LETTERS

From - John Wildin, Department of Primary Industries, Rockhampton, Q.

I think the term "range" is now in common use and I add support to comments by William Low (Range Assessment Newsletter 75/2). I also support the suggestion by Low for the acronym change from A.R.S. to A.R.M.S. but I would suggest "range" in lieu of "rangeland", i.e. Australian Range Management Society.

The type of range can still be described with characteristic Australian terms like mulga, mallee, spinifex, eucalyptus woodland, gidyea scrub, Mitchell grass downs etc.

The name selected should suit the widest cross section of members.

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From - Jeff Powell, President, Kansas-Oklahoma Section of Society for Range Management

I would like to respond to some of the comments that were made in the September, 1975 issue of your Range Assessment Newsletter. Even though I am an outsider to Australia, I think my experience with range management in the U.S.A. may be of interest to your Australian Rangeland Society members. I am in general agreement with comments made by Bill Low in your letter. As Bill indicated, "range management" and "rangeland" are unique terms and may be unfamiliar to many people not working in that area. However, by the same token, rangeland is a unique kind of land and therefore, its proper management requires a unique and distinct set of management principles.

Many people who either have not had much experience on rangeland or have been trained in disciplines other than range science tend to try to force the principles and concepts from other related disciplines into the management of rangeland, usually with poor or unsatisfactory results. This situation is true in the United States as I am sure it is in Australia. There simply are not enough professionally trained people who are familiar with the unique principles of range science. When many people are called upon by circumstances to work with rangeland and they are not familiar with the ecological principles, they refuse to admit their lack of experience or training.

This unfamiliarity with the terminology and concepts in range management is a severe problem in the Great Plains and southeastern part of the United States. The prevalent management philosophy in the Great Plains is one of an eastern pasture philosophy. When their eastern pasture principles and practices are applied to our arid rangelands, the results are either erratic, uneconomical or cause irreconcilable damage to the soil surface. This is an area where ecological principles must take precedence over agronomic practices.

In the eastern part of the United States, range management principles and practices have been ignored or accepted only very slowly because the predominant land use (tree production) has caused ignorance of the other land resources such as forage, water, wildlife, etc. Range management principles and practices however, are still applicable in this area regardless of the preferred land use. Native forage production in the south-east is of trememdous importance and again the most profitable grazing management depends on proper ecological principles rather than agronomic or forestry practices.

One of the other major problems we have even among members of the Society for Range Management is the confusion over the term "range". Many people, because of their association with a particular agency or land user group, tend to think of range as a forage crop or kind of vegetation. This is a rather narrow-minded and erroneous concept of range. Range is short for rangeland. Rangeland has several different kinds of natural resources,

one of which is forage or that resource to which many people associate with "range". Therefore, I would encourage you and the Australian Rangeland Society to emphasize the term and concept of "rangeland" rather than "range". This shorthand term for rangeland has caused considerable confusion in the United States. I hope your Society can keep from making the same mistake.

No doubt many Australians who are unfamiliar with the confusion in the United States and other countries or who are unfamiliar with the principles applicable to rangeland would not place much significance on the name of your Society or Newsletter. I cannot agree. In Australia, especially, where so much of your land area is rangeland, I think that it is imperative that the Australian Rangeland Society hammer home to their own members and to the public at large that a distinct and unique kind of land needs a distinct kind of land management practices and principles. Consequently, that kind of land needs to be managed by well trained professionals who have an appreciation and understanding of these rangeland management principles and scientific concepts. This is one discipline where the knowledge and ability of the manager far outweigh any other possible input into the practice of that discipline.

WHAT HAPPENED ON OCTOBER 18, 1975?

Graham Harrington, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

That date might turn out to be even more important to the future of Australian rangelands than 19th January 1975 when the Australian Rangeland Society was formed. The first General Meeting of the Society at Deniliquin, N.S.W. is likely to have far reaching effects on its future character and will leave its stamp on the Journal also; the first number of the Journal of the Australian Rangeland Society will be mainly comprised of papers presented at the meeting, and the standards set will be self-perpetuating.

The meeting followed hard on the heels of the Chenopod Shrublands Symposium and a majority of participants attended both. It was gratifying, therefore, that the tenor of the meeting was immediately different from that of the symposium and the character of the Society began to emerge. The enthusiasm to present papers was such that the day's programme had to be extended and the time allowed per paper cut from 20 to 15 minutes in order to fit in the 15 papers. The organizers were in a dilemma for they realised that the most important part of this meeting would be the discussion, formal and informal, and yet they were loath to disappoint potential participants at this formative stage of the Society. In the event lively discussion had to be curtailed and somewhat fewer papers might have been better.

The atmosphere was relaxed after the President, David Wilcox's opening speech and continued that way through the day with jokes diluting the more serious stuff of management. It really did feel like a Society and not just another symposium.

Doug Campbell from the N.S.W. Department of Agriculture in Bourke orientated the meeting firmly towards concepts of management of our rangelands with his case for plant introduction in arid and semi-arid Australia. This continued throughout the day and indicated that the Society membership is firmly practical in its outlook and is concerned with the long term productivity from our rangelands. It was a pity that there were no graziers and only Dick Condon from N.S.W. and Dick Johnson from W.A. in the State Pastoral Control Boards to add dimension to what was a range scientist and "entrepreneur" (state agency extension personnel word) dominated meeting.

An interesting session on woodlands included Andrew Robertson's paper about fire influences in sub-tropical Kimberley woodlands, which showed strong similarities with African woodlands in Tanzania and Rhodesia. Tony Pressland and Allan Wilson dealt with two aspects of management of Australia's apparently unique semi-arid woodlands; Martyn Caldwell from Utah State University drew attention to the fact that nowhere in the U.S.A. do rainfalls in the 250-320 mm range produce woodlands on such a high plant mass.

Tom Atkinson, N.S.W. Department of Agriculture, presented Leggett's paper on remote sensing as a tool for rangeland studies. At the same time he welcomed the fact that we had firm evidence that the rangelands of our title were not confined to the xeric plant communities with the inclusion of two papers on the semi-natural pastures of the northern tablelands of N.S.W. from John Taylor/Wal Whalley and Guy Robinson and Peter Dowling.

Perhaps most important of all, was the subject of range condition assessment and the time allotted to Geoff Cunningham and Colin Lendon for their papers was not sufficient to do it justice. There is a widespread assumption amongst people connected with our rangelands that they can tell whether it is in good, reasonable or poor condition by experience and eyeball assessment. Yet it seems equally widely accepted that our rangelands are deteriorating. Either our assessments are wrong, or the people making the decisions don't care. The difficulty with eyeball assessment is that we do not know how much influence recent events such as good rains, a drought, heavy grazing or shutting up are having on what should be an objective measurement good for any season. Similarly it is difficult to assess what the long term trend is due to the masking influence of seasonal vegetation changes (Brendan Lay's paper on fixed point photographs was relevant here). The case for an objective method of range condition assessment (or range index to use the term put forward by Cunningham) for use by graziers and state agencies is clear. The debate and the work will clearly go on.

This was a fitting subject to end a highly successful meeting before we all retired to the Riverina Laboratory's rose garden (not a native in sight!) to replenish lost humidity. Our President looked suitably exhausted after a very taxing day which included a business meeting. He revived amazingly after force-feeding with Victorian beer!

MINUTES OF THE FIRST GENERAL MEETING OF THE AUSTRALIAN RANGELAND SOCIETY HELD AT THE CSIRO LABORATORIES AT DENILIQUIN, NEW SOUTH WALES ON SATURDAY, OCTOBER 18, 1975

Brendan Lay, Acting Secretary for the Meeting

Opening and Attendance:

The meeting, chaired by the President, David Wilcox, opened at 12.05 p.m. It was attended by about 45 people and was preceded and followed by 15 presented papers.

Minutes:

The minutes of the inaugural meeting of the Society in January 1975, were read and confirmed.

Report from Council:

These details were read and confirmed:

The Council had met five times since the inaugural meeting of the Society. At present there are 143 members, including 6 from the U.S.A. and one from South Africa. Twelve members are pastoralists. The first Newsletter is due to be published in December. Mention was made of the three-man editorial board for the Society, comprising Wal Whalley, Ray Perry and David Wilcox, and the editorial committee for the Journal, chaired by Graham Harrington.

It was hoped to publish the proceedings of the 2nd and 4th joint U.S./Australia range workshops as otherwise publication was in danger of lapsing. This would also give some kudos, it was felt, to the Society. Finance is presently available for publishing one of these.

The Council thought it important that consideration be given to the formation of state or regional branches in due course. Some financial incentive may be necessary for reimbursement of branch organisers.

The Treasurer's Report:

This was read and approved. About $2,000 in subscriptions is now to hand. (See below for details).

Changes to Articles of Association:

(1) Name. The various comments or criticisms of the Society's name were discussed by Graeme Tupper. The chairman discussed the background to the present name, and as any change would have to be submitted to the W.A. Companies office, he recommended no name change at present.

(2) Length of Tenure by Council. So that the production of the first issue of the Journal might be expedited, it was decided to accept the wishes of the present Council to extend their tenure to the end of the calendar year, 1976.

Title and Content of Newsletter:

The chairman suggested that any ideas from members on a novel name or caption for the Newsletter be forwarded. He emphasized that it was a medium for spontaneous contributions, therefore no editing. Also "news and views" from members. Few people write things spontaneously, so perhaps some sort of "urging" is necessary. Graham Harrington suggested a Newsletter representative for each state and perhaps two from New South Wales.

Participation of Members:

This was partially dealt with above. A discussion of the various ways we can conscript new members ensued. Some points raised were:-

(a) personal letters to pastoralists;
(b) the need to "produce the goods" and get them on display;
(c) publicising the Society through stock journals, or Department of Agriculture publications etc.;
(d) the production of more copies of the first Newsletter for prospective members.

General Business:

The only general business items were a discussion of the need for lapel badges or stickers, logos, etc. No interest in the former was shown, but a good logo was thought to be desirable. Doug Campbell offered a spontaneous count of the composition of the members present at the meeting. This revealed that no pastoralists were present.

Closure:

The meeting ended at 12.50 p.m.

FINANCIAL STATEMENT

Income to 9/10/75	$	
Subscriptions (132)	1,974.25	
Sale of U.S./Aust. Publications	381.60	
Newsletter subscriptions	23.45	
		$2,379.30

Expenditure to 9/10/75		
Incorporation fees	780.60*	
Paper, printing etc.	103.41	
Petty cash & postage	46.60	
Return of U.S./Aust. Payments	32.00	
Return of student subs	15.00	
Bank charges	3.62	
Miscellaneous	7.12	
		$988.35

* $250 paid by D. Wilcox who has since been reimbursed

Balance = $1,390.95

Financial Statement (Continued)

Outstanding liabilities = $349.60 (to SRM for U.S./Aust. Proceedings)

Therefore Cash in Hand = $1,041.35

Foreshadowed expenditure

1.	Printing Articles of Association	$50.00
2.	Printing 1st Edition of Journal	$400.00
		$450.00

Expected Income

January 1st approximately 120 subscriptions at $15 = $1,800

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UNITED NATIONS ENVIRONMENTAL PROGRAM
INTERNATIONAL CO-OPERATION TO COMBAT DESERTIFICATION

Allan Wilson, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

The drought, overgrazing and famine problems of the Sahel and Sahara regions of North Africa have given impetus to efforts by the United Nations to organize concerted international action to combat desertification. The term "desertification" refers to the formation of desert-like conditions in arid and semi-arid lands by the misuse of these fragile lands.

The present program has a number of stages, which are to culminate in an action program, or plan of action to be put before the U.N. Conference on Desertification, to be held 29 August - 9 September 1977. This Conference will be at the government representative level and will be held in Nairobi, although Australia has been suggested as an alternative.

The program considers four interrelated components - climate, including climatic change and fluctuation - ecological change - demographic, social and behavioural aspects - and desert technology. Review studies will be prepared on each of these topics and a synthesis of them will be attempted. In addition UNEP and UNESCO are financing six case studies in selected areas of Tunisia and Chile (winter rainfall), Niger and India (summer rainfall), and Iraq and Pakistan (water-logged and saline soils). These case studies will draw together all relevant knowledge on the areas considered, giving particular attention to the interrelated components mentioned above and concluding with recommendations and lessons learnt in those areas.

Other nations have also been asked to contribute case studies and so far U.S.A. (Heady - Vale district, Oregon), Israel (Schechter - Negev) and Australia have agreed to contribute. I attended the meeting in Geneva which drafted the guidelines for these case studies and am now involved in the organisation of Australia's contribution. The attitude within the U.N. was that Australia had a lot of experience in this field, which could be of value to other countries.

Other tasks are the development of desertification maps, both generally of the world and of the case study areas and the consideration of transnational projects. The latter particularly concerns the Sahara region where several countries share the one desert problem.

The reviews and case studies will be integrated, translated and distributed well before the International Conference. It should be emphasized that the principal object is to give impetus to action by governments within their own boundaries, rather than to further action by the U.N. itself.

RESEARCH IN PROGRESS

THE TYNE PITTING PROGRAMME IN THE WESTERN DIVISION OF N.S.W.

R. J. Stanley and J. W. Lawrie, Soil Conservationists, Soil Conservation Service of New South Wales, Broken Hill.

Tyne-pitting appears to be a cheap, practical way to reclaim eroded and unproductive soils in the semi-arid and arid lands of New South Wales. The tyne pitter, which is a tractor drawn implement makes short pits in the soil. Because of the speed of travel and the width of the machine, large areas can be treated quickly at low cost. Work can also be undertaken without detailed initial survey work which is required for other reclamation techniques. Success of the technique is largely dependent on soil characteristics such as resistance to slaking which control the longevity of the pits, since on slaking soils pits quickly fill in after several wet periods.

The Service currently has in operation a research programme which aims to assess the usefulness of tyne-pitting throughout the semi-arid and arid areas in the western part of the State by establishing trial areas on the major soil types in the region.

The programme has been initiated in the Western Soil Conservation District with the establishment of a trial at "Kayrunnera", the property of F.H. & B.W. Clarke, which is located approximately 220 km north of Broken Hill. The trial is designed to assess plant regeneration and persistence on tyne pitted, otherwise naturally bare and unproductive, land under normal stocking conditions. "Kayrunnera" has an average annual rainfall of approximately 200 mm.

The trial area is located on country that has been mapped as Nuntherungie land system (Mabbutt *et al.*, 1972). It comprises bare stony risers with a quartz mantle and a light brown calcareous saline loam overlying a hardpan at from 30-100 cm depth, and vegetated stone-free steps with a deep reddish-brown loam that is calcareous and saline below 40 cm depth. The vegetation includes clumps of belah (*Casuarina cristata*) and isolated leopardwood (*Flindersia maculosa*), with sparse stands of perennial saltbush (*Atriplex vesicaria*), black bluebush (*Maireana pyramidata*) and low bluebush (*M. astrotricha*). The pastures comprise mainly bottle-washers (*Enneapogon avenaceus*) and copperburrs (*Bassia* spp.).

Six plots, approximately one hectare in area, have been located on the bare, uneroded stony rises. Half of each plot has been pitted using a 3-tyned Paech Model 3T HD tyne pitter with 38 cm shares, pulled by a 35 H.P. tractor. The other half of each plot has been left as a control. The paddock in which the trial is located is to be stocked for the duration of the study. The paddock size is 4,025 ha and the normal stocking rate is 1 sheep to 6.2 ha.

Data will be recorded twice yearly. The amount and type of pasture cover will be measured using the modified step-pointing method (Cunningham, 1975). Using this method at the initial sampling the control areas were found to have an average of 90% bare ground, with the main pasture species being the annuals, pop saltbush (*Atriplex spongeosa*), *Bassia ventricosa* and woolly copperburr (*Bassia lanicuspis*). In addition to the step-point measurements, the presence and size of perennial shrubs will be monitored using a 50 m x 1 m belt transect on each of the treatment and control areas.

Vertical stereoscopic photography will further add to the measurement of the effect of tyne pitting on ground cover. Eight pits on each treated area have been selected and permanently marked for stereoscopic photography. Two permanent photopoints for oblique photography have also been selected on each of the treatment and control areas.

Soil moisture levels will be measured gravimetrically on samples from depths of 5, 15 and 100 cm (or at depths as governed by the hardpan) on pitted and non-pitted treatment areas, as well as on control areas, at annual intervals or after suitable rainfall events.

After the success of a sowing treatment on an earlier pilot trial established at Kayrunnera, it was decided to include a sowing treatment in the present trial. The pilot trial was established in November 1973 and the pitted areas sown with a mixture of *A. vesicaria, A. nummularia, M. pyramidata* and *M. brevifolia*. Shrub counts in June of this year showed that 87 *M. brevifolia* plants and 547 *A. nummularia* (some up to 1.5 m tall) had established in an area of approximately one hectare. This result is particularly pleasing as no *A. nummularia* is known to occur in the vicinity. It was impossible to determine the establishment numbers of *M. pyramidata* and *A. vesicaria* because plants already growing on the area had not been counted prior to sowing.

Three of the six treatment plots in the current trial have been sown with a mixture of 2.0 kg *A. nummularia*, 1.5 kg *M. pyramidata* and 0.15 kg *A. vesicaria* per half hectare. The seed was sown into individual pits on a grid pattern over each of the areas, as well as into each of the pits that are stereophotographed.

Apart from the sowing treatment, tyne pitting trials similar to the "Kayrunnera" trial are to be established on properties throughout the Western Division. These properties have been selected to cover the dominant soils requiring stabilisation or revegetation in the Western Soil Conservation District.

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WILDERNESS INVENTORY

A. L. Payne, Department of Agriculture, Perth, W.A.

The report of a 1974 fauna and flora survey of the Prince Regent River area in the North West Kimberley, W.A., has just been printed. Entitled "A Biological Survey of the Prince Regent River Reserve" this first-class glossy publication is available from the Department of Fisheries and Wildlife, 108 Adelaide Terrace, Perth, W.A. 6000.

The report is profusely illustrated and easily read. It sets out in detail all species of fauna (including sections on mammals, birds, reptiles and fish) and flora encountered on the Survey. Several species of plants and animals are undescribed or new records for W.A.

Dr. A. A. Burbidge, the leader of the Survey says "the biological survey reported in this publication shows that the Prince Regent River Reserve is an outstanding conservation area, rich in flora and fauna and with interesting historical associations and aboriginal sites. As far as is known the area has little economic value, but in contrast, its value to nature conservation in Australia is enormous and it should be retained as a conservation reserve in perpetuity".

The recommendations from the survey are that the present Prince Regent River Reserve be extended to include the whole of the Prince Regent River catchment and that the area be declared an 'A' Class reserve.

Field work on similar biological surveys of the Drysdale River area and islands off the Kimberley coast has been completed. Reports are hoped to be in print next year.

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Membership form for The Australian Rangeland Society. Detach and send, with cheque to Mr. K. M. W. Howes.

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THE AUSTRALIAN RANGELAND SOCIETY

Mr. K. M. W. Howes, (Hon. Treasurer),
Australian Rangeland Society,
CSIRO,
Private Bag, P.O.,
WEMBLEY, W.A. 6014.

Dear Sir,

I . . . .

of . . . .

. . . .

. . . . State and Country

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

I enclose fifteen dollars (Australian currency) being my subscription for the year 1976.

Signature . . . .

Date . . . .

Date of Approval of Council . . . .

Entered in Register of Members . . . .

Date . . . .

Signed . . . .

Signed . . . .

(Members of Council)

- -

Mr. K. M. W. Howes, (Editor),
Australian Rangeland Society,
CSIRO,
Private Bag, P.O.,
WEMBLEY, W.A. 6014.

Dear Sir,

I wish to receive the Range Management Newsletter and enclose my cheque / bank draft / money order for $4.00 Australian currency, being for one year's subscription.

My address is: . . . .

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