Woodland bird report 2018

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This report examines the latest results of Connecting Country's bird monitoring program, links these with Connecting Country's strategic planning documents, and suggests actions based on these findings.

1. Context

1.1 Connecting Country strategic plan

Creating habitat for birds and other wildlife is Connecting Country's core business. One of our four key elements is '*Restoring landscapes*'. Our 'Strategic plan 2014-24' (Reference 1) included the objective: '*The populations of the five target woodland bird species are secured and increasing across 11 priority zones and across region as a whole'*. Supporting strategies to achieve this included '*Undertake and support on ground habitat restoration works including protecting remnant vegetation, encouraging natural regeneration, revegetation, pest plant and animal control, and adoption of appropriate grazing regime change*'. This involves working with partner organisations, landholders and Landcare groups.

1.2 Monitoring woodland birds

How do we measure our success in habitat restoration? In 2010 Connecting Country embarked on a woodland bird monitoring program with the aim of using birds as an indicator of landscape changes associated with our management actions, i.e., to check if our restoration efforts are actually helping local birds. From 2010 to 2017 a staff member surveyed various sites in the region, in accordance with our 'Monitoring strategy for woodland birds' (Reference 2). This data collection has been supplemented by a growing citizen science program.

The monitoring program was designed based on scientific principles. Survey sites were selected across both private and public land within the Mount Alexander region. Following minor adjustments, as of 2018 there are 51 survey sites across five sub-regions (north-east, north-west, central, south-east, south-west). Each survey site belongs to one of the 'treatment' types described in Table 1.

The 51 monitoring sites were visited four times per year (twice in spring/summer and twice in autumn/winter). Data was collected in a standardised manner via 20 minute 2 hectare counts by an observer who could identify birds by sight as well as call.

Table 1. Types of survey site treatments for woodland bird monitoring

Survey site type		Sub-type	
Intact sites	• Forest or woodland vegetation of good quality in the region • Usually part of larger patches of native vegetation	**Reference gully**	• Woodland and forests in low-lying areas or riparian habitats • Often dominated by Yellow Box and River Red Gum • Considered to be areas of higher fertility
		Reference slopes	• Woodland and forests in on slopes and hilltops • Often dominated by trees such as stringybark and Red Box • Considered to be areas of lower fertility
Restoration sites	• Historically modified areas where habitat restoration actions are planned or underway • Span the range of habitat enhancement activities supported by Connecting Country's work	**Paddock revegetation**	• Land previously cleared completely or has few remnant trees • Now being restored by tubestock planting, direct seeding and/or natural regeneration
		Restoration	• Areas with an existing mature tree canopy but heavily modified or absent lower habitat layers • Now being managed to restore understorey and mid-storey vegetation through direct planting and/or fencing to control grazing
Reference modified	• Agricultural grasslands used for livestock grazing or cropping, with few or no trees or shrubs	-	-

1.3 Targeted approach to habitat restoration

By 2017 we had substantial data on our local bird populations, and a decade of experience in delivering on-ground restoration works. Funding from North Central Catchment Management Authority (CMA) enabled us to reassess our work via an Investment Framework for Environmental Resources (INFFER) assessment by Geoff Park from Natural Decisions (Reference 3). This process was completed with input from Connecting Country's staff, management committee, and Woodland Bird Advisory group.

The INFFER assessment involved a detailed cost/benefit analysis of ten future scenarios ranging from total revegetation across the entire landscape, to revegetation in just some areas, to focusing on conservation actions for specific species (e.g., Diamond Firetail). We also looked at changing our approach from large revegetation projects to small scale supplementary planting of missing understorey species such as Banksia, Bursaria and Sheoak.

The most cost-effective and achievable option was a combination of option 2 and option 3, as defined in Table 2. This involved a focus on riparian and other fertile areas, implementing weed and pest animal control, fencing, and some supplementary planting rather than extensive revegetation.

Table 2. Most cost effective and achievable restoration options (based on 2017 INFFER assessment)

Option	Description
Option 2	No revegetation but focus on assisting natural regeneration through weed and rabbit control, stock grazing management
Option 3	Limit focus to riparian and fertile areas only including waterways, creek lines, gullies and valleys
Option 10	Hybrid of Options 2 and 3 – focus on riparian and fertile areas with limited supplementary revegetation

This approach has guided development of Connecting Country's recent projects, such as 'Box Ironbark East' (Biodiversity Hubs), 'Prickly plants for wildlife' and 'Remnant rescue' (Biodiversity Response Planning).

Other key findings of the INFFER process:

- Research indicated woodland birds use fertile and gully areas as a drought refuge.
- Extensive regeneration was occurring across the landscape as a result of land use change. Some areas had very high vegetation cover compared to other parts of Victoria. This may reduce the need for extensive revegetation work.
- Works on fertile and gully areas were expensive, as these areas are often the most weedy, most inaccessible, and most in demand for agricultural production. This presents challenges in engaging the landholders and finding sufficient funds to restore these valuable areas.
- Key threats to woodland birds and their habitats were historical land clearing (extinction debt), habitat fragmentation, climate change, use of land for agriculture, weeds, pest animals and planned burning.
- Other, more subtle threats included the loss of particular species from the landscape (e.g., Drooping Sheoak, Silver Banksia), loss of woody debris, loss of large old trees, loss of fertile landscapes, and browsing pressure from introduced and native herbivores.

North Central CMA provided a 2017 Habitat Zone map showing Riparian Ecological Vegetation Classes (EVCs), which represent the fertile and gully areas within our region (Reference 4).

1.4 What we knew so far

In 2017 we released a 'Summary of results woodland bird monitoring program 2010 – 2017' (Reference 5), based on combined results from our own bird database and some preliminary data from BirdLife Australia. Findings supported the recommendations of our INFFER assessment, showing that gully and fertile sites were particularly valuable for woodland birds.

2. Analysis of bird survey data 2018

In 2018 we analysed all data from our official monitoring program survey sites collected from 2010 to 2017 with help from Dr Kerryn Herman of BirdLife Australia. Kerryn used statistical analysis methods to assess the differences between the various site 'treatments'.

This analysis provides statistically robust, scientific evidence in two key areas:

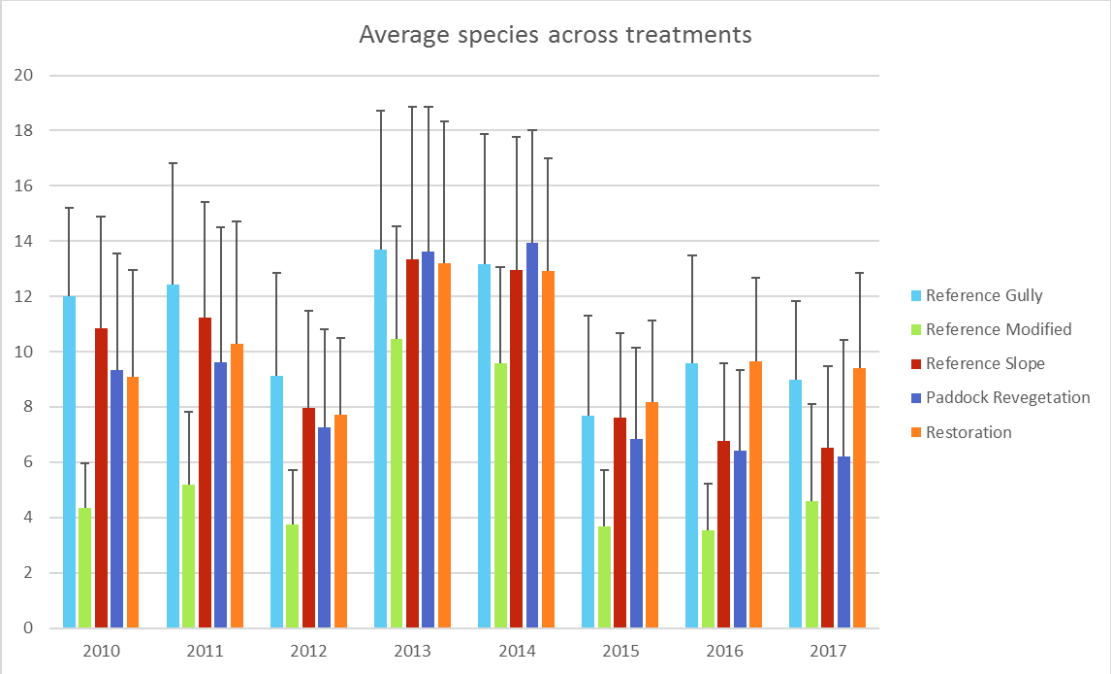
- Effect of revegetation on woodland birds present.
- Status of woodland birds in the region.

Key findings from analysis of Connecting Country's data and their implications for our work are summarised in the following sections.

2.1 Species diversity across site treatments

Finding: Gully sites support the highest bird diversity, followed by restoration sites.
Implication: Fertile, low lying areas are most worthwhile for restoration.

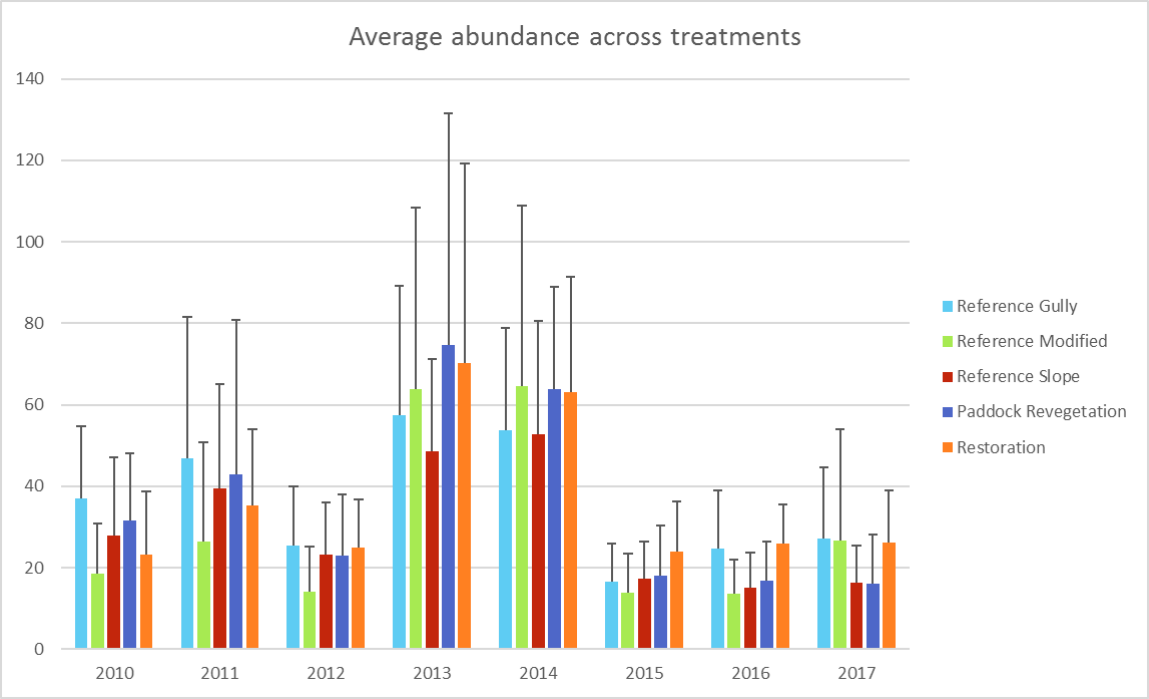
Figure 1. Average number of bird species recorded for site treatment type from 2010 to 2017



2.2 Total numbers of birds across site treatments

Finding: Restoration sites support the highest number of individual birds, followed by gully sites.
Implication: Restoration creates habitat used by many birds and is a worthwhile investment.

Figure 2. Average number of birds recorded for site treatment type from 2010 to 2017



2.3 Abundance of individual bird species over time

We also analysed all bird survey data available for the Mount Alexander region, comprising Connecting Country's data and other BirdLife records dating from 1998 to 2017 to assess the abundance of individual bird species over time. Results for our more common species are summarised in Table 3. It was difficult to get statistically significant trends with the rarer, less often seen species such as Diamond Firetail.

Table 3. Summary of population trends for bird species over time

Population trend		Species
Winners	Populations appear to be recovering well following end of the drought in 2010-11, showing a distinct upward trend in the region	• White-browed Babbler • Brown Treecreeper • Hooded Robin • Yellow-tufted Honeyeater • Spotted Pardalote
Steady	Populations appear steady in the area with no significant trend up or down	• Grey Fantail • Superb Fairy-wren • Jacky Winter
Losers	Populations are not rebounding after the last drought, with numbers declining	Nectar-loving species: • Fuscous Honeyeater • Black-chinned Honeyeater • Purple-crowned Lorikeet Insectivores : • Crested Shrike-tit • Rufous Whistler • Striated Thornbill • Laughing Kookaburra

3. Conclusions and recommendations

There is good news to celebrate! With high tree cover in some areas, a regenerating landscape, hundreds of participating landholders, we have an area rich in birdlife – in some parts of the region. The Clydesdale-Strangways area and the Muckleford area are a stronghold for woodland bird species in the region.

In an era of limited funding and uncertainty due to climate change, these results can guide our future actions and projects, and are also relevant for the wider community. Proposed actions are summarised in Table 4.

Table 4. Proposed actions

No.	Action	Description	Notes
1	**Target farmers**	Develop a scoping paper or project viability analysis of an agriculture-based project, including an extension officer to work with business farmers to encourage fencing of remnant vegetation, natural regeneration, weed control, and (if funding allows) direct seeding for larger areas and to connect isolated remnants.	Key contacts in Sutton Grange and Muckleford could be Muckleford Landcare, Holy Goat Farm, and Anne Perkins.
2	**Continue to engage landholders**	Continue to engage with private landholders to target both gullies and slopes to provide management advice and assistance with supplementary planting, weed control and pest control.	This is consistent with current projects such as 'Box Ironbark East' (Biodiversity Hubs), 'Prickly plants for wildlife' and 'Remnant rescue' (Biodiversity Response Planning).
3	**Partner with local authorities and community groups for larger projects**	Explore opportunities to partner with North Central CMA, Mount Alexander Shire Council and Landcare groups to facilitate or support broad-scale waterway restoration projects, delivered through Landcare groups, or in their absence, landholders.	Projects could use the Index of Stream Condition data released by North Central CMA as a focus. Broad-scale projects are likely to be expensive.
4	**Protect coarse woody debris**	Focus on coarse woody debris and leaf litter as essential to woodland birds on bush blocks, possibly through an education program and/or sustainable firewood campaign.	
5	**Reassess woodland bird monitoring program**	Review our woodland bird monitoring program and reassess monitoring goals with the help of interested citizen scientists and landholders.	This work forms part of our 'Habitat Health Check' project in 2019.

References

1. Connecting Country Strategic Plan 2014-24 (2014)
2. Connecting Country Monitoring Strategy for Woodland Birds (2010)
3. Woodland birds Project Assessment INFFER Assessment Report, Report prepared for Connecting Country by Geoff Park and Anna Roberts, Natural Decisions (2017)
4. North Central CMA map of Habitat Zones 2017 Riparian EVCs (2017)
5. Connecting Country Summary of Results Woodland Bird Monitoring Program 2010 – 2017 (2017)