



Surveys of birds by A Rocha Australia at Duggan Park, Toowoomba, Queensland, in 2023

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Introduction. Duggan Park is a bushland reserve of about 8 hectares situated on the Toowoomba escarpment, on the very edge of the Great Dividing Range at roughly 700 m altitude. It is owned and managed by Toowoomba Regional Council (TRC) and is one of a dozen such parks on the city's eastern and south-eastern margins.

Duggan Park remains relatively well-connected to extensive bushland along the escarpment although it has become almost surrounded by houses over the last decade or so. Like all of the escarpment parks, it requires active management especially to control invasive plants. Council's work is supported by Friends of the Escarpment Parks Toowoomba Inc. (FEP) and since 2021, its volunteer team at Duggan Park has been bolstered by volunteers from the local membership of A Rocha Australia, a Christian nature conservation organisation.

Wise holistic management of bushland requires a deep understanding of the area's biodiversity and of the ecological processes that support it. In August 2021, A Rocha started systematic monthly surveys of birds in the park as a sustainable project that would deliver information to TRC and FEP for park management, in a short timeframe. This report addresses the third year of surveys.

Methods. BirdLife Australia operates a national database of bird records known as Birddata ¹, from which its analyses of data have identified trends in national and regional populations of bird species, leading to threatened species designations and conservation action. The preferred Birddata survey method for woodland birds is the 2-hectare, 20-minute area search; this was applied by A Rocha at Duggan Park. During this type of standardised survey, all bird species confidently identified within or overflying the survey area are counted and data are entered to Birddata via a mobile phone app.

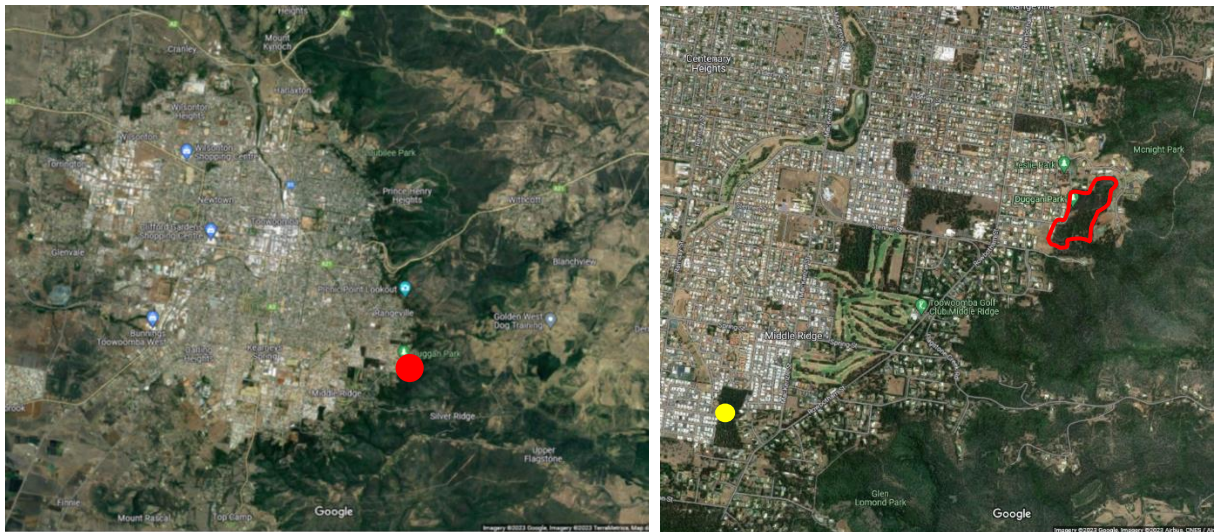
A flat 2 ha section of bushland on the top plateau of the park, which is traversed by a formed path, was demarcated for this activity (see maps below). This ecosystem is mapped by the Queensland Government as open forest dominated by common blackbutt *Eucalyptus pilularis*, New England blackbutt *E. montivaga* and mountain grey gum *E. biturbinata* on (red) volcanic soil; it has a moderately dense to closed tree and shrub understorey of *Acacia* spp. (several species, some tall), red ash *Alphitonia excelsa*, poison peach *Trema tomentosa* and sapling brush box *Lophostemon confertus*. The lowest layer has many vines and grasses, except under the closed thickets where the ground is covered in leaf litter, branches and logs. This ecosystem was formerly much more widespread on the Toowoomba plateau and is now classed as Endangered in statewide vegetation mapping; in Duggan Park it has been damaged by fire, invasion of lantana *Lantana camara* and other weeds and by drought death of mature trees.

From August 2021 to the end of 2023, 31 of the monthly 2 ha–20 min surveys were completed, all in daylight. In addition, nine incidental surveys were recorded, mostly to include records of species photographed by remote cameras installed for short periods in the thickets—well hidden from the public—to improve knowledge of birds inhabiting dense habitat that was difficult to view.

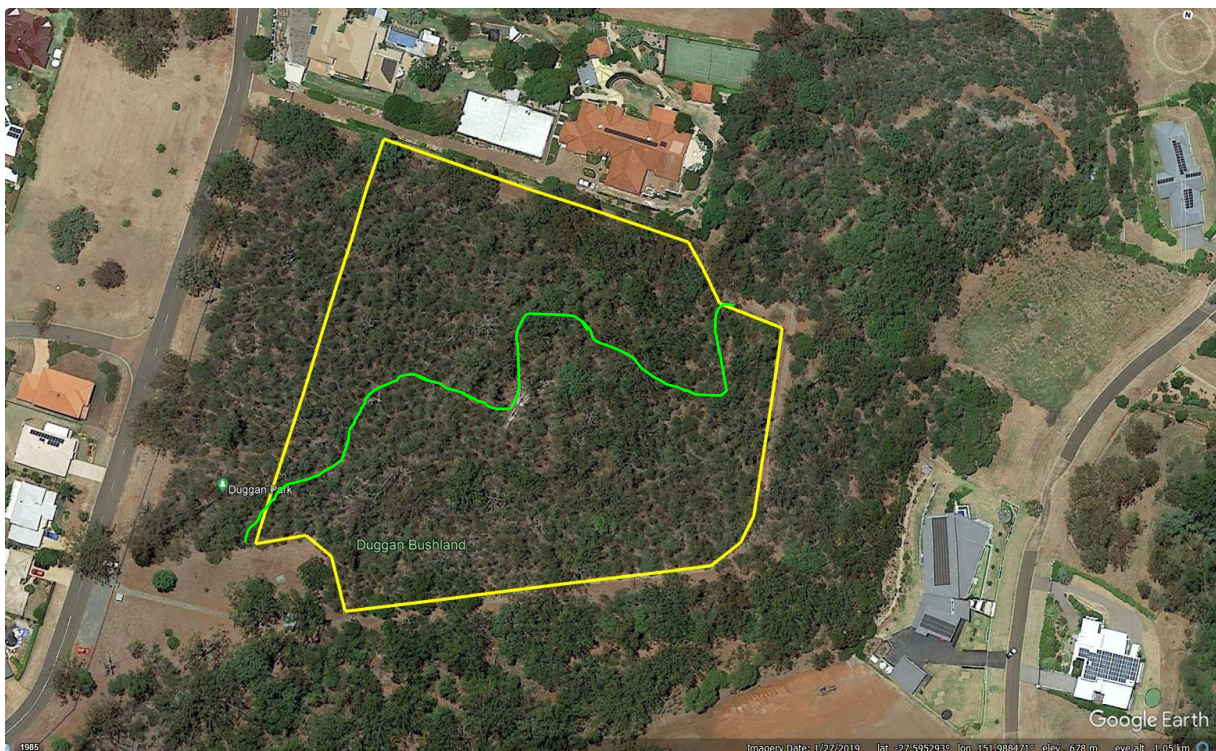
Climatic conditions varied across the reporting period, with above average to well above average rainfall in 2021 and 2022 respectively; year 2023 was drier but finished with a burst of high rainfall.

¹ <https://birddata.birdlife.org.au/home>

Maps of the location of Duggan Park and position of the bird survey plot.



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



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

Results. This report presents results from surveys in 2023, with reference to all surveys conducted to date; please refer to the report for 2021-22 for additional information.

Table 1 lists the 46 bird species recorded by A Rocha in the 2 ha plot during 2023; the cumulative list now stands at 60 species (Table 2, with scientific names). No species gazetted as threatened at state or national level were recorded but one species, Rufous Fantail, listed as migratory under Commonwealth legislation, was recorded in five surveys (Table 2); invariably it was in or near dense *Trema*-dominated thicket. Six other recorded species (Table 2) are strictly seasonal in their occurrence in the Toowoomba area: Rose Robin in the cooler months; and Common Cicadabird, Leaden Flycatcher, Oriental Dollarbird, Sacred Kingfisher and Brown-capped Emerald-Dove in the

Table 1. List of bird species recorded, and average count, in a 2 hectare plot in forest at Duggan Park, Toowoomba, by A Rocha Australia in calendar year 2023. Scientific names are in Table 2.

Common Name	average count in 2ha	Common Name	average count in 2ha
Australasian Figbird	2.0	Olive-backed Oriole	1.0
Australian Brush-turkey	1.7	Oriental Dollarbird	1.3
Australian King-Parrot	1.5	Pale-headed Rosella	1.8
Australian Magpie	2.0	Pied Currawong	4.6
Bar-shouldered Dove	1.0	Rainbow Lorikeet	5.0
Black-faced Cuckoo-shrike	1.0	Red Wattlebird	1.7
Brown Cuckoo-Dove	1.0	Red-browed Finch	2.0
Brown Thornbill	2.6	Rufous Fantail	2.0
Common Cicadabird	1.5	Sacred Kingfisher	2.0
Eastern Spinebill	1.0	Satin Bowerbird	1.2
Eastern Yellow Robin	1.4	Scaly-breasted Lorikeet	4.6
Galah	1.6	Scarlet Honeyeater	1.0
Golden Whistler	1.5	Silvereye	8.2
Grey Butcherbird	2.0	Spotted Pardalote	2.8
Grey Fantail	2.8	Striated Pardalote	1.0
Grey Shrike-thrush	1.0	Sulphur-crested Cockatoo	1.5
Laughing Kookaburra	1.0	Variiegated Fairy-wren	2.3
Leaden Flycatcher	1.0	White-browed Scrubwren	1.8
Lewin's Honeyeater	2.9	White-browed Woodswallow	4.0
Little Lorikeet	1.0	White-naped Honeyeater	1.0
Magpie-lark	1.5	White-throated Treecreeper	1.0
Noisy Friarbird	1.5	Willie Wagtail	1.0
Noisy Miner	1.5	Yellow-faced Honeyeater	2.5



Rufous Fantail, a listed migratory species, visits in the warmer months

warmer months. A suite of bird species is more abundant in the cooler months, generally from April to August: most notably the Yellow-faced Honeyeater², Grey Fantail, Golden Whistler and the two pardalotes. On 15 April 2023, an exceptional tally of 16 Grey Fantails was made in the 2 ha plot; such numbers are sometimes reported around Toowoomba in the early stages of northward ‘migration’ but usually over a much larger area.

Only two species, Pied Currawong and Painted Button-quail have been recorded by A Rocha as breeding in the 2 ha plot at Duggan Park to date. In part this reflects the habitat density but more so the brevity of the survey period (20 minutes), which does not facilitate discovery of breeding evidence—normally a matter of patient observation for longer duration. Ten other species including Dollarbird, Tawny Frogmouth, Sacred Kingfisher, Brown Thornbill, pardalotes and some cockatoos and parrots are known to breed elsewhere in Duggan Park, as documented in separate surveys of the whole park by the author, and others. A Satin Bowerbird maintains a display bower in the 2 ha plot and an active nest was discovered in January 2024 in a blackbutt tree outside the plot.

Arguably the most significant species in the surveys has been Painted Button-quail. Although sometimes noticed in the park by FEP volunteers, during A Rocha surveys this species was recorded on eight dates with up to four individuals counted (Table 2); none were seen by A Rocha in 2023, a drier year, but after late rains one was seen in the plot again in January 2024. Most records of this small, shy, ground-dwelling bird were from remote cameras in dense *Trema* thicket, where the birds fed in leaf litter, leaving circular feeding scrapes (‘platelets’). It is remarkable that such a bird should be present so close to extensive suburban houses—from which predatory cats roam (as verified on camera at nearby Nielsen Park)—and it seems that rapid thickening and foliage growth of *Trema* and associated shrubs due to the wet period 2020 to 2022 favoured influx of the button-quail. Adults with small young were ‘captured’ on the remote cameras.

² Yellow-faced Honeyeater was the most abundant species recorded in the whole park as recorded separately by the author, with highest count of 54 birds—mostly passing through—on 4 May 2021.

Table 2. List of bird species recorded in a 2 hectare plot in forest at Duggan Park, Toowoomba, by A Rocha Australia, 2021 to 2023

Common Name	Scientific Name	Number of records (n = 41)	Highest count
Australasian Figbird	Sphecotheres vieilloti	5	4
Australian Brush-turkey	Alectura lathami	4	2
Australian King-Parrot	Alisterus scapularis	9	2
Australian Magpie	Gymnorhina tibicen	1	2
Bar-shouldered Dove	Geopelia humeralis	3	1
Black-faced Cuckoo-shrike	Coracina novaehollandiae	7	2
Brown Cuckoo-Dove	Macropygia phasianella	5	1
Brown Honeyeater *	Lichmera indistincta	1	2
Brown Thornbill *	Acanthiza pusilla	26	6
Brown-capped Emerald-Dove	Chalcophaps longirostris	1	1
Collared Sparrowhawk	Accipiter cirrocephalus	1	1
Common Cicadabird	Edolisoma tenuirostre	2	2
Crested Pigeon	Ocyphaps lophotes	1	1
Eastern Spinebill *	Acanthorhynchus tenuirostris	4	2
Eastern Whipbird *	Psophodes olivaceus	4	2
Eastern Yellow Robin *	Eopsaltria australis	20	3
Galah	Eolophus roseicapilla	10	3
Golden Whistler *	Pachycephala pectoralis	9	2
Grey Butcherbird	Cracticus torquatus	4	2
Grey Fantail *	Rhipidura albiscapa	20	16
Grey Shrike-thrush	Colluricincla harmonica	9	2
Laughing Kookaburra	Dacelo novaeguineae	6	1
Leaden Flycatcher *	Myiagra rubecula	3	1
Lewin's Honeyeater *	Meliphaga lewinii	27	6
Little Corella	Cacatua sanguinea	1	2
Little Lorikeet *	Glossopsitta pusilla	6	2
Magpie-lark	Grallina cyanoleuca	3	2
Mistletoebird *	Dicaeum hirundinaceum	3	1
Noisy Friarbird	Philemon corniculatus	8	2
Noisy Miner	Manorina melanocephala	13	6
Olive-backed Oriole	Oriolus sagittatus	5	2
Oriental Dollarbird	Eurystomus orientalis	6	3
Painted Button-quail *	Turnix varius	8	4
Pale-headed Rosella	Platycercus adscitus	12	3
Peaceful Dove *	Geopelia placida	1	2
Pied Currawong	Strepera graculina	13	16
Rainbow Bee-eater *	Merops ornatus	2	4
Rainbow Lorikeet	Trichoglossus moluccanus	14	8
Red Wattlebird	Anthochaera carunculata	4	5
Red-browed Finch *	Neochmia temporalis	7	10
Rose Robin *	Petroica rosea	1	1
Rufous Fantail *	Rhipidura rufifrons	5	2
Sacred Kingfisher *	Todiramphus sanctus	4	1
Satin Bowerbird	Ptilonorhynchus violaceus	12	2
Scaly-breasted Lorikeet	Trichoglossus chlorolepidotus	9	13
Scarlet Honeyeater *	Myzomela sanguinolenta	2	2
Silvereye *	Zosterops lateralis	13	25
Spotted Dove	Spilopelia chinensis	3	3
Spotted Pardalote *	Pardalotus punctatus	22	4
Striated Pardalote *	Pardalotus striatus	11	4
Sulphur-crested Cockatoo	Cacatua galerita	6	6
Tawny Frogmouth	Podargus strigoides	1	1
Variegated Fairy-wren *	Malurus lamberti	9	5
Welcome Swallow *	Hirundo neoxena	1	1
White-browed Scrubwren *	Sericornis frontalis	17	7
White-browed Woodswallow *	Artamus superciliosus	2	8
White-naped Honeyeater *	Melithreptus lunatus	1	1
White-throated Treecreeper *	Cormobates leucophaea	3	1
Wonga Pigeon	Leucosarcia melanoleuca	3	1
Yellow-faced Honeyeater *	Caligavis chrysops	29	8

* small bushbird category (smaller than a Noisy Miner, or ground dwelling).

Breeding in the 2 ha plot was recorded for Painted Button-quail and Pied Currawong.



Brown Cuckoo-Dove feeds on ripe *Trema* berries



Rose Robin (male): visits in the cooler months

All bird photos by R. Jaensch.

Table 2 indicates the 29 species recorded in the A Rocha surveys, which may be categorised as ‘small bushbirds’—smaller than a Noisy Miner, or ground-dwelling, and including aerial species. This is a positive result because in nearby bushland parks where Noisy Miners and other aggressive species dominate, there are fewer species or individuals of small bushbirds. At Duggan Park in the 2 ha plot, despite being quite often recorded (13 surveys), the highest count of Noisy Miner was only six birds (Table 2). Probably the dense shrubbery and continuous forest in the plot and vicinity is not favoured by the miners, whereas miners are more common in open habitats of the park where understorey is short or shrubs are completely absent.

Considering all records from the A Rocha surveys, the most frequently recorded (three highest ranked) species are Yellow-faced Honeyeater, Lewin’s Honeyeater and Brown Thornbill (Table 2); this measure can favour highly vocal species. The most abundant species in 2023, by average count per survey, were Silvereeye, Rainbow Lorikeet, Scaly-breasted Lorikeet and Pied Currawong (Table 1); bias is to highly sociable species. The average number of species in 2 ha plot surveys (n = 31) was 13.

Conclusions. The methods applied by A Rocha for building a systematic inventory of birds in a 2 ha portion of Duggan Park have proved effective in documenting a substantial number of species across many bird families. Only one nocturnal species (Tawny Frogmouth) has been recorded, which is unsurprising given the lack of nocturnal surveys. Additional species can be expected from further surveys; the author has recorded 103 species in 74 surveys of the entire park, starting in 2019. These could include more raptors (e.g. Square-tailed Kite), seasonal visitors (e.g. Spangled Drongo), transient species (e.g. Dusky Woodswallow) and others, e.g. Brown-headed Honeyeater. Yellow-tailed Black-Cockatoo and Large-billed Scrubwren are among other birds that have been separately recorded in the same 2 ha plot. Superb Fairy-wren seems to occur in different sections of the park.

The avifauna of Duggan Park seems more ‘intact’ or at least more biodiverse than in some other bushland areas on the south-eastern edge of Toowoomba’s urban zone; At Nielsen Park (6 ha) after 146 surveys over four years, involving two 2 ha plots, a similar number of species (57) was recorded but only 16 small bushbird species were listed. Probably, the most significant influence has been the isolation of the other parks from larger areas of bushland, compared to the better connectivity of Duggan Park—which should be preserved. It is possible that Duggan Park is a vital link in a seasonal corridor for bird migration along the Great Dividing Range in South-East Queensland but a much longer and more sophisticated study would be required to verify this theory.

The survey plot at Duggan Park is kept as free of weeds as possible by A Rocha volunteers, although lantana readily regrows in wet periods; climbing asparagus (present) and other smothering vines are not yet a serious problem there. Regardless, the character and condition of forest habitat in the plot is largely beyond the control of workers. Both old-growth and young trees, mainly New England blackbutt, died during the (one in a hundred year?) drought ending in early 2020; thickets of *Trema* and *Alphitonia* grew prolifically in the wetter years 2020-22, dying back but reinvigorating in returned wet conditions of summer 2023-24; and ground cover has changed in a similar way. In such a dynamic environment, changes in avifauna could be expected. Longer term study will be needed if medium- or long-term trends in bird populations are to be meaningfully identified—leading to any requisite responses on habitat management.

