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

**Official publication of The Australian Rangeland Society**



## 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).

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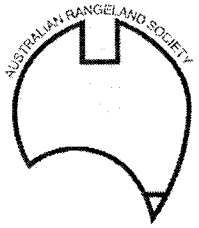


The Australian Rangeland Society

# HERBIVORE MANAGEMENT AND SUSTAINABLE RANGELAND USE IN SOUTH AUSTRALIA

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## ABSTRACT

*The effects on rangeland condition and livestock production of reducing the numbers of rabbits, feral goats and kangaroos are being measured in the Olary Ranges of South Australia. This Vertebrate Pest Program project involves the North East Pastoral Soil Board, local pastoralists and three agencies of the South Australian and Commonwealth governments.*

*An improved understanding of the financial and other benefits, and the costs, of controlling pest mammals and kangaroos could lead to a reassessment of management practices and policy regarding domestic and wild grazing mammals in rangelands.*

## INTRODUCTION

Wild exotic herbivores reduce the ability of rangeland to support domestic livestock and native wildlife by competing with them for food and water and by causing rangeland degradation. The main wild exotic herbivores in the South Australian arid zone are rabbits and feral goats, but donkeys, brumbies and camels can be locally important. Kangaroos cannot be ignored in the context of pastoral production because they are very numerous in some areas. Predator control and/or the provision of drinking water have resulted in all the large mammalian herbivores being artificially abundant.

Rangeland improvement, with its attendant benefits for soil conservation, livestock, and native flora and fauna, depends in part on the control of grazing by unwanted herbivores. But whether it is easier or more cost-effective to improve the rángeland by controlling some herbivores rather than others remains largely unknown, as does the level and duration of control that is needed. We need to know more about the effects of managing kangaroos and pest herbivores on the growth and regeneration of individual plant species and on the value of the extra livestock production that results before we can offer advice on what to manage and how to manage it.

The North East Pastoral Soil Board, South Australia's Department of Environment and Natural Resources and Animal and Plant Control Commission, and the Commonwealth's Bureau of Resource Sciences have established a project under the Vertebrate Pest Program to look at some of these issues. Its title is 'The management of grazing mammals for sustainable resource use within the sheep-grazed rangelands of South Australia'. The project involves very close cooperation between the North East Pastoral Soil Board, the pastoralists whose properties are involved and the three government agencies.

## PROJECT OBJECTIVES

The project has two main objectives:

1. To obtain more sustainable use of rangelands by:
    a. improved pest control resulting from better adoption of existing technology (such as rabbit warren ripping with appropriate follow-up work, and goat mustering and trapping); and
    b. improved kangaroo management (and reconsideration of quotas for kangaroo offtakes if it is shown that kangaroo control leads to more sustainable pastoral production).

Possible consequences of improved wild herbivore management include:

a. improved conservation and demographic status of rangeland plant species and of native animals smaller than kangaroos;
b. improved ability of rangeland to support grazing mammals through periods of low rainfall;
c. improved soil conservation; and
d. higher stock numbers in the medium to long term following an improvement in rangeland condition.

2. To obtain better knowledge of the economics of pest and kangaroo control by measuring:
   a. the cost of controlling pest animals and kangaroos; and
   b. the value of increased stock production resulting from controlling pests and kangaroos.

## PROJECT METHODOLOGY

The study sites are on five pastoral leases in the Olary Ranges. Field work began in 1995 and looks at the separate and combined effects of feral goats, rabbits, kangaroos and sheep on the rangeland. Paddocks are set stocked with sheep and subjected to normal station management. The numbers of feral goats, rabbits and kangaroos are being reduced in some parts of the area in a factorial experiment, and the consequences of a reduced grazing pressure for plant production, floristic composition and sheep production are being measured. Herbivore numbers are being measured by transect counts, dung, aerial survey and, for sheep, stocking rate and numbers mustered. For goats and kangaroos the size of each experimental treatment is about 150 square kilometres (typically several paddocks), and for rabbits it is six sites of one square kilometre each. The goats and kangaroos are being commercially mustered and shot. Warren ripping with follow-up work is being used for the rabbits.

An improved understanding of the benefits, and the costs, of controlling pest mammals and kangaroos will form part of future information exchange among peer groups of pastoralists, and will contribute to extension activities in many parts of the rangelands. (Benefits include those to soil conservation, livestock, property finances and native flora and fauna.) The results of the project will also contribute to the formulation of policy regarding the management of domestic and wild grazing mammals.

## PROGRESS IN THE FIRST YEAR

The first year of the project has seen the experimental sites established, vegetation identified, baseline vegetation yields assessed, baseline sheep production measured and substantial progress made towards reducing the numbers of wild grazing animals to predetermined levels.

Rabbit calicivirus disease (RCD) moved unexpectedly into the study area in late 1995 and caused a major drop in rabbit numbers. Most of the rabbit warrens are now empty, although there are signs of reappearance in some warrens where the virus's presence was confirmed. Despite low rabbit numbers, the warrens are still being ripped in the designated 'rabbit control' areas to prevent a resurgence in numbers and to establish a treatment difference between these areas and those where rabbits are not controlled. Monitoring might indicate that there is no detectable difference in the vegetation trends in these two areas, but this result will still be of interest because it will show that RCD has largely if not completely suppressed the effects of rabbits.

In the rangelands RCD was first detected near Yunta, and the time course of the epidemic and of its effects on rabbit populations and rangeland vegetation at Yunta might continue to be in advance of these events in other rangeland areas. Continued study of the rabbits and rangeland in this area could allow trends in the disease's progress and consequences to be forecast in other areas, with rabbit control and other activities being planned accordingly.