



Exclusion Fencing

Exclusion fencing protects native vegetation from animals. They are expensive and require on-going management, yet remain a valuable tool for supporting resilient ecosystems.

This fact sheet uses the knowledge of the Rivers to Ranges and Conservation Futures working groups. It is designed for the Yarra Catchment covering all types of grazing and disturbance exclusion, from small guards to large fences. It doesn't cover predator exclusion fences, stock exclusion fences, waterway protection or inclusion fences.

Disturbance is natural. However, pest animals and over-population of native animals can throw native systems out of balance. Ongoing human disturbance, fragmentation and climate change increases the vulnerability of vegetation to even natural disturbance levels.

Exclusion fences are a method of managing the impacts of grazing animals on areas of vegetation.

They can have unintended consequences such as:

- Preventing movement and dispersal of native animals like echidnas.
- Creating a hazard that can trap or injure animals.
- Pushing the level of disturbance below natural levels.

However, these impacts can be managed. Take care in choosing the type, size and placement of the fence and establish ongoing monitoring, maintenance and follow-up works within the fence.

Fence Design

Animals impact plants in several ways. Some graze grasses and herbs while others browse woody shrubs and trees. Many do both, although the height reached depends on the animal. They can also dig up, trample or flatten sensitive areas. They can also rub against plants knocking them over or ring-barking them.

The impacts depend on the numbers and type of animals present, which varies across the year.

Before you install exclusion fencing know what you want to protect and the numbers and types of animals you wish to exclude.

Total exclusion may be impossible or even undesirable. However, reducing the access of one or more species may be enough to achieve the desired outcomes.

Animals can be very determined to enter fenced areas. Particularly as the vegetation inside can be lush and larger fences create a barrier to their natural movement.

Animals don't like to be enclosed and would rather not enter a fenced area, even if they can. They will avoid smaller fenced areas, but if they do enter they are likely to leave quickly. Animals are less likely to enter a fence they can see around. More consolidated fences are also more cost effective than long enclosures which are difficult to see around. You can protect the same area with less fencing.

Regardless of the fence construction, regular monitoring and maintenance is required to repair damage from animals breaking through or falling limbs.



Rabbits

Rabbits are an introduced species found across a broad range of environments. Rabbits graze and browse the lower layer of vegetation including grasses, forbs and regenerating plants. They can also disturb areas by digging and building warrens.

Rabbits are excluded by wire mesh buried or pegged down in a skirt facing outwards and rising to about 90cm high.



Following fencing implement rabbit control within the fence including blocking all warrens with follow-up as required. Control outside the fence can also reduce the chance of reinvasion.

Deer

There are between three to six different species of Deer found in the Yarra catchment. Deer are an introduced animal increasing at an exponential rate.

They are present in highest numbers along waterways and in wetlands, but are found in and have an impact on all vegetation types.

Some deer species graze grasses and forbs while others browse woody vegetation. Some do both. The size of the animal means they can damage even established trees by rubbing against them. Deer also damage soil and vegetation by trampling, pugging and wallowing.

Current deer control in the Yarra Catchment has had minimal impact on over numbers and often deer recolonise. Fencing is currently the only longer term solution. Deer are one of the main reasons land managers are building new fences or increasing the height of existing fences.

Deer fencing needs mesh from 1.5 to 1.9m high. This can be difficult due to the need to drive star pickets in from up high. A simple solution is to use two smaller star pickets bolted together after placing the post.

Deer are less likely to want to enter a fenced area they can see a way around. Fencing smaller areas with a clear line of site around the fence will encourage deer to travel around rather than jumping or pushing over the fence. A white sight wire at the top can improve visibility.

Kangaroos and Wallabies

Kangaroos (Eastern Grey) and Wallabies (Swamp Wallaby) are native animals. However, due to human disturbance their numbers can increase to the point where they cause significant disturbance to vegetation. Even at natural numbers their impacts can add to those caused by pest animals. Exclusion may also allow regenerating or sensitive areas to thrive.

Kangaroos prefer open areas where they have access to water. They are likely to be particularly abundant when they are contained by

development (e.g. Plenty Gorge Park) or fencing (e.g. Gresswell Forest).

Grey Kangaroos eat mainly grasses, but they may also eat other plants. They can also flatten vegetation under trees where they sleep.

Kangaroo fencing needs to be tall (1.8m), strong and made of chain mesh. However, they dislike smaller enclosed areas (about 10x10m). A deer and rabbit-proof fence should dissuade Kangaroos, but won't exclude completely. Kangaroos may also damage fencing if they can't find an easy way around. An arched entrance may be the best compromise (see wombats).

Swamp Wallabies are more abundant in woodland and forests. They eat shrubs, ferns and grasses. Fencing for rabbits and deer will generally exclude wallabies although they may still get in and need help getting out. It is unlikely wallaby pressure would be at a level where stronger, higher fencing is worth the cost.

Wombats

Wombats (Common Wombats) are native animals. Wombats prefer forest environments and are most abundant in the ranges, such as in and around Kinglake National Park. They are strong, creatures of habit who follow the same path night after night, breaking through most fences in their way. Even if you repair the fence, the wombat is likely to break through again in the same place.

Look for tracks before fencing and avoid their paths. Otherwise weighted gates or arched access points made from wood or tyre can allow them entry without their destroying the fence. Even if some rabbits enter, the fence should reduce grazing pressure, especially if all warrens are blocked.

Purpose of fencing

Vegetation Protection

Exclusion fencing is most commonly used to protect patches of rare or threatened plants or areas of high biodiversity. Land managers also fence to define areas of intensive management. Their aim is for these areas aim to provide refuges of high quality vegetation to sustain local



plant and animal populations and provide a source for dispersal.

Things to consider:

- Design the construction of the fence based on the animals you want to exclude (see previous section).
- Fences can be small (from a couple of star pickets with mesh wiring) to large permanent constructions spanning hectares. Choose the size of fence considering:
 - the size of the asset
 - resources available for fencing and follow-up maintenance and vegetation management
 - the potential disruption to natural animal movements.
- Temporary or cheap fencing can sometimes be a better solution. If you intend to reuse materials, plan construction with ease of removal in mind. Skirts can be particularly hard to remove so use only if needed. Consider temporary fencing if you:
 - only require the protection for a short time (e.g. to allow a patch to establish following weed control, seasonal growth of an annual plant or while rabbit numbers are booming)
 - don't know the extent of a plant population or would like to expand fencing as the patch size increases (although Murphy's law dictates that your target plant will always start growing outside your fence as soon as it's constructed)
 - are unsure of the impact fencing will have on the population.
- Excluding grazing (particularly total exclusion) will result in increased vegetation growth. This may result in a flush of weed growth or excessive growth and recruitment of native plants which can harm the asset you were trying to protect. Plan for ongoing follow up works including weed control, thinning or slashing as required. Opening the fence during a season when the protected plant has not emerged is also an option.
- For small low patches, orchid cages are an alternative to fencing as they are moveable and relatively inexpensive. However, they can draw the attention of orchid hunters and

may be disturbed by people or other large animals. They can be pegged down.

- Even within fencing, orchid cages can protect sensitive plant patches from digging White-winged Coughs and other animals that get through the fence.
- It's very difficult to exclude insect predators. Land managers protecting highly sensitive orchids are now starting to use Portuguese Millipede traps.



Revegetation and Regeneration

Protection of revegetation and regeneration can improve both survival and vigour.

As well as the revegetation, weeds are more likely to thrive in fenced areas or within guards, out competing new plants. Controlling weeds after planting is more difficult so good site preparation is a must. For best results weeds should be controlled one to two years in advance with follow-up control after planting.

Although more expensive than plant guards, success rates may make exclusion fencing a more cost effective solution when grazing pressure is high. It can also be particularly useful for protecting direct seeding and natural regeneration.

To reduce costs, revegetation can be staggered by fencing smaller cells with relatively movable fencing. Fences can be flipped, once the plants are resilient enough to withstand grazing, to expand a revegetation patch. This may require some experimentation to exclude enough grazing and get the timing right. Plan for future reuse. Don't use a skirt on the fence if it isn't required because it takes a lot of work to remove.

Fences may be particularly beneficial to help regrowth after fires when disturbance is high and grazing animals are attracted by the fresh growth. Even if grazers are not completely

excluded, the fence will help shrubs, forbs and grasses to re-establish during this vulnerable time.



Plant guards are used to protect tube-stock planting and regenerating plants. Common types of plant guards include soft plastic, core-flute, netting, wire or plastic mesh and milk cartons secured with 1–3 wooden or metal stakes. Old car tyres can also be used, but can become stuck as the plant grows. Consider the following when choosing and using guards:

- **Animal excluded:** Consider the height and durability of the guard. Milk cartons for rabbits, plastic or corflute for moderate numbers of kangaroos and wallabies, mesh for deer and high numbers of kangaroos and wallabies.
- **Cost and ease of installation.**
- **Ability to reuse on future projects.**
- **Size:** big enough to contain the plant if going to remain on for any length of time. Narrow guards prevent plants growing wide. Remove guards before they restrict growth.
- **Microclimate created:** Guards can create a microclimate which protects new seedlings. However, they can also stop taller shrubs and trees from generating the strength to withstand winds once the guard is removed. Remove guards as soon as the plant can withstand grazing or consider mesh or fencing on more exposed sites. Take care if using stockings to keep a plant upright as they can prevent trees from developing strong trunks.
- **Weed control within the guard.** Particularly in the early stages grassy weeds may prevent a plant from establishing.

If total exclusion isn't possible consider also guarding plants within an exclusion plot.

Less commonly, branches can protect regeneration. Place fallen branches or dead

shrubs across the slope or over areas of interest. The branch will discourage grazing while also creating an improved microclimate by trapping sediment and leaf litter. Dead shrubs such as acacia can also be arranged in low rough fences around small areas of regrowth. Don't use weed species with seeds that could drop.

People and fences

In reserves, people may be upset at the installation of a fence in an area they used to access. They may also consider the fence unsightly. Consider paths of movement, choose less conspicuous materials (if practical) and provide simple information to explain the fence. However, fences can draw people looking for threatened species. Keep informational signs broad such as "Conservation Area", "Biodiversity Protection Area" or "Research Area".

Theft of gates and other removable components can be an issue in public reserves. Consider alternative access options that don't require expensive gates.

Conclusion

Exclusion fences will never be a long term solution to managing the impacts of pest animals and the overpopulation of native animals. However, they create refuges across the landscape while we work towards finding solutions for these big issues. Collectively we need to give the bush as much support as we can to bolster its ability to look after itself.

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