



Rabbit control in Queensland

A guide for land managers



The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

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Preface

This manual has been prepared as a straightforward but comprehensive guide to rabbit control for land managers in all areas of Queensland. The statistics and costings that have been included are the most recent available at the time of publication.

A short glossary of technical terms with which readers may be unfamiliar has been included at the back of this guide.

References

The Department of Primary Industries and Fisheries (DPI&F) acknowledges the authors of all the reference sources used to help compile this guide—a list of the most significant of those resources appears at the back of this book. While this publication should serve as a complete guide in itself, the reference list would also serve as a useful starting point for readers who might want further or more detailed information.

Credits

Photographs appearing in this guide come from DPI&F stock images, or have been provided by the following people and organisations: Michael Brennan, Grant Beutel, John Conroy, John Cross, Peter Elsworth, Craig Hunter, David Parker, Steve Parker, Mark Ridge and the Robert Wicks Pest Animal Research Centre.

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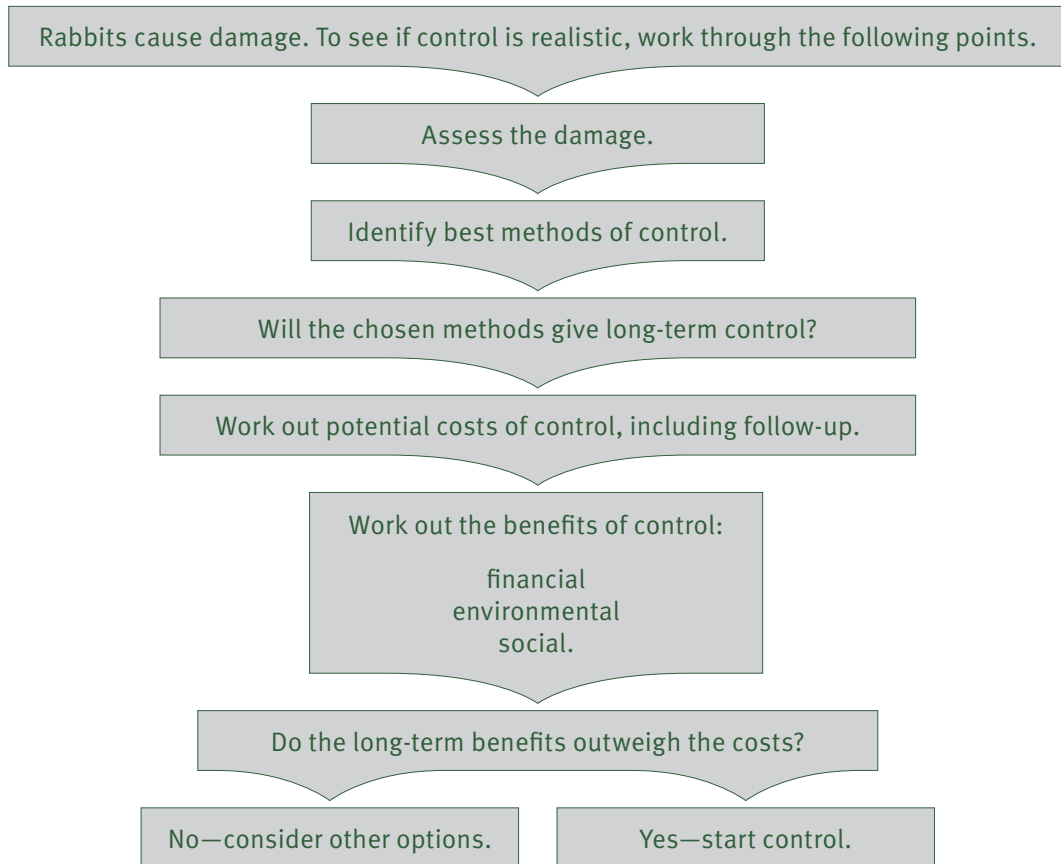
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Is rabbit control worthwhile?



The ineffective (short term) rabbit control cycle

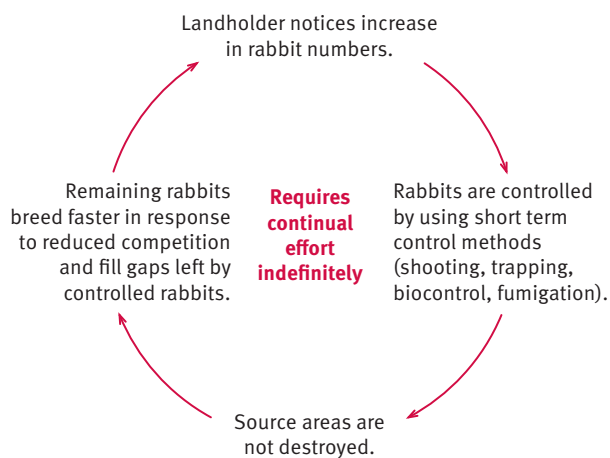


Figure 1: Ineffective (short term) rabbit control cycle.

Effective (long term) rabbit control flow

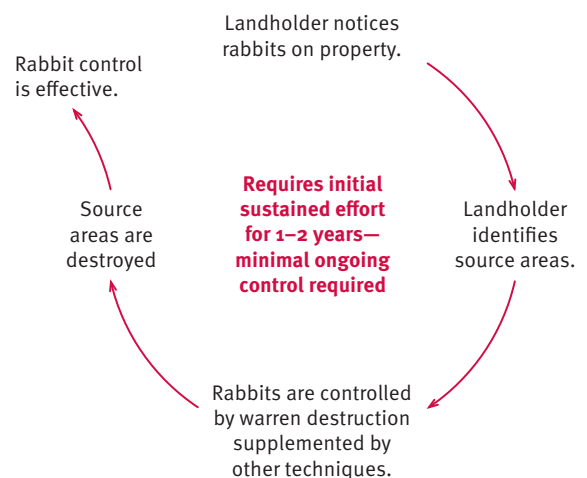


Figure 2: Effective (long term) rabbit control flow.

Introduction

How can this manual help you?

This manual can help you choose the best and most cost-effective way to reduce the impact of rabbits on your property. It includes an easy-to-use guide to work out how much rabbits are really costing you and explains different ways to tailor control techniques to your local environment.

Why control rabbits?

The long-term benefits of effectively controlling rabbits are significant. There should be no ongoing damage and, provided you allow recovery time and don't overstock, you should see major improvements in pasture quality and productivity.

This can mean land is able to better carry stock throughout periods of drought and the need to agist stock will be reduced.

Aim for effective rabbit control

The complete eradication of rabbits from Australia is not a realistic short-term goal but there are effective ways to reduce and minimise their impact on agricultural production and the environment.

Although eradication may be possible in some fenced areas, the rabbit's well-developed ability to disperse and recolonise means that even the best control programs may see rabbits returning at some stage. Persistence and perseverance are required but, if the job is done correctly in the first place, there should be long-lasting effective control with minimal ongoing effort required.

Effective control of rabbits will mean:

- more money in your pocket
- more feed available for other animals (cattle, sheep and wildlife)
- more nutritious pastures with fewer weedy species
- reduced need for stock agistment
- less erosion
- a richer seed-bank in the soil
- recovery of trees and shrubs, which stabilise the country.

Different control methods will be effective for different periods of time. Warren/refuge destruction and fencing off will give long-term (10–30 years, possibly permanent) rabbit control. Shooting, poisoning, bio-controls and fumigation will give short-term (a few months to a year) rabbit control. All control methods are discussed in detail in this guide.

Rabbits in Australia

The European rabbit (*Oryctolagus cuniculus*) was introduced to mainland Australia near Geelong, Victoria, in 1859. Twenty-four rabbits were brought from England primarily for hunting. The rabbits spread across the country at an average rate of 70 km per year. It was the fastest rate of any colonising mammal anywhere in the world.

Rabbits in Queensland

Rabbits were first reported in 1887 in south-western Queensland, 30 miles south of Eulo. Rabbit-proof fences were soon established across southern Queensland but the rabbits spread beyond these barriers—sometimes aided by people transporting them but also due to low predation rates, the availability of the ready-made burrows of native animals, little competition from cattle and no serious diseases.

The Darling Downs–Moreton Rabbit Board fence, located in south-eastern Queensland is the only remaining rabbit fence in the state.

Rabbit numbers in Queensland over time

Rabbit numbers have been variable across Queensland ever since rabbits first appeared in 1887. Disease, seasonal variations, predators and control operations have all had an impact on numbers. The figures in table 1 are an indication of the reduction in rabbit numbers before and after the introduction of myxomatosis (myxo) and rabbit haemorrhagic disease virus (RHDV).



Table 1: Rabbit numbers in Queensland.

Year	Rabbits (millions)
1949 (just prior to Myxo)	150
1995 (just prior to RHDV)	5
1996 (after RHDV)	2

Current rabbit numbers in Queensland have increased from the 1996 figure, and research in 2008 has shown that rabbits may number 14 million.

Distribution of rabbits in Queensland

The largest rabbit populations are found in the Granite Belt, south-western Darling Downs, Maranoa, southern Warrego and the far south-west. Moderate populations are dotted throughout the north-western Darling Downs and north Burnett, and low populations are scattered through much of the remainder of the state. Rabbits do best where they have established warren systems.

Rabbit warrens are most frequently found in deep, well-drained soils. Cracking clay soils are avoided because of waterlogging and the risk of warren collapse. Where warren building isn't possible, rabbits can use above-ground harbour such as hollow logs, or dense undergrowth formed by plants like blackberry or lantana. However, due to strict temperature requirements for successful breeding (refer to section 2.1), they don't thrive in these environments.

A personal history

With the introduction of biological controls such as myxomatosis and RHDV, many modern farmers have not experienced the most dire ravages of rabbit infestations. For those who did live through these times, however, the memories of the heartache and devastation caused by rabbits are still fresh. The following true account serves as a warning to land managers of the emotional and social impacts of rabbits. While rabbit numbers are still relatively low at present, the benefits of the biological control may not last into the future and we may yet see again the damage done by large rabbit numbers. This is the story of one family's experiences with rabbits in the 1950s and 1960s. (The family wishes to remain anonymous.)

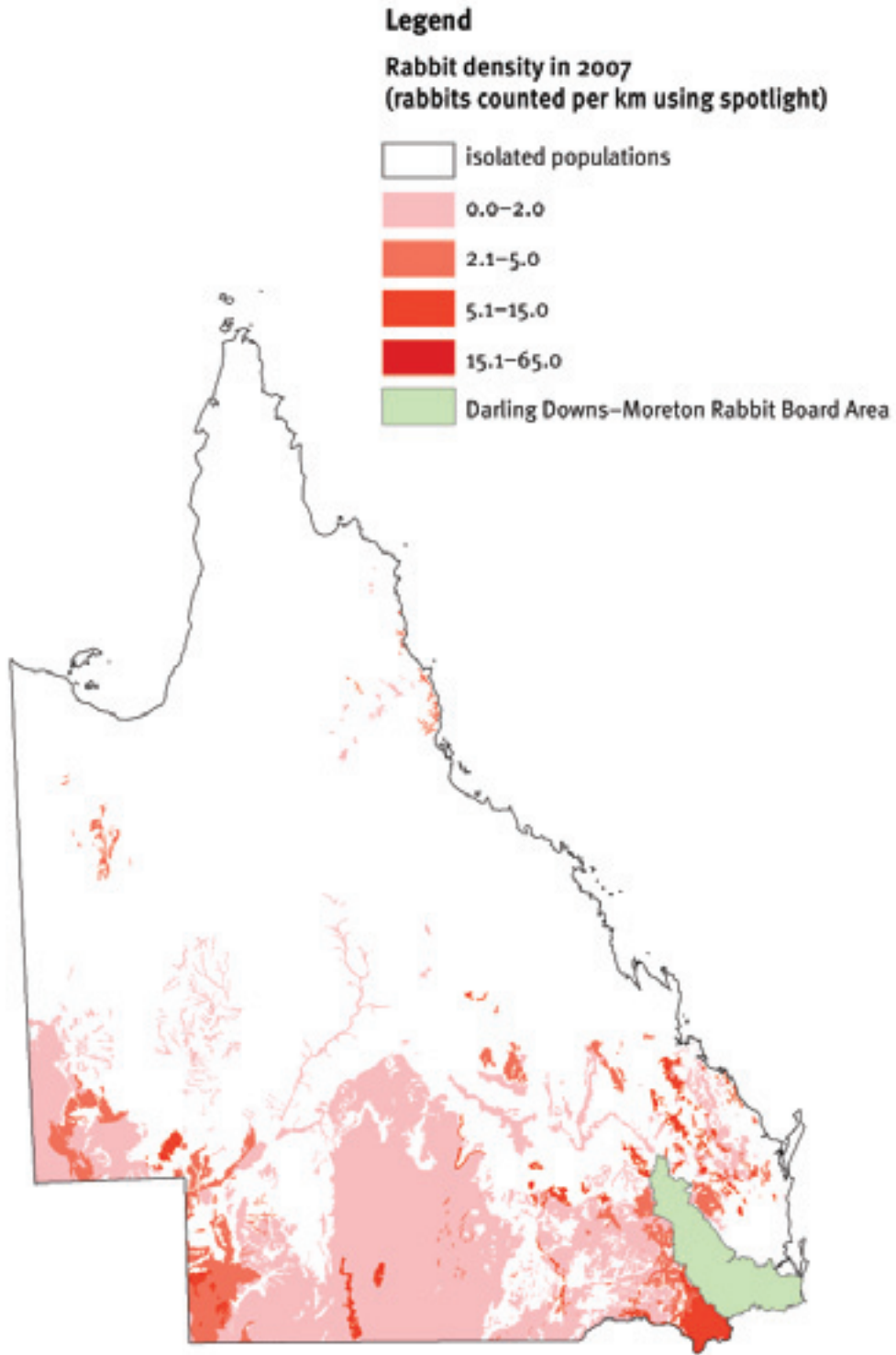
My parents attempted to run a profitable crop and fruit farm in Victoria in the late 1950s and early 1960s. They owned a small farm on the outskirts of Kyabram, which is in the Goulburn Valley in Victoria. The main farming activities in the district were growing fruit and vegetable crops, and dairy farming.

My parents were dedicated, keen farmers but finally the problem of an overwhelming infestation of rabbits proved to be the last straw for my father. My parents and my two brothers regularly carried out control measures and the release of the myxomatosis virus was a considerable help, but eventually the rabbit numbers recovered to pre-myxomatosis release levels. Totally disheartened by the ever-growing rabbit problem and the uncooperative attitude of the neighbours towards rabbit control, my parents made the tough decision to abandon the family farm when I was nine years old. (I was the youngest of five children.)

Consequently, we changed from being a farming family, living on the outskirts of town, to being a town-dwelling family, living on ¼ of an acre. My father found himself in the position of having to learn new skills at the age of 41. To complete his qualifications in his new trade, he had to leave the family temporarily and travel to Melbourne to complete his motor mechanic apprenticeship. This all led to a lot of upheaval for the whole family and my two brothers also moved to Melbourne to gain further skills and to seek employment opportunities.

My father is 85 years old now and he can still remember the despair he felt—after shooting and trapping rabbits regularly for years on end—seeing fresh infestations coming from neighbouring properties.





Map 1: Number of rabbits likely to be seen with a spotlight at night. Darker red areas indicate more suitable rabbit habitat.

Section 1: Rabbits cost you

If allowed to get out of control, rabbit damage will cost you dearly—and not just economically. While rabbits can have a profound and obvious impact on your income, the ravages caused to your property can also affect its ecological sustainability and viability, as well as your peace of mind and social wellbeing.

While the economic impacts of rabbits are usually pretty easy to measure, the social, emotional and environmental costs are more difficult to quantify and are frequently overlooked. Nevertheless, all these factors should be considered when making decisions about rabbit control.

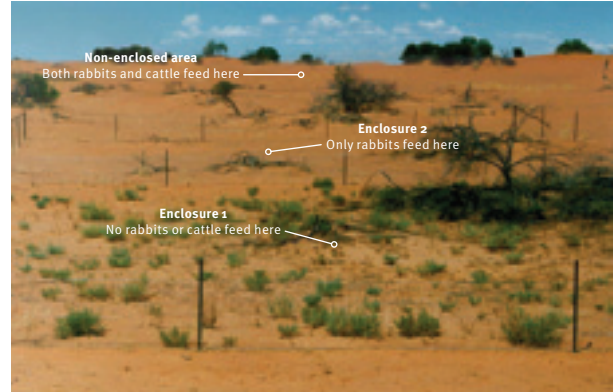
1.1 Production losses

Most rabbit-related production losses are the result of competition with livestock for food, and pasture damage. On average, 10 rabbits are capable of eating as much pasture as one sheep, and 100 rabbits as much as one yearling steer. So the cost of even a small rabbit problem can be significant.

Extremely conservative estimates suggest rabbits currently cost the Queensland cattle and sheep industries at least \$1 per rabbit per year. This equates to an estimated \$150 million per year prior to the introduction of myxomatosis, \$5 million per year after the introduction of myxomatosis and \$2 million per year following the introduction of RHDV (formerly known as rabbit calicivirus disease—RCD). These estimates are a bare minimum. The cost to the wool industry alone could be somewhere between \$20 million and \$70 million per year. It is estimated that rabbits cost Australia between \$600 million and \$1 billion dollars annually in damage to agricultural industries and the environment.

1.2 Pasture quality

Rabbits are picky eaters and prefer succulent, actively growing grasses that are high in protein and water. They will selectively graze your best grasses down to root level, causing a change in pasture composition where the preferred grasses are eaten out, making way for less palatable grasses and weeds to spread. This can mean reduced production of livestock or huge pasture re-establishment costs in the future.



Pic. 1: Rabbits and cattle are excluded from enclosure 1, and only rabbits can enter enclosure 2. You will notice that the area outside is the same as enclosure 2. Rabbits take all the good feed that cattle eat.

1.3 Crop damage

Rabbits cause problems in horticultural, grain, forage and wine-grape crops throughout Queensland. The amount of damage caused depends on the number of rabbits and the stage of crop they eat. For example, if rabbits eat the buds of wine grapes it will cost the producer 12 months worth of production, whereas in grain crops, they may only damage the outer crop edge. (Crop-edge damage can also be caused by climate and weather conditions and this can make it difficult to determine exactly how much should be attributed to rabbits.)

Stop feeding the rabbits

- **\$1 per rabbit per year** can be lost in production on a sheep or cattle property.
- **\$50 per rabbit per year** can be lost in production on irrigated pasture (estimated for lucerne hay fetching \$15 per bale).
- **\$200 per rabbit per year** can be lost in production on a vegetable-growing property (based on 2008 prices of broccoli, cauliflower and capsicum).





Pic. 2: Rabbit-infested country on the left, rabbit-free on the right. (Pasture protected by a rabbit proof fence near Canberra in 1953.)



Pic. 3: Evidence of rabbits gnawing on tree roots.

1.4 Environmental impact

Rabbits are environmental vandals and the damage they do to the balance of your local ecosystem can have a lasting impact. While it may not be something you can actually see, an ecosystem that functions properly is vital to ensure your property can recover from constant agricultural use.

In times of drought, rabbits will climb trees to forage on the foliage and will often even ringbark trees in their search for moisture. Their grazing and burrowing reduces vegetation coverage, prevents native vegetation from regenerating, and can lead to soil erosion. The exposed bare soil is then blown or washed away making areas less productive and causing associated water-quality problems.

Rabbits have contributed to the localised extinction and decline of many native plant and animal species, including other burrowing animals such as the wombat and bilby. The loss of vegetation from rabbit grazing and the destruction of new seedlings threaten the survival of native plants as well as the native birds, mammals and insects that rely on the plants for food and shelter.

1.5 Urban impact

Rabbits also cause problems in urban areas where they damage town gardens and golf courses, and can cause structural damage to buildings by digging under the foundations. They have even been known to cause problems in town cemeteries by burrowing beneath gravesites.

The cost of urban damage is difficult to gauge as it will vary significantly between locations.

1.6 Legislative responsibilities

Because of the threat they pose to primary industries and the environment, rabbits have been designated Class 2 declared pests under the *Land Protection (Pest and Stock Route Management) Act 2002*. As a consequence, all land managers have a legal responsibility to control rabbit numbers on their properties. (Further information on legal responsibilities and possible penalties is available in section 7.3.)

It is worth bearing in mind, however, that the economic incentives for control may outweigh the legal imperatives—the cost of rabbit damage often out-strips control costs. (Further information on control costs is available in section 4.3.)



Pic. 4: Rabbits have destroyed this vegetable garden near Brisbane.