Land for Wildlife Notes

Fencing wildlife habitat

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Scope of this Note

This Note provides advice only on the erection and operation of fences as they relate to wildlife concerns. Fencing construction is well covered elsewhere, however, some suggestions are made for fencing in difficult situations and for reducing costs. A comprehensive reference list of publications on fence construction is provided for your guidance (see references). Staff of the Department of Conservation and Natural Resources, Department of Agriculture, Rural Water Commission, agricultural colleges (Victorian College of Agricuture and Horticulture, Council for Adult Education), neighbours, responsible fencing contractors or fencing distributors may also be able to offer advice on the construction aspects of fencing.

How do fences help wildlife and landholders?

Fencing habitat areas is one of the most effective steps that can be taken to protect native vegetation, the wildlife dependent on it and the benefits it offers to a property including shade and shelter for livestock, and erosion prevention.

Fences are used as a barrier to the movement of animals. They can be an effective barrier to livestock and may also be a barrier to the movement of other animals including vermin and wildlife.

Trees are at risk from browsing of the bark by livestock.

By exclusion of livestock, fences protect native vegetation and the soil surface from browsing and trampling respectively. Some of the effects livestock can have on native vegetation are removal of flowers and seed heads, compaction of soil, spread of weeds, destruction of leaf and twig litter and prevention of natural regeneration .

A fence around native bushland ensures that livestock dung remains in the paddock where it is useful as fertilizer. This prevents accumulation under shade trees in native vegetation which may contribute to tree dieback (Landsberg, 1990, LFW News Vol.1, No.8, p10). Natural regeneration as a result of careful fence placement is the cheapest means of obtaining revegetation. Fences protect understorey plants which are vital to many insectivorous birds.

Fences serve many other useful functions for land managers. They help to prevent erosion, permit controlled use of different land systems, protect vegetation used to shelter livestock, reduce the risk of livestock death in dangerous areas and reduce the time spent on transfer of stock around a property. Thus, fences are a basic tool in the effective management of a property.

The Fences Act

The *Fences Act* 1968 sets out the legal framework relating to dividing and vermin-proof fences. For example, it specifies who is liable for the cost and construction of fences and how disputes are to be settled. The Act is for sale at Information Victoria (Tel: 651 4100) and may be obtained through some libraries.

Effective placement

The first step in determining where to place fences is to prepare a Property Management Plan (Whole Farm Plan) for the property. Consideration must be given to the most effective use of fences to achieve the separation of different land classes (e.g. rocky areas vs alluvial flats), efficient livestock movement (laneways, paddock exits), control of livestock mating and land protection (gullies, rivers and streams, dams etc.) including vegetation

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protection (bush areas, areas for regeneration or planting). Design factors that reduce the cost of labour spent on supervision and mustering should be considered and evaluated.

The usual technique is to draw up a plan of the features and issues of the property and then compare the existing layout with an 'ideal' situation, with the aim of working toward the new layout over time as finances and labour permit. It is often best to draw up the ideal situation first before comparing it with the existing layout so that the plan for the future is free of pre-existing constraints (ref Garrett, B.K., 1993, LFW Note 22).

Priorities

In terms of wildlife habitat, priority should be given to protecting existing remnants of the original native vegetation (select those in the best condition based on the quality of understorey) or consolidating existing remnants through expansion of their area and connections to nearby remnants. Larger areas should be fenced before small isolated remnants which have lower long-term viability. Streams should also be given high priority, particularly areas with wide vegetation frontages. These, and other areas with fertile soils, will provide high-quality wildlife habitat.

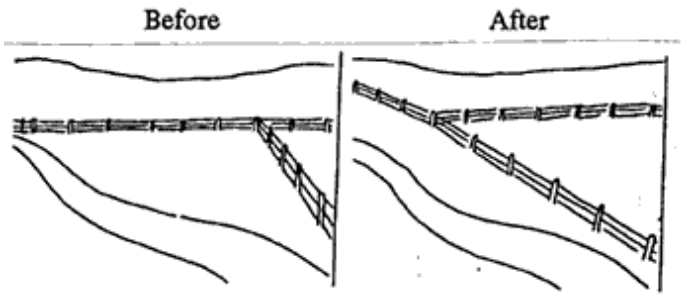
Other priority areas may be sites of rare or locally uncommon species. The least well represented habitats in the area/on the property should also have a high priority.

Wetlands and rocky areas are often unsuitable for agriculture but high in wildlife values and should be fenced. A stand of dead trees, which provide important wildlife breeding and roosting sites, may need to be protected by fencing.

New plantings and new wildlife corridors have a lower priority than consolidating remnants but are still important considerations and the fencing plan should allow for revegetation. Areas with potential for natural regeneration should be considered as these will be more cost-effective than revegetating using tube-stock. Opportunities for working in with neighbours should also be discussed.

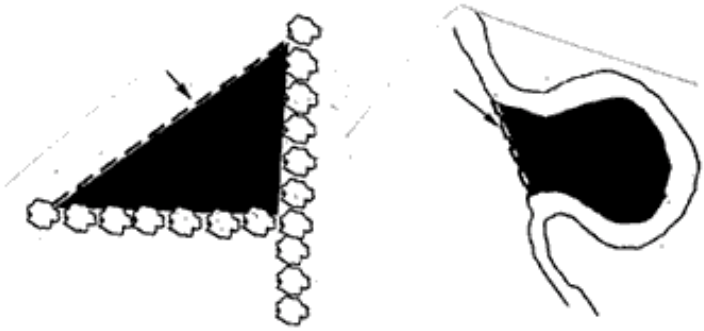
Aim to protect or create a system of habitat patches and corridors by protecting remnants and creating further habitat in areas where it will benefit the property and wildlife. If possible, allow for at least some large patches of habitat.

Some specific suggestions for fence placement to permit regeneration and expand habitat areas, at minimal cost, are shown below.



1. Re-alignment of existing fences when they are due for replacement can offer scope to protect areas for rehabilitation with local native vegetation.

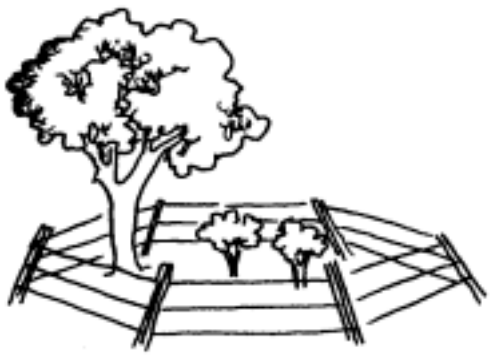
2. Double fencing is widely practiced in Victoria. It has the added advantage of eliminating the need to take down and dispose of the old fence in some situations. This method offers an opportunity to connect isolated patches of habitat with corridors. Particularly valuable when the adjacent area (e.g. roadside) has good remnants of the native flora which can be used as a source of natural seedfall.



3. Fencing paddock corners, especially in areas with good roadside remnants of the native vegetation can be cheap and may substantially increase the size of a habitat patch.

Dotted line = fence position.

4. A fence across the bend in a river offers protection to a large area, whilst requiring a minimum of fence. Note that, to reduce the risk of fence damage by floodwaters, fences should run in the direction of stream flow wherever possible (Dole, 1985).



5. The major advantage of a circular design is that it eliminates the need for strainer posts. Also, more habitat is away from the edge between pasture and bush than with linear designs, thus offering greater protection from the outside environment.

6. Fencing beside remnant trees, rather than beneath them (where seedlings may be suppressed), can allow for natural regeneration.

Type of fence

The type of fence required will be dependent on the type on animal(s) being excluded and on the situation. Specific designs are given in low-cost information sheets produced by the Department of Agriculture called *Agnotes* (see references). Conventional or electric fencing can be used. Electric fences may be cheaper but require regular maintenance. Standard farm fences will not exclude wildlife although they may hamper some species (e.g. emus). Consequently, they do not pose the same risk to wildlife as some electric fences that effectively form a broad-scale barrier to wildlife movement.

Total exclusion of grazing animals, especially rabbits, may be necessary to achieve revegetation and this may require more elaborate fencing such as wire netting or other measures such as fumigation or warren-ripping (see LFW News Vol. 1, No. 8, p5).

Whilst access tracks are usually necessary to permit maintenance, consideration should be given to their potential role in the dispersal of weeds, which may threaten the habitat or adjacent crops, and their potential for erosion.

When to fence

Fences can be constructed at any time of the year. Fencing in winter has the advantage of moist, easily worked soils and precedes summer seed fall which could be used for regeneration. If areas are to be planted in autumn or spring, then prior fencing in summer or winter is usually necessary to protect plants from livestock.

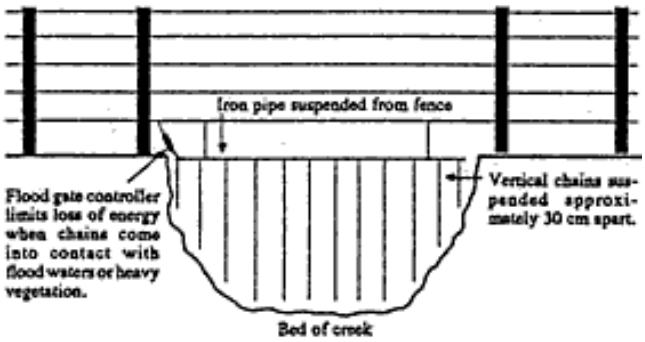
Difficult situations

Rivers and streams

To reduce the risk of damage to fences during floods, fences should be located well away from the main flow. This will also benefit erosion protection and wildlife by increasing the area being revegetated. Twenty metres on either side is a desirable minimum width but may be impractical in some farming situations.

A two-wire electric fence, with livestock access 'chutes' (gravel ramps), protects the stream environment and livestock from drowning. An even better option might be total exclusion and provision of water in troughs.

Another important consideration in fencing eroded streambanks is to allow for streambank re-stabilisation. Steep-sided eroded banks will eventually attain a sloping stable grade that is wider than the current stream width.



A variety of fencing techniques, such as floodgates (right), can be used where watercourses occur (Dole, 1985). Guidelines for river management works are available from CNR (Katsantoni, 1990). Although this booklet does not cover fencing, related issues are discussed.

Wetlands

By ensuring that the wetland is surrounded by an adequate buffer, the problems associated with fencing across a wetland are avoided.

Rocky areas

Go around rocky areas where possible. The advice of local contractors or fence manufacturers (who may have extension staff willing to help with advice) should be sought in these situations. Where a suitable hole is unable to be dug, solutions, such as drilling into the rock and securing the post with a bolted plate, or setting it in concrete, can be used. Both of these methods limit the strain that can be placed on the fence.

Cheaper alternatives

Fencing is a major capital cost to any landholder. Whilst expenditure on quality fencing is a worthwhile investment, it may be necessary to seek alternative, cheaper solutions, at least in the short term. Electric fencing offers considerable scope for reducing fencing costs. Some suggestions are given here that can be applied to protect remnant bushland from livestock.

A tree has been used as a corner post for an electric fence erected to protect native vegetation. A steel pin avoids the need to circle the tree with wire which may eventually kill it or create a hazard if the tree is ever sawn.

An insulated wooden stake rests against this remnant tree, taking the strain of the wire off the tree and saving the cost of a corner post.

A fibreglass rod insulates an electric wire from the tree and can be used as an alternative to the ceramic insulator shown above.

A log section has been used to anchor a corner in a single-strand electric fence.

Other tips: Recycle old fence posts to span gaps between trees. Use live trees as posts but be sure to insulate the tree from live wires using polypipe. Don't circle trees with wire, as this may kill the tree and create a hazard if the tree is sawn and wire has become buried in the wood. Don't cut off the tops of dead trees to use the stump as a strainer if this will significantly reduce the number of dead trees available for wildlife breeding and shelter.

Sample costing

The following example is for a four-wire solar electric fence used to protect 34ha of forest from Merino sheep. The solar unit can be used to protect additional areas and is only required where mains power is not available.

Treated posts (12 @ $15)	$180.00
Top stays (6 @ $10)	$60.00
Fence posts (45 @ $3)	$135.00
Insulators (50 @ 90c)	$45.00
Poly sleeve (100m)	$90.00
Pin-type insulators (150 @ 27c)	$40.50
Gate breaks (12 @ 2.50)	$30.00)
Joint clamps (1 bag)	$17.00
2.5 HG Coils (5 @ $91)	$455.00
Staples	$18.50
Energizer (for solar system)	$730.00
TOTAL (excludes labour)	$1801.00

How to get water to stock

Troughs or access ramps ("chutes") can be provided to permit access to water on watercourses, wetlands and dams that have been excluded from livestock by fencing. Troughs are preferred as they permit total protection of the habitat. Where the trough can be positioned downhill from the water source, water can be siphoned to the trough. To obtain water from most wetlands and streams will require a pump. Inexpensive pumps, such as hydraulic ram pumps which operate on the force of the fall of water in a stream, may enable cheap delivery of water to the trough. The costs of establishing a trough system should be evaluated against the potential loss of stock through drowning, cost of erosion control, loss of shade and shelter and loss of wildlife if exclusion is not practised. Access via chutes to the watercourse may offer an alternative but must take account of the concentration of activity as a result of the reduced area. Thus, some form of reinforcement of the bank, such as gravel, will need to be provided.

Fencing for vermin control

Refer to Agnote 2316/83 *Electric fencing for vermin and wildlife: fencing design* (see references). Note that a modified sloping electric fence is given in this Note to reduce the risk of echidnas being killed.

Weed control

Opportunities for weeds to establish in native vegetation will be reduced once stock are excluded. However, particularly were there has been a history of major soil disturbance or in situations where native vegetation is being established on introduced pasture grasses, weeds may proliferate in the absence of grazing. This possibility should be anticipated and a control program prepared. Disturbance resulting from vehicles, people movement or digging should be minimised during construction, to avoid weed establishment. Land protection staff of the Department of Conservation and Natural Resources may be able to assist with preparing a weed control strategy. In some cases it may be necessary to allow limited short-term grazing to resume, in order to control weeds. In other cases it will be worthwhile establishing local native ground-cover vegetation at the time of fencing, in order to prevent weed infestation (see LFW News Vol. 1, No. 10 Environmental weed control - check your options). Changes to the nature of the ground-layer vegetation following fencing may have negative (as well as positive) effects on wildlife. For example, Grey-crowned Babblers and Bush Thick-knees, which forage amongst leaf-litter and fallen branches, will be discouraged if a dense understorey of grasses or shrubs develops.

Problems for wildlife

Fencing can have negative impacts on wildlife, if not properly designed. For example, on a large scale, wildlife exclusion fences can form a barrier to wildlife movement. Movement is an essential part of maintaining the health of wildlife populations (see LFW Note No. 3 Creating habitat corridors for wildlife).

A Squirrel Glider which has died as a result of being snagged on a barbed wire fence.

Electric fences may cause the death of wildlife. For example, kangaroos may become caught in the wires of an electric fence and be killed by the current. Electric fences with live wires placed low to the ground may kill animals, such as echidnas and snakes (Lund and De Silva, 1985). The echidna responds to the electric shock by raising its quills and can remain stuck in the fence until killed by the current. Sugar Gliders may land on the top wire of an electric fence and steady themselves by holding on to the next wire down. When shocked they cling on tighter and may perish (Lund & De Silva, 1985). Koalas may also be killed when they attempt to climb electric fences. A more frequent hazard for gliding possums and birds is getting snagged on barbed wire on conventional fences. Livestock may also be killed, especially horned animals which become stuck in an electric fence.

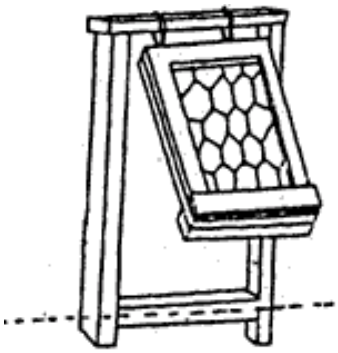
The solution is to select wire spacings that avoid killing wildlife and to use plain wire wherever possible. Electric fencing has reduced the need to use barbed wire in fencing and is more effective at containing cattle. Large-scale fencing to exclude wildlife may be inappropriate and should consider the movement needs of wildlife.

Solving problems caused by wildlife

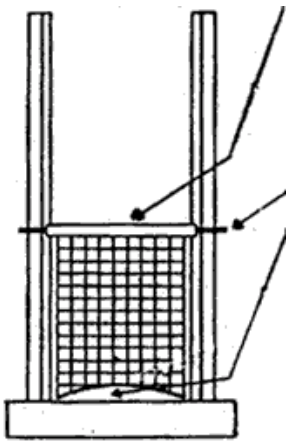
Exclusion by fencing can be an effective means of solving problems caused by wildlife (Temby, 1992). If one has regard for potential problems for wildlife (see 'Problems for wildlife'), fences can be designed to reduce damage by wildlife to existing fences and to exclude wildlife from areas where their activities are incompatible with other land use.

Structures

Wombat damage to rabbit-proof fences may be avoided by the installation of a simple gate. In an existing fence, wombat passages should be progressively closed until the wombats are using only a few openings. This may take several weeks. At the remaining openings, install a wombat gate (as described) and leave each open until the wombats are freely using them. Finally, close the gate and monitor subsequent use. Don't forget that juvenile wombats will have less capacity to open the gate. Alternatively, a two-wire electric fence with live wires at 15 and 30cm can be used to exclude wombats.



Materials: Door frame of 75x25mm timber with heavy mesh or use single sheet of heavy marine ply, metal or other material 600mm high and 400mm wide.



10mm internal diameter pipe welded to mesh.

5.7mm rod through post and pipe.

4mm x 5cm mesh. Min. 50cm high, 45cm wide.

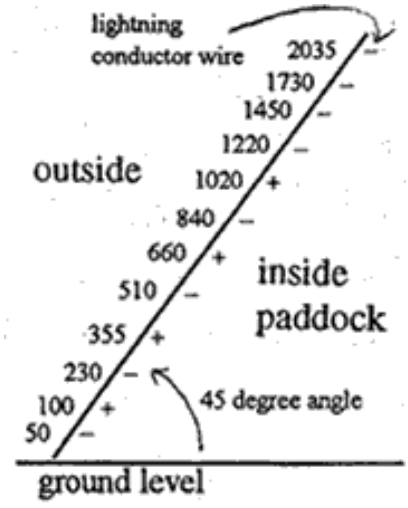
8mm rod welded to mesh.

10cm gap.

Install the gate where kangaroos regularly breach the existing fence.

Source: Farmnote No. 71/90, WA Dep't of Agriculture & Beckmann, 1990.

A similar gate can be installed for kangaroos (see Beckmann, 1990).



Kangaroo Gate

A sloping electric fence designed to exclude kangaroos. Wire spacings in millimetres. Post length of 2.13 metre. This fence may be appropriate for exclusion of wildlife from valuable enterprises, such as crops, if which wildlife damage has been costed as considerable. As a broad-scale barrier, it may be harmful to wildlife. Modified, from Temby 1992, by reducing spacings of lowest wires by 50mm to reduce the chance of echidna deaths

.Some Do's and Don'ts

- Do consider the range of wildlife species in your area and how they might be affected by fencing.
- Do determine your priorities for fencing and prepare a property plan.
- Do seek advice - from the Department of Conservation and Natural Resources, Department of Agriculture, Rural Water Commission (rivers & flood plains), local contractors and distributors, etc.
- Don't create hazards or broad-scale barriers for wildlife.

Protected by fencing, an eroded stream is being revegetated. Fencing is a positive contribution to landcare and improved environmental management with potential savings for

landholders.

Discarded materials

Unused and old fencing materials may create a hazard for wildlife, as well as for humans and machinery. Dispose of these materials thoughtfully.

Taxation

Expenditure on preventing and treating land degradation, such as fencing, may be a deductible item for taxation purposes. A Landcare Note titled "Landcare Taxation Arrangements" is available from CNR offices and brochure "Landcare Taxation Arrangements - a guide to section 75D" from tax offices and CNR. For further information contact the Australian Taxation Office or your accountant.

References and further reading.

Extension Notes available from the Department of Agriculture.

Agnote 2316/83 (1983) *Electric fences for vermin and wildlife: fencing design*. Department of Agriculture and Rural Affairs

Agnote 1880/82 (1982) *Electric fencing*. Department of Agriculture and Rural Affairs

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Agnote 4116/89 (1989) *Fencing wires*. Department of Agriculture and Rural Affairs.

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Farmnote No. 32/89 *Simple electric fencing to protect bush areas on farms*. Agdex 723. Western Australian Department of Agriculture.

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Garrett, B.K. (1993) *Whole Farm Planning*. Department of Conservation and Natural Resources - Victoria.

Katsantoni, G. (ed.) (1990) *Environmental guidelines for river management works for the Standing Committee on Rivers and Catchments*. Department of Conservation and Environment.

Landsberg, J. et al. (1990) Tree dieback and insect dynamics in remnants of native woodlands on farms. *Proc. Ecol. Soc. Aust*., **16**, pp 149-165.

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Temby, I. (1992) *A guide to living with wildlife: how to prevent and control wildlife damage in Victoria*. Department of Conservation and Environment, Victoria.