

How-to guide

What makes an effective planting for supporting biodiversity on farms?

Project 1.2.1



Threatened
Species
Recovery
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Introduction

Research on plantings on farms in southern Australia has been taking place over the past 25 years at The Australian National University, including within the NESP TSR Hub and the Sustainable Farms project.

A significant amount of research and monitoring effort has been focused on understanding and maximizing the long-term conservation value of plantings – or restored areas of native vegetation on farms. This work has generated some critical insights for guiding the establishment and management of plantings

in agricultural landscapes, particularly from the perspective of supporting native wildlife (e.g. for facilitating successful breeding by native birds^{1, 2}).

However, plantings also are valuable for: providing shelter for domestic livestock³, storing carbon¹⁸, and remediating land degradation, such as secondary salinity¹⁹.

This fact sheet summarizes some of the key findings from that work and aims to assist farmers and other land managers to implement best practice vegetation management on farms.

The insights on relationships between plantings and biodiversity are most relevant to the Box Gum Grassy Woodlands of south-eastern Australia – especially from north-east Victoria to south-east Queensland.

The information presented here is based on extensive peer-reviewed scientific research with corresponding articles cited for further information. Copies of these (and other related) articles can be provided by the author to anyone with an interest in revegetation programs.

Plantings as part of the portfolio of vegetation assets on a farm

Productive farms that support high levels of native biodiversity are typically those that also support a range of natural assets on a farm⁴. Different kinds of vegetation on a farm – such as plantings, patches of natural regrowth, old growth woodland and native grasslands – support different species, meaning that farms with a diverse “portfolio” of vegetation assets support a greater overall variety of birds⁴. That is, the range of species that inhabit plantings tend to be different from the range of species characteristic of natural regrowth woodland and old growth woodland¹⁴.



*This South West Slopes shelterbelt supports a diversity of vegetation.
Image: Suzannah Macbeth/Sustainable Farms*

What to plant

It is best to use native plants, generally those that are endemic to the local area or region, to establish plantings. This is because planting exotic species can often attract exotic bird species, some of which can be serious agricultural pests such as the common (or European) starling¹³.

Plantings with an understorey or midstorey tend to have more species of animals such as birds than plantings with only overstorey eucalypts⁶.

If a planting has only overstorey trees, additional underplanting with understorey or midstorey vegetation can boost bird species richness, although it may take several years for the benefits of such management interventions to be realised⁵.

Good ground cover also can be important for promoting biodiversity – both in remnant vegetation and in plantings¹⁵.

Plantings with a layer of wattles (*Acacia* spp.) discourage unwanted hyper-aggressive species such as the noisy miner¹².

Once established, she-oaks (casuarinas) can provide habitat for species of conservation concern like the glossy black-cockatoo⁸.

Where to plant

If the goal is enhancing bird biodiversity, then the best places to establish plantings on farms are in gullies and around watercourses¹². This is where bird biodiversity is highest.

This does not mean that plantings elsewhere on a farm are without value. Indeed, efforts to increase the total amount of native vegetation cover in agricultural landscapes has been shown to have marked positive benefits for many native animal species, including woodland birds⁷.

Plantings tend to support more species when they are established around large old paddock trees¹², as these large old trees may

provide tree hollows, which many native birds and mammals depend on to nest and den.

As hollows often typically do not begin to form in trees until they exceed 100 years old, a young planting alone would not provide this important resource for a very long time. Notably, having two or more ages of trees and other plants in one area can boost the variety of habitat features available to different species and, in turn, lead to elevated levels of native species richness (e.g. for groups like birds).

Plantings around paddock trees also appear to result in an improvement in the condition of paddock trees¹³.

What size, shape and level of connectedness is best for plantings?

The effectiveness of a planting is strongly influenced by the position of the planting in relation to other vegetation.

Plantings that are connected or close to other plantings or remnant vegetation are better for bird and mammal biodiversity than those that are isolated^{9, 11}. For example, nest boxes in connected plantings have higher rates of occupancy by native mammals than do nest boxes in isolated plantings⁹ as the surrounding vegetation can provide additional food, shelter and improved access, for example enabling arboreal mammals to reach hollows without descending to the ground.

In general, larger plantings are better for native biodiversity than

smaller plantings and block-shaped plantings are superior to long narrow plantings. However, the benefit of being close to other vegetation can outweigh the effects of size¹². For example, plantings that support a dam or large old tree typically support higher bird species richness than plantings that lack these key natural assets.



IMAGE RIGHT: An adult male white-winged triller, a species that flourishes in plantings. Image: David Smith/Sustainable Farms

Planting management

Some management activities can make a large difference to the conservation of biodiversity in plantings.

Limiting grazing pressure within plantings can have marked positive impacts on bird and reptile biodiversity⁶. Fencing plantings is therefore essential as is repairing or replacing fences in poor condition. The top strand on such fences should not be barbed wire wherever possible to prevent animals such as birds, gliders and fruit bats from becoming entangled¹³.

Logs are key habitats for a wide range of species in temperate woodland environments^{16, 17} and when they need to be removed from cropping areas, towing them into plantings will help improve

habitat. For example, animals such as the common ringtail possum are more likely to occupy plantings when there are logs on the woodland floor.

There can be value in installing nest boxes within plantings, although it is best to deploy fit-for-purpose designs, otherwise such artificial hollows will boost populations of already common species and pest species, and more specialised species of conservation concern will rarely occupy them^{9, 10}.

Just because an area has been planted does not mean an end to management at that point. Key tasks are still required such as weed and invasive animal control. For example, controlling populations of rabbits and foxes

can have positive benefits for native biodiversity and also, respectively, reduce competition for pasture and boost lambing success.

There also may be a need to control over-abundant native herbivores such as kangaroos, as a number of field studies show that large populations of these animals can have negative impacts on vegetation cover, native invertebrates, reptiles and birds.

Staff at local Natural Resource Management groups (such as Landcare, Greening Australia and Catchment Management Authorities and Local Land Services) are an excellent source of information on what to plant in any given region.

Conclusions

Plantings are a critical natural asset on farms. Farms with plantings as part of the portfolio of natural assets tend to be more species rich than those without plantings, including for an array of species of conservation concern (for which plantings are sometimes the most important habitats).

This factsheet contains recommendations for planning, establishing and managing plantings to boost the value for plantings for biodiversity. The recommendations are based

on extensive field-based research but are general in nature. You should take into account the specifics of your site and region, including your local plant species

and which wildlife species do and may potentially use your site. Your local NRM/CMA/LLS organisation can generally provide support in this area.

*A replanted landscape at Binalong, in the New South Wales Southern Tablelands.
Image: Suzannah Macbeth/Sustainable Farms*



Further information

Professor David Lindenmayer, Research Director, Threatened Species Recovery Hub,
Fenner School of Environment and Society, The Australian National University, Canberra ACT, 2601
David.Lindenmayer@anu.edu.au



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