

Quarterly Report:

*Woodland Bird Monitoring within
Gunbower-Koondrook-Perricoota TLM Icon Site -
Autumn 2017*



Prepared for

North Central Catchment Management Authority

by

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Front cover photo: Bush bird monitoring site (FDU-4) Gunbower Forest autumn 2008 (left) and autumn 2017 (right) – Rick Webster

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Summary

The autumn 2017 surveys identified total of 36 woodland bird species on the survey plots, and an additional four species in the habitat adjoining the survey plots for the icon site. The only threatened species recorded during the current round of monitoring was the Varied Sittella *Daphoenositta chrysoptera* (listed as vulnerable within NSW, NSW SC 2017). Although no threatened species were recorded within Gunbower forest during the current round of monitoring two species (jacky winter *Microeca fascinans* and red-capped robin *Petroica goodenovii*) listed as part of the Victorian threatened woodland bird community were recorded.

The autumn 2017 surveys identified three species on the monitoring plots that had not been recorded in earlier autumn surveys: peaceful dove *Geopelia striata*, long-billed corella *Cacatua tenuirostris* and Gilbert's whistler *Pachycephala inornata*.

There were 264 individuals (Gunbower 122, Koondrook-Perricoota: 142) recorded on the 22 plots during autumn 2017.

As surveys were not completed on all monitoring plots in every year it is difficult to ascertain whether there have been any changes in either the species diversity or number of woodland birds inhabiting the icon site, additional surveys including all plots are required to determine whether there are any long-term trends in species diversity, total population of woodland birds or whether individual species populations are stable, increasing or decreasing within the icon site.

1. Introduction

The Living Murray Program (TLM) identified Gunbower-Koondrook-Perricoota (GKP) forest as one of six icon sites along the Murray River (<https://www.mdba.gov.au/managing-water/environmental-water/delivering-environmental-water/living-murray-program> accessed 11 June 2017). GKP straddles the Murray River in the mid-Murray floodplain between the townships of Koondrook/Barham in the north and Torrumbarry in the south. This icon site is approximately 54 000ha in size (Gunbower: 22 000ha, Koondrook-Perricoota: 32 000ha). The forest comprises a number of habitat types including: river red gum *Eucalyptus camaldulensis* forest and woodland, black box *E. largiflorens* and grey box *E. microcarpa* woodlands and a range of wetland habitats. As a result of the forest's importance to the health of the River Murray and in an attempt to monitor changes within the forest a bush (terrestrial) bird monitoring program was established.

Within Gunbower forest a baseline monitoring program for woodland birds was completed between 2008-2012 while in Koondrook-Perricoota (KP) forest baseline monitoring was completed between 2001-2003. In addition, woodland bird surveys have been conducted in 2008 and 2011-12 in KP.

The aims of the current surveys within GKP are:

- to identify the presence, extent and abundance of different woodland bird species;
- to identify changes in bird assemblages in the forest over time;
- to understand the contribution the GKP makes to the local and regional population of threatened and other woodland bird species;
- to identify changes in bird assemblages after natural or managed watering events;
- confirm that the number and location of current survey sites is truly representative of the total populations in the forest and that the methodology contains sufficient scientific rigour; and
- Survey existing sites once each season (winter, spring, summer and autumn) during 2017-18.

2. Methods

2.1 Bush Birds

2.1.1 Census Methodology

In conjunction with North Central Catchment Management Authority (North Central CMA) and Forestry Corporation of NSW (formerly Forests NSW) staff, 22 plots (Figure 1 and 2) within GKP were identified as monitoring sites for woodland birds (i.e. terrestrial bird species). These plots were chosen as they cover a range of habitat types (Table 1, Appendix 1). Within each of the four habitat types identified three to eight two hectare plots were established. All of the survey plots identified within GKP Forest were visited during the autumn survey.

Each two hectare plot is surveyed for 20 minutes. During this twenty minute period, all species and individuals observed or heard on the plot were recorded. All birds seen or heard outside the plot were recorded as being present within that habitat type if the observer was confident that this was the case. All birds flying over or through the plot were recorded as on the plot if they were a species that used the air space to forage for food (e.g. Brown Goshawk *Accipiter fasciatus*, Tree Martin *Hirundo nigricans*).

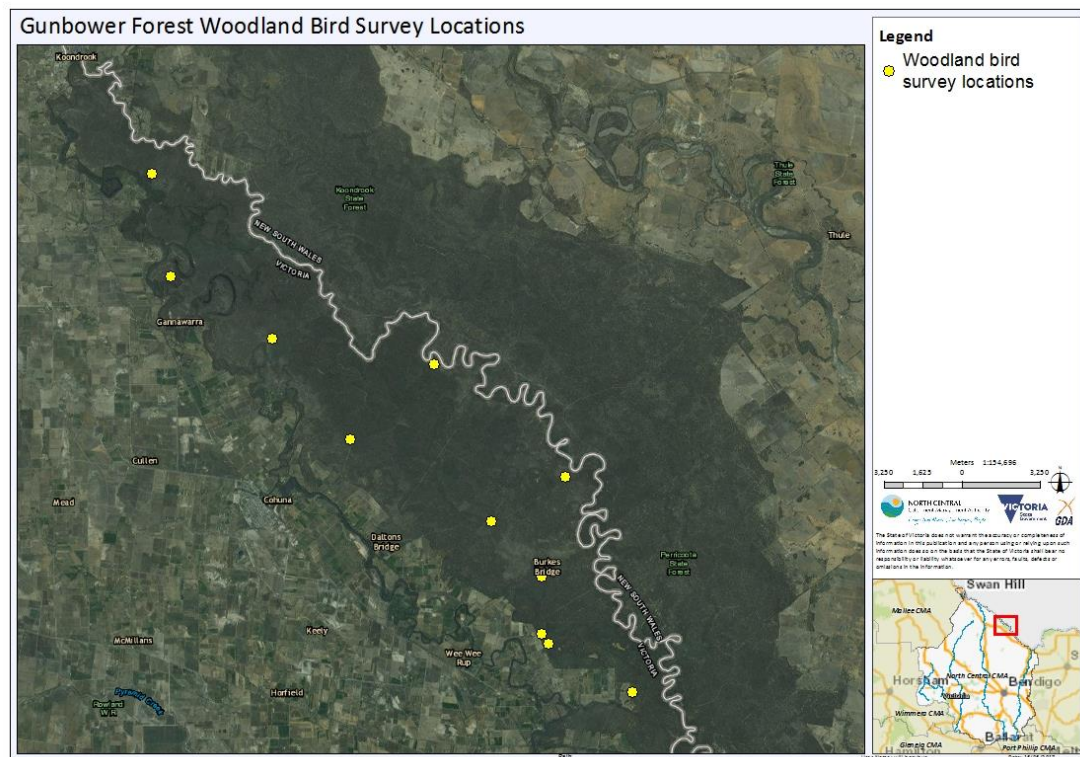


Figure 1: Gunbower Forest Woodland Bird Monitoring Plot Locations

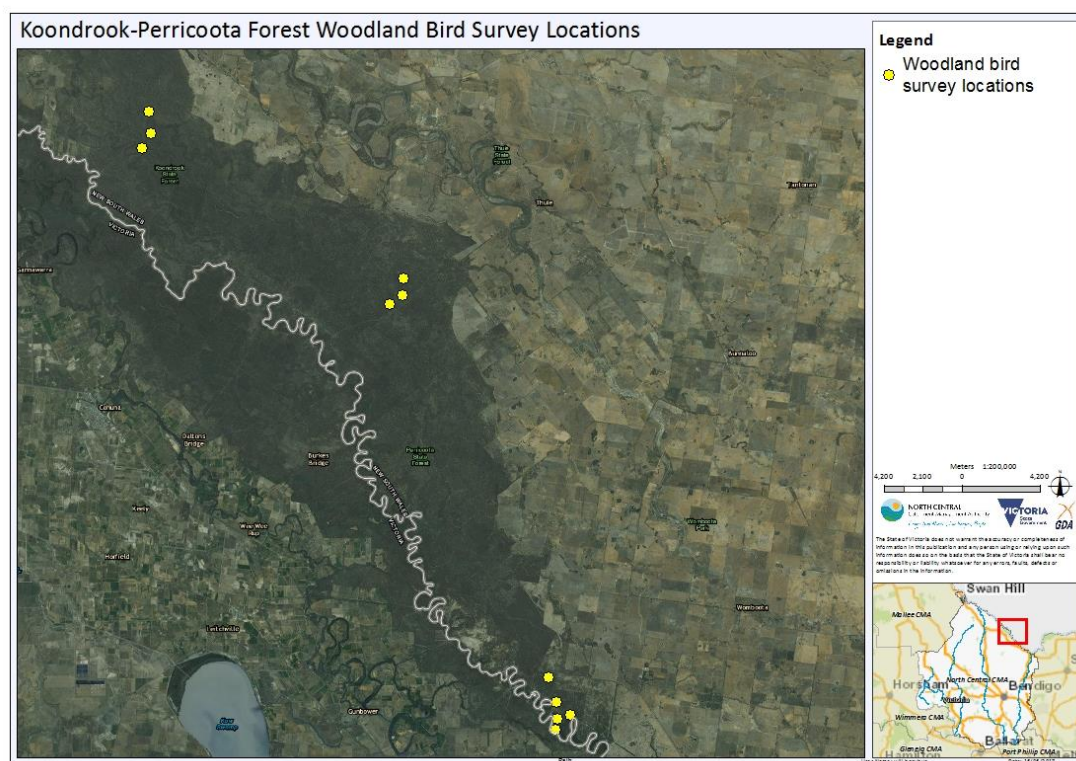


Figure 2: Koondrook-Perricoota Forest Woodland Bird Monitoring Plot Locations

Surveys were not undertaken if the weather was excessively windy (i.e. crowns of the trees moved violently) or it was raining. To minimise potential bias in the results, each plot was visited both early and late in the morning. All counts were conducted by the author eliminating inter-observer bias (Kavanagh and Recher 1983) and were undertaken between sunrise and 12:20pm to coincide with peak levels of bird activity (Keast 1984, Arnold 1989). Early counts were started prior to 9am and all late counts were started prior to 12pm. This meant that all counts were completed by 12:20pm. Figure 1 shows the location of the bush bird survey plots within GKP.

Table 1: Habitat types surveyed for bush birds in GKP forest and the number of survey plots in each habitat type

Habitat Type	No. of Sites
River Red Gum Flood Dependent Understorey	9
River Red Gum Flood Tolerant Understorey	4
River red Gum Flood Tolerant Understorey/Black Box	2
Box Woodland (Grey Box <i>Eucalyptus microcarpa</i>)	4
Box Woodland (Black Box <i>E. largiflorens</i>)	3

No nocturnal surveys for birds have been undertaken as part of this project. There were also no targeted surveys undertaken for rare or threatened species.

2.1.2 Data Analysis

Three estimates of bird abundance have been determined using the data collected during the survey period (2001-2017). The reporting rate, average number of birds per non-zero count and the average number of birds over all counts. These parameters have been calculated in the following way:

$$\text{Reporting Rate} = \frac{\text{number of counts on which species were reported}}{\text{total number of counts made}}$$

$$\text{Birds per Non-zero Count (BPNZC)} = \frac{\text{total number of birds reported}}{\text{Number of counts on which species was reported}}$$

$$\text{Average Number of Birds per Count} = \frac{\text{total number of birds reported}}{\text{total number of counts made}}$$

The abundance of a species within the autumn surveys was by the following:

- Rare: reported in 2 or fewer autumn seasons.
- Uncommon: reported in 3 or 4 autumn seasons.
- Common: reported in 5 or 6 autumn seasons.
- Abundant: reported in 7 or 8 autumn seasons.

3. Results & Discussion

3.1 Bush Birds

The autumn 2017 surveys for woodland birds were conducted between 13th – 23rd May. A total of 36 woodland bird species were recorded from the survey plots across the icon site (Gunbower: 27 species, Koondrook-Perricoota: 27 species). An additional four species were recorded in the habitat (see section 2.1.1 for a definition of habitat) adjoining the survey plots. Appendix 2 contains a list of the species recorded during the current survey.

No Federally listed threatened woodland bird species were recorded during the autumn round of surveys. One NSW threatened woodland bird species was recorded during the surveys

(www.environment.nsw.gov.au/resources/threatenedspecies/TS20170428.pdf accessed 15 June 2017):

- Three varied sittellas *Daphoenositta chrysoptera* (listed as vulnerable) were recorded on plot GB-2.

No individually listed Victorian threatened woodland bird species was recorded during the current survey. However, a suite of woodland birds has been listed within Victoria as the Victorian Temperate Woodland Bird Community (Table 2) some of which were recorded during the current survey

(www.environment.vic.gov.au/_data/assets/pdf_file/0018/50418/Flora-and-Fauna-Guarantee-Characteristics-of-Threatened-Communities-.pdf accessed 15 June 2017).

The following species listed in the threatened temperate woodland bird community were recorded on the following plots:

- jacky winter's *Microeca fascinans* were recorded on plots FDU-1 (1), FTU-2 (2) and adjacent to plots FTU-1 and BB-3;
- One red-caped robin *Petroica goodenovii* on plot BB-4; and
- Two additional species (Western Gerygone *Gerygone fusca* and Brown-headed Honeyeater *Melithreptus brevirostris*) were heard in the habitat adjoining survey plots GB-4 and GB-3 respectively.

The autumn 2017 surveys identified three species on the monitoring plots that had not been recorded in earlier autumn surveys:

- peaceful dove *Geopelia striata*;
- long-billed corella *Cacatua tenuirostris*; and
- Gilbert's whistler *Pachycephala inornata*.

There were 264 individuals (Gunbower 122, Koondrook-Perricoota: 142) recorded on the 22 plots during autumn 2017.

The surveys completed in autumn 2017 are the first woodland bird surveys completed since 2012. Figure 3 shows the total number of species and individuals recorded from the icon site during autumn since woodland bird surveys were commenced. As surveys were not completed on all monitoring plots in every year it is difficult to ascertain whether there have been any changes in either the diversity or number of woodland birds inhabiting the icon site. In those years when the majority (2012) or all

(2008 & 2017) the monitoring plots were surveyed there is a greater diversity and number of individuals recorded. The increase in both species diversity (42) and individuals (331) in autumn 2012 is possibly due to:

- the icon site receiving floods in 2010/11 and 2011/12 resulting in a possible increase in food for woodland birds that inhabit the icon site;
- movement of individuals into the icon site due to more favourable conditions following the floods; or
- improved breeding success resulting in an increase in woodland bird populations.

Although the species diversity (42 v's 36) and number of individuals (331 v's 264) recorded in autumn 2017 following 2016/17 flood were not as high as autumn 2012 following two years of flooding they were similar. The total species diversity for the icon site based on observations made on the monitoring plots across all the survey years is 58 species.

Table 2: Victorian Temperate Woodland Bird Community

Common Name	Scientific Name	Common Name	Scientific Name
Painted Button-quail	<i>Turnix varia</i>	Yellow-tufted Honeyeater	<i>Lichenostomus melanops metoni</i>
Bush Stone-curlew	<i>Burhinus grallarius</i>	Fuscous Honeyeater	<i>Lichenostomus fuscus</i>
Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii graptogyne</i>	Black-chinned Honeyeater	<i>Melithreptus gularis</i>
Little Lorikeet	<i>Glossopsitta pusilla</i>	Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>
Superb Parrot	<i>Polytelis swainsonii</i>	Painted Honeyeater	<i>Grantiella picta</i>
Swift Parrot	<i>Lathamus discolor</i>	Jacky Winter	<i>Microeca fascinans</i>
Turquoise Parrot	<i>Neophema pulchella</i>	Red-caped Robin	<i>Petroica goodenovii</i>
Barking Owl	<i>Ninox connivens</i>	Hooded Robin	<i>Melanodryas cucullata</i>
Brown Treecreeper	<i>Climacteris picumnus victoriae</i>	Grey-crowned Babbler	<i>Pomatostomus temporalis</i>
Speckled Warbler	<i>Chthonicola sagittata</i>	Ground Cuckoo-shrike	<i>Coracina maxima</i>
Western Gerygone	<i>Gerygone fusca</i>	Apostlebird	<i>Struthidea cinerea</i>
Regent Honeyeater	<i>Anthochaera phrygia</i>	Diamond Firetail	<i>Stagonopleura guttata</i>

Since monitoring has commenced within the icon site a total of 58 woodland bird species (Appendix 3) have been recorded on the monitoring plots during the autumn surveys including seven species which are considered threatened or significant species (www.environment.nsw.gov.au/resources/threatenedspecies/TS20170428.pdf and DSE 2013).

The reporting rate, the average number of birds per count and the average number of birds per non-zero count for each species for all autumn surveys conducted in the icon site since 2001 are presented in Appendix 3. Table 3 provides a summary of the species status during autumn over the monitoring period (2001-2017). Caution should be used when interpreting this data as the number of monitoring plots surveyed during each survey year was not consistent. However, based on the data presented for the autumn season since 2001 the following trends for population measures have been observed:

- Reporting Rates: increases in two species, increases in particular years for five species and decreases in 12 species, decreases in particular years for one species.

- Average/Count: increases in four species, increases in particular years for three species and decreases in 11 species, decreases in particular years for one species.
- Population: this is given only for species (30) considered common or abundant. Of these populations 15 were considered to be declining, one increasing and the remainder (14) stable for surveys conducted in autumn.

Subsequent surveys could be expected to lead to a revision of these numbers.

Although numerous species (24) were recorded utilising only box woodland (i.e. black box *Eucalyptus largiflorans* or grey box *E. microcarpa*) or river red gum *E. camaldulensis* communities during the autumn surveys, it is likely that the majority of these species have been recorded in both communities (Webster unpublished data). Over half (13) of the species recorded during the autumn surveys were only recorded once irrespective of the vegetation community they were recorded in. This either indicates that the species is rarely recorded within the icon site (e.g. brown falcon *Falco berigora*), is usually not present during autumn surveys as they are migratory (e.g. sacred kingfisher *Todiramphus sanctus*, rufous songlark *Cincloramphus mathewsi*) and have left the icon site when autumn surveys are completed or are only present in small numbers and therefore recorded infrequently (e.g. southern whiteface *Aphelocephala leucopsis*, olive-backed oriole *Oriolus sagittatus*).

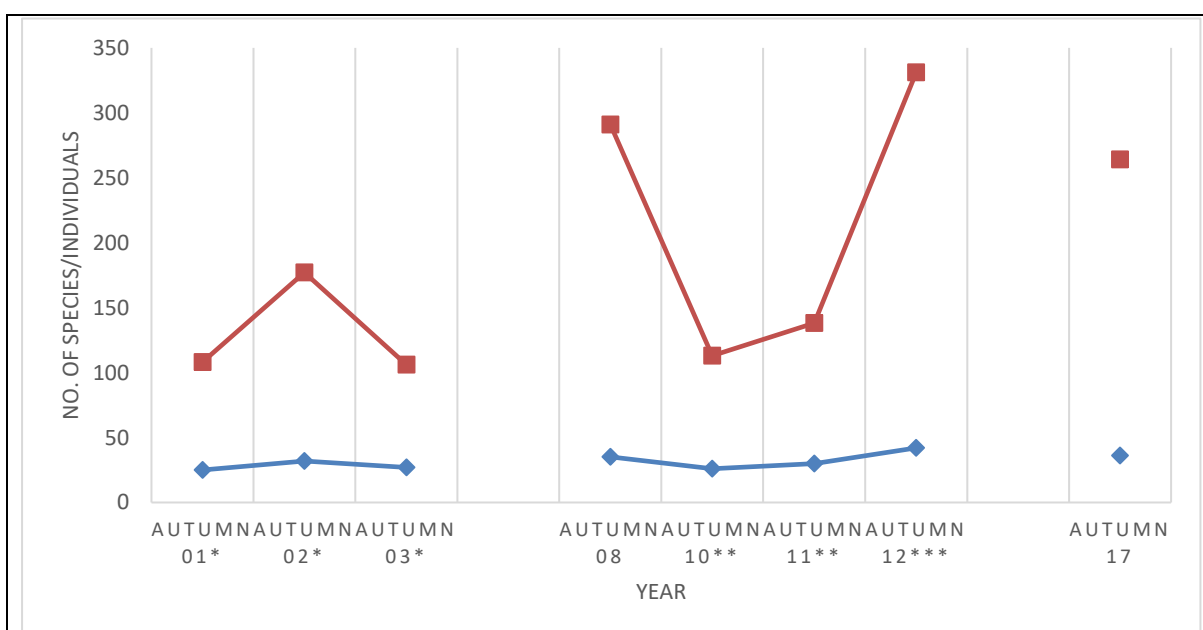


Figure 3: Species Diversity and Number of Individuals Recorded from Monitoring Plots during Autumn Surveys

Notes:

- * Surveys only undertaken on plots within Koondrook-Perricoota forest.
- ** Surveys undertaken on plots within Gunbower forest, GB-1 and GB-2 in Perricoota forest.
- *** Surveys completed on all plots except 17-1, 17-2, 17-3.

The remaining species were only recorded in the river red gum community during the autumn surveys (8):

- whistling kite *Haliastur sphenurus* (3);
- sulphur-crested cockatoo *Cacatua galerita* (6);
- eastern rosella *Platycercus eximius* (5);

- striated thornbill *Acanthiza lineata* (2);
- white-browed scrubwren *Sericornis frontalis* (4);
- crested shrike-tit *Falcunculus frontatus* (3);
- magpie-lark *Grallina cyanoleuca* (3);
- scarlet robin *Petroica boodang* (3);
- tree martin *Petrochelidon nigricans* (5); and
- diamond firetail *Stagonopleura guttata* (3).

As more surveys are undertaken, in both more seasons and over a longer time period it is likely that the majority of species recorded only in river red gum communities during autumn surveys will be recorded in other broad vegetation types within the icon site.

A comparison of photos of all terrestrial bird monitoring sites visited during autumn since 2001 are included in Appendix 4.

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon
Site: Autumn 2017

Table 3: Species trend summary for autumn (2001-2017) GPK Icon Site

Species	Status	RR	Av/Count	Population
Australian Hobby	Rare	-	-	-
Australian Magpie	Common	Increase 10 & 11	Increase?	Stable?
Australian Raven	Uncommon	-	-	-
Black-chinned Honeyeater	Rare	-	-	-
Black-faced Cuckoo-shrike	Common	Decrease	Decrease	Decrease
Brown Falcon	Rare	-	-	-
Brown Treecreeper	Abundant	-	-	Stable
<i>Brown-headed Honeyeater</i>	<i>Uncommon</i>	<i>Decrease</i>	-	-
Buff-rumped Thornbill	Abundant	-	-	Stable
Chestnut-rumped Thornbill	Rare	-	-	-
Common Bronzewing	Uncommon	-	-	-
Crested Shrike-tit	Uncommon	-	-	-
Crimson Rosella	Abundant	-	-	Stable
Diamond Firetail	Rare	-	-	-
Dusky Woodswallow	Abundant	-	-	Stable
Eastern Rosella	Common	-	-	Stable
Fan-tailed Cuckoo	Rare	-	-	-
Galah	Abundant	Decrease	Decrease	Decrease
Gilbert's Whistler	Rare	-	-	-
Golden Whistler	Common	Decrease	Decrease	Decrease
Grey Fantail	Abundant	-	-	Stable
Grey Shrike-thrush	Abundant	-	-	Stable
Hooded Robin	Rare	-	-	-
<i>Jacky Winter</i>	<i>Abundant</i>	<i>Decrease</i>	<i>Decrease</i>	<i>Decrease</i>
Laughing Kookaburra	Rare	-	-	-
Long-billed Corella	Rare	-	-	-
Magpie-lark	Uncommon	Decrease?	Decrease?	Decrease?
Olive-backed Oriole	Rare	-	-	-
Painted Button-quail	Rare	-	-	-
Peaceful Dove	Rare	-	-	-
Pied Butcherbird	Rare	-	-	-
<i>Red-capped Robin</i>	<i>Abundant</i>	<i>Increase 10</i>	<i>Decrease?</i>	<i>Decrease?</i>
Red-rumped Parrot	Common	-	-	Stable
Rufous Songlark	Rare	-	-	-
Rufous Whistler	Abundant	Increase 10 & 11	Increase 10 & 11	Decrease
Sacred Kingfisher	Rare	-	-	-
Scarlet Robin	Uncommon	Decrease?	Decrease?	-
Southern Whiteface	Rare	-	-	-
Spotted Pardalote	Common	Increase 12	Increase 12	Stable
Striated Pardalote	Abundant	Decrease 10 & 17	Decrease 10 & 17	Decrease?
Striated Thornbill	Rare	-	-	-
Sulphur-crested Cockatoo	Common	-	-	Decrease
Superb Fairy-wren	Abundant	Increase	Increase	Increase
Tree Martin	Uncommon	Increase?	Increase?	-
Varied Sittella	Common	-	-	Stable?
Wedge-tailed Eagle	Rare	-	-	-
Weebill	Abundant	-	Increase	Stable
Welcome Swallow	Rare	-	-	-
Whistling Kite	Common	Decrease	-	Decrease?
White-breasted Woodswallow	Rare	-	-	-
White-browed Babbler	Rare	-	-	-
White-browed Scrubwren	Common	Decrease	Decrease	Decrease
White-plumed Honeyeater	Abundant	Decrease	Decrease	Decrease
White-throated Treecreeper	Abundant	Decrease	Decrease	Decrease
White-winged Chough	Common	Decrease	Decrease	Decrease
Willie Wagtail	Abundant	Increase 08	Increase 08	Decrease?
Yellow Thornbill	Abundant	-	-	Stable
Yellow-rumped Thornbill	Common	-	-	Stable

Notes:

Bold = Threatened or significant species

Italics = Victorian Temperate Woodland Community

4. Conclusions

The autumn 2017 surveys identified 36 species of woodland birds which is within the range of species diversity (25-42) identified during previous autumn surveys. The species diversity identified during the current survey is a small (14%) decrease from the previous autumn survey (2012) which was completed following two flood events (2010-11 and 2011-12). However, it is similar to the species diversity recorded in autumn 2002 (32 species) and autumn 2008 (35 species) when flood events did not occur in the previous spring. Environmental watering events between 2012-2016 within the icon site may have helped prevent the species diversity dropping back to levels observed during the drought (e.g. 2003: 27 species, 2010: 26 species) by maintaining habitat quality across those areas receiving water. A similar trend was observed in the number of individuals recorded across the icon site.

Of the 30 species, identified as either common or abundant within the icon site during autumn approximately half are considered to be declining based on the autumn counts conducted since 2001. This result should be treated with caution. As other seasons are considered different trends could expect to be identified. However when considering only the autumn counts it is probably not surprising that some species (e.g. rufous whistler *Pachycephala rufiventris*, jacky winter *Microeca fascinans*, red-capped robin *Petroica goodenovii*) are declining in the icon as they have also been identified as declining across much broader areas of south-eastern Australia (Reid 1999, [www.environment.vic.gov.au/ data/assets/pdf file/0018/50418/Flora-and-Fauna-Guarantee-Characteristics-of-Threatened-Communities-.pdf](http://www.environment.vic.gov.au/data/assets/pdf_file/0018/50418/Flora-and-Fauna-Guarantee-Characteristics-of-Threatened-Communities-.pdf) accessed 15 June 2017).

Only one species (superb fairy-wren *Malurus cyaneus*) was considered to be increasing possibly due to the natural floods (2010-11, 2011-12 and 2016-17) and e-water events between 2013 and 2015 resulting in improved understorey health which the fairy-wrens utilise for foraging and nesting. The remaining species were considered to have stable populations within the icon site based on the autumn surveys.

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6. Appendices

6.1 Appendix 1

AMG coordinates for bush bird survey sites within Gunbower- Koondrook-Perricoota Forest. All AMG coordinates presented below were collected using map datum AUS66.

Site Name	Easting	Northing
Gunbower		
GB-3 (Grey Box)	264344	6026267
GB-4 (Grey Box)	260516	6028614
FDU-1	243950	6047379
FDU-2	249096	6040657
FDU-3	255831	6039717
FDU-4	258315	6033227
FTU-1	252424	6036516
FTU-2	261348	6035154
FTU-3	260446	6031012
BB-1 (Black Box)	244800	6043120
BB-2 (Black Box)	260823	6028208
Koondrook		
17/1 (FDU/RRGQ1)	250869	6047868
17/2 (FDU/RRGQ2)	251354	6048702
17/3 (FTU/RRGQ3)	251213	6049866
Perricoota		
GB-1 (Grey Box)	273264	6019989
GB-2 (Grey Box)	274491	6017999
15/1 (FDU/RRGQ1)	273703	6017150
15/2 (FDU/RRGQ2)	273780	6017741
15/3 (FTU/RRGQ3-Box)	273731	6018658
16/1 (FDU/RRGQ1)	264320	6039807
16/2 (FDU/RRGQ2-Box)	265019	6040303
16/3 (Black Box)	265055	6041192

6.2 Appendix 2

Bird species recorded from the 22 GKP bush bird monitoring plots during autumn 2017. Taxonomy follows Christidis and Boles (2008).

Gunbower

Common Name	Scientific name	FDU-1	FDU-2	FDU-3	FDU-4	FTU-1	FTU-2	FTU-3	BB-3	BB-4	GB-3	GB-4
Australian Magpie	<i>Gymnorhina tibicen</i>	H-H	H-2	O-3	H-H				H-H			
Australian Raven	<i>Corvus coronoides</i>			H-1			H-H		O-1	H-H		
Brown Treecreeper	<i>Climacteris picumnus</i>	O-2	H-H		O-1	H-H	O-5	O-1	H-1	O-2		H-1
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>											O-H
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>		H-1							O-7	H-H	O-1
Crimson (Yellow) Rosella	<i>Platycercus elegans flaveolus</i>	H-1		O-2		H-H	O-4		O-2			
Eastern Rosella	<i>Platycercus eximius</i>						O-4					
Emu	<i>Dromaius novaehollandiae</i>				H-H							
Galah	<i>Eolophus roseicapillus</i>						O-2					
Gilbert's Whistler	<i>Pachycephala inornata</i>							H-1				
Golden Whistler	<i>Pachycephala pectoralis</i>							H-1		O-2		
Grey Fantail	<i>Rhipidura albiscapa</i>		H-H			H-1		O-1	H-1	O-1	O-2	
Grey Shrike-thrush	<i>Colluricincla harmonica</i>		H-H			H-1	H-1	H-H	H-H		O-1	
Jacky Winter	<i>Microeca fascinans</i>	O-1				O-H	O-2		H-H			
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	O-1	H-H	O-H								
Magpie-lark	<i>Grallina cyanoleuca</i>				O-1							
Peaceful Dove	<i>Geopelia striata</i>	H-H										
Red-capped Robin	<i>Petroica goodenovii</i>									O-1		
Red-rumped Parrot	<i>Psephotus haematonotus</i>	H-2			H-H							
Restless Flycatcher	<i>Myiagra inquieta</i>				H_H							
Rufous Whistler	<i>Pachycephala rufiventris</i>		H-1				H-1				H-H	
Spotted Pardalote	<i>Pardalotus punctatus</i>			O-1		H-1		O-2				
Striated Pardalote	<i>Pardalotus striatus</i>	O-1	H-H	H-H		H-H		H-1	H-H		H-H	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>			O-H								
Superb Fairy-wren	<i>Malurus cyaneus</i>	O-3			H-2	H-1		H-2	O-1	O-4		
Weebill	<i>Smicromis brevirostris</i>		H-1	H-H		O-3	O-3		H-2	O-2	H-H	H-H
Western Gerygone	<i>Gerygone fusca</i>										H-H	
White-browed Babbler	<i>Pomatostomus superciliosus</i>	H-H			H-1							
White-plumed Honeyeater	<i>Ptilotula penicillata</i>	H-H	H-H	H-H	O-2	O-2	O-2	O-1	H-1	O-2		
White-throated Treecreeper	<i>Cormobates leucophaeus</i>		H-H	H-H		O-1	H-1	H-1		O-1		H-1
White-winged Chough	<i>Corcorax melanorhamphos</i>	O-H						O-5				

Common Name	Scientific name	FDU-1	FDU-2	FDU-3	FDU-4	FTU-1	FTU-2	FTU-3	BB-3	BB-4	GB-3	GB-4
Willie Wagtail	<i>Rhipidura leucophrys</i>				H-1						H-H	
Yellow Thornbill	<i>Acanthiza nana</i>				O-1					O-1		

Notes:

O-1 species and number of individuals observed on survey plot.

O-H species observed in the habitat.

H-1 species heard and number of individuals recorded on survey plot.

H-H species heard in habitat adjoining survey plot.

Koondrook-Perricoota

Common Name	Scientific name	15-1 (FDU)	15-2 (FDU)	15-3 (FTU-BB)	16-1 (FDU)	16-2 (FDU)	16-3 (BB)	17-1 (FDU)	17-2 (FDU)	17-3 (FTU)	GB-1	GB-2
Australian Hobby	<i>Falco longipennis</i>											O-1
Australian Magpie	<i>Gymnorhina tibicen</i>		H-1			O-H	H-H				H-H	
Australian Raven	<i>Corvus coronoides</i>	H-H				H-H				H-1		
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>										O-1	
Brown Treecreeper	<i>Climacteris picumnus</i>		H-H	H-1	O-2	H-H	H-1	H-H			O-1	O-3
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>									O-2		O-3
Common Bronzewing	<i>Phaps chalcoptera</i>											O-1
Crimson (Yellow) Rosella	<i>Platycercus elegans flaveolus</i>				O-2							
Eastern Rosella	<i>Platycercus eximius</i>							O-1				
Galah	<i>Eolophus roseicapillus</i>	O-10		H-H	H-1			O-2		H-H		
Golden Whistler	<i>Pachycephala pectoralis</i>			H-H								
Grey Fantail	<i>Rhipidura albiscapa</i>			H-H								O-1
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	H-H			H-H		H-1		H-1		H-H	O-1
Jacky Winter	<i>Microeca fascinans</i>			H-H							O-1	O-1
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	H-H										H-H
Long-billed Corella	<i>Cacatua tenuirostris</i>	O-28										
Peaceful Dove	<i>Geopelia striata</i>								H-H			
Red-rumped Parrot	<i>Psephotus haematonotus</i>				H-H							
Restless Flycatcher	<i>Myiagra inquieta</i>										H-H	
Spotted Pardalote	<i>Pardalotus punctatus</i>			H-1	H-H			H-H				
Striated Pardalote	<i>Pardalotus striatus</i>	H-1		H-H	H-H	H-1		H-H				
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	H-H	O-2	H-H	H-H			O-9				
Superb Fairy-wren	<i>Malurus cyaneus</i>	O-6	O-5						O-2			
Tree Martin	<i>Petrochelidon nigricans</i>				O-1	O-1			O-1			

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

Common Name	Scientific name	15-1 (FDU)	15-2 (FTU)	15-3 (FTU-BB)	16-1 (FDU)	16-2 (FTU)	16-3 (BB)	17-1 (FDU)	17-2 (FTU)	17-3 (FTU)	GB-1	GB-2
Varied Sittella	<i>Daphoenositta chrysoptera</i>											O-3
Weebill	<i>Smicromis brevirostris</i>			O-5			O-3				H-3	O-2
White-browed Scrubwren	<i>Sericornis frontalis</i>	H-1	H-H									
White-plumed Honeyeater	<i>Ptilotula penicillata</i>			O-1	O-5	O-1	O-1	H-1	H-1		O-3	O-2
White-throated Treecreeper	<i>Cormobates leucophaeus</i>	H-1					H-1					
White-winged Chough	<i>Corcorax melanorhamphos</i>								O-H			H-H
Willie Wagtail	<i>Rhipidura leucophrys</i>		H-H									O-1
Yellow Thornbill	<i>Acanthiza nana</i>								O-3	O-2		O-2

Notes:

O-1 species and number of individuals observed on survey plot.

O-H species observed in the habitat.

H-1 species heard and number of individuals recorded on survey plot.

H-H species heard in habitat adjoining survey plot.

Bold - significant species.

6.3 Appendix 3

Reporting rates average number of woodland bird species recorded on the monitoring plots and average number of woodland bird species recorded per non-zero count within the Gunbower-Koondrook-Perricoota icon site during autumn surveys.

Year		2001*	2002*	2003*	2008	2010**	2011**	2012***	2017	
Total Number of Surveys		9	9	9	22	13	12	19	22	
Common Name	Scientific Name									
Australian Hobby	<i>Falco longipennis</i>	Reporting Rate							16.7%	
		Av. No of Birds							0.17	
		BPNZC							1	
Australian Magpie	<i>Gymnorhina tibicen</i>	Reporting Rate	11.1%			18.2%	38.5%	25%	5.6%	13.6%
		Av. No of Birds	0.11			0.27	0.77	0.42	0.11	0.27
		BPNZC	1			1.5	2	1.67	2	2
Australian Raven	<i>Corvus coronoides</i>	Reporting Rate				15.4%	8.3%	16.7%	13.6%	
		Av. No of Birds				0.15	0.08	0.17	0.14	
		BPNZC				1	1	1	1	
Black-chinned Honeyeater	<i>Melithreptus gularis</i>	Reporting Rate				4.5%			5.6%	
		Av. No of Birds				0.05			0.11	
		BPNZC				1			2	
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	Reporting Rate		11.1%		22.7%	15.4%	16.7%	5.6%	4.5%
		Av. No of Birds		0.11		0.32	0.23	0.17	0.06	0.05
		BPNZC		1		1.4	1	1	1	1
Brown Falcon	<i>Falco berigora</i>	Reporting Rate							5.6%	
		Av. No of Birds							0.11	
		BPNZC							1	
Brown Treecreeper	<i>Climacteris picummus</i>	Reporting Rate	44.4%	66.7%	44.4%	72.7%	38.5%	66.7%	61.1%	50%
		Av. No of Birds	0.67	1.67	0.78	1.73	1.38	2	1.11	0.82
		BPNZC	1.5	2.5	1.75	2.38	3.6	3	1.82	1.64
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>	Reporting Rate			11.1%	9.1%		8.3%		
		Av. No of Birds			0.11	0.23		0.08		
		BPNZC			1	2.5		1		

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

Year		2001*	2002*	2003*	2008	2010**	2011**	2012***	2017	
Total Number of Surveys		9	9	9	22	13	12	19	22	
Common Name	Scientific Name									
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>	Reporting Rate	11.1%	33.3%	22.2%	22.7%	7.7%	33.3%	33.3%	18.2%
		Av. No of Birds	0.11	2.33	0.78	0.36	0.08	0.58	1.17	0.5
		BPNZC	1	7	3.5	1.6	1	1.75	3.5	2.75
Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>	Reporting Rate						5.6%		
		Av. No of Birds						0.11		
		BPNZC						1		
Common Bronzewing	<i>Phaps chalcoptera</i>	Reporting Rate			9.1%	7.7%	16.7%		4.5%	
		Av. No of Birds			0.09	0.08	0.17		0.05	
		BPNZC			1	1	1		1	
Crested Shrike-tit	<i>Falcunculus frontatus</i>	Reporting Rate	11.1%			4.5%		5.6%		
		Av. No of Birds	0.22			0.05		0.11		
		BPNZC	2			1		1		
Crimson Rosella (Yellow form)	<i>Platycercus elegans flaveolus</i>	Reporting Rate		22.2%	11.1%	18.2%	30.8%	41.7%	27.8%	22.7%
		Av. No of Birds		0.33	0.11	0.23	0.69	1.33	0.78	0.5
		BPNZC		1.5	1	1.25	2.25	3.2	2.8	2.2
Diamond Firetail	<i>Stagonopleura guttata</i>	Reporting Rate			11.1%			11.1%		
		Av. No of Birds			0.11			0.11		
		BPNZC			1			1		
Dusky Woodswallow	<i>Artamus cyanopterus</i>	Reporting Rate	11.1%	11.1%	33.3%	4.5%	7.7%	8.3%	22.2%	
		Av. No of Birds	0.11	0.44	1.78	0.14	0.31	0.08	0.72	
		BPNZC	1	4	5.33	3	4	1	3.25	
Eastern Rosella	<i>Platycercus eximius</i>	Reporting Rate			11.1%	4.5%	7.7%	11.1%	9.1%	
		Av. No of Birds			0.22	0.14	0.31	0.22	0.23	
		BPNZC			2	3	2	2	2.5	
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Reporting Rate			11.1%					
		Av. No of Birds			0.11					
		BPNZC			1					
Galah	<i>Eolophus roseicapilla</i>	Reporting Rate	33.3%	66.7%	44.4%	27.3%	15.4%	16.7%	11.1%	18.2%
		Av. No of Birds	1.22	2.78	1.44	1.41	0.23	0.25	0.33	0.68
		BPNZC	3.67	4.17	3.25	5.17	1.5	1.5	3	3.75
Gilbert's Whistler	<i>Pachycephala inornata</i>	Reporting Rate							4.5%	
		Av. No of Birds							0.05	
		BPNZC							1	

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

Year		2001*	2002*	2003*	2008	2010**	2011**	2012***	2017	
Total Number of Surveys		9	9	9	22	13	12	19	22	
Common Name	Scientific Name									
Golden Whistler	<i>Pachycephala pectoralis</i>	Reporting Rate	11.1%	22.2%	22.2%	4.5%		5.6%	9.1%	
		Av. No of Birds	0.44	0.22	0.22	0.05		0.06	0.14	
		BPNZC	2	1	1	1		1	1.5	
Grey Fantail	<i>Rhipidura albiscapa</i>	Reporting Rate	33.3%	22.2%	11.1%	9.1%	38.5%	50%	27.8%	22.7%
		Av. No of Birds	0.33	0.33	0.11	0.09	0.46	0.58	0.39	0.27
		BPNZC	1	1.5	1	1	1.2	1.17	1.4	1.2
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	Reporting Rate	22.2%	11.1%	22.2%	13.6%	53.8%	33.3%	16.7%	22.7%
		Av. No of Birds	0.22	0.11	0.22	0.23	0.62	0.33	0.17	0.23
		BPNZC	1	1	1	1.67	1.14	1	1	1
Hooded Robin	<i>Melanodryas cucullata</i>	Reporting Rate				9.1%			5.6%	
		Av. No of Birds				0.23			0.11	
		BPNZC				2			2	
Jacky Winter	<i>Microeca fascians</i>	Reporting Rate	22.2%	33.3%	11.1%	27.3%	23.1%	16.7%	16.7%	13.6%
		Av. No of Birds	0.44	0.56	0.11	0.5	0.46	0.17	0.28	0.18
		BPNZC	2	1.67	1	1.83	2	1	1.67	1.33
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Reporting Rate							16.7%	4.5%
		Av. No of Birds							0.22	0.05
		BPNZC							1.3	1
Long-billed Corella	<i>Cacatua tenuirostris</i>	Reporting Rate								4.5%
		Av. No of Birds								1.27
		BPNZC								28
Magpie-lark	<i>Grallina cyanoleuca</i>	Reporting Rate		11.1%					11.1%	4.5%
		Av. No of Birds		0.11					0.17	0.05
		BPNZC		1					1.5	1
Olive-backed Oriole	<i>Oriolus sagittatus</i>	Reporting Rate				4.5%				
		Av. No of Birds				0.05				
		BPNZC				1				
Painted Button-quail	<i>Turnix varius</i>	Reporting Rate	22%							
		Av. No of Birds	0.56							
		BPNZC	2.5							
Peaceful Dove	<i>Geopelia cuneata</i>	Reporting Rate								4.5%
		Av. No of Birds								0.09
		BPNZC								2

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

Year		2001*	2002*	2003*	2008	2010**	2011**	2012***	2017	
Total Number of Surveys		9	9	9	22	13	12	19	22	
Common Name	Scientific Name									
Pied Butcherbird	<i>Cracticus nigrogularis</i>	Reporting Rate						5.6%		
		Av. No of Birds						0.11		
		BPNZC						2		
Red-capped Robin	<i>Petroica goodenovii</i>	Reporting Rate	11.1%		11.1%	13.6%	30.8%	8.3%	16.7%	4.5%
		Av. No of Birds	0.11		0.11	0.27	0.38	0.25	0.28	0.05
		BPNZC	2		1	2	1.25	3	1.67	1
Red-rumped Parrot	<i>Psephotus haematonotus</i>	Reporting Rate			4.5%	15.4%	8.3%	11.1%	4.5%	
		Av. No of Birds			0.09	0.54	0.83	0.61	0.09	
		BPNZC			2	3.5	10	11	2	
Rufous Songlark	<i>Cincloramphus mathewsi</i>	Reporting Rate						5.6%		
		Av. No of Birds						0.06		
		BPNZC						1		
Rufous Whistler	<i>Pachycephala rufiventris</i>	Reporting Rate	22.2%	11.1%		18.2%	46.2%	41.7%	16.7%	4.5%
		Av. No of Birds	0.22	0.11		0.18	0.46	0.42	0.17	0.09
		BPNZC	1	1		1	1	1	1	2
Sacred Kingfisher	<i>Todiramphus sanctus</i>	Reporting Rate					8.3%			
		Av. No of Birds					0.08			
		BPNZC					1			
Scarlet Robin	<i>Petroica multicolour</i>	Reporting Rate	22.2%		22.2%			8.3%		
		Av. No of Birds	0.33		0.56			0.08		
		BPNZC	1.5		2.5			1		
Southern Whiteface	<i>Aphelocephala leucopsis</i>	Reporting Rate						5.6%		
		Av. No of Birds						0.06		
		BPNZC						1		
Spotted Pardalote	<i>Pardalotus punctatus</i>	Reporting Rate	11.1%	22.2%	22.2%	18.2%		61.1%	22.7%	
		Av. No of Birds	0.11	0.44	0.22	0.36		0.78	0.27	
		BPNZC	1	2	1	2		1.27	1.2	
Striated Pardalote	<i>Pardalotus striatus</i>	Reporting Rate	77.8%	77.8%	77.8%	68.2%	38.5%	25%	61.1%	13.6%
		Av. No of Birds	1.2	1.67	1.2	1.05	0.46	0.25	1.22	0.14
		BPNZC	1.57	2.14	1.57	1.53	1.2	1	2	1
Striated Thornbill	<i>Acanthiza lineata</i>	Reporting Rate		22.2%	11.1%					
		Av. No of Birds		1.11	0.22					
		BPNZC		5	2					

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

		Year	2001*	2002*	2003*	2008	2010**	2011**	2012***	2017
Total Number of Surveys			9	9	9	22	13	12	19	22
Common Name	Scientific Name									
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	Reporting Rate	22.2%	33.3%	22.2%	13.6%			5.6%	11.1%
		Av. No of Birds	0.56	1.56	0.33	1.09			0.11	0.5
		BPNZC	2.5	4.67	1.5	8			2	5.5
Superb Fairy-wren	<i>Malurus cyaneus</i>	Reporting Rate	22.2%	11.1%		9.1%	15.4%	33.3%	44.4%	40.9%
		Av. No of Birds	0.22	0.33		0.32	0.23	0.58	0.89	1.18
		BPNZC	1	3		3.5	1.5	1.75	2	2.89
Tree Martin	<i>Hirundo nigricans</i>	Reporting Rate					7.7%	8.3%	5.6%	13.6%
		Av. No of Birds					0.08	0.08	0.06	0.14
		BPNZC					1	1	1	1
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Reporting Rate		11.1%	11.1%	4.5%	7.7%	16.7%	5.6%	13.6%
		Av. No of Birds		0.22	0.11	0.14	0.08	0.5	0.11	0.14
		BPNZC		2	1	3	1	3	2	3
Wedge-tailed Eagle	<i>Aquila audax</i>	Reporting Rate							11.1%	
		Av. No of Birds							0.11	
		BPNZC							1	
Weebill	<i>Smicrornis brevirostris</i>	Reporting Rate	33.3%	44.4%	33.3%	40.9%	15.4%	16.7%	38.9%	36.4%
		Av. No of Birds	0.56	1	0.56	0.59	0.15	0.25	0.61	0.95
		BPNZC	1.67	2.25	1.67	1.44	1	1.5	1.57	2.63
Welcome Swallow	<i>Hirundo neoxena</i>	Reporting Rate				4.5%				
		Av. No of Birds				0.05				
		BPNZC				1				
Whistling Kite	<i>Haliastur sphenurus</i>	Reporting Rate	11.1%		11.1%	9.1%		8.3%	5.6%	
		Av. No of Birds	0.11		0.22	0.09		0.08	0.17	
		BPNZC	1		2	1		1	3	
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	Reporting Rate			11.1%					
		Av. No of Birds			0.22					
		BPNZC			2					
White-browed Babbler	<i>Pomatostomus superciliosus</i>	Reporting Rate								4.5%
		Av. No of Birds								0.05
		BPNZC								1
White-browed Scrubwren	<i>Sericornis frontalis</i>	Reporting Rate	11.1%	11.1%		4.5%			8.3%	4.5%
		Av. No of Birds	0.11	0.11		0.09			0.17	0.05
		BPNZC	1	1		2			2	1

Quarterly Report: Woodland Bird Monitoring within Gunbower-Koondrook-Perricoota TLM Icon Site: Autumn 2017

		Year	2001*	2002*	2003*	2008	2010**	2011**	2012***	2017
Total Number of Surveys			9	9	9	22	13	12	19	22
Common Name	Scientific Name									
White-plumed Honeyeater	<i>Ptilotula penicillata</i>	Reporting Rate	77.8%	77.8%	66.7%	59.1%	23.1%	83.3%	66.7%	59.1%
		Av. No of Birds	2.56	2.44	1.89	1.27	0.31	1.42	2.72	1.05
		BPNZC	3.29	3.14	2.83	2.15	1.33	1.7	4.08	1.77
White-throated Treecreeper	<i>Cormobates leucophaeus</i>	Reporting Rate	55.6%	55.6%	33.3%	33.3%		8.3%	44.4%	27.2%
		Av. No of Birds	0.56	0.67	0.33	0.33		0.08	0.56	0.27
		BPNZC	1	1.2	1	1		1	1.25	1
White-winged Chough	<i>Corcorax melanorhamphos</i>	Reporting Rate				25%	15.4%	8.3%	11.1%	4.5%
		Av. No of Birds				6.83	0.54	1	0.5	0.23
		BPNZC				27.33	3.5	12	4.5	5
Willie Wagtail	<i>Rhipidura leucophrys</i>	Reporting Rate	11.1%	11.1%		33.3%	15.4%	8.3%	15.4%	4.5%
		Av. No of Birds	0.11	0.11		0.42	0.23	0.08	0.17	0.05
		BPNZC	1	1		1.25	1.5	1	1.5	1
Yellow Thornbill	<i>Acanthiza nana</i>	Reporting Rate	11.1%	22.2%	22.2%	16.7%	7.7%	16.7%	15.4%	18.2%
		Av. No of Birds	0.56	0.44	0.33	0.33	0.08	0.33	0.17	0.32
		BPNZC	5	2	1.5	2	1	2	1.5	1.75
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	Reporting Rate		11.1%	11.1%	8.3%	15.4%		15.4%	
		Av. No of Birds		0.56	0.11	0.08	0.23		0.67	
		BPNZC		5	1	1	1.5		6	
No. of Species		25	32	27	35	26	29	42	36	

Notes:

* Surveys only undertaken on plots within Koondrook-Perricoota forest.

** Surveys undertaken on plots within Gunbower forest, GB-1 and GB-2 in Perricoota forest.

*** Surveys completed on all plots except 17-1, 17-2, 17-3.

Bold – threatened or significant species

6.4 Appendix 4

Photographic comparison of bush bird plots within GKP from autumn 2008 to autumn 2017.

Plot: BB-3 (Gunbower Forest)



Autumn 2008



Autumn 2010



Autumn2011



Autumn 2012



Autumn 2017

Plot: BB4 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot: FDU-1 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot FDU-2 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot FDU-3 (Gunbower Forest)



Autumn 2008



Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot FDU-4 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot FTU-1 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot FTU-2 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot FTU-3 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot GB-3 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012

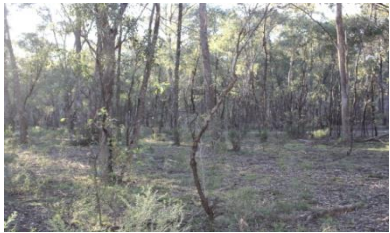


Autumn 2017

Plot GB-4 (Gunbower Forest)



Autumn 2008



Autumn2010



Autumn2011



Autumn 2012



Autumn 2017

Plot 15-1 (FDU, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 15-2 (FDU, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 15-3 (FTU/BB/GB, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 16-1 (FDU, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 16-2 (FDU, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 16-3 (BB, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011



Autumn 2012



Autumn 2017

Plot 17-1 (FDU, Perricoota Forest)



Autumn 2008

Autumn2010

Autumn2011

Autumn 2012



Autumn 2017

Plot 17-2 (FDU, Koondrook Forest)



Autumn 2008

Autumn2010

Autumn2011

Autumn 2012



Autumn 2017

Plot 17-3 (FTU, Koondrook Forest)



Autumn 2008

Autumn2010

Autumn2011

Autumn 2012



Autumn 2017

Plot GB-1 (Perricoota Forest)



Autumn 2008



Autumn2010



Autumn2011

Autumn 2012



Autumn 2017

Plot GB-2 (Perricoota Forest)



Autumn 2008



Autumn2010



Autumn2011

Autumn 2012



Autumn 2017