Section 6: Case studies

6.1 Sheep and cattle property in south-eastern Queensland

Benandre is a 1178 hectare sheep and cattle grazing property located in the border ranges of southern Queensland, approximately 60 kilometres east of Texas. In 1997, with the assistance of the property owner, a rabbit control demonstration was set up at Benandre with the aim of demonstrating to land managers in the local area that effective and long-term rabbit control was possible.

Prior to the control measures, rabbits were living in warrens and were competing heavily with stock for feed, particularly in times when feed was scarce. An olive plantation had been established in the hope of growing a commercial crop but rabbits were also threatening the success of that endeavour. Significantly, rabbit numbers were low as a result of outbreaks of myxomatosis and RHDV—an ideal time to implement follow-up control measures, ensuring the control would be longer lasting.

What was done?

Most of the warrens on Benandre were located in a key rabbit area of roughly one square kilometre. All the warrens in this key area were located and pegged (using steel star pickets) by a person—known as the spotter—on a motorbike. The warrens were then ripped using a 50 horsepower tractor.

A total of 154 warrens were identified, of which 94 were ripped. There were 33 warrens in areas that were inaccessible for the tractor, so these were fumigated using a pressure fumigator. The remaining 23 warrens, which couldn't be ripped using the small tractor because they were located under logs, were destroyed by a bulldozer that could clear the logs away. All the warrens were checked two weeks after treatment for any reopened holes, which were re-treated with fumigation tablets. Table 12 provides a brief summary of the results.

Table 12: Benandre rabbit warren ripping—a summary.

Area treated	1 km²
Number of warrens ripped	94
Number of warrens fumigated	33
Tractor hours (ripping only)	14
Cost per warren to rip[a]	$2.65
Total cost for ripping per km² (including labour)[a]	$470.00

[a] Costs are in 1997 dollars.

What was the outcome?

An inspection of the property in 2007 (10 years after the control measures were undertaken) confirmed that rabbits had not returned to re-establish warrens in those areas that were ripped. This was despite their presence on the neighbouring property. The olive plantation was thriving and the land manager had also found that he could leave the sheep on the property during dryer times, rather than de-stock.

The Benandre work showed that it is possible to control rabbits with a small budget, using equipment that is readily available on most properties. Many land managers do not have access to large bulldozers with multiple ripping tines, or the funds to hire such equipment. However, most farming enterprises have access to suitable tractors (2- or 4-wheel drive) and the ripping at Benandre illustrates that effective and long-lasting warren destruction and rabbit control can be achieved by most land managers once they are armed with the right information.

Pic. 38: 50 horsepower tractor with a single ripping tine.

6.2 Cattle property in far south-western Queensland

Bulloo Downs is a one million hectare cattle station in south-western Queensland, located approximately 120 kilometres west of Thargomindah. Bulloo Downs had probably been the main source area for the rabbits that recolonised much of the surrounding area after droughts. It is ideal habitat for rabbits—sand dunes are intersected by clay flats that are regularly inundated by local rainfall or flooding of the Bulloo River. Approximately one quarter of the property (2500 square kilometres) is suitable rabbit habitat.

Many rabbit warrens had been established close to long-lasting natural waterholes, which provided plenty of drought refuge. It was probably these extensive drought refuge areas that enabled rabbits to survive dry seasons in large numbers and then to spread back out across the region during good seasons.

What was done?

Major control measures were begun in 2002 and took three years to complete. Given the size of the property and extent of the problem, this time was chosen because rabbit numbers were comparatively low due to the extended drought. To survive the drought, the remaining rabbits had become more densely located in areas close to permanent water. This meant that control measures could be targeted over the relatively small areas in which the rabbits were concentrated but the end result would be control over very large areas of the property.

All permanent water sources were located and all warrens within one kilometre were ripped—a total of 48 000 warrens covering 215 square kilometres. Two large rubber-tracked tractors were used together. One was a 220 horsepower Caterpillar Challenger with a 5-tine ripper and a stick rake at the front; the other was a 280 horsepower John Deere tractor with a 5-tine ripper and a stick rake behind the ripping blades.

Most of the warrens were located on sand dunes adjacent to permanent water sources, both man-made and natural. Some of the larger, deeper warrens needed cross-ripping but most were able to be ripped one way only due to the effectiveness of the ripping equipment and the softness of the sandy soil.

The total cost of the work, which was jointly funded by government grants and property-owner contributions, was $260 000. This compared favourably with the pre-control cost to the owners of Bulloo Downs in lost cattle production directly attributable to rabbits. This loss had been estimated at up to $600 000 in each year of a two-year scientific study prior to the control.

Pic. 39: Ripping machinery in use on dunes.

What was the outcome?

Ripping the warrens in the rabbits' drought refuge at Bulloo Downs resulted in a 99% reduction (at least) in rabbit numbers. Although rabbits were still active in a couple of spots that had not been ripped, an inspection of the control area in late 2007 showed that rabbits had not returned to those areas that had been ripped. Importantly, the numbers of small native mammals on the property doubled in the three months after control. (These figures were based on data from the scientific study conducted in 2001–02 prior to control.)

The Bulloo Downs work is an example of a large-scale rabbit control operation that required the assistance of many people including ripping contractors, property managers and staff, and government officers. The project was very successful and illustrates that control over a large area can be achieved if the areas that are key to the rabbits' long-term survival are identified and treated. A control operation on this scale needs to be well planned and well resourced.

6.3 Cattle property on the Darling Downs (Queensland)

This 150 hectare cattle property is located 10 kilometres east of Warwick and lies within the region controlled by the Darling Downs Moreton Rabbit Board (DDMRB). The aim of the board is to maintain the rabbit-proof fence that protects areas to the west, and also to coordinate rabbit control works within the DDMRB area. (See section 7.1 for more information on the fence.) Officers from the DDRMB worked with the land managers on this project to try and eradicate rabbits on the property.

In late 2005 the property had come to the attention of the board because rabbits had been sighted in the area. The property had an extensive amount of rabbit harbour made up of three large and active warrens in a contour bank, and 30 large stick-raked piles of timber that were also sheltering rabbits.

When spotlight counts on the property indicated a medium level of rabbit infestation, shooting and trapping were commenced immediately. This short-term control technique had initially reduced numbers but the rabbits bounced back so that, after many months of shooting and trapping, the number of rabbits was about the same as when control had started.

What was done?

After the property changed hands in 2007 the new owners were keen to get rid of the rabbits once and for all. The DDMRB was sounded out for advice on the best approach to the problem and the owners then followed that advice.

With the help of the board, the property owners used a tractor with a bucket on the front to collapse the three warrens. This work took just one hour. The piles of timber that were harbouring rabbits were burnt using nothing more than 20 litres of drip-torch fuel and a box of matches.

What was the outcome?

Spotlighting conducted after the control work revealed no remaining rabbits at all. The removal of rabbits from the property improved its grazing potential and also reduced the risk of environmental damage due to the soil erosion that rabbits cause.

Once the land manager had made the commitment to ridding the property of rabbits, this became an example of a small-scale but very successful control program that involved little cost and very few people. In the end the results speak for themselves—a rabbit control program that focuses on the removal of harbour and breeding areas can achieve impressive and long-term results.

Pic. 40: Destroying warrens on a contour bank.

6.4 Peri-urban rabbit control

Taabinga Cemetery is located just five kilometres south of the town centre of Kingaroy, in the South Burnett region. The cemetery is surrounded by cultivated land, making it an island refuge for any rabbits in the area. The site's rabbit population was an isolated one in a relatively small and confined area.

Rabbits had established 22 warrens in the cemetery. Most of these were in/under cement graves, which were being damaged and made unstable—to the point of collapse in some cases—by rabbits burrowing under the cement structure.

What was done?

In 2002 the site was used to conduct a trial to determine if RHDV applied on carrot would be a suitable delivery technique for wild rabbits. Prior to releasing the virus, spotlight counts were carried out in the area to estimate rabbit numbers, and all warrens were located and mapped.

To give the rabbits time to become accustomed to a new food source, approximately 500 g of carrots were chopped into small pieces and placed in the entrances of the most active warrens—the rabbits were free-fed like this for two nights. On the third night, by which time the rabbits were eating most of the chopped carrot, it was baited with live virus and placed in the same spots as the previous two free-feeds. Any carrot not eaten was picked up the following morning and removed from the study site.

What was the outcome?

The first dead rabbit was found only three days after baiting and after six days there was very little rabbit activity at the site. One week after the virus was released there were no rabbits sighted in spotlight counts and no visible signs of rabbit activity. Follow-up spotlight counts three weeks after the control operation also found no rabbits.

The release of RHDV at the Taabinga cemetery decimated the rabbit population within the site, indicating that all the rabbits at the site were susceptible to the virus. The method of releasing the virus using baited carrots was relatively inexpensive compared to other control techniques and, in the short term, extremely effective in reducing rabbit numbers.

To capitalise on the success of this control operation, local government staff were urged to take measures to ensure that further rabbit damage could not occur to the cemetery landscape. While rabbit numbers were close to zero, it was suggested that warrens should be destroyed to permanently prevent future breeding and reinvasion—rabbits cannot breed without adequate shelter for their offspring.

Unfortunately, no follow-up work was done. An inspection of the site in early 2007 showed that rabbits had reinvaded the existing warrens.

The work at this site showed that biological control can be a very effective option to reduce numbers in susceptible rabbit populations. However, a single control option is usually not enough to permanently rid an area of rabbits and initial results can quickly be reversed—particularly if the warrens or other breeding places are not destroyed.