RESERVE MANAGEMENT

The following radio talk was given on the A.B.C. by Dr. A.A. Burbidge, Fauna Research Officer:-

"This and the next two talks in the series will be given by members of the fauna section of the Department. Today's talk will deal with some of the problems of fauna conservation on reserves.

Western Australia has about four million acres of land classified as fauna sanctuaries and game reserves, the latter being open to duck shooting in season. This area is small being only 0.6% or 1/160th of the total area of the State and comparable in size to four or five cattle stations. Much of the reserved land is outside the south-west land division, the total within the division is about 1,180,000 acres or 1.8%.

When the land around a reserve is cleared for farming the character of the reserve is immediately changed. What was once part of a large area of unbroken bushland now becomes an island surrounded by country that most of the animals are unable to inhabit. At that time the reserve commences a change in its character due to outside pressures such as the invasion of weeds like wild oats and introduced animals like rabbits, foxes, cats, dogs, rats and mice. Fires become more frequent and this affects the plants. Normally the reserve will slowly but inevitably change and over a period of many years the plant associations will deteriorate and the animals they support will decrease in variety and numbers.

The rate and amount of deterioration depends on a number of factors, the most important of which is the size of the reserve. Since most of the pressures I have mentioned enter from the perimeter of the reserve smaller reserves will be affected much more quickly because they have a relatively greater circumference and a shorter distance between the boundary and the middle of the area. On the other hand, a large area has a relatively smaller perimeter compared to its total area and a long distance from the perimeter to the central region. Thus the invasion of introduced plants and animals is a much slower process and eventually a buffer zone is created around the perimeter of the reserve leaving the central area undisturbed.

This outside pressure is only one factor affecting the change in the character of the bush in a reserve. With a

small reserve there is a much greater chance that a fire will burn out the whole area and destroy all the food and cover of a particular species leading to its extinction in the area. In a large reserve pockets of land will remain unburned and the animals left there will repopulate the area as it recovers. Also a large reserve will contain a greater number of plant associations and therefore will also have a greater variety of animals.

What, then, is the minimum size for a reserve? This is a difficult question to answer because there is little data available on the problem. In addition, a suitable size in one area would not be suitable in another - in the desert a greater area is necessary than in a rain forest because of the lower density of plants and animals in dry country. The Australian Conservation Foundation has picked 10,000 acres as an arbitrary figure but research in this State has shown that this figure is too low and, in semi-arid country at least, 50,000 acres is more correct as the minimum size for an area which will continue to harbour the full range of plants and animals.

Some reserves greater than this size already exist and more can be created in areas of the State which have yet to be thrown open for intensive farming. However, in the heavily populated areas of the State reserves of this size do not exist and cannot be created. This does not mean, however, that reserves smaller than 50,000 acres are of no use, it means that they require management. For this purpose the Department of Fisheries and Fauna has recently created a reserves management unit.

At the moment the task of this unit is to develop techniques. There are few basic techniques available and there has been little work on this problem in the past, either here or overseas. The management of a piece of natural bush is much more complex than farm management because instead of managing for a few species of plants and animals one must maintain complexity where there are large numbers of plant and animal species. One technique we are studying is putting firebreaks through reserves to prevent the whole area being burned at once, coupled with control burns at different times of the year and at various intervals depending on the types of vegetation and the requirements of the animals. Along with this it is necessary to understand the life history and food requirements of the animals you are managing so you can measure the effects of the management techniques on the animals.

The development of management techniques for existing

reserves will continue over a long period of time. However, it is impossible to create bushland in its original complexity from cleared country so we must continue to set aside reserves and safeguard the ones we have over the next few years for we will soon be in the position where there is no more natural bushland which can be reserved.

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