

## A second year of bird surveys by A Rocha Australia at Nielsen Park, Middle Ridge, Toowoomba

Roger Jaensch, Rob Brodribb, John Wall & Mick Atzeni

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### Introduction

This report covers the second year of a project of A Rocha Australia (ARA), conducted collaboratively with Friends of the Escarpment Parks (FEP) at Nielsen Park, Toowoomba, southern Queensland. It should be read in conjunction with the report of the first year of the project, February 2020 to January 2021. Some of the introductory information from that report is not repeated here.

Nielsen Park is owned by Toowoomba Regional Council and lies in the south-eastern part of a plateau of volcanic origin, at altitude around 600m. It protects a remnant less than 6 hectares in extent of eucalypt open-forest dominated by New England blackbutt *Eucalyptus montivaga* and common blackbutt *E. pilularis*, with associated pink bloodwood *Corymbia intermedia* and some grey gum *E. biturbinata*. Many of the blackbutts have died in the past few years due to drought, drying climate and/or possibly also borer insect attack. There is a diverse shrub layer, now predominantly native, and a rich mix of native and introduced plants in the ground cover. Under Queensland legislation the entire park is mapped as an Endangered regional ecosystem (RE 12.8.1a)<sup>1</sup> now confined to several small patches in the outer south-east of the plateau. Management assistance, mainly weeding, is contributed by FEP and ARA volunteers.

Systematic bird surveys in Nielsen Park were started by several members of ARA and FEP in early 2020, to build a baseline knowledge of bird fauna in a standardised, replicable fashion and to inform property management. The '2.0 ha, 20 minute' method of BirdLife Australia was applied and records were documented in the *Birdata* app; the data are publicly available online. Surveys were conducted in two plots (sites), each of 2.0 hectares as shown on the map below. Habitat in the plots was quite similar but the density, height and extent of shrubs was generally greater in the northern plot.



Nielsen Park showing the bird survey plots for the ARA project. The yellow line indicates the northern plot (site) boundary; the blue line indicates the southern plot. Each plot covers 2.0 hectares.

<sup>1</sup> <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.8.1>

## Results from the second year (February 2021 to January 2022)<sup>2</sup> & comparisons with Year 1

1. In Year 2 of the project, the northern and southern plots were surveyed every month, but with more than one survey in each of April, May and December. The total number of 2ha surveys was 30, with a seasonal bias in the data: summer, 8 surveys; autumn, 10; winter 6; and spring 6. In addition to these standardised surveys, three incidental surveys were documented. The overall effort was closely similar to that achieved in Year 1.
2. The total number of bird records in Year 2 was 326 (cf. 261 in Year 1).
3. The total number of species recorded from all surveys was 40 (cf. 35 in Year 1).
  - Includes non-indigenous (introduced) species = 0.
  - Nationally Threatened Species = 0.
  - Migratory<sup>3</sup> Species = Rufous Fantail, a single bird on 26 November 2021.
  - The cumulative list for the project is 46 bird species, after 65 surveys. *See page 6.*
4. Six species from Year 1 were not recorded in Year 2, including three birds-of-prey, Mistletoebird and Olive-backed Oriole. Eleven species were added to the project list in Year 2, including Golden Whistler, Rufous Fantail, Lewin's Honeyeater, Little Lorikeet and several passers-by (overhead, or present only briefly).
5. Species recorded in each of the 2ha plots:
  - 33 species in the northern plot; 34 species in the southern plot.
  - 27 species were common to both plots, e.g. Satin Bowerbird.
  - The six species recorded only in the northern plot included Golden Whistler, Rufous Fantail, Tawny Frogmouth and two friarbirds.
  - The seven species recorded only in the southern plot included Australian Wood Duck, Dollarbird, Spotted Pardalote and Sulphur-crested Cockatoo.
6. Eastern Whipbirds had a nest with small young in the central sector on 14 September 2021. Dollarbirds were feeding fledged young in the southern plot on 12 January 2022. Galahs and Rainbow Lorikeets apparently bred in tree holes in the southern plot.



Eastern Whipbird nest in Nielsen Park, some time after it was in use, in spring 2021.

<sup>2</sup> For this report, data have been combined for the two plots in Nielsen Park unless indicated otherwise.

<sup>3</sup> Under the Commonwealth's EPBC Act 1999; a Matter of National Environmental Significance (MNES).

7. No species of special ornithological interest (e.g. rare species) were recorded in Year 2.
8. The most frequently recorded species in Year 2:

Common Name	percentage of 30 surveys
Noisy Miner	100
Rainbow Lorikeet	100
Galah	97
Scaly-breasted Lorikeet	77
Pied Currawong	70
Pale-headed Rosella	63
Laughing Kookaburra	57
Australian Brush-turkey	53
Grey Butcherbird	50
Australian Magpie	47

Using data for the northern plot and for the southern plot, standardized surveys only.

Eight of the top 10 were unchanged from Year 1.

9. For Year 2, the cumulative tally of individuals across all surveys, which gives a crude measure of abundance (but not the number present at any one time):

Common Name	number of individuals
Noisy Miner	250
Rainbow Lorikeet	186
Scaly-breasted Lorikeet	156
Galah	120
Pale-headed Rosella	60
Pied Currawong	44
Little Corella	40
Laughing Kookaburra	39
Australian Magpie	28
Australian Brush-turkey	26

Using data for the northern plot and for the southern plot, standardized surveys only

Eight of the top 10 were unchanged from Year 1.

10. Records of common aggressive/predatory species in both years (2ha data only) are summarized in the next table. Three of these species were recorded somewhat more frequently and with a greater tally of individuals in Year 2.

species	frequency (% of surveys)		number of individuals	
	Year 1	Year 2	Year 1	Year 2
Grey Butcherbird	45	50	18	23
Laughing Kookaburra	45	57	30	39
Noisy Miner	90	100	217	250
Pied Currawong	86	70	63	44



A juvenile Dollarbird being fed by an adult, in Nielsen Park, January 2022.



11. Occurrence of small bush birds inhabiting the lower strata of the forest at Nielsen Park is shown in the next table. In Year 2, the number of such species doubled and the number of records tripled—despite almost the same survey effort.

species	number of records	
	Year 1	Year 2
Brown Thornbill	3	3
Eastern Whipbird	1	12
Golden Whistler		2
Lewin's Honeyeater		2
Rufous Fantail		1
White-browed Scrubwren	5	8

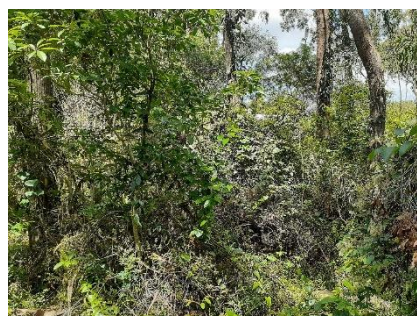
12. Analysis of data by season (2ha data only), Year 2. The number of seasonal samples is too small at this stage to conduct robust analysis and there is a seasonal bias in the survey effort. But these preliminary indications of seasonality may eventually prove to be truly meaningful:

- Some 15 species might be considered residents of the park, being recorded in all four seasons, e.g. Brush-turkey, Pale-headed Rosella, White-browed Scrubwren. Another four species were recorded in three seasons and probably also are resident, e.g. Brown Thornbill.
- Seven species were recorded only in autumn, notably four of the species of honeyeater, and Golden Whistler.
- Nine species were recorded only in spring and/or summer, e.g. Dollarbird, Koel and Little Lorikeet.
- Australian Wood Duck was recorded only in winter, presumably intending to breed in tree hollows in the park.

13. Information on bird usage of sites (northern or southern ends of the park) in Year 2:

The number of samples by site is too small at this stage to conduct robust analysis. But these preliminary indications of preference may eventually prove to be truly meaningful:

- Brown Thornbill, White-browed Scrubwren and Eastern Whipbird were recorded in both the northern and southern plots, with a combined total of nine records from the northern plot and 12 records from the southern plot. However, Golden Whistler and Rufous Fantail were recorded only in the north, perhaps preferring the greater extent of tall shrub thickets there?
- The southern plot seems to have more hollows for bird nesting, both in live and dead trees, which may partly explain why Wood Duck, Dollarbird and Sulphur-crested Cockatoo were recorded only in the southern plot.
- A 'new' location for a bower of Satin Bowerbird was found in Year 2 but bowers generally were scarce in Nielsen Park in Year 2, having been more numerous and persistent in Year 1. This may be due to changes in the interference of bowers by rival male bowerbirds, the thicker undergrowth in Year 2, and/or other factors. The number of records of Satin Bowerbird declined from 12 to nine.
- Tawny Frogmouths continued to roost at two sites in the northern plot in Year 2, and possibly nested because an adult with two suspected juveniles was recorded in November 2021.



## Conclusions and other comments on the results

1. The number of bird species recorded at Nielsen Park in this project increased markedly through Year 2 of the project to 46, including three more species of small bush birds of the lower strata. More surveys tend to produce more species, up to a 'plateau', so with further effort the list could grow further, perhaps by another third.
2. However, relative to survey effort the species richness is low for this location and habitat. For example, a somewhat lesser effort (44 surveys) over a similar area of open-forest less than a kilometre away along Nelson Street, has yielded 100 species (over 3.5 years: RJ pers. obs.). Furthermore, the proportion of species recorded only occasionally (in less than or equal to 5% of surveys) is much higher at Nielsen Park (53% compared to 31%). In other words, the expanding list of species is less due to resident or regularly visiting species than perhaps it could be.
3. The apparent increase in use of the park by small bush birds is certainly encouraging. This may be due partly to improved habitat, especially the indigenous shrub layer, resulting from weeding by FEP over many years. (But it was interesting to note that scrubwrens were sometimes recorded in a remnant patch of thick lantana in the far south-east of the park.) Another factor, especially in the return of and breeding by Eastern Whipbirds over the past year, may simply be the run of average to above-average rainfall in 2020 and 2021 in contrast to severe drought before that; as ground feeders, whipbirds would benefit from better moisture in the leaf litter.
4. Overall, the dominance of Noisy Miners (the most frequently recorded and abundant species in both years) in the park and prevalence of several other aggressive/predatory species, surely is discouraging to small bush birds. As an 'island' of forest surrounded by suburban housing, the park is an ideal headquarters for these species. It is encouraging, though, that no non-native bird species have been recorded in Nielsen Park in this project; Spotted Doves do occur just outside.
5. Isolation of Nielsen Park from extensive similar habitat may be an even greater contributor to the limited richness of bird species. In contrast, after just 10 surveys in a 2ha shrubby forest plot at Duggan Park, which is partly connected to the escarpment bushland, already 12 species of small bush birds (also Painted Button-quail and Wonga Pigeon) have been recorded.
6. With 60+ surveys completed, the sampling is sufficient for more sophisticated analyses of the results to be undertaken. Nevertheless, in view of Australia's highly variable climate—demonstrated locally by very different rainfall in 2019, 2020 and 2021—a longer span of years of survey would be preferable beforehand. At least one more year would be a minimum target.
7. A change in survey approach is proposed for Year 3 of the project. On one day at the midpoint of each of the four seasons (i.e. in April, July, October and January), a series of four 20-minute surveys will be conducted at the two 2ha plots. The surveys will be spaced across the day, to capture differences in bird activity, including at night—presently a data gap. Diversifying the survey approach may pick up species and add to knowledge missed so far. Also, it should ensure that observer effort can be sustained through the third year of the project.



## List of species recorded to date

Combined list of species, Year 1 & Year 2	
Common Name	Scientific Name
Australasian Figbird	<i>Sphecotheres vieilloti</i>
Australian Brush-turkey	<i>Alectura lathami</i>
Australian King-Parrot	<i>Alisterus scapularis</i>
Australian Magpie	<i>Gymnorhina tibicen</i>
Australian Wood Duck	<i>Chenonetta jubata</i>
Barking Owl	<i>Ninox connivens</i>
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>
Brown Goshawk	<i>Accipiter fasciatus</i>
Brown Thornbill	<i>Acanthiza pusilla</i>
Cattle Egret	<i>Bubulcus ibis</i>
Crested Pigeon	<i>Ocyphaps lophotes</i>
Dollarbird	<i>Eurystomus orientalis</i>
Eastern Koel	<i>Eudynamys orientalis</i>
Eastern Whipbird	<i>Psophodes olivaceus</i>
Galah	<i>Eolophus roseicapilla</i>
Golden Whistler	<i>Pachycephala pectoralis</i>
Grey Butcherbird	<i>Cracticus torquatus</i>
Laughing Kookaburra	<i>Dacelo novaeguineae</i>
Lewin's Honeyeater	<i>Meliphaga lewinii</i>
Little Corella	<i>Cacatua sanguinea</i>
Little Friarbird	<i>Philemon citreogularis</i>
Little Lorikeet	<i>Glossopsitta pusilla</i>
Magpie-lark	<i>Grallina cyanoleuca</i>
Mistletoebird	<i>Dicaeum hirundinaceum</i>
Musk Lorikeet	<i>Glossopsitta concinna</i>
Noisy Friarbird	<i>Philemon corniculatus</i>
Noisy Miner	<i>Manorina melanocephala</i>
Olive-backed Oriole	<i>Oriolus sagittatus</i>
Pale-headed Rosella	<i>Platycercus adscitus</i>
Pied Butcherbird	<i>Cracticus nigrogularis</i>
Pied Currawong	<i>Strepera graculina</i>
Rainbow Lorikeet	<i>Trichoglossus moluccanus</i>
Rufous Fantail	<i>Rhipidura rufifrons</i>
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>
Spotted Pardalote	<i>Pardalotus punctatus</i>
Square-tailed Kite	<i>Lophoictinia isura</i>
Striated Pardalote	<i>Pardalotus striatus</i>
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>
Tawny Frogmouth	<i>Podargus strigoides</i>
Torresian Crow	<i>Corvus orru</i>
Welcome Swallow	<i>Hirundo neoxena</i>
White-browed Scrubwren	<i>Sericornis frontalis</i>
Yellow-faced Honeyeater	<i>Caligavis chrysops</i>
Yellow-tailed Black-Cockatoo	<i>Zanda funereus</i>