



# Goomig Project Gouldian Finch Monitoring - Nesting Activity 2021-2022







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# Goomig Gouldian Finch Monitoring - Nesting

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# 1.0 Executive Summary

The Goomig Project (Weaber Plains Development Project) is an irrigated agricultural development located approximately 30 km north of Kununurra, which involved clearing approximately 9,260 ha of vegetation for agriculture. Approximately 11,470 ha of native vegetation surrounding, or remaining between, the cleared areas has been designated as a buffer area (the study area) to be managed to protect surrounding conservation reserves and watercourses (Strategen 2014). Gouldian Finch monitoring in the buffer area during ongoing operation is required as a condition of the approval for the project, and is outlined in the Gouldian Finch Conservation Plan (GFCP; Strategen 2014). Item 7 of the monitoring regime requires "annual monitoring of breeding populations, including timing and reproductive outputs (i.e. clutch size and fledging success), to be undertaken annually between February and July".

Breeding surveys in the buffer area were conducted across three phases, at monthly intervals in March, April and May 2022, to coincide with the primary breeding period previously recorded within the study area. Artificial nest boxes previously deployed in the study area were checked for evidence of usage by Gouldian Finches using a burrow scope camera, and if active nests were detected, details on the status of the nest (e.g. clutch size, development of chicks) were recorded.

A total of 138 nest boxes were checked for condition and evidence of Gouldian Finch occupation on at least one of the survey phases. This included 121 out of the 159 provided nest box locations, and a further 16 nest boxes not at provided locations. As at the conclusion of the May survey:

- 71 nest boxes were still in good, useable condition;
- 67 were broken or blocked; and
- 38 nest boxes could not be found at their reported locations.

No Gouldian Finches were recorded breeding in the artificial nest boxes within the study area in the 2022 breeding season, nor was any evidence of recent usage visible. As all recorded breeding in the buffer area has taken place in artificial nest boxes since they were first installed in 2013, it is likely that the decline in condition and hence availability of nest boxes is at least partly responsible for the decline in nesting activity in the study area. Additional nest boxes (at least were installed after the 2021 breeding season, however there may be a lag in uptake of these new nest boxes given the lack of breeding activity in the study area during the 2021 season. In addition, the new nest boxes have been installed in low-lying, seasonally-inundated habitat rather than in known breeding habitat of rocky hillslopes. As such, it is possible that they are not in suitable Gouldian Finch breeding habitat.

The reduction in artificial nest box availability may have caused Gouldian Finches to shift back to using natural hollows in these breeding areas. No evidence of breeding in natural hollows was observed (e.g. adults entering hollows or carrying nesting material, calls of begging fledglings), but these were not systematically checked during the current surveys due to time constraints and because GPS locations for previously-checked hollows were not available, so it is possible that some nesting took place in natural hollows. However, as few Gouldian Finches were seen in the breeding areas until late in the season, and no evidence of breeding was observed, it follows that it is unlikely that significant numbers nested in natural hollows in the mapped breeding areas. At least six juvenile Gouldian Finches were observed with adults in the study area during the May survey, which does indicate that successful breeding did take place somewhere in the broader area.

It is also possible that the fires in the buffer area (particularly the late season fire in November-December) may have reduced breeding suitability by reducing the quantity of seed available in breeding areas. However, as no breeding was recorded in the previous season either, it is unlikely that this is the primary reason for the lack of breeding activity this season. Similarly, seasonal conditions are unlikely to have affected breeding in the study area this season as, although overall rainfall for the 2021-22 wet season was a little below average, the difference was minor

(<2% below long-term median) and surface water was still available in proximity to the breeding areas by the May survey.

The results of the monitoring during the 2022 season indicate that the target (identified in the GFCP) of “no reduction in baseline breeding numbers<sup>1</sup> which can be attributed to Buffer Area management” has not been achieved, as no Gouldian Finches were confirmed breeding in the buffer area. As such, we make the following recommendations:

1. Repair or replace broken or missing nest boxes within the existing mapped breeding areas to return the number of boxes available for use in these areas to at least the 120 originally available.
2. Ensure that any additional nest boxes are only installed in suitable Gouldian Finch breeding habitat, ideally within or immediately adjacent to the existing mapped breeding areas.
3. If prioritisation is required, prioritise repair and replacement of boxes in breeding populations 4 and 5 (northern section of the study area) where larger numbers of Gouldian Finches have been recorded breeding in previous seasons.
4. Systematic location and inspection of potentially suitable natural hollows should be recommenced, particularly if observed breeding activity does not increase following restoration of nest boxes.
5. Future monitoring reports must include GPS locations of all natural hollows (and nest boxes) inspected during that season to facilitate reliable re-inspection in subsequent seasons.
- 6a. Consider expanding or revising the monitoring program to encompass known breeding locations outside of the buffer area to provide control data; OR
- 6b. Source and incorporate relevant data obtained by other monitoring programs at suitable control sites in the region into the assessment and reporting each year.

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<sup>1</sup> Baseline breeding numbers have not been defined explicitly in the GFCP – we have treated the initial detailed survey in 2011 as the baseline survey for this purpose, as clearing commenced the following year.

## 2.0 Introduction

### 2.1 Project Background

The Goomig Project (formerly Weaber Plains Development Project) is an irrigated agricultural development located approximately 30 km north of Kununurra (Figure 2.1) and is an expansion of the existing stage 1 of the Ord River Irrigation Scheme. The project was approved by the then Department of Sustainability, Environment, Water, Population and Communities in 2011.

The project involves clearing approximately 9,260 ha of vegetation for agriculture. Approximately 11,470 ha of native vegetation surrounding, or remaining between, the cleared areas has been designated as a buffer area (the study area) to be managed to protect surrounding conservation reserves and watercourses (Strategen 2014).

### 2.2 Project Scope

Gouldian Finch monitoring in the buffer area of the Goomig Project during ongoing operation is required as a condition of approval for the project. A Gouldian Finch Conservation Plan (GFCP) has been prepared which includes a monitoring regime to be implemented to satisfy this condition (Strategen 2014). Biota Environmental Sciences (Biota) was engaged by the Department of Primary Industries and Regional Development (DPIRD) to implement this monitoring during the 2021-22 season.

The scope of the current study was to undertake monitoring surveys to meet the requirements of Items 7, 8 and 9 in Table 3 of the GFCP for the 2021-22 season:

- Item 7: Annual monitoring of breeding populations, including timing and reproductive outputs (i.e. clutch size and fledging success), to be undertaken annually between February and July;
- Item 8: Annual wet-season monitoring of foraging activity in critical wet-season feeding areas in close proximity to breeding areas, to be undertaken between November and April each year; and
- Item 9: Mapping and annual monitoring of the phenology and productivity of wet season feeding habitat, and assessment of their use by Gouldian Finches, to be undertaken between November and April each year.

This report addresses the results of the annual monitoring of breeding populations (Item 7). Item 8 and Item 9 are addressed in a separate report (see Biota 2022).

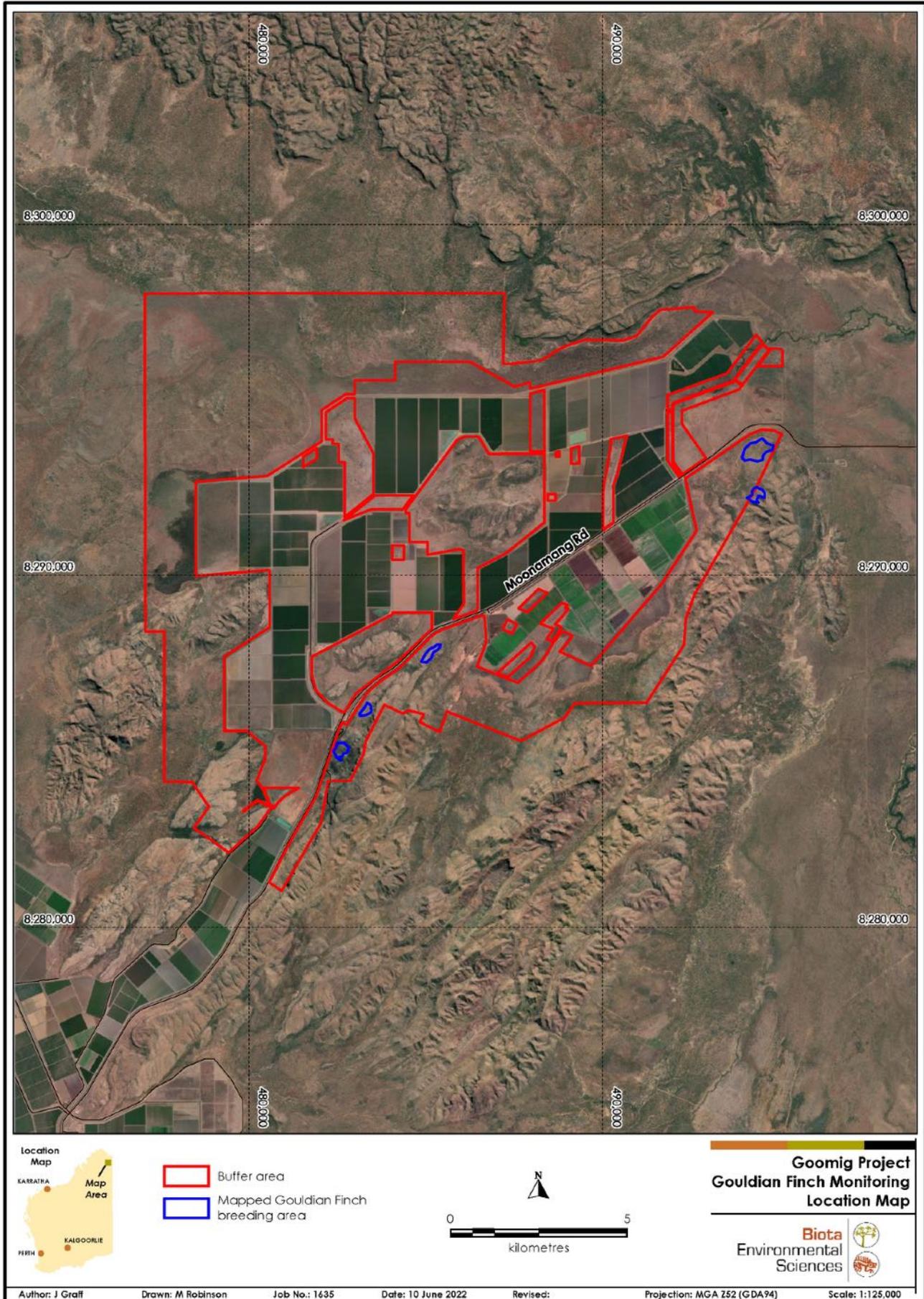


Figure 2.1: Gomig Project buffer area (the study area)

## 2.3 Gouldian Finch (*Chloebia gouldii*)

### 2.3.1 Distribution

The Gouldian Finch formerly occurred across large areas of tropical northern Australia from Cape York in Queensland to the Kimberley region of Western Australia. However, over the last 100 years, the species has declined markedly in range and abundance, and is now recorded reliably only from the Northern Territory and Western Australia, with infrequent records in Queensland (O'Malley 2006). In Western Australia, the Gouldian Finch occurs throughout much of the Kimberley region in the north-east of the state, from the Dampier Peninsula in the west, south to Mornington Wildlife Sanctuary and Halls Creek, and east to Lake Argyle and the WA border (Johnstone and Storr 2004, Cornell Lab of Ornithology 2022).

### 2.3.2 Habitat

Known breeding habitat for Gouldian Finches primarily comprises rocky hillslopes with smooth-barked eucalypts, including *Eucalyptus brevifolia*, *E. tinnitans* (O'Malley 2006), *E. miniata*, and *Corymbia dichromophloia* (Brazill-Boast et al. 2011), located in proximity (usually <2 km) to permanent fresh water sources for drinking (O'Malley 2006). An understorey of suitable foraging grasses is also typically an important component of breeding habitat (Brazill-Boast et al. 2011).

During the non-breeding season, Gouldian Finches disperse from breeding areas into adjacent lowland areas, favouring woodland areas with an understorey of suitable foraging grasses (Dostine et al. 2001).

### 2.3.3 Breeding Ecology

Gouldian Finches nest almost exclusively in eucalypt hollows, though there are historical reports of nesting in termite mounds (Tidemann 1996). In the east Kimberley, they nest in hollows in the cavity-bearing eucalypts *Corymbia dichromophloia* and *Eucalyptus miniata* (Brazill-Boast et al. 2010, 2011). Selection of hollows is highly dependent on structural characteristics of the hollow and the number of suitable hollows available in an area (Brazill-Boast et al. 2010, 2011).

Eggs are laid between February and June near Wyndham in Western Australia (Brazill-Boast et al. 2010), and between January and August, depending on wet season rainfall, on Newry Station in the Northern Territory (Tidemann et al. 1999). The average clutch size at Northern Territory study sites was  $5.2 \pm 1.3$ , and pairs were recorded laying up to three clutches per season (Tidemann et al. 1999).

### 2.3.4 Diet

The Gouldian Finch is an obligate granivore, feeding almost entirely on grass seeds, though insects are occasionally taken (Johnstone and Storr 2004). Research in the Northern Territory found Gouldian Finches foraged mostly on the ground in burnt areas during the dry season, feeding on fallen seed from annual grasses, particularly sorghum (*Sarga*) species, that was exposed by the burning of the grass cover (Dostine et al. 2001). During the wet season, the finches fed on seeds of perennial grasses, including *Themeda triandra*, *Alloteropsis semialata*, *Chrysopogon fallax*, and *Heteropogon triticeus*, taking seeds directly off the grasses as they ripen (Dostine et al. 2001).

### 2.3.5 Conservation and Threatening Processes

The Gouldian Finch is listed as Endangered at federal level under the *Environment Conservation and Biodiversity Protection (EPBC) Act 1999*. It is not listed as threatened under state legislation in Western Australia, but is listed as a Priority 4 species by the Department of Biodiversity, Conservation and Attractions (DBCAs). Outside of Western Australia, the Gouldian Finch is also listed as Endangered under the *Nature Conservation Act 1992* in Queensland, and as Vulnerable in the Northern Territory under the *Territory Parks and Wildlife Conservation Act 2000*.

The key threatening processes for Gouldian Finches currently are considered to be changes in vegetation due to altered fire regimes and grazing by introduced animals (O'Malley 2006, Legge et al. 2015). More regular, intense fires were found to be related to poorer body condition in Gouldian Finches from the late dry season to late wet season (Legge et al. 2015). This is likely because they reduce food availability by burning the annual grass seeds used for dry season foraging, damaging the perennial grasses used for wet season foraging, and reducing the spatial and temporal complexity in seed availability relied on to provide year-round food resources (Watkinson et al. 1989, Crowley and Garnett 2001, Legge et al. 2015). Regular intense fires have also been found to reduce nest hollow availability (Brazill-Boast et al. 2010, 2011). Heavy grazing is also likely to reduce food availability for Gouldian Finches, by decreasing seed yields and extent of key Gouldian Finch foraging grasses (Crowley and Garnett 2001)

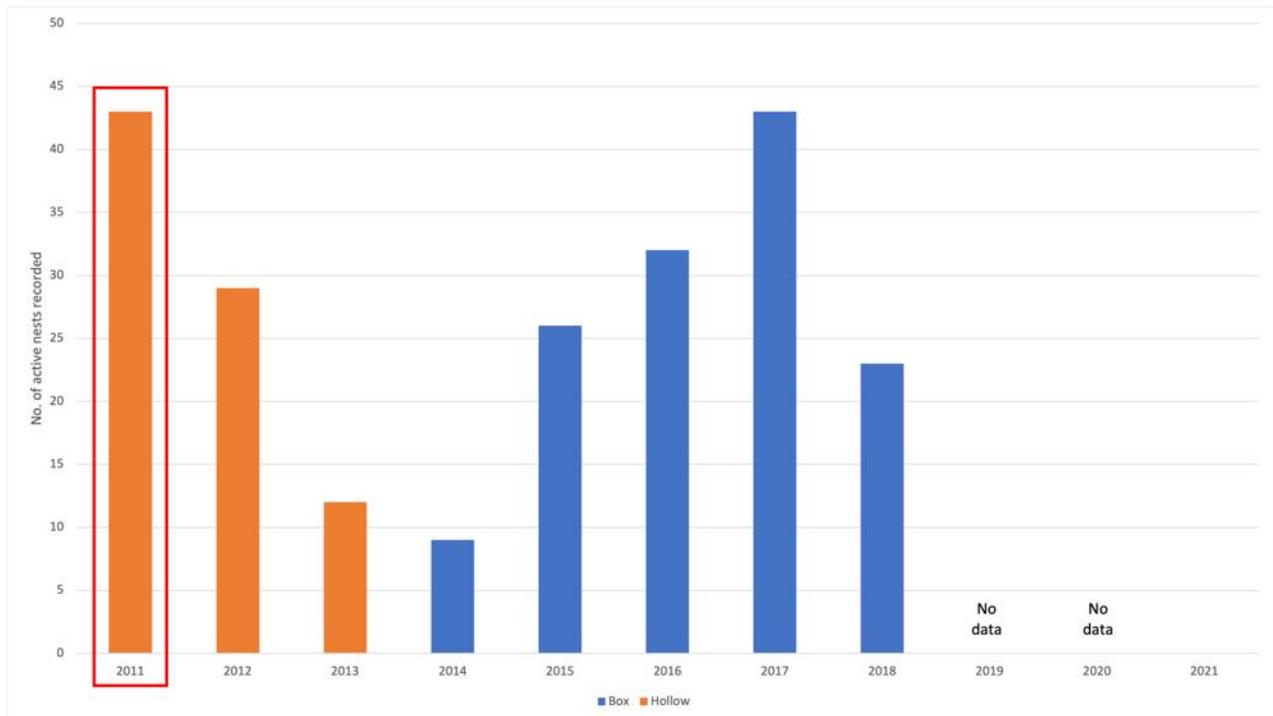
Commercial trapping of wild finches also coincided with major declines in Gouldian Finch populations in the Kimberley until it ended in 1986 (Franklin et al. 1999). High levels of infestation by mites in the air sacs of wild Gouldian Finches have also been reported, and have been suggested as a possible cause of population declines, but the actual extent of the impact is uncertain (O'Malley 2006).

## 2.4 Gouldian Finches in the Study Area

### 2.4.1 Breeding

Suitable breeding and non-breeding habitat for Gouldian Finches exists within the Goomig Project development area and buffer area (Figure 2.2). Suitable breeding habitat was identified in 2010, with 11 areas of suitable habitat identified (Pryke 2010). Gouldian Finches were recorded breeding in five of these areas during a detailed survey in 2011, with 43 active nests recorded that season in natural hollows (Save The Gouldian Fund 2011a). As clearing for the project commenced following the 2011 season, we have treated this as the baseline breeding activity level for the purpose of addressing the GFCP target for breeding activity in the buffer areas. The number of active nests recorded declined in subsequent years, to 29 in 2012 and 12 in 2013 (Save The Gouldian Fund 2012a, 2013a).

Following the 2013 breeding season, 120 artificial nest boxes were erected in the five known breeding areas to provide additional suitable nesting sites (Save The Gouldian Fund 2014a). The following breeding season (2014), nine active nests were recorded in the study area, all using the newly-installed artificial nest boxes (Save The Gouldian Fund 2014a). The number of active nests recorded increased again in subsequent years, to 26 in 2015, 32 in 2016, and 43 in 2017, before declining again to 23 in 2018 (Save The Gouldian Fund 2015a, 2016a, 2017a, 2018). All active nests recorded since the installation of artificial nesting boxes have been recorded from these nest boxes, with none recorded from natural hollows, despite searches of all previously identified potentially suitable natural hollows. No monitoring was undertaken during the 2019 and 2020 breeding seasons, and no active nests were located during the 2021 breeding season, albeit from only a single phase of survey undertaken in March (Jackett 2021a). The 2021 survey also identified that a large proportion (79%) of the artificial nest boxes were missing or damaged and recommended repairing or installing new nest boxes (Jackett 2021a). As a result, additional nest boxes were erected in the northern section of the buffer area in 2021.



**Figure 2.2: Gouldian Finch nesting activity recorded in study area.**

Gouldian Finches were recorded foraging in the buffer area during the breeding season each season from 2014 to 2018, with the number of individuals recorded ranging from 17 to 32, with all records from within the mapped breeding areas (Save The Gouldian Fund 2014a, 2015a, 2016a, 2017a, 2018). The majority of these records were from breeding areas where active nests were also recorded, with the exception of the 2018 season when a single individual was seen in a breeding area where no nests were detected (Save The Gouldian Fund 2018). During the 2021 survey, a single adult male was recorded, also from within a mapped breeding area, though no active nests were recorded that season (Jackett 2021a).

## 2.4.2 Non-breeding

Gouldian Finches have also been observed using the Goomig Project buffer area during the non-breeding season. Individuals were recorded by Animal Plant Mineral (APM) during general bird surveys in the project area in August 2010 (Save The Gouldian Fund 2015b), and 73 individuals were subsequently recorded during targeted surveys in 2011 (Save The Gouldian Fund 2011b). No Gouldian Finches were sighted in the development envelope or buffer areas during the initial land-clearing phase in 2012 (Save The Gouldian Fund 2012b). However, following completion of clearing, Gouldian Finches were again recorded in the buffer area, and the number of individuals recorded trended upwards with 14 individuals sighted in 2013, 29 in 2014, 38 in 2015, 33 in 2016, and a high count of 52 in 2017 (Save The Gouldian Fund 2013b, 2014b, 2015b, 2016b, 2017b). However, this high count post-clearing was still lower than the pre-clearing count of 73 individuals. No counts were undertaken during the 2018-19 and 2019-20 non-breeding seasons, and only a single juvenile individual was recorded during the October 2020 surveys (Jackett 2021b).

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## 3.0 Methods

### 3.1 Survey Team and Timing

Surveys for breeding activity were conducted across three phases, at monthly intervals in March, April and May 2022. Timing was chosen to cover the primary breeding period in the area, based on past surveys. Specifically, during past breeding seasons the earliest estimated nest commencement dates have ranged from 16<sup>th</sup> to 28<sup>th</sup> February, and the latest estimated nest commencement dates have ranged from 6<sup>th</sup> April to 2<sup>nd</sup> May (Save The Gouldian Fund 2014a, 2015a, 2016a, 2017a, 2018). The monthly intervals for surveys was based on expected duration of activity for a clutch, with eggs taking 12-14 days to hatch, and chicks then taking 20-21 days to fledge (Johnstone and Storr 2004). Thus, monthly surveys were selected to maximise likelihood of detecting any active nests, while minimising the number of field deployments.

Survey personnel and their qualifications are outlined in Table 3.1, with survey timing and scope outlined in Table 3.2. Nest monitoring work was undertaken under Regulation 27 license number 27000596 (Appendix 1).

**Table 3.1: Survey team and experience.**

Personnel	Position	Qualifications	Years of Experience	Project Role
Garth Humphreys	Principal Ecologist/Director	BSc (Hons)	32	Project Director
John Graff	Zoologist	BSc (Hons)	15	Project Manager, field survey, data analysis and reporting
Nathan Beerkens	Zoologist	BSc (Hons)	6	Field survey, data analysis and reporting
Joshua Keen	Zoologist	BSc (Hons)	7	Field survey
Nigel Jackett	Senior Zoologist (contractor)	BSc (Hons)	16	Field survey
Louis Masarei	Zoologist (contractor)	BSc	6	Field survey

**Table 3.2: Survey timing and personnel.**

Survey Dates	Team Members	Activities
12 <sup>th</sup> – 20 <sup>th</sup> March 2022	Nathan Beerkens, Joshua Keen	Nest box monitoring (in addition to grass phenology and foraging surveys)
11 <sup>th</sup> – 14 <sup>th</sup> April 2022	John Graff, Nigel Jackett	Nest box monitoring
16 <sup>th</sup> – 19 <sup>th</sup> May 2022	John Graff, Louis Masarei	Nest box monitoring

### 3.2 Weather and Seasonal Conditions

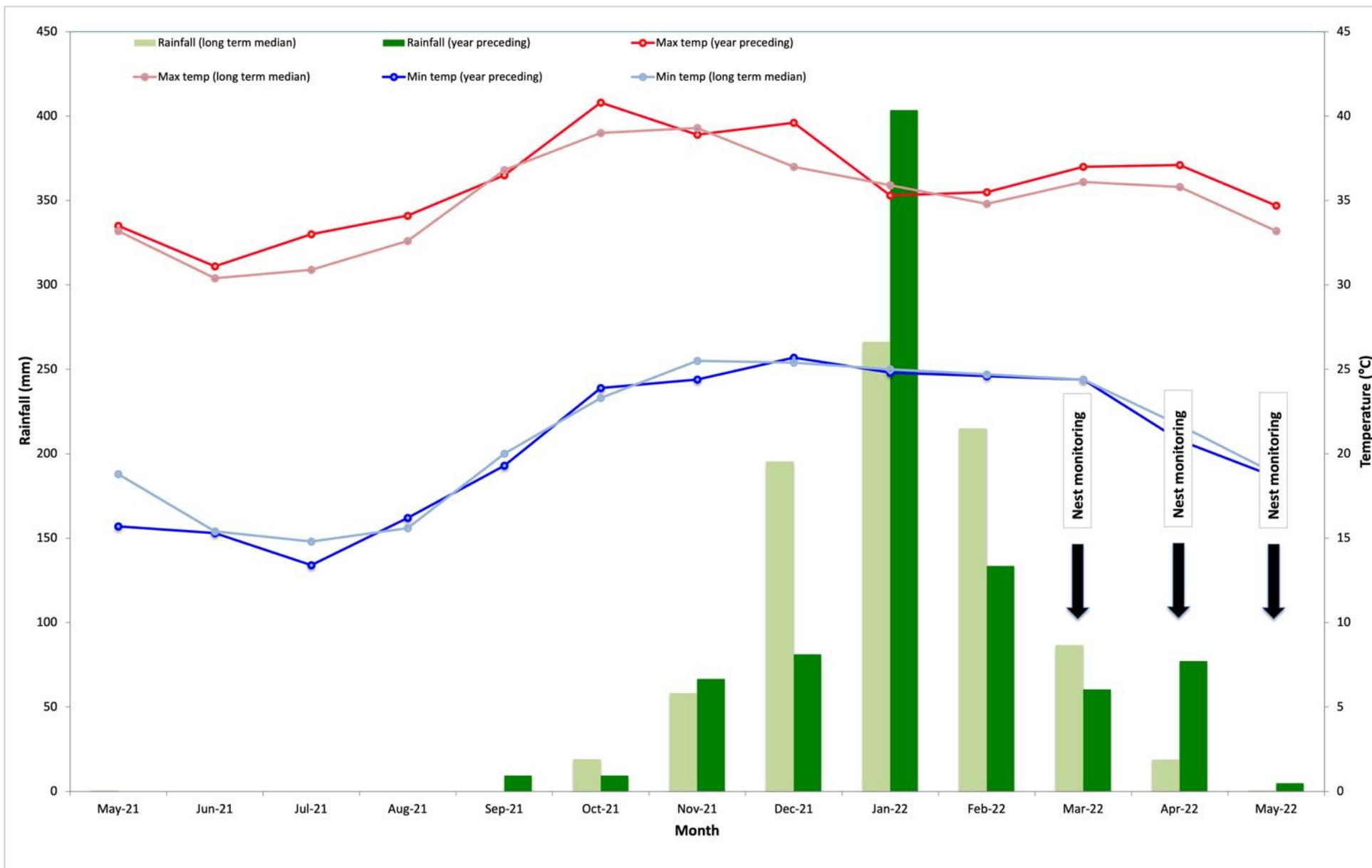
Weather conditions during the March and April surveys were hot and relatively humid, with patchy and sometimes heavy rainfall associated with thunderstorms (Table 3.3). Conditions were more moderate during the May survey, with lower minimum temperatures, lower humidity, and mostly sunny conditions, though maximum temperatures were still hot (Table 3.3).

Seasonal conditions for the 2021-22 wet season leading into the survey were fairly typical when compared to long term averages (Figure 3.1). However, rainfall was slightly below average overall (846 mm against a long-term median of 860 mm), with extensive heavy rainfall not recorded until January. Maximum temperatures over the preceding year were also generally higher than the long-term average.

**Table 3.3: Weather conditions during surveys.**

Temperature and rainfall data taken from DPIRD Kimberley Research Station weather station, wind data from Bureau of Meteorology Kununurra Aero weather station

Survey	Date	Max Temp (°C)	Min Temp (°C)	Rainfall (mm)	Wind at 9am (km/h)	Wind at 3pm (km/h)
Nest Monitoring – Phase 1 (also inc. foraging surveys and grass transects)	12 <sup>th</sup> Mar 2022	35.0	23.3	15.6	13 NW	9 NNE
	13 <sup>th</sup> Mar 2022	37.2	24.7	0.2	7 NNE	9 N
	14 <sup>th</sup> Mar 2022	36.2	22.0	1.2	11 WSW	9 N
	15 <sup>th</sup> Mar 2022	38.3	24.8	0.0	6 NW	4 NE
	16 <sup>th</sup> Mar 2022	37.9	25.1	0.0	9 NE	11 NNE
	17 <sup>th</sup> Mar 2022	36.2	25.0	0.0	11 N	11 NNW
	18 <sup>th</sup> Mar 2022	35.3	20.7	27.6	17 SE	11 ESE
	19 <sup>th</sup> Mar 2022	37.3	25.0	0.0	15 SE	13 SSE
	20 <sup>th</sup> Mar 2022	37.4	24.6	0.0	4 SE	15 N
Nest Monitoring – Phase 2	12 <sup>th</sup> Apr 2022	39.8	17.7	0.0	9 SW	9 NNE
	13 <sup>th</sup> Apr 2022	36.4	22.6	18.4	13 SSE	7 S
	14 <sup>th</sup> Apr 2022	35.8	22.4	49.8	11 SW	13 N
Nest Monitoring – Phase 3	17 <sup>th</sup> May 2022	36.8	16.8	0.0	13 ESE	15 NE
	18 <sup>th</sup> May 2022	35.9	18.2	0.0	13 E	11 NNE
	19 <sup>th</sup> May 2022	36.7	18.1	0.0	11 SE	7 ESE



**Figure 3.1: Rainfall and temperature data for the preceding 12 months compared to long-term averages**

Rainfall data taken from DPIRD Kimberley Research Station weather station, temperature data from Bureau of Meteorology Kununurra Aero weather station.

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### 3.3 Nest Box Monitoring

Artificial nest boxes that had previously been installed in the study area were checked monthly from March to May, to align with previously recorded Gouldian Finch breeding timing at the site (see Section 3.1). The GPS locations of 159 nest boxes were visited and where the boxes could be located, their condition was initially inspected from ground level. If the boxes appeared to be intact and in suitable condition for use, they were examined with a Signet wireless inspection camera operated by a zoologist standing on a secured 3.8 m extension ladder. Video footage from the camera was streamed wirelessly to a second zoologist on the ground to check for evidence of nesting activity. Any evidence of nesting was recorded, and if an active nest had been located, details of the status of the nest would have recorded, including:

- clutch size (number of eggs/chicks);
- estimated age of chicks; and
- evidence of egg failure or chick mortality.

Nest boxes were re-checked at monthly intervals using the same methods, though boxes found to be broken were not re-checked during subsequent surveys. Boxes found to be blocked by ant, termite or other debris were re-checked in subsequent surveys, as observations showed that these blockages were sometimes only temporary.

The locations of 158 natural hollows previously identified within the study area (Save The Gouldian Fund 2011a, 2012a) could not be obtained prior to these surveys, so systematic searches of natural hollows were not undertaken due to time constraints.

### 3.4 Limitations

The results of the 2021-22 breeding activity monitoring should be assessed giving consideration to the following potential limitations;

- Natural hollows potentially suitable for Gouldian Finch nesting were not systematically checked due to a combination of time constraints, lack of previous hollow location data, and recent exclusive usage of artificial nesting hollows by breeding Gouldian Finches in the study area. Hence, it is possible that some breeding activity took place undetected in natural hollows in the study area;
- Some nest boxes were not inspected internally using the ladder and inspection camera for a variety of reasons including challenging weather and access conditions (March survey only), a lack of stable ground around base of tree to allow use of ladder (up to two boxes, all surveys), and a large bee swarm near the nest box (one box, April survey). In these instances, the nest box was observed for signs of activity (e.g. chick begging calls), and gently tapped with a long stick, if reachable, to check for occupation. These alternative methods are less effective at determining occupancy and may have resulted in nesting activity not being detected. However, almost all boxes checked in this manner due to weather conditions in March were subsequently checked with an inspection camera in April and May and no evidence of recent nesting was detected; and
- Some nest boxes were not located, particularly during the initial survey, either because we could not locate nest boxes at marked locations, GPS locations provided were inaccurate, or nest boxes were not in the provided dataset. Most nest boxes not found at marked locations could not be found despite subsequent searches, but four were located on subsequent trips, while five boxes were subsequently found not at marked locations and likely account for five "missing" boxes that had inaccurate GPS co-ordinates. Boxes not located on earlier surveys were not checked on those surveys and so occupancy could not be checked. However, as no evidence of recent usage was detected on subsequent surveys, we consider it unlikely that they were used by Gouldian Finches earlier in the season.

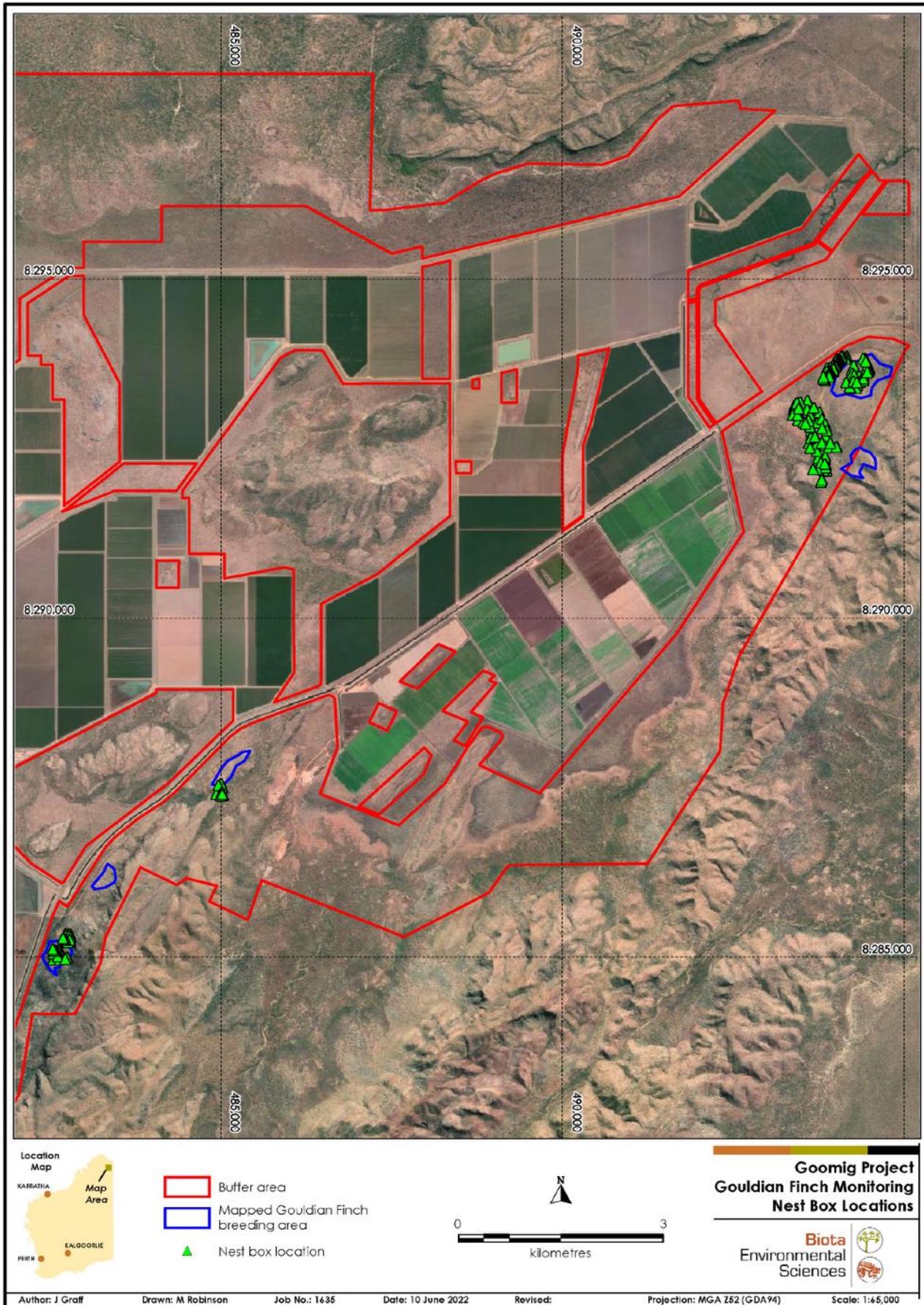


Figure 3.2: Provided locations of artificial nest boxes previously installed in study area.

## 4.0 Results

### 4.1 Nest Box Condition

Of the 159 provided nest box locations, 122 nest boxes were found. A further 16 nest boxes that were not at provided locations were also located incidentally and checked. As such, a total of 138 nest boxes were checked for condition and evidence of Gouldian Finch occupation on at least one of the survey phases. Of these, 71 were still in good, useable condition by the May 2022 survey, while 67 were broken or blocked. A total of 38 nest boxes could not be found at their reported locations.

To break down the condition of the 159 nest boxes by deployment duration:

- 120 nest box locations were provided for the originally installed (2013) nest boxes. Of these, 31 were still in good condition, while 52 were broken or blocked, and 37 could not be located. An additional five nest boxes (two in good condition and three broken or blocked) were found in these areas away from marked locations. These likely account for five of the missing boxes – unfortunately the box numbers were no longer visible to confirm this.
- 39 nest box locations were provided for new boxes installed in 2021. All 39 were located, of which 29 were in good condition and 10 were broken or blocked. An additional 11 nest boxes not in the provided dataset were also located in this area, of which nine were in good condition and two were broken or blocked.

A summary of the status of nest boxes in each section is provided below in Table 4.1. The locations and status of each nest box as at the conclusion of the May 2022 survey are mapped in Figure 4.1 and Figure 4.2, and provided in tabular form in Appendix 2.

**Table 4.1: Nest box status by section.**

Section	Deployed	Population <sup>1</sup>	Condition (at May 2022)			Total
			Good	Broken/Blocked	Missing	
Southern	Original	Population 1	19	6	8	33
		Population 3	2	6	2	10
Sorby	Original	Population 4	3	33	21	57
		Population 5	9	10	7	26
	2021	New	38	12	0	50
<b>Total</b>			<b>71</b>	<b>67</b>	<b>38</b>	<b>176</b>

<sup>1</sup> Based on mapped location – listed population in provided data often inconsistent with mapped location

### 4.2 Nest Box Occupancy

No Gouldian Finches were recorded using the nest boxes in suitable condition during the 2022 breeding surveys, nor was any evidence of recent usage in the intervening periods (Table 4.2). No other bird species were recorded using the nest boxes. Other fauna recorded occupying the boxes included Spotted Tree Goannas (*Varanus scalaris*), Green Tree Frogs (*Litoria caerulea*), geckos (*Gehyra* sp./spp.), and a variety of invertebrates including ants, crickets, and spiders (Table 4.2). The results of each nest box check are provided in Appendix 3.

**Table 4.2: Occupancy of nest boxes in 2022.**

Month	Gouldian Finch	Other birds	<i>Varanus scalaris</i>	<i>Litoria caerulea</i>	<i>Gehyra</i> sp.	Ants/Termites*
March	0	0	2	0	0	29
April	0	0	5	1	3	14
May	0	0	4	0	3	13

\* Other invertebrates not reported in table

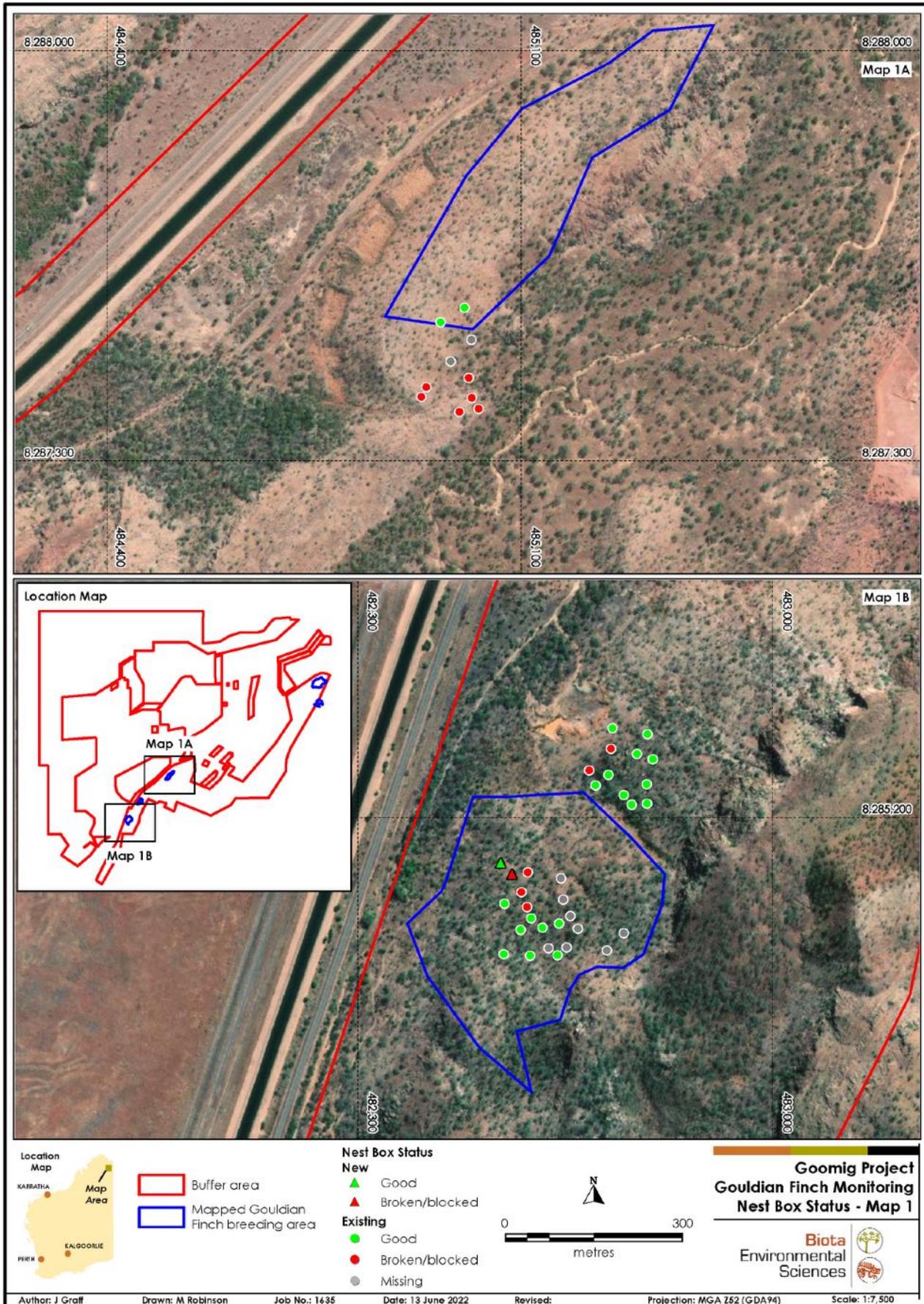


Figure 4.1: Status of artificial nest boxes following final survey in May – southern section.



This is the second consecutive breeding season where no Gouldian Finches were recorded using artificial nest boxes in the study area (Table 4.3). Nest box occupancy had increased steadily in the study area from 2014 to 2017, but declined again in 2018 and had reached nil occupancy by 2021 (Table 4.3).

**Table 4.3: Comparison of Gouldian Finch nest box occupancy each breeding season.**

Year	Occupied Nest Boxes	Available Nest Boxes	Occupancy (%)
2014	9	120 <sup>1</sup>	7.5
2015	26	120 <sup>1</sup>	21.7
2016	32	120 <sup>1</sup>	26.7
2017	41	120 <sup>1</sup>	34.2
2018	23	120 <sup>1</sup>	19.2
2019 <sup>2</sup>	-	-	-
2020 <sup>2</sup>	-	-	-
2021	0	22	0.0
2022	0	71	0.0

<sup>1</sup> Assumes all nest boxes were available for use

<sup>2</sup> No monitoring undertaken in 2019 and 2020 breeding seasons

### 4.3 Other Breeding Activity

No adult Gouldian Finches were observed entering natural hollows or carrying nesting material during any of the survey phases, nor were any begging juveniles heard from natural hollows. However, at least six juvenile Gouldian Finches were observed with adults in the study area during the May survey (Biota 2022).

## 5.0 Discussion

Gouldian Finches were not directly recorded breeding in the study area for the second consecutive breeding season, following a hiatus in the monitoring program during the 2019 and 2020 breeding seasons. Prior to this, the number of Gouldian Finch breeding records from the study area had increased from 2014 through to 2017, but declined again in 2018 (see Table 4.3). No monitoring was undertaken in 2019 or 2020, so it is not possible to determine whether the declining trend continued through these seasons, or precisely which season nest box usage completely ceased. Unfortunately, this makes it more difficult to definitively identify the reasons for the decline.

All active nests recorded in the study area since the 2014 season have been recorded from artificial nest boxes (Save The Gouldian Fund 2014a, 2015a, 2016a, 2017a, 2018), so it is likely that the deterioration in condition of the nest boxes is at least partly responsible for the decline in nesting activity in the study area. Additional nest boxes were installed prior to the 2022 breeding season, however there may be a lag in uptake of these new nest boxes given the lack of breeding activity in the study area during the 2021 season, and possibly prior to that. Although Gouldian Finches were recorded using the original nest boxes during the first breeding season following installation, multiple pairs had nested in natural hollows in the same areas the previous season, whereas there was no evidence of this during the 2021 breeding season.

In addition, the new nest boxes have not been installed within the existing mapped breeding areas, and have been installed in low-lying, seasonally-inundated habitat rather than in known breeding habitat of rocky hillslopes. As such, it is possible that the newly installed nest boxes are not being used as they are not in suitable Gouldian Finch breeding habitat. Additionally, a significant proportion of these boxes were occupied by ants during the March surveys when the area was inundated, likely because the ants were driven into the trees to escape the inundation at ground level. This meant that a significant proportion of the nest boxes in this section were not available for use early in the breeding season.

It is also possible that the reduction in artificial nest box availability has caused Gouldian Finches to shift back to using natural hollows in these breeding areas. As natural hollows were not systematically sampled this breeding season, it is possible that some nesting took place in the breeding areas in natural hollows. However, during past surveys where breeding was recorded, individuals were also observed foraging in the breeding areas. Hence, the low number of birds observed in the March (nil) and April (3-5 individuals) surveys (Biota 2022), in combination with a lack of any observed breeding activity, suggests it is unlikely that any significant numbers bred in the existing breeding areas this season. It is also worth noting that prior to the installation of artificial nest boxes in 2013, the number of active nests recorded in natural hollows had declined from 43 to 12 between 2011 and 2013 (Save The Gouldian Fund 2011a, 2012a, 2013a), suggesting that there may have been some decline in quality or quantity of natural hollows available for breeding. However, this period also coincided with the commencement of clearing in the project area and a decline in the number of birds observed during the non-breeding season, so it is difficult to draw strong conclusions from the decline in breeding numbers over this period.

Seasonal conditions are unlikely to have affected breeding activity in the study area this season. Although overall rainfall for the 2021-22 wet season was a little below average, the difference was minor (<2% below long-term median) and surface water was still available in proximity to the breeding areas by the May survey.

Fires that affected the buffer area in 2021 are likely to have reduced the availability of seed in breeding areas for the 2022 breeding season, and thus may have reduced the suitability of those areas for breeding. For example, almost no spinifex (*Triodia* spp.) was observed seeding in March phenology surveys, which is significantly lower than seeding observed during previous monitoring (Biota 2022). However, as no breeding was recorded during the 2021 breeding season either, it seems unlikely that this was the primary driver of the absence of breeding activity.

Larger numbers of Gouldian Finches were observed in the study area in and near the breeding areas during mid-May (including juveniles; Biota 2022). This is approximately coincident with completion of the breeding season based on the timing recorded during previous surveys (Save The Gouldian Fund 2014a, 2015a, 2016a, 2017a, 2018), and may represent post-breeding birds moving into the area. The presence of juveniles in these flocks in May does indicate that although no breeding was recorded in the mapped breeding areas, some successful breeding took place, at least within the broader area. Alternatively, Gouldian Finches using artificial nest boxes commenced breeding earlier on average than those using natural hollows (Brazill-Boast et al. 2013), so Jackett (2021a) suggested that a shift back to nesting in natural hollows in the study area may have been accompanied by a later start to breeding. It is possible that this may be the case, given the first juveniles were not observed until May. However, few adults were observed prior to May also, so it is more likely that these birds moved into the area following breeding elsewhere in the broader area.

## 6.0 Conclusions and Recommendations

The target for the monitoring of Gouldian Finch breeding populations in the study area identified in the GFCP (Strategen 2014) is as follows:

- No reduction in baseline breeding numbers which can be attributed to Buffer Area management.

The results of the 2022 monitoring indicate that this target has not been met, as no Gouldian Finches were confirmed breeding in the buffer area. This represents a significant decline from the number of active nests recorded from natural hollows during the first year of survey which we have taken as the baseline breeding number (43 in 2011; Save The Gouldian Fund 2011a) and from the peak breeding activity levels since installation of artificial nest boxes (43 again in 2017; Save The Gouldian Fund 2017a). It is possible that some Gouldian Finches nested within the breeding areas in natural hollows, but the low numbers of individuals observed in these areas through much of the breeding season, and lack of any observations of breeding activity, suggest it is unlikely that this represents a significant number of birds. However, the presence of juvenile birds during the May survey indicates that at least some successful breeding did take place in the broader area.

It is likely that the decline in breeding activity in the study area is at least partly a result of the loss of available artificial nest boxes for use, so we recommend the following actions:

- Repair or replace broken or missing nest boxes within the existing mapped breeding areas to return the number of boxes available for use in these areas to at least the 120 originally available;
- Ensure that any newly installed nest boxes are only installed in suitable Gouldian Finch breeding habitat, ideally within or immediately adjacent to the existing mapped breeding areas; and
- If prioritisation is required, prioritise repair and replacement of boxes in breeding populations 4 and 5 (northern section of the study area) where larger numbers of Gouldian Finches have been recorded breeding in previous seasons.

Gouldian Finch breeding activity within the study area shifted entirely to artificial nesting hollows following their installation, but it is possible that following the deterioration in condition of the nest boxes some pairs have shifted back to natural hollows. In response to this, we recommend the following, particularly if breeding activity is not detected following restoration of artificial nest boxes:

- Systematic location and inspection of potentially suitable natural hollows recommences; and
- Future monitoring reports must include GPS locations of all natural hollows (and nest boxes) inspected during that season to facilitate re-inspection in subsequent seasons.

More broadly, the identified target requires that any reductions in breeding numbers not be “attributed to Buffer Area management”. Identifying whether any recorded changes are attributable to buffer area management is difficult to do with certainty without concurrent data from control locations outside of the buffer area. This could, for example, allow the separation of the impact of any regional stochastic processes such as drought from local influences arising from the project itself. To address this, we recommend consideration be given to either:

- Expanding or revising the monitoring program to encompass known breeding locations outside of the buffer area to provide control data; OR
- Incorporating relevant data obtained by other monitoring programs at suitable control sites in the region into the assessment and reporting each year.

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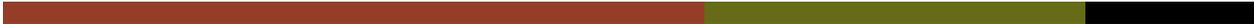
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# Appendix 1



## Fauna License







## **FAUNA TAKING (BIOLOGICAL ASSESSMENT) LICENCE**

### **Regulation 27, Biodiversity Conservation Regulations 2018**

Licence Number: BA27000596-2  
Licence Holder: John Konrad Graff  
Biota Environmental Sciences  
PO Box 155  
Leederville WA 6903

Date of Issue: 26/04/2022

Date Valid From: 26/04/2022

Date of Expiry: 21/02/2023

#### **LICENSED ACTIVITIES**

Subject to the terms and conditions on this licence, the licence holder may –

1. **Take and disturb fauna for** Goomig Development Project Gouldian Finch Monitoring, the Weaber Plain Development Project (Goomig Project) was referred under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) on 14 May 2010, condition of the approval requires annual monitoring of Gouldian Finches in accordance with the approved Gouldian Finch Conservation Plan (EPBC 2010/5491). Monitoring to be undertaken by visual observation, photography or videography, habitat assessment and Nest boxes will be monitored for use by Gouldian Finches using burrow scope cameras to check for usage by Gouldian Finches. Each nest box will be checked at monthly intervals from March to May to check for occupation by Gouldian Finches, and reproductive output if present (clutch size and fledging success) as required by the conservation management plan.

#### **LOCATIONS**

1. *Goomig Project (Weaber Plains Development Project)* buffer area, including Goomig Conservation Park, approximately 30 km north-northeast of Kununurra.

#### **AUTHORISED PERSONS**

The following persons or persons of the specified class may assist in carrying out the licensed activities:

1. Nathan Beerkens
2. Joshua Keen
3. Michael Greenham
4. Nigel Jackett
5. Victoria Ford
6. Louis Masarei

#### **CONDITIONS**

1. Fauna must not be taken on CALM land, (as defined in the Conservation and Land Management Regulations 2002), unless authorised by a written notice of a lawful authority issued under regulations 4 and 8 of the Conservation and Land Management Regulations 2002.



2. If persons, other than the licence holder, are authorised to carry out/assist in carrying out the activities under the licence, the licence holder must ensure those persons have read and understand the licence terms and conditions.
3. The written authorisation of the person in possession or occupation of the land accessed and upon which fauna is taken, as required under regulation 101(2) and referred to in "Additional information" below, must:
  - a) state location details (including lot or location number, street/road, suburb and local government authority);
  - b) state land owner or occupier name, and contact phone number;
  - c) specify the time period that the authorisation is valid for;
  - d) be signed and dated; and
  - e) be attached to this licence at all times.
4. This licence, and any written authorisation or lawful authority which authorises the take of fauna on specified locations must be carried at all times while conducting licensed activities and be produced on demand by a wildlife officer.
5. If a species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* is inadvertently captured, that species is to be released immediately at the point of capture. If the fauna is injured or deceased, the licence holder shall contact the DBCA Wildlife Licensing Section ([wildlifelicensing@dbca.wa.gov.au](mailto:wildlifelicensing@dbca.wa.gov.au)) for advice on treatment or disposal. Details of any capture of threatened fauna must be included in the "Return of Fauna Taken."
6. The licence holder must not:
  - a) release any fauna in any area where it does not naturally occur;
  - b) transfer fauna to any other person or authority (other than the Western Australian Museum) unless approved in writing by the CEO; or
  - c) dispose of the remains of fauna in any manner likely to interfere the natural or present day distribution of the species.
7. The licence holder must not take and remove more than ten specimens of any one protected species of fauna from any location less than 20km apart. Where exceptional circumstances make it necessary to take a larger number of specimens from a particular location in order to obtain adequate statistical data, the collector must proceed with circumspection and justify their actions to the Director General in advance.
8. All holotypes and syntypes and a half share of paratypes of species or subspecies permitted to be permanently taken under this licence must be donated to the Western Australian Museum. Duplicates (one pair in each case) of any species collected, which represents a significant extension of geographic range must be offered to the Western Australian Museum.
9. All specimens and material retained under the authority of this licence must be offered to the Western Australian Museum for loan, for inclusion in its collection, or on request be made available to other persons involved in relevant scientific studies.
10. The licence holder must create, compile and maintain records and information as required in a DBCA approved "Return of Fauna Taken" of all fauna taking activities as they occur.
11. A DBCA approved "Return of Fauna Taken" must be completed in full (including nil taking details) and submitted to DBCA Wildlife Licensing Section ([wildlifelicensing@dbca.wa.gov.au](mailto:wildlifelicensing@dbca.wa.gov.au)) prior to the end of each annual period of the licence (from the valid from date) (refer to "Additional Information" section below).



Danny Stefoni  
LICENSING OFFICER  
WILDLIFE PROTECTION BRANCH

Delegate of CEO

### ADDITIONAL INFORMATION

1. It is an offence to take any species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* unless the person is authorised under Section 40. The penalty ranges between \$300 000 and \$500 000; Section 150 Biodiversity Conservation Act 2016.
2. Regulation 82 empowers the CEO to add, substitute or delete a term or condition of a licence or to correct errors. Such power may be exercised on application of a licence holder or by the CEO's own initiative. If an amendment to a licence term or condition is required, please contact the CEO or the Licensing Section on [wildlifelicensing@dbca.wa.gov.au](mailto:wildlifelicensing@dbca.wa.gov.au) in the first instance. The licence holder, if adversely affected by a condition imposed in this licence, may apply to the State Administrative Tribunal for review of the decision of the CEO to impose that condition on a licence: regulation 89(2) Biodiversity Conservation Regulations 2018.
3. A person must not contravene a condition of a licence. The penalty for an offence involving the contravention of a condition of a licence is a fine of \$10 000: regulation 84 of the Biodiversity Conservation Regulations 2018.
4. It is an offence for persons authorised by this licence to enter land that is not in their possession or under their control without first having the *prior* written authorisation of the current owner or occupier of the land to:
  - a) enter the land; and
  - b) carry out the activity authorised by this licence.

The penalty for this offence is a fine of \$5 000: regulation 101(2) of the Biodiversity Conservation Regulations 2018.

5. The licence holder must be able to produce for inspection upon request any information or records required by regulation 85(2) of the Biodiversity Conservation Regulations 2018 Penalty \$10 000. It is an offence to knowingly include false or misleading information or make statements in records: regulation 85(3) of the Biodiversity Conservation Regulations 2018 Penalty \$10 000. It is an offence to include any information or make any statement in a return that the licence holder knows to be false or misleading in a material particular: regulation 86 (2) of the Biodiversity Conservation Regulations 2018 Penalty \$10 000.
6. The approved DBCA "Return of Fauna Taken" data file can be downloaded from the DBCA webpage (<https://www.dpaw.wa.gov.au/plants-and-animals/licences-and-authorities>).
7. The issuing of a licence under the Biodiversity Conservation Regulations 2018 does not constitute an animal ethics approval or a licence to use animals for scientific purposes as required under the *Animal Welfare Act 2002*, Animal Welfare (Scientific Purposes) Regulations 2003. It is the responsibility of a licence applicant / licence holder to ensure that they comply with the requirements of all applicable legislation. Enquiries relating to the Animal Welfare Act licences and animal ethics approvals are to be directed to the Department of Primary Industries and Regional Development (<https://www.agric.wa.gov.au/animalwelfare>).



8. Threatened fauna can only be taken under a *Biodiversity Conservation Act 2016* Section 40 authorisation, Occurrences of threatened species must be reported to the CEO. For more information please see <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals>.
9. Any interaction involving Nationally Listed Threatened Fauna that may be invasive and/or harmful to the fauna may require approval from the Commonwealth Department of the Environment and Energy <http://www.environment.gov.au/about-us/business-us/permits-assessments-licences>. Interaction with such species is controlled by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and Environment Protection and Biodiversity Conservation Regulations 2000 as well as the *Biodiversity Conservation Act 2016* and Biodiversity Conservation Regulations 2018.

# DEPARTMENT OF PARKS AND WILDLIFE



Department of  
Parks and Wildlife



Enquiries:  
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Bentley Delivery Centre WA 6983

PAGE  
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CE006558

RECEIPT NO.

AMOUNT  
\$0.00

## CONSERVATION AND LAND MANAGEMENT REGULATIONS 2002 REGULATION 4

### WRITTEN NOTICE OF LAWFUL AUTHORITY

FOR THE PURPOSE(S) DESCRIBED

TO AUTHORIZE A PERSON TO DO AN ACT THAT WOULD, BUT FOR SUCH A  
NOTICE, BE UNLAWFUL UNDER THE CONSERVATION AND LAND  
MANAGEMENT REGULATIONS.

DIRECTOR GENERAL

#### CONDITIONS

- 1 This authority is a written notice for the purposes of regulation 4(1) of the Conservation and Land Management Regulations 2002 (the Regulations) and it authorises the person named as the authority holder to carry out certain acts as described under "Purpose" (below), that would otherwise be unlawful under the Regulations cited in this authority.
- 2 Where applicable, licenses issued under regulation 89 or section 15(1) and/or section 23C of the Wildlife Conservation Act 1950 for the taking of flora and/or fauna are required in addition to this authority.
- 3 This authority does not comprise a lawful authority to enter CALM Act land the subject of division 1 of part 3 of the Regulations unless the land and/or waters is described below. "CALM land" is defined in regulation 2 to mean land, or land and waters, to which the Regulations apply, including caves and parts of caves on, or under that land. The Regulations apply to the land and waters as described in regulation 3.
- 4 Licensee/authority holder must contact the applicable region/district at least one (1) week prior to activity commencement for site specific instructions. (Contact details provided in the covering letter and/or attached conditions to this licence/authority).
- 5 No bioprospecting involving the removal of sample aquatic and terrestrial organisms (both flora and fauna) for chemical extraction and bioactivity screening is permitted to be conducted without specific written approval by the Director General.
- 6 Where applicable, a licence issued under the Biodiversity Conservation Regulations 2018 is required in addition to this authority.
- 7 Further conditions are attached.

DEPARTMENT OF PARKS AND WILDLIFE



Department of Parks and Wildlife



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PAGE 2  
NO. CE006558

PURPOSE

TAKE AND DISTURB FAUNA (REGULATION 8) FOR GOOMIG DEVELOPMENT PROJECT GOULDIAN FINCH MONITORING, THE WEABER PLAIN DEVELOPMENT PROJECT (GOOMIG PROJECT) WAS REFERRED UNDER THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT) ON 14 MAY 2010, CONDITION OF THE APPROVAL REQUIRES ANNUAL MONITORING OF GOULDIAN FINCHES IN ACCORDANCE WITH THE APPROVED GOULDIAN FINCH CONSERVATION PLAN (EPBC 2010/5491). MONITORING TO BE UNDERTAKEN BY VISUAL OBSERVATION, PHOTOGRAPHY OR VIDEOGRAPHY, HABITAT ASSESSMENT AND NEST BOXES WILL BE MONITORED FOR USE BY GOULDIAN FINCHES USING BURROW SCOPE CAMERAS TO CHECK FOR USAGE BY GOULDIAN FINCHES. EACH NEST BOX WILL BE CHECKED AT MONTHLY INTERVALS FROM MARCH TO MAY TO CHECK FOR OCCUPATION BY GOULDIAN FINCHES, AND REPRODUCTIVE OUTPUT IF PRESENT (CLUTCH SIZE AND FLEDGING SUCCESS) AS REQUIRED BY THE CONSERVATION MANAGEMENT PLAN FOR GOOMIG PROJECT (WEABER PLAINS DEVELOPMENT PROJECT) BUFFER AREA, INCLUDING GOOMIG CONSERVATION PARK, APPROXIMATELY 30 KM NORTH-NORTHEAST OF KUNUNURRA.

AUTHORISED PERSONS

NATHAN BEERKENS  
JOSHUA KEEN  
MICHAEL GREENHAM  
NIGEL JACKETT  
VICTORIA FORD  
LOUIS MASAREI

DATE OF ISSUE 22/02/2022  
VALID FROM 22/02/2022  
DATE OF EXPIRY 21/02/2023

  
LICENSING OFFICER

LICENSEE: MR JK GRAFF  
ADDRESS BIOTA ENVIRONMENTAL SCIENCES  
PO BOX 155  
LEEDERVILLE WA 6903

(JOHN KONRAD)

-----

## AUTHORITY CONDITIONS

### 1. General

- 1.1 All Authority holders must comply with the CALM Act and Regulations, and the Wildlife Conservation Act and Regulations.
- 1.2 The Director General retains the right to terminate the Authority at any time.
- 1.3 The District Manager and/or National Parks Ranger is to be notified before the commencement of any activity.
- 1.4 The District Manager or his/her delegate has on-site control of all activities.
- 1.5 The Authority holder shall keep the Authority on hand during all periods of collection activity, and produced on demand to an officer of the Department of Environment and Conservation.
- 1.6 Authorities are not transferrable.
- 1.7 All individuals listed as authorized assistants to be assisting with the project must be supervised by the Authority holder. The Authority holder remains fully responsible for all actions under taken under this Authority.
- 1.8 Commercial use, or sale of any specimens taken under this Authority is prohibited.
- 1.9 The Authority does not allow the taking of Declared (or Threatened) Rare Flora or Fauna.
- 1.10 The Authority provides no entry to Parks or Reserves, or parts thereof, listed as limited access or prohibited areas.
- 1.11 The Director General shall be provided with a report at the expiry of the Authority detailing the results of the project and a copy of all publications arising from the project. Details of all specimens taken, where lodged and registration numbers in those collections must also be provided.

### 2. Environmental Considerations

- 2.1 Disturbance to the environment must be minimal.
- 2.2 Rocks, logs, litter or similar material are to be returned to their original orientation on completion of research.
- 2.3 Excavations, regardless of size, must be backfilled upon completion of work.
- 2.4 Pit traps must be filled or capped following completion of the work period and removed entirely after completion of the project.
- 2.5 All reference markers must be removed before the expiry date of the Authority.
- 2.6 Camping or lighting fires on Nature Reserves is prohibited.

- 2.7 Fires within a Park must be in an approved site.
- 2.8 On-site camping in a Park may be permitted on a site selected by the District Manager or her/his delegate.

### 3. Dieback Hygiene

- 3.1 Moist soil access will be restricted to approved low risk management tracks and firebreaks.

Approved tracks will generally:

- 3.1.1 Be hard surfaced, well drained and/or low in the landscape.
- 3.1.2 Be predominantly within a single dieback risk category i.e. all dieback free, dieback, uninterpretable etc.
- 3.1.3 Pose minimal threat to downgrade area i.e. boundary tracks with private property or resistant vegetation downslope.  
  
Access to additional management tracks and firebreaks may be approved by the District Manager or his delegate under soil conditions.
- 3.1.4 Vehicles must be cleaned down before entry into a Park or Reserve, and at the direction of the District Manager when travelling within a Park or Reserve.
- 3.1.5 All excavation equipment must be clean before entering a Park or Reserve, and must be cleaned down between excavations. There is to be no soil or plant tissue movement between sites.

### 4. Specimens

- 4.1 A LICENCE TO TAKE FAUNA FOR EDUCATIONAL OR PUBLIC PURPOSES, or a SCIENTIFIC OR OTHER PRESCRIBED PURPOSES LICENCE (Flora), or a Regulation 89 licence to take flora and fauna in a Marine Reserve for Scientific Purposes is required to collect flora or fauna.
- 4.2 Plant specimens are to be restricted to standard herbarium sheet size or smaller unless specifically indicated.
- 4.3 Rootstocks of plants are to remain undisturbed unless specifically indicated.
- 4.4 All fauna including invertebrates are to be released at the site of collection unless otherwise indicated.
- 4.5 The taking of Buprestidae beetles is not permitted.
- 4.6 Geological specimens are restricted to hand specimens (approx 20 cm x 10 cm x 5 cm) unless specifically indicated.

**End of Conditions**

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## Appendix 2

### Nest Box Locations with May 2022 Status





Box No.	Section	In data or New	Latitude	Longitude	Box Status (May 2022)
100	Southern	In data	-15.489992	128.859974	Missing
101	Southern	In data	-15.510009	128.838705	Good
102	Sorby	In data	-15.442156	128.940644	Broken/Blocked
103	Sorby	In data	-15.444769	128.941965	Broken/Blocked
104	Southern	In data	-15.490726	128.860408	Broken/Blocked
105	Sorby	In data	-15.446016	128.942551	Good
106	Sorby	In data	-15.434836	128.947265	Broken/Blocked
107	Sorby	In data	-15.445736	128.941679	Broken/Blocked
108	Sorby	In data	-15.444033	128.940983	Broken/Blocked
109	Sorby	In data	-15.438887	128.938378	Broken/Blocked
110	Sorby	In data	-15.440670	128.941073	Missing
111	Sorby	In data	-15.447486	128.942795	Broken/Blocked
112	Southern	In data	-15.490392	128.859585	Broken/Blocked
113	Sorby	In data	-15.442744	128.940724	Broken/Blocked
114	Sorby	In data	-15.434724	128.947851	Missing
115	Southern	In data	-15.509130	128.838975	Good
116	Southern	In data	-15.510163	128.839149	Good
117	Southern	In data	-15.509448	128.838951	Broken/Blocked
118	Sorby	In data	-15.436069	128.94683	Broken/Blocked
119	Southern	In data	-15.511440	128.838158	Missing
120	Sorby	In data	-15.440469	128.939255	Broken/Blocked
121	Southern	In data	-15.511348	128.837637	Broken/Blocked
122	Sorby	In data	-15.436075	128.947024	Missing
123	Southern	In data	-15.489664	128.860296	Missing
124	Sorby	In data	-15.436427	128.946465	Missing
125	Sorby	In data	-15.438997	128.939976	Good
126	Southern	In data	-15.511768	128.838195	Missing
127	Sorby	In data	-15.438126	128.940219	Missing
128	Sorby	In data	-15.443754	128.94041	Good
129	Sorby	In data	-15.436425	128.946796	Missing
130	Sorby	In data	-15.444833	128.941478	Broken/Blocked
131	Sorby	In data	-15.438596	128.9385	Broken/Blocked
132	Sorby	In data	-15.439289	128.940167	Broken/Blocked
133	Sorby	In data	-15.439640	128.941823	Missing
134	Sorby	In data	-15.440029	128.940561	Broken/Blocked
135	Sorby	In data	-15.446823	128.94211	Broken/Blocked
136	Sorby	In data	-15.440720	128.938917	Broken/Blocked
137	Sorby	In data	-15.443829	128.941474	Broken/Blocked
138	Southern	In data	-15.512020	128.838306	Missing
139	Southern	In data	-15.490542	128.859507	Broken/Blocked
140	Southern	In data	-15.510291	128.839516	Good
141	Sorby	In data	-15.441038	128.941565	Missing
142	Sorby	In data	-15.441607	128.940531	Broken/Blocked
143	Sorby	In data	-15.435616	128.947356	Good

Box No.	Section	In data or New	Latitude	Longitude	Box Status (May 2022)
144	Sorby	In data	-15.440766	128.940362	Broken/Blocked
145	Southern	In data	-15.509223	128.839527	Good
146	Sorby	In data	-15.512519	128.837961	Missing
147	Southern	In data	-15.510310	128.839272	Good
148	Sorby	In data	-15.447417	128.94245	Missing
149	Southern	In data	-15.509527	128.839359	Good
150	Sorby	In data	-15.446774	128.942731	Broken/Blocked
151	Southern	In data	-15.512057	128.83769	Good
152	Sorby	In data	-15.441001	128.93963	Broken/Blocked
153	Southern	In data	-15.509611	128.839605	Good
154	Sorby	In data	-15.439541	128.938832	Broken/Blocked
155	Sorby	In data	-15.439310	128.938339	Missing
156	Sorby	In data	-15.445557	128.942619	Broken/Blocked
157	Sorby	In data	-15.443084	128.940665	Broken/Blocked
158	Sorby	In data	-15.439982	128.938167	Missing
159	Sorby	In data	-15.438323	128.939197	Broken/Blocked
160	Sorby	In data	-15.438388	128.938748	Broken/Blocked
161	Sorby	In data	-15.448946	128.94203	Broken/Blocked
162	Sorby	In data	-15.442916	128.941214	Broken/Blocked
163	Sorby	In data	-15.447210	128.941686	Missing
164	Southern	In data	-15.489165	128.860191	Good
165	Sorby	In data	-15.447023	128.942708	Broken/Blocked
166	Sorby	In data	-15.446361	128.942036	Broken/Blocked
167	Sorby	In data	-15.441222	128.939921	Missing
168	Southern	In data	-15.512139	128.838127	Good
169	Sorby	In data	-15.444444	128.940548	Broken/Blocked
170	Sorby	In data	-15.435425	128.947854	Broken/Blocked
171	Sorby	In data	-15.444025	128.94259	Missing
172	Southern	In data	-15.489392	128.859811	Good
173	Sorby	In data	-15.440034	128.938881	Broken/Blocked
174	Sorby	In data	-15.511884	128.837627	Broken/Blocked
175	Sorby	In data	-15.436457	128.946059	Good
176	Sorby	In data	-15.448674	128.942129	Broken/Blocked
177	Sorby	In data	-15.434096	128.946219	Broken/Blocked
178	Sorby	In data	-15.433329	128.948447	Good
179	Sorby	In data	-15.447281	128.940955	Missing
180	Sorby	In data	-15.435189	128.947863	Broken/Blocked
181	Southern	In data	-15.512632	128.83767	Good
182	Sorby	In data	-15.444313	128.943096	Missing
183	Sorby	In data	-15.440565	128.942144	Missing
184	Sorby	In data	-15.436303	128.945932	Broken/Blocked
185	Sorby	In data	-15.442802	128.942641	Missing
186	Sorby	In data	-15.441240	128.942614	Missing
187	Southern	In data	-15.512232	128.837526	Good

Box No.	Section	In data or New	Latitude	Longitude	Box Status (May 2022)
188	Sorby	In data	-15.433854	128.948656	Missing
189	Sorby	In data	-15.442073	128.942861	Missing
190	Sorby	In data	-15.434153	128.948576	Broken/Blocked
191	Southern	In data	-15.512606	128.837256	Good
192	Sorby	In data	-15.444275	128.944154	Missing
193	Sorby	In data	-15.432486	128.948066	Missing
194	Sorby	In data	-15.433454	128.946494	Good
195	Southern	In data	-15.512219	128.838424	Missing
196	Sorby	In data	-15.432468	128.947799	Good
197	Sorby	In data	-15.439134	128.939024	Broken/Blocked
198	Southern	In data	-15.512508	128.838249	Missing
199	Southern	In data	-15.512289	128.839151	Missing
200	Sorby	In data	-15.435674	128.945487	Broken/Blocked
201	Sorby	In data	-15.446518	128.94255	Broken/Blocked
202	Southern	In data	-15.490247	128.860257	Broken/Blocked
203	Southern	In data	-15.490771	128.86011	Broken/Blocked
204	Sorby	In data	-15.432884	128.948158	Good
205	Southern	In data	-15.511654	128.837539	Broken/Blocked
206	Sorby	In data	-15.434487	128.946313	Good
207	Sorby	In data	-15.441816	128.942197	Missing
208	Sorby	In data	-15.434338	128.948363	Good
209	Sorby	In data	-15.443738	128.942164	Missing
210	Southern	In data	-15.509996	128.839512	Good
211	Southern	In data	-15.512628	128.838102	Good
212	Sorby	In data	-15.439071	128.941054	Missing
213	Southern	In data	-15.511832	128.83727	Good
214	Sorby	In data	-15.443766	128.943314	Missing
215	Southern	In data	-15.50985	128.838907	Good
216	Southern	In data	-15.509783	128.838605	Broken/Blocked
218	Southern	In data	-15.512199	128.837868	Good
219	Southern	In data	-15.512552	128.83888	Missing
220	Southern	In data	-15.49056	128.860306	Broken/Blocked
415	Sorby	New	-15.432187	128.945525	Good
416	Sorby	New	-15.432489	128.94537	Broken/Blocked
417	Sorby	New	-15.432302	128.944931	Good
418	Sorby	New	-15.432204	128.944888	Good
419	Sorby	New	-15.432136	128.944918	Good
420	Sorby	In data	-15.432653	128.944582	Good
421	Sorby	New	-15.432305	128.944825	Good
422	Sorby	In data	-15.432657	128.944624	Good
423	Sorby	New	-15.432685	128.944455	Good
424	Sorby	In data	-15.432601	128.94443	Good
425	Sorby	In data	-15.432637	128.944465	Good
426	Sorby	In data	-15.432508	128.944258	Good

Box No.	Section	In data or New	Latitude	Longitude	Box Status (May 2022)
427	Sorby	In data	-15.432512	128.944212	Good
428	Sorby	In data	-15.432653	128.944245	Good
429	Sorby	In data	-15.432876	128.944318	Broken/Blocked
430	Sorby	In data	-15.432882	128.943996	Broken/Blocked
431	Sorby	In data	-15.432849	128.944035	Broken/Blocked
432	Sorby	In data	-15.43301	128.944241	Good
433	Sorby	In data	-15.433132	128.944229	Good
434	Sorby	In data	-15.433162	128.944229	Good
435	Sorby	In data	-15.433277	128.944072	Good
436	Sorby	In data	-15.433348	128.944143	Good
437	Sorby	In data	-15.43338	128.943912	Good
438	Sorby	In data	-15.433388	128.943843	Good
439	Sorby	In data	-15.433778	128.943809	Good
440	Sorby	In data	-15.433567	128.944062	Good
441	Sorby	New	-15.433469	128.943614	Good
442	Sorby	In data	-15.433817	128.943824	Good
443	Sorby	In data	-15.434155	128.943714	Good
444	Sorby	In data	-15.433775	128.94377	Broken/Blocked
445	Sorby	In data	-15.433793	128.94339	Good
446	Sorby	New	-15.433681	128.943305	Good
447	Sorby	In data	-15.43377	128.942856	Good
449	Sorby	In data	-15.433852	128.943582	Good
450	Sorby	In data	-15.434005	128.943535	Broken/Blocked
451	Sorby	In data	-15.433925	128.94376	Broken/Blocked
452	Sorby	In data	-15.434129	128.943014	Good
453	Sorby	In data	-15.434204	128.942814	Good
454	Sorby	In data	-15.434328	128.943372	Broken/Blocked
455	Sorby	In data	-15.434417	128.943187	Broken/Blocked
456	Sorby	New	-15.434543	128.943185	Broken/Blocked
457	Sorby	In data	-15.434618	128.943011	Good
458	Sorby	In data	-15.434896	128.943108	Broken/Blocked
459	Sorby	In data	-15.434904	128.943159	Good
460	Sorby	New	-15.435419	128.942618	Good
461	Sorby	In data	-15.435245	128.94242	Good
462	Sorby	In data	-15.435217	128.942386	Good
463	Sorby	In data	-15.435186	128.942398	Good
464	Sorby	In data	-15.435161	128.942304	Good
465	Sorby	In data	-15.434901	128.942339	Broken/Blocked
X001*	Sorby	New	-15.434705	128.946555	Broken/Blocked
X002*	Southern	New	-15.511391	128.837387	Broken/Blocked
X003*	Southern	New	-15.511217	128.837212	Good
X004*	Sorby	New	-15.435542	128.946469	Broken/Blocked
X005*	Sorby	New	-15.435667	128.94694	Good

\* Not at point locations provided and no numbers visible on boxes – some/all may be boxes reported as missing with inaccurate co-ordinates

## Appendix 3

### Results of Nest Box Assessments





Box No.	Date	Status	Notes
100	13/03/2022	Not Found	Box not found
101	16/03/2022	Good	No activity
	13/04/2022	Good	Large spider in box
	18/05/2022	Good	Empty
102	15/03/2022	Broken/Blocked	Box broken
103	15/03/2022	Broken/Blocked	Box broken
104	13/03/2022	Broken/Blocked	Box broken
105	15/03/2022	Good	Working, no evidence observed
	12/04/2022	Good	Empty, box condition ok
	17/05/2022	Good	Empty
106	14/03/2022	Broken/Blocked	Box broken
107	15/03/2022	Broken/Blocked	Box broken
108	15/03/2022	Broken/Blocked	Box broken
109	15/03/2022	Broken/Blocked	Box broken
110	15/03/2022	Not Found	Box not found
111	15/03/2022	Good	Working condition, but with some damage. No evidence observed
	12/04/2022	Broken/Blocked	Broken, box on ground
112	13/03/2022	Broken/Blocked	Box broken
113	15/03/2022	Broken/Blocked	Box broken
114	14/03/2022	Not Found	Box not found, tree fallen
115	16/03/2022	Not Found	Box not found
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
116	16/03/2022	Not Found	Box not found
	13/04/2022	Good	Gecko ( <i>Gehyra</i> sp.) present. Entrance pointing downwards.
	18/05/2022	Good	Entrance almost vertically down
117	16/03/2022	Good	Working condition, but with some damage. No evidence observed
	13/04/2022	Broken/Blocked	Box broken on ground
118	14/03/2022	Broken/Blocked	Box walls broken
119	17/03/2022	Not Found	Box not found
120	15/03/2022	Broken/Blocked	Box broken
121	17/03/2022	Broken/Blocked	Box broken
122	14/03/2022	Not Found	Box not found
123	13/03/2022	Not Found	Box not found
124	14/03/2022	Not Found	Box not found, tree fallen
125	15/03/2022	Good	Working, no evidence observed
	12/04/2022	Good	Partly blocked by old ant nest, empty.
	17/05/2022	Good	Empty
126	17/03/2022	Not Found	Box not found
127	15/03/2022	Not Found	Box not found, tree possibly fallen
128	15/03/2022	Good	Box intact and covered with ants. No response to tapping
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
129	14/03/2022	Not Found	Box not found, tree fallen
130	15/03/2022	Broken/Blocked	Box broken

Box No.	Date	Status	Notes
131	15/03/2022	Broken/Blocked	Box broken - base gone
132	15/03/2022	Broken/Blocked	Box broken
133	15/03/2022	Not Found	Box not found
134	15/03/2022	Broken/Blocked	Box broken
135	15/03/2022	Broken/Blocked	Box broken
136	15/03/2022	Broken/Blocked	Box broken
137	15/03/2022	Broken/Blocked	Box broken
138	17/03/2022	Not Found	Box not found
139	13/03/2022	Broken/Blocked	Tree fallen over, box broken
140	16/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
141	15/03/2022	Not Found	Box not found
142	15/03/2022	Broken/Blocked	Box broken
143	14/03/2022	Good	Nest box intact, full of ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
144	15/03/2022	Broken/Blocked	Box broken - base snapped open. Spider in remnants.
145	16/03/2022	Good	Box fine, appears to be a recent replacement (broken box parts found on floor). No response to tapping
	13/04/2022	Good	Gecko ( <i>Gehyra</i> sp.) flushed from hollow
	18/05/2022	Good	Empty
146	17/03/2022	Not Found	Box not found, tree burnt
147	16/03/2022	Good	Box fine, no response to tapping
	16/03/2022	Good	Empty
	13/04/2022	Good	Empty
148	15/03/2022	Not Found	Box not found
149	16/03/2022	Good	Box fine, recent replacement. No response to tapping
	13/04/2022	Good	Empty, possible old bird dropping
	18/05/2022	Good	Empty
150	15/03/2022	Broken/Blocked	Box broken
151	17/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
152	15/03/2022	Broken/Blocked	Box broken
153	16/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
154	15/03/2022	Broken/Blocked	Box broken
155	15/03/2022	Not Found	Box not found, tree may have fallen
156	15/03/2022	Broken/Blocked	Box broken
157	15/03/2022	Broken/Blocked	Box broken
158	15/03/2022	Not Found	Box not found
159	15/03/2022	Broken/Blocked	Box broken
160	15/03/2022	Broken/Blocked	Box broken
161	15/03/2022	Broken/Blocked	Box broken - log detached from box

Box No.	Date	Status	Notes
162	15/03/2022	Broken/Blocked	Box broken
163	15/03/2022	Not Found	Box not found
164	13/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Green Tree Frogs in box
	18/05/2022	Good	Tree frog scat, otherwise empty
165	15/03/2022	Good	Working, no evidence observed
	12/04/2022	Broken/Blocked	Box broken but still in tree
166	15/03/2022	Broken/Blocked	Box broken
167	15/03/2022	Not Found	Box not found
168	17/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
169	15/03/2022	Broken/Blocked	Box broken
170	14/03/2022	Broken/Blocked	Box broken
171	15/03/2022	Not Found	Not located
172	13/03/2022	Good	Box partially burnt but intact. Tree fully burnt. No response to knocking
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
173	15/03/2022	Broken/Blocked	Box broken
174	17/03/2022	Broken/Blocked	Box broken
175	14/03/2022	Good	Looks in good condition. Empty
	12/04/2022	Good	<i>Gehyra</i> sp. present
	17/05/2022	Good	Empty, box falling off
176	15/03/2022	Broken/Blocked	Box broken
177	14/03/2022	Broken/Blocked	Box broken
178	14/03/2022	Good	No response to tapping
	12/04/2022	Good	No nesting, box ok
	17/05/2022	Good	Empty
179	15/03/2022	Not Found	Box not found
180	14/03/2022	Broken/Blocked	Box broken on ground
181	17/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Large spider in box
	18/05/2022	Good	Small gecko ( <i>Gehyra</i> sp.) in box
182	15/03/2022	Not Found	Box not found
183	15/03/2022	Not Found	Box not found
184	14/03/2022	Broken/Blocked	Box broken
185	15/03/2022	Not Found	Box not found
186	15/03/2022	Not Found	Box not found
187	17/03/2022	Not Found	Box not found
	13/04/2022	Good	<i>Varanus scalaris</i> in box
	18/05/2022	Good	Empty
188	14/03/2022	Not Found	Box not found
189	15/03/2022	Not Found	Box not found
190	14/03/2022	Broken/Blocked	Damaged
191	17/03/2022	Not Found	Box not found
	13/04/2022	Good	Empty, loosely attached to tree

Box No.	Date	Status	Notes
	18/05/2022	Good	Empty, very loosely attached to tree
192	15/03/2022	Not Found	Box not found
193	14/03/2022	Not Found	Box not found
194	14/03/2022	Good	No response to tapping. Empty
	12/04/2022	Good	Empty, condition ok
	17/05/2022	Good	Empty
195	17/03/2022	Not Found	Box not found
196	14/03/2022	Good	No response to tapping. Empty
	12/04/2022	Good	Empty, good condition
	17/05/2022	Good	Empty. Gouldian Finch calling in adjacent tree. Large natural hollow in tree - likely too big/deep for Gouldians
197	15/03/2022	Broken/Blocked	Box broken
198	17/03/2022	Not Found	Box not found
199	17/03/2022	Not Found	Box not found
200	14/03/2022	Broken/Blocked	Nest box damaged
201	15/03/2022	Broken/Blocked	Damaged
202	13/03/2022	Broken/Blocked	Box broken
203	13/03/2022	Broken/Blocked	Box broken
204	14/03/2022	Good	No response to tapping. Empty
	12/04/2022	Good	Empty, good condition
	17/05/2022	Good	Empty
205	17/03/2022	Broken/Blocked	Box broken
206	14/03/2022	Good	No response to tapping. Too high/blocked by branch to burrow scope
	12/04/2022	Good	Empty, good condition
	17/05/2022	Good	Empty
207	15/03/2022	Broken/Blocked	Tree dead
208	14/03/2022	Good	Quite downfacing, empty
	12/04/2022	Good	Empty, entrance pointing downward a bit
	17/05/2022	Good	Empty, entrance pointing downwards
209	15/03/2022	Not Found	No nest box located
210	16/03/2022	Good	Box fine, recent replacement. No response to tapping
	13/04/2022	Good	Ant colony (orange-brown coloured ants)
	18/05/2022	Good	Empty
211	17/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Grass and other possible old material in entrance, box empty
	18/05/2022	Good	Empty
212	15/03/2022	Not Found	Box not found
213	17/03/2022	Good	Box loosely attached. No response to tapping
	13/04/2022	Good	Empty, box beginning to detach
	18/05/2022	Good	Empty, box starting to fall away from hollow
214	15/03/2022	Not Found	Box not found
215	16/03/2022	Good	Empty
	13/04/2022	Good	Too high and ground too unstable for ladder, no response to tapping
	18/05/2022	Good	No response to tapping, too unstable for ladder
216	16/03/2022	Broken/Blocked	Bottom damaged

Box No.	Date	Status	Notes
218	17/03/2022	Good	Box fine, no response to tapping
	13/04/2022	Good	Empty
	18/05/2022	Good	Empty
219	17/03/2022	Not Found	Box not found, tree or branch may have burnt down
220	13/03/2022	Broken/Blocked	Box broken
415	17/05/2022	Good	Empty
416	17/05/2022	Broken/Blocked	Blocked by ants
417	17/05/2022	Good	Spider nest
418	17/05/2022	Good	Full of hairy caterpillars
419	17/05/2022	Good	Empty
420	17/03/2022	Broken/Blocked	Box entry clogged by ants
	12/04/2022	Good	<i>Varanus scalaris</i>
	17/05/2022	Good	Empty
421	17/05/2022	Good	Empty
422	17/03/2022	Broken/Blocked	Box entry clogged by ants
	12/04/2022	Good	Empty, slightly damaged
	17/05/2022	Good	Empty
423	12/04/2022	Good	Not in GPS dataset. Empty
423	17/05/2022	Good	Box falling away from hollow
424	17/03/2022	Good	Box fine. Contains <i>Varanus scalaris</i>
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
425	17/03/2022	Broken/Blocked	Box entry clogged by ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
426	17/03/2022	Good	Box fine. Contains <i>Varanus scalaris</i>
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty, partially blocked by ant debris
427	17/03/2022	Broken/Blocked	Box detached from log (and upside down)
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
428	17/03/2022	Good	Box fine. Empty
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
429	17/03/2022	Broken/Blocked	Box fine, clogged by ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Broken/Blocked	Blocked by ants
430	17/03/2022	Broken/Blocked	Box fine, full of ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Broken/Blocked	Blocked
431	17/03/2022	Broken/Blocked	Box fine, clogged by ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Broken/Blocked	Blocked
432	17/03/2022	Broken/Blocked	Full of ants
	12/04/2022	Habitat tree	Empty but with some remnant ant nest/wasp nest material
	17/05/2022	Good	Empty

Box No.	Date	Status	Notes
433	18/03/2022	Good	Empty
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
434	17/03/2022	Good	Box fine, empty except for few ants
	12/04/2022	Good	Empty and slightly disconnected, screw had come loose, re-attached
	17/05/2022	Good	Empty
435	17/03/2022	Good	Box fine but almost vertically downwards. Unsurprisingly empty
	12/04/2022	Good	Empty, entrance angled down steeply
	17/05/2022	Good	Empty, spider web over entrance
436	17/03/2022	Broken/Blocked	Box fine, clogged by ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
437	17/03/2022	Broken/Blocked	Clogged by ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
438	17/03/2022	Broken/Blocked	Clogged by ants
	12/04/2022	Good	Empty. Cockroach noted
	17/05/2022	Good	Empty
439	17/03/2022	Broken/Blocked	Box fine, full of ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Good	<i>Varanus scalaris</i>
440	17/03/2022	Good	Box fine, empty
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty, wasp nest
441	17/03/2022	Broken/Blocked	Ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
442	17/03/2022	Good	Box fine, big ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Good	Partly blocked, <i>Varanus scalaris</i> in hollow
443	17/03/2022	Good	Empty
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
444	17/03/2022	Broken/Blocked	Entry clogged by ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Broken/Blocked	Blocked
445	17/03/2022	Broken/Blocked	Blocked by ants
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
446	12/04/2022	Good	<i>Varanus scalaris</i>
	17/05/2022	Good	Empty
447	17/03/2022	Broken/Blocked	Full of ants
	12/04/2022	Good	Empty
	17/05/2022	Good	<i>Varanus scalaris</i>
449	17/03/2022	Broken/Blocked	Blocked by ants
	12/04/2022	Good	Empty

Box No.	Date	Status	Notes
	17/05/2022	Good	Empty
450	12/04/2022	Good	Empty
	17/05/2022	Broken/Blocked	Blocked by ants
451	17/03/2022	Broken/Blocked	Blocked by ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Broken/Blocked	Blocked
452	17/03/2022	Good	Empty
	12/04/2022	Good	Empty
	17/05/2022	Good	Empty
453	17/03/2022	Broken/Blocked	Blocked by ants
	12/04/2022	Broken/Blocked	Blocked by ants
	17/05/2022	Good	Empty
454	17/03/2022	Broken/Blocked	Hollow blocked by ants
454	12/04/2022	Broken/Blocked	Blocked by ants
454	17/05/2022	Broken/Blocked	Blocked
455	17/03/2022	Broken/Blocked	Hollow blocked by ants
455	12/04/2022	Good	<i>Varanus scalaris</i>
455	17/05/2022	Broken/Blocked	Blocked
456	17/03/2022	Broken/Blocked	Ants blocked hollow
456	12/04/2022	Broken/Blocked	Blocked by ants
456	17/05/2022	Broken/Blocked	Blocked
457	17/03/2022	Broken/Blocked	Entrance blocked by ants
457	12/04/2022	Good	Empty
457	17/05/2022	Good	Empty, many ants
458	17/03/2022	Good	Empty
458	12/04/2022	Broken/Blocked	Blocked by ants
458	17/05/2022	Broken/Blocked	Blocked
459	17/03/2022	Good	Empty
459	12/04/2022	Good	Empty
459	17/05/2022	Good	Empty
460	12/04/2022	Good	Empty
461	17/03/2022	Broken/Blocked	Full of ants
461	12/04/2022	Good	Empty
461	17/05/2022	Good	Empty
462	17/03/2022	Good	Box fine, too high to use ladder in swamp
462	12/04/2022	Good	Empty
462	17/05/2022	Good	<i>Varanus scalaris</i>
463	17/03/2022	Broken/Blocked	Full of ants
463	12/04/2022	Broken/Blocked	Blocked by ants
463	17/05/2022	Good	Empty
464	17/03/2022	Good	Big ants
464	12/04/2022	Good	Bee colony in tree, not checked
464	17/05/2022	Good	Bee colony smaller, whitewash outside box but no real evidence visible inside box
465	17/03/2022	Broken/Blocked	Ants, nest box detached from hollow
465	12/04/2022	Broken/Blocked	<i>Varanus scalaris</i> , box detached
465	17/05/2022	Good	Partly blocked, gecko sp.

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<b>Box No.</b>	<b>Date</b>	<b>Status</b>	<b>Notes</b>
X001	14/03/2022	Broken/Blocked	Box broken and not at a GPS point
X002	17/03/2022	Broken/Blocked	Box broken and not at a GPS point
X003	13/04/2022	Good	Empty
X003	18/05/2022	Good	Empty
X004	14/03/2022	Broken/Blocked	Not at marked location. Looks a bit damaged.
X005	17/05/2022	Good	Empty, not in GPS set