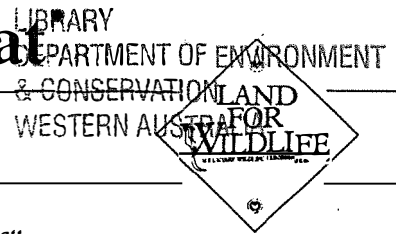


Rabbit control in wildlife habitat



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W: 12-Ex-30 hare, fencing-rabbit, secondary poisoning

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Introduction

The introduced rabbit *Oryctolagus cuniculus* has a major impact upon native vegetation, crops and pasture in agricultural areas. Bushland areas, particularly those in which logs and undergrowth are retained, can provide harbour for rabbits and may be perceived by some landholders as undesirable for this reason. However, a wide range of techniques is available for effective rabbit control in vegetation whether it is retained specifically as wildlife habitat or to prevent land degradation. Given the importance of both these aims, rabbit control in bushland will play a role on all properties.

This Note gives an overview of the techniques and issues involved in rabbit control. Read the section titled 'Further Information' in this pamphlet for additional sources of advice. A brochure specific to urban areas is available (see references).

In addition to traditional techniques, the CSIRO and Australian Animal Health Laboratory are searching for alternative methods of control, such as fertility control and more effective biological control, to help reduce rabbit populations. Spanish Fleas have been introduced as a new carrier of the myxoma virus in drier areas. These are potential solutions for the future. But real options exist right now for rabbit control.

Problems caused by rabbits

The problems associated with rabbits extend beyond those of agricultural production. Rabbits eat many species of native plants, selecting particular species over others. This can prevent natural regeneration in bushland areas, destroy seed production, facilitate erosion, deny or reduce native wildlife species' food supplies, create soil disturbance and allow invasion by bushland weeds. It can also change the nature of the vegetation, as unfavoured species expand into areas previously occupied by those preferred by rabbits, and may lead to plant and animal extinction or reduction in numbers. Rabbits can ringbark young trees and be a serious menace to revegetation projects. The ensuing land degradation will affect the health of habitat areas. Rabbits in bushland may encourage permanent populations of cats and foxes which also impact on native fauna. They are thus of major concern to landholders protecting native vegetation.

One doe rabbit can produce 30-35 young in a season. As rabbits become sexually mature in 3-4 months, her own young may begin breeding in the same season. It follows that each rabbit killed during the non-breeding period avoids having to kill 30 or more times as many following breeding.

Aiming to keep the bush healthy

Understorey vegetation, rocks and logs provide wildlife habitat. Removal of these essential components of an ecosystem can lead to reduced numbers of wildlife and subsequent problems with increased insect attack and dieback. The aim in areas managed for their value as wildlife habitat must be to use techniques that are non-destructive to the habitat.

Preparation

It is important to decide initially whether rabbits are threatening the vegetation and to ensure that any treatment undertaken is less harmful than the rabbits themselves. Assessment through on-ground night and day inspections is an essential part of managing rabbits. Daytime inspections will reveal the

extent of damage to vegetation, soil stability and enable mapping of features such as warren and burrow locations, inaccessible areas and wildlife. Night inspections (by spotlight) will reveal rabbit numbers, where rabbits are feeding (for poisoning), age classes and susceptible wildlife.

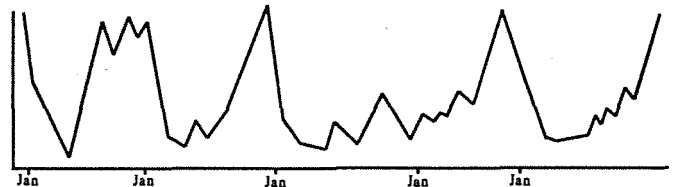
Group action

Whilst the individual efforts of single landholders are commendable and an example to others, effective rabbit control will only be achieved if neighbours band together as a group to tackle rabbits. This is because rabbits can rapidly reinvade controlled areas from adjacent uncontrolled ones. Hence, your involvement in a Landcare or similar group will be necessary to manage rabbits effectively and joining, or starting a group in your area, is highly recommended.

Control options

Numerous mechanical and chemical methods are available for the control of rabbits. However, they are most effectively used in combination.

Rabbit warrens afford protection from predators and are important in the social structure of the rabbit population. Destroying the warren is critical to reducing the rabbit population.



Rabbit populations fluctuate seasonally with peak numbers occurring in the spring breeding season. Aim to reduce rabbit numbers in the base population (bottom of the trough) so that there are fewer breeding individuals.

Fumigation - autumn/winter

Fumigation tablets (Gastoxin and Phostoxin), which liberate poisonous gas on contact with moisture, are available from stock and station agents. A tablet is placed deep inside each warren entrance before the entrance is filled with soil and the soil stamped down to seal in the gas. A muzzled dog can first be used to scout the area and flush rabbits underground. Pressure fumigators are also widely used. 'Larvacide' (chloropicrin) gas, and smoke as a tracer, is pumped through the warren by the fumigator. An alternative is car exhaust fumes (carbon monoxide). Pressure fumigators are available for hire from the Department of Conservation and Natural Resources. These techniques involve minimal disturbance to bushland areas. Fumigation should be followed by warren destruction. Note that wildlife may be living in rabbit burrows. Check for signs before fumigating or use live-capture traps instead.

Warren ripping and wool plugs - autumn/winter (moist soils)

A ripper, pulled behind a tractor, can be used to destroy the rabbit warren complex. The tractor driver is usually accompanied by an assistant who locates warrens, temporarily removes obstacles, such as logs, and shovels in entrances that cannot be reached by the ripper. This method is generally unsuitable for natural bushland areas in which the ground flora cannot be disturbed and may facilitate weed invasion amongst native vegetation, causing serious control problems. Ripping is usually carried out two to three days after fumigation. Ripped areas will need to be revegetated to prevent erosion.

An alternative technique under trial involves the use of wool plugs rammed into warren openings. Fumigation tablets are placed into the warren before it is plugged. This technique, if successful, will avoid the problems associated with disturbance in native vegetation and could be valuable in rocky areas.

Poisoning - summer/autumn

Clean (free of weed seeds) oat grain or diced carrots may be laid in trails or broadcast with a bait layer designed for this purpose. Several 'free-feeds' without poison are followed by one including sodium monofluoroacetate (compound 1080, pronounced 'ten eighty', poison) or pindone (which is recommended for built-up areas and other areas where dogs may be affected by secondary poisoning after eating rabbit carcasses). Poisoning should be timed to occur when rabbits are least territorial and when other foods are scarce (summer). Care must always be exercised in the use of poisons, to avoid potential impacts on wildlife, livestock and other domestic animals. Coloured dyes are used to minimise uptake by birds and, in areas with larger macropods, a bait station (cage excluding species larger than rabbits) can be used. A detailed pamphlet 'Trail baiting with 1080' is available from CNR offices. This method is useful in reducing the rabbit population peaks. It is suited to cleared land adjoining a bushland area.

Shooting

Shooting the rabbits remaining, after these other methods have reduced numbers, is proving to be one of the best techniques in maintaining low numbers. It is cheap, encourages night inspection and is target-specific, thereby avoiding any impact on wildlife. Cats and foxes can be controlled at the same time.

Fencing

Rabbit-proof fencing is another option. However, as rabbits are able to gain access through even a small hole in the fence, this method is frequently ineffective in practice. Rabbit control needs to be undertaken across the landscape in an ongoing way, in co-operation with neighbours. Fencing does not achieve this goal. Another problem with exclusion fencing is restricting wildlife movement. For example, echidnas will not be able to pass through rabbit netting and this can have undesirable consequences (see Note 3 'Creating habitat corridors for wildlife').

Combining treatments

Cooke (1981) found that combined treatments were more effective than individual methods in controlling rabbits in roadside remnants of native vegetation in South Australia. This study also found that effective rabbit control could be economically justified in terms of increased crop yields in adjacent paddocks. Complete crop protection was achieved in the study. Effective rabbit control in the first instance meant that less intensive follow-up treatments could be employed in future years. Unless a large percentage of rabbits are killed (90%) then the rabbit population will very rapidly return to its original size. Once rabbit numbers are reduced, they must be kept low. A flare-up once in five years can set regeneration back to its starting point. Continuous low numbers can only be achieved by a carefully planned and faithfully exercised program of regular surveillance and treatment of rabbits.

Avoiding harm to wildlife

Rabbit control can have potential negative impacts, as well as those positive aspects mentioned earlier, on wildlife. Non-target species may be poisoned if poisons are used improperly, fences can create barriers, disturbance can allow weeds to invade and so on. Careful planning and care can minimise negative effects which are considerably outweighed by the positive benefits of reduced rabbit numbers.

Other side effects

A side effect of a successful rabbit control program in bushland

can be the appearance of environmental weeds brought in by the rabbits or other vectors. Weeds take advantage of disturbance, such as around warrens. They may have previously been kept invisibly low by constant rabbit browsing. An integrated campaign of rabbit and weed control combined with revegetation by native plant species can prevent this problem. With fewer rabbits available, there may be a temporary increase in fox and feral cat predation on native wildlife but in the medium term fewer rabbits means fewer feral cats and foxes.

Concern has been expressed about the potential effects of rabbit control on birds of prey, particularly Wedge-tailed Eagles. When myxomatosis was first introduced it achieved a 99.9% mortality rate without causing an apparent effect on eagle populations through loss of food supply. Also, with the reduction in rabbit numbers, alternative prey are likely to become available, such as native bandicoots. Based on toxicity estimates, a Wedge-tailed Eagle would have to consume 7.5kg of poisoned rabbit at one sitting to be killed by 1080. This is 2.5 times the average weight of the bird. However, care needs to be taken to remove poisoned rabbits, as specified in the guidelines for using 1080 poison, to avoid secondary poisoning of wildlife through consumption of dead carcasses.

Hares

Unlike rabbits, hares do not build warrens, resting instead in a shallow depression called a 'form', and are solitary animals. Hares prefer grassland and open woodland habitats. Although not considered a major pest of pastures, they may cause considerable damage to trees and vines due to their habit of stripping bark and nipping off the top of seedlings. Hares are not susceptible to myxomatosis nor do they readily take poisoned baits.

The main method of control, in open country, is shooting. Seedlings can be protected by plastic guards. In direct-seeded plantations, landholders have used a range of deterrents including handfuls of blood and bone scattered among the seedling lines; a mixture of five fresh eggs, 600ml of water and 150ml of acrylic resin or paint sprayed onto the trees; salt licks placed at 20-50m intervals; or fat with 15-20% kerosene rubbed onto the trunks.

The rewards

Once rabbits have been controlled, the health of bushland areas can be dramatically improved. Understorey vegetation may return and natural regeneration can occur. Flowers will no longer be eaten before they can set seed. Working against rabbits is a job for those interested in bushland and wildlife as much as for those seeking to improve pastures or crop yields.

Further information

It is important that you contact Department of Conservation and Natural Resources' staff to obtain local advice as techniques and regulations vary throughout the State. They can provide advice on sources of supply for equipment and other products used in rabbit control. Some equipment may be available for hire. They can also put you in contact with Landcare groups operating in your area (or help to set up a meeting to establish such a group) and with local contractors.

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