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Area: Statewide
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This Note provides a range of general ideas and principles for including wildlife habitat with Landcare planning. More detailed information on property planning is given in Note 22 'Farm planning and wildlife'. This Note takes a landscape level view of wildlife needs and planning.

Providing for wildlife can involve some simple steps that will add value to your property, whether your interest is in the advantages of natural pest control, in adding interest to your property for your own enjoyment or for resale value, or in making a contribution to the conservation of our unique native animals. Many solutions to land degradation involve protecting vegetation or revegetating areas. It is therefore possible to build in wildlife benefits at the same time, at minimal extra cost, to make best use of these areas, by following a few principles, as outlined in this Note.

Add value to Landcare efforts by building in wildlife values from the beginning (see Notes 9 'What your property can do for you' & 10 'How wildlife habitats can benefit your property').

Protect the best remnants first

The most valuable wildlife habitats are those that remain in a natural or semi-natural condition. These areas have special value because they may retain many of the species and interactions that make up the web-of-life for that natural ecosystem. Understorey plants, soil microflora and invertebrates may be present in remnants but will be absent, at least initially, from areas in which vegetation has been re-established. Logs, fallen branches and leaves, and rocks are important habitat components that may remain in remnants.

As a general rule, put your effort into the best remnants first.

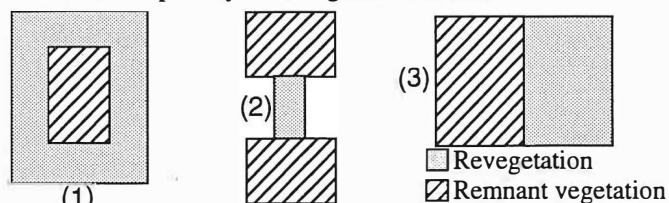
Remnants can often be substantially improved by fencing to exclude livestock (see Note 29 'Fencing wildlife habitat') or expanded by relatively cheap means, such as natural regeneration (see Note 13 'Natural regeneration: principles and practice' & 16 'Natural regeneration: case studies on the farm').

Revegetation options

Revegetation is a way of improving farm habitats for wildlife and contributing to land protection at the same time.

Existing remnants

These few simple guidelines, for revegetation of existing remnants, will improve your revegetation efforts.

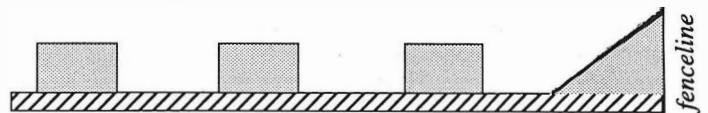


There are three main ways in which revegetation can be used to improve the conservation value of existing remnants of native vegetation in agricultural areas. (1) a buffer zone to protect the existing remnant from edge effects (see Note 23 'Edges: their effect on vegetation and wildlife'. (2) corridors to provide continuity of habitat. (3) additional habitat to increase the effective size of the remnant and maximise opportunities for natural regeneration of trees and understorey plants¹.

Many remnants on private land are small in size. This makes them vulnerable to disturbances from outside the remnant, such as windthrow during storms, invasion by weeds and rabbits, drift from fertilizers and noise and movement. Small remnants will attract wildlife species that like edge environments, such as

The 'rule-of-thumb' is, the wider the corridor and the larger the block, the better for nature conservation.

Noisy Miners, but will not provide for species that avoid edges, such as Pink Robin, Gilbert's Whistler and Long-nosed Bandicoot. Noisy Miners are aggressive and may expel other species.



Long narrow corridors can be improved by added blocks of vegetation scattered along their length, such as at fence corners. An additional benefit is improved protection for livestock.

Cleared land

Revegetating areas near to existing remnants will improve the chances of natural recolonisation of the area by the great variety of organisms that occur in a natural plant community.

Streams, gullies, drainage lines and wetlands are important, both as a focus for Landcare activities and as valuable habitat sites for wildlife.

Blocks of habitat are generally better than narrow strips. Within the Landcare area, it may be possible to identify some sites where substantial blocks of local native vegetation could be provided.

In summary, for most properties it will be best to PROTECT, REGENERATE then REVEGETATE.

Species selection

Selection of plant species used in revegetation work is all important. Native animals rely on local native plants. Whenever possible, use local native plants in all revegetation work. Wildlife will make some use of other species, but, because they do not form part of a natural system they will not be as effective in providing habitat and rarely provide long-term prospects for the animals that make use of them.

Native plant species have many admirable qualities that make them suitable for land protection, including the ability to flourish under local conditions and in the variety of local environments, the ability to self-perpetuate and, for the majority of species, ability to survive bushfire. Many species provide excellent wood for a range of uses including firewood, building and furniture (see Note 20 'Shelterbelts and wild-



Remnants of native vegetation, retaining their natural diversity of ground flora, should be high priority for management.



life' for further detail). These qualities translate into lower costs of establishment and maintenance, and resilience. Local species are a good choice for many other Landcare goals, such as soil stabilisation, as well as for wildlife.

To determine the plant species that are natural to your area, look for a remnant area of native vegetation in good condition. The nearer the remnant to your site, the better. It is important that the site is similar to that which you will be revegetating, as soil, local climate conditions and other factors influence where native plants will grow. Local CNR staff may be able to assist with locating sites and can provide advice on where plants or seed can be obtained legally.

Exotic plants, and Australian plants from distant areas, can cause serious problems for wildlife, their habitats and other activities on private land. For example, some plant species invade natural bushland (these are known as environmental weeds) and can change its character so that some wildlife species that would normally occur are unable to survive. The Grey-crowned Babbler, a medium-sized bird that lives in groups and feeds amongst leaf and twig litter and on the trunks of large box eucalypts, may have its feeding habitat destroyed when tall-growing dense weeds, such as St John's Wort, invade a site. Note that some native Australian plants are also invasive weeds outside their usual range. A list of known environmental weeds is available from *Land for Wildlife*.

There is no need to preferentially select species that have 'special' wildlife characteristics, such as high nectar production. The majority of local species will, in some way, contribute to the

Aim to achieve self-perpetuating ecosystems.

habitat resources used by native wildlife. It is more important to achieve a balance that is self-perpetuating and similar to the natural situation.

Integration

For native vegetation to have long-term value as wildlife habitat, and for it to make a valuable contribution to a property, it must be considered alongside the many other factors that influence property management and be fully integrated into the range of activities carried out on the property.

Fire safety, use of exotic plants, pest animal control, water supply and other management issues will have implications for wildlife habitat. The aim is to seek ways in which all the necessary goals for the property can be achieved harmoniously (see *Land for Wildlife* Note 4 'Wildlife management considerations on private land - a summary').

There are many activities that, whilst of no immediate value to wildlife in themselves, will help to protect the remnant habitats that do exist and upon which wildlife depend in the long-term. Examples include controlling erosion in gullies to prevent siltation of wetland and stream habitats and creating woodlots



Integrating wildlife habitat with other property uses can help you achieve all the things you want your property to be such as a wonderful place to relax and enjoy a family picnic. Many properties have lost these values since this photo was taken in 1916.

to avoid taking wood from bushland. Important natural processes, such as the cycling of water, nutrients and energy, will need to be maintained in a healthy state for habitats to persist. The whole range of Landcare activities contribute to a healthy property and wildlife will benefit from and contribute to this.

Integration can only be achieved by careful planning and adjustment to the way in which properties are managed. A special planning committee could be formed to look at ways of

Wildlife considerations should be integrated into all activities on the property, in the Landcare area and the catchment.

improving the integration of wildlife values across the Landcare area. This could be a special project of the Landcare group or the topic of discussion for one or two monthly meetings.

No doubt, there will be many issues identified where there appears to be a conflict in managing to achieve a truly integrated system that allows for wildlife and other objectives. For example, will more bushland habitat harbour more pest animals? Having these issues raised at group meetings, at which expert advice can be sought, can help to find solutions.

A patchwork landscape

The 'patchiness' of the landscape contributes to the range of habitats that are available for wildlife to live within. Patchiness is relevant because natural habitats are themselves a mosaic of different ages, floristics (type, number and distribution of plants), structures, etc. Important components of a patchwork landscape include the range of habitats, diversity of plants, habitat age, history, structure and changes over time.

Habitat diversity

Different animals live in different habitats. Therefore, the greater the range of habitats managed for their wildlife values, the greater the range of species that can be represented. Examples of habitats that may occur in a Landcare area include dry forest on upper slopes, tall forests along streams or rivers, lakes, shallow wetlands, scattered woodland in paddocks, plantations, farm gardens, etc.

Species diversity

A wide range of plant species potentially provides a wide range of resources for wildlife. The natural diversity of species in the area is the best guide. For this reason, it is valuable in revegetation or regeneration to include trees, shrubs, grasses, ground covers,

Aim to make your restored bushland and revegetation as diverse as the local nature.

climbers and parasites, such as mistletoe, where these are natural. Artificially enhancing diversity by planting additional species from beyond the area, is not necessary and is likely to have adverse effects.

You may wish to consider the special needs of rare species that occur in the area. To help plan for these species, lists of flora and fauna can be obtained via the Atlas of Victorian Wildlife database (ask for an order form from your local *Land for*

Wildlife extension officer or telephone (03) 450 8600).

If a range of vegetation age classes are represented in habitat areas throughout the Landcare area then this will cater for a wider range of wildlife species. Areas with large old plants are particularly valuable as they are the most difficult to replace.

Changes in habitats over time

Some wildlife species only occupy a habitat during a stage in its development. For example, the Silky Mouse prefers mallee-heathlands during the early years after a fire. At this

time there is a high diversity of fruiting plants which provide ample food supplies and support breeding year round. In contrast, hollow-dwelling wildlife such as Sugar Gliders, Eastern Rosellas and Chestnut-rumped Thornbills, need access to trees aged at least 70 years, which is the minimum for hollow development.

Ensure habitats are represented across the landscape and not just clumped in one area.

Habitats, and the resources they provide, also change on a seasonal basis. For example, most plant species do not flower at the same time across their entire range. The varied sequence of flowering enables honeyeaters, and other flower feeders, to follow the pattern of flowering of plants and ensures an ongoing supply of food over a long period of time.

History

Be aware of the history of management of the vegetation when assessing its priority for action.

The history of the vegetation may also contribute to its patchiness and its quality and value as a wildlife habitat. For example, some areas may have a history of regular burning whilst others may have been unburnt for many decades. The history of management may be important in deciding which areas

are most valuable for wildlife. Areas that have been frequently or extensively disturbed are likely to have less value for wildlife; they will be more prone to weed invasion and harder to manage.

Structure

Aim to represent the range of habitat features that occur naturally. Understorey and ground cover vegetation are important.

Understorey and ground cover plants are also important parts of habitat for many species of wildlife. The great variety of features in a habitat support its range of wildlife species. Some species may need tree hollows for shelter, but feed amongst the bark,

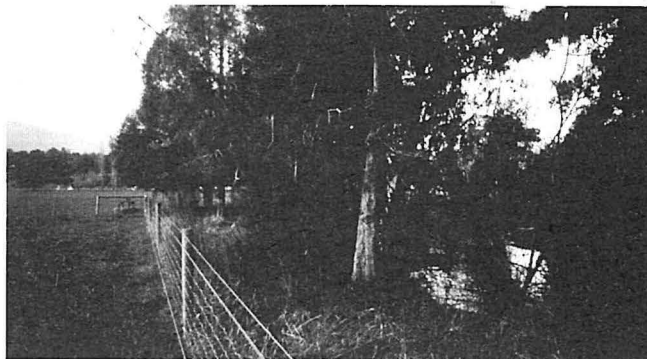
twigs and leaves of the forest floor. Species that are related to each other may use separate parts of a habitat, such as the three thornbills, in the example below, which feed at different heights in the vegetation. Within the same species, some individuals may differ in their use of the habitat. For example, male golden whistlers feed higher in the tree canopy than females.



Three species of thornbills can occur at the same site by feeding in different parts of the habitat. Striated Thornbills spend most of their time in the tree canopy gleaning insects off gum leaves, Brown Thornbills feed in understorey plants, particularly from leaves, whilst Buff-rumped Thornbills prefer bark surfaces at all levels and leaf, twig and bark debris on the ground.

Site quality

All sites are not the same to wildlife. As you would expect, more fertile sites with mild climates often provide superior habitat. So, for example, whilst koalas might be found on drier slopes, their preference is for the foliage of eucalypts growing on fertile soils, such as often occur along streamsides. It has been



Not all sites are the same to wildlife. High value sites, such as along watercourses, can be important locations to retain or re-establish wildlife habitat.

observed that, at some sites, productivity by plants important to some wildlife, is maintained even when stressful conditions prevail, such as drought. For example, the plants, particularly eucalypts, at these sites may maintain nectar production, which sustains nectar-feeding birds and mammals, until conditions are more favourable.

Keep it healthy, not 'tidy'

Many landholders now realise that a 'tidy' property, on which all fallen plant debris is raked or burnt, where dead trees are unquestioningly removed, and so on, does not equate to a well-managed property. Not only are the leaves, bark, twigs and branches that fall valuable habitat for wildlife, they are stores of nutrients that can be recycled to the soil and provide protection

against erosion. Dead trees provide roosts for insect-eating bats, which help control agricultural pest species while not causing any damage to crops or livestock. Logs, branches, twigs, leaves and rocks provide shelter for lizards, frogs and many invertebrates which may also be predators on species that cause problems.

To cater for the variety of needs of different wildlife species, consider including a range of sites, some with naturally high fertility, in revegetation plans. Since creeksides and gullies may be prone to erosion, fencing of these often fertile areas can combine wildlife and other land management goals.

Legitimate concerns regarding harbour for vermin can be addressed by using alter-

native methods of control (see *Land for Wildlife Notes 24 'Foxes - options for control in wildlife habitat'* and *31 'Rabbit control in wildlife habitat'*). Plant debris should not be allowed to accumulate where it may present a risk to humans in the event of a fire or other disaster. However, there are many areas where fallen plant material can be left as a valuable contribution to wildlife habitat and the soil. Identify them for your Landcare area. It is extremely important that these features are retained in bushland areas, where safe to do so.



Three Bush Thick-knees shelter amongst fallen branches left as habitat by this landholder. In appropriate places, fallen plant material benefits a property through soil enrichment and provision of habitat.

Checklist

Does your plan:

- Provide some wildlife habitat in each land class/area/zone, across the landscape?
- Give priority to the most natural remnants?
- Include some wide corridor links?
- Enlarge on blocks of native vegetation?
- Include some large blocks of vegetation?
- Include
 - streams?
 - gullies?
 - drainage lines?
 - wetlands?
 - sites with high natural fertility?
- Consider using local native species in each revegetation area?
- Represent the range of habitat features that occur naturally including:
 - provision for understorey and ground cover vegetation, retention of fallen logs, branches, twigs, leaves and rocks?
- Include vegetation in a range of age classes?
 - give priority to areas with big old trees?
 - protect dead trees?
- Overall, have you set up a process to integrate wildlife with other property uses?

Need more help?

Please contact a *Land for Wildlife* extension officer through your nearest Department of Conservation and Natural Resources office. The references listed here may be available for short-term loan.

As well as the references listed below, there are many other sources of local information that may be of assistance such as Land Conservation Council reports, aerial photographs and books on regional flora and fauna. *Land for Wildlife* Note 22 provides a list of contacts and references. *Land for Wildlife* extension officers can assist you in locating information.

References and further reading:

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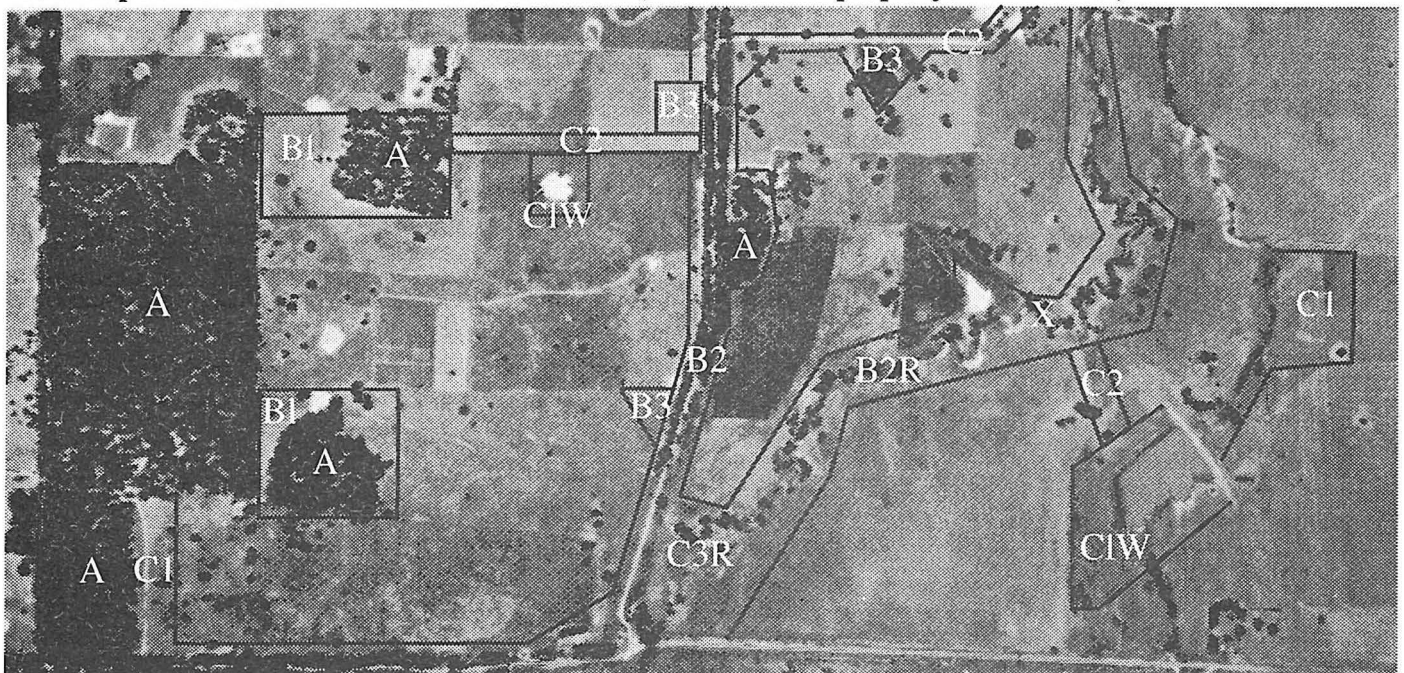
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O'Connell, M.A., and Noss, R.F., (1992). Private land management for biodiversity conservation. *Environmental Management*, 16: 435-50.

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Land for Wildlife Notes are available free-of-charge from offices of the Department of Conservation and Natural Resources, Victoria.

Wildlife habitat can be incorporated into a Property Management Plan by adding a wildlife habitat overlay to an aerial photo based plan (see Dixon, 1994, p 1-9). This layer must then be integrated with other layers to achieve an overall plan for the area. The example below is for a landscape near Woodend and illustrates the type of landscape level features that should be identified (see Note 22 for property level features).



Aerial photograph: Crown (State of Victoria) Copyright. Reproduced by permission of the Surveyor-General of Victoria.

Examples only. Remember, wildlife considerations must be integrated into the WHOLE landscape. The lines identify key areas for habitat.

Best remnants - top priority for management/fencing A
 Natural Regeneration - blocks, corridors, nodes. B1, B2, B3
 Revegetation - blocks, corridors, nodes. C1, C2, C3

Threatened/locally significant species X
 Wetland/Riparian W/R