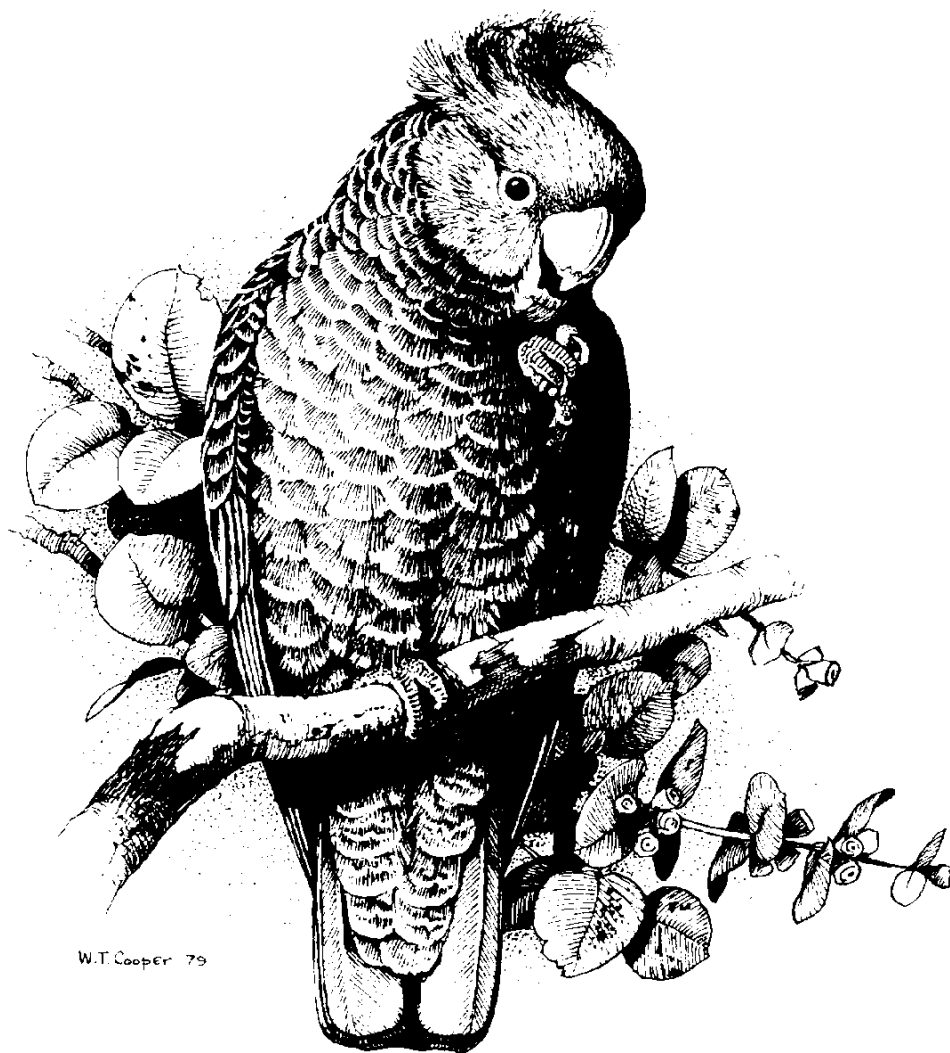


# canberra bird notes

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## ARTICLES

Canberra Bird Notes 44(3) (2019): 210-220

### BREEDING OF GANG-GANG COCKATOOS IN SUBURBAN CANBERRA

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**Abstract.** We report on an analysis of Gang-gang (*Callocephalon fimbriatum*) records held by the Canberra Ornithologists Group (COG) collected from 1985 to the present. In addition, during a survey of the distribution of Gang-gangs in the ACT from March 2014 to February 2015 many breeding observations were received, mostly of adults feeding fledged young. From these records and those held in the COG database it was possible to confirm only one breeding site in the ACT. Since 2016 observers were asked to report breeding observations to Canberra Nature Map and this initiative provided information on a number of possible breeding sites.

During the 2017-18 and the 2018-19 breeding seasons a group of volunteers made detailed observations on breeding sites in the Red Hill Nature Reserve: two sites produced fledged young in the first season and five in the following season. Ten nesting trees were climbed and measurements taken of nesting hollows. The results of observations and hollow measurements are presented.

#### 1. Introduction

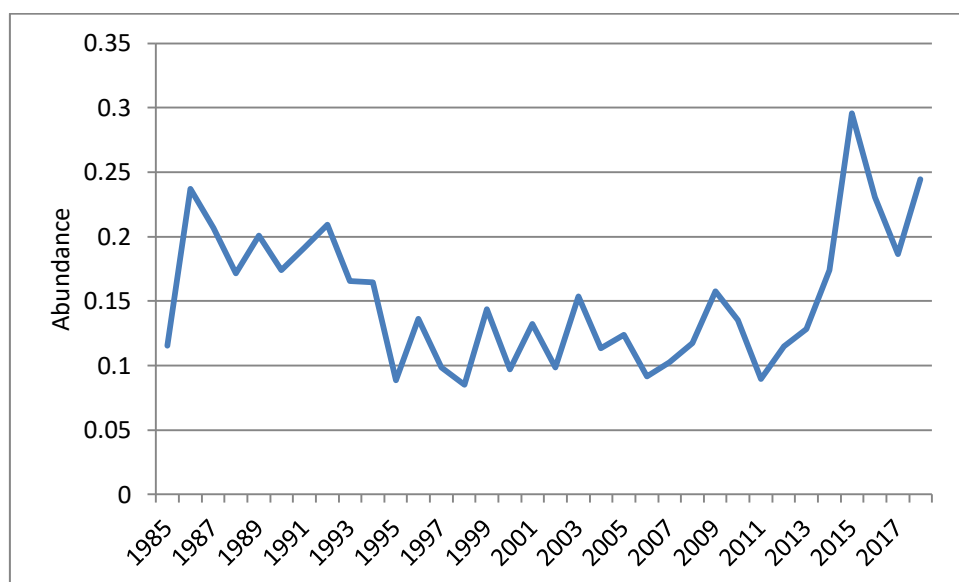
The Gang-gang (*Callocephalon fimbriatum*) is a well-loved and easily recognisable member of the Cockatoo family. Canberra is virtually in the centre of its range and although the Gang-gang is not listed as threatened in the ACT it is listed as threatened in New South Wales. Its distribution is restricted to the south-eastern corner of Australia, stretching from the mid-north NSW coast to the Victoria/South Australia border. Habitat requirements range from forests to woodlands and, like all Cockatoos, Gang-gangs nest in tree hollows. In our area it appears that the species in general spends the breeding season in the forest and near coastal valleys, and comes down to woodlands during the winter months. Elsewhere in its range this seasonal movement does not necessarily occur.

The Gang-gang is known for its remarkable tameness and like the Australian King-Parrot (*Alisterus scapularis*) will readily come to garden feeders and even be fed from the hand. Both adults incubate over a period of four weeks. Males usually incubate during the day. Young leave the nest eight weeks after hatching. They are then fed for a further 4-6 weeks or longer for up to close to 4 months. The Gang-gang is not a newcomer to Canberra. While its distribution in the local area before the development of Canberra is unknown, it is reported in the first list of birds from the area, at Yarralumla (Hermes 1982; Veerman 1986).

Records from the database held by the Canberra Ornithologists Group (COG) are the most reliable and comprehensive source of local information. Observations collected since 1981 indicate that Gang-gangs can be seen throughout the ACT and surrounding NSW. There have been two periods when they were intensively surveyed. The first was during the data collection for the ACT Bird Atlas from 1 September 1986 to 31 August 1989. The second period, from March 2014 to February 2015, was a survey conducted specifically to document the distribution and abundance of Gang-gangs and to celebrate 50 years of COG activity in the ACT and surrounding areas (see <http://canberrabirds.org.au/wp-content/uploads/2015/03/Gang-gang-survey-March-2014-to-February-2015-Final-report.pdf>; for a complementary report on community engagement see <http://canberrabirds.org.au/wp-content/uploads/2015/03/GG-survey-Community-Engagement-Report-Final.pdf>).

## 2. General observations 1981-2018

Apart from these two periods when the number of records and hence the number of birds and other reporting indices increased, the abundance (Fig. 1) and other indices have remained remarkably constant throughout the period.



**Figure 1. Gang-gang abundance. Average number of birds reported per observation.**

## 3. Breeding records in the COG database

### 3.1. July 1985-31 June 2013

Between 1 Jul 1985 and 31 Jun 2013 there are 255 ‘breeding’ records in the COG database. Of these, virtually all are of behaviours such as inspecting hollows, feeding young and dependent young, but there are only four observations of birds seen leaving or entering a nest. These four alone may indicate successful breeding at a site in the local region over a 29- year period prior to the COG survey in 2014-15 (one at Orroral Valley in 1997, one at O’Connor Ridge in 2000, one at Gossan Hill in 2009, and one at Gungahlin Hill in 2010). However, in none of the cases were the sites checked regularly, so there is no information on breeding success. In summary, over a 29-year period of observations there have been no observations of successful breeding in the Canberra region.

### 3.2. 1 July 2013 to present

Since 1 Jul 2013 there have been an additional 258 ‘breeding records’, most of which were collected during the COG 50<sup>th</sup> Anniversary survey, but again virtually all are of behaviours such as inspecting hollows, dependent young and a few observations of birds copulating.

Determining breeding success of hollow-nesting species is not easy. The usual reasons for this are that the site needs to be monitored regularly and if possible the hollow inspected for activity. This is seldom possible. In addition, Cockatoos tend to visit hollows throughout the year, which makes assessment more difficult. To help in determining the likelihood of breeding, any known site was coded according to the number of observer visits (if known), the number of observed visits by a Gang-gang and the birds’ behaviour.

Breeding possible, one report only, bird/s near hollow (Category 1)

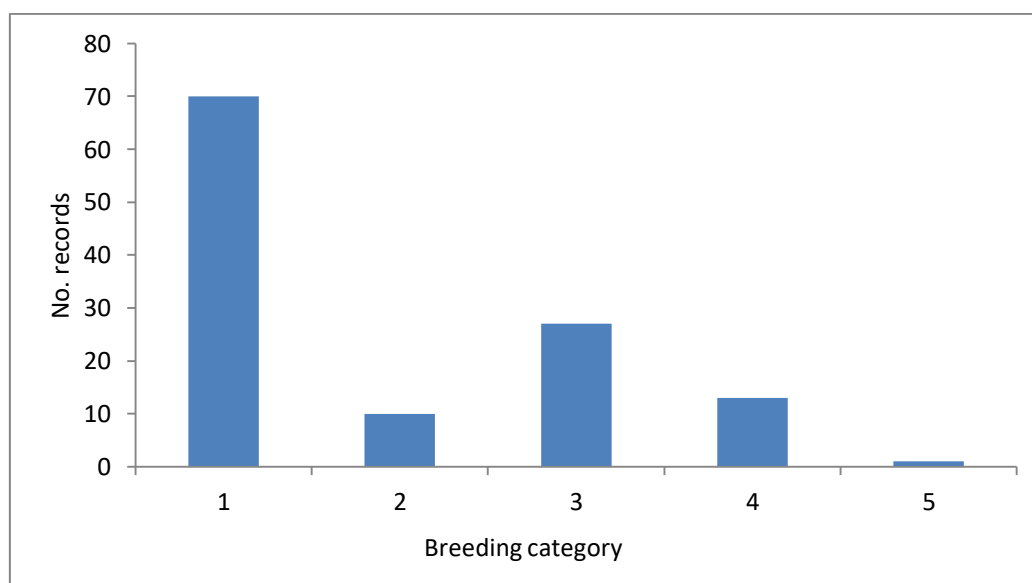
Breeding possible, one report only, seen entering hollow (Category 2)

Breeding possible, more than one report of birds at or near hollow (Category 3)

Very likely breeding, seen on multiple occasions at or near hollow and entering hollow on at least one occasion (Category 4)

Confirmed breeding, non-flying young seen at entrance (Category 5)

For the COG 50<sup>th</sup> Anniversary survey, from March 2014 to the end of the 2015-16 breeding season, there were 121 records of Gang-gangs visiting hollows, of which 66% were category 1 or 2 (see Figure 2) and there were 13 records of category 4. The only category 5 observation being from the ANBG.



**Figure 2. Number of records for each breeding category, 2014-2016.**

During the COG survey there were three sites with regular observations. In one case it was observed that at dusk the female was the bird that took incubation duties (C. Davey *pers. obs.*). This confirms sightings that suggest it is the female that incubates overnight (Higgins, 1999). None of the three sites produced young, and two appear to have failed, possibly due to heavy rain in December. There was a single breeding event recorded at the Australian National Botanic Gardens (ANBG), where recently fledged young were observed next to a tree hollow. This is the only confirmation of breeding in urban Canberra during the survey.

Since the survey, an additional 19 breeding records have been submitted to the COG database. One was a category 4 and one a category 5 at separate sites in the ANBG.

#### **4. Observations reported to Canberra Nature Map**

From 2016 observers were asked to report breeding behaviours as a sighting on Canberra Nature Map (CNM): <https://canberra.naturemapr.org/Community/Species/Sightings/15084>

At least one photograph was required for each sighting entered on the Map. The location and date is stripped from the image references. Clicking on the 'nesting site' box in the online record sheet restricted location data to the observer and the project administrators.

There were three images of Gang-gangs at or near a hollow during the 2016-17 season and three during the 2017-18 season. During the 2018/2019 breeding season, participants were asked to also note the number and sex of birds sighted and to choose from the following behaviours:

- seen entering hollow
- looking into hollow
- chewing bark around hollow
- perched near hollow

From 1 September 2018 to 28 February 2019, 165 sightings of hollow activity with 396 images were posted on Canberra Nature Map, by 27 observers.

Observers were encouraged to make repeated visits to a hollow of interest and record the presence or absence of Gang Gangs on each occasion. The aim was to obtain multiple sightings on the use of a hollow that Gang-gangs have been inspecting. In this way information could be obtained on the hollows that have been used by Gang-gangs for successful breeding and on those that were not successful.

Six nest locations were confirmed by the presence of young poking heads out of the hollow entrance, one from Stirling Ridge and five from Red Hill bushland. At a further forty hollows both males and females were seen entering on multiple occasions. The nest and potential nest trees were largely clustered in four parts of Inner Canberra (Red Hill - Hughes, Mt Majura – Mt Ainslie, ANU - Botanic Gardens and Gossan-Hill– Aranda).

#### **5. Observations from Red Hill**

During the 2017-18 and the 2018-19 breeding season a group of dedicated volunteers kept a close eye on the activity of a group of Gang-gangs in the Red Hill area.

For the 2017-18 breeding season the group managed to find 15 sites in which Gang-gangs showed an interest. Of these five were of category 1, two of category 2, two of category 3, four category 4 nests and two successful category 5 nests (Table 1).

**Table 1. Breeding category of 17 Gang-gang hollows at Red Hill during 2017-18 and 2018-19.** NC- not checked, NU-Gang-gang not seen using the site.

Site	Site name	Breeding season	
		2017-18	2018-19
22		1	NU
23		1	NU
24		1	NU
25	Tree 66	5	5
28	Long hollow	4	4
29	Small hollow	4	4
30	Duck down	5	5
31	Nest box	3	NU
33	Dead tree	2	3
39		2	NU
40		1	NU
133	Mistletoe	3	5
134	Red Box	1	5
135	Norm's	NC	5
136	Track hollow	4	4
137	Gully hollow	NC	4
138	Sandy's	4	2

For the 2018-19 breeding season 11 sites were observed. Of these one was a category 2, one was category 3, four were category 4 and five were category 5. At the two successful sites in 2017-18 (sites 25 and 30) Gang-gangs again reared young. Sites 135 and 137 had not been known previously. Sites 28, 29, 136 and 137 may well have been successful but young were not seen at the sites. When the hollow at site 28 was measured it contained a Common Brushtail Possum (*Trichosurus vulpecula*) in residence, which may have affected breeding success in 2017-18. Yet, on inspection of site 133, from which young had fledged, a Possum was found in the hollow.

During the 2018-19 breeding season, 187 of the 281 (67%) sightings submitted to CNM were by the Red Hill observers, providing a most valuable commentary on the activity of a number of sites in the area.

The following summary observations on fledgling appearance relate to the two category 5 nests in 2017-18 and five of the six category 5 nest sites in 2018-19.

For the 2018-19 season the pair at site 30 successfully reared a male and two female young (Table 2 and Figs. 3 and 4).

### 5.1 Hollow measurements

At the end of the 2017-18 breeding season five of the tree hollows were measured to gain a more detailed picture of those hollows in which chicks were successfully reared and those in which they were not. At the end of the next season an additional five were measured.

**Table 2. Number of chick**

Site	Hollow name	No. of chicks at hollow	First date chick was observed	Sex	Chick fledging date (observed)	Chick fledging date (estimated)	Time from sighting to fledging (days)	Time of fledging
25	Tree 66	2	7 Jan 18	♂ ♂		18-19 Jan 18	11-12	
30	Duck down	1	26 Feb 18	♂		8 Mar 18	10	
30	Duck down	3	13 Jan 19 13 Jan 19 20 Jan 19	♀ ♂ ♀	21 Jan 19  26 Jan 19	22 Jan 19	8 9 6	evening probably evening evening
135	Norm's	1	23 Jan 19	♀		26 Jan 19	3	morning
134	Mistletoe	2	13 Jan -19	♂, ♀	18 Jan 19		5	morning
25	Tree 66	2	7 Jan 19	♂, ♂		14 17 Jan 19	7-11	
133	Yellow Box	2	6 Jan 19	♂, ♀	12 Jan 19		6	evening

Tree species and hollow type (whether on the trunk or a primary or secondary limb) were noted. Measurements for hollow depth were taken from the base of the hollow entrance to the floor of the chamber. There were two measurements for hollow diameter; width and height of the hollow entrance. In addition, a measurement of the outside circumference of the spout or trunk level to the chamber floor and the maximum diameter of the chamber floor were measured. Finally, the height from the ground to the base of the entrance was estimated and the hollow perch length if present was measured (see Appendix).

The floor of the chambers was filled with very fine eucalyptus bark to a depth of 2-3 cm with no sign of eucalyptus leaves or twigs (Fig. 4). Gang-gangs were not observed taking sprays of leaves to the nest and an email to the COG Discussion List requesting sightings did not produce any responses. Despite frequent sightings of Galahs (*Eolophus roseicapillus*) carrying leaves to the nest, as mentioned by Higgins (1999), there is no mention of Gang-gangs doing so.





**Figure 3. Adult male with two female and one male young from site 30. Note the very white bill and the unusual feature of head plumage difference of non-fledged young. (Tom Tyrrell).**

Note: The difference in bill colour may not be visible in b/w print. Readers should view these photos in colour in the web version of this article on COG's website at: <http://canberrabirds.org.au/publications/canberra-bird-notes/>



**Figure 4. Female young from site 30 on 24 January. Last seen at hollow on 26 January 2019 (Tom Tyrrell).**



**Figure 4. Contents of Gang-gang nest hollow (*Chris Davey*).**

## 6. Discussion

Most breeding records of the Gang-gang are of observations of adult birds with young in attendance. When this occurs the breeding site may be some distance away, though the movement pattern of Gang-gangs is virtually unknown. Obtaining records of site-specific, confirmed, successful breeding events is difficult for any hollow-nesting species and can only be obtained by good luck or by having a site under regular observation to confirm non-fledged young at a hollow entrance. It is not surprising, then, that there are so few category 5 breeding records. Canberra Nature Map facilitates co-ordinated reporting and survey effort and has proven useful to extending the known observations/data.

In urban Canberra the suburbs most likely to report Gang-gangs were those bordering the Canberra Nature Park Nature Reserves of Mt Majura, Mt Ainslie, Gossan Hill, Bruce and O'Connor Ridges, Black Mountain and Aranda to the north of Lake Burley Griffin, and Red Hill and Mt Taylor to the south (see Davey and Eyles 2016). In suburbia, category 4 sites have been reported occasionally, for instance at Barton, O'Connor, Aranda and Reid (C. Davey *pers. obs.*).

To date we are aware of eight sites that have successfully fledged young, two at ANBG, one at Stirling Ridge and five at Red Hill. During the course of the 50<sup>th</sup> Anniversary survey, information was received of a tree that had been cut down some years previously in Corroboree Park, Ainslie, that contained Gang-gang chicks, but whether the young survived is unknown (C. Davey *pers. comm.*).

From the observations reported at Red Hill it would appear that the best time to sight breeding activity at a hollow is during the evening as adults swap incubation duties for the night shift. Higgins (1999) reports that the female incubates or minds the non-fledged young during the night, and this is confirmed by the Red Hill observations.



All of the confirmed nest sites were in either Red Box (*Eucalyptus polyanthemos*), Yellow Box (*E. melliodora*) or Blakely's Red Gum (*E. blakleyi*). They were either in hollows formed within the main trunk, at the junction of a main branch and the tree trunk, or in a short sprout attached to the main trunk. Adult birds feeding young were seen to feed nearby on the gum nuts of planted Blue Gum (*E. globulus subsp. bicostata*). A possible relationship between nest hollow choice and distance from planted Blue Gums will be investigated in the coming year.

Adults seem to be actively involved in encouraging the fledging of young. Chicks can be heard calling in the hollow and are encouraged up to the entrance by adults not entering the hollow to feed. This is when the heads of chicks were first observed at the hollow entrance. The time when young were first observed to when they fledged ranged from 3 – 11 days, with an average of 7 days for the thirteen chicks observed. Thus the window in which a nesting hollow can be confirmed by observation is quite short, which may partly explain the paucity of pre-existing records.

At least one adult and usually both are present at fledging, seemingly encouraging the young to leave the hollow through calling, being close by, making repeated short flights from the hollow and if the young followed rewarding them with food. This process can take a number of days, as observed for one nestling. Nestlings were not observed returning to a hollow once fledged.

Breeding of the Gang-gang is poorly known in the wild, most information being obtained from captive birds (Higgins 1999). According to Higgins (1999) the breeding season is usually between October and January and observations at Red Hill agree with fledging occurring on average around mid-January, indicating egg-laying in mid-October. During the 2017-18 breeding season there was much activity at site 31 by an adult pair, with no activity at the nearby site 30. At some time this activity ceased and not long after an adult pair was seen at site 30. Although the pair was not banded and so difficult to confirm, it is likely that the pair deserted site 31 and took up residence at site 30. This may have been the reason for the late breeding event at site 30, where fledging did not occur until early March 2018.

In the wild, clutch size is usually two, occasionally one or three (Higgins, 1999) so the successful rearing of three chicks at site 30 in 2018-19 is most unusual.

It is difficult to compare the hollow characteristics with other sites for there is little information available and details on how measurements were obtained are scarce. Higgins (1999) cites chamber depth as 76.2 cm and 200 cm with a diameter of about 25 cm.

From the small number of sites measured, there appears to be no particular tree type favoured, the choice depending on the variety of tree species in the landscape providing suitable hollows. Even so, 'gum' eucalypts such as Blakely's Red Gum are more likely to produce large hollows than 'box' type eucalypts such as Yellow Box or Red Box. Although there is much variability and difference with site location, on average the hollow diameter (16x14 cm) is less than that for the Sulphur-crested Cockatoo (*Cacatua galerita*) (15x27 cm) and the Galah (16x20 cm) (Higgins, 1999), whilst the average height above ground (6 m) is less than that for the Sulphur-crested Cockatoo (10-12.7 m depending on study) and similar to the Galah (5.4-8.8 m depending on study). Chamber depth (average 47 cm) is less than that for the Sulphur-crested Cockatoo and Galah (over 60 cm).

The chamber circumference compared with branch/trunk circumference is of interest, as the ratio provides a measure of nest insulation. The base of the nesting chamber was always filled with fine bark chewings to at least two centimetres

To obtain further breeding information on the Gang-gang in suburban Canberra we would urge those interested to adopt a site where breeding activity has been observed. Regular visits to the site, preferably in the evening, and on each visit recording, at a distance, any activity at the site and noting whether Gang-gangs are present, would be most valuable.

If you would like to be part of this ongoing study please contact [Michael.Mulvaney@act.gov.au](mailto:Michael.Mulvaney@act.gov.au)

### Acknowledgements

We would like to thank the community from the Red Hill area, in particular, Kim Lomax, Sam Nerrie, Norman Pushack, Jonathan Steinbeck, Roy McDowall and Cameron Tyrrell for their observations and photos and Laura Rayner for tree-climbing and the measurement of nesting hollows. The manuscript has greatly benefited from editorial comments by Michael Lenz and Kevin Windle.

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*Accepted 21 August 2019*

See Appendix on following page.

**Appendix. Gang-gang breeding hollow measurements.**

Tree number	25	28	29	30	31	134	133	135	136	137
Tree species	BRG	BRG	BRG	BRG	BRG	RB	YB	BRG	BRG	BRG
Hollow location	T	T	T	T	P	S	P	P	T	S
Hollow type	H	H	H	H	S	S	S	H	H	H
Estimate height above ground (m)	8	6.5	7	4	6	9	8	4	3	5.5
Hollow entrance height (cm)	11	8	7	33	14	15	23	14	22	12
Hollow entrance width (cm)	14	24	10	16	16	12	16	8	17	7
Chamber depth (cms)	52	60 (est)	23	56	77	129 (est)	48+	29	48	48
Max chamber floor dia (cms)	12	20	15	28	20	21	25	33	21	19
Branch/trunk circumference (cms)		259 (est)	129.5	146	132.5	108	194	138	201	72
Hollow perch length (cm)	106	54					26	152	72	
Comments		Possum					Possum			
<p>Tree species BRG-Blakley's Red Gum, RB-Red Box, YB- Yellow Box  Hollow location T- Trunk, P- Primary limb, S- Secondary limb  Hollow type H- Hollow in trunk or limb, S- Spout</p>										

**OBSERVATIONS ON THE ROOSTING BEHAVIOUR OF THE  
MAGPIE-LARK IN CHAPMAN/RIVETT.  
PART III: OBSERVATIONS FOR 2016 TO JUNE 2019**

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**Abstract.** *Observations on the roosting and roost flight behaviour of the Magpie-lark (Grallina cyanoleuca) around Chapman/Rivett during 2015 were published in Parts I and II. This Part provides details for 2016 to mid-2019, including the numbers of Magpie-larks involved in the roost flights, as well as for the occupation of two new roost sites utilised only for brief periods. Behaviour in February 2016 was very different from that observed in 2015, as it was, but to a lesser extent, in March 2016. However, after mid March the more normal pattern was re-established. This generally involved much smaller numbers of birds than in 2015, which seemed to be coming from, and returning to, roost sites which were assumed to be much deeper in Rivett, but were never located. By mid October 2016 roost flights over the study area had stopped and only very small numbers were occasionally observed to the end of June 2019. Also described is the roosting behaviour of the resident pair and local breeding for this period.*

## 1. Introduction

Magpie-lark (*Grallina cyanoleuca*) roost flight activity seemed to stop by early November 2015, as noted in Holland (2015a). However, early on the morning of 29 Dec, 4 birds came high from Rivett over the zig zag path (see site 1 in Map 1 of Holland (2015b))<sup>1</sup> towards the Chapman horse paddocks (CHP hereafter). As some birds were still moving through in late December, I continued to take notes into 2016. In particular I was keen to establish whether the birds first seen on the wires within my GBS site in January 2015 (Holland 2015b) were likely to have been roosting nearby, or were coming from deeper in Rivett.

## 2. Methodology

During 2016 most of the morning observations were made as I was walking my dogs, trying as much as possible to time the start of this when the local birds gave their first call or emerged from their roost, and/or when Magpie-larks came over from Rivett on their roost flights. In the evenings it was usually a much more dedicated and prolonged watch, often from the W side of my GBS site, or observation points determined by particular sightings. Observations from October 2016 and during 2017-2018 were made on a more *ad hoc* basis due to the much lower activity.

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<sup>1</sup> Note that the Key for this map is incorrect and should read: Key: 1 – Zig zag path; 2 – Underpass; 3 – Straight path wires; 4 – Hakea roost; 5 – Lower (ENE) end of laneway between Chauvel Circle and Percy Crescent; 6 – 27-31 Kathner Street; 7 – End of Toona Place; 8 – Wattles roost; 9 – Exotics roost; 10 – Corner Chauvel Circle and Monkman Street; 11 – Our battle-axe driveway; 12 – Pole on SSE corner of our block.

### 3. Observations

#### 3.1. Very low activity January/early February 2016

Despite the indications at the end of December, there was no evidence of multiple birds undertaking roost flights up to 11 Jan 2016, nor was I able to find the resident pair at the 47 or 52 Tce roosts (Holland 2015a). However, checking calling at 20:15 h on 12 Jan I found 4 birds disputing at 49 Darwinia Tce (often Tce hereafter), two of which went to the 52 Tce roost wattle. Soon one bird left to challenge birds calling in the bushes at 47 Tce. After much chasing they were seen off into Rivett. The two remaining birds then flew to the 47 Tce roost, but were not settled by 20:40 h. This pair's further roosting behaviour is summarised in Section 3.7.

There was only limited roost flight activity to the end of the first week of February. On the morning of 21 Jan, 4 birds came from Rivett to the ENE end of the laneway between Chauvel Circle and Percy Crescent, Chapman (Chau/Perc laneway hereafter - see site 1 on Map 1); and 6 birds flew over my GBS site towards Rivett on the evening of 28 Jan.



**Map 1. Key sites for the 2016-2019 observations of roosting Magpie-larks.**

1. Chau/Perc laneway; 2. End of Toona Pl.; 3. Triangular Rivett park; 4. Gum roost tree; 5. Exotic tree roost; 6. Sharp end of Rivett park; 7. Roofs/wires of 2-4 Burgan Pl.; 8. Higher part of western Monkman St.; 9. Corner Chauvel Circle/Monkman St.; 10. Start of Kathner St.; 11. W corner of Kathner St/Percy Cres.; 12. Lane from Croton St to Bangalay Cres. Roost flight directions are bounded in white.

#### 3.2. Activity associated with a gum tree roost in Rivett in 2016

At 06:40 h on 8 Feb at least 9 Magpie-larks were found at the end of Toona Pl Rivett (site 2 on Map 1). They moved W towards the gum trees at 54 Darwinia Tce, but were not followed further. At 06:30 h on 9 Feb at least 6 birds were present at the former spot. However, they moved slightly N of E about 125 m along the path which roughly bisects Rivett (Rivett path hereafter) towards the W corner of the wider N end (base) of the small triangular park (Rivett park hereafter, site 3 on Map 1). Over 20 birds were seen here, mainly on the ground. They were still moving further down the path at around 06:35 h.

This was unexpected as movement was in the reverse direction from the usual morning roost flights. At 06:20 h on 10 Feb there were 6 birds at the end of the nearby Borgan Pl. They too moved to the W corner of the Rivett park where around 12 birds gathered.

From about 06:25 h on 11 Feb at least 12 birds were present at the end of Toona Pl, but they then flew SE down Borgan Pl. However, at least 8 birds were then seen at the W corner of the Rivett park (site 4 on Map 1), and for the first time significant bird droppings were noticed on the path here, suggesting a possible roost site in the white-stemmed gum tree (20 m high and of similar crown width) above it. That evening I first checked for birds moving over to Rivett, but none were seen. However, at 19:55 h 12 birds were seen in the gum (gum roost hereafter).

Subsequent activity associated with this new gum roost site is described below, and summarised in Table 1 above.

**Table 1. Summary of observations associated with the gum roost tree in February 2016.**

Date	Number and time [h] Toona (T) or Borgan Pl (B)	Number in/around gum roost at W corner of Rivett park and time[ h]	Comments
8 Feb	9 (T, 06:40)	-	Moved W in usual direction
9 Feb	6 (T, 06:30)	20 (06:35)	Moved E - opposite of usual
10 Feb	6 (B, 06:20)	12 (06:25)	See text
11 Feb	12 (T, 06:25)	8 (06:30); 12 (19:55-20:00 h)	Roost first discovered at W corner of Rivett park - see text
12 Feb	0 (T/B, 06:25)	20 (06:30); 20 (19:32-20:00)	See text
13 Feb	0 (T/B, 06:25)	06:25, heard here, did not check 9 (19:55 h)	See text
15 Feb	5 (see text, 06:25)	6 (06:31); 8 (19:50- 20:05)	7 flew in direction of gum roost tree from 19:32 - see text
16 Feb	Did not check – see text	6 (19:51-20:00)	See text
18 Feb	Did not check – see text	1 (19:56-20:01)	8 flew in direction of gum roost tree from 19:45– see text
19 Feb	0	5 (06:31-06:36)	Birds were along the Rivett path wires - see text
22 Feb	0	8 (06:35)	-

On 12 Feb the only activity was around the gum roost tree at 06:30 h, with up to 20 birds mostly on the grass. By 19:40 h 6 birds were on the ground near the roost tree, before more birds came in mainly from the S. A few also came from the W, as well as through the wattles along the SW edge of the Rivett park. Nearly all came in low or through the bushes/trees, quite a few went in to the main roost tree just after 19:40 h, but the remainder did so slowly, often via other bushes/trees, and all had still not settled at 20:00 h. In the end there were well over 20 birds, nearly all in the main gum, but also a few in a gum to the NNW on the opposite side of the Rivett path, as well as in the adjacent trees/wattles.



At 19:55 h on 13 Feb 3 birds were still on the ground and a further 6 could be seen in the gum roost tree. Other birds could be heard nearby but none came in. At 06:25 h on 15 Feb 5 birds were on the wires near the end of Burgan Pl. A few of these flew down to the pole adjacent to the gum roost tree, when they were joined by a couple of birds from the roost, 6 birds were seen together at 06:31 h. From 19:32 h that evening I first watched from Darwinia Tce for flights towards the gum roost, and saw 7 birds doing so. About 8 birds were near the roost site by 19:50 h, but only 6 (3 pairs) were spotted in the tree by 20:05 h. There were possibly some birds in the nearby bushes, and others were calling nearby but were not located.

On the morning of 16 Feb I checked for possible movement along the flyway from Rivett across Darwinia Tce into Chapman, but none was noted up to about 06:35 h. That evening a maximum of 6 birds went into the roost, some in or from the nearby bushes.

Up to 06:45 h on 18 Feb there were again no birds moving over from Rivett. That evening 4 birds flew very high over our house. A further 4 birds followed and dropped into the blue gum in the nature strip off Darwinia Tce for <1 minute before fluttering off into Rivett. A similar event was one of the major triggers which led me to make all the 2015 observations (see Section 2.1 in Holland 2015b), but during 2016 this was one of the few times birds stopped here or on our GBS site wires. As described below almost invariably they flew over. However, there was no activity around the gum roost tree area at 19:56 h until around 20:01 h, when a single bird was seen in it before it dropped into bushes up the path to the W.

The low numbers suggested that the roost was breaking up. In support, at 06:31 h on 19 Feb, 5 birds were on the Rivett park wires along the path. Until 06:36 h there was also some local movement but mostly calling nearby, with at least 2 birds seen at the opposite E corner of Rivett park. There were few birds associated with the gum roost tree hereafter, with a maximum of 8 birds at 06:35 h on 22 Feb.

A more detailed discussion of this roost site deeper in Rivett is found in Section 4.1.

### *3.3. Activity associated with an exotic tree roost including a possible new roost flight path*

For the remainder of February 2016 low numbers of Magpie-larks continued to be seen or heard. However, between 19:41 and 19:44 h on 29 Feb at least 12 birds (and a couple of Common Mynas (*Sturnus tristis*)) were gathering in a medium-large exotic tree (identified as probably a Box Elder – exotic tree roost hereafter) in the lane between Sollya and Geebung Places (Sol/Gee lane hereafter). This tree (site 5 in Map 1) is about 200 m ESE of the gum roost tree and around 300 m from Darwinia Tce in the SW direction where they headed later.

This led to a series of observations over March related to this new roost site, as well as roost flight activity associated with it over the S sharper end (apex) of the Rivett park (site 6 in Map 1). Activity was also still recorded at the wider N end of the park, but not necessarily associated with the gum roost tree. This is summarised in Table 2. Only the critical observations to describe the observed patterns etc have been included in the following text.

At 06:47 h on 5 Mar, 14 birds were at the wider N end of the Rivett park, 4 then left in a NW direction flying towards the SW end of Angophora St. Except for 21 Jan and possibly 8 Feb, this was the first time in 2016 that morning movement in the usual direction towards the CHP was clearly observed. This contrasts with the evening (for maximum numbers see

28 Jan in Section 1, the 15 and 18 Feb entries in Table 1, and the 2, 7 and 14 Mar entries in Table 2).

From 06:46 h on 7 Mar, 8 birds were seen at the far E end of the Rivett park, they then joined other birds. In the end 24 birds gradually moved WSW towards the gum roost tree.

The first roost flight activity at the S end of the Rivett park was observed on 10 Mar. Four birds were seen there, with two moving towards Burgan Pl, but when I reached the corner of Goodenia St just before 07:00 h at least 14 birds moved from the roofs and wires of 2-4 Burgan Pl (site 7 of Map 1 – this is 150 m SSE of the exotic tree roost site) across to Darwinia Tce. However, I then failed to locate any birds there or in the nearby streets.

This observation suggested a possible roost flight path towards Cooleman Ridge from the Sol/Gee lane exotic tree roost. However, the area was quiet at a similar time on 11 Mar, though 10 birds were later seen moving over our GBS site using the more traditional route.

As summarised in Table 2, only small numbers of birds were observed for the next three days, with the main one being 5 birds on the roof of 4 Sollya Pl next to the exotic tree roost site on 13 Mar. However, there were none seen at the corner of Burgan Pl. The 4 birds that came low over our GBS site at 18:35 h on 14 Mar possibly landed across the Tce. Much calling could be heard from there for over 10 minutes, but I did not check the numbers.

At 07:01 h on 15 Mar, 22 birds came over the roofs/wires at 2-4 Burgan Pl towards the Tce. The 3 birds that emerged from a large gum there at 07:04 h seemed to move NW, but at 07:10 h 5 birds flew high over in a SW direction towards the higher part of western Monkman St/Cooleman Ridge (Site 8 on Map 1). At 07:25 h, 8 birds came high over our GBS site in a SW direction (possibly also towards the ridge), then at 07:30 h one bird flew along the usual route towards the CHP.

So, at least 36 birds, the highest morning count in 2016, were seen moving in a SW to W direction over 30 minutes. As most of the birds seemed to be heading there, I thought I had at last confirmed the roost flight towards Cooleman Ridge. A possible roost flight in this direction had been raised a number of times in 2015, but was never definitely established (see Sections 2.3-2.5 and Table 2 in Holland 2015b).

That evening from 18:30 to 19:15 h I stood at the corner of Chauvel Circle and Monkman St (Site 9 on Map 1), which provided a 270° view over the area, but nothing was seen except for 2 birds coming through very low from the Cooleman Ridge direction. However, on the next morning 16 Mar a total of 6 birds were seen flying towards Cooleman Ridge.

At 06:55 h on 17 Mar, 11 birds were first seen moving quite low through the trees in a W direction across mid Burgan Pl. Several were on the 4 Sollya Pl roof, and then 7 birds moved in a SW direction through the Burgan Pl trees from 07:01-07:03 h. Nine birds then flew over towards the SW at 7:08 h, landing in trees at the higher part of western Monkman St. So at least 27 birds were seen moving, but they were scattered and strung out, often low.

With the exception of 25 Mar, as noted below and in Table 2, from 18 March only the more usual path, heading W/NW towards the CHP, seemed to be used. The birds seen heading NNW towards the start of Kathner St (Site 10 on Map 1) on 19 Mar again underlined that movement was scattered and spread over time and space, in a very broad arc.

Around 7:00 h on 21 Mar, 8 birds came from 4 Sollya Pl roof and trees, through the Rivett park, keeping to the NE side of Burgan Pl, some going towards the gum roost tree. At 07:06 h, 6 birds on the 2-4 Burgan Pl roofs and wires moved across the street but W in the general direction of the CHP. At 07:15 h, three birds came over our GBS site, also heading for the CHP. Thus of the 17 birds seen moving, the most likely direction was towards the CHP.

The mornings of 22, 24, 26, 27 and 29 Mar were either not checked or bird activity was low. On the dark, showery morning of 25 Mar none were seen until 7 birds were at 2 Burgan Pl at 07:15 h. Their initial movement was to the SE, but then at least 6 rose high over the Tce in a SW direction towards the higher part of western Monkman St.

**Table 2. Summary of observations around the exotic tree roost in Sol/Gee lane etc to end March 2016.**

Date	Number in exotic tree roost and/or surrounds time [h]	Activity at wider N end of Rivett park time [h]	Roost flight activity time [h]
29 Feb	12 (19:41-19:44)	-	-
2 Mar	5 in general area (06:41) 8 settled in (19:47)	-	6 over to Rivett (19:19-19:37)
5 Mar	-	14 milling (06:47)	At least 4 flew NW – see text
7 Mar	10 still settling (19:40)	24 birds milling around (06:46-06:50)	5 over GBS struggling low into NE breeze (19:26)
9 Mar	-	6 on wires (06:42)	2 moved ENE (06:43)
10 Mar	-	12 milling around, mainly E side (06:49)	14 birds moving over 2-4 Burgan Pl towards Darwinia Tce (07:00) – see text
11 Mar	Quiet	-	10 over GBS to the W (07:16)
12 Mar	7 birds still settling (19:35)	-	-
13 Mar	5 birds on roof of adjacent 4 Sollya Pl (06:55)	6 on wires (06:50)	None until 3 over 66 Darwinia Tce (07:02)
14 Mar	-	4 on wires (07:10)	4 low over GBS site –see text
15 Mar	6 birds moved to the gum rear of 6 Burgan Pl, a similar number still on 4 Sollya Pl roof (by 06:58).	6 on the E side wires (06:55)	At least 36 seen undertaking roost flights between 2-4 Burgan Pl and GBS site from 07:01-07:30. But that evening only 2 birds seen in reverse direction - see text.
16 Mar	-	-	4 then 2 flew in a SW direction over Monkman/Ordell Sts (07:01-07:03)
17 Mar	Several birds on 4 Sollya Pl roof (06:59). At least 10 birds (19:36)	-	At least 27 seen making a roost flight between 06:55 and 07:08, but again a complex pattern – see text for details
18 Mar	-	8 moving towards gum roost tree, 2 flew NW and 4 flew W over Toona Pl (07:10).	3 across Burgan Pl (07:01), 2 high in W direction over GBS (07:22).

Table 2 continued next page

Table 2 continued

Date	Number in exotic tree roost and/or surrounds time [h]	Activity at wider N end of Rivett park time [h]	Roost flight activity time [h]
19 Mar	-	-	Small numbers ( $\leq 3$ ) flew NNW over Angophora St to the start of Kathner St (07:01-07:22)
21 Mar	-	8 milling around calling (07:00).	17 seen moving, most likely towards CHP, between 07:03 and 07:15 (see text)
23 Mar	-	11 came over Sollya Pl houses, NW towards gum roost tree area (07:03-07:05)	-
25 Mar	-	-	7 at 2 Burgan Pl, 6 high in SW direction (07:15 – see text)
28 Mar	10 birds came in to bare tree at rear of 6 Sollya Pl at 18:52, did not settle in the roost and some dispersed by 18:58.	-	4 milling S end of Rivett park at 07:18 h, did not seem to move.
29 Mar	2 birds in exotic tree roost at 18:55, 3 then came in quietly low or from the 6 Sollya Pl bare tree, total = 5.	-	Only two single birds were seen moving towards exotic tree roost from 18:38-18:47.
30 Mar	-	-	5 high NW over GBS (07:26)
31 Mar	-	-	7 came from exotic roost tree in NW direction at 07:20.

The 10 birds which came in pretty close together from the Rivett park direction at 18:52 h on 28 Mar were possibly disturbed by my presence, as some went back towards the Rivett park.

#### 3.4. Return to a normal roost flight pattern and much lower activity from late March 2016

The higher numbers seen together, and the apparent roost flight activity towards Cooleman Ridge rather than the CHP from 10 Mar, at least for some of the birds, only lasted to around 18 Mar, as shown in Table 2. From then there were signs that the unexpected and at times confusing roost flight activity was coming to an end, and the more usual path to the CHP seemed to resume, except that it originated from deeper in Rivett than was the case for the known roost sites in 2015. Numbers were low, and often spread out in space and time, and as a result generally only the higher numbers ( $>5$  together or 10 in total) seen on their roost flights from 22 Mar are included in Table 2. These criteria were also used for entries in Tables 3 and 4 below for the remainder of 2016.

Roost flight numbers in the first half of April, both in the morning and afternoon, were low with a maximum total of 8 birds on 2, 4, 7 and 17 Apr. Despite regular checking, activity in the three areas listed in Table 2, including the S end of the Rivett park and the start of Burgan Pl, was also very low. On 7 Apr the exotic tree roost site was noted as having only

sparse foliage, and thus was likely to be unsuitable for further roosting, and on 16 Apr it was estimated >50% leaves had been lost.

As summarised in Table 3, in the second half of April there were three evening observations meeting the criteria, including the 15 birds seen together (the highest such number since 15 Mar) on 22 Apr. A feature was that birds would almost invariably fly straight over my GBS site, often as far as I could see either way without stopping (estimated as >400 m), sometimes high, or very low, slowly or in a hurry, and in different directions in an arc of almost 90° between the CHP and Cooleman Ridge.

On six occasions between 15 and 5 Apr up to 10 birds were seen at the W corner of Kathner St and Percy Cres Chapman (site 11 on Map 1), including twice in the morning flying out in a WSW direction along the boundary of Cooleman Ridge NR and the CHP. It was suspected that they roosted in the large trees at the N corner of 32 Percy Cres.<sup>2</sup> This is on the extreme NW edge of the Chapman houses adjacent to the horse paddocks, and would allow easier access to their presumed feeding grounds. However, at best this was only a temporary roost site as it was never definitely confirmed, despite regular checking until the end of July.

Numbers continued to be low during May (Table 3): only five observations (only one away from our GBS site, and only one in the evening) in the middle of the month met the above criteria. Often no birds were seen despite keeping a regular lookout, often for extended periods in the evenings. If anything, numbers were even lower for the first half of June, with only one morning observation just meeting the above criteria.

There were two similar such observations in the second half of June, but also two somewhat different ones (see Table 3). The first in the afternoon of 20 Jun initially included birds moving in the opposite direction, and later I thought there might be a roost site in the front garden of 17 Percy Cres. This is at the lower end of the Chau/Perc laneway, where some birds often visited from 8 July 2015 (Holland 2015a). However, this roost site was not confirmed, despite regular checking to see if the melaleucas/20 Cle roost site was active.<sup>3</sup> The second observation was of 10 birds moving through the Rivett park area on 23 Jun, the most seen together there since 23 Mar (see Table 2). This suggested a roost deeper in Rivett than had been found to date, but again despite regular checking it was never confirmed.

**Table 3. Summary of observations of higher numbers (>5 together or 10 in total) in roost flights from April to mid July 2016.**

Date	Time [h]*	Number	Comments
22 Apr	17:00-17:30	20	2 low over GBS site towards Rivett at 17:19 h, then 15 low over at 17:21 h, closely followed by 5 including the challenging resident pair.
23 Apr	17:10-17:35	10	6 lowish over GBS site towards Rivett at 17:17 h, then 4 at 17:24 h
28 Apr	17:00–17:25	12	Came over GBS site in a loose flock hurrying to Rivett around 17:15 h

Table 3 continued next page

<sup>2</sup> Three of these observations were provided by Malcolm Gill who lives there.

<sup>3</sup> Note that up to 20 Common Starlings *Sturnus vulgaris* were observed using the melaleucas roost before, and in particular the 2 months after, this observation.

Table 3 continued

Date	Time [h]*	Number	Comments
10 May	06:58	9	Birds flew over Goodenia St in a NW direction along the NE side of Burgan Pl, some more calling there.
15 May	06:44-06:51	11	3 quite high over GBS towards CHP, then 8 the same at 06:45 h, with one returning to Tce at 06:46 h, and 1 more over high at 06:47 h.
16 May	06:43-06:44	8	1 high over from Rivett, then 7 straggling, no challenge from residents
17 May	06:45	7	Birds came over Darwinia Tce towards CHP, struggling into the wind.
	17:00	6	Came high over GBS site sequentially in an arc of almost 90°.
8 Jun	06:58	6	Birds came low over Tce into the breeze, 1 returned to end Toona wires
20 Jun	16:34-16:54	12	5 moved slowly in a SW direction up Angophora St towards and across Darwinia Tce (opposite to usual direction). 2-3 were at the lower (ENE) end of the Chau/Perc laneway to 16:50. 7 then came high over from the CHP to there at 16:53 h, and soon dropped low to the W side of 17 Percy Cres. Possible new roost site, but not confirmed.
23 Jun	07:04	5	Came high over from Rivett with a challenge call from a resident bird.
	07:09-07:12	13	Around 10 came low over the end of the Sollya Pl houses to the W corner of the Rivett park. Then there was excited calling at Rivett path end of Sol/Gee lane with 2 moving to the wires and 1 higher over.
24 Jun	07:03-07:06	7	1 flew over the S side of Toona Pl towards the SW end of Angophora St. Then 6 flew over 57 Tce from SE of Burgan Pl.
3 Jul	16:18	8	Birds flew high from CHP over 11-13 Kathner St in a SSE direction towards GBS site. They were well spread out and soon out of sight.
	17:01, 17:03	6	3 high over GBS site to Rivett, then 3 over much lower (total pm = 14)
9 Jul	16:47-16:53	16	1 high over, then 15 medium to high birds in a relatively compact group flew over as far as I could see from the Chau/Perc laneway.
12 Jul	07:03-07:22	11	7 (and 3 at 7:04 h) flew low from corner Pavonia St/Toona Pl to the SW end of Angophora St, most stopping there on the wires/pole. By 07:05 h, all had moved through, some seemingly to the wires at the lower end of the Chau/Perc laneway. At 7:22 h, 1 flew high over Angophora St in a NNW direction towards the start of Kathner St.
15 Jul	07:01-07:05	12	6 over from Rivett, more calling and same number over at 07:03 h, then 4 birds disputing over 63 Darwinia Tce, so possibly >12 moving.
	16:56-17:08	10	2 very high straight over lower (ENE) end of Chau/Perc laneway from CHP, then at 17:05 h 5 similarly over 15 Percy Cres but a little lower. At 17:08 h, 3 (of 4) still on the laneway wires went in the wrong direction back up Percy Cres.
19 Jul	16:57	5	Birds flew in SE direction high over 6 Percy Cres to N side of corner Angophora St and Darwinia Tce (some more movement possible).

\* Bigger ranges equals total time spent looking rather than when birds seen

There were two similar such observations in the second half of June, but also two somewhat different ones (see Table 3). The first in the afternoon of 20 Jun initially included birds moving in the opposite direction, and later I thought there might be a roost site in the front garden of 17 Percy Cres. This is at the lower end of the Chau/Perc laneway, where some birds often visited from 8 July 2015 (Holland 2015a). However, this roost site was not confirmed, despite regular checking to see if the melaleucas/20 Cle roost site was active.<sup>4</sup> The second observation was of 10 birds moving through the Rivett park area on 23 Jun, the most seen together there since 23 Mar (see Table 2). This suggested a roost deeper in Rivett than had been found to date, but again despite regular checking it was never confirmed.

On the afternoon of 3 Jul, 8 birds flew SSE towards our GBS site at 16:18 h. (Table 3). The timing was earlier than any other in Tables 3-4, and the flight was in a slightly different direction. This sighting supported some morning observations when some birds were seen to move over Angophora St towards the start of Kathner St (see 19 Mar entry in Table 2, and also 12 Jul and possibly 19 Jul in Table 3). Hence, during 2016 Magpie-larks were observed doing roost flights in a 90° arc. On the evening of 9 Jul, at the lower end of the Chau/Perc laneway, 15 of a total of 16 birds moved together towards Rivett, the highest number since 15 Mar (Section 3.3.), and equal to that of 22 Apr (Table 3).

The above two observations, as well as those on 20 Jun, suggested I might have been missing some evening bird movements by watching mainly from the zig zag path (see Footnote 1 above) to the W of my house, so I paid more attention to the lower (ENE) end of the Chau/Perc laneway, as well as the corner of Darwinia Tce and Angophora St (see observations on 12, 15 and 19 Jul in Table 3).

### 3.5. Increased numbers from late July 2016

Even from the higher activity and slightly different attention I was paying from 9 Jul, I did not expect the much greater numbers seen at the end of July/early August as summarised in Table 4 below. The total of 27 birds counted on 30 Jul, the highest for over 4 months (equal to 17 Mar - see Table 2), again suggested that I was not seeing all of them from my usual spot W of my house. However, this was not supported by the much higher total of 44 birds I saw from the latter the following day (31 Jul).

Surprisingly there were low numbers both mornings and evenings for the next two days (though viewing conditions were not ideal), until 15 birds came over our GBS site on the morning of 3 Aug, the highest number during this period of high evening numbers. That afternoon a minimum of 52 birds was seen on their roost flight over the lower end of the Chau/Perc laneway. Based on their timing on 4 Aug, I may have missed some between 16:41 and 16:55 h, while I was dropping off my dogs after making the first observation.

Again numbers were low the following morning (4 Aug), but that afternoon from my usual spot within my GBS site at least 40 birds were counted passing through during 30 minutes, again at different heights and in slightly different directions. Given the numbers that came over when I first started looking, again I may have missed some. However, it was clear that my viewing position did not matter, as the number of birds seen from my GBS site on 30 Jul and 4 Aug were only exceeded once (the 52 birds on 3 Aug) at the Chau/Perc laneway.

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<sup>4</sup> Note that up to 20 Common Starlings *Sturnus vulgaris* were observed using the melaleucas roost before, and in particular the 2 months after, this observation.

**Table 4. Summary of observations of higher numbers (>5 together or 10 in total) in roost flights from end July to end 2016.**

Date	Time (h)*	Number	Comments
28 Jul	06:56	10	8 birds came high over GBS site from Rivett, plus 2 lower.
	16:45-16:49	8	2 high over towards Rivett, then 6 very high over, fast downwind.
30 Jul	16:53-17:07	27	Loose group of 12 birds high over the lower end of the Chau/Perc laneway to Rivett, then 2 high over at 16:55 h, 9 lower at 17:03 h, 2 high over at 17:05 h, 2 more lower. Over 15 minutes 27 birds came in groups at different heights and from slightly different directions.
31 Jul	16:55-17:07	44	Birds over GBS site to Rivett in small groups (9, 4, 2, 2, 7, 8, 4, 4, 4) at roughly minute intervals at a low to moderate height in about a 90° arc.
3 Aug	06:53-06:54	15	2 on wires joined 11 coming lowish over GBS, then 2 more over.
	16:41	52	5 seen from 15-17 Percy flying low over to SE side of Angophora St.
	16:55-17:15		5 birds struggled over as I was approaching the Chau/Perc laneway. Another 16 came low over at 16:57 h, followed by 5 at 16:59 h, and 9 at 17:02 h. Two of 4 birds disputing overhead moved on before another 8 came down the laneway at 17:04 h, then at 17:15 h another 2 came over.
4 Aug	06:51	7	5 birds came slowly up Angophora St, plus 2 to pole at corner with Tce.
	16:42-17:12	40	15 birds came low over GBS site plus 6 slightly higher, then 2 higher at 16:43 h. Single birds through at 16:56 h and 16:47 h, then 7 birds low over at 17:00 h, 4 over at 17:01 h, and 4 more over at 17:04 h.
9 Aug	06:47-06:56	9	7 were straggling low over our GBS site, then 2 were disputing over corner Angophora St/Tce, 1 of which flew over 17 Percy Cres at 6:50 h, then 3 disputing opposite 9 Kathner St, 1 of which flew high over CHP.
13 Aug	17:07-17:09	12	4 moderately high NW of GBS site, then 8 lower over GBS site.
15 Aug	17:14-17:15	10	3 birds followed by 7 over GBS site.
16 Aug	17:16-17:17	10	7 over GBS site, disputing a bit with 1 bird returning. Then another 5 very high NW of GBS site, with again 1 returning.
18 Aug	17:27	7	6 birds lowish plus 1 higher over GBS site.
21 Aug	16:58-17:28	19	5 lowish over GBS site, 7 at 17:12 h, then 1 high over at 17:13 h, another at 17:15 h, followed by 3 over challenged by 1 from Chauvel Circle. 1 NW of GBS site at 17:18 h, then 1 high over at 17:28 h.
7 Sep	17:13-17:23	16	15 straggled over NW of GBS site, then nothing until 1 moderately high over almost SE along Tce.

\* Bigger ranges equals total time spent looking rather than when birds seen

After this six-day period of four higher evening counts, more reminiscent of those seen in 2015, numbers dropped again with only 5 counts just meeting the criteria (see Table 4) between 5 and 20 Aug, in spite of regularly spending a similar time looking, particularly in



the evenings. The only morning count, on 9 Aug, again shows how wide and diverse the roost flight path appeared to be, as also shown by the detail for the high counts in Table 4.

Following this, there were only two counts comprising slightly elevated numbers to mid September. The 19 well spread out birds on the evening of 21 Aug was the highest number for over a fortnight. The sighting on 7 Sep also came as a surprise, as very low numbers had been observed between these two dates.

### *3.6. Limited roost flights from mid October 2016 to the end June 2019*

I was away from 12 Sep to 10 Oct inclusive, and on my return it was clear that very little roost flight activity was occurring. This continued to the end of the year, with a maximum of 4 birds being seen together several times, but with no clear direction of movement. While I kept to a similar timing and checking regime to 2015-2016, particularly early in 2017, very little roost flight activity was subsequently observed. The maximum number was 5 birds over our GBS site at 07:40 h on 27 Mar and 5 over Angophora St at 07:10 h on 30 Mar 2017, though in both cases this may have included the resident pairs.

During 2018 there was again very little roost flight activity observed and only a limited number of birds seen together, except for the following incidents:<sup>5</sup>

1. At 06:39 h on 20 Feb over 20 Magpie-larks were gathering on the wires mid-way in the lane that runs from Croton St to Bangalay Cres (site 12 in Map 1), but they did not seem to be moving far. Up to then, this was the largest number I had seen together so deep in Rivett (it is about 450 m NE of the Rivett park), though the historical numbers for Rivett Oval (see Table 6 in Holland, 2015a) should be noted.

2. At 06:50 h on 16 Mar, a loose flock of at least 30 Magpie-larks flew over the ESE corner of Woollum Cres (note only 125 m SW from the 20 Feb sighting) and dropped down into the gum trees on the verge of 42 Angophora St. They could be seen moving around in them, though I watched until at least 06:56 h they did not seem to move further up the street. A few others were calling close by. In all there were around 35 birds.

### *3.7. Roost activity in GBS site in 2016 to the end June 2019, including the resident pair*

After 12 Jan 2016 (see Section 3.1) the 52 Tce roost was next checked at 20:31 h on 16 Jan. Two birds were present, well apart, high in the wattle. Over the next two months they were regularly observed there, usually close together but occasionally up to 1 m apart, changing spots slightly from time to time.

They were also often the first to call in the mornings. However, on the mornings of 15-17 Feb calling was first heard from the verge of 55 Darwinia Tce. It was heard again from there on 9-12 Mar, and at 19:43 h on 12 Mar two birds were found roosting high in the tallest gum on the verge of 57 Tce, in addition to the two roosting at their usual spot in the 52 Tce roost. At 06:46 h on 13 Mar two birds left the former almost immediately after calling, flying NE to the pole at the end of Toona Pl. Calling from 57 Tce was then heard on 10 of the next 12 mornings to 25 Mar, with always the same movement in the opposite direction from the usual roost flights, except on the morning of 19 Mar, when they first moved around a bit, before flying NE.

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<sup>5</sup> This does not include the 14 birds seen at start of Geebung Pl on 19 Feb – see Section 3.8.

The birds were last heard calling at 07:08 h on 28 Mar from the rear of 55/57 Tce. They were never heard or seen roosting at 57 Tce again. Their initial movement could be explained by the fact they were the adjacent resident pair whose territory is centred on the end of Toona Pl. This would fit in with my observations that the 57 Tce roost tree was just beyond the main GBS site resident pair's territory, as that pair never went there.<sup>6</sup>

The latter continued to be heard and occasionally seen in and around their roost site at 52 Tce. However, from 25 Apr they appeared to have moved across to 47-49 Tce, though a roost site there could not be confirmed. On 3 May the calls again came from the 52 Tce roost wattle, but it was not until 06:41 h on 11 May that I found them on the 54 Tce side, rather than over the 52 Tce drive as usual. During the next month, even if they could be heard calling from the wattle in the morning, they could be seen only occasionally, high up in their concealed NE corner spot. They were easier to find in the evenings, particularly if seen going into the roost.

Perhaps due to my timing, their calling first thing was heard much more regularly from mid June to the end of July, with at least 1 bird (mostly 2) seen in the wattle (always at their favourite high NE spot), or going to it, on 18 of the 20 occasions I checked. On 3 Aug they were found lower over the driveway at 17:32 h, possibly sheltering from the strong SE wind, as at 17:26 h on 6 Aug they were back at their favoured high spot. Regular checking after this almost always found them there; if not, they were usually back there the next evening.

They were still heard from there on the morning of 11 Sep 2016. However, on my return from a month away they could not be found in the 52 Tce roost around 19:00-19:15 h on 11 Oct, or early the next morning. It soon became clear that the roost was no longer used, as they were breeding as described in Section 3.9.

On 2 Mar 2017 the resident birds were still favouring the W side of our GBS site. However, early on 12 Mar they called from the 52 Tce roost direction, and at 19:32 h on 13 Mar roosting was confirmed there, with 2 birds still settling about 50 cm apart over the driveway. They were then seen at slightly different spots on the 5 occasions I checked in the evenings from 16 Mar to 16 Apr. I was then only able to find them on one occasion (evening of 20 May) in the 7 times I checked to 16 Jul, when it became clear they were no longer using this roost site. After that there was very little evidence that they were using this site to the end of 2018, favouring again the W side of our GBS site, often calling from there and seen flying to the wires of the zig zag path early in the mornings (but see footnote 5 above).

### 3.8. Activity at the exotic tree roost end 2016 to start 2017

As indicated in Section 3.4, >50% leaves had been lost from the exotic tree by mid April and the tree was no longer suitable for roosting. However, it was checked when it had leaves again from November 2016 while watching a Red-rumped Parrot (*Psephotus haematonotus*) roost nearby. Observations on 6 evenings from 8 Nov to 10 Jan 2017 showed 4-8 Magpie-larks were using this roost site. At 06:40 h on 19 Feb at least 14 birds were on the ground at the start of Geebung Pl about 75 m away, the furthest E such numbers were ever observed

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<sup>6</sup> For several weeks from 9 Feb 2019 a pair roosted in a small exotic tree in the front garden of 51 Darwinia Tce. Several times the initial morning movement was also to the end of Toona Pl, suggesting they were possibly the same pair, further evidence being that a single bird was sometimes present in the 52 Tce roost at the same time.

from here. While up to 8 birds were still observed in or around the exotic tree on 24 Feb and 2 Mar, the foliage was sparse and it looked in very poor condition. Towards the end of 2018 it seemed to recover, but occasional checks since have revealed no evidence of roosting, either of birds in, or droppings under, the tree.

### 3.9. *Breeding 2016-2018*

As noted in Section 3.7, on 11 Oct 2016 on my return from a month away, the resident pair seemed to be absent. At 15:30 h on 13 Oct I saw 2 birds flying to a large wattle on the E corner, next to the tennis court, at 17 Percy Cres (adjacent to site 1 in Map 1). I watched them nest-building, with the male spending much time shaping the near complete nest.

The pair was seen around the nest in the following days, with the female seen shaping it several times. Then she was on the nest from 20 Oct. One of the pair was then seen on it, often with the partner nearby, until 15 Nov, when the female was seen over the nest at 08:23 h. She seemed to be pecking (possibly feeding?) for about 30 secs, but then settled. However, at 07:42 h on 17 Nov a bird flew to the nest and fed chicks, which could be seen just above the rim of the nest. While 1-2 birds were in the area at 07:32 h and 07:58 h on 19 Nov, no adult bird was on the nest at those times. It was therefore a surprise at 08:40 h on 22 Nov to find the male above the nest, seeming to be preening the female, but she arrived at 08:42 h, and as he flew off an already largish chick rose from the nest to take the food.

On subsequent visits the nest and tree were empty and the fate of this chick remains unknown. However, it is possible it fledged soon after 22 Nov, as Higgins et al. (2006) indicate an incubation period of 17-19 days, plus a fledging period of 17-18 days. Thus the 34 day period between 20 Oct and 22 Nov could fit within this 34-37-day period, particularly if the female was already on a full clutch when she seemed to be still shaping the nest, and if the chick fledged shortly after the latter date, given that the next time it was checked was on 26 Nov. There was subsequently never any indication of a dependent young in the nest area or in the resident pair's territory.

This is the only record of breeding by the local pair in the four years from 2015 to 2018. In fact breeding nearby was also only seen in 2016, though I did not keep a close eye on this activity after this. The outcome of these breeding events too was unclear. A pair of Magpie-larks was associated with a nest in a gum tree in the Rivett park off 6 Burgan Pl from 19 Aug 2016. On 24 Aug two birds flew to the tree and briefly copulated. While the pair often seemed to be feeding chicks, fledging could not be confirmed up to 22 Dec. It was possibly a similar story for the nest first found with a bird on it in the large gum in 9 Toona Pl on 5 Nov 2016. A bird was last seen over the nest, possibly feeding young, on 19 Dec. Again this 45-day period is greater than the 34-37 days for the end of egg-laying to fledging noted above, and the evidence continues for poor breeding seasons for the local Magpie-larks (see Section 3, Discussion in Holland, 2015a).

### 3.10. *Multiple birds in the Chapman Horse Paddocks*

In 2015 I did not attempt to follow the birds into the CHP and find where they may have been feeding. There are now four examples of this occurring.

1. At 08:15 h on 29 Aug 2016, 8 Magpie-larks were seen feeding on the ground 20 m inside the CHP around the middle of the S fence line of the Narrabundah Hill reserve.

2. At around 14:15 h on 29 Oct 2016, 15 birds were feeding in low grass in the CHP, strung out over 250 m about 100 m in from the mid S fence line of Narrabundah Hill.

3. Around 10:00 h on 3 Apr 2019 a group of 9 Magpie-larks were flying around the SW corner of Narrabundah Hill, including the adjacent CHP, and at 08:55 h on 30 May 2019 a loose group of 14 Magpie-larks was observed feeding on the ground there.

However, the CHP is a very large area and these birds were only noted incidentally while surveying at the Narrabundah Hill reserve. Note the usual roost flight direction was well away from here, which, at least in a straight line, would be most accessible from the roost flight path over the start of Kathner St. Note also that these four observations were at a time when limited roost flight activity was observed, in particular the last three.

#### **4. Summary and Discussion**

Compared with 2015, the observations made in 2016-2019 comprised of four main aspects:

##### *4.1. Activity associated with a gum tree roost in Rivett in February 2016*

Activity associated with this roost site on the W corner of the Rivett Park was first discovered on 8 Feb 2016. Magpie-lark behaviour there was confusing and very different from that observed previously in 2015. Birds were initially found to be moving towards a large gum on this corner, in the opposite direction from the usual morning roost flights. This was identified as a roost site on 11 Feb, but never contained more than 20 birds.

This new roost site deeper into Rivett only lasted slightly over a week from when it was found. Though it could have been used for a while before its discovery, I had often gone past the spot and had not noticed any activity or droppings there until the birds went in that direction on 9 Feb. It is unclear why it broke up so soon, but the tree was much larger and much more open than those used for previous roosts. Its position right over a public path was not unusual, a number of roosts previously being in a similar position (see Holland, 2015b). Note that the hakea roost site described in that paper also only lasted for a week.

There is also the question why there were no clear roost flights from there. One possibility is that the birds were local pairs roosting communally, but separating into their territories, or going to local urban foraging areas, in the morning. While the evening observations on 12 Feb of birds coming in low through the trees and bushes from several directions lend some support to this, it does not explain the morning movements of up to 12 birds from the ends of Toona/Burgan Pl in an easterly direction towards the roost from 9-11 Feb. I spent the early mornings of 16 and 18 Feb trying to determine activity in the normal roost flight direction, but up to then there was only evidence for small numbers doing this in the evening.

##### *4.2. Activity associated with an exotic tree roost including a possible new roost flight path*

In fact it was not until 5 Mar 2016 that the morning roost flight started to be detected (see Section 3.3 and Table 2). This was shortly after a new roost site further into Rivett in an exotic tree in the laneway between Sollya and Geebung Places (exotic tree roost) was discovered on 29 Feb. While never more than 12 birds were counted in this roost, for much of March there was more activity in the immediate area, with of a total of 36 birds seen undertaking morning roost flights on 15 Mar. This included a maximum of 22 birds together seen moving SW towards Darwinia Tce over the roofs/wires of 2-4 Burgan Pl at the corner

of Goodenia St (125 m from the exotic tree roost site). Based on several such sightings around the middle of the month, I thought I had at last confirmed the roost flight towards Cooleman Ridge, as at least some birds seemed to be heading there. A possible roost flight in this direction had been raised a number of times in 2015 but was never definitely established (see Sections 2.3-2.5 and Table 2 in Holland, 2015b). I have never observed multiple Magpie-larks on Cooleman Ridge, so a 90° right turn at the higher part of western Monkman St cannot be ruled out as it would lead to the CHP via the ends of Kathner St/Percy Cres, where some birds were observed to gather during April.

#### *4.3. Return to a normal roost flight pattern and much lower activity from late March 2016*

At the same time, some birds were also seen flying in the normal direction towards the CHP and by 18 Mar 2016 this more usual path seemed to be resuming as the main one, except that it originated from deeper in Rivett than was generally observed in 2015.

From the last week of March to mid September 2016, only roost flights in the normal 2015 directions were observed. However, numbers were low (often zero), and spread out in space (in about a 90° arc between the higher part of western Monkman St/NW Cooleman Ridge and the start of Kathner St Chapman) and time. Despite regular checking, activity in the exotic tree roost area, including at the start of Burgan Pl, was also very low. By mid April 2016 >50% leaves of the exotic tree roost had been lost and it was thus unsuitable for roosting.

Generally the higher numbers (>5 together or 10 in total) were seen on their roost flights up to five times per month, with a maximum of 15 together and 20 in total up to the end of July. From 31 July 2016 there was a six-day period of four higher evening counts of between 27 to 52 birds, more reminiscent of the numbers seen in 2015. However, compared with 2015, birds rarely stopped as they almost invariably flew straight over, often as far as I could see either way (estimated as >400 m), to presumed roost sites deeper in Rivett that were never located. While from early 2015 birds were regularly seen flying over from, or back to, Rivett, they often stopped on the local wires etc. This includes when there were roost sites in or close to my GBS site from March to May (Holland 2015b). Also when there was a major, more prolonged roost at the lower (ENE) end of the Chau/Perc laneway (Holland 2015a) from July to October, some birds often stopped briefly to rest on the wires there before moving on. As the focus was on roosting in or close to our GBS site, little attention was paid to where these birds may have been roosting at the time.

#### *4.4. Limited roost flights to the end of June 2019*

On my return from a month away on 11 Oct 2016 it was clear that very little roost flight activity was occurring. This continued to the end of the year, and also through 2017 and to the end of June 2019, with just two sightings of elevated numbers meeting the above criteria in the first quarter of 2018, despite my looking out for signs of roosts or roost flights at similar times to 2015 and 2016. Small numbers could also be observed in the exotic tree roost from early Nov 2016 to early Mar 2017, but roost flights associated with these were never clearly observed.

After mostly roosting at their favourite site in the 52 Tce roost wattle up to mid September, the resident pair moved to the W of their territory to breed in the spring of 2016, and then continued to favour that side except for use of the above roost for a couple of months between March and May 2017. Exactly where they roosted at other times is unclear.

#### 4.5. Concluding Comments for January 2016 to the end of June 2019

It is unclear why numbers in general were lower in 2016, and why there were no roosts either in or close to my GBS site compared with 2015. Roost flight activity also stopped around the end of September 2016 and never resumed. The spring of 2016 was very wet and a likely explanation at the time was that the Magpie-lark groups broke up to breed, though only limited and largely unsuccessful local breeding was evident. The period from 2017 to the end of June 2019 was much drier, which might have been expected to trigger flock formation, though this appears not to have happened, despite two observations of 20-35 birds in Feb-Mar 2018.

#### 4.6. Discussion and analysis for the whole period (January 2015 to June 2019)

Significant roost flights and roosts were observed only for the first 21 months of this 4.5 year period. While for the remainder of the period there were often some signs of Magpie-larks undertaking roost flights, the numbers doing so were always low, with the criteria employed of >5 together or 10 in total only met during April to mid September 2016.

In this time a total of six main roost sites were identified. Some characteristics of these roosts are given in Table 5. The resident pair's roosts or small numbers roosting outside these times are not included in this summary.

**Table 5. Summary of roosts, dates and duration used, as well as maximum numbers.**

Roost name	First discovered	Duration (last used)	Maximum number*
Hakea	6 Mar 2015	11 days (16 Mar)	60 (7 Mar)
Wattles	17 Mar 2015	15 days (31 Mar)	35 (21 and 25 Mar)
Exotics	2 Apr 2015	42 days (13 May)	22 (7 and 8 May)
Melaleucas/20 Cle	8 Jul 2015	96 days (12 Oct)	63 (29 Aug)
Gum tree	9 Feb 2016	14 days (22 Feb)	20 (9 and 12 Feb)
Exotic tree	29 Feb 2016	30 days (29 Mar)	12 (29 Feb)
Exotic tree	8 Nov 2016	117 days (4 Mar 2017)	8 (10 Jan and 24 Feb)

\* Associated with, but not necessarily all in roost

The first three utilised during March to May 2015 were in or on the edge of my GBS site. The first of these, the hakea roost, was associated with the largest number of birds observed during this period, but lasted only 11 days, with the birds then moving directly to use the wattles roost about 50 m away. This lasted slightly longer before activity moved to the exotics roost directly across Darwinia Tce 25 m from the hakea roost. While this roost site was used for much longer, it involved smaller numbers of birds, in particular early on.

These birds typically first gathered on the wires along Darwinia Tce, or those on the Rivett side of the Tce underpass, or occasionally those at the end of Toona Pl (an extension from the underpass), before flying in a slightly N of W direction to the CHP. The flight path was confirmed on 12 Mar, with some stopping briefly on the wires at the ENE end of the Chau/Perc laneway. However, on occasions, from as early as 20 Mar, some birds seemed to move towards Cooleman Ridge, at least initially, though this flight path was never confirmed.

After a period where numbers were low and any roost flight pattern was unclear, the melaleucas/20 Cle roost complex was active for over 3 months from its discovery on 8 July

2015. This consistently involved the largest number of birds, particularly during August. During the evening counts up to the end of this month, Magpie-larks could usually first be heard coming E from the CHP through the western third of Kathner St, and would usually alight on the wires at the lower (ENE) end of the Chau/Perc laneway, or nearby. Small numbers were also observed then going through to Rivett on the SE side of Angophora St, except for the single morning count on 9 Aug, when 13 birds went to Rivett in the opposite direction to the usual roost flights. From morning counts, numbers roosting dropped from early September. In the second half of the month the pattern became more complex with birds moving around and stopping in the local area rather than flying directly to the CHP.

There was no clear roost flight activity associated with the relatively low number of birds observed at the short-lived gum roost tree site in February 2016. Though it was further away and thus I was not able to check it as regularly as the others, numbers in the exotic tree roost 200 m to the ESE of the gum roost tree watched during March were even lower, though more birds were actually seen doing roost flights from this general area. Based on a number of observations around the middle of March, I thought I had at last confirmed the roost flight towards Cooleman Ridge, as at least some birds seemed to be heading there.

However, this was never confirmed and a 90° right turn at the higher part of western Monkman St cannot be ruled out. From 18 Mar 2016 the more usual path seemed to be resuming as the main one, except that it originated from deeper in Rivett than was generally observed in 2015. However, numbers were low (often zero), and spread out in space (over about an arc of 90° between NW Cooleman Ridge and the start of Kathner St Chapman) and time. Also compared with 2015 birds rarely stopped near my GBS site as they almost invariably flew straight over, often as far as I could see either way (estimated as >400 m) without stopping, to presumed roost sites deeper in Rivett that were never located.

Small numbers could also be observed in the exotic tree roost through irregular checking from early Nov 2016 to early Mar 2017, but roost flights associated with these were never clearly observed.



**Map 2. Key sites for Magpie-lark roosts 2015-2016 and the 2015 roost flight directions.**

1. Hakea roost; 2. Wattles roost; 3. Exotics roost; 4. Melaleucas/20 Cle roost; 5. Gum roost tree; 6. Exotic tree roost. February to May 2015 roost flight directions are bounded in white, July to October 2015 roost flight directions are bounded in red.



These roost sites are shown in Map 2, also shown are the roost flight directions for 2015, with the much narrower ones associated with the melaleucas/20 Cle roost shown in red. The broader roost flight directions (due to their origins deeper into Rivett) for 2016 are shown in Map 1.

It is very interesting that significant roost flights and sites were only observed for the first 21 months of this 4.5 year period. Also most roost sites were only used for relatively short periods. The literature suggests this is to reduce predation risk. However, I cannot recall observing any interaction with, or even presence of, potential predators either when Magpie-larks were gathering pre-roost, or when in the roost. In particular the melaleucas/20 Cle roost complex, which involved the largest number of birds for the longest time, as well as other species co-roosting, was the most closely watched site. Robinson (1947a) notes one site being used for around 16 months, but following a break of 4 months birds started to gather at a new roost site due to the territorial behaviour of resident birds. The melaleucas/20 Cle roost complex was also the one where the resident pair was seen interacting the most, but without seeming to affect the roosting activity.

It is also interesting that the vast majority of the roost flights were in the same direction, out towards the peri-urban areas of the Chapman Horse Paddocks/Cooleman Ridge in the mornings, and back to the urban areas in the evenings to roost, consistent with where they would have foraged during the day. A reason why much lower numbers have been seen since October 2016 may be that they changed foraging sites, though the low numbers of birds that have been seen since were still undertaking the same flight patterns. Also only during this time there were some *ad hoc* observations of groups actually feeding in the CHP.

So again the question arises, where did the Magpie-larks come from and where have they gone? The previous discussion and literature references for the 2015 observations (Holland 2015a) still pertain, in particular Robinson (1947a), who observed variable numbers of birds roosting at various times near Coolup in SW Western Australia, and Gilbert (1935), who made similar observations near the NSW coast. Robinson (1947b) also notes that the roosting site is not permanent, though the same site may be used for several years.

### Acknowledgements

I would like to thank Malcolm Gill for providing some of the information on the possible roost site at the corner of Kathner St and Percy Cres summarised in Section 3.4, to Steve Read for identifying the exotic tree roost as a Box Elder, and to Michael Lenz for providing constructive and detailed comments on this paper.

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**Male Magpie-lark (*Bron King*)**

## TELEMETRY AND COLOUR-BANDING CONFIRM PREDICTIONS ABOUT LITTLE EAGLE MIGRATION AND TERRITORY DESERTION

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**Abstract.** *The Little Eagle (Hieraaetus morphnoides) is listed as vulnerable in New South Wales and in the Australian Capital Territory. The work of Nix (1974), Baker-Gabb and Fitzherbert (1989) and Griffioen and Clarke (2002) predicted that Little Eagles would migrate north to tropical areas from southeast Australia. Here I detail these predictions and others about territory desertion, and comment on the fate of the first satellite-tagged Little Eagle.*

### Background

Olsen and Fuentes (2004, 2005) first signalled a decline in breeding Little Eagles in the Australian Capital Territory (ACT). Subsequently, the Little Eagle was declared Vulnerable in the ACT then in New South Wales (Olsen 2014; Debus 2017) and is being assessed for Vulnerable status in South Australia (Ian Falkenberg pers. comm.).



**Figure 1. (left) Satellite-tagged adult male Little Eagle “OB” at Strathnairn with tubular satin rouseau harness, and (right) Radio-tagged juvenile Little Eagle “OA” at Strathnairn.**

Olsen *et al.* (2008, 2009) proposed radio-tagging Little Eagles in the ACT because home ranges recognised by planners and government agencies were much too small, and habitat destruction from suburban sprawl might cause the desertion of Little Eagle breeding

<sup>1</sup> All photos by author unless indicated otherwise.

territories in the ACT. The first Little Eagle (Fig. 1, right) was radio-tagged on 22 Nov 2014, a nestling male (VHF transmitter). His Strathnairn nest was in the path of the proposed Ginninderry housing development (Olsen *et al.* 2015, 2017a). The second Little Eagle (Fig. 1, left), the adult male from this same nest, was banded and radio-tagged on 28 Oct 2015 and migrated to Daly Waters in the Northern Territory and back to the Strathnairn nest site (Drynan 2017; Olsen *et al.* 2017b; Olsen and Trost 2017a; ABC News 21 April 2017; Anon. 2017; Brawata *et al.* 2019).

Olsen *et al.* (2015, 2017a, b) and Olsen and Trost (2017a,b) said this Little Eagle nest site could be abandoned because of an inadequate buffer radius around the nest tree and increased habitat destruction from property development. After this adult male returned from Daly Waters to his spring-summer home range in 2017, he (identified by colour-band) and a female were seen in the Strathnairn nest area by Susan Trost on 13 Aug 2017, but both disappeared. A different male and female from nearby Land's End appeared after the Strathnairn pair abandoned their nest, and they attended the nest for a short time, but they too left and the Strathnairn nest site was deserted. The Land's End pair and Strathnairn pair were identifiable by plumage differences – the Land's End male was dark morph (Fig. 2), the Strathnairn male was light morph and colour-banded (Fig. 3); the Land's End female was wary, flew when approached, and showed a twisted primary in flight (Fig. 4, left); the Strathnairn female was confiding and remained perched when approached, and had no twisted primary in flight (Fig. 4). Several photographers took images of the Strathnairn female from the ground.

Remote-controlled cameras placed in the tree next to the Strathnairn nest in 2017 appeared to disturb the original Strathnairn pair and they were not seen attending the nest again. These two pairs in West Belconnen in 2016 (Strathnairn and Land's End) were reduced to one failed pair at Land's End in 2017 (see Olsen and Trost 2018; Olsen 2018).



**Figure 2. Land's End male Little Eagle.**





**Figure 3. Adult male Little Eagle “OB” photographed on 1 Jan 2017 near Canberra (Geoffrey Dabb).**



**Figure 4. Land’s End female (left), showing distinctive twisted primary, and Strathnairn female (right) Little Eagles.**

### Comments on Little Eagle migration

The recent paper by Brawata *et al.* (2019) on the migration of the above-mentioned adult male Little Eagle makes a number of statements which require comment.

First, two technical points:

(1) *The total weight of the backpack including the PTT-100 transmitter was 22 g. This represents less than 3% of the bird's body weight, with the typical weight span for a male Little Eagle being 600–800 g.*

We would not use a 22 g transmitter on a 600 g raptor; 22 g is 3.7% of 600 g. This male Little Eagle weighed 740 g, and the transmitter was 3% of his weight.

(2) *The PTT-100, encased in a backpack, was attached to the bird using a Teflon ribbon harness.*

On this Eagle we used tubular satin rouleau.

We had previously used Teflon ribbon to attach a satellite transmitter to a Wedge-tailed Eagle (see Hatton *et al.* 2015) and we had 6 mm Teflon ribbon available, but had concerns about the effect of Teflon harnesses on smaller, agile male raptors such as male Little Eagles because we found it abrasive compared to other materials (see also Peniche *et al.* 2011 and Dixon *et al.* 2016). We did not use Teflon ribbon on either of the radio-tagged male Little Eagles at Strathnairn, including the one referred to in the Brawata article (see Olsen and Trost 2017b and Fig. 4).

Other statements in the Brawata *et al.* paper relate to previous research on Little Eagle migration:

(3) *In Victoria, it is thought that some Little Eagles move seasonally between different breeding and wintering areas (Baker-Gabb and Fitzherbert 1989) and this apparently includes migration.*

Baker-Gabb and Fitzherbert did not say this. They were discussing continental migration, not just Victorian movements, and said that Little Eagles migrate north from southeast Australia, some to far northern Australia. They used RAOU Atlas data (Blakers *et al.* 1984) to determine *within year and not year-to-year variation* in raptor movements. They also used the paper by Nix (1974) who

developed a model of bird migration in Australia based on the premise that the relative degree of change in the environment, whatever the cause, should provide the best index of the need for seasonal movement (p. 160).

Further,

Analysis of seasonal growth indices suggests that movements of bird populations in the Australian region should occur very largely within four discrete sets.

One of these sets was:

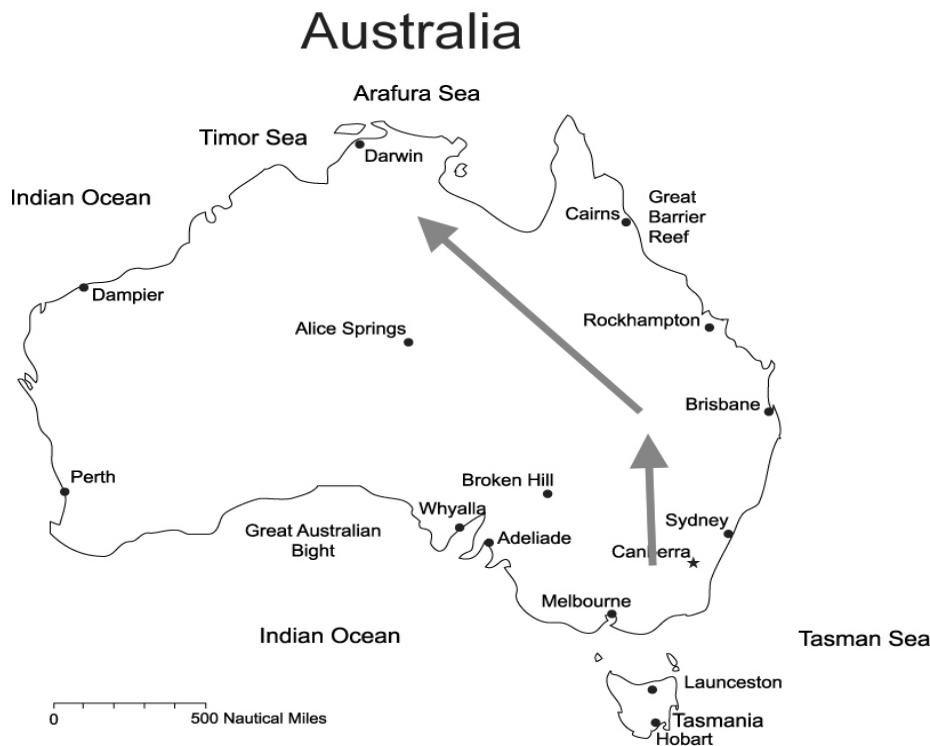
Eastern Australia, including Tasmania and extending to New Guinea and associated islands for some species. The important seasonal change here is the low winter temperatures in the south-east. (p. 161).

Baker-Gabb and Fitzherbert concluded that seasonal movements of raptors in Australia appear to reflect well the patterns predicted by Nix (1974)' (p. 162).

They argued that:

'The widespread and temperate zone species which migrate [by definition, make return journeys] south-north over long distances include the Square-tailed Kite *Lophoictinia isura*, Whistling Kite *Haliastur sphenurus*, Brown Goshawk *Accipiter fasciatus*, Collared Sparrowhawk *A. cirrhocephalus*, Little Eagle *Hieraeetus morphnoides*, Black Kite, Australian Hobby *Falco longipennis*, Australian Kestrel *F. cenchroides* Swamp Harrier and, probably, the Southern Boobook.' They further state. 'The ... migratory species [i.e. including Little Eagles] travel north, some as far as northern Australia ' (p. 162).

This north-south movement is also clear in the reporting rates for Little Eagles in atlas studies such as Barrett *et al.* (2003). Their summer map shows more sightings in the southeast; their winter map shows more sightings in the north. Cooper *et al.* (2014) also showed reduced reporting rates from April to July for Little Eagles in NSW and the ACT.



**Figure 5. Predicted Little Eagle migration route (based on Figure 16 in Griffioen and Clarke (2002)), matching the route taken by Little Eagle “OB” (see map in Brawata *et al.* 2019).**

(4) *Bird movements in general in Australia are all but unknown despite the importance of such knowledge (Griffioen and Clarke 2002).*

Griffioen and Clarke did not conclude this. In fact, using atlas data, as did Baker-Gabb and Fitzherbert, they provide a map (their Figure 16) showing that various species, including Little Eagles (Fig. 5), should move, during winter, from southeast Australia in a northwest direction to northern Australia, thus making a return journey between breeding and wintering grounds, the same pattern found in the satellite-tagged Strathnairn male. Like

Baker-Gabb and Fitzherbert, they concluded that ‘The large-scale movement patterns detected agree well with Nix (1976)’ (p. 122).

In summary, Baker-Gabb and Fitzherbert (1989) and Griffioen and Clarke (2002), using the earlier work of Nix (1974), predicted the migration route used by the adult male Little Eagle from Strathnairn.

### Issues of Little Eagle conservation

Other questions about Little Eagle conservation deserve comment. There are no known threatening processes linked to migration, but there were threatening processes linked to disturbance of breeding habitat. Researchers had accurately predicted the desertion of ACT Little Eagle nest sites before these nest sites were abandoned, including the Strathnairn nest site. The predicted desertions were linked to suburban development and Wedge-tailed Eagles *Aquila audax* (Olsen *et al.* 2015; Olsen 2018). Dabb (2018) said about the Strathnairn nest site in 2017, ‘That nest was abandoned before egg-laying.’

Why was the Strathnairn nest site, where Little Eagles were first radio-tagged and colour-banded, deserted? Rae (2018) postulated that the Strathnairn nest may have been abandoned because of beetle infestation but provided no evidence as to where this pair went, which beetle species was involved, and whether these same insects are found in successful raptor nests. Insect infestations are common in successful raptor nests in the ACT, so, when collecting pellets and prey remains, it is our protocol to freeze these remains before sending them to museums for analysis so museum collections are not affected (J. Olsen and S. Trost unpublished data).



**Figure 6 (left). Little Eagle roost tree near Strathnairn in 2016. Figure 7 (right). Same roost area previously used by fledglings and adults for foraging and roosting (photographed in 2019).**

The area close to this nest experienced disturbance from land clearing for suburban housing (Figs. 6 and 7). Parallel cases exist in NSW where pairs attempted or completed a breeding cycle while major earthworks gradually approached the nest and removed foraging habitat, but abandoned the nest site in the following year apparently because the disturbance had been too great (Debus 2011; Larkin *et al.* unpublished data).

Finn and Stephens (2017) state: ‘Despite evidence of the harm that land clearing causes to individual animals, such harm is either ignored or considered only indirectly in

environmental decision-making ... land clearing causes physical injuries, other pathological conditions, pain and psychological distress over a prolonged period as animals attempt to survive in the cleared environment or in the environments they are displaced to...' (p. 377).

Because many eagle species need large home ranges to breed in, they can be used as 'surrogates', in this case, as 'umbrella species' that provide large areas that contain more biodiversity (species richness) than do smaller areas (Ray et al. 2005). However, the 'Little Eagle Protection Zone' in place to protect this nesting pair, a 200m radius around the nest, was apparently too small and failed (Olsen 2018), so the original pair could not serve this function.

When breeding habitat is to be destroyed, industries often use strategies that create the illusion of species conservation, including 'buffers' and 'corridors' too small to save nesting pairs, and inadequate 'trade-offs' (Olsen 2014). Ecologists are sometimes hired to find more individuals of a threatened species, apparently to diminish the perceived harm caused by the destruction of breeding habitat (see, as an example for Leadbeater's Possum *Gymnobelideus leadbeateri*, 060519-media-release-ground-breaking-research-find-new-leadbeaters-possum-areas-wfeedlcpkcqo).

Olsen and Debus (2018) argued that independent research, not linked to industry funding, should be considered alongside industry-funded research. When future ACT Little Eagle nests are abandoned, at least four potential hypotheses could be investigated and tested by researchers to find causal factors – Wedge-tailed Eagles, prey availability, property development, and beetle infestation.

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## THE FERAL PIGEON: A DISCUSSION

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**Abstract:** *This contribution begins with comments on the problem of an English name for the familiar *Columba livia* in Australia. It notes past and present uses of domestic pigeons, particularly in the Canberra area. One use, for live pigeon trap-shooting, was probably a main source of the wild population in Australia. In Canberra, as elsewhere, there are striking differences between varieties, in appearance. Related to that variation is the recent theory that an African species is implicated in the evolution of domestic pigeons, just one element in the complicated story of pigeon genetics. (This author claims no expertise in the field of genetics and relies here on the cited source material. The burgeoning science of genetics is casting new light on persistent variations in populations of feral pigeons.) Classification of varieties of feral pigeons for study purposes is discussed. An appendix gives some information on pigeon-keeping in and around Canberra. This note is intended to be read with the accompanying photo portfolio. [In the below, the choice between upper and lower case (Feral Pigeon, feral pigeon; Blue Bar, blue-bar) depends on source referred to, and context.]*

### The English name

If you are recording birds and you see an ordinary pigeon, perhaps perched on a power-line, you will probably enter it as a 'Rock Dove'. That is the English name provided for *Columba livia* in the Australian list and in most global lists. Many recent books make the point that in relation to this species, and most others in the family, 'pigeon' and 'dove' can be used interchangeably. Common usage determines whether a particular species is designated a 'pigeon' or a 'dove', the latter generally being a smaller species. Further light on the matter is the following:

'[D]ove' is Anglo-Saxon, while 'pigeon' came into French through Latin and was probably introduced to England after the Norman Conquest, so that 'pigeon' bears the same relation to 'dove' as 'beef' does to 'ox' or 'mutton' to 'sheep'. (Morrison 1958).

So, in English, perhaps 'pigeon' once had a particular use, now lost, that was related to food. Certainly 'pigeon pie' is a name for an old dish associated with the French cuisine.

Up to about 60 years ago, although the species was common in towns in Australia it was not to be found in Australian bird lists. 'Indian Turtle-Dove' and 'Senegal Dove' (also, in a sense, 'feral pigeons') were included in the RAOU list, being recognized as introductions. The 'Rock Dove' was not, apparently being regarded as only a domestic species (RAOU 1926). In 1958, a list of 'introduced species' in Sydney included 'Domestic Pigeon or Rock-Dove' (Hindwood 1958). Similarly, the Condon list of 1975 used 'Domestic Pigeon', with the annotation: 'Feral domestic breeds, descended from the wild Rock Dove of Europe, have been introduced and are generally very abundant in large towns and cities ...' (Condon 1975).

The 1978 English name recommendations to the RAOU had proposed 'Feral Pigeon'. Soon after that recommendation Frith could write that 'Rock Dove' was 'seldom applied to feral populations' (Frith 1982). However, the first Christidis and Boles list, in 1994, adopted 'Rock Dove'. That was one of several of the 1978 names that were changed 'to conform with current international usage'. The change was significant, because it entailed the abandonment of a distinctive name to distinguish feral birds from the naturally occurring wild strain which is found only in the northern hemisphere (Schodde 1978; Christidis 1994).

It might be noted that the IOC list explains its choice of the English name 'Rock Dove' with the following: ' "Rock Pigeon" conflicts with established names in Australia for species of *Petrophassa*; accept BOU choice of classic 'Rock Dove' for this species native to British Isles. Feral Pigeon is available for worldwide introduced populations' (IOC – underlining added).

Therefore, there is a reasonable basis for use of 'Feral Pigeon' for the Australian populations. Forshaw (2015) follows that course in using 'Feral Pigeon', with 'Rock Dove (ancestral form)' given under 'other names'. In Australia, 'Rock Dove' is not entirely apt, especially in view of the hybrid theory (see below). 'Feral Pigeon' has the difficulty that free-flying domestic pigeons can easily be confused with wild birds, although the label can be stretched to apply to both if so defined.

The story of the domestication of the pigeon is a long one, going back to Mesopotamia about 4500 years ago and continuing through records from ancient Egypt and biblical times. BWP (1998) gives the following summary of populations in Europe, where both wild and 'domestic-strain' birds occur:

Original range obscure because of long history of domestication by man (for food and breeding). Many became feral, especially in urban areas, and still being reinforced by escaped birds; wild birds may also have joined feral colonies. Present distribution inadequately known: impossible in many countries to distinguish wholly wild colonies ... (Snow 1998).

As to physical characters, Goodwin distinguishes the 'Rock Pigeon' from the 'Feral Pigeon', the latter having proportionally narrower bodies, longer tails, broader bills and larger cere (Goodwin 1970).

### **Occurrence of feral pigeons in Canberra area**

Feral pigeons are a common sight around Canberra. When the national parliament is the live background to a televised news item, you will sometimes see a small dark pigeon shape gliding across the façade. A recent press item concerned a pigeon that had made a nest of artificial red poppies in the Hall of Memory at the Australian War Memorial. This was made an occasion for recalling the use of carrier pigeons in wartime (*Canberra Times* 8 November 2019).

In August 2019 I sought information on the COG email discussion list about concentrations of feral pigeons locally. I received information from 25 individuals. In summary, the main haunts today are certain bridges and overpasses, including relatively recent constructions in newer suburbs. Some former places of concentration now have fewer birds. There are probably fewer birds roosting and nesting on buildings. It has been said that the more modern buildings lack suitable ledges, but there are certainly adequate ledges on many

public and commercial buildings in Canberra, although some may be equipped with obstacles to roosting and nesting. The Defence office complex at Russell was a favourite roost site, but evidently not so much now.

There are certainly strong incentives for building managers to eliminate roosts. The website of one 'pest management' business lists the following disadvantages of having resident pigeons: drains blocked by droppings and carcasses leading to leaking ceilings as well as ceiling and wall collapse; collapsed ceilings from weight of accumulated droppings; blocked ventilation systems and spread of disease through such systems; diseases such as salmonella exposing a business to bad publicity and costly litigation; spread of diseases by ticks and other parasites; damage to air conditioning and machinery from acidity of droppings (*Australian Pest Bird Management P/L*).

In February 2017 the ACT government circulated a 'Rotavirus warning for pigeon owners'. This concerned a disease then affecting lofts in New South Wales that was first detected in Western Australia the previous year. Mortality rates had been up to 30% in some lofts. The disease has since been reported in the ACT. Wild pigeons may be affected, and are a possible source of infection of racing pigeons. This is another possible cause of decline in numbers of wild pigeons locally, and a strong incentive for pigeon-keepers to destroy any wild birds that come to the vicinity of their lofts.

The COG statistical data cover the period from 1982. Both the abundance and reporting rate graphs for the Rock Dove show a significant increase since 2005, but a decline over the last 2 or 3 years, with numbers still above the long-term average. In 2017-2018, the species ranked 57<sup>th</sup> in number of records. However, in the Garden Bird Survey the species ranked 9<sup>th</sup> in abundance, and was recorded at 66% of sites. (COG data)

It is possible that in the future feral pigeons around Canberra will try to make use of woodland tree hollows for nesting, as has occurred in other places in Australia, around Adelaide for example. (Danny McCreadie, *pers. comm.*, Morialta National Park in Adelaide Hills being mentioned. See photo.)

### **Uses, and breeding, of Domestic Pigeon**

Up to the 1960s pigeon-breeding in Australia was fashionable or profitable, sometimes both, particularly in rural areas. A search through newspapers and journals through the *Trove* facility of the National Library (NLA) shows the earlier popularity of (a) raising fancy breeds for show purposes, (b) pigeon racing, (c) raising 'utility pigeons' (for food purposes), and (d) pigeon trap shooting. There is some mention of 'carrier pigeons' for military purposes.

The sport of shooting released pigeons was popular in England at about the time of the First Fleet (*The Sporting Magazine* 1793). In the *Sydney Gazette* of 24 September 1831 there is an advertisement for a pigeon shoot at Parramatta, 'four pigeons to be boxed for each shot'. In *Australian Town and Country Journal* in 1870 there is a report of an event at Goulburn racecourse paddock where a crowd gathered to see Mr H Payten 'essay his task of killing thirty birds out of fifty with an ounce of shot'. The cumulative number of captive-bred birds that were released and not shot (*i.e.* missed by the shooter) over more than 120 years must have been enormous, perhaps the main single source of wild pigeons in Australia. Many, being pigeons, would have returned to their home base for recycling (Le Carré 2016), but if all pigeons returned home there would be no feral pigeons.

Evidence for the contribution of trap-shooting to an early local feral population is to be found in a lengthy report of a 'pigeon match' in the *Queanbeyan Age* 1 September 1875:

A cold westerly wind with a beating rain continued during the shooting, and materially affected the results, as might easily be imagined. To this (to the sportsmen) untoward (but to the birds lucky) contingency, a large number of the feathered prisoners owed their lives.

In 1903 the *Geelong Advertiser* published what today would be called a media release, from the Victorian Director of Agriculture:

I have the honor to draw attention to the fact that pigeon breeding can be made a very profitable industry for many residents of cities and towns. There is considerable demand for pigeons in the state on the part of gun clubs, and a good many pigeons are introduced from neighboring states through inability on the part of our breeders to supply the demand. Breeders can reckon on getting 1/6 per pair for their birds, and a pair of pigeons will produce five broods a year, and the expense of feeding pigeons is not very great. Attention to this industry could be profitably directed by many families with very little trouble.

There is no record of live pigeon shooting in Canberra, but there is an advertisement in the *Canberra Times* in 1927 for such an event at the Queanbeyan racecourse. Victoria was the last state to cease live pigeon shooting, in 1956. You would be of advanced years now if you had witnessed live pigeon trap-shooting in Australia (as this author has).

No doubt lost homing pigeons have made a contribution to the feral population. The Goulburn Homing Pigeon Society was conducting races at least as early as the 1880s. The Canberra Homing Pigeon Club was established in 1945. A report in the *Canberra Times* refers to a study of pigeon navigation being conducted by CSIRO. In 1966, in response to a request, the CSIRO had received 'several hundred' reports from throughout Australia about leg-banded pigeons. A Canberra owner was reported as saying that more than 500 pigeons had been lost in the course of the then current racing season (*Canberra Times* 16 August 1967). Pigeon-racing is now less popular, but in Canberra there is still an active racing group that organizes races between July and November. Racing birds have durable colour bands and electronic tags. Stray homing pigeons, disabled or disoriented, may be identified by tags and bands. (See Appendix.)

With quite different fashions in recreation today, it is easy to lose sight of a widespread recreational activity of past years: the keeping of pigeons for no practical purpose, but simply as a hobby. There are few written records of that activity. However John Layton has recalled the following from just one country town:

During the 1950s and 60s it was not uncommon for Wagga boys to keep pigeons. Their stock was usually built from fledglings taken from beneath the Wollundry Lagoon Bridge, a concrete structure in Wagga's CBD. Most lads kept them as pets like some people keep an aviary of Budgerigars. Others, however, went in for breeding to produce various colour combinations. These were good for swapping, selling or just plain bragging rights. Judging by the flock I saw in Wagga last December at least one local breeder maintains that pursuit.

The holy grail was a shiny black bird or a “Swartz.” I don’t believe that goal was ever achieved. Attempts usually produced dismal sooty grey, ashy looking things. White was a sought after colour too, and such birds were called “albinos”(sic). White persisted in birds through several generations, even in birds that were showing near-to-original Rock Dove plumage. The remnant white usually persisted in under-tail coverts and rump areas. Such birds were called a “Wheatears”.

Other colours in vogue were white birds streaked with brown or brownish yellow and called Chockos and Gingers respectively.

Occasionally a boy would acquire a racing pigeon as distinct from a feral. This usually happened when the racer landed in a garden, probably to escape a raptor. Such birds were used to being handled and easily captured. The boy would remove the leg band and offer the bird for sale to a racing pigeon enthusiast only to be rebuffed on the grounds, “it may have been in contact with mongrels and probably carries disease and parasites.” These birds ended up in the young pigeon keeper’s flock, so he got to introduce some new blood. Racing pigeons appeared slightly larger and more svelte than ferals. (John Layton, *pers. comm.*)

During my own schooldays in Geelong I had a brief period of keeping a small flock of pigeons in the back-yard. None of them produced young, and they gradually drifted off, perhaps in search of better accommodation. I remember that among my circle of pigeon-owning friends the ‘red chequer’ was a sought-after variety.

### **The variable plumages**

The remainder of this note is concerned with the variations in the appearance of the Feral Pigeon. Goodwin said of Feral Pigeons in the UK:

They vary much both individually and locally ... , probably in most cases according to their ancestry. For example, the majority of the Feral Pigeons of inner London which, although heterogeneous, probably stem largely from the old type Dovecote Pigeon, are smaller and have finer bills and smaller ceres than those in Richmond, only about ten miles away. These latter have obviously derived mostly from lost or strayed Racing Homer Pigeons.

For Australia, Frith has pointed to ‘noticeable differences in the composition of flocks according to their origin and age’. He offers the following evidence:

For instance, the relatively newly established and small populations in Canberra include more coloured birds that resemble various domestic breeds (over 50 per cent) than do the long-established populations in Sydney. In one day, I classified by colour, just over 600 Feral Pigeons in Hyde Park, the Domain, and the Botanic Gardens, Sydney. Of these, 64 per cent were basically blue chequers (many of them melanistic), 21 per cent were basically blue-bars, and the remainder were a heterogeneous group of most of the colours known in domestic breeds. These included ash red, red chequer, yellow, brown, chocolate, black, velvet, grizzled, mealy, white, and pied birds of all colours. (Frith 1982)

*HANZAB* interprets the Frith conclusion as ‘long-established feral populations tended to have a larger proportion of birds that resembled the ancestral form than newer populations’ (Higgins 1996). Earlier, G.F. van Tets had noted ‘forty to fifty per cent of the feral pigeons in Canberra are similar to the ancestral Rock Dove of Europe’ (describing here the light

bluish-grey back with the two black bars on the upper wing – here called ‘blue-bar’) (Frith 1969).

The ‘ancestral’ Rock Dove has only one plumage pattern, similar to the blue-bar. Illustrations of wild birds from places inhabited by the original Rock Dove, regardless of which subspecies, all show that plumage pattern (Del Hoyo 1997). Forshaw, following Goodwin, lists another seven common types, beginning with ‘Blue Chequer’, similar to blue-bar but ‘with wider bands across the folded wing and with pronounced black markings on the wing-coverts, upper back and sometimes rump, producing an overall darker appearance’. The Blue Chequer is ‘the commonest colour among Feral and Homing Pigeons in Britain’ (Goodwin 1970). Other categories in the Goodwin list are Velvet, Mealy, Red or Red Chequer, Grizzle, Black and Pied.

### **The American literature**

In the USA there is a large literature about the breeding and keeping of the extraordinary range of pigeon varieties. Pigeons in a feral state, for all their variety, represent only a small part of the full range of domestic types. (The confusing term ‘pigeon fancier’ might refer to, but is not always limited to, a keeper of truly ‘fancy pigeons’.) Much has been learnt about the genetic principles involved, as shown by the Frank Mosca website, for example.

With respect to pigeons of the homing/feral type, the American literature uses slightly different terminology from that used in the UK. Apart from (1) blue-bar (ancestral type), there are: (2) chequer (a chequered mantle of little, moderate, or heavy melanin in the coverts); (3) T-pattern (or ‘T-check’ - a dark mantle with small grey T-shape marks); (4) ‘spread’ (an overall melanic plumage); (5) others (albinos, reds, ‘and, potentially, dozens more’). Types (2), (3) and (4) are commonly referred to as ‘melanics’, being types that are darker than blue-bars. One authority in the United States has said that common plumages and patterns occur at stable frequencies in most feral populations. Some other points from that source are:

- birds with unnatural plumage patterns and colours are removed by predators;
- females tend to choose males different from themselves (promoting hybrid vigour - ‘heterosis’). (Some say females prefer melanic males.);
- ferals are superior in survival and reproduction to domestic stocks and, in European studies, to wild Rock Doves. The term ‘superdove’ has been used;
- melanic plumages are more frequent in north (of USA) than south;
- there are relatively few blue-bars in inner cities where melanics are reproductively superior, but the reverse occurs in outer suburbs and rural areas (Johnston 1998).

The story has become more complicated. In the United States recent research has been directed to the genetics of domestic/feral pigeons. This has confirmed a number of advantages associated with a gene possessed by the melanic types. According to one commentary on recent findings:

Previous research has shown that the darker checker and T-check birds have an advantage in urban environments: they have a longer breeding season and fledge many young out of the nest. The new [University of Utah] study found that the genetic changes associated with checker and T-check patterns probably resulted from humans



breeding the domestic rock pigeon with the African speckled pigeon (*Columba guinea*), a wild pigeon species common in sub-Saharan Africa. A version of the NDP gene was introduced into domestic pigeons several hundred years ago, long after pigeon domestication. (University of Utah - 2)

The research team itself noted:

Pigeon fanciers have long hypothesized that the checker pattern in the rock pigeon (*Columba livia*) resulted from a cross-species hybridization event with the speckled pigeon (*C. guinea*), a species with a checker-like wing pattern ... (Vickrey 2018)

Those findings would mean that there is in Australia, and elsewhere, a form of rock dove, in domestic and feral states, that is of hybrid origin.

It has been more widely known that different genes control *pattern* as distinct from *colour*. That is, pattern and colour are inherited independently of one another. The genes controlling particular colours have now been identified (University of Utah - 1).

### **Varieties: classification, proportions and trends**

In making comparisons between plumages at particular times and places it is necessary to describe varieties in a consistent way. In summary, the Frith findings were: Canberra - blue-bars (or blue-bars and blue chequers?) <50%, other >50%; Sydney - blue-bars and blue chequers 85%, other 15%. On the other hand, for Canberra, van Tets gave: blue-bars 40-50%. Referring to the Frith numbers, Forshaw comments:

I suspect that in the 30 years since that observation was made there have been changes in the composition of flocks in Canberra because my experience is that the Blue Chequer and Blue strains now are quite prevalent and numbers of coloured birds, especially with white on the plumage, are significantly lower.

A difficulty in labelling varieties among feral pigeons is that the variations are often only a matter of degree, the different types merging into one another. Thus some blue-bars have a slight flecking of black on the wing coverts, becoming progressively heavier in other individuals, to the point that the label 'chequer' is justified. Further along the scale, birds can be found that are almost or entirely black on the upperparts (no longer 'chequered'), some completely black.

Another variation is reddish or reddish-brown plumage in place of blue-black plumage. With respect to United Kingdom birds, Goodwin says of 'Red Chequers' and 'Reds': 'The "red" colours are usually rather infrequent in Feral Pigeons, except where these have been derived largely from Homing Pigeons, in which this colour is frequent'. Yet another variation is the presence of some degree of white plumage, sometimes in primaries, sometimes on head and neck, sometimes more extensive. Wholly white birds are rare, if to be found at all in the wild in Canberra at the present time. The white plumage occurs where feathers lack pigment, for example melanin, and can occur in birds of the red and blue-black groups. Many, perhaps most, 'Red Chequers' have white primaries. Breeders refer to part-white birds as 'pieds'. In North America a 'pied' with more than half white plumage is called a 'splash' (Mosca). In the UK such a bird is a 'Gay-pied' (Goodwin).

The categories to be used in censusing a given population will depend on the purpose. Traditional breeders' labels might be useful for some purposes. They might not be

appropriate if gradations of melanism need to be recorded more precisely, for example if investigating the relationship between breeding success and degree of melanism. If 'pattern' is being investigated it is necessary to take account of 'epistasis' (the masking of pattern by apparent whiteness, or by atypical areas of black or red pigmentation). 'Pigeonetics' is a complicated subject. (See *Genetic Science Learning Centre. Pigeon breeding: genetics at work*. A short guide to the basics is an Australian publication available in the NLA: Cleasby 1999.)

A simple classification according to colour might use the following categories: (a) blue-black group and (b) red group, assigning any birds with some white plumage to one or other of those two categories unless a bird is more than 50% white, in which case it can be put in a third category, (c) 'mainly white, and others'. The great majority of wild birds seen around Canberra can be placed somewhere along the blue-black continuum, and hence in (a). It is not unusual to see flocks of 20 or more birds where all are in category (a). See photo portfolio for examples. A tentative assessment of proportions in the Canberra pigeon population is: (a) 90- 95%; (b) and (c) the remainder, in varying proportions depending on locality.

With respect to pattern, the proportion in the whole Canberra area population of blue-bars with no or only slight black flecking could be as high as 20% that proportion varying between suburbs. The trend over time, if measurable, would probably depend on variable genetic and environmental factors according to location.

### **Appendix: Pigeon-keeping in and around Canberra**

The Canberra Racing Pigeon Combine (CRPC) has 22 actively participating members, based at points between Carwoola and Yass. Racing pigeons wear a 'life band' made from aluminium and plastic. This is placed on a leg when the bird is 5 days old.

The CRPC runs a program of races each year. In 2019 pigeons were released, progressively further afield, at Boorowa, Parkes, Cowra, Cobar, Bourke and Charleville. The group gathers at the old greyhound track, Symonston, where the opportunity was taken to see and discuss the types of pigeons used in racing. On one Friday, birds were being loaded on the truck for a release on Sunday at Narromine. (There was a disappointing result from that race. On the Monday only half of the 500 birds had returned.) Delays in return can extend to weeks.

Some racing pigeons have long formal pedigrees, like thoroughbred racehorses. Pigeons are able to be 'closely bred', meaning that a successful breeding operation can begin with a small number of birds that can be allowed to multiply with little or no addition of outside stock. Hence one breeder referred appropriately to his 'family', nearly all birds being related to one another. That family, of about 100 birds, was entirely 'blues', with no red individuals. Significantly, that 'family' contained quite a few (blue) piers, being marked by some white flight feathers and white flecks on the head. Those features came from the inclusion in the early stock of a high-performing pier bird originating from South Australia. In general, racing pigeon flocks have a higher proportion of piers than the feral population in Canberra.

Another experienced owner had a poor opinion of 'reds' (used here for 'red-group birds'), having only 4 of them in a loft of about 100 birds. Another owner had 14 reds among a total of 85, and yet another 23 out of a loft of 60. However, yet another owner seemed to have mainly reds and birds that were partly or wholly white. A view held by several owners is

that reds and partly white birds are at greater risk of being taken by 'hawks'. The racing scheduled for 15 September, from Narromine, included an event limited to white birds. The eligible birds had to be wholly white, with no trace of dark plumage.

With respect to white birds not of the racing kind, there is an establishment in Queanbeyan with a specialized collection of these. This is a business ('Doves Away') that makes available white homing pigeons for release at such events as weddings and funerals. Whether any such pigeons have been taken by 'hawks' has not been investigated. At a residence at Weetalabah, near Queanbeyan, the owner has a large collection of free-flying pigeons, mainly of the white type, some with unusual but attractive variations such as a combination of white and chocolate brown.

Undoubtedly, the most dangerous 'hawk' to a racing pigeon is the Peregrine Falcon. There is a long history of persecution of the falcon by owners of pigeons (Mackay 1989, Olsen 2014;). For 1991-1995, analysis of prey items at falcon nests in Namadgi National Park revealed that 15% were Rock Dove, being homing pigeons (from bands) - compare 17% for Galah. However five sites near Canberra showed only 3% of items were Rock Dove (compare 33% Starling, 18% Silver Gull, 11% Galah, 26% both rosellas combined) (Olsen 2004). See also Olsen 2008. It has been suggested that contrasting wing patterns, as in some pigeon varieties, may attract the attention of falcons (Olsen 2004).

### Acknowledgments

The use of COG data is acknowledged. Valuable help was received from members of the COG email discussion list, particularly Alison Rowell, John Layton and Con Boekel. Information was received from members of the Canberra Racing Pigeon Combine, particularly Keith Munns, Stan Kurzawa, Troy Lloyd and Peter Holt. Helpful comments were received from Jerry Olsen, Joe Forshaw and Alastair Smith. Thanks to Terry and Kay Steele of Ritter, Oregon, USA, and Danny McCreadie for providing photographs.

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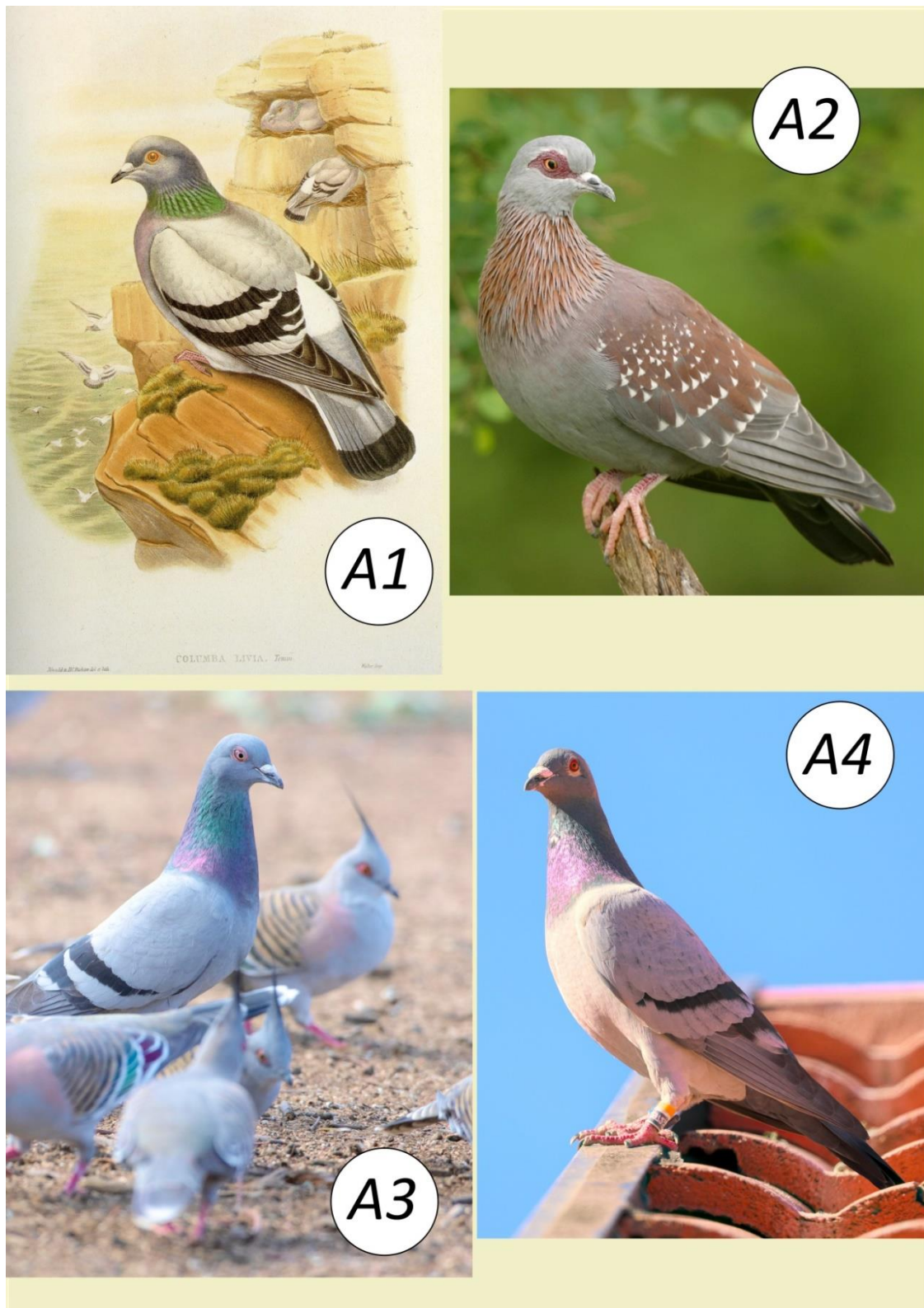
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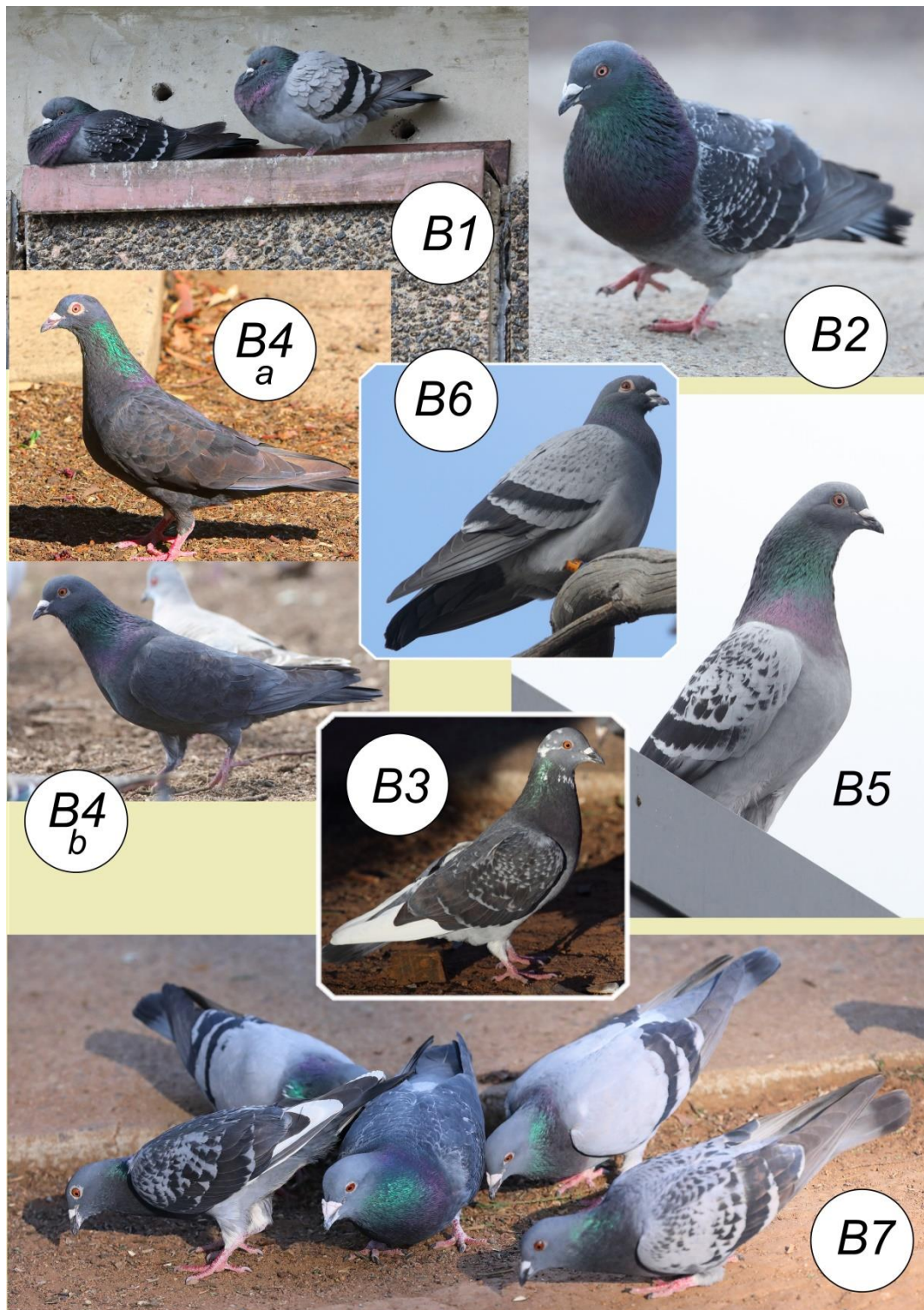
To illustrate the above article, the following pages contain **A Pigeon Photo Portfolio**. All photographs were taken around Canberra, except for A1, A2, B6 and S2.

Readers of the b/w print version of Canberra Bird Notes may want to view the Photo Portfolio also in the electronic version of this issue at <http://canberrabirds.org.au/publications/canberra-bird-notes/> to get the full benefit of the colour images.



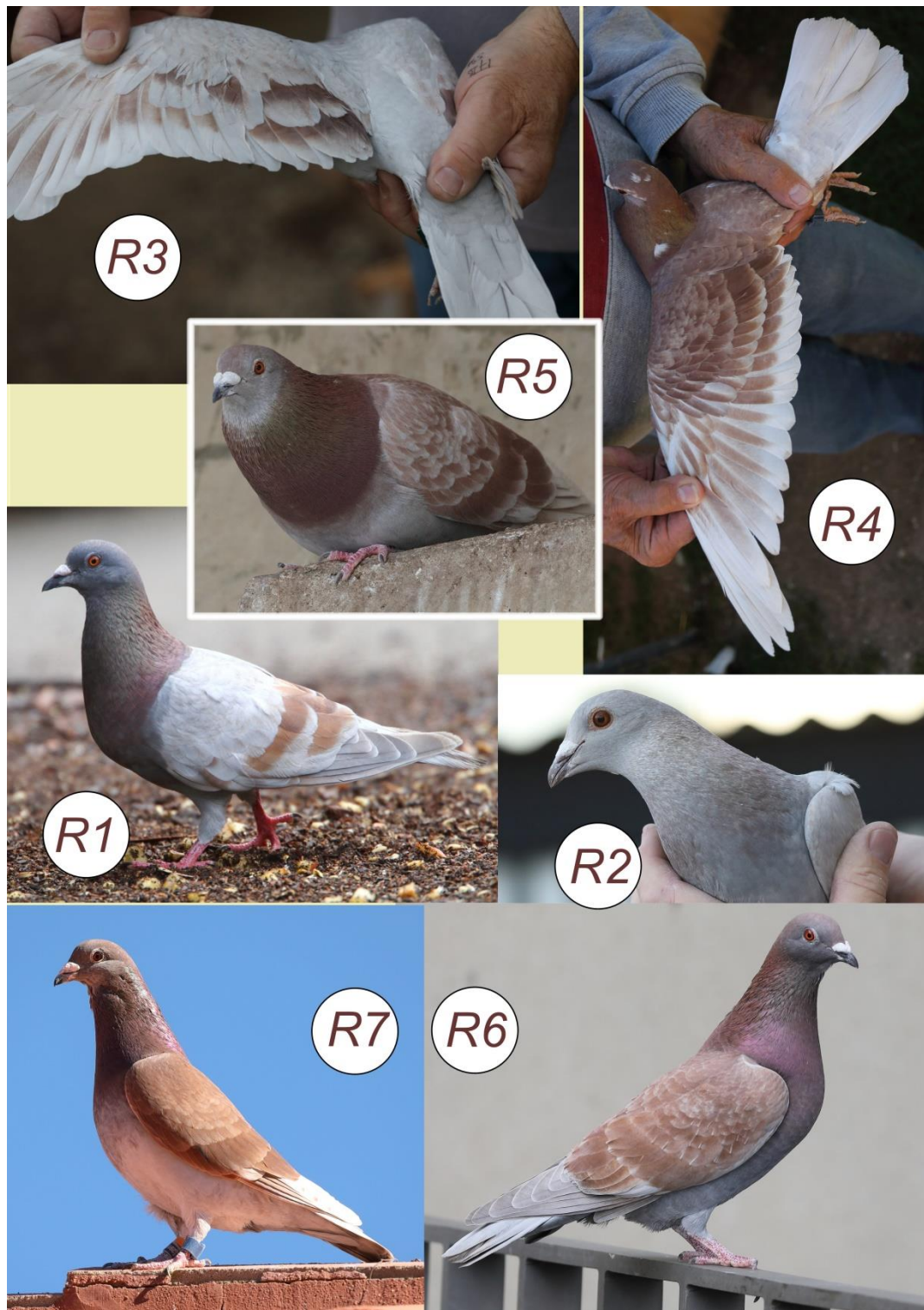


*A series. Basic plumages.* A1 - Lithograph from John Gould's *Birds of Great Britain* of Rock Dove *Columba livia* at home on sea cliffs. This is the 'ancestral form'. A2 - African Speckled Dove *Columba guinea*. Photo: Terry Steele, USA. There is recent evidence that genetic changes in the course of breeding of the domestic pigeon can be traced to this species. A3 - A blue-bar, similar type to the ancestral form, in a Canberra suburban park with Crested Pigeons. A4 - Another blue-bar, this one a racing pigeon, on a roof near its loft.

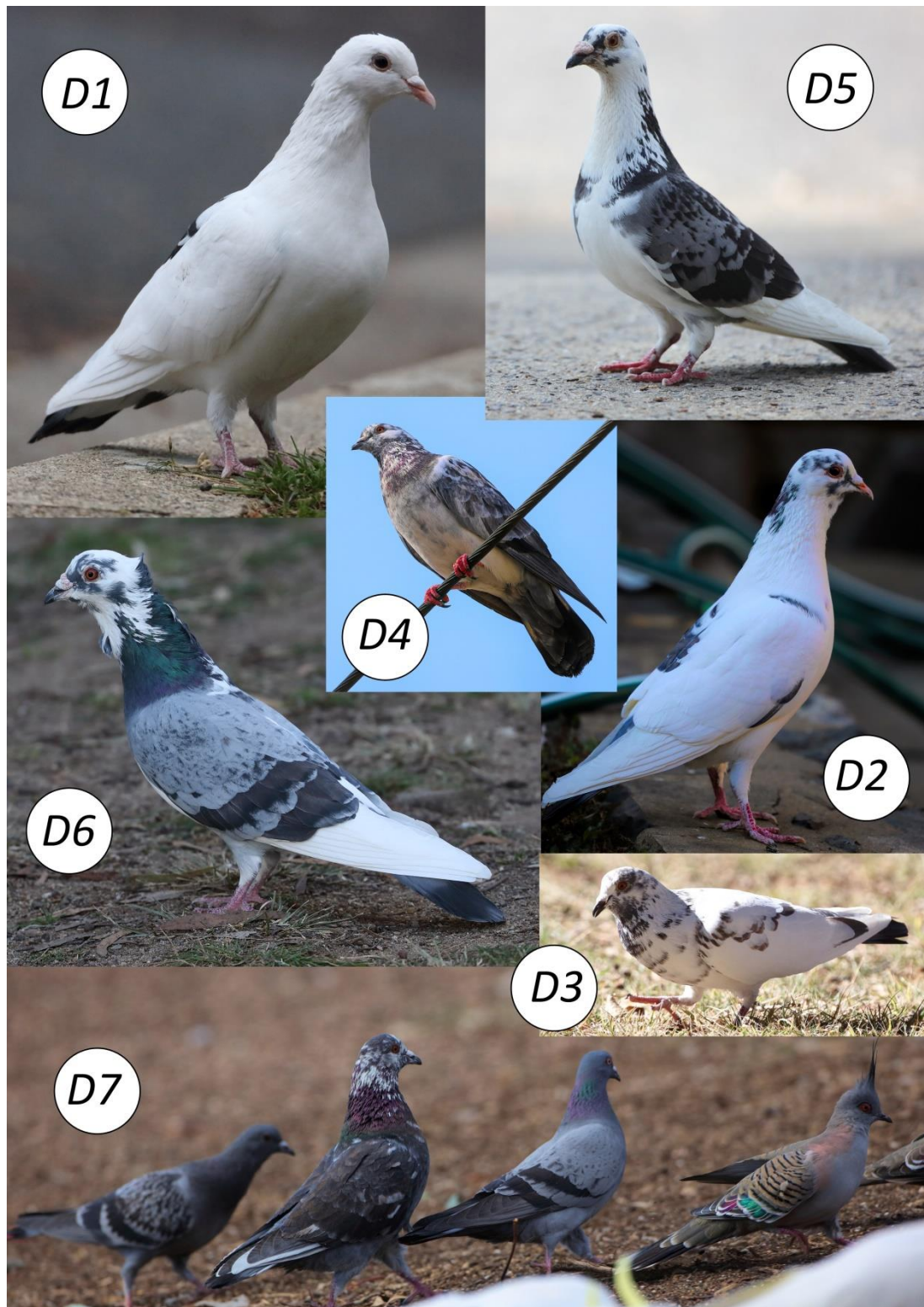


*B series. Examples of the blue/black continuum.* B1 - A blue-bar and a darker (chequer or melanic) type under Commonwealth Avenue Bridge. B2 - A displaying cock bird, a type that might be called a T-pattern. B3 - A dark chequer, showing also the typical 'pied' characters. B4 - Two different dark 'barless' birds of a type that might be called 'spread' in the United States. B4a has a marked reddish tone in the wings. B5 - A pale blue chequer, with clear wing bars. B6 - A blue-bar with a trace of black flecking. This is a 'lost' racing pigeon, photographed near Lake Mungo, western NSW. B7 - In this group of feeding birds in a suburban street are two blue-bars, a blue 'pied' and two chequers showing extremes of pale and dark.





*R series. Examples of reddish birds.* R1 - The red equivalent of the blue-bar, this type might be called an ash-red or ash-red bar or 'mealy'. R2 - Another of that type, this time a racing pigeon, with a paler head, neck and breast than R1. R3 - This is R2 held to show the wing pattern. R4 - The owner, holding the bird, has put this forward as an example of a red chequer. R5 - Another example of a red chequer, being a wild bird photographed under the northern end of King's Avenue Bridge. (At that place, large cavities forming part of the bridge design, are home to many feral pigeons.) R6 - A handsome wild bird of the chequer type photographed near the main entrance to Parliament House. R7 - A more solid 'Red', a racing pigeon on a roof near its loft.



*D series. Less usual types.* D1, D2 - Mainly white birds that occasionally appear in a Narrabundah street, neither being wholly white. D3 - A bird near old Parliament House, the type that might be called 'pale grizzle'. D4 - A bird in O'Connor, being a darker grizzle type. D5, D6 - Unusual peds in a Narrabundah street, D6 showing a crested type in its ancestry. D7 - A mixed group in an O'Connor park, the largest bird being a mixture of types. Obviously a cock bird, it is engaged in prolonged chase of a smaller blue-bar. 'Chasing' is a common 'courtship' behaviour among feral pigeons.





*E series. Around the National Parliament.* E1 - Two dark pigeons take advantage of a window ledge as a short-term roost. E2 - Transient birds using the main façade as a vantage point, while others (E3) recall their cliff-dwelling origin by perching on the faux sandstone of the steeply sloping walls of the forecourt. E4, E5 - Pigeons often fly in to drink at the water feature in the forecourt, which is of ideal depth for the purpose. E6 - Pigeons with Galahs feeding on seed on the lawns near old Parliament House. In such situations, Galahs are less timid than pigeons.

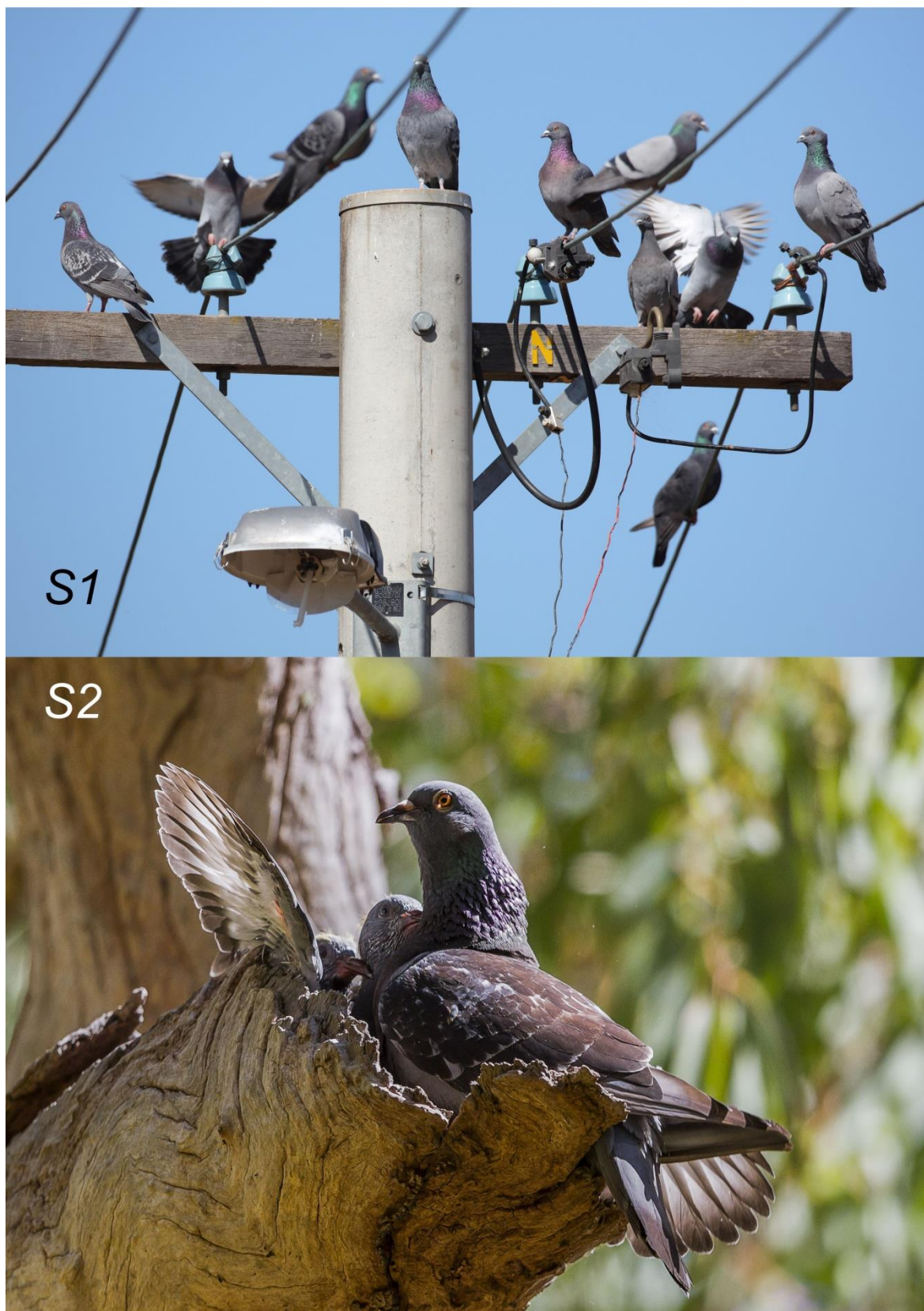


*J series. The river flats, now mainly pasture, at Jerrabomberra Wetlands Nature Reserve. J1 - A photo from 2011, when pigeons used to perch conspicuously on the powerlines. They are seen there less often now, which might have contributed to a decline in the recording rate, given the high proportion of records from this locality. J2 - A 2019 photo of a flock in flight in that area, all, as in J2, being of the blue-black description. J3 - Three blue-bars foraging for seeds among the pasture grasses. J4 - Part of a flock in flight showing 2 distinctive plumages, the single red bird of the flock, and a pied bird at lower right showing the white wing flash said to attract the attention of falcons.*



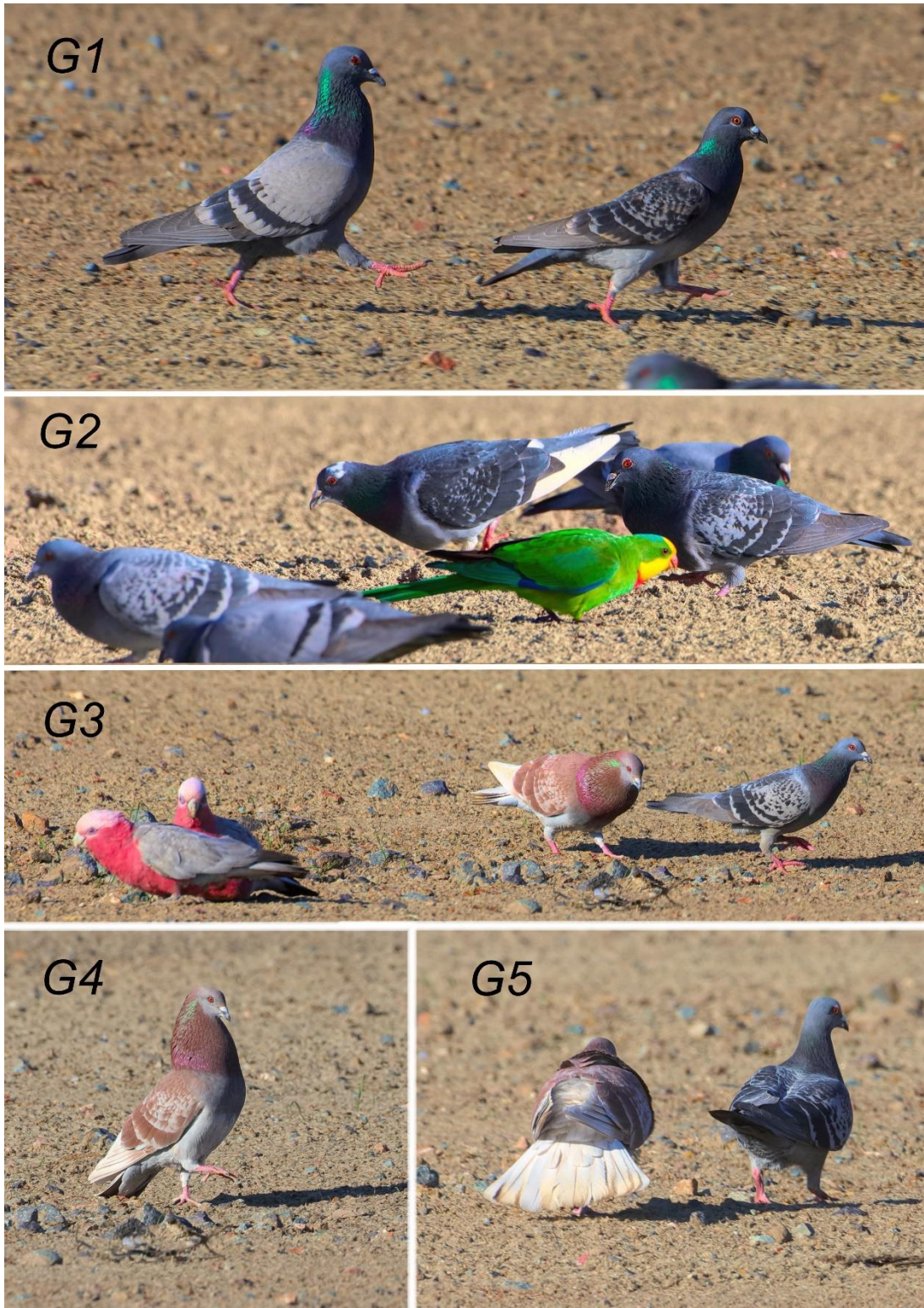


*T series. Tuggeranong, at the Drakeford Drive bridge over Isabella Pond. By contrast with the selection in the J series, pigeons here show a greater colour range. T2a and b show 13 birds along the horizontal arm of a light pole. Six of the 13 are of the reddish type, and the single blue-bar is the typical pied type. Adding the two birds on a nearby light (T1) brings in a single standard blue-bar among 15 birds. T3 shows birds that have made a home in the cramped space under the bridge.*



*S series. Contrasting scenes. S1 – Street scene. In O'Connor, a group of pigeons on a power-line wait for an opportunity to approach a feeding site in a suburban park. S2 – Woodland scene. A pair of adult pigeons feed young in a tree spout, Morialta National Park, near Adelaide. (Photo Danny McCreadie)*





*G series. Open spaces near Gungahlin town centre. In September 2019, attention was directed to this area because large numbers of Superb Parrots were feeding there. About 60 feral pigeons were also spread out over the apparently bare ground, feeding in small groups alongside other species. The attraction was probably seeding that had been artificially spread over the area. G1 - Blue-bar chasing a blue chequer. G2 - Feral pigeons form a small foraging flock with a Superb Parrot. G3-G5 A red chequer chasing a blue chequer, near a pair of foraging Galahs.*





*N series. Pigeons in Narrabundah.* N1 - An Australian Raven is taking a meal at the remains of a recently deceased racing pigeon (cause of death unknown). The site is the nature strip of a suburban street. The pigeon's green 'life band' is indicated by the arrow. N2 - A flock of racing pigeons in an exercise flight over the suburb. N3 - A mixed gathering of pigeons and peafowl on a street verge. It is difficult to deter opportunistic pigeons from gathering at such a food source, where seed is being offered (to peafowl, in this case).

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## COMPOSITION AND ESTIMATE OF THE SIZE OF THE BREEDING GRASSLAND BIRD COMMUNITY ON FARMLAND AT LAKE GEORGE (NSW)

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**Abstract:** Farmland (300 ha) to the East of Lake George ('Currandooley') with grazing paddocks, fallow fields, lucerne and wheat fields was surveyed during the breeding season, partially from 2015 to 2017 and fully in 2018. Seven grassland species were recorded. Estimates of the number of territories, expressed as total numbers and as number of territories (T)/10 ha, are given for each species and habitat. Horsfield's Bushlark (*Mirafra javanica*), a relatively uncommon species in the Canberra Region, occurred in good numbers, almost exclusively in wheat. It reached its highest density of 7.5 T/10 ha in 2017. Maximum recorded densities (T/10 ha) for the other species were: Stubble Quail (*Coturnix pectoralis*): 2.1 in lucerne with light sheep grazing (2018); White-fronted Chat (*Epthianura albifrons*): 0.7 in wheat (2016); Eurasian Skylark (*Alauda arvensis*): 10.0 in fallow field (2018); Golden-headed Cisticola (*Cisticola exilis*): 4.0 in wheat (2016); Brown Songlark (*Cincloramphus cruralis*): 1.7 in wheat (2017) and Australasian Pipit (*Anthus novaeseelandiae*): 2.5 in lucerne with light grazing by sheep (2018). Eurasian Skylark and Australasian Pipit were found on all forms of land use and were the most common species. Only these two species held territories in regularly grazed paddocks, all seven species did so in wheat.

### 1. Introduction

Among the diverse landscapes in COG's Area of Interest (AoI) the agricultural settings receive probably the least attention by bird observers. There are several reasons for this. The species pool is rather limited compared to *e.g.* woodland or wetland habitats. More importantly, much of the farming land is not readily accessible, it is privately owned and largely fenced in, and obtaining permission to enter is often not straightforward. Surveying such sites from the road usually proves unsatisfactory. Detection of birds is restricted to those within close range. Hence it is often difficult or impossible to get any idea of the number of birds occupying such sites. We have only limited if any information on the density at which *e.g.* Australasian Pipits (*Anthus novaeseelandiae*), Eurasian Skylarks (*Alauda arvensis*) and other species occur in a wheat field, in rank grassland or a paddock grazed by livestock.

A few years ago we gained access to a couple of rural properties on the eastern side of Lake George, allowing us to conduct COG's monthly waterbird surveys from this side for a large section of the lake. On the way to some of the lookout points for counting waterbirds, a dirt road passes for several kilometres through a portion of the 'Currandooley' property (Fig. 1). On either side of the road are parcels of land (fully or partly fenced) which are used either



for grazing livestock or for growing different crops. Particular areas contained a notable number of Horsfield's Bushlarks (*Mirafra javanica*) in spring and summer. This was the trigger to look also at the other grassland species occurring along this transect road during the breeding season. We started to take greater note of these birds from the 2015 breeding season onwards. However, it was only in 2018 that we were able to survey all selected paddocks and fields. In this paper we report on the species and the number of birds encountered.



**Figure 1. Part of the study area, looking from South to North, with the transect road to the right.**

## 2. Study area

The approximate area covered is indicated on a topographical map by the two rectangles in Fig. 2. Taylors Creek crosses the area from East to West and divides the study site roughly in half. The paddocks selected for survey are outlined in Fig. 3 and their sizes [ha] given in Table 1.

In most cases the selected paddocks are delineated by fences and the transect road, but the areas surveyed at Sites 3W and 4E are smaller than the actual paddocks. Sites 5W, 6E and 7E include small areas of land used for different purposes (storage of feed, machinery, sheds etc.). They were excluded from the surveys. These areas are marked on the map in Fig. 3 by broken lines.

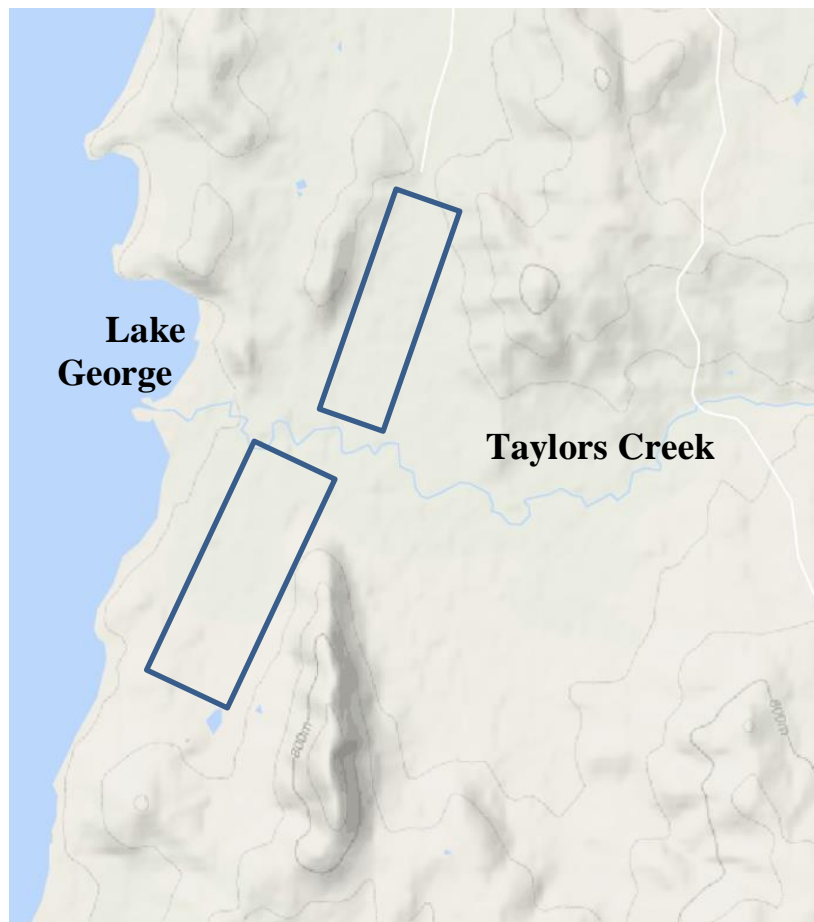
It is generally flat country between 680 to 720 m above sea level. It rises gently from North to South (Fig. 1). A number of hills in the Northwest and Southeast form natural borders to several paddocks (Figs. 2 and 3). More grassland to the West connects the land to the eastern shore of Lake George. In all other directions the selected paddocks are joined by further agricultural land (Fig. 3). There are only very few (exotic) trees in one or two of them.

The land use comprises grazing of sheep and cattle and cultivation of wheat, lucerne, and canola, although not all crops are grown every year within the study area. Land use for individual paddocks can vary between years. Some fields may also be left fallow for a period and later opened to livestock. The northern part is chiefly managed for keeping

sheep, the southern part for crops, cattle and to a lesser extent sheep. Cattle are moved relatively often between different paddocks within and outside the study area. All livestock is managed to prevent any overgrazing.

### 3. Methods

The area was surveyed between October and December, the main breeding period for the local grassland birds. Paddocks with livestock on them at the time of a visit were surveyed only from the road. In 2015 – 2017 we focussed mainly on wheat fields as they attracted most of the Horsfield's Bushlarks. Two to three visits were conducted. The wheat and canola crops are usually harvested by the end of December.



**Figure 2. Topographic map of the southeastern side of Lake George with the location of the study area, divided into two parts (the rectangles) by Taylors Creek.**

In 2018 the area was visited five times. Livestock was absent for periods from those paddocks used for grazing. This provided the opportunity to survey these paddocks on foot. The lucerne and wheat fields were surveyed on foot on several of the visits.

Numbers for each species were determined by focussing on all observations that may indicate birds were holding a breeding territory (see *e.g.* Oelke 1974; Lenz 1990; Bibby and Burgess 1992): singing and displaying birds, fighting between conspecifics, observations of pairs, adults carrying nest material or food, and fledglings. We did not search for any nests and have in most instances no information on how successful breeding events were. Numbers are given as number of territories rather than the number of birds. Some territories

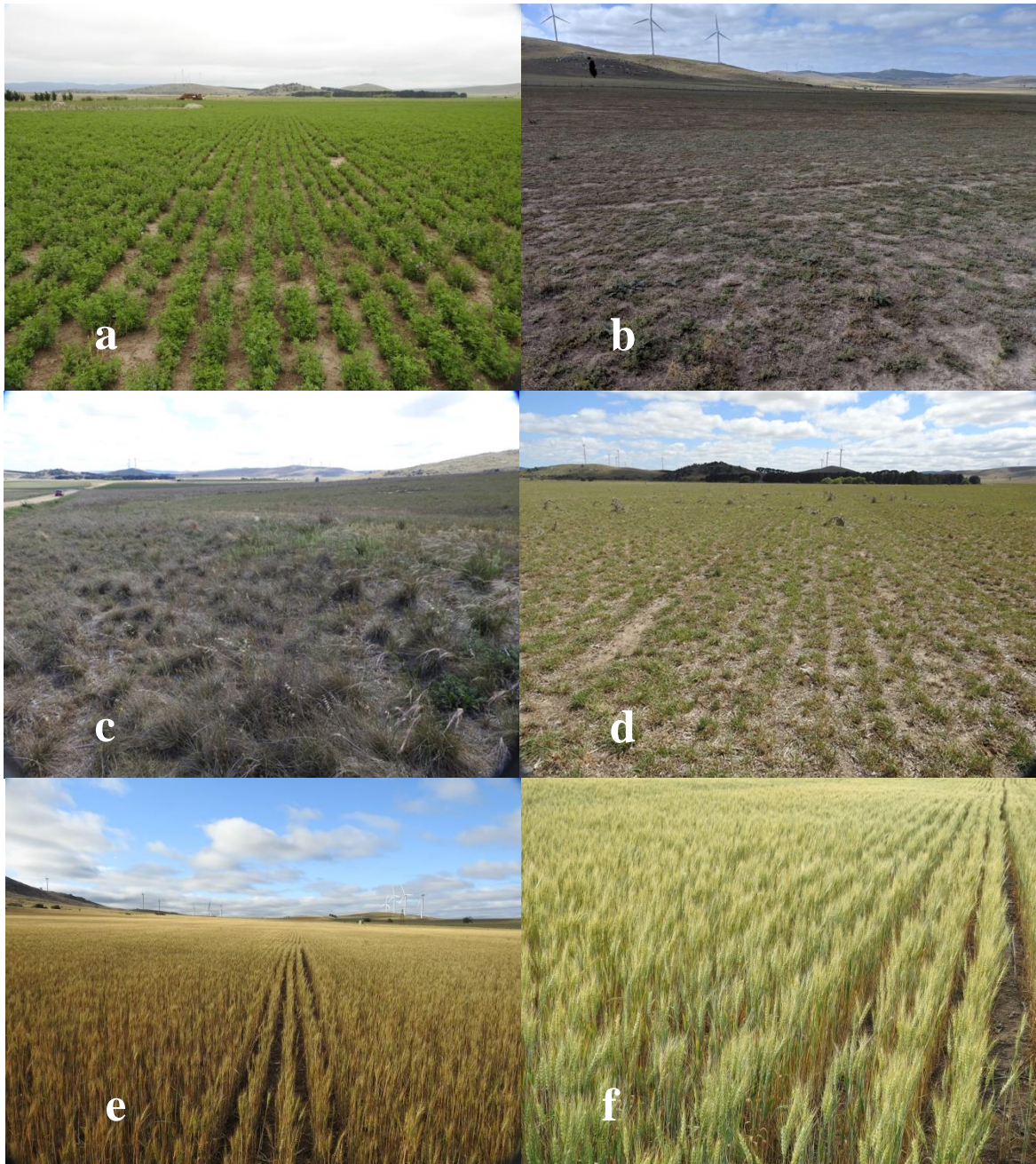
may be occupied not by a pair, but by an unpaired male advertising its territory, or as in the cases of the Brown Songlark (*Cincloramphus cruralis*) and the Golden-headed Cisticola (*Cisticola exilis*) (Magrath *et al.* 2003 and Higgins *et al.* 2006b respectively), a male may be paired with more than one female.



**Figure 3. Map of the area on the southeastern side of Lake George with the eight paddocks of farmland surveyed along a 4.75 km transect road in the breeding seasons of 2015-2018.** Areas delineated by broken lines were not surveyed. Paddock No. 8 was included only in 2018.

In 2018 sites were walked to their full length and width in straight lines *ca.* 40 m apart when the vegetation was higher and denser (wheat, see Figs. 4 e, f) and at *ca.* 50 to 60 m apart in open grazed paddocks (see Figs. 4 a-f). In 2015-2017 the wheat fields were the main focus, most other paddocks were checked only from the transect road. Where appropriate more detail is given for each observation year.





**Figure 4. Main vegetation types in 2018: (a): Site 3E: lucerne; (b): Site 2E: pasture with regular grazing by sheep; (c): Site 7: fallow field, lightly grazed for periods by cattle and sheep; (d): Site 5E: pasture grazed by cattle; (e, f): Site 8E: wheat.**

Given the limited number of visits, and without detailed plotting of the records on maps of the paddocks to establish territory boundaries *etc.*, our numbers can only be estimates. However, the simple and in most cases low (except for wheat) vegetation structure of these paddocks (see Fig. 4, a-d) ensured a high discovery rate of birds (compared to sites with shrubs and trees). Wheat fields were more frequently and intensively surveyed, especially in 2018. We feel our estimates give a good first indication of the abundance of species at the sites, covering diverse regimes of agricultural land use.

The abundance of birds is expressed in two ways: (a) absolute numbers of territories are given for each species and site where applicable; (b) the number (density) of territories per



10 ha [T/10 ha] of habitat of each site is calculated in order to allow comparisons between land-use type and sites of differing sizes (see *e.g.* Oelke 1974; Lenz 1990).

**Table 1. Area [ha] of the eight paddocks surveyed for grassland birds.**

Sites West (W) of transect road		Sites East (E) of transect road		Both parts combined <sup>B</sup>
Site	Area [ha] <sup>A</sup>	Site	Area [ha] <sup>A</sup>	Area [ha]
1W	22	1E	30	52
2W	5	2E	17	22
3W	4	3E	5	9
4W	3	4E	25	28
5W	30	5E	35	65
6W	14	6E	17	31
7W	24	7E	41	65
	---	8E <sup>C</sup>	28	28
<b>Total</b>	<b>102</b>		<b>198</b>	<b>300</b>

<sup>A</sup>Area of paddocks determined with polygon function on 'Google Earth'; <sup>B</sup>Land use of opposing paddocks (West/East) along transect road identical; <sup>C</sup>Site 8E is only reached via paddock 6E.

#### 4. Results

During the surveys from 2015 to 2018 the breeding grassland bird community consisted of seven species: Stubble Quail (*Coturnix pectoralis*), White-fronted Chat (*Epthianura albifrons*), Horsfield's Bushlark (Bushlark hereafter), Eurasian Skylark (Skylark hereafter), Brown Songlark, Golden-headed Cisticola (*Cisticola* hereafter) and Australasian Pipit (Pipit hereafter). A pair of another species, the Banded Lapwing (*Vanellus tricolor*), started to incubate a clutch in one of the lucerne paddocks (Site 3E) in early September 2018. However, the nesting attempt failed.

##### 4.1. Surveys in 2015

The aim of the surveys in 2015 was to get gain a better understanding of the distribution of Bushlarks across land uses. No Bushlarks were found on paddocks with livestock. On 22 Nov the species was encountered 14x in wheat (max. density 3.3 T/10 ha) and at least 3x in canola (Table 2). By the time of the second survey on 12 Dec (Table 2) both wheat and canola had been harvested and about half as many Bushlarks (8x) were found, mainly as singing birds, in lucerne, a crop not used previously. Many Skylarks made the switch as well. Stubble Quails and Pipits also moved from wheat into lucerne. Among the Cisticolas found in wheat, only one male switched to lucerne after harvest. The others had abandoned the sites (Table 2).

Low stands of lucerne (Fig. 3A) are less likely to provide an appropriate nesting habitat for most of the species found in the area. This is clearly indicated by the fact, that very few birds were encountered in it during the main breeding season (November), except for a few Skylarks (Table 2).

In the fully surveyed wheat field of Site 5W other species present apart from Bushlarks were Stubble Quail (0.7 T/10 ha), Skylark (3.3 T/10 ha), Cisticola (1.7 T/10 ha) and Pipit (0.7 T/10 ha) (Table 2).

**Table 2: Estimates of the number and density [no. territories/10 ha] of territories in 2015 for the three sites with planted crops based on visits on 22 November and 12 December.**

Site	Land use	Stubble Quail	White-front. Chat	Horsf. Bush-lark	Euras. Sky-lark	Golden-headed Cisticola	Austra-lasian Pipit
Survey 22 November							
5W <sup>A</sup>	wheat	2 <i>0.7</i>		10 <i>3.3</i>	10 <i>3.3</i>	5 <i>1.7</i>	2 <i>0.7</i>
5E <sup>B</sup>		(1)		(4)	(5)	(2)	
6W <sup>A</sup>	lucerne				1		
6E <sup>A</sup>					2		
7W <sup>B</sup>	canola		(2)	(1)	(4)	(1)	
7E <sup>B</sup>				(2)	(6)	(5)	
Survey 12 December (wheat and canola have been harvested)							
5W <sup>A</sup>	wheat				4		
5E <sup>A</sup>							1
6W <sup>A</sup>	lucerne	2		4	6		
6E <sup>A</sup>		2	1	4	6	1	2
7W <sup>A</sup>	canola				1		
7E <sup>A</sup>					2		

A: Sites surveyed by walking fully around them and along N/S transects.

B: Sites surveyed only from the road, the incomplete estimates in brackets.

**Table 3: Estimates of the number and density [no. territories/10 ha] of territories in 2016 in wheat fields based on visits on 13, 20 and 28 November.**

Site	Size [ha]	Land use	White-front. Chat	Horsf. Bush-lark	Euras. Sky-lark	Golden-headed Cisticola	Australasian Pipit
5W <sup>A</sup>	30	wheat	2 0.7	14 4.7	8 2.7	12 4.0	2 0.7
5E <sup>A</sup>	35		1 0.3	11 3.1	8 2.3	6 1.7	1 0.3
7W <sup>A</sup>	24	wheat			5 2.1	2 0.8	3 1.3
7E <sup>A</sup>	41			3 0.7	5 1.2	4 1.0	4 1.0
<b>Total</b>			<b>3</b>	<b>28</b>	<b>26</b>	<b>24</b>	<b>10</b>

A: Sites surveyed by walking their perimeter and along their middle (N to S).

#### 4.2. Surveys in 2016

The key feature for the year was that wheat was grown on two sets of paddocks (Sites 5 and 7) (Table 3). The surveys were mainly focussed on these paddocks. One of these sets, Sites 5W and 5E, is on flat ground. Site 7E is also on flat ground except for the western third of it. It rises gently North to South and more notably towards the West (towards the transect road). Site 7W as a whole has a similar North to South incline, but a more pronounced one over its full width towards the West. Areas with level ground appeared to have more fertile

soil or were at least better at retaining moisture, to judge by the more vigorous growth of the wheat, while those sections rising towards the West appeared to be relatively dry, and the wheat stood lower.

Rainfall in 2016 was the highest of all four years of the study with between 38 to 45% above those of the other years (Table 4).

**Table 4. Monthly rainfall figures [mm] for 2015 to 2018 at Bungendore Post Office, ca. 15 km to the SW of the study area (Bureau of Meteorology 2019).**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	148	21	13	92	9	44	38	60	10	29	55	33	552
2016	108	29	56	15	50	199	78	56	125	58	52	52	882
2017	19	35	83	32	47	1	15	59	21	38	69	82	500
2018	46	79	12	21	15	41	11	34	27	34	55	112	487

A total of 28 Bushlark territories was estimated for the wheat fields. Densities ranged from 3.1 to 4.7 T/10 ha in wheat growing on level ground (Sites 5W and 5E). The species was present only at a low density of 0.7 T/10 ha in wheat on Site 7E with the partial westward rise. The Bushlark was notably absent from the drier Site 7W (Table 3).

Skylarks were more evenly distributed across the wheat paddocks with densities of 1.2 to 2.7 T/10 ha (Table 3).

The wetter conditions in 2016 may (Table 4) explain the widespread presence of *Cisticolas* in the wheat fields. The species was present on all wheat fields although Site 5W was the favoured paddock, with 12 singing males at a density of 4.0 T/10 ha (Table 3).

Pipits were found in all wheat fields at low densities ranging from 0.3 to 0.7 T/10 ha at Site 5, and 1.0 to 1.3 T/10 ha at Site 7, possibly indicating that the species may favour the drier areas with poorer growth of wheat, *i.e.* lower vegetation height (Table 3).

Three pairs of White-fronted Chats were also encountered in wheat (Sites 5W and 5E) (Table 3). Notably, it was the only year that they nested within the study area (although the species is not infrequently found in the wider region on the eastern side of Lake George). It is possible that the overall higher rainfall in 2016 was a factor for its choice of this habitat.

#### 4.3 Surveys in 2017

The area was visited only twice in November and surveys were focussed on the wheat fields which were restricted to Site 7 (Table 5). The former wheat fields at Site 6 had been allowed to lie fallow.

Interestingly, with wheat grown only on Site 7, Bushlarks were present even on Site 7W (the drier site with the notable westward slope) in high numbers (Table 5). This site was avoided by this species in 2016, when better choices were available. The densities exceeded those of the previous year, reaching 7.5 T/10 ha on Site 7E and just half of that, 3.7 T/10 ha, on Site 7W, still indicating that this site is less suitable (Table 5).

**Table 5. Estimates of numbers of territories and density [no. territories/10 ha] in lucerne and wheat fields in 2017 based on visits on 10 and 21 November.**

Site	Size [ha]	Land use	Stubble Quail	Horsf. Bush-lark	Euras. Sky-lark	Gold.-head. Cistic.	Brown Song-lark	Australasian Pipit
5W <sup>B</sup>	30	fallow field	---	---	(3)	---	(1)	---
5E <sup>B</sup>	35		---	---	(2)	---	(1)	(1)
6W <sup>A</sup>	14	lucerne	---	---	3 2.1	---	1 0.7	3 2.1
6E <sup>A</sup>	17		---	---	3 1.8	---	1 0.6	---
7W <sup>A</sup>	24	wheat	4 1.7	18 7.5	14 5.8	6 2.5	4 1.7	4 1.7
7E <sup>A</sup>	41		2 0.5	15 3.7	10 2.4	2 0.5	7 1.7	4 1.0
<b>Total</b>			<b>6</b>	<b>33</b>	<b>35</b>	<b>8</b>	<b>15</b>	<b>12</b>

A: Fields surveyed by walking fully around them and along their middle.

B: Sites surveyed only from road, the incomplete estimates in brackets.

Lucerne (Sites 6W, 6E) and the wheat Site 7E were settled by Skylarks at similar densities of 1.8 to 2.4 T/10 ha (Table 5). However, in the more sloping wheat Site 7W Skylarks reached a much higher density of 5.8 T/10 ha (Table 5), perhaps indicating that drier sites with lower vegetation height are given preference, as for the Pipit.

In 2017 an influx of Stubble Quails and Brown Songlarks occurred. The former was present with 7 territories, the latter with 21 across all sites, but wheat was the preferred habitat for both species, with a maximum density of 1.7 T/10 ha (Table 5).

Pipits occurred at densities ranging from 1.0 to 1.7 T/10 ha in wheat and at 2.1 T/10 ha in lucerne.

#### 4.4. Surveys in 2018

Five surveys were carried out: 27 Oct, 18 and 30 Nov, 10 and 19 Dec. Site 1 was surveyed on foot only on 10 Dec when sheep were temporarily absent; Site 5 was fully accessible on 30 Nov when cattle had been taken off, and likewise Site 6 was free of cattle on 18 Nov and 19 Dec.

The period from March to October of 2018 was quite dry, as the rainfall records for Bungendore (Bureau of Meteorology 2019) show (Table 4). Overall, it was the driest year of all the four survey years (Table 4).

Stubble Quails were present in weedy grassland, lucerne and wheat at densities from 0.2 to 2.1 T/10 ha (Table 6).

Except for one territory in lucerne, all other 20 Bushlark territories were restricted again to wheat, reaching a density of 7.1 T/10 ha (Table 6).

The Skylark was the only species that occurred right across the site, even in paddocks with livestock. In total, 137 territories were estimated. Former wheat fields lying fallow attracted the highest numbers, with a density of 10.0 T/10 ha. High densities were also found in lucerne and pasture with rank grass and quite low grazing pressure (Table 6).

**Table 6. Estimates of numbers of territories and density [no. territories/10 ha] in 2018 based on five visits between 27 October and 19 December 2018** (although some sites with sheep or cattle were surveyed on foot only once or twice).

Site	Size [ha]	Land Use <sup>A</sup>	Stubble Quail		Horsf. Bushlark		Euras. Skylark		Gold.-h. Cisticola		Brown Songlark		Austral. Pipit	
			N	D	N	D	N	D	N	D	N	D	N	D
1W	22	pasture sheep <sup>B</sup>					4	1.8					3	1.4
1E	30						7	2.3					1	0.3
2W	5	pasture sheep <sup>B</sup>					2	4.0						
2E	17						1	0.6					1	0.6
3W	4	lucerne (sheep)					2	5.0					1	2.5
3E	5						2	4.0					1	2.0
4W	3	pasture (cattle)					2	6.7						
4E	25						10	4.0			1	0.4		
5W	30	pasture (cattle)	2	0.6			17	5.7			2	0.7	1	0.3
5E	35		1	0.3			14	4.0			1	0.3	2	0.6
6W	14	lucerne (sheep)	3	2.1	1	0.7	12	8.6					1	0.7
6E	17		1	0.6			10	5.9			1	0.6	1	0.6
7W	24	fallow field	2	0.8			14	5.8			2	0.8	3	1.3
7E	41		1	0.2			18	10.0			2	0.5	2	0.5
8E	28	wheat	5	1.8	20	7.1	22	7.9	1	0.4	1	0.4	6	2.1
<b>To-tal</b>			<b>15</b>		<b>21</b>		<b>137</b>		<b>1</b>		<b>10</b>		<b>23</b>	

A: (sheep) and (cattle) in brackets: stock was kept in very low numbers (sheep) or for a limited period (cattle) on these paddocks. B: estimated stocking rate: 12 to 15 sheep/ha during the time of the surveys. N: Number of territories; D: Density [Number of territories/10ha]

We could locate only one Cisticola territory (Table 6), no doubt a reflection of the generally dry conditions.

Brown Songlarks were again present, but at 50% of the numbers of the previous year. Densities ranged from 0.3 to 0.8 T/10 ha (Table 6).

The Pipit was the second most widespread species and the second most common species. Densities of 2.0 to 2.5 T/10 ha were reached in lucerne and wheat. Other land uses had lower densities (Table 6).

## 5. Discussion

Farmland in the Canberra Region takes many forms, although grazing appears to be the dominant land use. The 'Currandooley' site may not necessarily be typical in its combination of uses. Notably, pastures are carefully managed to prevent overgrazing, and

use of individual paddocks may rotate between cultivation of different crops, being fallow and opened for livestock.

Our surveys are a first attempt to understand which species breed on farmland used for livestock and cultivation in COG's AoI, and in what numbers.

#### 5.1. Land use and breeding bird fauna

Between 2015 and 2018 the study site included five main habitats, *i.e.* land uses (excluding a canola crop in 2015, which was not studied adequately): pasture regularly grazed by sheep; pasture grazed by cattle for periods of varying length; fallow wheat fields later opened to limited numbers of sheep and cattle; lucerne (with small numbers of sheep) and wheat (Table 7).

**Table 7. Breeding bird species composition for the main types of land use at 'Currandooley'.**

Bird species	Land use				
	Pasture sheep	Pasture cattle	Fallow field (cattle, sheep) <sup>B</sup>	Lucerne (sheep) <sup>B</sup>	Wheat
<b>Eurasian Skylark</b>	X	X	X	X	X
<b>Australian Pipit</b>	X	X	X	X	X
<b>Brown Songlark</b>		(X <sup>A</sup> )	X	X	X
<b>Stubble Quail</b>			X	X	X
<b>Horsfield's Bushlark</b>				(X <sup>C</sup> )	X
<b>Golden-headed Cisticola</b>					X
<b>White-fronted Chat</b>					X

A: After removal of cattle. B: (sheep) and (cattle): stock was kept in very low numbers (sheep) or for limited periods (cattle) on these paddocks. C: after wheat was harvested.

Only two species, Skylark and Pipit, were present in all habitats, although breeding success would most likely be rather limited on the more heavily grazed sites. Brown Songlarks settled on pasture only after cattle had been removed and weeds had started to grow.

Sites with higher vegetation and no or limited grazing pressure contained more species (Table 7). Wheat provided conditions for breeding for all seven species, although Cisticola and White-fronted Chat occurred in it only during wetter seasons.

Wheat is harvested at the site from mid to late December. By that time not all broods of all species may have produced fledglings. When White-fronted Chats were breeding in wheat, they managed to produce fledglings before harvest time. We have no relevant information for the other species. However, fallow wheat fields with no or limited grazing pressure may offer the best chances for birds to complete a breeding cycle.



In most cases only very limited information exists on the length of the breeding season of local grassland birds. However, the species summaries for COG's AoI (Canberra Ornithologists Group 2019) indicate extended breeding seasons for some species (Table 8). Following brood loss due to farming practices and trampling from livestock or predation (Donald *et al.* 2002)), some species may be able to re-lay in the same or a different habitat. Some species may even be double-brooded under favourable conditions. Notably, Australasian Pipits at a study site in the Snowy Mountains appeared to be double-brooded and in one case replacement clutches were initiated twice after previous nest failures (Norment and Green 2004).

**Table 8. Time of year (month) in which the breeding categories 'Nest with eggs/young', 'Adults carrying food' and 'Dependent young' have been observed in COG's AoI** (based on 'Bird Info' at: <http://canberrabirds.org.au/birds/>) for the seven species of grassland birds breeding at 'Currandooley').

Species	Breeding category		
	Nest with eggs/young	Adult carrying food <sup>B</sup>	Dependent young
<b>Stubble Quail<sup>A</sup></b>	?	?	Dec - Feb
<b>White-fronted Chat</b>	Aug-Sep (Apr)	Aug-Jan (Apr)	Sep- Dec
<b>Horsfield's Bushlark<sup>A</sup></b>	?	Nov, Dec	? (see also text)
<b>Eurasian Skylark<sup>A</sup></b>	Sep-Jan	Nov, Dec	Nov, Dec
<b>Golden-headed Cisticola<sup>A</sup></b>	Oct, Dec	Nov-Jan	Oct, Nov, Feb
<b>Brown Songlark<sup>A</sup></b>	?	Dec, Jan	Dec
<b>Australasian Pipit</b>	Sep-Nov, Feb	(Sep) Oct-Jan (Feb, Mar)	Nov-Feb

A: Species for which only few relevant observations are available.

B: Adults observed carrying food, for young in or already out of the nest.

## 5.2. Comments on individual species

Our estimates, notably for the breeding season of 2018, allow some comparisons with other studies, although in many cases the summaries in HANZAB provide no information on habitat type or the season when the data was collected.

### 5.2.1. Stubble Quail

Numbers of this species can vary greatly between seasons and years (Marchant and Higgins 1993; Cooper *et al.* 2014). They were present at 'Currandooley' in 2015, 2017 and 2018. In 2018 they were found on sites with little or no grazing pressure at densities from 0.2 to 2.1 T/10 ha (Table 6), with wheat and lucerne the preferred habitats. There are no figures available for comparison. While walking the paddocks in 2018 we flushed several pairs from the areas on return visits. Breeding, rather than mere occupancy of suitable habitat by calling males was likely. The breeding season in NSW extends from spring to early summer with at times a second peak from late summer to autumn (Frith and Carpenter 1980).

According to the NSW & ACT Atlas a regular breeding season has been documented from late September to April (Cooper *et al.* 2014).

#### 5.2.2. White-fronted Chat

This species is often encountered in the Lake George/Lake Bathurst area. They bred successfully at 'Currandooley' in wheat in 2016, the wettest year (Table 3). They were also recorded in 2015 from canola and lucerne, although we could not confirm whether they managed to raise young on those types of vegetation (Table 2). White-fronted Chats were absent from the area during the breeding seasons of 2017 and 2018.

#### 5.2.3. Horsfield's Bushlark

The relatively common occurrence of this species at 'Currandooley' was the trigger for these surveys. During the breeding season the species was found almost exclusively in wheat. Interestingly, in 2016 when a choice of wheat fields was available, they clearly preferred those on level ground to those on slopes. The former appeared to have higher soil moisture (better growth of the cereal) (Tables 3, 5 and 6). However, even in their preferred fields, Bushlarks were less likely to be found in patches of poorer growth.

Apart from wheat, we encountered displaying birds in stands of rye grass, oats and taller, weedy lucerne in other areas near our study site. In the survey area the species appeared in lucerne only after wheat had been harvested. Bushlarks were also singing over young stands of canola (2015), but seemed to abandon this crop when foliage developed and the gaps between the rows closed in.

The literature contains no figures on population density (Higgins *et al.* 2006a). We recorded maximum densities of 7.1 (2018) and 7.5 (2017) T/10 ha in wheat (Tables 5 and 6).

#### 5.2.4. Eurasian Skylark

The Skylark has a long association with agriculture and is well adapted to it in its native Eurasian range. It is therefore perhaps no surprise that it was found in all paddocks, irrespective of their use. It also was the most common grassland species, with 137 territories in total in 2018 (Table 6). Densities ranged from 0.6 to 4.0 T/10 ha on sheep paddocks through to 10.0 T/10 ha on a fallow field (Table 6).

Szabo (2014) provides density figures (birds/10 ha) from 'the native range and introduced locations' (for Australia based on Higgins *et al.* 2006a). However, without information on the season and habitat type from which the data originated, it is difficult to make comparisons with our estimates. The closest may be 11.5 T/10 ha on a managed sheep farm in New Zealand. A comment for Britain, indicating that the highest values (6.1 birds/10 ha) were found on fallow land (set-aside), may also be relevant.

#### 5.2.5. Golden-headed Cisticola

This species preferred wheat and was especially common in the wettest year, 2016, with a maximum density of 4.0 T/10 ha (Table 3). It was also found in canola (2015), and rarely in lucerne.

Much higher densities, of up to 65 birds/10 ha, have been recorded from several wetlands/grasslands around the country (Higgins *et al.* 2006b). But no figures are available for farmland.

#### 5.2.6. Brown Songlark

This species is found in denser grasslands, but also commonly in pastures and crops such as cereals, vegetables and others (Higgins *et al.* 2006b). It is nomadic (Magrath *et al.* 2003) and occurs in our region only in some years (Taylor and Canberra Ornithologists Group 1992; Canberra Ornithologists Group 2019). At 'Currandooley' Brown Songlarks were present only in 2017 and 2018, with highest numbers in 2017 (Tables 5 and 6).

Densities in 2017 reached 1.7 T/10 ha (wheat, Table 5) and in 2018 a maximum of 0.8 T/10 ha in a fallow paddock (Table 6). Much higher numbers of 8.2 to 9.7 birds/10 ha have been documented from Victoria (Higgins *et al.* 2006b).

#### 5.2.7. Australasian Pipit

Apart from the Skylark, this is the only species found throughout the study site in all land-use forms. In 2018, it was the second most common breeding bird, with 23 territories (Table 6). In one set of lucerne paddocks and in wheat it reached its highest densities, 2.0 to 2.5 T/10 ha.

The 2018 densities at 'Currandooley' (both low and high, see Table 6) are within the range of those reported from various sites and open habitats across Australia (Higgins *et al.* 2006b). However, on alpine meadows in the Snowy Mountains, densities of 11 T/10 were reached. It was also noted in a study from the Upper Lachlan Catchment in NSW that Australasian Pipits benefitted from stock rotations (Hanspach *et al.* 2011), which no doubt increased their chances of raising young.

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## NOTES

Canberra Bird Notes 44(3) (2019): 286-287

### NORTHERN SHOVELER (*SPATULA CLYPEATA*) AT JERRABOMBERRA WETLANDS

ROGER WILLIAMS<sup>1</sup>

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On 10 Sep 2019, I went to the Jerrabomberra Wetlands, just to see what was around, and noticed a duck with a white breast from the bank near the Bittern Hide. It was asleep on the water, so I took a photo. When I looked at the enlarged image on the back of the camera, I identified it as a male Northern Shoveler (*Spatula clypeata*) in breeding plumage. I knew that because I had recently seen this species in Scotland and had gone to Leeton to see (unsuccessfully) the Northern Shoveler reported there in early August 2019.



Right away, I sent the photo to Shorty Westlin and asked him to confirm my identification, which he did. I then asked him to post it on the chat line, as I cannot do that from my phone, to let everyone know.

Almost instantly it seemed, many people came to have to have a look at the bird as it was the first record of the Northern Shoveler in the ACT. We even had some friends from Armidale come down to see the duck. There were many reports on eBird over the next 9 days until the bird left and probably over 100 people saw it.

It was a medium-sized duck, similar in size to an Australasian Shoveler (*A. rhynchotis*). It had a large spoon-shaped bill, dark green head, white breast, and chestnut sides and belly. It seemed to be quite at home at the wetlands and spent most of its time with Australasian Shovelers, even interacting with them by bobbing heads.

This species has a wide geographic range across the northern hemisphere. It breeds from April to June across Eurasia and western North America. In winter various populations migrate south to specific locations, scattered throughout southern North America and Mexico, the Black Sea, the Mediterranean and West Africa, India, Southern China and Japan (Reeber 2015; Soothill and Whitehead, 1988). The non-breeding population of the Northern Shoveler reaching Asia is estimated at 1 to 1.5 million birds (Reeber 2015).

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<sup>1</sup> All photos by the author.





### **The Northern Shoveler in the company of Australasian Shovelers**

The fact that the shoveler was in full breeding plumage when it would be expected to be in post-breeding eclipse triggered some discussion on the COG chatline. Marchant and Higgins (1990) suggest that ‘some vagrants adjust moult-cycle to conditions in southern hemisphere.’

How it got here is the question. There are eBird records from the Philippines, Malaysia and Indonesia to our north, and also from several small islands across the Pacific between Australia/NZ and North America. Without banding data and knowledge of global weather patterns, it is impossible to say which route it took.

It is also interesting to speculate whether this was the same bird as recorded in Leeton in August, and where would it have gone to from Canberra? The first accepted Australian record of a Northern Shoveler dates back to 1975 (Marchant and Higgins 1990). Over the last 10 years, according to the records on eBird, the species has been seen nine times in Australia: the first record from 1999 at the Western Treatment Plant at Werribee, Vic, where it was seen again in 2001 and 2013. It was noted once in August 2017 at Kingston, SA, between July and September 2018 at Lake Modewarre, Victoria, in May 2002 at Southwest Rocks, NSW, in 2017 on Norfolk Island and in 2019 at Leeton, NSW and the ACT. This species has been recorded several times in New Zealand (both North and South Islands), nine times since 2016. However, much as it would have been nice to see a pattern between the sightings in Australia and New Zealand, I could discern none.

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## **COLUMNIST'S CORNER**

*Canberra Bird Notes* 44(3) (2019): 288-289

### ***The race is not to the swift***

You might not think the seriously literary *London Review of Books* ('LRB') would be a good source of information about birds. As it happens separate issues this year carried quite a bit of information about two kinds of birds, the common pigeon and the swift. The pigeon item was a review of a recently published book, *Secret Pigeon Service* by Gordon Corera. This was about use of pigeons during the Second World War, particularly in getting information from occupied Europe to the United Kingdom.

The reviewer gives the information that pigeons can fly extremely fast, up to 110 miles per hour. 'There are faster birds – peregrine falcons, the pigeon's main predator, can reach 200 miles per hour on the stoop – but none can fly horizontally, under its own power, as quickly as a pigeon.'

Less than five months later, in August, the same journal contained a shorter bird item, this time discussing swifts, in general but specifying as the main subject *Apus apus*, what some people (in London anyway) like to call 'the Swift'. This contained the following information:

They are the swiftest of all birds in level flight (a peregrine can outstrip them in a dive, but they can outfly her in a flat race); the top speed ever officially recorded was 111.6 km per hour, but there are reports of the needle-tailed swift, found in Africa and Asia, reaching 170 km per hour.

You will see where we are going here. Such a discrepancy could not go unnoticed by the alert LRB readership. A letter published in the 26 September edition referred to the claim that the pigeon was the fastest flying bird, and went on: 'I loved this unlikely fact which has become part of my children's education.' The letter then referred to the later piece about swifts and concluded: 'I should never have believed that stuff about the pigeon.'

But wait. *The Bird Almanac* (1999, 2004) by David Bird, under 'Records in the Bird World', contains a section on 'Locomotion'. (I am consulting here my own copy, signed by David on a visit to Canberra in 2006.) After the reference to the unchallengeable diving Peregrine, this authority offers the following:

fastest flapping flight: white-throated needle-tailed swift at 170 km/h (106 mph);  
fastest-moving racing pigeon: 177 km/h (110 mph)

This makes one wonder whether the pigeon gained the specified speed without actually flapping. We now have the advantage of several other sources which cite various bird speeds but, like the *Almanac*, do not give the source of the information. One of these, again, gives the Spine-tailed Swift [White-throated Needletail] as number one in 'level flying' (171 km/h, 106 mph). However that authority cites vaguely 'several sources' and cautions that 'you may find contradicting lists elsewhere'.

And then there is Wikipedia's 'List of birds by flight speed'. This is on the side of the pigeon. 'The greatest self-powered horizontal speed is achieved by Homing Racing Pigeons. ... they have been recorded flying at 177 km/h (110 miles per hour), making them the birds

with the fastest speed ever recorded on a self-powered flight.’ The given list of references does not, so far as I can see, produce evidence in support of the pigeon. Wikipedia’s reference to the BBC’s *Earth News* brings to light the advice that ‘the spine-tailed swift is reported as the fastest bird in level flight’, but adds that ‘the record is difficult to verify as the methods used to verify the bird’s speed have never been published.’

A reference to the Guinness Records site, unhelpfully, supports the conclusion that the level flight record-holder is a satellite-tagged Grey-headed Albatross at a modest 127 km/h (78.9 mph).

If a pigeon did really fly at 177 km/h, the question arises of possible wind-assistance. Under the Beaufort Scale, a ‘fresh breeze’ could assist to the extent of 38 km/h, and a ‘strong breeze’ up to 49 km/h, without looking at what help a pigeon might get from more extreme winds.

Here in Canberra we are, in a sense, at the centre of the issue. At the right time of year you would have a good chance of seeing in flight, if not at record-setting speeds, each of the three species in question: Peregrine Falcon, Spine-tailed Swift, and pigeon (homing and otherwise). You could also find another local record-holder in a quite different field (according to *The Bird Almanac*). This is our Australian Pelican: world record ‘absolute longest bill’ – 47cm.

*Stentoreus*

*Canberra Bird Notes* 44(3) (2019): 289-291

### ***Birding in Cyberspace, Canberra Style***

This issue of *Canberra Bird Notes* marks **the 20<sup>th</sup> anniversary of this column**. Although I have not checked every issue of *CBN* published since vol. 24, no. 3, September 1999, I am fairly confident that I have drafted a column for each one. For the first few years of the column, I focused on describing content from the national birding email discussion list, Birding-Aus. I wrote, ‘This column aims to share with *CBN* readers some of the highlights of the discussion which has taken place on the list that may be of special interest to Canberra region birders.’ That first column discussed the purported impacts on birding of lunar phases, new books, duck hunting, swooping magpies, using the Birding-Aus list for information exchange, its function as a national hotline (the first South Island Pied Oystercatcher for Australia had recently been identified), and Bell Miners.

A decade later, the column in vol. 34, no. 3, December 2009, reflected the fact that I had shifted the focus of the column from the Birding-Aus list’s content to birding in cyberspace more generally, although still using Birding-Aus as one source. I pointed out that, ‘Much has happened [since the first column in the series was published in 1999] in the world of cyberspace, including birders’ use of computers and the internet... The widespread use of broadband and computers with hugely better performance than a decade ago meant that files that would have been considered impossibly large to use are now routinely accessed from the web, uploaded to it and shared between net denizens. COG’s wonderful photo gallery... illustrates this...’ I discussed the development of birding portals on the web, the growth of cloud computing that had only just started at that time, the 29 October 2009 National Bird

Day, the Gould League of Bird Lovers, 'Killer Magpies', the Amazon Kindle e-book reader that had just arrived in Australia, the Common Koel, the recently launched Twitter, and the Birds Australia Rarities Committee's website. The column concluded with a mention of online reporting: 'A flock of budgerigars swarm across the fields at Boulia in the far west Queensland in October 15, 2009.' Clearly some things have remained topical, while new birding in cyberspace resources and issues have emerged. I wonder what the column will be discussing 20 years from now.

Turning to contemporary matters, you will probably recall that 19 October this year (2019) was *the second global birding October Big Day*. The organisers, from the Cornell Lab of Ornithology, summarised it as follows:

More than 18,000 eBirders from 164 countries and territories joined together on 19 October to go birding on the second October Big Day. The global count of 6,497 species broke last year's total of 6,360 species, setting a new October Big Day record! And for the seventh Big Day in a row, eBirders around the world recorded more than half of the world's bird species in a single day! eBirders also added 41,300 photographs of 2,345 species and 857 audio recordings of 309 species to their checklists, providing excellent documentation and memories for an epic day. Wow! <https://ebird.org/australia/news/october-big-day-results-a-new-record-and-more-than-6000-species-in-a-day>.

How does Australia, and the ACT specifically, compare with the results for birders from other parts of the world? I have calculated some rates. In the following table the jurisdictions are listed in descending order of the number of checklists submitted per 100,000 population:

19 October 2019 eBird Global Big Day, selected results				
Jurisdiction	Number of species reported	Rate*	Number of checklists	Rate*
ACT	118	0.28	52	0.12
NZ	138	0.03	332	0.07
USA	601	0.00	18596	0.06
Aust.	544	0.02	1143	0.05
NSW	326	0.04	310	0.04
UK	195	0.00	417	0.01
* per 100,000 population				

What stands out here is that the ACT's participation rate is approximately twice that of Australia, New Zealand and the USA. I am a little surprised that it is so much higher than the UK rate, owing to the long history of significant involvement in birding in that nation. Perhaps British birders still prefer to lock away their observations in notebooks that will be thrown out when they die, rather than submit their data to eBird?

Also of interest is that the rate of species recorded in the ACT on the Big Day, 0.28 species per 100,000 population, is far higher than for any of the other jurisdictions listed. Perhaps this means that the ACT birders put a big effort into recording the species diversity of this small jurisdiction, whereas elsewhere large proportions of the records were of common birds?

The American Birding Association (ABA) publishes its online ‘**aba blog**’ (it also has a podcast series). Earlier this year (23 May 2019), Ted Floyd published a blog post titled ‘Whither the field notebook?’ <http://blog.aba.org/2019/05/whither-the-field-notebook.html>. It contains advice to young birders about recording their observations.

One item that you may find of interest is his reference to including, in eBird checklists, the eBird taxon about which we sometimes chuckle disparagingly: ‘**passerine sp**’. This means, of course, that the observer identified the bird as a passerine, but could not identify to which species (sp.) it belongs. Rather than argue that this is a useless cop-out (fancy recording a bird when all you can say about it is that it is a passerine!) he argues that this is an important thing to record. (So does eBird in its help files: <https://tinyurl.com/u9o9zee>). Referring to his eBird checklist, which forms the basis of the blog post, Floyd writes:

Keep on going to the bottom, where my checklist ends with something of a dud: “passerine sp.” But it’s an honest entry. I think the bird probably *was* a Great-tailed Grackle, but, whatever it was, it was far away, I didn’t hear it well, and I didn’t see it at all. Which reminds me of some advice not from me or any other judge in the Young Birder of the Year contest, but, rather, from Nobel laureate Peter Medawar, one of the most important figures in the field of immunology. This is from Medawar’s classic and still very relevant *Advice to a Young Scientist* (1979):

*I cannot give any scientist of any age better advice than this: The intensity of the conviction that a hypothesis is true has no bearing on whether it is true or not. The importance of the strength of our conviction is only to provide a proportionately strong incentive to find out if the hypothesis will stand up to critical evaluation.*

Medawar wasn’t a contest judge, as I said, and, as far as I am aware, he wasn’t a birder. But he might as well have been. Because that’s the best advice I could give to any birder of any age or generation. (<http://blog.aba.org/2019/05/whither-the-field-notebook.html>)

Have you ever recorded ‘passerine sp’ on a birding checklist? If not, might you in the future, based upon the opinion presented in this blog post?

### ***T. Javanica***

This column is available online at <http://canberrabirds.org.au/publications/canberra-bird-notes/>. There you can access the web sites mentioned here by clicking on the hyperlinks.

To join (subscribe to) the *CanberraBirds* email discussion list, send an email message to [canberrabirds-subscribe@canberrabirds.org.au](mailto:canberrabirds-subscribe@canberrabirds.org.au). The subject line and body of the email can be empty.

To unsubscribe, either permanently or temporarily, send an email message to [canberrabirds-unsubscribe@canberrabirds.org.au](mailto:canberrabirds-unsubscribe@canberrabirds.org.au). If you wish to re-subscribe after being unsubscribed temporarily, simply follow the ‘subscribe’ instructions above.

The *CanberraBirds* list’s searchable archive is at <http://bioacoustics.cse.unsw.edu.au/archives/html/canberrabirds>.



## PRESIDENT'S REPORT 2017-18

The 2017-18 was a steady year for COG.

The year saw COG maintain and enhance its very effective collaboration with the ACT Conservation Council, strengthen its partnership with the Woodlands and Wetlands Trust including through signing an MOU, and work actively with the BIGnet group of NSW birding clubs meeting on matters of mutual interest and concern. We will be host to next year's meeting of bird clubs from all over NSW.

The Committee is busy working on plans for a number of projects for next year, including a member survey, ongoing database matters and further development of a Committee-only admin area accessible on our website.

### General

We have all enjoyed Sandra Henderson's goal for this year – a new birding spot every week! Sandra has challenged us with monthly reports in *Gang-gang* with her endeavour to go to at least one new place each week. Thanks, Sandra

Ryu Callaway had many of us out looking at cockies. His Sulphur-crested Cockatoo and Little Corella roost sites survey has been very interesting and revealed some very large and regular roosts. Thanks to Ryu

The most left-field news this year came from Kay Hahne and Philip Veerman. At the June meeting we got to see an "historical item of interest". According to Jenny Bounds, it was a roller (as the Lilac-breasted variety.) This gadget was the brainchild of Philip Veerman, who wanted some kind of aid to help him with data entry from the many Garden Bird Charts handed in each year since 1981. Well done Kay and Philip. [cf spelling above]

Finally, I acknowledge two COG members who received awards this year.

Ian Fraser OAM Australia Day

Alison Russell-French OAM Queen's Birthday

Congratulations to both.

### Gang-Gang Newsletter

Hard-copy of the *Gang-gang* newsletter ceased from 1 July 2018. Over recent years, COG's income has not covered its outgoings, and COG has an ongoing annual deficit. In March, the COG Committee considered options for reducing this shortfall. After much discussion, a decision was made to cease the printing and distribution of hard copies of the *Gang-gang*

newsletter. The Committee values the newsletter and all contributions to it and is committed to continuing its production.

This move will result in a considerable saving and will mean that membership fees will not need to increase this year. The Committee also considered that cessation of printing was an environmentally responsible thing to do.

*Gang-gang* will continue to be available on the COG website, as a colour pdf that can be downloaded and printed if you wish. The majority of the membership already access *Gang-gang* on the website, and some have been doing so for many years.

### **Committee**

In 2017-18, COG has again been very well-served by a dedicated and enthusiastic Committee and I would like to take this opportunity to thank them all for their contributions.

We started the year with the two executive members and seven committee members and with the positions of Treasurer and Vice President vacant. Lia Battisson agreed to act in the role of Treasurer and has done that for the whole year. This has been a wonderful continuing contribution from Lia. Steve Read stepped up from Committee member to Vice President during the year. I would like to acknowledge Steve for that appreciated involvement.

On the committee we started the year with Jenny Bounds, Sue Lashko, Lia Battisson, David McDonald, Paul Fennell, Nick Nicholls and Steve Read. Prue Watters then joined during the year. With Lia remaining as Acting Treasurer and Steve becoming Vice President, we effectively had an Executive of four: Neil Hermes (President), Steve Read (Vice President), Bill Graham (Secretary) and Lia Battisson (Acting Treasurer), and a committee of six.

Jenny Bounds (Conservation Officer),

Chris Davey (Records Management and Survey),

Sue Lashko (Editor of *Gang-gang*, meeting-room organizer and Outings Officer),

Paul Fennell (management and oversight of the COG Database),

David McDonald (advice on COG Constitution and policy issues) and Chatline

Bruce Lindenmayer (connecting COG with CIMAG).

### **Retiring Committee**

On behalf of the Committee I would like to extend our thanks to those Committee members who are standing down:

Lia Battison: Treasurer on three occasions since 2003

Sue Lashko: since 2005, Editor of *Gang-gang*, meeting-room organizer and Outings Officer)

They have been stalwart supporters of and contributors to the Committee for 28 years between them.

As well as Committee members, we have been well served by a number of other members who have provided invaluable service to COG: Jack Holland, COG's Public Officer, is responsible for the members' meetings speakers program, which has been both fascinating and broadly focused over the year; Sandra Henderson manages COG membership and the monthly raffles; Michael Lenz produces the *Canberra Bird Notes* with the help of Kevin Windle; Duncan McCaskill manages the Garden Bird Survey; Barbara Allan is responsible for the Bird Blitz and the Rarities Panel; Nicki Taws is the COG Records Officer; Kathy Walter and John Goldie manage the sales desk; Julian Robinson continued as Website manager; Dianne Davey distributes COG publications. Bruce Lindenmayer generously



volunteered to assist with the tea and coffee we have after meetings. All of these people have generously given their time to help COG members and the organisation.

### **Updated Annotated Checklist of the Birds of the ACT**

COG's Annotated Checklist of the Birds of the ACT was updated in November 2017, under the authority of the Committee of COG.

The new version is dated 22 November 2017 and contains 305 taxa. The taxonomic order and nomenclature—English and scientific names—used in this checklist largely follow Birdlife Australia's Working List of Australian Birds, version 2.1 (BLA's WLAB), in accordance with COG's policy on the matter. The 'Status' column reflects the likelihood that an experienced birder would record the species during a day of bird observing, at the right time of year, in the appropriate habitat. The Checklist identifies threatened species, i.e. those declared Endangered or Vulnerable in the ACT or NSW.

Under the auspices of COG's Committee, David McDonald prepared the 2017 revision, supported by Chris Davey and with inputs from some other COG members.

The main updates reflect:

- Changes to BLA's WLAB taxonomic order and nomenclature, e.g. changing the Australian Pipit to Australasian Pipit and *Ninox novaeseelandiae* to *Ninox boobook*
- Additions to the ACT list that have been endorsed by COG's Rarities Panel, e.g. Tawny Grassbird, and
- Changes to the status of some species, e.g. White-bellied Sea-Eagle changed from non-breeding to breeding.
- In addition, the Supplementary List that was appended to the previous (2014) edition is no longer present. This is because it included many species for which there are no accepted records.

These have been deleted, and the species in the former Supplementary List with valid ACT records have been moved into the single, consolidated, Annotated Checklist. The status of the re-introduced species, e.g. Magpie Goose and Bush Stone-curlew, has been clarified. Thanks to David McDonald

### **COG Membership**

There are currently 447 members, including family memberships counted as 2, and 2 organisational members of COG.

To all our continuing members, you are a vital part of our organisation and your support for COG is very much appreciated.

### **Steve Wilson Medal 2017**

The Steve Wilson Medal Sub-Committee (Neil Hermes, Alison Russell-French and Bruce Lindenmayer) has selected Dr Michael Lenz as the recipient of the 2017 Steve Wilson Medal for 2017 (see *CBN* 42(3) (2017), p. 317 for details).

### **Conservation**

Jenny Bounds continues as Conservation Officer, and represents COG in various forums and stakeholder groups, such as ACT Grassy Woodland Stakeholder Group, and the Kosciuszko 2 Coast (K2C) forum. COG has again collaborated with the Conservation Council ACT and other groups to progress conservation matters impacting on birds,

particularly those relating to ongoing greenfield development in Gungahlin and the Molonglo Valley, and the implementation of offset arrangements.

This year COG has provided submissions/comment on these main issues:

- Molonglo Valley Stage 3 EIS Exemption application – COG did not support this. It included development boundary changes and the unresolved buffer for Kama Nature Reserve from future housing. COG has long advocated a substantial and effective buffer for Kama to mitigate urban-edge effects. The submission noted that the urban development in Molonglo has had significant detrimental impacts on birds, particularly on birds of prey and the Brown Treecreeper population in the Valley.
- Molonglo River Reserve draft Plan of Management released for public comment – a key matter, the width of the buffer for Kama NR, was not defined in the draft Plan.
- A submission to the ACT Legislative Assembly's Nature in our City Inquiry. COG raised the need for whole-of-landscape planning into the future (instead of site-by-site planning), the ongoing loss of scattered, mature eucalypts, inadequate urban-edge buffers and poor urban/bush interface management, and the extension of cat containment in the ACT.
- Ongoing consultation with Local Land Services in NSW concerning management of local TSRs important for birds, e.g. Nelanglo near Gundaroo.
- Hot air balloon trials at Jerrabomberra Wetlands early in 2018.
- Attendance and input to the K2C forum. In the last twelve months a key issue has been the future of K2C, given the lack of project funding opportunities to continue the group's important on-ground landholder engagement and land connectivity initiatives in the region.
- Ongoing work through the ACT Conservation Council's Biodiversity Working Group on:
  - offset arrangements, to assess the outcomes of biodiversity enhancements at sites; and
  - future planning issues on the western edge of Canberra (possible development front west of Molonglo suburbs and west of the Murrumbidgee River at Point Hut Crossing); this will have significant environmental implications for the river corridor.

In 2015/16 COG partnered with several other groups under the umbrella of the Conservation Council ACT to submit a nomination to have clearance of hollow-bearing trees (mature eucalypts, including paddock trees) declared a threatening process in the ACT. Jenny Bounds prepared material concerning impacts on two listed ACT bird species (Superb Parrot, Brown Treecreeper), based on COG's surveys of Superb Parrots in Gungahlin and Molonglo Valley, a study of Brown Treecreepers in and around Kama Nature Reserve by Chris Davey, and also COG database records. The nomination was considered and expanded by the ACT Scientific Committee, with a positive outcome in September 2017.

## Surveys

COG continues to conduct or have members participate in various bird surveys:

- K2C twice a year (Nicki Taws coordinator for Greening Australia)
- Jerrabomberra Wetlands/Fyshwick Sewage Ponds (quarterly surveys, Chris Davey, Sue Lashko and others)
- Latham's Snipe surveys (coordinated by the Woodlands and Wetlands Trust)
- Annual Lyrebird survey at Tidbinbilla NR (Chris Davey, Peter Fullagar)
- Lord Howe Island annual survey in September (Chris Davey, Peter Fullagar)

- Lake Bathurst and Lake George (Michael Lenz)
- The annual COG Blitz in October (Barbara Allan coordinator)
- The annual ANU bird surveys at Mulligans Flat and Goorooyarroo reserves (part of the long-term woodland experiment).

### **Woodland Bird Monitoring Project**

COG's long-term woodland survey at 15 locations (142 monitoring points) continues. Jenny Bounds coordinates the project's operations. Many thanks are due to the team of COG members and their helpers who survey the sites quarterly. The commitment of the site coordinators over time is a significant factor in the success of this survey and deserves recognition. With more than ten years' data at all sites (some sites since 1995), COG is in a position to plan and undertake a significant analysis of this data in the future.

### **The COG website**

During the year the COG website was visited by an average of 200 different people each day, similar to last year. Newly available statistics reveal some possibly surprising patterns of usage. I would like to thank Julian Robinson for his ongoing efforts in managing and maintaining the COG Website.

### **Records Management**

Essential support for the COG database is provided through the Records Management Team and the Rarities Panel. I would like to acknowledge the contributions provided by Nicki Taws as Records Officer, Tony Harding, Helen Mason and many others for data entry and to the members of the Rarities Panel consisting of Richard Allen, Jenny Bounds, Grahame Clark, Dick Schodde, Nicki Taws and Barbara Allan (Secretary), who have all offered to continue in their various roles.

### **Outings**

Once again COG has been able to run a very comprehensive outings program, and our special thanks go to Sue Lashko for all her efforts in making this a great success for COG members. This is a vital part of COG's activities and the fact that the planned outings for the year are mostly fully attended is testimony to their popularity.

In addition to the scheduled outings, the ad hoc group that has organised the Wednesday walks has once again operated most successfully and managed to attract a most enthusiastic and intrepid group of followers, with outings taking place each month, notwithstanding some very testing weather conditions this year. On behalf of COG members, our thanks to Martin Butterfield and others for organising these events.

### **Canberra Bird Notes**

I would like to thank Michael Lenz and Kevin Windle for their great work as Editors of the *Canberra Bird Notes* and all those who have contributed to *CBN* over the past year. *CBN* is a well-respected and valued source of information about the birds of the Canberra region.

Particular appreciation is also due to Paul Fennell and Jaron Bailey for their work on the Annual Bird Report.

### **Monthly meetings**

Jack Holland has arranged yet another most interesting year of both local and interstate speakers at the COG monthly meetings in 2017-18. I would like to thank Jack for his

sterling efforts in bringing to the members engaging and informative presentations each month.

Our appreciation to all those who have assisted with the provision of the refreshments that follow the monthly meetings, and to Sandra Henderson for taking on the responsibility of providing the raffle prizes and selling the tickets. All of these add to the enjoyment of the occasions and provide an opportunity for members to socialise.

### **CanberraBirds email announcement and discussion list**

At the end of the year [i.e. 2018?], COG's CanberraBirds email announcement and discussion list had 324 subscribers, a similar number to the same time last year [i.e. 2017?]. The list, managed by David McDonald, continues to provide a useful forum for people to discuss the birds of the Canberra region, their environments, and COG's activities.

New subscribers, including people new to birding who seek support from more experienced birders, are welcome to subscribe. During the year there were 2,723 emails distributed over the list, an average of about seven per day. The list manager has commended subscribers for the way they use the list: positively, productively and politely.

### **Canberra Birds Conservation Fund (CBCF)**

The Fund, established in the year 2000, is a tax-deductible gift recipient, and members and friends of COG are encouraged to donate to it. During the year, the Fund provided support to one project that contributed to the achievement of its conservation objectives. The recipient was the Woodlands and Wetlands Trust and the funds were provided to enable the Trust to purchase binoculars for use in its new introduction to birding courses, conducted at Mulligans Flat.

The Committee of Management of the Fund (Dr Penny Olsen, Geoffrey Dabb, David McDonald) invites enquiries from people seeking financial support for projects that are consistent with its environmental objectives. Although most of the projects funded to date have been academic research, the Fund can support any projects that encourage interest in, and develop knowledge of, the birds of the Canberra region; promote and co-ordinate the study of birds; and/or promote the conservation of native birds and their habitats in the Canberra region. COG members are encouraged to promote the Canberra Birds Conservation Fund, encouraging friends and businesses alike to make tax-deductible donations to it in the interests of the birds of the Canberra region and their environment.

### **In conclusion**

I thank all the COG members who have actively contributed over the year to COG and our many and varied activities. COG is well recognised for its effectiveness as an organisation dedicated to the conservation and enjoyment of birds.

COG continues its work in conserving our birds as well as providing a great organisation for those who love birds.

Neil Hermes  
President  
10 October 2018

## **THE 2018 RECIPIENTS OF THE STEVE WILSON MEDAL**

At the 2018 AGM, Sandra Henderson and Richard “Dick” Schodde were awarded the Steve Wilson Medal following assessment by the Steve Wilson Medal Committee (Neil Hermes, Alison Russel-French and Bruce Lindenmayer).

### ***SANDRA HENDERSON***

Sandra joined COG in 2006, after being captivated by a Golden Whistler at Lowden Forest Park while on a COG tour run by Ian Fraser. Within a few weeks Sandra was in the role of secretary, which she undertook for 9 years. At the same time she took on the role of memberships officer, a role she continues in to today.

Sandra loves the COG outings program and feels strongly that to get something out of it, you must be more involved, which is why she now organises/leads several outings each year. She says it allows her “to show off some of my favorite new places of the last few years”.

Running monthly raffles for the last few years lets Sandra indulge her love of books and bookshops, but she also like the brief chats with members as they arrive at meetings.

Sandra got involved in woodland surveys quite early on in her time with COG and has done Callum Brae surveys for over 10 years, and more recently the Isaacs Ridge surveys. She enjoys helping Lia with many of COGs promotional activities at various open days.

### ***RICHARD “DICK” SCHODDE***

Dick was former Curator/Director of the Australian National Wildlife Collection at CSIRO, is one of Australia’s most widely known professional ornithologists, internationally as well as nationally. He founded the Australian National Wildlife Collection, has published almost 200 scientific papers and a number of books on the taxonomy and biogeography of Australia’s birds. He was the first Honorary President of the recently formed International Ornithologists’ Union where he still serves as the Chair of the Union’s Working Group on Avian Nomenclature.

Dick joined COG in the first year of its existence in the early 1960s, but only became active in the early 1970s after shifting to ornithology in CSIRO’s Division of Wildlife Research. He served on the COG committee for several years before becoming President from 1976 to 1978 and was remarkably unsuccessful in getting meetings to start on time. In his last year as President, when COG was charged with organizing the then RAOU’s annual field outing, he led the initiative to hold that event on Norfolk Island and carry out the first methodical survey of the island’s bird fauna. The resulting report, written with other COG members Peter Fullagar and Neil Hermes, was the first published record of an RAOU field program in over a decade, and the last ever.

Dick has given diverse talks to COG meetings over the years, regularly contributed “bird of the month” through the 1980s, and led excursions then, mostly to Jindalee near Cootamundra. Dick produced the COG pocket list of Australian birds in the 1980s and 1990s which provided COG with valuable funds, and still serves on COG’s Rarities Panel.



## THE 2019 RECIPIENTS OF THE STEVE WILSON MEDAL

At the 2019 AGM, Sue Lashko and Paul Fennell were awarded the Steve Wilson Medal following assessment by the Steve Wilson Medal Committee (Neil Hermes, Alison Russell-French and Bruce Lindenmayer).

### **SUE LASHKO**



Sue has been birding for 56 years and joined COG in 1999. She has been editor of Gang-gang since 2004, field trip organiser since 2009 and served on the committee until 2018.

Sue has led many COG field trips from morning and day trips around Canberra, to 5 day trips to the coast focusing on waders, to extended camping trips to a range of sites in western NSW.

As a surveyor Sue has been part of the Mulligans team since 2000, woodland surveys at Newline since 2007 and Superb Parrot surveys at Gungahlin. Sue has been on the Jerrabomberra Wetlands quarterly survey teams for the past 5 years.

### **PAUL FENNELL**



Paul became a member of COG in the early nineties. In 1993 became Vice-President and President in 1996.

In 1997 Paul took over the management of the general bird data base and the Woodland Survey Database, starting an arrangement that went on for over 20 years. Part of this role was to ensure that the required information for each Annual Bird Report was compiled for the authors of the various species reports. In 2007 Paul took over the editorship of the ABR and is currently preparing

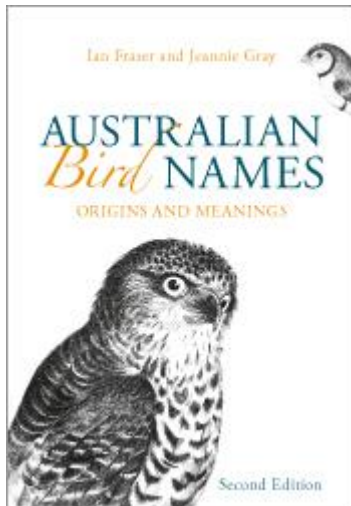
for the 2018-19 edition. In 1999 he led the group compiling the first edition of the Birds of Canberra Gardens, published in 2000. Paul was editor of the second edition in 2009, which is now out of print.

## BOOK REVIEWS

Canberra Bird Notes 44(3) (2019): 300-302

**Australian Bird Names: Origins and Meanings. (2<sup>nd</sup> edition). By Ian Fraser and Jeannie Gray.** CSIRO Publishing, Clayton South, September 2019, ISBN: 9781486311637, Paperback, xviii + 347 pp., RRP \$AU 54.99

Reviewed by KEVIN WINDLE, Pearce, ACT 2607 (Kevin.Windle@anu.edu.au)



This is the second edition of the very successful volume first published in 2013 and reviewed in these pages by Geoffrey Dabb (CBN 38/2, June 2013). It comes with a new subtitle: no longer ‘a complete guide’, instead ‘origins and meanings’, although its completeness is hardly in question. In its coverage of the field it is nothing if not catholic: it aims to include all species known to have occurred in Australia, and all their many names – vernacular, scientific, historical or regional. Few can have escaped the compilers’ notice.

Fraser and Gray explain the need for a new edition only six years after the first by reference to recent additions to the bird list and major changes in the taxonomic context. The Christidis and Boles list has given way to that of the International Ornithologists’ Union, with all that this implies for nomenclature and the order of species. Additional local names have come to light, many contributed by readers or found in the press with the aid of the National Library’s ‘Trove’ project. A paragraph has been added to the prefatory material on the ever-vexed question of hyphens in bird names, and the extensive bibliography has been revised.

In other respects, amendments to this splendid work appear to be minor. Some of the comments below apply equally to the first and second edition. For the etymology of names of Old World species, *The Oxford Dictionary of British Bird Names*, by the eminent Germanist and philologist William Lockwood, remains a prime source, as it should. It enables Fraser and Gray to follow some derivations far back into the history of the Indo-European language family. For purely Australian names and those from other languages, the standard English dictionaries are relied on. Etymology, of course, is not an exact science and when the origins of names are disputed or obscure the compilers take care to make this clear.

This book is probably unique in offering explications not only of common names, but also of scientific names. The translations, always interesting, are often intentionally comical, but some, it must be said, are rather uninformative: *Carduelis carduelis* is glossed as ‘goldfinch-goldfinch’, which is accurate enough but fails to point out the connection with *carduus*, thistle. Why not the well-attested ‘thistlefinch’, which is listed under ‘Other names’? Other translations seem questionable. *Milvus migrans* (Black Kite) is said to mean ‘nasty migrating kite’, which surely over-emphasises a secondary semantic component. After all, Pieter Boddaert, who gave us the name, may have been thinking simply of a raptor, rather any intrinsic nastiness. And would this make its Old World congener *Milvus milvus* (Red Kite) ‘nasty kite nasty kite’?

Much is made of the pronunciation of scientific names. However, given the proviso, repeatedly emphasised, that ‘there is *no* definitive right way to say them’ (p. xvii, F. & G.’s emphasis), one wonders whether it was really necessary to devote heroic efforts to the production of laboured ‘phonetic’ renderings such as *a-kan-tho-RIN-kvs te-noo-i-ROS-tris* (Eastern Spinebill) and *s-yoo-do-bvl-WEH-ri-uh ro-STRAH-tuh* (Tahiti Petrel). The chosen system of transcription requires three dense paragraphs of explanation (pp. xvii-xviii), and is not always observed. Geoffrey Dabb has pointed out that if it were followed closely, *gerygone* would require ‘ee’ for its final vowel. The form *dje-RI-go-ne* (p. 209 and later) gives a short final /e/ as in ‘hen’, surely at odds with general usage.

If some of the effort expended on the pronunciation of scientific names had been directed instead to common names, where aberrations are less likely to pass unnoticed, helpful guidance might have been provided, *e.g.* which syllable to stress in *garganey*, a species little known to Australian observers. Lay people have been heard to make ‘plover’ rhyme with ‘drover’. ‘Senegal’ is sometimes mispronounced (Senegal Spotted Dove, Laughing Dove). Messieurs Baillon and Vieillot present no difficulty to those with some knowledge of French, but matters are less straightforward when these appear in their possessive form, Baillon’s Crake and Vieillot’s Storm-Petrel (White-bellied Storm Petrel), where some awkward compromise is required.

The bibliography lists an impressive range of sources, spanning many continents, more than two millennia, and several Romance and Germanic languages. Ovid, Aristophanes, Pliny, Ctesias and Homer (Rieu’s translations) figure in it. Rabelais is included because a good gargantuan blow-out would be incomplete without roast *tadornes* (Shelduck). Classics of zoology in Latin, German and French are well represented. I found no titles from Slavonic languages, although Janusz Strutyński’s *Polskie nazwy ptaków krajowych* (Polish Names of Native Birds, Wrocław 1972), an etymological study which ranges wider than its title suggests, might be a useful addition.

A work of this kind requires meticulous attention to detail in every area, and it is clear that the compilers have been very thorough, but occasional defects remain. A sentence in the added paragraph about hyphens has lost its subject (‘However, does retain ...’, p. xiv). The Pechora river (see Pechora Pipit), being well to the west of the Urals, is not, properly speaking, ‘in western Siberia’.

Small flaws appear in the bibliography, now extensively revised: *Acathiza* should read *Acanthiza* (p. 291). The two parts of a work by Alexander von Middendorff are widely separated, the first listed under M and the second under von, with an /f/ dropped from his surname on the second occasion. Salvin has been inserted between two titles by Salvadori.

Errors apart, the relentlessly jocular tone, unusual in a work of reference, may not be to the liking of all users.

Technical production is of a high standard. A small defect in an otherwise very handsome volume is the very tightly packed page. In my copy, with pages printed on a slight outward slant, the space at the foot is sometimes a mere three millimetres on the left, slightly more on the right.

These, however, are small quibbles. In truth there is little for the carping critic to cavil about. All in all, *Australian Bird Names: Origins and Meanings* is a most valuable reference

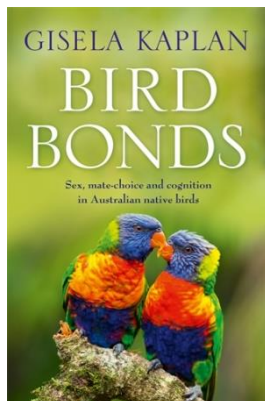
work, rich in interesting information of a kind not easily found elsewhere. It is good to see that CSIRO Publishing appreciates the need to keep it up to date.

*Canberra Bird Notes* 44(3) (2019): 302-303

***Bird Bonds.* By Gisela Kaplan.** Pan Macmillan Australia, Sydney, 2019. ISBN: 9781760554200, Paperback, 354 pages, \$AU34.99.

*Reviewed by CORNELIS (CON) BOEKEL, TURNER, ACT (con@boekel.com.au)*

Just how much are birds like humans? Kaplan's view is that birds are a lot more like us than we had generally supposed. The book targets birdwatchers, nature lovers and researchers.



One of the book's prisms is a shift in research emphasis from a focus on the evolutionary benefits of competition and aggression to the benefits of cooperation and closer bonding. The particular focus is sex, mate-choice and cognition in Australian birds. The book frequently moves between theories and research on the human brain and human behaviour, and related research into the bird brain and bird behaviour. Nature, nurture, the selfish gene, altruism, competition and cooperation are some of the themes running through the book. A vast and rapidly increasing body of research into both human and bird brains, and related behaviour, is analysed with critical diligence. It says much for the book that this reviewer now regards 'bird brain' as

a compliment rather than as an insult.

Kaplan demonstrates the peculiar advantages of Australian birds as research subjects. Australia has provided the world with songbirds. Our birds are generally more long-lived than birds elsewhere. Most of our birds form long-term pair bonds. Australian birds have relatively large brains. In some species these brains keep absorbing learning and the brain itself may be plastic to experience. Most of our birds are, at least to the human eye, monomorphic. Our female birds sing. They make choices. Much behaviour within the pair bond is cooperative and reinforcing.

Kaplan provides fascinating insights into the interplay between hormones and behaviour. As with humans, so with birds. Too much stress and both human and bird health suffers – with profound evolutionary consequences. Long-term pair bonding in birds benefits from and encourages the development of cognition, and reduces damaging stress.

The book pushes the boundaries of our understanding of bird cognition, bird emotion and bird decision-making. It seems to me that some of the theoretical and research underpinnings for Kaplan's views are relatively settled, some remain contested, some are highly controversial, some are lightly supported, and some are speculative. The actual and potential ramifications of the book for humans range from the existential to the immediately practical. Will we take a page from the book of birds and learn to cooperate better before we compete ourselves out of existence by way of global warming? What are the conservation management implications for duck hunting and kangaroo culling in relation to both additional stress and the dissolution of long-term pair bonds? Will birds which have evolved under the current relatively stable environmental conditions be able to adapt in time to

address the extremely rapid environmental changes consequent to global warming? What government responses are appropriate? Here, we Canberrans have a straw in the wind. In September 2019 the ACT became the first jurisdiction to pass legislation recognising animals as 'sentient beings'. The law recognises that animals can feel and perceive the world around them, and deserve to have a quality of life that reflects their intrinsic value.

The book gives pleasing glimpses of Kaplan the person and, one and the same, Kaplan the scientist. What shines through is that she regards birds with wonder, affection, curiosity and concern. Examples include her responses to the death of the Princess Parrots and her rearing of an orphaned Eastern Rosella. That she does not let her feelings interfere with her learning from these incidents adds much to the interest of the book. Her concern extends to the conservation status of several of the endangered species discussed in the text. Then, importantly, there is her justified personal irritation with, and scientific objection to, some of the male biases evident in research priorities, findings and interpretations.

The book is copiously illustrated and the illustrations meet one benchmark well: they serve to illustrate the points being made by Kaplan. There are some superb individual images – including, for example, the Australian Magpie on a cold morning, and the courtship flight of the Whistling Kite. But the quality of several of the illustrations does not match the quality of the text. Inexplicably, several images crop off the crowns of the heads of the birds when a very small downsizing would have fitted the bird into the picture space. Some images are soft. In some, whites are blown. In some, blacks are clipped. This is all doubly disappointing given that there are some 23,000 quality Australian bird images in the Birdlife Australia Photography Group's galleries, a good many of which are freely available for purposes such as this book.

The extensive glossary is very useful. Given that the book discusses complex theoretical issues and assesses research outcomes from within a variety of specialised research disciplines, there are many technical terms. The definitions given in the glossary make many of these terms readily accessible to the layperson.

The quick reference list of birds named in the book is useful. It does contain errors and some odd usages. Thus, for example, 'Australian koels' for 'Australian Koel', 'Domestic ducks, *Anser domesticus*' for Domestic Goose *Anser anser domesticus* and 'Biziura lobate' for *Biziura lobata*.

As I write the last few words of this review, 'our' resident Australian Magpie pair (I assume here that they are male and female) are just outside the window. For the first time I consciously observe these two birds carolling in tight synchrony. They are matching each other in notes, tempo and loudness, as well as the associated physical movements with beaks pointed skywards. They are demonstrating some of the behaviours of the kind discussed and analysed in the book – preening in synchrony and calling in synchrony. One of the many gifts of the book is that it has opened my eyes to new ways of seeing and interpreting the behaviour of old feathered friends.

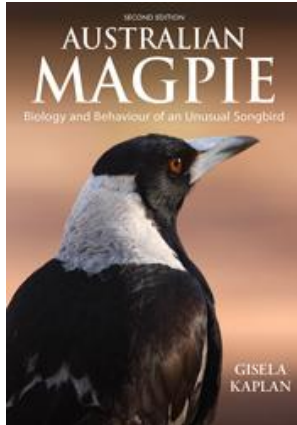
I found the book to be wonderfully informative and stimulating. I heartily recommend it. At \$34.99 it is excellent value.



Canberra Bird Notes 44(3) (2019): 304-307

**Australian Magpie. Biology and Behaviour of an Australian Songbird. By Gisela Kaplan.** CSIRO Publishing, Clayton South, Victoria. Second edition, 2019, ISBN: 9781486307241, Paperback, 280 pages, RRP AU\$ \$45.

*Reviewed by GEOFFREY DABB, Narrabundah, ACT 2604 (gdabb@iinet.net.au)*



CSIRO Publishing has now built up a long list of fauna-related titles. One component, the 'Australian Natural History Series' is a set of easy-to-handle soft-cover volumes. They are claimed to be written in 'a clear accessible style which is suitable for upper secondary or undergraduate level readers, as well as naturalists'. By my count, birds are the subject of 9 of the 19 volumes in the set.

At the time of writing the latest is this second edition of Gisela Kaplan's book about the Australian Magpie. The introduction explains that much has been learned about magpies since the first edition in 2004. 'The astonishing advances that we have made in understanding what birds are about have been infinitely strengthened by cross-disciplinary research in neuroscience, ethology, comparative psychology, ecology and biology'. ('Ethology', a word you must know if you are reading Kaplan's book, means, put briefly, 'the scientific study of animal behaviour'.) Moreover: 'Biogeography, palaeontology and taxonomy of Australian birds have taken a very dramatic turn since 2004.'

The author claims that the book 'literally covers most of the research ever published about magpies, even if summarized briefly, and can be pursued in whatever direction a reader's interest is piqued.' At the same time, the 214 pages are sprinkled with anecdotal observations, many the author's own. The summarized research findings and related observations are woven into a discussion under each of these chapter headings:

1. Origins 14 pages (evolution, phylogeny, relationships)
  2. Which is the 'real' magpie? 12 pages (taxonomy, subspecies)
  3. Anatomy 14 pages
  4. The brain and the senses 15 pages
  5. Diet and cognition in foraging 23 pages
  6. Managing a territory 20 pages (incl. defence against predators)
  7. Bonding and breeding 16 pages
  8. Caring for the young 23 pages
  9. Social rules and daily life 20 pages
  10. Song production and vocal development 19 pages
  11. Communication 20 pages (incl. non-vocal, purpose of different calls)
  12. Magpies and humans 14 pages (incl. swooping)
- Epilogue: the success of magpies 2 pages (trends)

The author is clearly of high repute in her own field, having regard to the positions she has held, and the 30-odd publications she has written or contributed to that warrant citation in this volume alone. Most of that work relates to animal behaviour, and much to the magpie in particular.

However, any review must point out that the style of the first edition has been described as ‘idiosyncratic’, and marred by ‘unclear writing’. Another criticism is that ‘lapses into anthropomorphism ...[may have] mislead a lay audience’. Those critical comments, admitted to be ‘harsh’, are to be found in a review in *Emu* in 2005 (‘the 2005 review’). The reviewers clearly felt that the first edition fell short of the standard to be expected in a scientific work. The grounds for criticism appear to extend to this second edition, although one ground of complaint, the absence of an index, has certainly been rectified. (If you look up ‘Canberra’ in the index you will find several references to the pioneering work of Robert Carrick – as well as to the matter of magpies holding court (see below)).

That criticism comes from a particular viewpoint, and raises the question of the audience to which the book is directed. Many readers might like the loose, often speculative, style in which the book is written, with many illustrations of behaviour of an anecdotal nature using the language of human interaction. That is how some people like to talk about birds. Here are two passages to illustrate:

There were several cases in which the female of the breeding pair completely destroyed the eggs in the other nest as well as the nest itself. If there was ever an angry magpie she demonstrated her anger by loud and sharp vocalisations while ripping the nest apart. The female brooding on the then destroyed nest was a daughter from an earlier year. There was no obvious male partner attached to the daughter – reminiscent of situations and attitudes towards pregnant teenage girls in human society. The daughter was allowed to stay after motionlessly watching her mother’s actions and then showing all the submissive gestures that the mother seemed to require even after the nest was destroyed.

The following appears two paragraphs on:

All these examples may or may not represent unusual events and overall may account for a relatively small percentage of normal life among magpies. However, their variability, even if some events are rare, suggests something about the flexibility of magpie social relations and interactions with their environment and specific territorial conditions. Again, one may well be reminded of human social relationships.

The 2005 review mentions the then yet-to-be published HANZAB Volume 7, which was to contain ‘more than 100 pages of text’ on the magpie. Now we have that HANZAB volume we can compare it with the second edition of the Kaplan book. HANZAB is certainly more logically organized, and easier to refer to, but the Kaplan book with its many interesting photographs (not always explanatory of the text) would be easier to read ‘horizontally’ to use Kaplan’s expression. HANZAB is a great dump of summarized published material, which in general fails to evaluate the compressed snippets of offered information. As it happens Gisela Kaplan is one of the most-cited authorities in the HANZAB magpie entry, generally on the basis of the 2004 edition. I would expect that for most people the Kaplan volume will be more readily available than HANZAB, but that is another issue.

Curiously, unless I am missing something, Kaplan’s 2019 edition makes no mention of HANZAB, except to cite her own contribution to Volume 7(A) relating to ‘Australian magpie voice’. Of course many of the works referred to in HANZAB are cited by Kaplan directly.

One of the authors of the 2005 review appears to be Darryl Jones who, in common with Gisela Kaplan, has been interviewed more than once on ABC radio on the recurrent subject of magpies. He is also the author of his own popular book on magpies. This is *Magpie Alert: Learning to live with a wild neighbour*, 2002, UNSW Press.

I would guess that many Australian readers with an interest in nature will enjoy reading, or at least looking through, this second edition. However, if they are seeking information for an important purpose, some caution should be exercised. To show the reason for caution, I give two examples.

The first relates to predators taking magpies. At page 93 is a set of photos showing 'Local avian predators of birds that may take juvenile or even adult magpies'. The species shown are – Black-shouldered Kite, Brown Goshawk, Wedge-tailed Eagle, Little Eagle, Peregrine Falcon.

In its 'Threats' section, HANZAB says that magpies are often killed or injured by cats or dogs but does not mention avian predators. In its section on the nestling to fledgling period, HANZAB lists the following recorded predators of very young magpies – Brown Falcon, Red Goshawk, Australian Raven, Pied Currawong, Barking Owl, Swamp Harrier.

(With respect to the reverse behaviour, in its section on 'interspecific agonistic interactions', HANZAB gives a list of 13 raptors that magpies are recorded as having attacked. There is a very long list indeed of other species that magpies are recorded to have 'attacked, chased or harassed', including Yellow-rumped Thornbill and Silvereye.)

Of Kaplan's species that 'may take juvenile or even adult magpies', consider the Black-shouldered Kite. Kaplan's text says: 'Black-shouldered Kites include galahs and smaller parrots among their staple prey diet, which they catch during flight, but there is no incident known of them bringing down a magpie.' According to HANZAB vol. 2, the food of the kite is 'mostly small rodents such as mice but also grasshoppers and other insects when available'. A very small percentage of birds is included in the diet, but there is no record of a Galah or parrot as prey. It is difficult to imagine a BSK taking a Galah in flight. Perhaps in the Kaplan book there has been confusion with the Peregrine Falcon. Something has gone wrong with this section, unnecessarily in view of availability of the relevant HANZAB volumes.

My second example relates to the episode of magpies 'holding court'. High significance is attributed to the reported behaviour. 'If, what he and I observed is not entirely misinterpreted, this would be the very first behaviour ever described of an apparent "rational" deliberate act in an animal.'

If so, or possibly so, the passages in question deserve some examination here. The main account of the episode came in a phone call from a person in Canberra:

... the behaviour he was going to describe to me happened not just once but, as he had observed, twice [*he had observed once*]. He explained that a large group of magpies (between 10 and 20) would gather in a semi-circle on the ground, all facing a single magpie at the middle of the diameter of the semi-circle. The individual magpie, so he said, showed fear but did not attempt to fly away. Then magpies would start stepping forward and pecking the individual quite hard. One after the other would do so and when everyone in the semi-circle [*everyone in the front row of the semi-circle*] had

had a peck at the singled-out individual they flew away leaving the severely injured [*the injured*] and defeated individual behind.

In the 2004 edition this observation is described in the introduction. In the second edition the observation is described in the chapter 'Social rules and daily life', with differences in wording indicated above by italics. The second edition adds: 'Since I had heard this fascinating story, I started watching out for such behaviour myself and, indeed, observed a very similar event in a smaller group.'

In the 2004 edition the episode is introduced as an example of a person with no particular knowledge of birds becoming a good naturalist and ethologist. It was that person who first referred to a group of magpies 'holding court'. Kaplan comments: 'This fascinating story may be verified or scientifically explained one day but, so far, we have no definitive explanation.'

In the second edition, the episode, and Kaplan's similar but undescribed observation, become the basis for a discussion of brain function and the suppression of emotions, and ability to plan for the future. This leads to the comment that 'a bird's brain is already set up for suppressing emotions, hence for exercising "self-control".' Some readers might have sympathy for the ideas floated in this discussion, and a better grasp of them than I have. For myself, I do not see the justification for the following conclusion, which takes the reader to the frontiers of magpie biology, and perhaps beyond:

Whatever these interactions may mean, these events between the magpies involved no anger and no aggression, they were orderly and coherent – very much like the way judicial systems function when carrying out punishments, physical or otherwise, for past misdeeds thus involving an emotional and physical distance between an act and the response.

I am also troubled by the differences between the stories as related in each of the editions.

It is not surprising that the court-holding behaviour has been picked up in popular media. The April 2019 edition of *Australian Geographic* has a heading 'Here are 4 things you definitely didn't know about magpies'; then comes 'Magpies basically have their own judicial system'. The 'holding court' episode is described, with this time the semi-circle becoming a circle, and 'each magpie' having a peck.

Different people had different views about the first edition, and no doubt this revised edition will receive a similar reaction. What you think of it will depend on what you expect in a book of this kind.

Canberra Bird Notes 44(3) (2019): 308-309

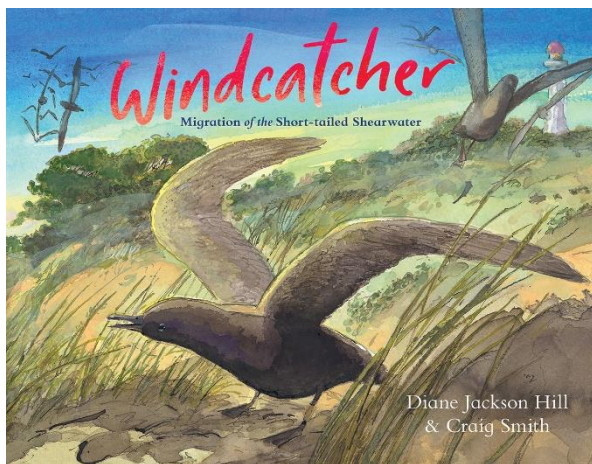
**Windcatcher – Migration of the Short-tailed Shearwater. By Diane Jackson Hill and Craig Smith.** CSIRO Publishing, Clayton South, 2019. ISBN 9781486309870; Hardback, 32 pp.; RRP AU \$24.99.

and

**A Hollow is a Home. By Abbie Mitchell Illus. Astred Hicks.** CSIRO Publishing, Clayton South, 2019. ISBN 9781486308057; Paperback, 104 pp.; RRP AU \$29.99.

Reviewed by JANETTE LENZ, Lyneham, ACT 2602 ([lenczmj@hotmail.com.au](mailto:lenczmj@hotmail.com.au))

These two delightful books would be just right for Birdwatchers or Naturalists to buy for their children or grandchildren aged 6-10 and are highly recommended.



While *Windcatcher – Migration of the Short-tailed Shearwater* is a story book, easily read by, and to primary school aged children, it opens up interest in the remarkable mysteries of annual seabird migration – and conservation. A Short-tailed Shearwater flies from the edge of the Southern Ocean to the rim of the Arctic Circle – and back – every year. A 30,000 kilometre journey.

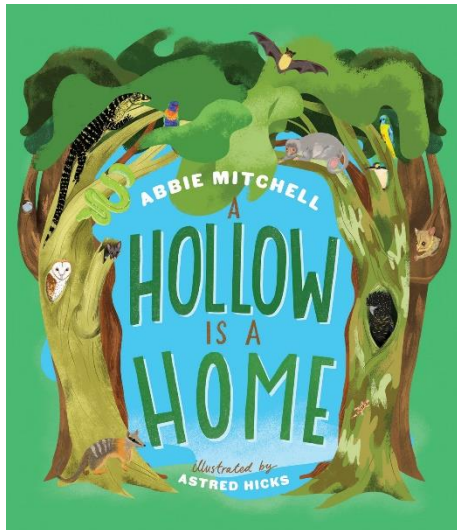
The issue is topical as in the 2019-20 breeding season Shearwaters only arrived late and in far fewer numbers, due to many catastrophic effects on migrating birds, including changing weather patterns and food shortages. Encouraging an interest in the birds by our children can benefit their understanding and affinity with avifauna and the environment. *Windcatcher* aims to do just that.

Based on birds that live on Griffiths Island, near Port Fairy, Victoria, *Windcatcher* is a tale of endurance and survival beginning with one small bird called Hope. Instinct and community will guide her. A wingspan the size of a child's outstretched arms will support her. But first, she must catch the wind...

From the winner of the 2017 Wilderness Society Environmental Award for Children's Literature (picture fiction category), the landscape A4-sized hardback format is comfortable to hold if reading to a child; the water colour illustrations beautifully designed and coloured; and the story has just enough tension to hold interest but not frighten younger children. This means that conservation issues are also incorporated seamlessly with wonder at the migration effort.

The last two pages have simple, but accurate facts about the Shearwater which could be useful for adults wishing to answer questions from children, or even explore the issues further for themselves. References and further reading are given, and Teacher Notes are available to download from the CSIRO web-site: [www.publish.csiro.au/book/7851](http://www.publish.csiro.au/book/7851)





*A Hollow is a Home* is for older children. It is a book of exploration into tree hollows and the creatures that call them home. More than 340 Australian species (about 15% of Australian animals) use tree hollows and this book has colour photos and descriptions of many of them, from “glorious gliders” to “darting dunnarts” or “minute microbats” as well as more animals (mostly vertebrates) which use tree hollows as places for resting, nesting or hiding. Invertebrates also rate a mention as do some interesting hollow-dwellers from other countries – but the emphasis is on Australia.

Again, conservation issues are highlighted. How are hollows created? Why are they threatened? There are tips for budding naturalists on how to spot and monitor hollows, protect the environment and encourage habitat for animals. The stated aim is to inspire the next generation of young Australians to tackle the challenge of biodiversity loss by interesting them in ‘bush-ecology’.

In the ‘Happy hollow hunters’ section, scientists who study hollow-dependent animals are profiled through written interviews. They include David Lindenmayer, Caragh Threlfall, Paul Doughty and Amanda Edworthy. Citizen science also gets a mention. A glossary defines some of the more unusual scientific terms or concepts; there is a list of hollow-using species in Australia which gives both the common and scientific name, and a short list of useful links.

In all, a very comprehensive book, but therein lies my small criticism: the book is very dense and I wonder if a child would use the book just to dip into, even though the fun-facts are presented attractively. Rather, it is a reference book.

If used in a classroom, teachers could use it to help children explore the world of hollows, and the creatures who use them, step by step and over time. Each section in its own well-headed unit box could be a lesson in itself – and there are format consistencies which make selection easier. For example, the sections which detail a specific animal are headed, “Creature feature” and the layout of photos and coloured illustrations is pleasant.

Certainly, the book is recommended for its accuracy and wealth of information. Again, Teacher Notes are available to download from the CSIRO web-site: [www.publish.csiro.au/book/7729](http://www.publish.csiro.au/book/7729)

Canberra Bird Notes 44(3): 310

***Birds of Goulburn & District.* Compiled by Frank Antram, published by The Goulburn Field Naturalist Society Inc., 2019. AU\$ 3 (incl. postage).** For ordering a copy contact the Goulburn Field Naturalist Society by mail: PO Box 1148, Goulburn, NSW 2580 or email:



[gfnsp@protonmail.com](mailto:gfnsp@protonmail.com) .

The Goulburn District adjoins the North East part of COG's Area of Interest with some overlap around the Collector and Lake Bathurst area. The District is defined as "an area of about 50 km radius of Goulburn: from Crookwell to the north west; Taralga to the north east; Bungonia and Windellama to the south east; and Collector, Lake Bathurst and Tarago to the south west."

225 species are listed (with symbols added to define their status). From COG's waterbird surveys of Lake Bathurst several rare species of waterbirds can be added to this list.

A list of local places to watch birds in and around Goulburn is also given.

This publication should be of great interest to Canberra bird watchers who explore or pass through the Goulburn District.

Michael Lenz

Canberra Bird Notes 44(3) (2019): 311

**RARITIES PANEL NEWS**

A modest list again. Many of the species were not formally presented to the Panel for review but on the basis of information presented on the chat line and on eBird, we have elected to list them in the interests of completeness.

The most unlikely record, and a first for the ACT, was that of a northern hemisphere species, the Northern Shoveler, at Kellys Swamp in September. It was possibly the same bird recorded in the Riverina on 2 August.

The two Crimson Chat records, both of probable juveniles, were not surprising, given the extreme drought conditions in their normal habitat of inland Australia. The Parkwood bird was still being recorded in mid-December. They follow the many records of presumably the same adult male chat in Campbell Park in November 2018.

Pectoral Sandpipers are not on the list of unusualls but fall into the unlisted category of species which show up from time to time especially at Jerrabomberra Wetlands and which can cause identification problems. This bird's bicolored and downcurved bill and dark lore were diagnostic. ACT records are always noteworthy.

Banded Lapwings are not unusual in COG's AoI but ACT records are few and far between these days and are worthy of mention, as is the Common Sandpiper which took up residence and bobbed its way around Isabella Pond in October and was still present in December..

The Panel was unable to endorse one record. It has also assisted several members of the general public with their photographs of species with which they were unfamiliar – including a juvenile Silver Gull.

**ENDORSED LIST 95, DECEMBER 2019****Northern Shoveler** *Spatula clypeata*

1; 10 Sep 2019; Roger Williams, Shorty Westlin, Lia Battisson; JWNR (see this issue of CBN, pp. 286-287)

**Banded Lapwing** *Vanellus tricolor*

Up to 11; Oct 2019; various observers; Old Boboyan Rd

**Common Sandpiper** *Actitis hypoleucos*

1; 7 Oct 2019; Sandra Henderson; Isabella Pond.

**Pectoral Sandpiper** *Calidris melanotos*

1; 20 Nov 2019; Geoffrey Dabb; JWNR (see photos on following page)

**Crimson Chat** *Epthianura tricolor*

1; 12 Oct 2019; Liam and Tony Manderson; Old Boboyan Rd

1; 28 Nov 2019; Peter Christian; Parkwood

**Barbara Allan** ([allanbm@bigpond.net.au](mailto:allanbm@bigpond.net.au))



**Pectoral Sandpiper on its own (above) and in the company of two Sharp-tailed Sandpipers (below; P.S. in centre) at Jerrabomberra Wetlands, Nov/Dec 2019  
(Geoffrey Dabb)**

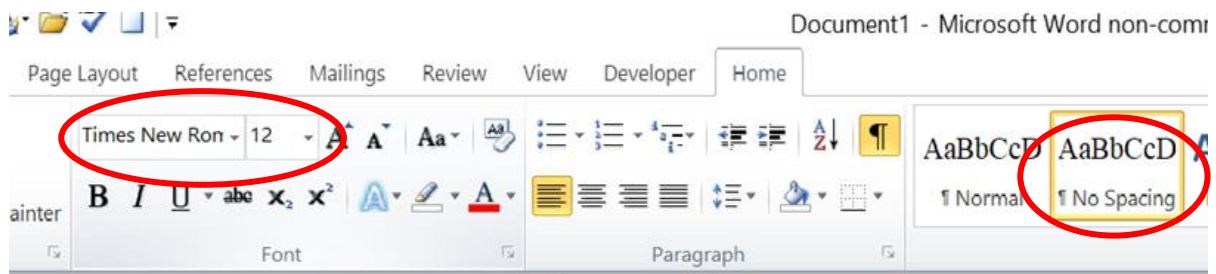


## Canberra Bird Notes

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[CBN@canberrabirds.org.au](mailto:CBN@canberrabirds.org.au) or [michael.lenz.birds@gmail.com](mailto:michael.lenz.birds@gmail.com)

**Please submit contributions in *Times New Roman*, with 12-point Font Size and ‘No Spacing’** (see illustration below):



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***Contents continued from outside back cover***

Windcatcher – Migration of the Short-tailed Shearwater. By Diane Jackson Hill  
and Craig Smith

*Janette Lenz* ..... 308

A Hollow is a Home. By Abbie Mitchell, Illus. Astred Hicks

*Janette Lenz* ..... 309

Birds of Goulburn & District..... 310

**Rarities Panel News and Endorsed List 95**..... 311

## CANBERRA BIRD NOTES 44(3) DECEMBER 2019

### Articles

Breeding of Gang-gang Cockatoos in suburban Canberra

*Chris Davey, Michael Mulvaney, Jacky Fogerty, Tom Tyrrell and Jenny Tyrrell* ..... 210

Observations on the roosting behaviour of the Magpie-larks in Chapman/Rivett, Part III:  
Observations for 2016 to June 2019

*Jack Holland*..... 221

Telemetry and colour-banding confirm predictions about Little Eagle migration and  
territory desertion

*Jerry Olsen* ..... 241

The Feral Pigeon: A discussion

*Geoffrey Dabb* ..... 250

Composition and estimate of the size of the breeding grassland bird community on  
farmland at Lake George (NSW)

*Michael Lenz and Julianne Kamprad*..... 271

### Notes

Northern Shoveler (*Spatula clypeata*) at Jerrabomberra Wetlands

*Roger Williams* ..... 286

### Columnist's Corner

The race is not to the swift *Stentoreus* ..... 288

Birding in Cyberspace, Canberra style *T. Javanica*..... 289

**President's Report 2017-18**..... 292

**The 2018 Recipients of the Steve Wilson Medal** ..... 298

**The 2019 Recipients of the Steve Wilson Medal** ..... 299

### Book Reviews

Australian Bird Names: Origins and Meanings (2<sup>nd</sup> edition). By Ian Fraser and Jeannie Gray

*Kevin Windle* ..... 300

Bird Bonds. By Gisela Kaplan

*Cornelius (Con) Boekel* ..... 302

Australian Magpie. Biology and Behaviour of an Australian Songbird (2<sup>nd</sup> edition).  
By Gisela Kaplan

*Geoffrey Dabb* ..... 304

***Contents continued on inside back cover***

Printed January 2020