

**PROCEEDINGS OF THE AUSTRALIAN RANGELAND SOCIETY
BIENNIAL CONFERENCE**

Official publication of The Australian Rangeland Society

Copyright and Photocopying

© The Australian Rangeland Society 2012. All rights reserved.

For non-personal use, no part of this item may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior permission of the Australian Rangeland Society and of the author (or the organisation they work or have worked for). Permission of the Australian Rangeland Society for photocopying of articles for non-personal use may be obtained from the Secretary who can be contacted at the email address, rangelands.exec@gmail.com

For personal use, temporary copies necessary to browse this site on screen may be made and a single copy of an article may be downloaded or printed for research or personal use, but no changes are to be made to any of the material. This copyright notice is not to be removed from the front of the article.

All efforts have been made by the Australian Rangeland Society to contact the authors. If you believe your copyright has been breached please notify us immediately and we will remove the offending material from our website.

Form of Reference

The reference for this article should be in this general form;
Author family name, initials (year). Title. *In*: Proceedings of the nth Australian Rangeland Society Biennial Conference. Pages. (Australian Rangeland Society: Australia).

For example:

Anderson, L., van Klinken, R. D., and Shepherd, D. (2008). Aerially surveying Mesquite (*Prosopis* spp.) in the Pilbara. *In*: 'A Climate of Change in the Rangelands. Proceedings of the 15th Australian Rangeland Society Biennial Conference'. (Ed. D. Orr) 4 pages. (Australian Rangeland Society: Australia).

Disclaimer

The Australian Rangeland Society and Editors cannot be held responsible for errors or any consequences arising from the use of information obtained in this article or in the Proceedings of the Australian Rangeland Society Biennial Conferences. The views and opinions expressed do not necessarily reflect those of the Australian Rangeland Society and Editors, neither does the publication of advertisements constitute any endorsement by the Australian Rangeland Society and Editors of the products advertised.



The Australian Rangeland Society

REHABILITATION AND PROTECTION OF CONSERVATION AREAS IN THE ARID LANDS OF
SOUTH-EASTERN AUSTRALIA

John Cooke

Department of Conservation and Environment,
253 Eleventh Street, Mildura 3500

ABSTRACT

The rangelands of north-western Victoria were used for production of wool for up to 150 years. They are now to be primarily used for nature conservation and recreation. This change in use of the land has brought with it a need to adjust management to protect the conservation and recreation values rather than the values of its agricultural production. This paper covers the conservation/recreation values that are to be protected, threatening processes to those values and the means by which protection is afforded to the land.

INTRODUCTION

In March 1990, the Government of Victoria accepted with some modifications the recommendation of the Land Conservation Council (LCC) (1), and in so doing indicated that the prime use of public land in the Victorian Mallee will be for conservation and recreation. Some of this land has been grazed by domestic livestock for up to a century and formed the core of some farming units.

The protection and rehabilitation of the landscape to enhance the floral and faunal, recreational, cultural and social values of the landscape are now the prime tasks of the managing authority, the Department of Conservation and Environment.

In this paper, I will identify the values to be protected, the processes threatening these values and discuss the methods by which protection is achieved.

VALUES TO BE PROTECTED

In the process of its review (2), the LCC commissioned a number of surveys and assessments. Separate surveys of the flora and fauna of the Mallee were undertaken by the Department of Conservation and Environment. These surveys are purported to be the most extensive undertaken in the semi-arid zone of south-eastern Australia. Of the 31 species of mammals that originally existed in the area, five are extinct and a further 15 are rare or threatened (3). Two birds are locally extinct and a further three are threatened. Certain biological communities notably the Murray pine (*Callitris preissii*)/buloke (*Allocasuarina luehmannii*) vegetation types were shown to be extensively modified. There is virtually no actively regenerating pine/buloke community. The woodland community, which is prized for its agricultural potential, and hence cleared and alienated for much of its distribution, was the most modified by activities of European man, namely grazing and harvesting for forest products. The surveys provide powerful evidence as to the effect of grazing on the conservation values of the land. On one hand, there were perhaps 10 species threatened within this community, and on the other hand it represented the principal grazing areas of a number of licensees. The Government decided that the most prudent course of action was to remove grazing of domestic stock in total, and has indicated its intent to reduce the grazing impact of introduced pest animals, namely rabbits (4).

On the global scale, a number of issues relevant to the protection and rehabilitation of arid-zone lands are important. The modification of a

vegetation community based on perennial deep-rooted species to one of annual grasses, as has happened over large sections of the semi-arid zone, is likely to have contributed to the greenhouse gases, namely carbon dioxide. The mass of carbon stored as weed in vegetation and roots, and as organic matter in the soil, is substantially reduced following the conversion from a forest to grasslands.

Worldwide, wilderness values in arid and semi-arid landscapes have been substantially reduced (5). Although there does not seem to be any literature pertaining to the worldwide assessment of wilderness values in the Mediterranean climatic zones of the world, it would appear that the Big Desert and Sunset Blocks of the Victorian Mallee would rank high in any list of remaining wilderness area (6).

Some three or four individual species are known only from public land in the Victorian Mallee, and it is the stated intent of both the Victorian Government and Australian Government that further extinction should not occur. The public lands contain much of the remaining gene pool of some native flora and fauna in the State of Victoria. For many species, this gene pool is a major component of the total gene pool of the species.

On a local scene, the removal of deep-rooted perennial vegetation and its replacement with agriculturally useful species such as shallow-rooted annual medics and grasses, is the principal predisposing cause of secondary salinity (7). The retention of a perennial component in the landscape, especially on areas of potentially high recharge to the groundwater system, is an integral part of salinity prevention. Land left bare through either over-cultivation or over-grazing is often eroded by wind in the mallee environment. The resultant dust not only contributes to a loss of capability of the land but causes a public nuisance.

The arid-zone and semi-arid zone land provides extensive recreational, aesthetic, photographic and other social uses. In a world of increasing urban populations, these values are expected to increase in importance. The arid and semi-arid zones of north-west Victoria are particularly relevant to this anticipated growth, as it is close to two capital cities and is well serviced by roads, rail and air transport. It is one of the few areas where there is a substantial city (Mildura) serviced by a substantial river (the Murray) in the arid zone of Australia. This combination of values is attractive to certain groups of tourists and holiday makers.

THREATENING PROCESSES

The principal threatening process to the conservation values of the region was the clearing for agriculture and its subsequent alienation. Some two-thirds of the total area of the Victorian Mallee is now used for wheat/sheep production.

Of the remaining one-third of the landscape still held in public ownership, most retains remnants of its native vegetation. The vast majority of this area has a high conservation status and shows very little impact of European settlement. Still there has been a loss of native mammals from the area (2). Of those areas that are highly modified, the total grazing pressure exerted by domestic livestock, rabbits and goats has had the most dramatic and widespread impact of all activities since European settlement. There has been no clearing of public land for the purpose of agriculture since 1973, although some 20,000 hectares of vegetated public land was alienated in 1977 and therefore available to be cleared. For a long time there has been a policy to not allow deliberate burning of mallee vegetation in addition to a ban on mechanical clearing since 1973 on public land.

Grazing of domestic livestock on all of the area recommended to become National Park will cease over the next five years. National Parks represent

57% of the remaining public land, which equates to 22% of all land in the Mallee (1). Grazing may continue under a proposed new management regime of the remaining public land thereafter. Details of these new arrangements are still to be developed.

Once domestic livestock is removed from the areas within the newly created National Parks there is a need to undertake considerable and extensive rabbit control programs. Although rabbits are recognised pests of both pastoral and conservation zones, the tolerance levels of rabbits is very much lower in a conservation zone. In the case of the Victorian parks, the intent is to allow regeneration of woodland species. These species are highly sensitive to even very low levels of grazing by rabbits.

The removal of the domestic livestock and a high level of control of rabbits leads to a flush of growth of annual plants, in the years immediately following the phase out of grazing. This flush of growth creates an increased risk of fire in the dry summer months. Fire is both an aid and a threat to the regeneration of native woodland species. It would appear that the tree species such as cattleshrub (*Alectryon oleifolius*) and sugarwood (*Myoporum platycarpum*) regenerate more rapidly following fire. However, fire is a major threat to the regenerating seedlings of these and other species. Following the removal of grazing, perennial species either through regeneration or expansion in size of suckering, will begin to again dominate the water balance of the arid zone. As this occurs the annual species become a less prominent component. This means that there is less fodder available for rabbits and a lower fire hazard. Local experience would suggest that in the case of highly degraded land, it could be as long as 15 years before perennial shrubs are sufficiently robust to be able to withstand the impact of grazing by domestic livestock.

The western grey kangaroo, which is native to the region, has also become a pest animal in specific landscapes within certain conservation parks within the region. In Hattah-Kulkyne National Park in particular, western grey kangaroos have replaced sheep and rabbits as the major grazer. They are exerting considerable environmental stress on the disturbed woodland communities of that Park. They may also be placing a number of flora and fauna species at risk. The reasons why the kangaroo population has rapidly increased to such a high level in Hattah-Kulkyne National Park, and has not done so elsewhere in the region, has not been identified. The problem is a particularly difficult one, as the pest is one of the animals for which the park was established to protect. The resolution of the problem would appear to be limited to that of culling.

A considerable number of alien plants have invaded the rangelands of Australia. Many of these plants pose no particular threat to either the agricultural or conservation status of the land. The change in the intent of the use of the land has brought about a change in the perception of which plants cause concern. Weeds such as horehound (*Marrubium vulgare*) which were considered noxious in grazing areas, as it has the potential to contaminate wool, are now considered to be of less importance. Weeds such as caltrop (*Tribulus terrestris*), which pose only a minor threat to grazing cause much discomfort to campers, walkers and sightseers. The targets for weed control programs therefore change when the intent of the use of the land is changed.

The Victorian mallee contains extensive and important Aboriginal cultural and archaeological values. Canoe trees, burial sites and artifacts occur over extensive areas of the mallee and the riverine environment. Many of the sites occur on the sandy rises and lunettes adjacent to lakes and rivers, and these areas suffer extensively from infestations of rabbits. Works aimed at rabbit control, such as ripping and harbour destruction can have a substantial impact on the cultural values of the landscape. The rip lines, especially where they occur on hillsides, also reduce the aesthetic values of the landscape. Rabbit control must not only be more thorough, so as to allow for

the regeneration of native seedlings, but is more costly in areas where conservation values are the prime value of the land. In conservation reserves, measures aimed at reducing one threat must not be allowed to become a threat to another value.

THE PROTECTION OF THE LAND

The State Conservation Strategy, released in 1987, clearly spells out the intention of the Government to protect conservation and recreation values of the State. In addition to this, the Government has also released strategies on specific issues such as wetlands conservation and salinity prevention.

In each of these strategies, there is a strong commitment to involve the community in decisions that affect the land. The major National Parks have advisory committees made up of people with specialist knowledge and other representing the wider community. The advisory committees help allay some of the fears that may develop between neighbours who have widely different objectives.

In all cases where the status or the use of the land has changed there is a commitment of Government to involve the community in the decision.

The State Government also allocates extensive resources to educating the community in respect to conservation needs of the State. This occurs through the formal education system, the media, and extension services of the government departments.

Under the umbrella of the strategies of Government, conditions of leases and licences for occupation of public land can be addressed. These strategies guide the direction and level of enforcement and extension aimed at the protection of conservation values of public land.

It is the responsibility of the Department of Conservation and Environment to manage this land and to this end there is a strong commitment to involve community and conservation groups, and to undertake significant public education and extension programs.

REFERENCES

1. Land Conservation Council (1989) Mallee Area Review, Final Recommendations, Land Conservation Council, Melbourne.
2. Land Conservation Council (1987) Report on the Mallee Area Review. Land Conservation Council, Melbourne.
3. Robertson, P. et al (1989) Fauna of the Mallee Study Area North-Western Victoria. Arthur Rylah Institute Environ. Res. - Tech. Rep. Ser. No. 87.
4. Ward, D.J. and Cooke, J.W. (1987) The Control of a Pest Animal (Rabbit) in an Arid Environment. A case study. In: 8th Aust. Vert. Pest Control Conference. Department of Conservation, Forests and Lands, Mildura.
5. McCloskey, M.J. and Spalind, H. (1987) A Reconnaissance-Level Inventory and the Wilderness Remaining in the World. A report to the Fourth World Wilderness Conference, Washington DC.
6. Preece, K. and Lesslie, R. (1987) A Survey of Wilderness Quality in Victoria. Ministry for Planning and Environment Victoria and the Australian Heritage Commission.
7. Cooke, J.W. and Willatt, S.T. (1983) Land Management, Water Use and Salinity Prevention. Proc. R. Soc. Vict. 95; 117-121.