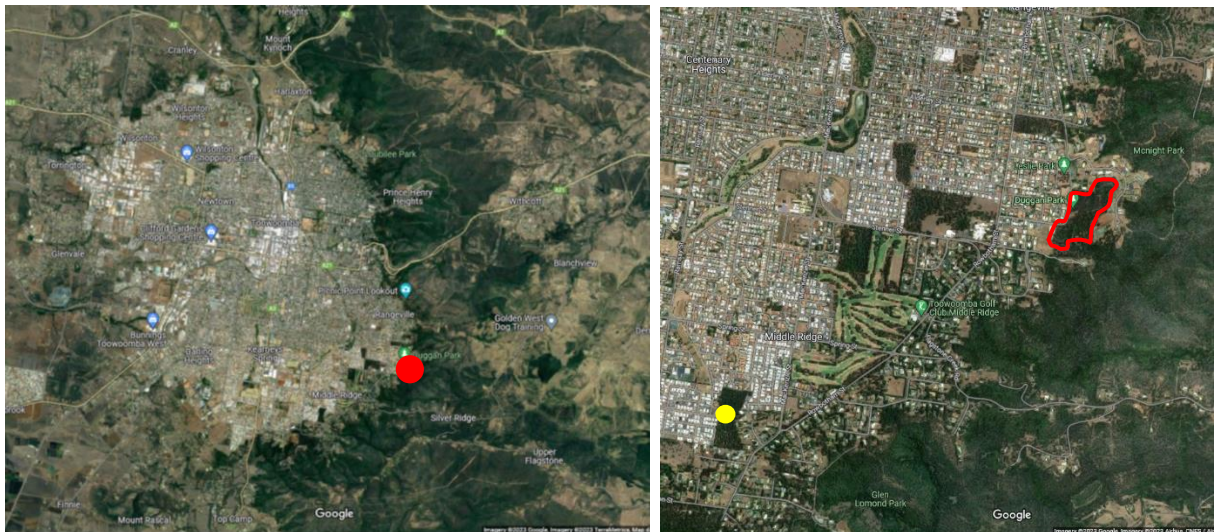


Surveys of birds in Duggan Park, Toowoomba, Queensland, by A Rocha Australia

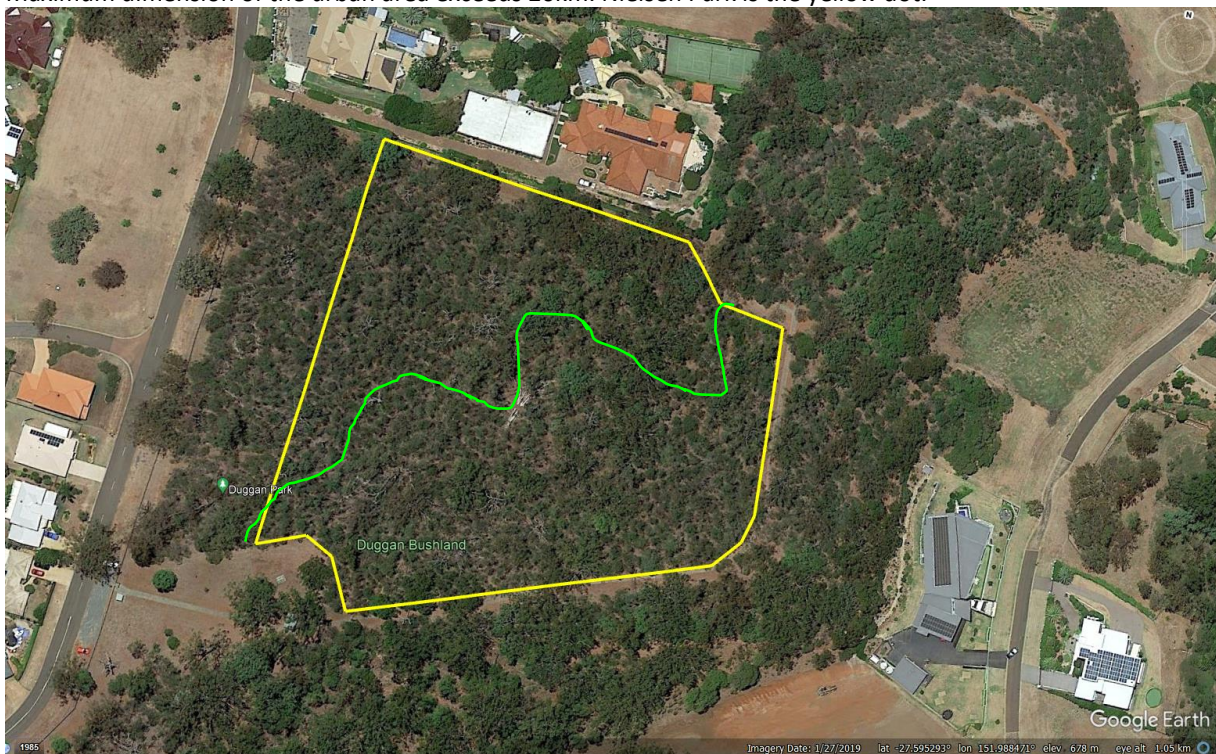
Covering the first 1.5 years (August 2021 to January 2023) of the project

Report by members of A Rocha Australia in Toowoomba, February 2023

Location of study area. Duggan Park is a bushland reserve of about 8 ha owned and managed by Toowoomba Regional Council, situated at the top of Toowoomba's eastern escarpment. It straddles the watershed between coastal and inland catchments on the very edge of the Great Dividing Range at an altitude of 680m (2230 feet) above sea level.



Location of Duggan Park (red dot & red polygon) on the eastern escarpment of Toowoomba city. Maximum dimension of the urban area exceeds 20km. Nielsen Park is the yellow dot.



Yellow line = boundary of 2ha survey plot; green line = formal pathway (paths also follow the plot edges).

Habitats. Most of Duggan Park is covered in a mix of remnant and regrowth native vegetation. Officially, almost the entire park is mapped by the Queensland Government as Regional Ecosystem 12.5.6, a type of open forest that is classed as Endangered¹ due to the small remaining area. The dominant trees are New England blackbutt *Eucalyptus montivaga*, common blackbutt *E. pilularis*, mountain grey gum *E. biturbinata*, pink bloodwood *Corymbia intermedia* and brush box *Lophostemon confertus*; also some tallowwood *E. microcorys* and she-oaks *Allocasuarina* sp. The understory varies from tall dense thickets of *Acacia neriifolia* and other *Acacia* species, young brush box, red ash *Alphitonia excelsa* and poison peach *Trema tomentosa*, to low shrubbery of prickly beard-heath *Leucopogon juniperinus*, introduced lantana *Lantana camara* in some areas, several vines and/or a suite of tussock grasses. Eucalypts in the south-west corner of the park were planted about 20 years ago.

Methods. In mid-2021, the local members of A Rocha Australia (ARA) concluded their voluntary support to vegetation (weed) management at nearby Nielsen Park, under supervision of Friends of the Escarpment Parks (FEP). Their efforts were transferred to Duggan Park to fill a gap in the FEP volunteer workforce there.

Given the expertise among the members and drawing on experience from Nielsen Park, the ARA team started monthly surveys of birds at Duggan Park in August 2021. In the long term, this might potentially provide information to assess the benefits of vegetation management at the park by FEP, ARA and Council. Although some information on birds of the park had been reported by other people ahead of the project (and ongoing), this would be the first systematic documentation that could be subject to robust analysis due to the method applied.

The survey team adopted the '2 hectare, 20 minute' area search of BirdLife Australia for this project and mapped an irregular polygon for this purpose over open forest and thickets as shown in the map above. This flat area was traversed by a formal gravel trail installed by Council as a 'sensory walk' for vision impaired people, with interpretive signs (with braille text and photos) on plants and birds of the site. During bird surveys, usually conducted monthly at one to two hours after sunrise, the ARA team of up to six observers walked the internal trail and the external trails, recording and counting all birds seen (including overflying) or confidently heard.

Occasionally, remote cameras were deployed to determine bird species too secretive to usually be detected in the 20-minute survey window. These birds were recorded in 'incidental surveys'.



Painted Button-quail (L) and Brown-capped Emerald Dove (R) as captured on remote camera.

¹ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.5.6>

Data were entered during the survey via a mobile phone application to the national database (*Birdata*) of BirdLife Australia, which at time of writing holds over 40 million bird records. All Birdata records can be used for nature conservation, notably by detection of trends in national or regional populations of bird species, leading to official designations of threatened species.

Results (from first 1.5 yrs). Table 1 below gives a list of species recorded, with number of records and gross measure of abundance in the survey plot to date; Table 2 shows the average count.

- Number of surveys conducted: **28** (2ha-20min = 20, with two in August 2021 and in August 2022; incidental = 8, mostly being remote camera records). Number of Birdata records: **284**.
- Species recorded = **57**, none listed as nationally Threatened.
- Breeding recorded: **2** species: Pied Currawong (October 2022) and Painted Button-quail (young in May 2022, eggs probably laid in early April).
- Most frequently recorded species: Yellow-faced Honeyeater, Spotted Pardalote, Brown Thornbill, Lewin's Honeyeater, Eastern Yellow Robin.
- Most abundant species (by gross sum of all counts): Yellow-faced Honeyeater, Lewin's Honeyeater, Brown Thornbill, White-browed Scrubwren, Spotted Pardalote.
- Number of small bush birds recorded (not including miners, parrots, aerial spp.): **23** species.
- Notable occurrence (relatively uncommon species): Brown-capped Emerald Dove, Rose Robin, White-browed Woodswallow, Collared Sparrowhawk, Cicadabird, Wonga Pigeon.



Rose Robin (L) and Rufous Fantail (R).

- Recorded only in winter: Eastern Spinebill, Rose Robin (presumed to be migrants). Peak count in winter: Grey Fantail, Silveryeye, Yellow-faced Honeyeater.
- Recorded only in autumn: Brown Cuckoo-dove, Olive-backed Oriole. Peak count in autumn: Red-browed Finch.
- Recorded only in spring: Rainbow Bee-eater, White-throated Treecreeper.
- Warm period migratory visitors: Rufous Fantail, Dollarbird, Cicadabird, Leaden Flycatcher & Brown-capped Emerald-Dove.

- Recorded in all seasons: many species, including Painted Button-quail and Satin Bowerbird.
- Recorded only once: 16 species.

Discussion & conclusions. The approach taken for ARA bird surveys at Duggan Park has successfully provided a good representation of the more than 100 bird species recorded there historically. (A significant proportion of all bird lists comprises species that pass through only once, or infrequently.) Although the method has some limitations—such as inability to find every bird in the 2ha plot within 20 minutes—at least it has been applied consistently. The data serve as a valuable baseline against which future assessments can be compared.

Conditions during the reporting period were relatively wet, with very much above-average rainfall through 2022. Consequently, understorey in the survey plot changed from being relatively open and dry (in late 2019, at the end of severe drought) to dense—much of it a closed canopy—and lush from about summer 2020-21. This possibly encouraged more frequent or prolonged use of the survey site by species such as Painted Button-quail and Rufous Fantail and occurrence of Emerald Dove and Wonga Pigeon. It is remarkable that these birds occur within little more than 100 metres of continuous urban housing.

The presence, persistently or regularly in many cases, and high relative abundance of so many small bush birds in Duggan Park is very encouraging. Although Noisy Miners are relatively common in the park, their areas of occurrence are localised and mostly outside the survey plot, in tall open forest with limited shrub layer. Given the typical aggression of miners to smaller birds, it is important that dense low shelter remains available for small bush birds in Duggan Park. Changes to vegetation may be caused by drought or wildfire.

In contrast, over more than two years of survey, only six species of small bush bird have been recorded in similar surveys at Nielsen Park (see map above) by ARA. The vegetation community at Nielsen Park is similar to that at Duggan Park and there is a healthy and dense shrub layer, enhanced by FEP and Council management. But at Nielsen Park, the forest has become cut off from the extensive escarpment woodland and forest, now being surrounded by houses, and the list of bird species has decreased markedly over the past few decades. It is therefore of vital importance for maintaining the biodiversity at Duggan Park, that the close proximity of similar forest and direct connection to it is maintained. Purchase of parcels of land and encouragement of vegetation regrowth at strategic locations around the park may be helpful.

Already, some patterns of seasonal occurrence have emerged from simple analysis of the survey data, despite the many factors influencing bird presence and abundance—not least, a highly variable and changing climate. Greater confidence on patterns and on results generally can be anticipated from extension of the present survey program for at least another two years or ideally for as many years as possible.

Acknowledgments. The following ARA members participated in one or more of the bird surveys at Duggan Park: Mick Atzeni, Rob Brodribb, Sue-Ellen Jaensch, Roger Jaensch, Wally Richards, Daina Wall and John Wall. Thanks also to Kaye Wood-Riley of FEP and to Rob Brodribb, for support regarding all ARA activities at Duggan Park. All photos in this report are by R. Jaensch.



Variegated
Fairy-wren
(male)

Table 1. Number of records & gross number of individuals, of bird species recorded by A Rocha Australia at Duggan Park in the first 1.5 years, from standardised and incidental surveys.

Common Name	Scientific Name	no. of records	no. of individuals
Australasian Figbird	<i>Sphecotheres vieilloti</i>	4	11
Australian King-Parrot	<i>Alisterus scapularis</i>	4	4
Bar-shouldered Dove	<i>Geopelia humeralis</i>	2	2
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	6	7
Brown Cuckoo-Dove	<i>Macropygia phasianella</i>	3	3
Brown Honeyeater	<i>Lichmera indistincta</i>	1	2
Brown Thornbill	<i>Acanthiza pusilla</i>	17	37
Brown-capped Emerald-Dove	<i>Chalcophaps longirostris</i>	1	1
Cicadabird	<i>Edolisoma tenuirostris</i>	1	2
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>	1	1
Crested Pigeon	<i>Ocyphaps lophotes</i>	1	1
Dollarbird	<i>Eurystomus orientalis</i>	3	5
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	3	4
Eastern Whipbird	<i>Psophodes olivaceus</i>	4	5
Eastern Yellow Robin	<i>Eopsaltria australis</i>	13	19
Galah	<i>Eolophus roseicapilla</i>	4	4
Golden Whistler	<i>Pachycephala pectoralis</i>	5	5
Grey Butcherbird	<i>Cracticus torquatus</i>	3	5
Grey Fantail	<i>Rhipidura fuliginosa</i>	12	25
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	6	7
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	4	4
Leadend Flycatcher	<i>Myiagra rubecula</i>	1	1
Lewin's Honeyeater	<i>Meliphaga lewinii</i>	16	50
Little Corella	<i>Cacatua sanguinea</i>	1	2
Little Lorikeet	<i>Glossopsitta pusilla</i>	5	6
Magpie-lark	<i>Grallina cyanoleuca</i>	1	1
Mistletoebird	<i>Dicaeum hirundinaceum</i>	3	3
Noisy Friarbird	<i>Philemon corniculatus</i>	6	7
Noisy Miner	<i>Manorina melanocephala</i>	10	21
Olive-backed Oriole	<i>Oriolus sagittatus</i>	2	4
Painted Button-quail	<i>Turnix varius</i>	7	12
Pale-headed Rosella	<i>Platycercus adscitus</i>	6	10
Peaceful Dove	<i>Geopelia placida</i>	1	2
Pied Currawong	<i>Strepera graculina</i>	8	14
Rainbow Bee-eater	<i>Merops ornatus</i>	2	7
Rainbow Lorikeet	<i>Trichoglossus moluccanus</i>	7	20
Red Wattlebird	<i>Anthochaera carunculata</i>	1	5
Red-browed Finch	<i>Neochmia temporalis</i>	6	20
Rose Robin	<i>Petroica rosea</i>	1	1
Rufous Fantail	<i>Rhipidura rufifrons</i>	4	5
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	6	8
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>	4	5
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>	1	2
Silvereye	<i>Zosterops lateralis</i>	8	24
Spotted Dove	<i>Streptopelia chinensis</i>	3	5
Spotted Pardalote	<i>Pardalotus punctatus</i>	18	33
Striated Pardalote	<i>Pardalotus striatus</i>	8	13
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	4	10
Tawny Frogmouth	<i>Podargus strigoides</i>	1	1
Variiegated Fairy-wren	<i>Malurus lamberti</i>	7	17
Welcome Swallow	<i>Hirundo neoxena</i>	1	1
White-browed Scrubwren	<i>Sericornis frontalis</i>	12	36
White-browed Woodswallow	<i>Artamus superciliosus</i>	1	8
White-throated Treecreeper	<i>Cormobates leucophaea</i>	2	2
Willie Wagtail	<i>Rhipidura leucophrys</i>	2	2
Wonga Pigeon	<i>Leucosarcia melanoleuca</i>	1	1
Yellow-faced Honeyeater	<i>Caligavis chrysops</i>	19	70

Table 2. Average count, when recorded, for birds recorded by A Rocha Australia at Duggan Park in the first 1.5 years (August 2021 to January 2023), from standardised and incidental surveys. This does not include surveys when no individuals of the species were recorded.

Common Name	average count when recorded
Australasian Figbird	2.8
Australian King-Parrot	1.0
Bar-shouldered Dove	1.0
Black-faced Cuckoo-shrike	1.2
Brown Cuckoo-Dove	1.0
Brown Honeyeater	2.0
Brown Thornbill	2.2
Brown-capped Emerald-Dove	1.0
Cicadabird	2.0
Collared Sparrowhawk	1.0
Crested Pigeon	1.0
Dollarbird	1.7
Eastern Spinebill	1.3
Eastern Whipbird	1.3
Eastern Yellow Robin	1.5
Galah	1.0
Golden Whistler	1.0
Grey Butcherbird	1.7
Grey Fantail	2.1
Grey Shrike-thrush	1.2
Laughing Kookaburra	1.0
Leaden Flycatcher	1.0
Lewin's Honeyeater	3.1
Little Corella	2.0
Little Lorikeet	1.2
Magpie-lark	1.0
Mistletoebird	1.0
Noisy Friarbird	1.2
Noisy Miner	2.1
Olive-backed Oriole	2.0
Painted Button-quail	1.7
Pale-headed Rosella	1.7
Peaceful Dove	2.0
Pied Currawong	1.8
Rainbow Bee-eater	3.5
Rainbow Lorikeet	2.9
Red Wattlebird	5.0
Red-browed Finch	3.3
Rose Robin	1.0
Rufous Fantail	1.3
Satin Bowerbird	1.3
Scaly-breasted Lorikeet	1.3
Scarlet Honeyeater	2.0
Silvereye	3.0
Spotted Dove	1.7
Spotted Pardalote	1.8
Striated Pardalote	1.6
Sulphur-crested Cockatoo	2.5
Tawny Frogmouth	1.0
Variiegated Fairy-wren	2.4
Welcome Swallow	1.0
White-browed Scrubwren	3.0
White-browed Woodswallow	8.0
White-throated Treecreeper	1.0
Willie Wagtail	1.0
Wonga Pigeon	1.0
Yellow-faced Honeyeater	3.7