



Rabbits: Warren destruction and harbour management

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This Landcare Note describes methods of destroying rabbit warrens and outlines approaches to managing above-ground harbour.

The value of burrows for rabbits

A single pair of rabbits has the potential to increase to greater than 180 individuals in 18 months. A female rabbit will dig a short burrow to breed in if there is not one currently available. The burrow is important for the expansion of rabbit populations as especially protects the young from predators and climatic extremes.

A warren can be composed of anything from 3 to greater than 200 burrows. A large warren is the result of many years of both building of new burrows and the extension of existing burrows.

More and more rabbits

Sixty percent of all young rabbits will move away from their home warren as they mature. They move out seeking new burrows or safe above-ground harbour after each breeding period. This is how rabbits continually colonise new areas.

Rabbit prone areas

Some areas are more amenable to encouraging the growth in rabbit populations than others.

Population growth is favoured by those soils which are easy to dig and are characteristically well drained (helping young rabbits survive even after heavy rain). Granitic and sandy soils are particularly amenable to rabbits, but these soils are also often highly erodible, so precautions with earthworks may be necessary.

Above-ground harbour is another environmental factor that helps rabbit survival where they have ready access to it as a safe haven or shelter, protecting them from either wet, cold, heat or predators. Such harbour may be heaps of debris, patches of woody weeds, or some forms of native vegetation.

A balanced approach

It is important to effectively control rabbits, but, control works need to be carried-out cognisant of the full range of environmental needs. What other values of the land need protection and how should the methods of warren

destruction and harbour management be deployed to protect these values? Do the targeted sites have native vegetation cover, provide habitat for significant fauna, or have aboriginal or archaeological significance? Is the land steep, or in a drainage line, where the works could cause erosion or lead to poor water quality in waterways?

Consider all options for minimising and select an appropriate course of action.

Clearing of native vegetation, or disturbance of significant sites, is subject to compliance with various local, state and commonwealth legislation. There can be significant penalties for damaging such values so always check with the appropriate authority (See the following sections: Native vegetation regulations and harbour removal; and, Sites of aboriginal or archaeological significance).

Are you doing rabbits a favour?

Some of the best ways to help rabbits are to

- leave burrow and warren systems intact after control programs;
- build-up piles of rubbish or building materials etc on the ground where rabbits can use them for refuge;
- grow weeds (boxthorn/blackberry/gorse/etc); and
- tolerate your neighbours rabbits on your land.

Giving yourself an advantage over rabbits

Use at least two or more methods concurrently over all of your land and work with your neighbours to cover a large area.

To make your land less like a rabbit heaven and more like rabbit hell:

- isolate areas of woodland or remnant vegetation with rabbit-proof fencing if rabbits are using them for refuge;
- remove debris and rubbish
- control weeds and physically remove woody proclaimed weeds such as (boxthorn, blackberry, gorse, etc);
- destroy burrow and warren systems;
- clean up old building and fencing materials;



- isolate stony rises, or naturally rocky areas, with rabbit proof fences if they are used as refuge by rabbits;
- remove heaps of debris or rocks, or isolate them with a rabbit-proof fence;
- make buildings rabbit proof using netting;
- strategically use rabbit proof fencing; and,
- aim to be rabbit free, make a 5-year plan!

Warren destruction

“Destroy the burrow and warren systems and you can beat the rabbit”

Warren destruction is a key follow-up action in a control program to prevent rabbits from re-infesting your land. Digging burrows out with a shovel, mattock or pick can destroy a burrow/warren. Mechanical equipment including bulldozers, excavators, backhoes, and tractor-mounted rippers are highly efficient methods that can completely destroy warren systems. However there are a number of precautions:

- If the land is steep or in a drainage depression, or highly erosion prone, it will be wise to protect the disturbed area from overland flows of water whilst the vegetative cover is re-establishing;
- If it is essential that native vegetation needs to be cleared to remove warren systems, then an exemption to the native vegetation clearance controls can be claimed provided a written letter-of-agreement is obtained from the Department;
- Ensure that warrens are not being utilised by native species prior to destroying the warrens; and,
- Confirm that the warrens do not occur on sites of aboriginal or archaeological significance prior to conducting such operations.

Get the right equipment for the job

Appropriate equipment saves time, money and unnecessary damage to the environment. Bulldozers, excavators, backhoes, traxcavators and even shovels each perform different functions in a variety of terrains. A tined ripper mounted on a bulldozer, or an appropriate tractor, is commonly used to rip burrows in open areas.

Where minimal disturbance is important, excavators, traxcavators, and backhoes are more appropriate. They can be very successful on rocky sites, along fence-lines, and where removal of woody weeds (boxthorn, furze, blackberries etc.) is necessary. They can also be successfully used to minimise disturbance to areas of native vegetation where warrens are interspersed with remnant vegetation..

In sandy areas where there is the risk of wind erosion, a blade plough may be the most appropriate.

Use a planned approach

The first step is to think about the environment in which the warrens are located. This may aid your decisions in how to prevent reinfestation of the warrens whilst protecting native flora and fauna and preventing disturbance of aboriginal or archaeological sites.

Ensure that warrens are not being utilised by native species prior to destroying them.

Environmental values

If warrens are providing a refuge for native fauna species, or if they are in areas of native vegetation, or if associated with aboriginal and archaeological sites, consider erecting a rabbit proof fence around the infested site after eradicating rabbits from the area. In these instances please first check with your local Department of Primary Industries (DPI) office as restrictions on certain type of control activity may apply.

The judicious use of an excavator with a ripper blade on the end of the arm often is a practical and sensible way of removing warren burrows in a area of native vegetation.

Ripping

In the instances where broad scale ripping is appropriate (such as on open and cleared land) it is more effective if it starts at least four metres out from the outermost warren opening. The distance between rip lines should be no more than 50 cm. Interline ripping between the rip lines after the first pass, will help destroy the warren structure.

Cross ripping

Cross ripping may be necessary in some areas. Cross ripping is to rip in one direction and then to rip again at an angle of 90 degrees to the original ripping.

Destroy the burrow system

Rip to a depth of 1.5m or more if possible. The deeper the ripping the greater the destruction of the warren system. Ripped warrens can also be track rolled to reduce the risk of rabbits burrowing in on the rip line caused by the dozer. Track rolling will also help compact the soil surface and reduce the risk of erosion. The site should be revegetated with appropriate vegetation as soon as possible.

Explosives

Explosives can be used to implode warrens that are surrounded by desirable vegetation or are otherwise unsuitable for ripping. The process involves using an explosive charge to cause sufficient sub-surface disturbance to collapse the warren system whilst creating minimal disturbance on the surface. Note that permits may be required to use explosive materials and only by appropriately accredited users.

Safety considerations

Safety should be a primary consideration, when ripping or using explosives always use accredited and experienced operators. Observe appropriate legislation and follow industry codes.

Above ground surface harbour

Have no home available to the rabbit

Ready access to above-ground surface harbour significantly enhances the survival of dispersing young rabbits and provides them protection from predators and climatic extremes. Dense, low-growing vegetation, logs,

fallen timber, rocks, weeds and discarded building/fencing materials may be important to rabbit survival.

Remove debris heaps, discarded building/fencing materials and patches of woody weed.

Use rabbit proof fencing to isolate areas of native vegetation and litter cover which may provide harbour to rabbits.

Monitoring:

Protect your investment

“Monitoring is simply having a look at what is happening with the rabbit population in a standardised repeatable way and recording what is found for your immediate action and for those who may follow you.”

- Check rabbit prone sites each time you are in that area;
- Double check in breeding season;
- Look for active entrances at burrows;
- Record what you find;
- Talk to your neighbour (public /private land) about their rabbit control program;
- Be ready to respond if rabbits are found;
- Look for where the rabbits are harbouring;
- Visit ripped warrens. Rabbits frequently return to old warrens;
- Is adequate revegetation occurring in the disturbed areas; and,
- Always be ready to act (fumigate/dig out/re-rip).

See Landcare Note LC0334: Rabbits: monitoring rabbit populations.

Checking the ripping: what to look for?

Supervise ripping as it is done and ensure all accessible warrens are treated. Always check the result of warren destruction 2-3 days after the work is completed. Use this table to check your results: -

Ripped warren	Reason	Solution
Hole(s) on outside edge	Ripping not wide enough	Rip at least 4 m outside line of holes
Holes opened in the centre	Ripping too shallow	Rip to 1.5 m
50% burrows open 30% open in 6 months of ripping	High invasion pressure / poor ripping	Re rip; poison; remove surface harbour or access to it; fumigate
10 or more burrows active	Poor ripping / lots of rabbits	Re-rip; fumigate; remove harbour or access to it

Let the rabbit back and your entire program will fail

“Rabbits are not easily beaten”

In the 1950s myxomatosis killed over 90% of Australia’s rabbits but by mid 1960s the rabbit was back in high numbers. Do not underestimate the rabbit. Remember Thomas Austin only released 24 wild rabbits in 1859.

Native vegetation regulations and burrow/warren removal

The Victoria Planning Provisions require that a planning permit be obtained for the removal, destruction or lopping of native vegetation. However, an exemption is provided to seeking a permit if

- the clearing is to the minimum extent necessary to remove **burrows** for vermin control; **and**,
- a written agreement is obtained from an officer of the department administering the Flora and fauna Guarantee Act.

Hence if your burrow/warren removal work will necessarily remove or damage native vegetation, please contact your local DPI office to gain an agreement. Please note there is no exemption for removing harbour, only burrows.

Sites of aboriginal or archaeological significance.

We are only just beginning to recognise the importance of aboriginal sites as part of our cultural heritage. Aboriginal people have always known the importance of these sites to their existence, they serve as reminders of why we need to preserve and protect all facets of heritage. Many aboriginal sites have been lost, denying future generations valuable insight into aboriginal culture. Sites of aboriginal or archaeological significance may not always be apparent to people of non-aboriginal origin. These are:

- **Religious and Belief Sites** that include burial sites, ceremonial grounds, stone arrangements, carved trees, art sites, engravings and paintings.
- **Archaeological Sites** consist of campsites, quarry sites, axe grinding grooves, fish traps and middens.
- **Natural Landscape Features** are locations of natural landscapes that have spiritual significance.

These sites are protected under the Victorian Archaeological and Aboriginal Relics Preservation Act 1972 and the Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984

Further information

Your local office of the DPI can assist you with queries. Each rabbit control program needs an individual approach depending on your country and severity of rabbit infestation. DPI Officers are able to assist you in planning an effectively integrated rabbit control campaign.

For general information about DPI/DSE please contact: Customer Service Centre

Phone: 136 186

E-mail: customer.service@nre.vic.gov.au

Further information is available on the Aboriginal Affairs web site at <http://www.dvc.vic.gov.au/aav.htm>

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