



Department of  
Primary Industries and  
Regional Development

## Journal of the Department of Agriculture, Western Australia, Series 4

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Volume 25  
Number 1 1984

Article 4


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1-1-1984

### Rabbits north of Carnarvon

D R. King

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#### Recommended Citation

King, D R. (1984) "Rabbits north of Carnarvon," *Journal of the Department of Agriculture, Western Australia, Series 4*: Vol. 25: No. 1, Article 4.

Available at: [https://library.dpird.wa.gov.au/journal\\_agriculture4/vol25/iss1/4](https://library.dpird.wa.gov.au/journal_agriculture4/vol25/iss1/4)

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In Western Australia rabbits are mainly a pest along the south-western coastal parts of the State, but there are populations north of the Tropic of Capricorn. Rabbits, after crossing the Nullarbor Plain from South Australia and colonising the South-West of the State, were reported to have reached the west coast near Geraldton by 1912 and then spread northwards.

There is little information on the biology of rabbits in the northern parts of their range, but pastoralists in some areas are concerned about erosion and damage to vegetation on their stations when rabbits reach high numbers.

The Agriculture Protection Board undertook a study led by Research Officer, **Dr D. R. King**, to determine when the rabbits bred, how productive they were, where they occurred on the stations, to what extent their numbers varied in different types of vegetation, and whether any cost effective control programmes could be carried out in such country.

## Background

Rabbits were studied on two coastal stations north of Carnarvon from 1975 to 1981. The properties, Quobba and Gnaraloo, are in an area where rabbit numbers were said to fluctuate considerably depending on seasonal conditions. At the time the study started, they were reportedly causing some economic damage.

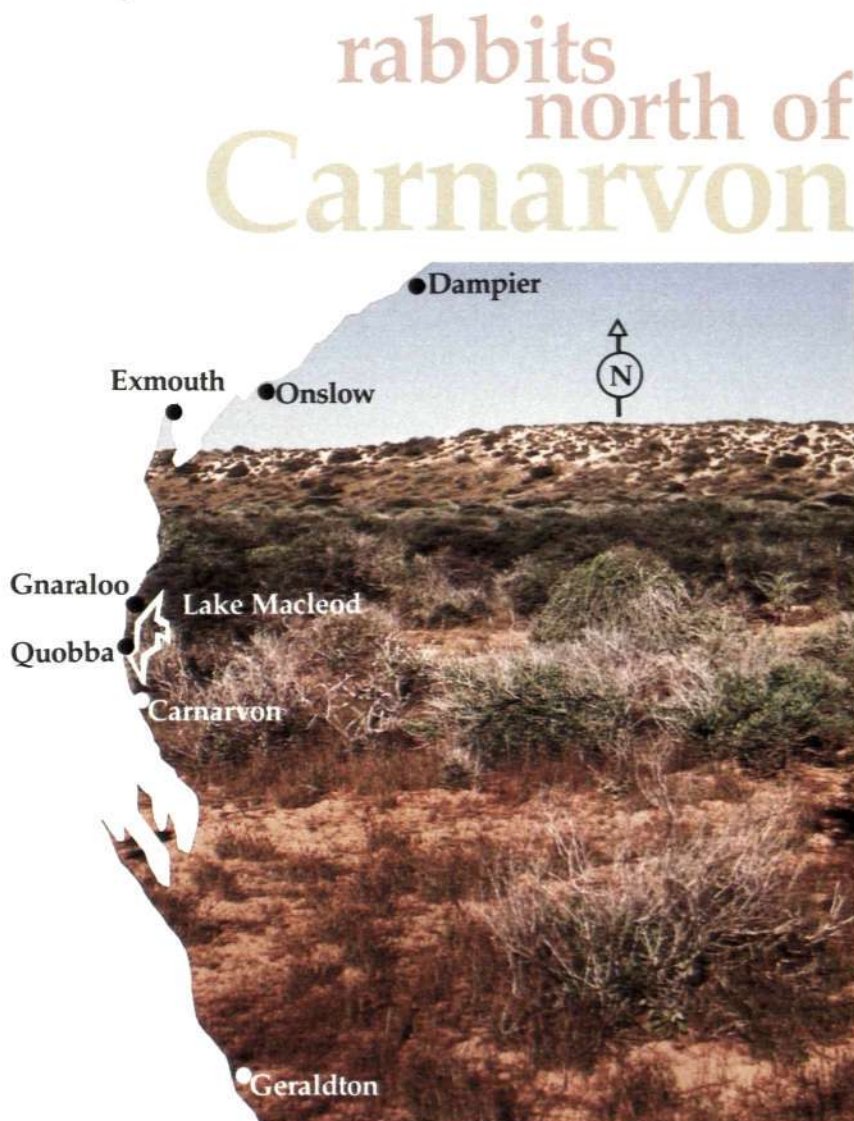
The field work for the study was undertaken as part of a Special Works Project administered by the Department of Aboriginal Affairs. Work was supervised by officers of the Agriculture Protection Board Training Section and data and samples collected in the field were analysed at the Board's Forrestfield laboratories.

## The study

Quobba and Gnaraloo stations lie between the Indian Ocean and the western shore of Lake Macleod, a large salt lake which is generally dry. There are large open dunes near the coast, shrub and grass-covered dunes and undulating plains inland, and low sand and shell-grit dunes on the shore of Lake Macleod. The climate is arid with rain falling mainly in winter, although some cyclonic rain occurs in most summers.

Both stations are stocked with sheep; feral goats, euros, emus, and some red kangaroos are also present.

Rabbits were counted, using spotlights from vehicles, on five lines which ran along tracks from the coast to Lake Macleod. Counts were made every few months between 1976 and 1981, and the average number of rabbits per kilometre of line was calculated in each land system.



Rabbits collected on each trip were killed and examined to determine their reproductive condition and age.

■ Rabbit survey and habitat area north of Carnarvon.

As winter rains are relatively reliable, rabbits in this coastal region have a more regular winter breeding season than that of rabbits in pastoral areas in other parts of Australia. However, the start and finish of winter rainfall differed between years, and the length of the breeding season was limited by the duration of this winter rain. Total annual rainfall was above average only in 1974 and 1975.

The breeding pattern of rabbits on the area was similar to that observed in the South-West of Western Australia. Some males in the population were fertile at all times of the year, but the highest percentage fertility occurred in winter and spring. In females, pregnancy rates were highest between June and September and the largest litter sizes were in September. Some



breeding occurred in all years, even those in which annual rainfall was only about one-third of average. Kittens born in these years survived and entered the breeding population in the next year.

The only year during the study in which heavy rain fell in summer was 1975. In February and March of that year, 164 millimetres of rain fell at Gnaraloo station. Breeding began in February and some kittens born during the late summer survived and entered the adult population.

Each doe produced an average of 21 kittens a year. While this is lower than levels from sites in the South-West of the State, it is higher than those from other pastoral areas of Australia, despite the below-average rainfall and short breeding seasons in most years of the study.

Rabbit numbers on all landforms dropped during the study. The drop was greatest on those land systems where there was good above-ground cover of patches of dense shrubs and grass. In the area where there were few rabbits at the start of the study, numbers also dropped but some rabbits remained.

It has been found in parts of western New South Wales that after several dry years when no breeding occurs, rabbits are found only on particular parts of stations, and control measures can then be concentrated on these small areas. This did not happen on Quobba

and Gnaraloo, probably because of the annual breeding response to reliable winter rains.

### Conclusion

Although this study provided interesting data on the biology of rabbits in one northern part of the State, it did not produce any new information which could be used to try to control their numbers in a cost effective manner.

Rabbits persist in the least favourable terrain even after several dry years and are spread throughout the area, so it is not possible to focus control efforts on restricted areas where rabbits become concentrated.

The cost of controlling rabbits in the area by any current method is likely to exceed the benefit gained, because of the area's naturally low pastoral productivity and the breeding potential of the rabbit population. Rabbits will remain a continuing problem when their numbers build up following good seasons.

■ Aboriginal assistants take blood samples from a rabbit.



■ Extensive rabbit warrens on Quobba station.

