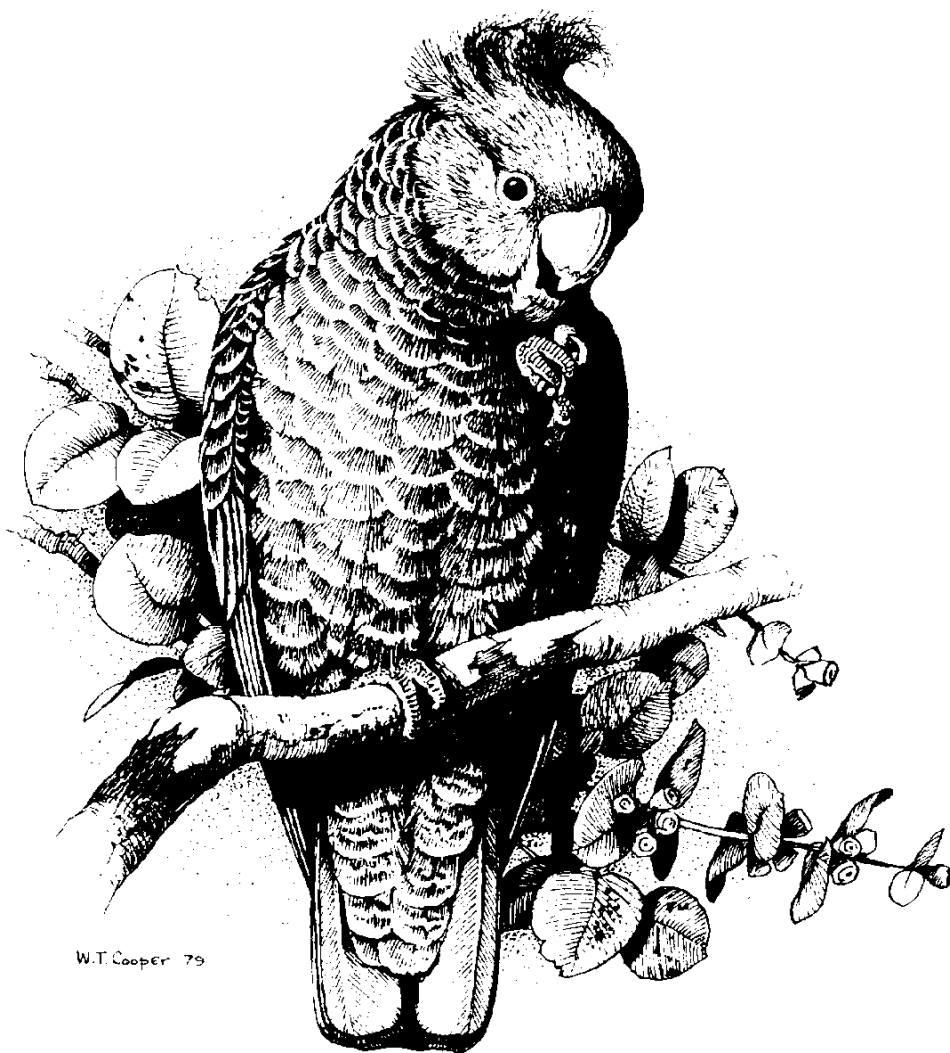


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EDITOR'S NOTE

COG and its members have a proud history of supporting research on our birds by providing sightings or information on suitable study sites to researchers. This has always been a two-way street since the researchers give feedback to COG on their work and their insights. For example, it is always great to hear about the work of ANU students at COG meetings.

Over many years research on one species, the Little Eagle, has received lasting support from COG members providing sightings to interested parties. All indications are that the number of breeding pairs that manage to raise a fledgling has declined in the ACT and surrounds. The Little Eagle has been declared Vulnerable. There is now considerable interest in the dynamics of the local Little Eagle population, especially the question of how many pairs there are, and how many manage to raise a fledgling – the ultimate measure of breeding success.

Currently two groups are studying the species: Jerry Olsen, Sue Trost and a group of volunteers with Geoffrey Dabb as the main COG contact person; and a recently formed larger coalition with participants from universities, the ACT Government and developers. In 2017 the latter group emphatically requested that any information on the Little Eagle be directed to it.

Any sightings COG members post on the chatline or enter into eBird are picked up by both groups. Of course, there are also other sources and avenues for obtaining relevant information, although this may or may not reach both research groups.

We now have summary statements from both groups for the Little Eagle 2017/18 breeding season (Geoffrey Dabb, *COG chatline*, 7 Feb 2018 and Stuart Rae, *Gang-gang* 3 Apr 2018 and this issue of *CBN*, pp. 186-193), giving welcome feedback to COG members and other interested parties.

In an ideal world both groups would work together rather than independently. Hopefully, one day, collaborative work will be possible.

The December 2017 issue of *Canberra Bird Notes* contained an article by Penny Olsen and Stuart Rae (*CBN* 42(3) 2017: 245-249), arguing that determinations of the size of the breeding population in the 1980s are flawed. 'Hence it cannot be ascertained whether the breeding population has declined since the 1980s.'

Three articles in this issue of *CBN* (pp. 120-139) are replies to the questions Olsen and Rae (2017) had raised.

A fourth article (pp. 140-142) is the response of the author of *Australasian Eagles and Eagle-like Birds* (Stephen Debus, CSIRO Publishing, 2017) to two reviews of his book, chiefly to a review in *CBN* 42(3) 2017: 318-322 and also in *Emu* 118(2) 2018: 230-231, addressing some misconceptions by both reviewers. Again the Little Eagle features.

I also draw special attention to the first article, a Discussion Paper by Geoffrey Dabb, on the possible implications on the status of threatened species in the ACT under new legislation.

This issue also contains many other interesting articles on our local birds. I commend them all to the *CBN* readership.

Michael Lenz
Editor *Canberra Bird Notes*
14 May 2018

DISCUSSION PAPER

Canberra Bird Notes 43(2) (2018): 114-119

WHEN IS A BIRD SPECIES REGIONALLY THREATENED? A DISCUSSION OF THE NOT-SO-SIMPLE CONCEPT OF 'REGIONAL EXTINCTION' IN RELATION TO THE AUSTRALIAN CAPITAL TERRITORY

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Abstract: *Issues of interpretation of relevant instruments, and some issues of conservation policy, will need to be settled before the future 'regional' status can be addressed of bird species now listed as threatened in the ACT. Choice of a 'region' might be a decisive consideration in determining the status of some species.*

Before the 2016 amendments to the *Nature Conservation Act 2014* : the origins of the present situation

What does 'regionally threatened' mean? The answer to that simple question is far from simple. So far as the ACT is concerned, the starting point is the word 'extinction' in successive versions of ACT conservation legislation. On the meaning of 'extinction' depend the related concepts of 'endangered' and 'vulnerable'. A reasonable view is that in the absence of any indication to the contrary 'extinction' has its ordinary meaning: total or global extinction. The Paradise Parrot is extinct. The Regent Honeyeater is at risk of extinction.

An earlier piece of ACT legislation, the *Nature Conservation Act 1980*, gave the Flora and Fauna Committee the task of setting criteria for determining whether species were at risk of extinction, that is whether they were 'endangered' or 'vulnerable' for the purpose of the Act. The committee was to 'have regard only to factors relevant to ... the conservation of a species ... in relation to the Territory and the surrounding region'.

Although it was not necessary for it to do so, the committee, in instruments made in 1995 and 2008, adopted a concept of 'risk of regional extinction'. The committee determined criteria that had regard to risk of extinction of a species 'in the ACT region'. In 2008 this was indicated to mean –

... the ACT and surrounding bioregions. Bioregions are not strictly defined but as a guide, the *Revision of the Interim – Biogeographic Regionalisation for Australia (IBRA) and Development of Version 5.0 – Summary Report* (Environment Australia, September 2000) recognises that the ACT falls within two bioregions – the Australian Alps and South Eastern Highlands.

It might be noted that the bioregions specified take in an area that includes the NSW and Victorian Alps and extends in a relatively narrow band more than 600km south-west to north-

east to take in Orange and Bathurst. That area is much more than 10 times the area of the ACT.

The criteria adopted were directed to ‘risk of premature extinction in the ACT region’ as demonstrated by, for example, severe reduction in population or distribution, *within the region*.

Before amendments to the legislation in 2016, 11 bird species were determined to have threatened species status on the basis existing at the time, and these remain on the ACT threatened species list by reason of a transitional provision. As explained below, the future status of those species under the amended legislation is to be addressed in due course.

The new system of assessment: the future direction

In 2016 substantial amendments were made to the *Nature Conservation Act 2014* to give effect to a cooperative national scheme. The basis of the new scheme is an intergovernmental memorandum of understanding (MOU) giving effect to something called ‘the common assessment method’ (CAM). The scheme introduces a new approach for assessing extinction risk of species. A species might be assessed either at ‘the national scale’, having regard to the status of the species across Australia, or at ‘the regional scale’. The preferred approach is to assess at the national scale, with the Commonwealth having responsibility for species that occur across state/territory boundaries, unless otherwise agreed by the jurisdictions concerned.

The ‘national scale’ approach created an issue for some states/territories:

For some Australian jurisdictions, the common assessment method is a substantial change from current practice. For example, in states and territories, species are often listed at the regional scale (only taking into account the occurrences within that jurisdiction) and may be listed using threat criteria and categories that differ from the IUCN categories. (Commonwealth Dept of Environment and Energy website. More about those IUCN categories appears below.)

Unsurprisingly, the regional approach had led to different threat assessments for the one species in different jurisdictions (Attachment 1).

Accordingly, the MOU allows a state/territory to list, as well as species listed as threatened at the national scale, other species that are of particular conservation significance to it ‘or other species of significance’. (MOU: definition of ‘state/territory threatened species’ and para 6.2). However, the ‘common assessment method’ is now to be used. Previously listed species are known as ‘legacy species’ and are to be ‘transitioned’ to a national or regional category established under the new scheme (CAM, Schedule 2).

In the ACT in 2016, pursuant to the new scheme, criteria were determined for including a species in the ‘Regional Category of the Threatened Native Species List’ (reproduced in Attachment 2). These require that such a species occur, or have occurred or be suspected to occur, ‘in the ACT or surrounding bioregions’.

If that preliminary requirement is satisfied, it is then necessary to apply certain criteria advocated by the International Union for Conservation of Nature (IUCN), an international body which has been an influential authority on conservation matters.

The IUCN is concerned mainly with the threat of *global* extinction of species, and publishes a famous ‘Red List’ of species so threatened. The IUCN Red List *Categories and Criteria* are concerned with risk of global extinction. They do not readily fit a concept of ‘regional extinction’, hence the issuing of additional ‘regional guidelines’ by the IUCN (referred to here as ‘the IUCN Guidelines’).

The IUCN Guidelines ‘strongly discourage’ their application in a small region in relation to a ‘wide-ranging taxon’. All the seven ACT-listed bird species not nationally threatened as presently assessed, especially the Glossy Black-Cockatoo, White-winged Triller and Little Eagle, seem to be in that ‘wide-ranging taxon’ category. They are species that occur across a wide range, and individuals can range across large distances. Are such species appropriate for regional assessment at all? The IUCN Guidelines say that the proportion within the region of the total continental population is one matter that might be considered in deciding whether to undertake a regional assessment. Curiously, this might mean that an area with a low proportion of the continental population of species X by reason of range shrinkage might not be an appropriate region for a regional assessment of species X.

If that obstacle is overcome, the population within the region is to be assessed, to arrive at a tentative assessment, as if it were a total population. In principle, that is roughly the approach that was followed under the former legislation. However, the IUCN Guidelines then call for a second step ‘to determine the final estimate of extinction risk within the region’.

For the seven bird species in question, which are all regional breeding species, the IUCN Guidelines require an inquiry into the likely immigration of breeding birds from outside the region. That inquiry might lead to a ‘downlisting’ from the tentative category (*e.g.* listing as ‘near threatened’ of an otherwise ‘vulnerable’ species) or an ‘uplisting’ (*e.g.* if the regional population is a ‘demographic sink’). (A ‘sink’ is defined in the Guidelines as: ‘An area where the local reproduction of a taxon is lower than local mortality. The term is normally used for a subpopulation experiencing immigration from a source where the local reproduction is higher than the local mortality.’)

A crucial question: What is ‘the region’ in ‘regional assessment’?

On a broad reading, the ACT criteria can be regarded as leaving this open. Helpfully, the ACT administering agency has indicated that ‘the ACT and surrounding bioregions’ was not intended, necessarily, to be ‘the region’ for purposes of regional assessment.

There is some reason to think that the agreed common assessment method intended that the relevant region would be the state or territory:

states and territories can elect to assess the threat status of the species within their jurisdiction and list under a category of threat appropriate to the status of the species within that jurisdiction (CAM, Schedule 1, para 2.3(c)).

However, when the IUCN Guidelines are considered the ACT by itself is a very small area. If it is permissible to select a larger area (but necessarily smaller than the total national range), there is a strong argument that to sensibly apply the IUCN Guidelines a separate selection of ‘region’ should be made for each species that needs to be regionally assessed.

Take the Hooded Robin, for example. It is regarded as a declining species in and around the ACT. In assessing its regional status, it would be a reasonable approach to select a ‘region’

across which the Hooded Robin was in a similar situation to its situation in the ACT (that is in a state of decline), rather than to include the ACT with distant areas where the Hooded Robin was abundant or with areas where there had never been Hooded Robins. If you are not constrained by a political boundary, and you decide to use a biological boundary, you can gather and analyse all your species data before making a final decision on the appropriate boundary. How the matter of 'the region' will be approached will be influenced by the ACT's policy objective in using a 'regionally threatened' concept – and (in this example) by the 'conservation significance' for the ACT of the Hooded Robin. In any case, selection of 'the region' will be an important step, possibly the decisive step, in the assessment or re-assessment of possibly threatened species.

One future possibility: a presently listed 'vulnerable' bird species might be listed as 'regionally conservation dependent'

This new category should be mentioned. When we look at the concept of a 'conservation dependent species', the statutory framework seems even more complicated. I sympathise with those who had to create a workable system from ill-matched legislative elements. The two-layered Australian federal system adds to the complexity.

I shall not reproduce here the challenging text of the ACT 'Criteria for Regionally Conservation Dependent Species'. In summary, for a currently listed bird species these appear to require that: (a) the species occurs in the ACT; (b) the species has been the subject of official, long-term conservation management; and (c) there be sufficient data for the species to be assessed as 'near threatened' under the IUCN Guidelines referred to above. That last requirement raises, again, the issues about 'region' outlined above, and calls for the two-stage assessment process under the IUCN Guidelines.

I end this note with a caution about differences in use of language. In the ACT legislation a 'threatened native species' is a species listed in any category of the ACT threatened species list, which includes 'conservation dependent'. The 'nationally threatened' categories for the purpose of the intergovernmental MOU also include 'conservation dependent', but with that term having a different meaning, one given in Commonwealth legislation. The IUCN instruments do not recognise a category of 'conservation dependent'. The IUCN 'threatened categories' are 'critically endangered', 'endangered' and 'vulnerable'. 'Near threatened' is an IUCN category, but not a threatened category, so probably not a 'threat category' as used in the ACT 'regionally threatened' criteria.

Attachment 1

Species	ACT	NSW	Commonwealth
Regent Honeyeater	E	Critically endangered	Critically endangered
Hooded Robin	V	Vulnerable	not listed
Swift Parrot	V	Endangered	Critically endangered
Superb Parrot	V	Vulnerable	Vulnerable
Brown Treecreeper	V	Vulnerable	not listed
Painted Honeyeater	V	Vulnerable	Vulnerable
Varied Sittella	V	Vulnerable	not listed
White-winged Triller	V	not listed	not listed
Little Eagle	V	Vulnerable	not listed
Glossy Black-Cockatoo	V	V (only one population)	not listed
Scarlet Robin	V	Vulnerable	not listed

Attachment 2

Nature Conservation (Threatened Native Species Eligibility) Criteria 2016, Schedule, paragraph 7.

7 Criteria for Regionally Threatened Species

To be recommended to be listed as threatened in the regional category of the list, a species (or a formally recognised variety of a species) that has occurred, is suspected to occur, or occurs in the ACT or surrounding bioregions must meet at least one of the IUCN criteria, assessed at the regional scale, modified if necessary in consideration of the IUCN (2012) *Guidelines for Application of the IUCN Red List Criteria at Regional and National Levels* (http://s3.amazonaws.com/iucnredlist-newcms/staging/public/attachments/3101/reg_guidelines_en.pdf), for listing a species in any threat category as listed in IUCN (2012). *IUCN Red List Categories and Criteria: Version 3.1. Second edition* (<http://www.iucnredlist.org/technical-documents/categories-and-criteria>).

Note: A species should not be listed in this category if it is eligible, or likely to be eligible for listing in the national category of the list.

References

Garnett S.T., Szabo J.K. and Dutson G. (2011) *The Action Plan for Australian Birds 2010* CSIRO Publishing, Collingwood.

Legislation

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Nature Conservation Act 1980 (ACT) (repealed)

Nature Conservation Act 2014 (ACT)

Nature Conservation (Criteria and Guidelines for Declaring Threatened Species and Communities) Determination 2008

Nature Conservation (Threatened Native Species Eligibility) Criteria 2016

Nature Conservation Threatened Native Species List 2016 (No 1)

Websites

Commonwealth government, with respect to the ‘common assessment method’

<http://www.environment.gov.au/biodiversity/threatened/cam>

<http://www.environment.gov.au/biodiversity/threatened/publications/mou-cam>

ACT government

https://www.environment.act.gov.au/cpr/review_of_the_nature_conservation_act

Documents issued by International Union for Conservation of Nature (see also Attachment 2)

Guidelines for Using the IUCN Red List Categories and Criteria;

Available for download at: <http://www.iucnredlist.org/technical-documents/red-list-documents>.

Guidelines for Application of the IUCN Red List Criteria at Regional and National Levels.

Available for download at <http://www.iucnredlist.org/technical-documents/red-list-training/red-list-guidance-docs>.

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ARTICLES

Canberra Bird Notes 43(2) (2018): 120-131

ELEVEN HISTORIC BREEDING TERRITORIES OF ACT LITTLE EAGLES IS AN UNDERESTIMATE - A REPLY TO OLSEN AND RAE (2017)

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Some remarks about context

Olsen and Rae (2017) argue that it cannot be ascertained whether the breeding population of Little Eagles *Hieraaetus morphnoides* in the ACT has declined or not. Also in 2017 a number of actions were in place said to protect Little Eagles and promote understanding of Little Eagle biology in the ACT, for example, (i) a 'Little Eagle Protection Zone' was in place to protect a nesting pair; (ii) nest cams set at Little Eagle nests would soon help us better understand 'diet and breeding timing and success' of these eagles; and (iii) researchers were going to satellite-tag more adult Little Eagles. Further it was claimed that there were probably more breeding pairs of Little Eagles in the ACT in 2017 than people realised (*Canberra Times* 11 October 2017; Mick Gentleman Media release September 2017).

However, the breeding adults deserted the 'Protection Zone' nest in 2017, nest cams failed to produce viable data (pairs deserted), adult Little Eagles proved too difficult to capture, and few successful breeding pairs were found in the ACT in 2017. The argument has now shifted - the original 11 or 13 identified historic Little Eagle breeding territories in the ACT did not exist. This is a change from earlier published positions. Olsen and Rae ignored our repeated claim that these numbers were probably underestimates, for example, '*11 territories in the early 1990's (which in reality was probably closer to 20 territories)*' (Olsen *et al.* 2015, p. 208). Many of these omissions, and claims, seemed to be aimed at diminishing the perceived harm caused by the destruction of Little Eagle breeding habitat in the ACT.

To detect whether there has been a decline in Little Eagle breeding territories in the ACT you simply check historic territories for occupancy and breeding success (young fledged), even where data are incomplete or patchy. This method was pioneered by Ratcliffe with Peregrines *Falco peregrinus* in Britain (Ratcliffe 1993), with Golden Eagles *Aquila chrysaetos* in Scotland by Watson (2010), with Wedge-tailed Eagles *Aquila audax* in the ACT region by Fuentes *et al.* (2007), and with Little Eagles in the Armidale region by Debus and Ley (2009). ACT volunteers attempted to do this with Little Eagles in the ACT.

Olsen and Rae (2017) avoid discussing this standard method (checking historic territories for occupancy and breeding success) and instead concentrate on terminology, especially 'active nests'. Olsen and Rae seem to use three approaches:

1. Searching 15 publications by Olsen and/or Debus for typographical errors, especially errors linked to the labelling of graphs.

2. Making claims unsubstantiated by evidence; ignoring the existing Little Eagle evidence; selectively ignoring parts of our publications.
3. Arguing that all these publications by J. Olsen are “irretrievably compromised” then cherry-picking these same publications for evidence to support their own claims.

What do we think is happening with Little Eagles in the ACT?

After 2006, we started soliciting reports for breeding Little Eagles. Since then, pairs reported to us have tended to fledge a combined total of about two to four young each year in the ACT, from about two to four successful nests (fledged young) each year. Extra non-breeders were also found each year. All our surveys, in the 1990s, and after 2002, were underestimates because they were volunteer, part-time studies. A dedicated full-time study could most likely double that annual productivity figure to four to eight fledged young per year from four to eight successful nests. Successful breeding is the key (see ACT Government 2008). Still, we had a number of sites where we knew Little Eagles previously bred: Mt Mugga/O’Malley, Isaac’s Ridge/Mt Wanniasa, Kelly’s Swamp, Newline, Angle Crossing, Mt Ainslie, Mt Majura, Gungahlin Hill, Tidbinbilla-Tharwa Road, Tuggeranong Hill, near Dunlop, Ginninderra Falls, Molonglo River, Woodstock Reserve, Molonglo Gorge (near Queanbeyan), Mount Stromlo, Mt Pleasant, Black Mountain, Lion’s Youth Haven, Land’s End, Pegasus, Strathnairn Galleries, Lanyon. Many of these are now abandoned.

The best baseline we have for successful breeding, and use of nests in the ACT before 2006 is Mallinson *et al.* (1990). They studied two adjacent pairs for 6 breeding seasons 1980-1985. Both pairs laid each year, except 1985 when one pair did not lay, so 11 of 12 (92%) nests were active (defined as laying eggs). They fledged, on average, 1.0 young per pair per year. The *longest distance* between nests assumed to be of the same pair (alternative nests) was 1.5 km, but most alternative nests were closer. The closest that two different pairs nested together was 2 km apart. Olsen and Rae have ignored these data in favour of an imaginary Little Eagle biology with huge breeding territories. Though the Mallinson study is limited, it is hard data, and the best data we have for the ACT in the 1980s.

Long-lived raptors such as Peregrines, Wedge-tailed Eagles and Little Eagles have characteristically stable breeding territories across years, as in the Mallinson study. So, again, a standard way to look at stability in raptor populations is to look at historic breeding sites. For example, Olsen and Olsen (1989) said that Peregrines on Burrinjuck Dam over a 12-year period ‘occupied between 69 and 95% of the territories each year’ so ‘occupancy of nest sites was high and stable’. These Peregrines remain stable to this day. When Esteban Fuentes and I searched historic Wedge-tailed Eagle sites in 2002-2005 we found similar stability, territories occupied nearly 40 years after Leopold and Wolf (1970) studied them in the same area in 1964 (Fuentes *et al.* 2007). This stability held for ACT region Peregrines and Australian Hobbies *Falco longipennis* using the same breeding locations 11 years later (Olsen *et al.* 2008) and seemed to hold for Brown Goshawks (unpublished data). But it did not hold for Little Eagles in the ACT (unlike Little Eagles in New England). Most historic Little Eagle breeding territories in the ACT were no longer successful breeding locations, including those from the Mallinson *et al.* (1990) study.

We postulated reasons for this change (decrease) in Little Eagle breeding territories and tested these hypotheses each year as new information was gathered in the field. Initially Wedge-tailed Eagles were implicated, as was property development, then we wondered about the chemical Pindone, and at one point, because pairs would disappear and a pair would show

up some distance away, we wondered if they were moving long distances inside expanded territories. But this was a hypothesis to be tested. We did not know with certainty because these were *unmarked* birds. And after watching Little Eagles in 2015, 2016 and 2017, we no longer believed this was the case. Little Eagles, we believed, were not ranging large distances to alternative nest sites; they were ranging large distances because there were no breeding Little Eagles defending these spaces. For example, the adult satellite-tagged Strathnairn male ranged over the previous CSIRO Field Station nest site (Olsen *et al.* 2017) not because the CSIRO site was an alternative nest site for the Strathnairn pair, but because the CSIRO Little Eagle site was not used in 2015. In 2015, 2016, 2017 we never saw Little Eagles in conflict with other Little Eagles, only in conflict with corvids, Wedge-tailed Eagles or other birds. No territorial defence against other Little Eagles means these were home ranges, not breeding territories.

We suspect that Little Eagle breeding territories and home ranges across the ACT have been severely degraded for some reason, turned into marginal habitat, and that the ACT has become a 'sink' (Olsen *et al.* 2013a). It is important to see these historic breeding sites as breeding territories or home ranges, not long-standing pairs. This means that certain pairs will remain on a territory for a certain number of years, then abandon it or die. Floaters will come in each year (Olsen *et al.* 2013a), and sometimes settle on a traditional territory because these areas still 'look' like Little Eagle habitat to a Little Eagle. But mostly the eagles will fail to successfully breed (fledge young) at these locations, because the habitat can no longer support a breeding effort. If this hypothesis is true, it means we will *not* see marked/radio-tagged *pairs* of adults moving great distances, i.e. 7, 10 or 15 km to alternative nests (as Olsen and Rae imply). These are different birds popping up at sites, then abandoning sites, or one member of the pair moving and leaving his/her mate behind, or floaters moving in and trying out a new or historic site. An error that Olsen and Rae make is trying to use current patterns of ACT Little Eagle home range use, and breeding success, as an indicator of what Little Eagles did in the 1980s and 1990s, like considering Peregrine breeding patterns in post-DDT 1960s Britain as normal, and assuming this pattern was a model for pre-DDT Peregrines in Britain in the 1940s. Ratcliffe (1993) saw the 1960s patterns with British Peregrines as atypical. Current breeding patterns for Little Eagles in the ACT are atypical. Look at the breeding parameters (success, distances between pairs) for Little Eagles near Armidale being studied by Debus and Ley (2009). They resemble the findings of Mallinson *et al.* (1990), and closely related species such as Booted Eagles *Hieraetus pennatus* (Martínez *et al.* 2006). Current patterns in the ACT do not.

Sue Trost and I watched 6 Little Eagle pairs in the ACT in 2017 (though we believed there were more) – two pairs fledged one young each, four pairs failed. The two pairs in West Belconnen in 2016 (Strathnairn + Land's End) were reduced to one failed pair in 2017. This is atypical for Little Eagles or closely related species. Successfully breeding Little Eagles have declined in the ACT. A full-time team working on Little Eagles should find *more* successfully breeding pairs (contrary to what Olsen and Rae claim), but we are guessing that productivity (young fledged) will remain abnormally low.

Looking at the claims in the Olsen and Rae (2017) article in more detail:

1. (p. 245, 1st para.¹): ‘Following repeated scurrilous and misinformed allegations (most recently in Debus 2017, p. 83) relating to the ACT Scientific Committee’s supposed ‘refusal to consider or recognise the Little Eagle (*Hieraaetus morphnoides*) as qualifying for Endangered status in the ACT’ (p. 83),...’

First, Debus said nothing about the ACT Scientific Committee or about P. Olsen. Debus said ‘... *official* refusal to consider...’, meaning government. Second, Olsen and Rae simply needed to explain, using evidence, why the Little Eagle in the ACT did not qualify for Endangered status, i.e. >50% decline in index of abundance in three generations. What are the numbers? They provide no science.

2. (p. 245, 1st para.): ‘...the Little Eagle’s consideration by the ACT Scientific Committee is a matter of public record (ACT Government 2008).’

This determination is nine years old and it is unclear what has been decided since, and what the evidence is that a >50% decline has *not* occurred. Hence, Debus’ comment. For example, in the past few years we have usually found two to four successful (fledging young) pairs in the ACT. Olsen and Rae need to show there were not five to ten successfully breeding pairs historically, signifying <50% decline.

3. (p. 245, 2nd para.): ‘...determinations were made in part because of claims of a ‘collapse’ in the number of breeding pairs of the species in the ACT between the early 1990s and 2002 and following years, made by Jerry Olsen and colleagues (Olsen and Fuentes 2005, Olsen and Osgood 2006, and subsequent reports in *Canberra Bird Notes* and elsewhere).’

First, Olsen and Fuentes (2005) recommended that Little Eagles be listed as Vulnerable in the ACT because of a decrease in breeding pairs of Little Eagles at historic territories, something we did not find in other species. Little Eagles differed from other ACT raptor species. Second, the nomination was taken to the Scientific Committee (Bounds 2008) and P. Olsen and J. Bounds used claims from Olsen and Fuentes (2005) and other publications for this determination, even though Olsen and Rae call these publications “irretrievably compromised”. If these publications are irretrievably comprised, P. Olsen should have rejected them in 2008. Third, Olsen, Rae, and associated researchers, should not use these same “irretrievably compromised” nest locations, breeding statistics, and theories about a decline, in any future publications to advance their claims. Note that Olsen and Rae are referring to *breeding* pairs, not *failed* breeding pairs.

4. (p.246, 1st para.): ‘However, both baseline publications have been interpreted inappropriately. Olsen (1992) did not conduct a survey of Little Eagles across the ACT; the focus of that study was the Peregrine Falcon.’

This is not accurate. First, Peregrines were a primary focus, but not the only focus of these surveys. We noted other species, many close to Peregrine nests, including Little Eagles, which were not difficult to find. In 1990-1992 I banded 98 raptors of 10 species

¹ Location (page number and paragraph) of the quotes from P. Olsen and S. Rae (2017) *Canberra Bird Notes* 42(3): 245-249.

(ABBBS data), including nestling Little Eagles in the ACT, and documented nests of many breeding raptors that were not banded. But I was only one person, so time was limited, and I could not find all Little Eagle nests in the ACT, or even most of them. Eleven was an underestimate. Second, Olsen and Rae seem to be saying that a *general* survey of nests of many raptor species will *over-estimate* the number of Little Eagle nests, and a more specialised study of one species, searching specifically for Little Eagles, or Peregrines, or Wedge-tailed Eagles, will find *fewer* breeding pairs. This makes no sense. There is no published evidence for this claim. Olsen and Rae need to cite references. The opposite is true. When we concentrated our search on one species in the ACT – Peregrines, Little Eagles, Wedge-tailed Eagles, or Swamp Harriers *Circus approximans* – we found *more* breeding pairs, more breeding pairs than we did in a general survey. So, we believe, numbers of breeding Little Eagles found in 1990-1992 were an under-estimate.

5. (p. 246, 1st para.): ‘Presenting an aggregation of three years of activity obscures the fact that it is unlikely that each nest site was occupied by an active pair in each of the three years.’

First, these were not nests. These were clusters of nests on breeding territories. Second, most of these breeding Little Eagle nests were too far apart, 7, 10, 20 km apart, to be alternative nests. Third, we have a good baseline from Mallinson *et al.* (1990) that shows how far apart alternative Little Eagle nests should be (maximum 1.5 km, but usually closer), and how often territories (clusters of nests) were ‘active’ (92% of the time). Olsen and Rae seem to want to use some imaginary Little Eagle theory from an imaginary study instead of the hard data we have.

6. (p. 246, 1st para.): ‘It is well known that not every pair of Little Eagles breeds each year and that there can be alternative nest sites within an assumed (large) territory (*e.g.* Baker-Gabb 1984; Mallinson *et al.* 1990; Debus and Ley 2009).’

First, what do they mean by ‘It is well known’? This is hardly an empirical statement. And what do they mean by ‘breeds each year’? Does this mean fledge young, lay eggs? They need to define terms clearly. Second, Olsen and Rae failed to carefully read the references they cited. None of these references says what Olsen and Rae claim. Baker-Gabb showed they laid eggs every year. And Baker-Gabb said nothing about distance between alternative nests within a large territory. Neither does Mallinson *et al.* (1990), who showed that Little Eagles laid eggs in 11 of 12 nest attempts and that neighbouring pairs nested as close as 2 km apart. Alternative nests were a *maximum* of 1.5 km apart, but generally much closer. Debus and Ley studied Little Eagles in the New England Tablelands in habitat similar to the ACT and found neighbouring pairs about 2 to 5 km apart, and alternative nests inside territories 0.5 km apart, similar to that found by Mallinson *et al.*, not 5 km apart. Olsen and Rae provide no evidence of marked Little Eagles using alternative nests 5 or 7 or 10 km apart inside large territories, and they should have noted that Debus and Ley said: ‘There is increasing evidence of long-term fidelity of individual Little Eagles to nest-sites and breeding territories ... although confirmation is required from banding and individual marking.’ (p. 90). Why did Olsen and Rae not mark adult Little Eagles in 2017 and generate evidence for their claim?

7. (p. 246, 1st para.): ‘Olsen et al. 2013c, p. 197, even comment that pairs can use nests as far as 5 km apart in different years.’

First, as mentioned above, Olsen and Rae discredit these early studies, then cherry-pick the same studies as ‘evidence’ for their particular view. This practice of discrediting a study then using bits they like is a repeated pattern in their paper. Second, this is a misquotation. We said ‘A *strange* thing about Little Eagle pairs 2005-2012 is that alternative nests from year to year *could* be 5 km apart inside one home range.’ So, we found this strange (abnormal), and we considered this as *one possible explanation* for the abnormal behaviour we were seeing, not a conclusion. These eagles were *not marked*. Third, as mentioned above, we changed our view about these possible alternative nests in very large territories after watching ACT Little Eagles in 2015, 2016, 2017. We believe that most Little Eagle territories are now degraded (marginal), and different Little Eagles will turn up in these historic territories, but most will fail to breed successfully.

8. (p. 246, 2nd para.): ‘Further, all related publications that present these numbers in graphs show not 11 but 13 pairs in 1991 (*e.g.*, Debus *et al.* 2013, Olsen *et al.* 2013a, c, Olsen 2014 p. 145), which not only exaggerates the proposed reduction in numbers but is a misrepresentation of Taylor and COG (1992) both as to numbers and year. Taylor and COG (1992) was not a dedicated survey, it attempted to cover all bird species across the ACT and netted 13 Little Eagle breeding locations over several years from the late 1980s to 1990 or 1991 (not just the year 1991 or early 1990s as claimed in Olsen and Fuentes 2005 and thereafter in Olsen and colleagues’ publications).’

First, as mentioned above, we believe that 13 or 11 historic breeding territories for the ACT is an *underestimate*, not an overestimate. Most territories found were too far apart to be alternative nests. And 13 pairs *vs* 11 pairs make no difference to its designation as *Vulnerable*. Second, it is completely false to claim that Taylor and COG (1992) netted 13 Little Eagle territories from a survey of all bird species across the ACT over several years. If Olsen and Rae believe this, they should go to the original COG data and show *how* Taylor and COG derived 13 Little Eagle territories from this data, and *where* these territories were. McComas Taylor told us that these 13 territories were *not* derived solely from the COG (ACT Avifauna) Database. The database was supplemented with specific reports from expert observers. These reports were included on a map of territory locations (COG 1988) that was later referenced in Taylor and COG (1992, pp. 7 and 222) as 13 Little Eagle territories. I was not contacted about this 1988 project, so the 13 territories identified in the COG report were not necessarily the same 11 territories we identified, but there was some overlap in identified sites, such as Black Mountain, near the Tidbinbilla Tracking Station, Mt Wanniasa/Isaac’s Ridge, and others. However, we identified some breeding territories that COG (1988) did not, and COG identified some territories we did not. Third, Olsen and Fuentes (2005) did not say that Taylor and COG referred to Little Eagle territories in 1991 or early 1990s. This claim is false.

9 (p. 246, 2nd para.): ‘Aggregation of nest locations over several years can lead to over counting of pairs. Thus, the Taylor and COG survey neither equates to 13 breeding pairs in each of those years from the late 1980s to 1991, nor is it comparable to a dedicated annual survey for the species.’

First, they have misquoted Taylor and COG (1992) who referred to *territories* not *nest locations*. Taylor and COG (1992) also said about Little Eagles, ‘Their territories are much smaller than those of the Wedge-tailed Eagle’, a statement omitted by Olsen and Rae. Second, as mentioned above, the Olsen and Rae claim that Taylor and COG netted 13 territories from a general database is false. Many locations came from personal reports. Third, a dedicated survey of one species should generate *more* breeding pairs compared to a more general survey of all breeding raptors, not fewer. Olsen and Rae need to substantiate, with evidence, their claim that ‘Aggregation of nest locations over several years can lead to over counting of pairs’. Where in the literature has this happened anywhere in the world with eagles? And note – we are talking about *breeding territories* here, not just annual counts of Little Eagles seen in the ACT from a survey, eagles that could include floaters.

10. (p. 246, 3rd para.): ‘Terminology used in describing the breeding success needs to be consistent if it is to be reported and subsequently compared with later years or other studies, and ‘successful’ should only be applied to pairs that have raised at least one chick to fledging (e.g., Steenhof *et al.* 2017).’

First, you cannot use the new terminology recommended by Steenhof *et al.* (2017) in a 2006 or 2013 publication. Second, they need to look carefully at what Steenhof *et al.* said, for example, ‘*We recommend that a Golden Eagle nesting attempt be called successful if at least one young reaches 80% of the average actual fledging age ...*’ (P. 381) Third, Olsen and Rae discussed ‘active’ nests in this 2017 publication and in some of their previous publications and do not mention that Steenhof *et al.* ‘*caution against use of the term “active” to describe a nest or nesting territory, because it is tainted with a history of inconsistent use*’ (p. 378). We have all done it. Rae (2009) notes in the methods section of a paper on Tawny Frogmouths *Podargus strigoides* ‘*The dates of breeding activity, between August and December, fitted those typical of southern Australia*’ (p. 328) but nowhere defines what ‘breeding activity’ is (is it copulation, eggs, incubation, or young?). Rae further states on page 328, ‘*39 Tawny Frogmouth nesting attempts were recorded*’ but nowhere defines ‘nesting attempt’ (is it nest building, eggs?). So, as Steenhof *et al.* state, these examples of loose terminology are easy to find.

11. (p. 246, 3rd para.): - ‘If pairs were known to have had eggs or young, why was the outcome not followed up?’

More to the point, why did Olsen and Rae not follow it up? A repeated request we have made since 2005 (see Olsen *et al.* 2015) is that government ecologists should provide information about ACT Little Eagles. Part-time volunteers provided locations and assessments of breeding success for *all* reported Little Eagle breeding events 2002-2016. Other researchers provided none to the public record. There was nothing to stop Canberra-based Olsen and Rae from searching for and reporting ACT Little Eagle nest site locations and breeding success, especially after Little Eagles were listed as Vulnerable in 2008. I cannot find a single contribution they made to the public record of Little Eagle nest locations or breeding success 2002-2016. I believe that P. Olsen may have Little Eagle band records lodged with the Australian Bird and Bat Banding Scheme, including from historic ACT sites shown in the COG (1988) report, but these banding records have been embargoed from other researchers. These need to be immediately released.

12. (p. 246, 3rd para.): ‘The same set of annual tallies are labelled ‘active nests’ in Olsen and Osgood (2006, p. 179) and became ‘successful nests’ in Olsen 2013c (p. 197); they cannot be both.’

Of course they can be both. Their comment makes no sense. It depends on what we are comparing these values to.

13. (p.246, 4th para.): **There are numerous other discrepancies between their publications, for instance:’**

Olsen and Rae then list ‘discrepancies’ but they do not point out that these refer to one discrepancy linked to a glitch in one Excel graph that was used in a number of different publications. They claim repeated errors, but these stem from the same Excel graph, or its derivative. Trying to characterize this as ‘numerous other discrepancies’ is incorrect.

14. (p. 247, 1st dot point): ‘Olsen and Fuentes (2005, p. 143) state that there were ‘no successful Little Eagle nests in the ACT in 2005’, whereas Olsen *et al.* (2013c, p. 197, and elsewhere) graph three ‘successful’ nests and Olsen and Fuentes (2005, p. 143) and Olsen and Osgood (2006, p. 179) table only two ‘active’ nests (a pair and a pair with eggs or young) for that year.’

First, they have misquoted us. Olsen and Fuentes said ‘we *found* no successful Little Eagle nests ... in the ACT in 2005’. We did our best to search for Little Eagles (and 11 other raptor species), and this is what we found. This is different from ‘*state there were no successful Little Eagle nests*’ and seems disingenuous. And again they have referred to the same problem publication Olsen *et al.* (2013c), a graph we used a few times. The text was correct.

15. (p. 247, 3rd dot point): ‘In 2007, there were no ‘active nests’ (this time defined as having at least one egg or young) among the 11 original pairs, according to the table in Olsen *et al.* 2008 (p. 79), and the survey group ‘failed to confirm nesting in 11 1992 territories’ (p. 80), so the three new nests reported must have been in territories elsewhere in the ACT and could have been overlooked in previous surveys. If the authors had been consistent, they should have added the three to the total, raising the baseline to 14 pairs in future publications, but they did not.’

This is bizarre. Of course some nests were overlooked in previous surveys. It was a group of part-time volunteers. Olsen and Rae were arguing earlier that we had *overestimated* breeding pairs, now they are arguing that we should increase the number to 14 because we are *underestimating* previous pairs. On one point we agree: these earlier estimates of 11 pairs or 13 pairs were underestimates.

16. (p. 247, 1st para.): ‘Not least, despite the implied comprehensiveness in their publications, particularly when Taylor and COG are used as the baseline, Olsen and colleagues did not survey the whole ACT. Indeed, in 2008 they started ‘a new survey [to] find all possible Little Eagle territories in the ACT’ (Olsen *et al.* 2009, p. 81).’

As mentioned above, the COG (1988) survey (later cited in Taylor and COG 1992) and the J. Olsen surveys 1990-1992 *did* attempt to survey the whole ACT, as best as one person (J. Olsen) or a group of volunteers could. The ‘new’ survey was a different

survey, an attempt to refute (falsify) our initial hypothesis that Little Eagles were declining by using three groups of volunteers drawn from ACT Parks and Conservation, University of Canberra, and the Canberra Ornithologists Group to intensively search for successful Little Eagle breeding territories. As we hoped, this ‘new’ survey did find territories missed in earlier surveys, at Dunlop, Pegasus, Strathnairn, Lion’s Youth Haven, and elsewhere. That was its purpose. These territories were unlikely to be alternative nests of historic sites. But the ‘new’ survey showed that many historic sites from the 1980s and 1990s remained abandoned. Keep in mind that the original concern raised in the Olsen and Rae paper about Little Eagles qualifying for Endangered status (>50% decline in index of abundance in three generations) in the ACT after our group located only two successfully breeding pairs in 2017 means that either a) Olsen and Rae knew of more than two successfully breeding pairs in the ACT in 2017 and did not report this in 2017, or b) Olsen and Rae do not accept that there were five to ten successfully breeding pairs of Little Eagles in the ACT in the 1980s and 1990s (assuming that we use successfully *breeding pairs*, not floaters or failed breeders, as that index).

17. (p. 247, 1st para.): ‘Moreover, at least one of the 11 nests documented in 1992 was not in the ACT (Olsen and Fuentes 2005, etc.).’

This statement is false. Nowhere in Olsen and Fuentes (2005) do we say that one of these nests was outside the ACT.

Conclusions

1. The Olsen and Rae article contains false, unreferenced claims, inaccuracies, and no science. Conservation science is about making predictions (Charles Krebs personal communication). We made predictions in our earlier publications. Olsen and Rae have made none.
2. The story that the 13 territories were ‘netted’ from annual COG surveys is just that – a story. The 13 territories came from a COG (1988) report where ‘*records have been supplemented with the personal observations of a number of other observers who have specialist expertise in the field*’ (p. 5) and the report included a map marked with territories and nest sites, for example, the breeding territory near the Tidbinbilla Tracking Station contributed by Tony Ross.
3. I can find no records of ACT Little Eagle nest locations contributed by Olsen and Rae to our public knowledge. Instead they have (a) used the nest location and breeding information contributed by a number of volunteers such as Con Boekel, Peter Christian, Roger Curnow, Geoffrey Dabb, Chris Davey Steve Holliday, Michal Lenz, J. Olsen and others, without acknowledging their work; (b) criticised the work of others while failing to add new successful breeding locations to these volunteer surveys.
4. Money and experienced personnel are now available. They should survey the entire ACT and *colour-mark all adults*. Why the funded group failed to mark all of the adults in 2017 is a mystery. We have demonstrated how adult Little Eagles can be colour-marked and radio-tagged (see Olsen and Trost 2017). Failure to mark adults means that speculations about adults moving long distances to alternative nests are invalid.

Testable claims

This discussion generates clear, testable claims:

1. The 13 territories in Taylor and COG (1992) came from database analysis of COG data (P. Olsen & Rae) *versus* the 13 territories in Taylor and COG (1992) came from the COG (1988) report which included territories identified by observers and experts. These were marked on a map.
2. General surveys of breeding raptors will *overestimate* the number of a species (P. Olsen and Rae) *versus* specific surveys targeting *one species*, such as Peregrines or Little Eagles, will net *more* breeding pairs than will a general survey. A team working full-time on Little Eagles will find more pairs, but eagle productivity will remain low.
3. Alternative nests inside Little Eagle territories will be 5, 7, 10 km apart (P. Olsen & Rae) *versus* alternative nests inside Little Eagle territories will be <5 km apart.
4. *'there is no way to know how many breeding pairs of Little Eagles in the ACT historically (in the 1980s-1990s), or since 2002'* (P. Olsen and Rae) *versus* we can use the 11 territories identified by J. Olsen + the 13 territories identified on the COG (1988) map + several new breeding pairs found since 2002 (16 years ago, so historic) to estimate historic breeding numbers of Little Eagles in the ACT.

Closing Remarks:

1. We are guessing that these degraded territories will continue to attract Little Eagles at low levels, but most historic territories/home ranges will not become breeding territories (fledge young). So, marked Little Eagle *pairs* (as opposed to individuals) will seldom if ever move between widely separated nests across expanded territories/home ranges. Researchers will continue to draw invalid conclusions from un-marked Little Eagles, and describe these new, low, breeding rates as 'normal' (Sue Trost and I observed only 2 successful (fledging young) pairs out of six, i.e. 0.33 fledged young/pair).
2. While some researchers will deride these earlier publications, they nevertheless use them as a main source of data, to find breeding pairs, document previous breeding locations and success, and describe trends.
3. The new 'Little Eagle research team' has so far failed to add new breeding locations to the public record, and seems to attempt to block volunteer researchers from collecting data at Little Eagle breeding sites that they, the volunteer researchers, first discovered. Further, they will count failed breeders as breeders.
4. If Little Eagles are lost as a breeding species in the ACT there will be an argument along the lines of – *'This does not matter for a geographically small place such as the ACT'* (about 2,358 km²). Though government policy will have failed the Little Eagle in the ACT, the implication will be – *'This is of little consequence. You can always go see breeding Little Eagles in NSW, or another state or territory'*.

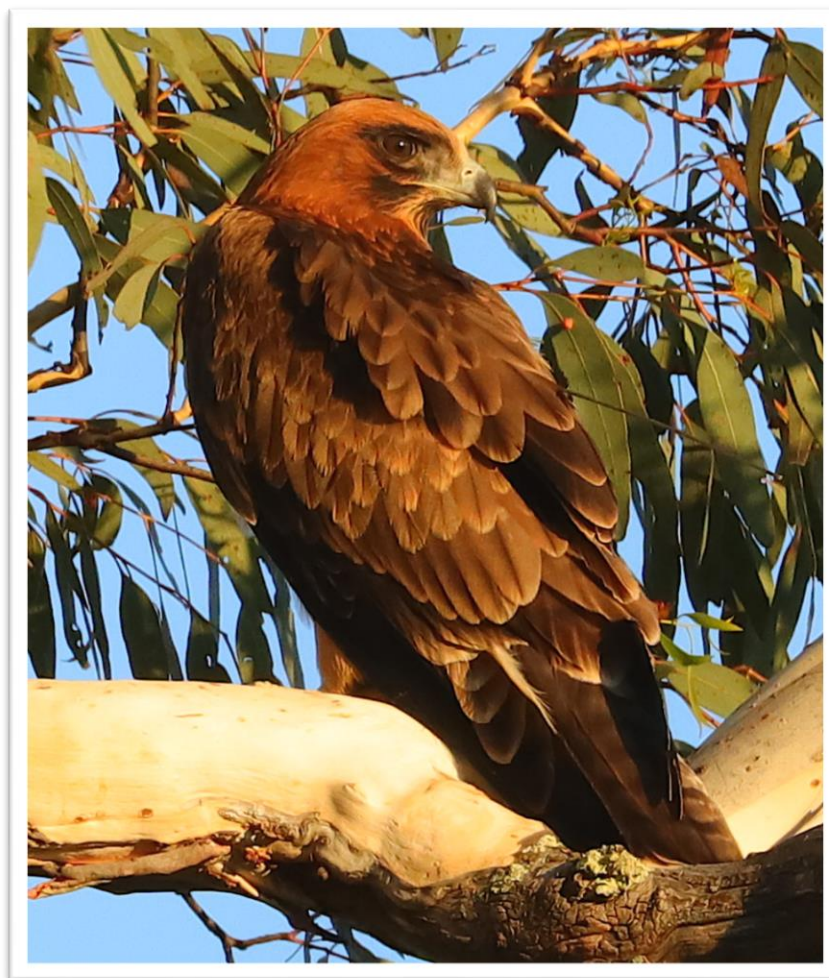
We will continue to monitor some breeding pairs in 2018, and continue to correct errors in the published literature.

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Juvenile Little Eagle on Black Mountain, 30 Dec 2017 (Jerry Olsen).

AN INCONVENIENT EAGLE

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A short article in *Canberra Bird Notes* (CBN 42 (2017): 245-249) by Penny Olsen and Stuart Rae ('POSR article') concludes 'there is no evidence for the proposed "collapse" in breeding numbers of Little Eagles in the ACT'. The article was critical of a number of earlier published articles about the Little Eagle (*Hieraaetus morphnoides*), including a series in *Canberra Bird Notes* from 2007 to 2017 where I was a co-author. The *CBN* editor has offered me an opportunity to reply.

Stephen Debus and Jerry Olsen are also responding to the POSR article. To avoid duplication I shall not go over the same ground. It seems to me that more than the claimed flaws in the earlier articles would need to be put forward if the evidence on the record about species decline is to be seriously questioned. I refer to the evidence advanced by COG in 2008, and the evidence cited by the ACT Fauna and Flora Committee in its recommendation on threatened species status. No evidence? A spelling error in a death certificate does not mean there is no evidence the subject is dead.

Instead, I shall take this opportunity to place some other relevant matters on the record.

Personal observations of local disappearance of nesting Little Eagles

The COG nomination (see COG 2007) summarised examples of local disappearance. At the risk of some repetition, but with more detail presented now, the following are some of my own observations of disappearance.

In 1995 a Little Eagle nest (bird sitting) was at the top of a Yellow Box in the 'Newline woodland' near Pialligo Avenue. Despite many visits in subsequent years to that paddock, and to the whole series of former stock-holding paddocks south to the Molonglo River, no nesting Little Eagles have been found there since 1995. That area has been regularly traversed in the course of the COG woodland monitoring surveys, with no reports of nesting Little Eagles.

In 1998, by arrangement with Environment ACT, COG began a program of quarterly surveys of areas of box-gum woodland in the ACT. I took responsibility for woodland in an area designated 'Symonston', which extended from Hindmarsh Drive south to Long Gully Road. Within that general area two pairs of Little Eagles had been studied over six breeding seasons (see Mallinson *et al* 1990). Within one of my survey sites a pair of Little Eagles (dark morph female, pale male) nested in 2003, raising one young. Within 12 months that site was removed from the woodland survey, being disturbed by the East O'Malley housing development. In 2004 a Little Eagle was seen at a nest on the northern slope of Mount Mugga, but that nesting did not proceed. Since then, despite regular visits, no Little Eagle nesting has been found in that expanse of woodland, including the former Callum Brae lease

and the Wanniasa Hills woodland south of Hindmarsh Drive. However, there have been several nests of Wedge-tailed Eagles in that area.

In 2006 I kept under observation a Little Eagle at a nest in a Radiata Pine near the office of the Fyshwick sewage works ('FSP' nest mentioned in Olsen and Osgood (2006)). The following year a pair of Little Eagles (dark female, pale male) used that nest, raising one young. The following year (2008) the (presumed same) female sat on the nest for several weeks but no young emerged. At that time, I suspected Pindone ingestion from rabbit prey as a possible cause of the failure, because Pindone had been extensively used at the nearby Jerrabomberra Wetlands. As a result, I raised the matter of Pindone use with ACT authorities. Since then, while Little Eagles have been frequently seen hunting around the wetlands, no nesting in that location has been reported. The tree in question has been removed, along with the rest of the small row.

Annual nest monitoring since 2007

An Action Plan for the Little Eagle (Action Plan No.35) was developed by the Conservator of Flora and Fauna, following the determination that it was a threatened species. That plan referred to 'a long-term program of raptor survey and monitoring in the ACT and region undertaken by community-based naturalists (including Canberra Ornithologists Group and the University of Canberra)'.

The Action Plan went on:

'It is desirable that these programs continue and that they include survey and monitoring of active nests, which can provide information on numbers of breeding pairs and their breeding success.'

The corresponding recommended action was:

'Participate in and support survey, monitoring and research by tertiary institutions; support involvement by community-based organisations to ... monitor the breeding success of the Little Eagle'.

The Action Plan also stated:

'breeding success is likely to be a key indicator of the Little Eagle's status'.

I was not involved in organised Little Eagle nest survey work before 2006, apart from involvement in the COG woodland project.

However, from 2007 I participated in a Little Eagle project organised by Jerry Olsen. My main reason for taking part was the observed disappearance of nesting Little Eagles from south Canberra. My role each nesting season was to seek information from local birdwatchers, including through the COG email discussion list ('chatline'), about signs of breeding activity within the ACT. I also investigated old nest sites and followed up reports. The aim was to record successful Little Eagle nests in the ACT.

Responses through the chatline led to the first reporting of nests west of Macgregor (Roger Curnow), at Pegasus riding school (Steve Holliday), Strathnairn (Peter Christian), on the north side of Black Mountain (Con Boekel), and Campbell Park (Michael Lenz).

The results of the annual monitoring were published in *Canberra Bird Notes*.

The following table, limited to nests in the ACT, gives a summary.

<i>Year</i>	<i>CBN ref</i>	<i>Successful nests</i>	<i>COG ABR reports for year incl AOI</i>
2007	33 (2)	3	80 (60 probably same pair, at L14)
2008	34 (2)	4	49 (more than half at L14)
2009	35 (2)	3	65 (half from L14)
2010	36 (3)	2	67 (half from L14)
2011	37 (2)	1	71 (widespread cells, hotspot L14)
2012	38 (3)	2	100
2013	n/a	2	94 (32 widespread cells)
2014	40 (3)	3	170 (40 widespread cells)
2015	42 (2)	1	213 (r/r 1.8% - cf. 30 y/a 2.7%)
2016	42 (2)	2	

So far as I know, there was no record of an unsuccessful nest after egg-laying apart from the FSP nest in 2008. However there were many examples of preliminary or possible breeding behaviour that did not qualify for the above table as a 'successful nest', for example: 2011 - pair inspecting nests Mount Ainslie; 2012 - pair at McQuoid's Hill; 2015 - male at Strathnairn nest, no eggs, male banded, radio-tagged; 2016 - pair at Lands End near nest, no eggs; 2015, 2016 - individuals repeatedly reported at Mount Stromlo/Rivett.

The table indicates the number of Little Eagle records in the COG annual reports (ABRs) for each corresponding year. This is to enable the results of different reporting processes to be compared. The results are consistent with one another. Many ABR records will be of a single individual at one location. Some might be of two birds at the one time. The ABR summaries relate to the whole COG 'area of interest'. There are reasons for the increasing level of reporting (see the ABRs for some of these). With use of eBird as a personal recording system by many observers in the ACT, the reporting of all bird species, including Little Eagles, has increased enormously.

2017: an extraordinary year for the ACT's Little Eagles

In October 2015, for a project conducted by a team at University of Canberra, Jerry Olsen attached a tracking pack to the male of the Strathnairn pair (called here 'LEmX'). The results of that project are reported elsewhere. The Strathnairn pair raised one young in 2016. After that, LEmX made a remarkable journey north to Daly Waters in the Northern Territory. It was reported back at Strathnairn in August 2017, being first seen by Roger Curnow.

Strathnairn is one of a number of Little Eagle nest sites in what might be called 'outer west Belconnen', an area extending to the west from the presently built suburbs. Most of those sites are on land proposed or likely to be proposed for housing development. Some sites are in reserves near the Murrumbidgee River. It has been known for many years that the area is an important one for Little Eagles. In a report on the southern part, for the ACT Planning and Land Authority in 2006, Stephen Debus indicated 3 Little Eagle nesting/foraging areas. One area was around the Molonglo/Murrumbidgee confluence.

In May 2017 a message was posted to the *COG chatline* by ACT government officials about ‘a coalition of researchers and developers’ formed to obtain information to ‘assist conservation of the eagles in the ACT and beyond’. That coalition is called here ‘the researcher-developer coalition’. The message asked for information about sightings of Little Eagles.

On 11 August 2017 I reported to the *COG chatline* the return of LEMX. I took the opportunity to renew my annual request for information about possible nesting pairs. I suggested such information could be sent either to me or to the researcher-developer coalition, in the expectation that ‘all nesting data will be pooled in the end’.

Planning for development of outer west Belconnen has been going on over many years, and for the Strathnairn precinct since at least 2013. A development application for ‘Strathnairn’ was made in March 2017. Approval of the application was challenged by the Ginninderra Falls Association in September 2017, on the ground among others that insufficient provision had been made for protection of Little Eagle nests and foraging habitat. The developer is a joint venture between a commercial business and the ACT government.

In the 2017 season, Little Eagles in the ACT found themselves the subject of attention from two groups, the earlier (Action Plan endorsed) group referred to above and the researcher-developer coalition. Only the latter had access to the development sites in west Belconnen in 2017.

The Canberra Times on 11 October 2017 reported statements on Little Eagle occurrence by ‘the resource recovery manager’ for the joint venture, evidently a participant in the researcher-developer coalition. One statement was:

‘The more we’ve looked, the more of these pairs of little eagles we’ve found. They were talking about there only being one or two left. Well, we’ve already found five definite pairs breeding in the ACT.’

That statement, and other events since then, including the POSR article, seem to me to raise reasonable concerns whether the purpose of the researcher-developer coalition is to ‘assist conservation of the eagles in the ACT and beyond’ - or to establish that there is no need for conservation measures. Perhaps I shall be reassured by future events, but one might wonder about the timing of the entry into the field of the researcher-developer coalition, given that vulnerable species status was recommended in 2007.

The earlier long-running project was directed mainly to finding and reporting, each season, successful nests of Little Eagles in the ACT. Clearly, the researcher-developer coalition is of broader scope.

Against that background, in continuation of the annual summaries in the CBN series, I set out what I knew of the 2017 season before the Stuart Rae report in *Gang-gang* (Rae (2018)).

Before the expected seasonal nesting activity the researcher-developer coalition placed elaborate video camera structures at the Strathnairn and Campbell Park nest trees, both of which had been successful in 2016. Video was streamed of two eagles copulating at the Strathnairn nest, one being a dark morph male, not LEMX. That nest was abandoned before egg-laying.



There was no nesting at the Campbell Park nest with the video camera. The presumed pair that had used that nest in 2016 moved to a different nest, where the pair raised one young to fledging. That presumed pair is of some interest because their site is near suburbs, and it has been monitored since 2012, with successful nests in each year. (See diagram.)

It is not known whether the video equipment caused abandonment of the two nests. The Campbell Park nest had been used from 2014 and the Strathnairn nest from at least 2012.

Little Eagle nest tree of the Campbell Park pair used 2014-2016, showing the equipment attached to the tree in 2017. The camera itself is mounted near the former nest (*Geoffrey Dabb*).

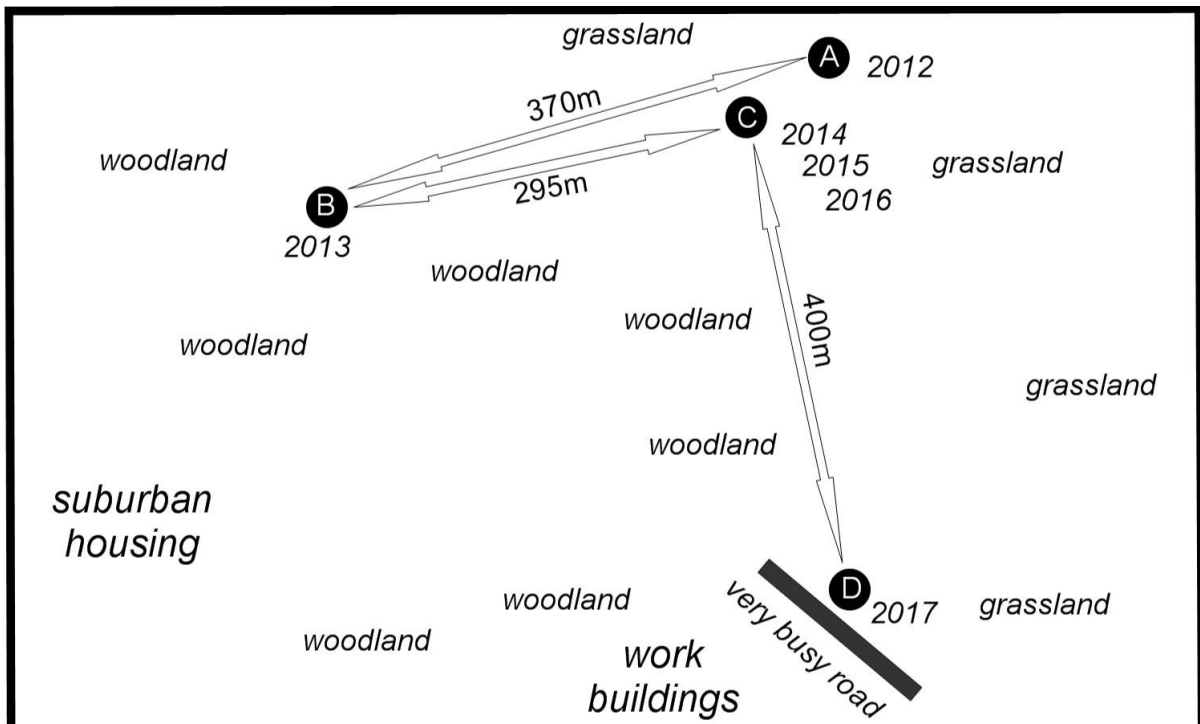


Diagram showing nests of Campbell Park pair, with distances between nests used sequentially 2012-2017.

Jerry Olsen and Susan Trost rediscovered a nest of a south-Black-Mountain pair on 4 Oct 2017, and collected prey remains and pellets at that site. That pair raised one young, the fledgling being seen to be colour-banded and fitted with a tracking aerial.

In 2017 there was an unusual cluster of Little Eagle eBird reports from the Australian National Botanic Gardens, Ryu Callaway reporting two birds. This is some evidence that the resumption of that breeding territory had not occurred in the immediately preceding years, although some reports had suggested possible activity around ANBG in 2016.

As in some previous years, possible pairs were reported from the woodland and pine forest east of the suburb of Gilmore, and the Mount Stromlo/Bibaringa area, but no nests were located.

The Stuart Rae summary and some final comments

I refer here to Stuart Rae's brief report on the 2017/2018 season on behalf of the researcher-developer coalition (Rae (2018)). The exceptional efforts now being made to find pairs of Little Eagles are to be welcomed, assuming they are for their stated purpose. The nine nesting pairs recorded is an impressive total, which has included some previously undetected nesting activity. As the resources recovery manager has said, the more you look the more you find. However, ominously, the increased survey effort netted only 3 successful nests, the same number as found in 2014, and one less than in 2008. It seems there was no successful nesting at the outer west Belconnen sites, a failure not recorded in any year in the period 2007-2016. Clearly much analysis and evaluation lies ahead. The relationship between 'nesting pairs' and 'successful nests' is likely to be a significant issue. Another question is: How many Little Eagle nests were there in the ACT in those earlier years, say before the year 2000?

This brings us back to the POSR article referred to in the first paragraph of this note. The Stuart Rae summary makes clear that the authors of the POSR article are participants in the researcher-developer coalition. Does this foreshadow that future analysis and evaluation will disregard the work in that earlier period of Jerry Olsen and McComas Taylor and others? If so, it is very likely the findings of the researcher-developer coalition will be contested. That would create an unhappy situation if, while controversy persisted, those findings were then used to determine what protective measures in the ACT were needed for the Little Eagle (if any). An inconvenient eagle indeed.

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LITTLE EAGLES IN THE ACT: A REPLY TO OLSEN & RAE (2017)

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A paper criticising publications by Jerry Olsen and/or myself on the Little Eagle *Hieraaetus morphnoides* in the ACT (Olsen and Rae 2017) contains some inaccuracies. The opening paragraph of that paper contains a misinterpretation and misrepresentation of what I said about the eagle's conservation status. In an article (Anon. 2012) and book (Debus 2017, p. 83) I was in no way denying that the ACT Scientific Committee had assessed and listed the eagle as Vulnerable in 2008. Further, in the book (p. 69) I explicitly stated that the eagle is 'listed as Vulnerable... in the ACT'. My comment on p. 83 related to the official response to later recommendations by Jerry Olsen and colleagues (including myself) to uplist the eagle from Vulnerable to Endangered, but I did not criticise the Scientific Committee. This is self-evident in the Boobook article (Anon. 2012), paraphrased in my book (Debus 2017), the former having said among other things:

'Regarding the Flora & Fauna Committee consideration of our proposed Little Eagle uplisting from vulnerable to endangered in the ACT, certain person(s) are determined to block it by arguing that:

- *the dots on the 1992 map in the Debus et al. paper are different nests in different years (apparently because the original 2005 CBN paper said 1988–1992);*
- *there is no matching regional [NSW] decline [in fact there is, in south-eastern NSW, if rather less severe, i.e. 50% drop in atlas reporting rate in 30 years].'*

This statement was a relay of information from a trusted source (with my own comments in square brackets), and I took the 'blocking' of the recommendation to have happened at 'community meetings' before it got as far as being formally before the Committee. I do not know who the 'certain person(s)' were or what official position they held, but my comments in the article and book implicitly refer to post-2008 events arising from articles in *Canberra Bird Notes* and *Corella* circa 2010 to 2013, expressing concern about the eagle's apparent decline.

The mismatch of COG Atlas sighting data and *known* breeding pairs of Little Eagles in the ACT at the time (2013) may relate partly to the fact that there may have been more pairs present than a small volunteer team could find, and atlas sightings reflected a somewhat higher breeding population of eagles than was realised (as well as perhaps some false positives based on misidentifications of other raptor species). We need the results of the 2017 Olsen-Rae and developer-funded survey(s) to know a more accurate current population size. Nevertheless, for argument's sake if there are or were say between six and nine breeding pairs and not the two to four reported over the last few years, this is still a 30% decline since the historical minimum of 13 territories (which decline is the IUCN threshold for Vulnerable). In that same article (Anon. 2012) I quoted a knowledgeable source (probably the most reliable at the time) as saying that the historical estimate (11–13 pairs or territories) was conservative, and that there were probably twice as many. Olsen *et al.* (2015) estimated that

in the early 1990s there were probably closer to 20 territories. Although the historical baseline is uncertain beyond being probably more than 11–13 territories and perhaps about 20, a significant decline seems certain in view of the documented abandonment of some historical territories that are now under suburbia (see recent papers in *CBN* by Jerry Olsen and colleagues). The ACT is a microcosm of the wider state of affairs in New South Wales, and the situation in the ACT must be seen in the light of the ~70% decline in atlas reporting rate for the Little Eagle in NSW between 1986 and 2006 (Cooper *et al.* 2014). Garnett *et al.* (2011 and supporting data) estimated a generation time of 18 years for the Wedge-tailed Eagle *Aquila audax* and Little Eagle. Realistically, Little Eagle generation time may be closer to 10–12 years as estimated for similar-sized raptors, but even so, a ~70% decline in atlas reporting rate over 20 years gives a calculated >50% decline in index of abundance in three generations, which meets IUCN criteria for Endangered in NSW.

The aforementioned inaccurate charge, concerning the ACT Scientific Committee and Little Eagle's listing as Vulnerable, also occupies a lengthy paragraph in a review of the eagle book by P. Olsen (2017). The true situation invalidates much of what Olsen says in the relevant and misleading paragraph of her review, particularly her attack on my understanding and interpretation of, and veracity about, the 2008 listing process for the eagle's Vulnerable status. That misunderstanding, and consequently misplaced sense of aggrievement, has coloured the tone of her review.

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REVIEW OF EAGLE BOOK: A REJOINER TO VEERMAN (2017)

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Book reviews are rather personal and subjective reactions, and I am of course in favour of scientific debate and critical review. However, an explanatory response is warranted because Veerman (2017) seems to have missed some of the points made in the preface, introduction and epilogue to my book (Debus 2017), about the rationale for many of the matters with which he takes issue.

Veerman's first major objection is the title and the species covered. These were explained at the start of the book, and the scene for the Australian content was set in my raptor field guide (Debus 2012), which identified several groups requiring research and conservation attention: sensitive species (eagles), arid-zone endemics and endemic bird-hunters. These groups are all represented in the eagle book, whose stated aim was to highlight these iconic or endemic species. I said why I thought the Black-breasted Buzzard and Red Goshawk sufficiently eagle-like, and that the Square-tailed Kite was included on request, and added that, with its large wingspan, it is sometimes confused with eagles. There is also much more new information on the six Australian species covered than on any of the kites or harriers *etc.* that Veerman felt could have been included. And besides, significant post-HANZAB information on all the others was referenced in the field guide (up to 2012, anyway, and there has been little on most of them since).

As explained, the New Guinea–Solomons eagles were included for completeness and other stated reasons; an eagle-like confuser (Long-tailed Buzzard) was excluded for lack of new information; and Wallacean eagles were excluded for lack of new information, marginal occurrence of some even in Wallacea, and their Asian rather than Australian affinities. One could also point out that New Guinea and Australia were once joined, and there are no extant eagles in Oceania or New Zealand. Australasia is a recognised biogeographical region that excludes Asia west of Wallace's Line, the corresponding region being the Oriental. For Wallacean and Asian species there is *HBW Alive* online and the Global Raptor Information Network www.globalraptors.org, to the extent that those species accounts have been revised since recent global treatises.

A suggestion to include the Osprey had been considered, but declined on account of other recent reviews (including a monograph) and lack of personal field study (a criterion for the other Australian species), but it is also a piscivore in a separate family. I said why the Australian kites formerly mis-named 'eagles' were excluded, but in any case the problems of identification with respect to the Little Eagle are covered in the field guide (and indeed summarised in the eagle book – hardly 'dismissed'!). I would not trust Google to present an accurate definition of 'eagle' or 'eagle-like' (it should be restricted to the Accipitridae, for a start), or to correctly identify all its raptor (or indeed bird) images.

The other main area is taxonomic treatment and discussion. The taxonomy was explained in layperson's terms and referenced in the bibliography. And *of course* the Osprey was treated as a single global species *Pandion haliaetus*, because it has reverted to that status in the latest BirdLife Australia working checklist (available online), and also because a recent DNA paper has so demonstrated (Monti *et al.* 2015, also available free online).

Other comments touched on my sources of information. Unfortunately the Papua New Guinea Bird Society's journal *Muruk* is long defunct, but I did consult regional experts (as is self-evident in the book). I used to trawl Birding-Aus for useful information on raptors (often reprinted in *Boobook*), and have in the past tried requests, to little result, as birding chatlines seem now to be full of what the twitchers are doing and seeing, not what the birds are doing (nevertheless, I do say on p. xxi that I used online posts).

The eagle book is explicitly post-HANZAB, but some of the 'missing' earlier basic information is nevertheless in the field guide, *e.g.* Black-breasted Buzzard using stones to break eggs. As the eagle book was deliberately illustrated by photos (and yes, Melanesian species sourced by contacting owners of online images), paintings of Melanesian species to HANZAB standard and format were unlikely to be available within the timeframe.

'Decimation' means 'reduced to one tenth', and was deliberately used in reference to the initial 90% kill of rabbits by the calicivirus. The index was compiled following instructions and was meant to be a guide to significant matters in the species accounts; those overseas eagles not listed are discussed in the introduction in a specific context, where they are easily found. The rationale for the layout of the bibliography was explained: books cited under multiple species accounts are (for brevity) under 'Books'; those cited in only one species account are listed under that species' name (simple!). Finally, the publishing schedule meant that the Little Eagle migration story came too late to be included.

Some of the points made above could also apply to the review by P. Olsen (2017), concerning attention to the rationale in the book's preface and introduction. For instance, Olsen says 'Opening the book randomly...', and proceeds to say 'Under "Field identification" for the [Wedge-tailed Eagle] we are told that an ongoing problem is that juvenile White-bellied Sea-Eagles are mistakenly identified as Wedge-tailed Eagles..., but it would have been more instructive to add that the Wedge-tailed Eagles have feathered legs, sea-eagles' are bare, etc.'. Well, under 'Field identification' for the Sea-Eagle we find 'The salient identification points (versus the Wedge-tailed Eagle) are the Sea-Eagle's bare tarsi...'

These and some other matters, including some raised by P. Olsen (2017), could be resolved by having HANZAB in modular format to which subsequent research could be added as soon as published, and HANZAB being made available online, as has been mooted.

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BREEDING OBSERVATIONS OF THE GREY BUTCHERBIRD, INCLUDING A REPEAT BROOD, IN THE CHAPMAN/RIVETT AREA

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Abstract: Observations of the breeding of the Grey Butcherbird (*Cracticus torquatus*) made over three seasons (2015-2017) in Chapman and Rivett are described. This includes a very rarely documented occurrence of a successful double brood, the presence of immature helpers at the nest, as well as notes on the begging calls made by both adults and fledglings during breeding. The timing of the breeding cycle with that known for the ACT is also compared.

1. Introduction

The Grey Butcherbird (*Cracticus torquatus*) is an increasingly common species in suburban Canberra. The 2015-2016 Annual Bird Report (Canberra Ornithologists Group 2017) describes it as a woodland species, also found in the suburbs, with the number of birds, records and reporting rate far higher than in the past. It is now listed on the Garden Bird Survey chart (as amended in June 2010) as one of the 50 species most likely to be found in Canberra gardens.

This has not always been so, with the COG Bird Atlas (Taylor and Canberra Ornithologists Group 1992) noting that despite intensive observation, there were only a handful of urban records between 1 Sep 1986 and 31 Aug 1989. It further notes that their absence from the city was surprising in view of their ubiquity in larger cities such as Sydney and Melbourne. At the time their low numbers in Canberra had been linked to the city's poor lizard fauna. The COG Bird Atlas also notes that little breeding information was available.

The increase is reflected in Jack Holland's (JH) observations in his local area of Chapman/Rivett, the NW end of Cooleman Ridge and the southern end of Narrabundah Hill, including his GBS site. In JH's notes since the January 2003 bush fires there are 10 or fewer observations up to and including 2008-2009, 20 or more up to 2013-2014, and more than 50 from 2014-2015. Indeed it is rare these days when JH surveys the NW Cooleman Ridge or S Narrabundah Hill that not more than one Grey Butcherbird is recorded, and they certainly are residents there. They also are regularly heard within the suburbs, in particular post-breeding.

2. Observations

2.1. Breeding activity at the extreme NW end of Cooleman Ridge

This increase has included the first local observations of breeding, with nests found on the extreme NW end of Cooleman Ridge, where the main track and Nature Trail drop steeply towards the end of Kathner Street Chapman. On 30 Sep 2015 JH was attracted to a begging noise there. Surprisingly these were not from newly fledged Australian Magpies

(*Gymnorhina tibicen*), but from a pair of adult Grey Butcherbirds that flew away together. The nest was found in a medium-large red box (*Eucalyptus polyamthemos*) at 35° 21' 05" S and 149° 01' 24" E in a relatively open position 10 m above the Nature Trail on the morning of 1 Oct. The bird on it was again begging in the same manner and was then fed by its partner. Subsequently a bird was observed on the nest only on 7 Oct, and although the birds remained in the area, by the end of the month it was concluded that the nest had been abandoned.

On the afternoon of 19 Oct 2016 begging calls similar to those made by dependent young Australian Magpie led JH to an as yet unfinished and more concealed nest 7 m high in a Mealy Bundy (*E. nortonii*), where the track and the Nature Trail diverge and about 30 m further up the slope from the 2015 nest. Early on 28 Oct a bird was on this nest, but only the tail was visible and it was hard to confirm the species, although another bird often called nearby. This situation continued until 22 Nov when for the first time something shadowy could be seen in the nest until an adult Grey Butcherbird arrived and fed it. While feeding was again observed on 26 Nov and 2 Dec, it was not until 8 Dec that a chick could be seen rising up and begging for food, before it sat on the edge of the nest.

Soon after, a second bird in brown immature plumage came to the nest briefly before flying to an open position in an adjacent tree. On the morning of 11 Dec a chick could be seen in the nest before a bird in immature plumage again came to feed it. However, on the morning of 18 Dec, it was surprising (as only one chick had been seen to date) to hear begging and find three recent fledglings in a tree on the opposite side of the main track. An adult was seen to fly away and the young sat quietly for 10 minutes until a mature bird arrived with food, but it was very reluctant to feed while an observer was present, so JH moved away.

Grey Butcherbirds were again present during October 2017, and the pair was seen defending the area on one occasion, but a number of searches failed to find the nest. Then, on the afternoon of 5 Nov, two fledglings were seen sitting on a branch in a very open position about 10 m down the slope from the 2016 nest, before an adult came in to feed them. One fledgling was clearly stronger than the other as it flew away several times over 30 minutes of observation, but returned and both young were fed again. A few days later a single fledgling was again seen in an open position nearby making soft begging calls similar to the Australian Magpie. Nothing further was subsequently seen or heard in the area.

2.2. Breeding activity in Kanooka St Rivett

On 8 Nov 2017 Wilf Hedley (WH) alerted JH to a new Grey Butcherbird nest that in the week before he had located on the verge of his neighbour's place at 43 Kanooka St. At the same time WH showed JH photos of the two previous fledglings which were still around. Earlier on 16 Sept WH had mentioned that a Grey Butcherbird nest had been in his garden for around a month already. This nest was in a 20 m spreading gum tree in the neighbour's place at No 43, overhanging his back yard.

WH's wife, who keeps an eye on all the avian comings and goings, first noted it while reading in the back sun room of an afternoon. The first date of any courtship ritual was 4 Aug, when plumbing work was in progress in the back yard. The plumber was being assisted by a Grey Butcherbird (presumed male) that would swoop in and pick up any juicy morsels and take them to the presumed female sitting on the fence line nearby. This type of behaviour is described in *HANZAB* (Higgins *et al.* 2006), which notes that the female often begs for food from the male, including before nesting.

Once the nest was found WH and his wife regularly saw the adult on it, and then saw both parents feed the two chicks, which fledged towards the end of October. Unfortunately no exact dates were retained except for from photos showing that the original breeding pair was still feeding two fledglings on 1 Nov 2017. Also (as related to JH on 20 Nov) photos and a video clip were taken of an adult bird feeding both first-clutch fledglings mice near the second nest site on 12 Nov.

On 8 Nov JH inspected the new nest, which was easily visible from the street in a quite open position about 5 m high in a medium-sized exotic tree, and only about 2 m from the kerb. However, as above, again only the tail could be seen, and from this and its appearance a Red Wattlebird's (*Anthochaera carunculata*) nest could not be ruled out. WH indicated he had seen a Red Wattlebird and an Eastern Koel (*Eudynamis orientalis*) having an interaction near the nest site, which first attracted his attention.

Again positive identification by JH did not occur until the afternoon of 15 Dec when he could clearly see two Grey Butcherbird chicks in the nest. There were also two birds (at least one in immature plumage) nearby, mostly on the ground across the street. They appeared not to be gathering food, nor did they approach the nest. On the morning of 19 Dec (one of the few times binoculars were used), a single chick could be seen low down in the nest, raising its head only once over 20 minutes. Adult birds were heard nearby several times, but again they did not approach the nest.

On the morning of 21 Dec, JH (again with binoculars) saw two birds above the nest. The lower one, in immature plumage, soon flew off, but the other, sitting about 50 cm above the nest, was about to fledge, judging by its very short tail. That afternoon WH forwarded two photos to JH. One showed a fledgling with a lot more white down than the other, which clearly had fledged earlier. This was the reason only the single chick in the nest could be found over the past few days.

A photo by WH the next day showed that the smaller fledgling had made it through the night, perched very low to the ground. They progressively moved from overnight roosting in the higher trees in WH's front yard to roosting in the big gum tree at the intersection of Nelumbo and Kanooka Streets. Both of the first fledglings appeared to have survived although they have not been seen since 27 Dec 2017. However, WH believes a cat that became interested in the second brood may have got one of them.

WH heard butcherbirds in the distance on return from holidays on 15 Jan 2018, further away towards the far side of Rivett Oval. However, they (including the surviving juvenile from the second brood still begging food from the adults) returned on 23 Jan, when on a 40°C day they were taking turns to bathe in the temporary bird bath set up for them.

3. Summary and Discussion

The above briefly details aspects of the expansion of the Grey Butcherbird into Chapman/Rivett, the NW end of Cooleman Ridge and the southern end of Narrabundah Hill. This relatively recent expansion is already widely documented throughout Canberra (Canberra Ornithologists Group, 2017). Their arrival in Kanooka St Rivett is more recent, WH could hear them three seasons ago, and there were indications of a possible breeding event at the back of the garage at No 43 two seasons ago (2016). Consistent with this, JH has records of Grey Butcherbirds conspicuously seen calling in Kanooka St on 6 Sep and 20 Nov 2015.

3.1 Successful Repeat Breeding

The main purpose of this paper is to describe new details of the species breeding, in particular the successful repeat brood in Rivett. Surprisingly *HANZAB* (Higgins *et al.* 2006) provides very little information on this, simply noting that the breeding behaviour of the Grey Butcherbird is not well known, with no major studies. Most of the information comes from the ROAU Nest Record Scheme (NRS), with 360 records to January 2003. It notes that the species “possibly rears two broods in a season”, quoting Campbell (1900). Otherwise it only states that the species has been recorded building a new nest for replacement or repeat clutches (De Warren 1926, NRS). Johnson (2003) also notes that De Warren (1926) observed Grey Butcherbirds building a second nest for a second clutch during a single breeding season.

The description of the events at 43 Kanooka St Rivett above seemingly adds a very rare example of two successful broods in a single season.

3.2 Helpers at the nest

HANZAB (Higgins *et al.* 2006) notes that very occasionally Grey Butcherbirds have been recorded breeding co-operatively with a single helper. Quoting Johnson (2003), it states that all reviews of co-operative breeding refer to a single record where at one nest near Griffith NSW two adults and a juvenile (probably referring to an immature) fed nestlings (Rowley 1976). It further notes from information in the RAOU NRS that at two other nests, one near Brisbane and another near Sydney, an immature, thought to be a young of the previous season, helped to feed nestlings, and at one of these nests an immature also helped to incubate.

In contrast Johnson (2003) states that the RAOU NRS contains ten records of more than two birds attending the nest or young. Interestingly, both the Birds in Backyards (<http://www.birdsinbackyards.net/species/Cracticus-torquatus>) and Wildlife QLD (<http://www.wildlifeqld.com.au/bird-conflicts/butcherbird.html>) websites state, respectively, “The young birds will remain in the breeding territory for about a year, and help the parents raise the young of the following season”, and “Juveniles remain in their parents' territory for about a year and help raise the chicks next season.” It is unclear on what literature these two statements are based.

This paper provides additional evidence for this, first the 2016 observations at Coleman Ridge, where on one occasion (11 Dec) an immature bird was definitely seen to feed the chick, and may also have done so on 8 Dec. At the time JH thought it might have been one of the parents still in immature plumage, which was puzzling since both parents in adult plumage were seen earlier. Whether it was a 2015 bird is unclear since the nest appeared to be abandoned that breeding season.

It is possible the bird in immature plumage was from a previous brood in 2016. Though the timing would have been similar to that in Rivett in 2017, there is no real evidence for this possibility. In Rivett the immature bird seen over the nest on 21 Dec 2017, or in the immediate area on 15 Dec, may have been a helper, but in this case feeding of the chicks was not observed. Also on the afternoon of 7 Dec the brown bird that could be seen over the nest was likely an immature.

3.3 Begging call during nesting

JH was not familiar with the begging call given by adults during nest-building etc. at Cooleman Ridge, described above as similar to that of dependent young of Australian Magpies. However, Higgins *et al.* (2006) state that during courtship feeding the female quivers its wings and utters either soft or loud begging calls similar to those of begging young. That the dependent young begging calls are very similar to those of the Australian Magpie is underlined by the fact that JH thought he heard a late example of the latter on Cooleman Ridge on 2 Feb 2017, but it turned out to be a Grey Butcherbird adult and juvenile. This was about 500 m from the nest site, and is likely to have been one of the Dec 2016 young.

3.4 Comparison with local breeding times

The Bird Info information from the COG database on the COG website (<http://canberrabirds.org.au/wp-content/uploads/2015/02/Grey-Butcherbird.pdf>) provides information on local Grey Butcherbird breeding. The breeding reporting rate spiked in 1998 at 0.3 (due to the higher rate of surveying for the Birds Australia atlas) and has peaked and troughed three times, at a maximum of 0.2, between then and 2013. More importantly:

- nest building has been reported from August to October,
- nests with eggs in September and October,
- nests with young in August, October and November, and
- dependent young from October to March.

The records are clouded somewhat with the addition of “bird on or seen leaving nest” from September to November and “breeding” from November to January. If the former means a nest with either eggs or young, it fits in with the above. However, “breeding” is very broad and cannot be accurately interpreted.

Nest building during September 2015 for the first record on Cooleman Ridge is consistent with this, as is the 2016 nest, which was still being built in the second half of October. Given that in 2017 the young had fledged by early November, nest building may have started early with egg laying in mid-September, based on the available incubation and fledging times below. However, the records of nests with young in Rivett in 2017 and on Cooleman Ridge in 2016 appear to be the first such observations for December.

HANZAB (Higgins *et al.* 2006) lists the average incubation period as 21.0 days (range 20-22 days) and the fledging period as 26.8 days (range 21-30 days). Johnson (2003) gives slightly longer times for the incubation period (23 days based on two estimations), but shorter for fledging, with the young remaining in the nest for 25 or 26 days (Skutch, 1987) or 24.7 days (range 23-27, n = 6), based on the ROAU NRS. However, both result in similar time estimates from first laying to fledging of around 47-49 days (or 7 weeks).

These estimates are consistent with the observations in Rivett, where the original nest was first noticed in late August/early September and the young fledged in the second half of October. Given that the second brood fledged by 21 Dec, eggs would have been laid in late October or very early in November, consistent with the bird being observed on the nest in the first week of the latter month.

A time of around two months from nest building to fledging would allow two broods per season if the first nest was built in late August and the second towards the end of October, as in Rivett. The nest with young in August in the COG database does seem to allow for the possibility of a double brood. Only the 2017 breeding timing would have allowed a second brood on Cooleman Ridge, but JH has no evidence for that.

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A REVIEW OF THE AUSTRALIAN DARTER AND VARIOUS CORMORANT SPECIES BREEDING ON MOLONGLO REACH, LAKE BURLEY GRIFFIN, ACT

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Abstract. *The Molonglo Reach, between Clare Holland House and Sylvia Curley Bridge, has at least since 1972 been known as a breeding location for the Australian Darter and the Little Black Cormorant. Subsequently the Little Pied Cormorant and the Great Cormorant have bred regularly in the area. Information on abundance and numbers of nests obtained from various sources is documented. A subsequent decline in breeding of the four species is reported and reasons for the decline are discussed.*

1. Introduction

The first reference to the Australian Darter *Anhinga melanogaster* breeding on the Molonglo Reach (Fig. 1) appears to be in a statement that ‘It has nested in the Lake Burley Griffin (Molonglo River) area, and the nesting season appears to be from early January to almost the end of February.’ (Canberra Ornithologists Group 1972). The same article mentions that for the Little Pied Cormorant *Microcarbo melanoleucos*, ‘Breeding has been recorded only from the Molonglo River,’.

The first recorded detail of breeding on the Molonglo Reach was in February 1979, 15 years after the filling of Lake Burley Griffin. Nix (1980) reported around 25-30 Great Cormorant *Phalacrocorax carbo*, 20-24 Little Black Cormorant *P. sulcirostris* and 8 Australian Darters in a Weeping Willow *Salix babylonica*. On inspection by canoe he observed 4 Australian Darter nests containing fledged young and 8 nests of Little Black Cormorant. He noted that previous records suggested that the Little Pied Cormorant had also bred in the same general area, possibly in the same tree. There is no mention of breeding in other locations along the Reach, which suggests, given Nix had a canoe and knew the area, that this was the only breeding site at the time.

Since then there have been various surveys and other sources of information regarding the Australian Darter and cormorants on the Molonglo Reach. This report discusses the status of these species from 1979 to the present and describes their breeding success and habitat use within an area stretching from Clare Holland House at the junction of the Molonglo River and Lake Burley Griffin, upstream to the Sylvia Curley Bridge.

2. Sources of information

Information for this report was obtained from ACT Government survey files held by the Woodlands and Wetlands Trust at Jerrabomberra Wetlands, from publications by the Canberra Ornithologists Group, unpublished reports and personal observations.

2.1. Breeding records from the Canberra Ornithologists Group's Annual Bird Report (ABR)

All breeding events for Australian Darter, Great Cormorant, Little Black Cormorant and Little Pied Cormorant from the Molonglo Reach area and published in *Canberra Bird Notes* were allocated to breeding season.



Figure 1. North bank of Molonglo Reach, 1 May 2008 (Chris Davey).



Figure 2. North bank of Molonglo Reach, willows cleared, 20 Jun 2008 (Chris Davey)

2.2. Ranger surveys

Systematic surveys of waterbirds were conducted virtually every month along the Reach by Rangers from the ACT Government. The surveys covered the periods July 1983-August 1986, August 1989-June 1993 and October 1994-October 1997, and included counts of individual species on all surveys. Comments were made regarding breeding but no specific counts of the number of active nests or the total number of nests were documented.

2.3. COG outings

In 2003 the Canberra Ornithologists Group (COG) started at least an annual outing to the area along the eastern edge of Lake Burley Griffin, including the Molonglo Reach as far as the Sylvia Curley Bridge, and reported numbers of Cormorants and Darters in accounts of the outings in various issues of the COG newsletter *Gang-gang*. The outings were by electric-driven motor boat and held at various times of the year but usually late summer-early autumn, when nestlings were most likely to be seen. For each visit the number of individuals and the number of active nests were recorded by Jack Holland.

2.4. Pre willow clearing survey

In late 2007 COG was contacted by the Lakes Officer, Department of Territories and Municipal Services (TAMS) to obtain COG's views on the proposal to clear willow species along both banks of the Molonglo Reach between Clare Holland House and the Sylvia Curley Bridge. After an on-site meeting between COG and TAMS it was agreed that due to lack of information, with little in the literature to guide recommendations or to provide advice on likely impacts, known nesting sites would be identified, the trees not removed and the area monitored over the subsequent breeding season to assess impacts. A survey was conducted by electric boat on 1 May 2008 and all nesting trees flagged with tape on both sides of the Reach. The species of tree used for nesting was identified and a report was submitted to the ACT Government (see Davey and Fullagar 2008). Tree-felling occurred during late May 2008 (see Fig. 2).

2.5. Post willow clearing survey

Subsequent surveys were then conducted during the breeding season of 2008-09, 2011-12 and 2012-13 to monitor the impact on the Australian Darter, Great Cormorant, Little Black Cormorant and Little Pied Cormorant along the Reach.

With the clear-felling of trees along the north bank of the Reach it was possible to observe breeding activity along the south bank from the cycle path along the north bank. Apart from a section on the widest part of the Reach where a telescope was required, all activities could be recorded through binoculars over a two-hour period. The surveys conducted by the author over the course of the 2008-09 breeding period consisted of 18 visits between 29 Oct and 7 Jun. Surveys during the 2011-12 seasons involved 15 visits between early September and mid-April, whilst the 2012-13 breeding seasons involved 5 visits between late November and late Feb. For each survey the number of birds of individual species, the number of active nests, the subsequent success of each nest and the tree species used for nesting were recorded.

3. Results

3.1. Breeding observation from Canberra Bird Notes

Observations of breeding by the Australian Darter along the Molonglo Reach in 1972-73 and up to 2002-03 have been reported by Allan (2003). Reports in 1972-73 and again in 1975-76 are vague but both refer to breeding along the Molonglo Reach. As indicated previously the first detailed report involves Australian Darter and Little Black Cormorant breeding in 1978-79 (Nix 1980).

In COG's ABRs between 1978-79 and 1982-83, the Australian Darter and Little Black Cormorant were reported breeding along the Molonglo Reach each season. The first record for the Little Pied Cormorant was in 1980-81 whilst the first record for the Great Cormorant was in 1983-84. Interestingly, in that year none of the other species were reported breeding.

From 1984-85 through to 2001-02 there are virtually no breeding records for any of the species. Breeding for the Australian Darter is mentioned for 1988-89 (1 record), 1997-98 (1 record of nest with young) and 1998-99 (1 record of birds on nest), whilst the Little Black Cormorant is only mentioned for 1988-89 (1 record). After 2001-02 breeding is recorded for all species nearly every year.

3.2. Ranger survey

Despite the Molonglo Reach area being surveyed by boat on 142 occasions between Sep 1983 and Oct 1997, with all species recorded for most visits, there are very few observations on breeding. There were no reports of breeding for the Great Cormorant or for the Little Pied Cormorant, but Little Black Cormorant chicks on nests were reported in Feb 1984, with reports of breeding during the 1989-90, and 1990-91 seasons only. For the Australian Darter breeding was reported during the 1989-90, 1990-91, 1996-97 and 1997-98 seasons.

3.3. COG outings

At least annual outings to the Molonglo Reach by COG provided a snapshot of activities mainly over the last few months of the breeding season. The observations indicated that from the start of the outings during the 2002-03 breeding season there was evidence of breeding for most if not all years by the Australian Darter, the Little Black Cormorant, the Little Pied Cormorant and the Great Cormorant (see Table 1). The variability might not reflect breeding success but rather timing of the outings in relation to the season, some years being more successful at the start and others at the end of the season. Even so, there appears to be a decline in the number of all breeding events such that by 2006-07 in the case of the Little Black Cormorant, by 2010-11 for the Little Pied Cormorant and by 2011-12 for the Great Cormorant breeding ceased along the Molonglo Reach. The Australian Darter continued to breed but appears to have ceased by 2016-17. Nests were visible during the February 2018 outing but they may well have been old nests from the 2016-17 season.

Table 1. Number of birds and active nests for the Australian Darter and three species of cormorant breeding along the Molonglo Reach from 2002 to 2018. (Records taken from trip reports in various issues of *Gang-Gang*. Observations from 1 May 2008 from pre clearing survey (see text) and observations from 13 Jan, 26 Feb and 1 Apr 2013 from post clearing surveys.)

Dates	Australian Darter No.		Little Pied Cormorant No.		Great Cormorant No.		Little Black Cormorant No.	
	Birds	Active nests	Birds	Active nests	Birds	Active nests	Birds	Active nests
2002-03								
mid-April	75	25*	20	2	yes	?	yes	?
31-May	35	2	?	?	?	?	?	?
03-Aug	15	0	yes	?	yes	?	?	?
2003-04								
09-May	35	8	yes	?	yes	1	yes	6
15-May	38	5	?	?	?	?	?	?
12-Dec	50	many	yes	5	yes	0	75	15
2004-05								
23-Jan	35	23	yes	yes	yes	yes	yes	yes
08-May	50	7	12	0	yes	0	70	0
2005-06								
15-Jan	30	22	yes	0	2	0	35	9
02-Apr	55	20	yes	2	yes	10	35	10
2006-07								
01-Apr	38	8	?	?	12	7	40	0
2007-08								
16-Mar	60	15	3	2	8	3	6	0
01-May	yes	8	yes	0	yes	0	yes	0
2008-09								
15-Mar	60	10+	1	0	12	5	10	0
2009-10								
14-Mar	70	14	?	2	?	2	2	0
2010-11								
20-Mar	60	6	6	yes	1	1	23 fly over	0
2011-12								
19-Feb	80	25	2	0	1	0	200	0
2012-13								
13-Jan	?	12	?	0	?	0	?	0
17-Feb	70	8	?	0	?	0	?	0
26-Feb	?	12	?	0	?	0	?	0
01-Apr	?	9	?	0	?	0	?	0
2013-14								
16-Feb	33	4	1	0	8	0	40	0
2014-15								
15-Feb	?	1	?	0	7	0	?	0

Table 1 continued next page

Table 1 continued

Dates	Australian Darter No.		Little Pied Cormorant No.		Great Cormorant No.		Little Black Cormorant No.	
	Birds	Active nests	Birds	Active nests	Birds	Active nests	Birds	Active nests
2015-16								
14-Feb	8	1	1	0	7	0	10	0
2016-17								
12-Feb	10	0	0	0	0	0	1	0
2017-18								
11-Feb	8	0	0	0	0	0	0	0
*Note error. Possibly not all active								

3.4. Pre-clearing survey

Twenty-six trees containing nests were recorded in May 2008, just before the tree-felling in late May. Three trees with nests were Weeping Willow, four nests were in White Poplar (*Populus alba*) and the remainder in Crack Willow (*S. fragilis*). Thirty-four of the 42 nests were empty and so could not be attributed to named species, but of the remaining eight all were occupied by the Australian Darter in various stages of chick-rearing. Eleven of the 42 nests were located in 10 trees along the north bank. After the clearing in late May no trees were removed from the south bank. On the north bank, seven trees with nests were removed at the time. Subsequently the remaining two Weeping Willows and the two Crack Willow nest trees were removed.

3.5. Post-clearing surveys

3.5.1. 2008-09

Between late Oct 2008 and early Jun 2009 the area was surveyed on 18 occasions, usually around mid-day. In most cases it was possible to assess the status of individual nests but on occasion nests were missed, usually obscured by leaves and branches. Where required, missing observations for the Australian Darter and Great Cormorant were taken to be 7 days for egg-laying, 28 days for incubation and 60 days for young in or around nests (Marchant and Higgins 1990). The same intervals were assumed for the Little Pied Cormorant although, surprisingly, there is no information available for this species. After about 4 weeks the nestling can leave the nest and perch on nearby branches, a behaviour known as 'branching'. Once any of the young had reached the branching stage, the nest was regarded as successful.

Sixty-eight nesting events were recorded of which 54 were Australian Darter, 4 were Little Pied Cormorant and 10 were Great Cormorant (see Figs. 3 to 5). There was no indication of Little Black Cormorants breeding in the area. Sixty-two percent of the nests were in Crack Willow, 20% in White Poplar and 18% in Weeping Willow. All of the Great Cormorant nests were in a single fallen Weeping Willow. The timing of the breeding season varied considerably between species, the Australian Darter starting to nest in mid-September and the final nest starting in mid-April. The Little Pied Cormorant did not start breeding until early January, whilst the Great Cormorant did not start until mid-March. The breeding success for the three species varied, Australian Darter being more successful (Table 2).

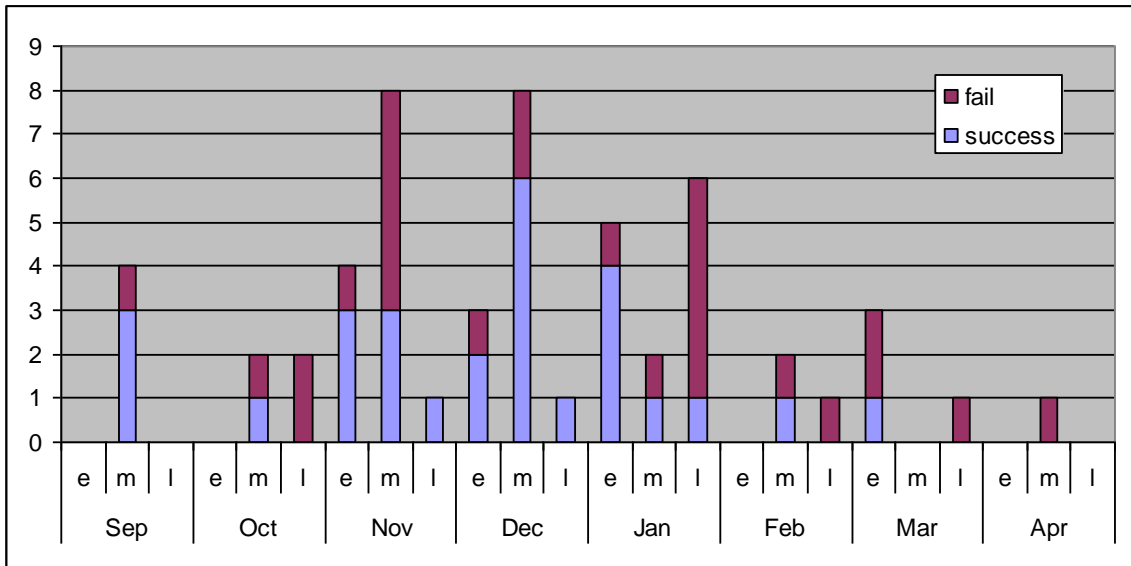


Figure 3. Number, breeding success and start of nesting for the Australian Darter at Molonglo Reach during the 2008-09 breeding season.

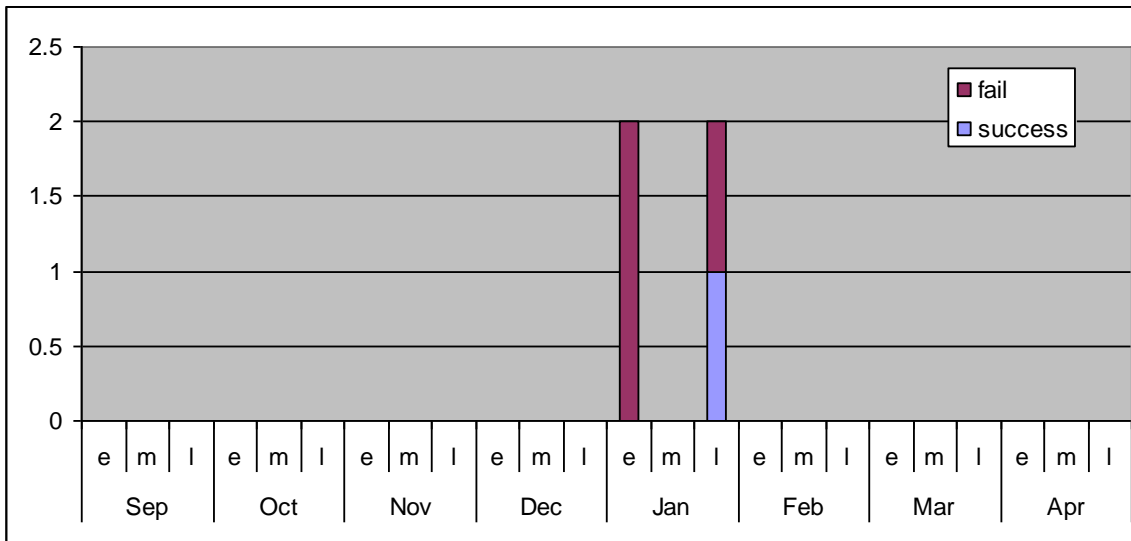


Figure 4. Number, breeding success and start of nesting for the Little Pied Cormorant at Molonglo Reach during the 2008-09 breeding season.

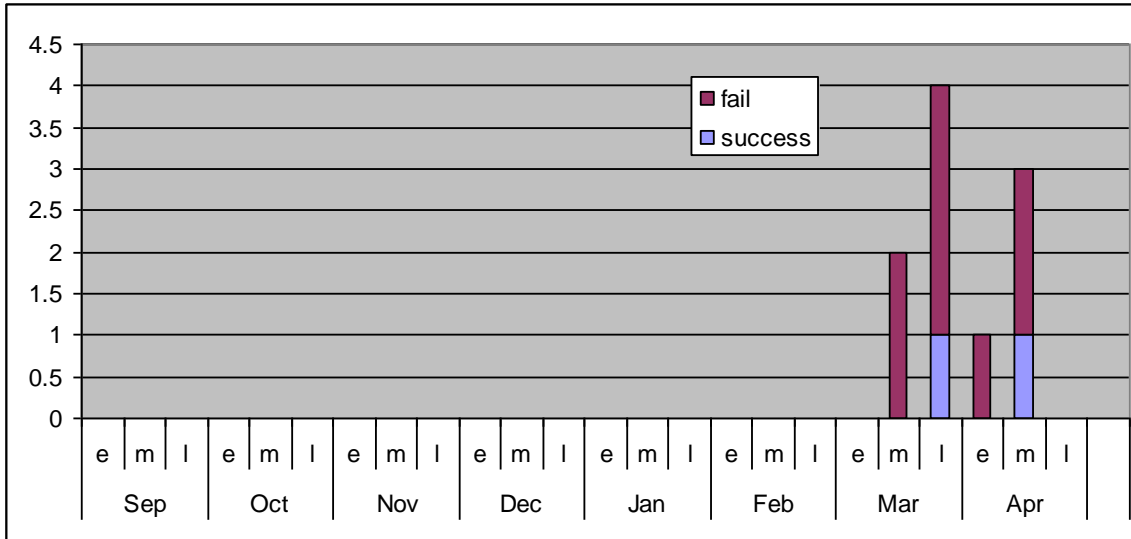


Figure 5. Number, breeding success and start of nesting for the Great Cormorant at Molonglo Reach during the 2008-09 breeding season.

3.5.2. 2011-12

During the 2011-12 surveys, conducted between mid-September and mid-April, 54 nesting events were recorded of which 50 were Australian Darter and the remainder Little Pied Cormorant. No Great Cormorants or Little Black Cormorants were observed breeding. Seventy-eight percent of nests were in Crack Willow and the remainder in White Poplar. The start of the breeding season for the Australian Darter was similar to the 2008-09 season, but the last nest was completed two months earlier. The Little Pied Cormorant was much earlier, starting in early September. There was a 56% success rate for the Australian Darter and 50% for the Little Pied Cormorant (see Fig 6 and 7 and Table 2).

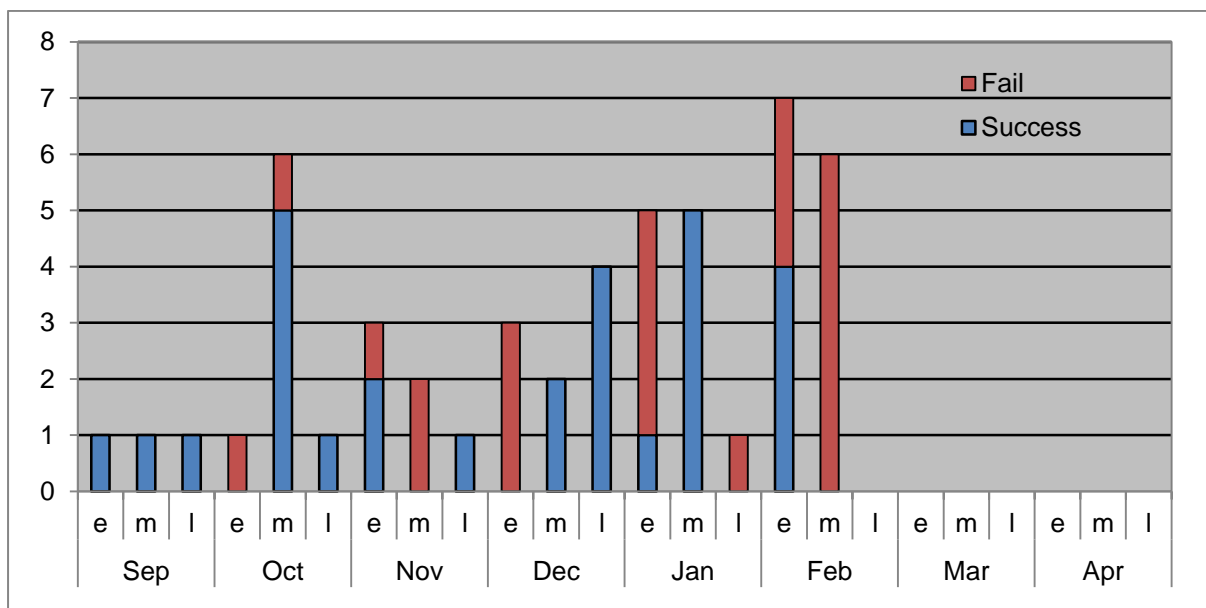


Figure 6. Number, breeding success and start of nesting for the Australian Darter at Molonglo Reach during the 2011-12 breeding season.

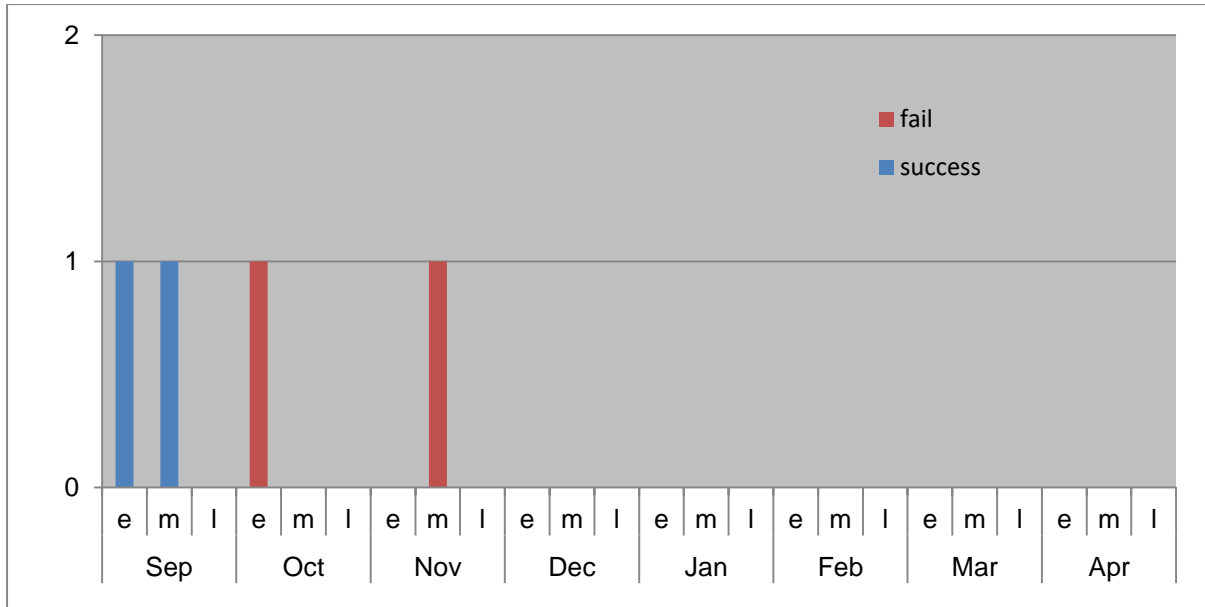


Figure 7. Number, breeding success and start of nesting for the Little Pied Cormorant at Molonglo Reach during the 2011-12 breeding season.

3.5.3. 2012-13

For the 2012-13 breeding season there were no observations until 22 Nov, so it is unknown when the breeding season started and thus difficult to compare with previous seasons (Fig 8 and Table 2).

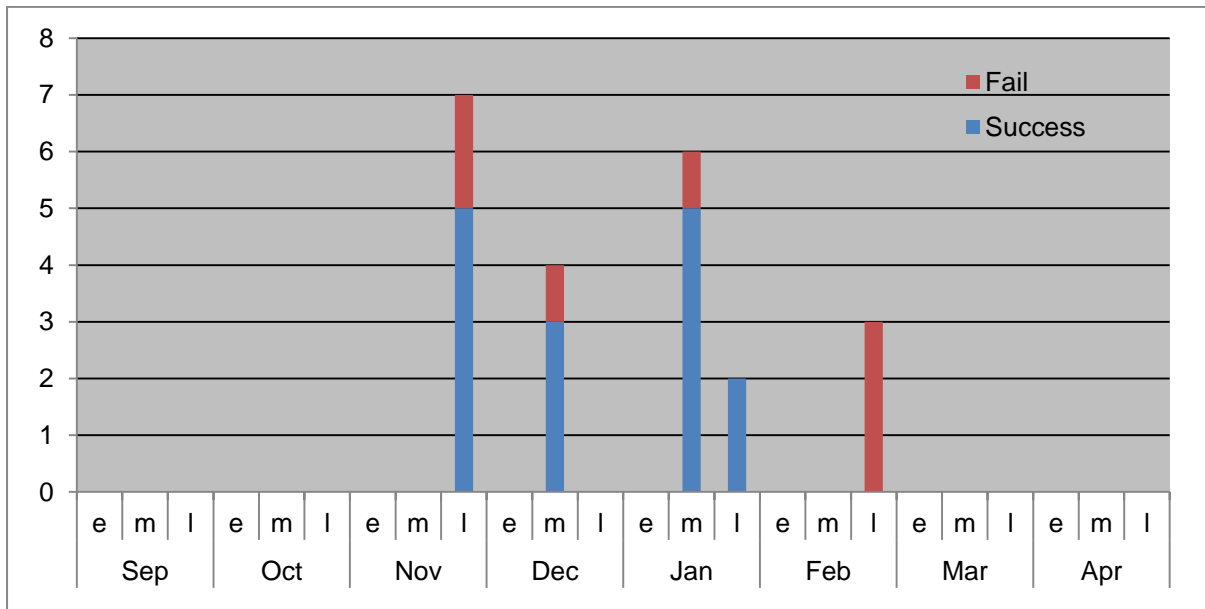


Figure 8. Number, breeding success and start of nesting for the Australian Darter at Molonglo Reach during the 2012-13 breeding season.

Table 2. Comparison of breeding success for Great Cormorant, Little Pied Cormorant and Australian Darter over three breeding seasons at Molonglo Reach, Lake Burley Griffin, ACT.

Season	Great Cormorant		Little Pied Cormorant		Australian Darter	
	No. breeding events	Successful (%)	No. breeding events	Successful (%)	No. breeding events	Successful (%)
2008-09	20	20	8	25	54	52
2011-12	0	-	4	50	50	56
2012-13	0	-	0	-	22*	68*
	* Observations started late November					

From late Nov 2008 onwards for the Australian Darter 34 nests had been started with 53% success, whilst in 2011-12 34 nests had been initiated with 50% success. In 2012-13 there were 22 nest started from late Nov onwards with a 68% success indicating better breeding success later in the season than in previous years.

4. Discussion

This report provides information from various sources between 1972-73 and 2017-18 on the Australian Darter and three species of Cormorant on the Molonglo Reach between the Clare Holland House and the Sylvia Curley Bridge.

Up until May 2008 surveying was difficult. Both banks of the Reach were lined with various Willow species on which the birds bred, making counts on either bank very difficult as the only access was on the footpath along the northern bank. The only way to obtain an accurate count was by boat. After the clearing of the willows it became possible to accurately assess the breeding on foot from the northern bank.

By 1972-73 the Australian Darter was breeding along the Reach. It is not possible from the records to indicate numbers although by 1978-79 at least 8 nests of Australian Darter and 4 nests of the Little Black Cormorant had been reported, with an indication that Little Pied Cormorant may also have bred. Breeding by Great Cormorant was not reported until 1983-84. After this period the incidence of breeding is vague. While breeding for both the Little Black Cormorant and the Australian Darter was recorded during the Ranger surveys and all species were always present, no specific counts of the number of active or the total number of nests were documented. The willow density on the northern bank may have limited reporting by members of the public and account for the virtual lack of observations from the COG records.

The COG outings varied in time but were generally towards the middle to late nesting period and many of the nests were unoccupied. Although a count of nests was possible they could not be allocated to species unless the nest was still occupied. Hence, the COG outings only provided a snapshot of activity at one time during the breeding season. A more detailed picture of breeding activity by the various species is provided by the surveys conducted after the clearing of willow along the northern bank in late May 2008.

Records from the COG outings indicate that by 2006-7 the Little Black Cormorant had stopped breeding, the Great Cormorant and Little Pied Cormorant had stopped breeding by 2011-12, and there was no indication that the Australian Darter had bred in 2016-17 or subsequently. However, it is possible that the species did breed but in low numbers and only early in the season.

Over the period 2008-09, 2011-12 and 2012-13, the Australian Darter bred between Sep and Apr with little variation in breeding success over the season. There was a large decline in breeding numbers from 2008-09 to the 2012-13 season. Despite observations from the COG outing, the Little Pied Cormorant did breed in 2011-12 but only between Sep and Nov. Breeding was confirmed for the Great Cormorant in 2008-09 but very late in the season and, as confirmed by the COG outings, had ceased by 2011-12.

Since 1972 there is every probability that the density and extent of willows along the Reach had increased. It was only eight years earlier that Lake Burley Griffin was filled, increasing the amount of water in the Reach, and this may well have been responsible for a possible increase in breeding numbers since that time. In addition, fish stocks in the lake would have increased considerably. Since 2008 there have been two major events that could have caused the decline in breeding in the Australian Darter and three cormorant species: willow clearing along the north bank, and increased boating along the Reach, in particular canoes and paddle boards. These may be related, as the clearing of the willow has greatly extended the width of the Reach and so made it more attractive for water activities.

The records suggest that the Little Black Cormorant is most likely to be affected by disturbance, followed by the Great Cormorant and Little Pied Cormorant, with the Australian Darter more capable of tolerating disturbance. Even so, it appears that since 2011-12 the Australian Darter numbers were declining until by 2016-17 breeding had ceased entirely.

There is no indication that the willow clearing *per se* affected breeding during the subsequent season. Little Black Cormorant had ceased breeding by then or moved elsewhere and the remaining three species bred successfully with no indication of a drop in numbers.

An example of the level of disturbance was recorded by the author over a three-hour period from 08:00 on Sunday 18 Feb 2018. The number of water-craft moving up and down-stream from a point opposite Duntroon was 105, of which two were of a Dragon Boat, 20 were of paddle boards and 83 were single or double canoes. These observations suggest that this level of disturbance exceeds that which the Australian Darter and the three species of cormorant are able to cope with for successfully breeding.

Acknowledgments

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AGE-RELATED VARIATIONS IN PLUMAGES OF EASTERN KOEL *Eudynamys orientalis*

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Abstract: Examples are given, and discussed, of plumage stages of young koels. In Canberra, we can see 'post-juvenile' and 'pre-adult' stages.

1. Introduction

The increasing numbers of breeding Eastern Koels (*Eudynamys orientalis*) in the Canberra suburbs have received much attention (See, in particular, Holland (2017), and the earlier articles there mentioned.). The more individual birds we see, the more opportunity we have to notice, and photograph, differences in plumage development.

Some lack of consistency in plumage descriptions is probably due to (a) a process of continuous plumage change from nestling to adult; (b) much individual variation in timing; and (c) the fact that after juveniles fall silent they are more difficult to observe. Some plumage change occurs on migration and when the birds are outside Australia. The following is the description of 'immature' plumage in Brooker et al. (1994):

'Several plumage changes in first few months. Similar to adult female but black stripe above eye to crown; wings dark brown, barred russet-buff. Older immatures often peculiar with black and buff blotches on female type plumage, or white and brown blotches on all-black plumage.'

The last sentence of that description may be from Coates (1985), referring to birds in New Guinea.

Higgins (1999) stresses the variation between individual birds. That article draws on field observations over several seasons near Mackay, Queensland (Crouther 1985) and studies in the Sydney area, mainly of captive birds (Disney 1992). Both those authors referred to a distinct 'immature plumage'. This was said to be briefly held, common to both sexes and similar to female adult plumage. However, Higgins (1999) takes the view that that plumage is 'a fully developed juvenile plumage or an early stage of post-juvenile moult'.

In this note the HANZAB view is accepted as correct. These issues are further discussed below under *Plumage development in juvenile koels*.

Some males returning to Australia are at the end of their first year, and are called here 'immature'. These are 'often separable' from adult males by a few retained juvenile feathers, particularly flight feathers, tail feathers and some on underparts; sometimes 'first basic feathers' of underparts are intermediate between juvenile and adult (HANZAB). Examples of such immatures are given in illustrations in HANZAB and Menkhorst *et al.* (2017).

Over the years I have noticed in Canberra several immature males of that general type. They are a regular component of the annual koel influx, but the proportion is unknown at present. It is an interesting but unproved hypothesis that a disproportionate number of immature koels has participated in the southward range extension of the species. A photograph of mine on the COG website shows such a bird in my garden in Narrabundah in 2006. Taken in the spring/summer 2017/2018, photos by Christine Darwood (Flynn) and Shorty Westlin (Symonston), both in respective personal collections, are of two birds falling within that type.

Some returning females also show one or more retained juvenile feathers.

2. Results

2.1. 2017/2018: the Carnegie Crescent bird [MKN]

Here I describe an immature male with more retained juvenile plumage than shown in the book illustrations. On 7 Jan 2018, I found a male koel with sub-adult plumage in Carnegie Crescent, Narrabundah. The following feathers were retained juvenile: at least six tail feathers, three primaries in left wing, all secondaries in left wing, several patches of breast feathers some showing thin bars on a pale background, many small feathers over the rest of underparts (Fig. 1, A and B). In addition a few post-juvenile black feathers on upper breast were cream-fringed (Fig. 1, C and D).

Around the Carnegie Crescent site on 7 Jan other male koels were active, with females and fledglings in the vicinity. On 9 Jan I found a male koel in a eucalypt in Rocky Knob Neighbourhood Park, about 350m from the Carnegie Crescent site. This resembled the earlier sub-adult.

On 25 Jan I found a sub-adult 90m further south near Brockman Street. This had some similarity to the last-mentioned bird with retained secondaries and at least three very worn retained tail feathers, but no retained primaries (except alula) in left wing. On 30 Jan there was much koel activity around Brockman Street. The sub-adult seen then was similar to that of five days before. It was seen to be much darker on the underparts than the 7 Jan bird with no or very few retained pale body feathers. However, it had some dark (blackish-brown) body feathers with a cream fringe.

From comparison of the distinctive tail feathers, I concluded that the sub-adult koel I have described on January 7, 9, 25 and 30 was the one bird (called here MKN). The change of appearance is consistent with progressive moulting and feather replacement.

In addition to the occasions mentioned above, I had a number of brief views of a calling and flying male koel around the Rocky Knob area, probably MKN by reason of the distinctive tail pattern. It was not the only male, but was the male most frequently present and seen calling ('wirra-wirra' call) and chasing female koels.

When first seen on 7 Jan, MKN was in a Pin Oak with an adult male koel for about one hour. During most of that time the two birds were within one or two metres of one another and engaged in what I describe as 'stationary confrontation' (an inter-action corresponding, I believe, to 'Threat or advertising display' (HANZAB 1999)). This was interrupted by MKN on at least three occasions with an excited 'wirra-wirra' call in response to a nearby female.

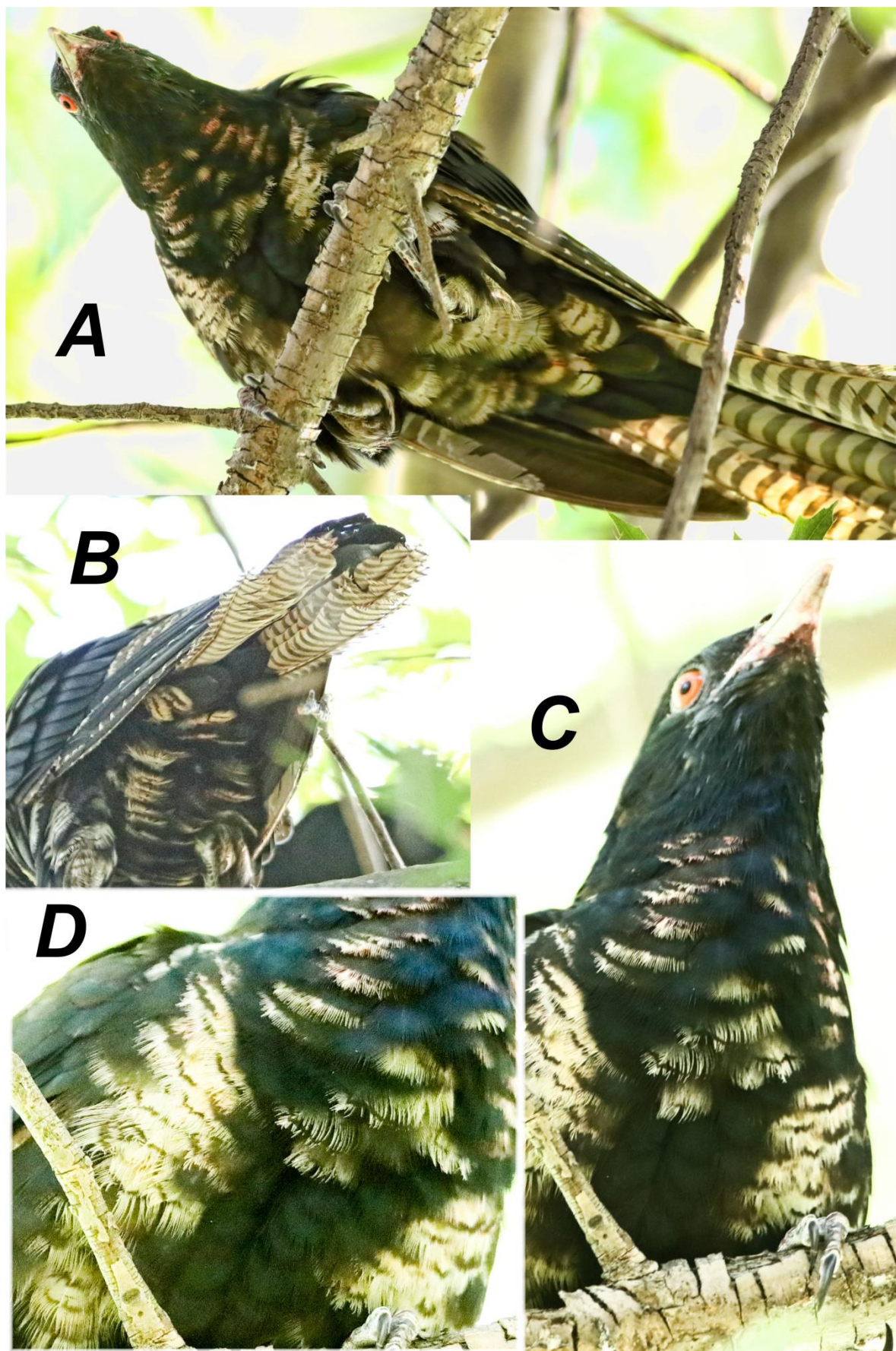


Figure 1. The immature male MKN Eastern Koel (2017/2018) (*Geoffrey Dabb*).

On 30 Jan, MKN engaged in stationary confrontation with an adult male koel for about 20 minutes, this time, incongruously, with both birds perched on potted succulents, in the porch of a house in Brockman Street. In stationary confrontation the birds are sometimes on low perches, and ignore observer presence unless very close.

I have several still photos of the two episodes of stationary confrontation. I interpret that behaviour, together with the excited calling, and female-chasing, as 'breeding behaviour' by MKN.

2.2. *The Richardson bird (MKR)*

On 15 Mar 2018 Kym Bradley photographed a young male koel (MKR) that was taking cherry tomatoes in her garden in Richardson, ACT (Fig. 2, below). That bird was of striking appearance. It appeared to be a fully-grown juvenile, but with obvious areas of black plumage: crown, chin, part mantle and, particularly, upper wing coverts. The black was partly broken by small spots or streaks of buff.

The birds mentioned above are shown here as follows. Fig. 2: above, MKN on 9 Jan 2018; below MKR on 15 Mar 2018. Fig. 3: above, for comparison with the 3 Canberra birds, a male photographed by Rupert Russell, Mount Molloy, FNQ, 30 Mar 2018 (subspecies unknown); below, MKF on 5 Jan 2018. Fig. 6, two examples of MKN in 'stationary confrontation' with adult male koel.

2.3. *The Fraser bird (MKF)*

On 5 Jan 2018 in Fraser, ACT, Steve Wallace obtained photos of a male koel (MKF) which was at an earlier plumage stage than MKN (see Fig. 3). This bird had extensive juvenile plumage on the underparts and, apparently, retained juvenile primaries (all) on the left wing, and juvenile tail feathers. Given that MKF would need to replace all its primaries, approximately sequentially, it seemed to be at least 8 weeks behind MKN - if a bird of the same year as MKN. However there is considerable uncertainty about the age of MKF (See below).

2.4. *Plumage development in juvenile koels*

The assimilation of juvenile or early immature plumage to adult female plumage in Disney (1992) and Brooker et al. (1994) should be treated with caution. The plumage of the underparts is similar. The plumage of the wings is quite different. The plumage of nape, mantle and back is variable and seems to undergo rapid change. In those areas, in the juvenile plumage of both sexes, some feathers are 'black with small white spot at centre of tip of each feather', some 'black-brown broadly marked by broad buff bars and cream tips' (HANZAB). The illustration of a 'fully grown' juvenile in HANZAB does not convey the described plumage pattern as well as the juvenile illustration in ABG.

HANZAB describes timing of the post-juvenile moult as follows:

'Subspecies *cynocephala* usually starts moult of body Mar-Apr., rarely as early as Dec.; moult usually starts on mantle, marginal upperwing-coverts and, perhaps, crown and nape

...

Moult of body begins very early, in some birds possibly before leaving the nest (Disney 1992), though whether moult of marginal coverts and some feathers of upperparts

observed in large nestlings represents early first pre-basic or late growth of juvenile plumage is controversial...’.



Figure 2. (above) MKN on 9 Jan 2018; (below) MKR on 15 Mar 2018 (Kym Bradley).

For present purposes the question of interest concerns the rate of plumage change after fledging and before departure from Canberra. An obvious early change is the development of adult plumage in upper-wing coverts, which enables the sex to be identified. A relatively

advanced example of this is the male bird MKR. An example of a transitional female juvenile is on the Canberra Nature Map website (photo by Michael Bedingfield, at Conder, ACT, 18 Feb 2016).



Figure 3. (above) Male, Mount Molloy, FNQ, 30 March 2018 (subspecies unknown) (*Rupert Russell*); (below) MKF on 5 Jan 2018 (*Steve Wallace*).

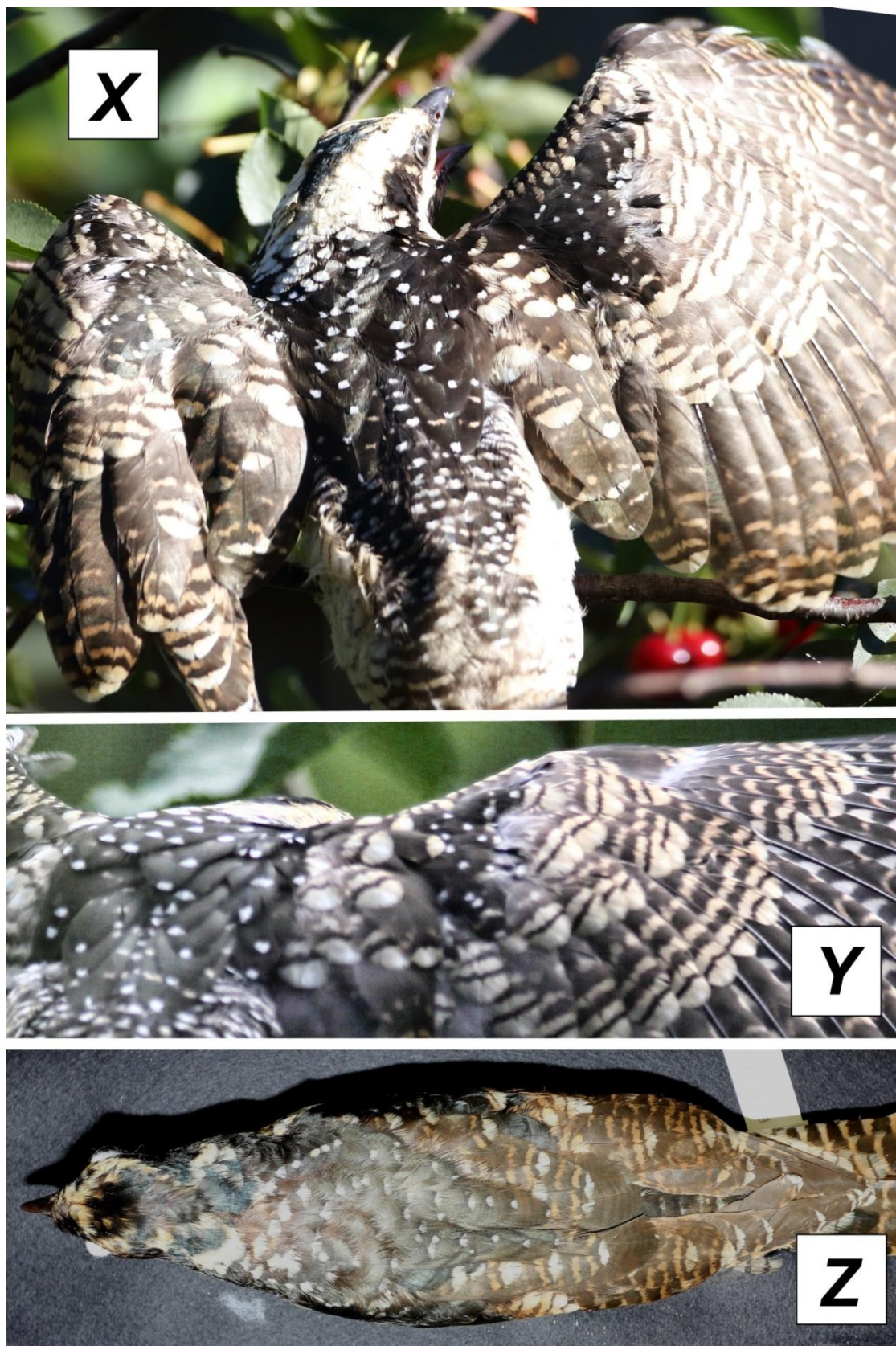


Figure 4. Older Eastern Koel juveniles, see text for details.



Figure 5. Older Eastern Koel juveniles, see text for details.

Figs. 4 and 5 show relevant parts of four older juveniles such as ‘small white spots’ on back not usually visible in a lateral view in the field (Fig. 4 X to Z). X and Y are two views of the same dependent juvenile, Caley Crescent, Griffith, X - 1 Jan 2018, Y - 30 Dec 2017.

At the earlier extreme is a dependent fledgling videoed by Steve Wallace at Spence, 21 January 2017, which can be seen at the Internet Bird Collection website: <https://www.hbw.com/ibc/video/eastern-koel-eudynamys-orientalis/juvenile-calling-responding-koel-calling-and-being-fed>. It is possible that the emerging dark marginal coverts shown in that video are the beginning of male adult plumage.

The complicated back pattern is consistent with the HANZAB description for both species, but a few spotted emergent coverts suggest this is a female. Z shows spots on back of older transitional male at about same stage of plumage development as MKR (collected Julatten, FNQ, 20 Mar 1999, ANWC 28817). Fig. 5(1) photo by Christine Darwood of self-feeding juvenile in garden in Flynn, 9 Mar 2015, an evident male showing emergent dark coverts; Fig. 5(2) spotted emergent coverts on a female (confirmed by dissection) collected at Giralang 22 Mar 2018, now in ANWC, photographed when frozen; Fig 5(3) a juvenile, probable male by emergent coverts, giving occasional begging call but flying freely and not seen to be fed so probably becoming independent, Caley Crescent, Griffith, 24 January 2018.

2.5. Variation in colour of iris

The HANZAB entry for immature male is as follows:

‘...captives attained ... red iris at c. 5 months old (Disney 1992). In wild, some develop red iris in first summer or autumn while in post-juvenile moult of body and most have red iris by second summer (n=5); brown iris recorded in one immature in second summer.’

MKN consistently showed a red iris. The MKF photos show an iris, in shade, as slightly more brownish. The MKR photos (not all shown here) indicate a left iris (in sun) as orange-red, and a right iris, in shade, as brownish-red. The difference might be explained by the fact that apparent iris colour sometimes depends on the light conditions. In the ANWC a sub-adult male (20 March 1999, Julatten, Q.) at about the same stage of plumage development as MKR is labelled as having a ‘dark red’ iris.

I have several photos of the one adult female with the iris colour appearing ‘reddish brown’ or ‘slightly brownish orange’ depending on the angle of the light.

2.6. Further discussion about MKF

The possibility must be considered that MKF was a bird hatched in late 2017. If hatched at the earliest date consistent with early breeding in Canberra in spring 2017, it could have been 7-8 weeks old when photographed. (This is based on a hatching 19 days before fledging in early December. A possible fledging date so early in December is inferred from information gathered for the 2017 season: Jack Holland, pers. comm.). If it was the result of a breeding event further north, it could have been 4-5 weeks older, but it is not known whether juveniles move further south after becoming independent.

If MKR was unusually advanced in post-juvenile moult on 15 March, it would be remarkable if MKF was even more advanced 5 weeks earlier. On the other hand, it would be remarkable if MKF was of the same year as MKN, and retarded in moult to such an extent.

A relevant consideration is that such extreme retardation, while unusual, is not unknown. Disney (1992) described 3 of 4 captive young males that ‘were in almost complete blue-black plumage by September’. However, a fourth male, by September: ‘... had only added a few blue-black adult feathers. The old immature feathers were very worn and brown with their white tips worn off, and only the odd new blue-black feather emerged before this bird was released in November.’

The retained juvenile feathers of MKF do appear to be extremely worn, especially the tail feathers. Moreover, the old feathers are pale to mid greyish brown by contrast with the warm buff and cinnamon tones of MKR and as shown in photos of other more advanced fledglings. The rate of wear of juvenile tail feathers is not known. MKF has a wholly black head, by contrast with MKR. That also contrasts with a transitional male photographed 30 March 2018 at Mount Molloy, FNQ, by Rupert Russell (subspecies unknown – Fig. 3). This author is not able to express a firm opinion on the age of MKF but believes the weight of evidence points to a bird in its second year.



Figure 6. Two examples of the sub-adult male MKN with a fully adult male Eastern Koel in ‘stationary confrontation’ as described in text. Left, MKN is lower bird; right, MKN is bird on the right (Geoffrey Dabb).

Acknowledgments

Jack Holland offered his usual encouraging comments when I was considering writing this note. I had intended to submit only a short note on the bird labelled MKN, to which Diana White first drew my attention. Steve Wallace's photo of MKF opened up a more difficult line of inquiry. I am grateful to Steve for our subsequent exchanges about the age of MKF. An online photo of a transitional male by Rupert Russell of Mount Molloy, FNQ, led to examination of a range of interesting plumages in images collected by Rupert over several years, and raised questions about which subspecies we were looking at. A subsequent conversation with Ian Mason about what was known concerning range and movements of the two Australian koel subspecies warned me that that line of inquiry was entering uncertain waters. Thanks to Christine Darwood, Kym Bradley and Shorty Westlin for photos, as attributed in above text. Thanks to Leo Joseph for access to koel skins at ANWC, and to Alex Drew of ANWC for advice on the sex of the Giralang juvenile. Thanks to Danny Rogers for helpful advice.

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RED-CAPPED ROBINS BREEDING IN SUBURBAN AMAROO: 2017-2018

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Abstract. *During the 2017/18 breeding season a pair of Red-capped Robins (Petroica goodenovii) was observed in the Canberra suburb of Amaroo. Over the period from November to March they bred three times, raising a total of four chicks to independence. The male assumed most of the feeding of the first two single juveniles, while each parent assumed duties for a juvenile in the third brood. It is apparent that the breeding events overlapped to some degree and the female started to nest again before the single young of the previous brood was independent. While the juveniles from the first two broods apparently moved on as soon as they were independent, one of them reappeared after the third brood had fledged and resisted attempts to be moved on by the male. The juveniles of the third brood remained with the parents much longer than the previous young. The male and female birds remain in the breeding location six weeks after the final sighting of the third brood.*

1. Introduction

Over a period of around four months from late Nov 2017 I was able to observe Red-capped Robins (*Petroica goodenovii*) breeding in my local suburb of Amaroo, Gungahlin, not far from Yerrabi Pond. What makes this particularly interesting is the fact that there were three breeding events and they happened in the middle of suburbia. I visited the area 24 times during the four months, the longest gap between visits being 18 days (6-24 Dec). The majority of my visits to the area were recorded on eBird.org. The area occupied by the robins bordered a large grassy area adjacent to Yerrabi Pond.

The area occupied by the robins bordered a large grassy area adjacent to Yerrabi Pond. The birds were mostly located in exotic trees that line the walking paths along two sides (100m x 200m) of the open area (Fig. 1). Houses back onto the walking paths and it is in one of these back gardens, in a pair of conifers, on the fence line, that the robins bred (Fig. 2). The birds were mostly seen perched in the trees and feeding on the ground close to the paths and they also occupied back gardens and a playground area and car park at the end of the 200m path. The robins weren't seen in the large grassy area, only on the verges where the trees were located.

My first sighting of a Red-capped Robin in the Yerrabi Pond area was on 10 Sep 2017, and the bird was in a street tree. The robin was a mostly brown bird with a russet cap and a very small patch of red on the breast. I thought it must have been passing through the area.

¹ All photos by the author.



Figure 1. General view of the area occupied by the Red-capped Robins for breeding. Backyards starting on the right.

2. Observations

2.1. First Brood

My next sighting, less than 50m away from the first, on 24 Nov, was of two birds. I heard a call and found two birds - a plain brown bird and a male in immature plumage. I returned three days later and found the male (Fig.3) catching food and flying into a small pine tree. Eventually I also saw a juvenile. Later that same day two birds had a bath in a puddle on the path. It was the juvenile and the female (brown bird) (Fig. 4). Two days later I watched the male catching food and feeding the juvenile in a tree (Fig.5). Both birds continued to visit the pine tree. The female was not seen. During subsequent visits the male was feeding the juvenile. I only glimpsed the female briefly. I did not see all three birds together. The juvenile was feeding itself by 6 Dec. That was my last sighting of the bird (Fig.6). During my next visit, on 24 Dec, both the female (Fig.7) and male (Fig.8) were seen.



Figure 2. The conifers used for nesting.

2.2. Second Brood

On 28 Dec the male and female were seen with an obviously younger juvenile (Fig.9). This one stayed close to the female and was begging to be fed. I observed this juvenile until 9 Jan 2018, during which time the male was usually feeding it (Figs. 10-12). The female was seen, but not with the other birds and not at the same time. The juvenile of the second brood was recorded over an eleven-day period.

From 12 Jan for the next two weeks the male and occasionally the female were recorded, although mostly just one or the other at each visit.



Figures 3 to 6. Red-capped Robins in Amaroo. See text for details.



Figures 7 to 10. Red-capped Robins in Amaroo. See text for details.



Figures 11 to 14. Red-capped Robins in Amaroo. See text for details.

2.3. Third Brood

On 31 Jan the male, female and a juvenile were present. I was fairly certain I heard a second juvenile. The juvenile I saw was obviously very young and stayed hidden in dense foliage (Fig.13). Five days later only the male and a juvenile could be detected. On 10 Feb I finally spotted the second juvenile (Fig.14) by following the very distinctive call of the very young bird. Each juvenile remained in the company of a parent and the adult/juvenile pairs were separated by several trees and remained apart. Each juvenile was being fed by the parent and did not venture far away, mostly staying hidden in the dense foliage of the exotic trees.

An interesting sighting on 12 Feb: the female and one juvenile were in one location. About 100 metres away another robin was perched on a wooden post. It looked similar to the female but still had the darker streaky plumage of a younger bird. I watched it for some minutes, doing what robins do - flying to the ground, catching insects and returning to a post. I knew it could not be the second juvenile as the young of the third brood were still staying close to parents and I had not yet seen them feeding themselves and behaving so independently. Eventually the male flew in and appeared to chase this robin away. Next, I saw the second juvenile being fed by the male, so I knew that there was a fifth robin present. At some point the fifth bird and the juvenile ended up in the same tree and the juvenile begged the other bird for food fascinating to watch. Eventually I went back to confirm that the female and other juvenile were still in their location; they had not moved.

It is possible that the fifth bird was the juvenile of the second brood, as it did not appear much older and could possibly have remained in the area. The fifth bird was seen on several occasions over the next few weeks.

My final observation of the five birds on 5 Mar (before going on a 16-day holiday), followed a common pattern. The male was accompanied by one juvenile and the two birds stayed close together with the male still feeding the juvenile, but the juvenile was also flying to the ground to hunt as well. The fifth bird was close by but not really interacting with the others. Some 200 metres away the second juvenile displayed more independence, feeding itself and not staying close to the female. The female was out of sight but appeared once, seemingly to lead the juvenile into a tree for protection as cars and people moved in the immediate vicinity.

Notably, the juveniles of the third brood remained with the parents for much longer than the previous offspring – at least 33 days. This was probably an indication that the third brood was the final brood for the season.

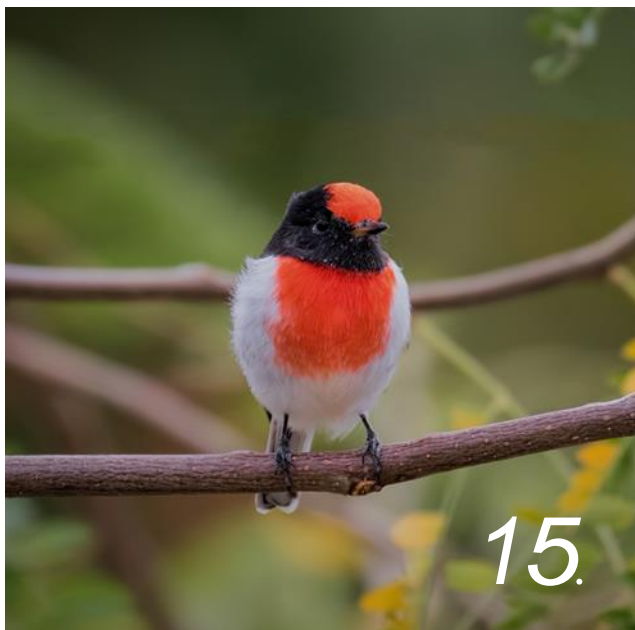
3. Conclusions and Discussion

Red-capped Robins are not commonly recorded breeding in the Canberra Region. Three broods were produced in Amaroo between November and January and four offspring were raised to independence. Although HANZAB says they can rear up to four broods, the only evidence from our region that the species is multi-brooded comes from Coventry (1988), who observed up to two broods in a season near Cooma. This makes the three successful broods I observed in Gungahlin the more remarkable.

Due to the *ad hoc* nature of my visits it is hard to determine exactly when the birds fledged and how long the juveniles remained with the adults, but it was at least 9 and 12 days respectively for broods 1 and 2. This appears to reflect data in HANZAB which gives an incubation period of around 14 days, another 14 days until fledging and then another two

weeks until independence. The young can however remain in natal territory from eight days to 1.5 months. The time between the final sighting of one brood and the appearance of the new brood was 22 days, indicating that the breeding events overlapped to some degree and the female started to nest again before the young of the previous brood was independent and this would explain her absence while the male was assuming responsibility for feeding the fledglings of the first two broods.

The juveniles of the third brood remained in the area for much longer – at least 33 days, but this is still in keeping with the HANZAB data. The parents shared the feeding duties with the third brood as the female was no longer required on the nest.



The apparent reappearance of a juvenile from an earlier brood is interesting. After resisting apparent attempts by the male to move it on, it remained in the vicinity of the other birds without actually seeming to interact with them for three weeks. It most likely moved on at the same time as the juveniles of the third brood.

At the time of writing, both the male and female Red-capped Robins were still located in the vicinity of Yerrabi Pond in Amaroo. It will be interesting to see if they remain in the area and also if the breeding pattern is repeated in the future.

Over the past two months (mid Feb to mid Apr 2018) the male has moulted and

now displays a fine adult plumage (Fig. 15, see above).

A more complete visual record of the Red-capped Robins during this period can be found at: <https://www.flickr.com/photos/140414659@N08/albums/72157690820685842>.

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SLEUTHING THE VOCALISATIONS OF THE ACT'S FIRST ACCEPTED RECORD OF BLACK BITTERN

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Abstract. *Over two days in early January 2018, I recorded the calls of an unfamiliar bird at Jerrabomberra Wetlands Nature Reserve. I conducted analysis of the calls and canvassed a group of local and interstate experts to support my claim of Black Bittern *Ixobrychus flavicollis*. Having previously submitted unsuccessful first records to the RP, I was determined to produce the requisite evidence to support my claim for this ACT first. Without photographic evidence, I submitted the Unusual Bird Report and the digital calls to the Rarities Panel (RP). The record was subsequently endorsed by the RP as the ACT's first record of Black Bittern. A photographic record was subsequently obtained (see Fig. 3).*

Introduction

While birding at Jerrabomberra Wetlands Nature Reserve at 07:50 h on 5 Jan 2018 I heard an unfamiliar call emanate from thick vegetation along Jerrabomberra Creek (Weather conditions: Cool 18.6°C; wind southerly 7 km/h; 2/8 high cloud). The call was a single 'whoo' note repeated almost exactly every 10 seconds, for a duration of about 2 minutes. I had never knowingly heard this call so I was unable to identify to species. I did have the presence of mind to record the call on my iPhone and when the calling ceased, I unsuccessfully played the call back to try and lure the caller out in to the open. I remained in the area for another 20 minutes trying to approach the location where the call had originated; dense and dark deciduous vegetation on the southern side of an island in Jerrabomberra Creek, but I was thwarted by thick reed beds, blackberry canes and the creek.

Later I made a list of likely candidates for the 'whoo' call and listened to the recordings on the Morcombe and Pizzey apps on my iPhone and also BOCA Field Guide to Australian Birdsong. Initially, as I suspected the call was pigeon-like, I listened to all pigeon and dove calls. I found nothing that matched.

In considering the location of the call - its proximity to a sighting of a bird in April 2017 that Milburn had speculated was a Black Bittern *Ixobrychus flavicollis* - I hypothesised that this might be that species. On playing the call of Black Bittern I was convinced that I had identified the species. The call I had recorded was almost a perfect match for the call on the Morcombe iPhone app (recorded by Dave Stewart). While I have observed Black Bittern on a number of occasions in the NT and north Qld, I have never heard the species call.

I sent the recording to two local birders, Frank Antram and Peter Milburn, without providing my summation of identity. Even without being presented with a point of reference, Antram replied that he believed the call to be Black Bittern (F. Antram, *pers. commun.*, 06 Jan 2018). Milburn concluded, 'seems attenuated and a little high pitched. Need to listen to it live. Otherwise good' (P. Milburn, *pers. commun.*, 06 Jan 2018).

I also sent the call to two other local birders, and both responded that they thought my conclusion was sound. None of these four local birders had experience with a calling Black Bittern, so their assessment, like mine, was made by a comparison of my recorded calls and the calls on the two birding apps or BOCA recordings.

The following morning, 6 Jan (Weather conditions: warm, 19.1°C; still; 1/8 cloud), I returned to Jerrabomberra Creek at 06:40 h and again heard the bird call about 50 minutes later. Like the first day, the bird produced a single note 'whoo' every 10 seconds for about 2 minutes. Again, I recorded the call and played back the recording to try and lure the bird into the open. Again too, I was unsuccessful and the bird did not respond although I remained in the area until 0800.

Discussion

Black Bittern is a bird of terrestrial wetlands and estuarine and littoral habitats. In New South Wales the bird is generally only found east of the Great Dividing Range with occasional inland records at Coonabarabran (1975), Cowra (1950) and Holbrook (1901). The species has never been recorded in the COG area of interest and certainly not in the ACT. Its movements are little known and it is probably sedentary throughout most of its range, though in NSW it is reported more often in summer than winter (Marchant and Higgins 1990).

Marchant and Higgins (1990) describe the voice as 'very poorly known, loud drawn-out booming w-h-o-o-o-o-o- similar to, but louder than, call of pigeon; call uttered at 15-s intervals...' Other field guides similarly describe the call as 'loud pronounced w-h-o-o-o-o' booming (Pizzey and Knight 2012) and 'whoo-oo-oo', pigeon-like in quality but louder' (Menkhorst et al 2017).

Methodology and analysis

Appreciating the requirement to have a first record endorsed by the COG Rarities Panel (RP), I decided to submit an unusual bird report (UBR) based on the sound recordings, my analysis and opinions of a range of experts. Understandably the RP imposes a very high threshold for new species to be accepted on the ACT list. I had experience of this when a previous joint 'first' I had submitted in 2015 was rejected because it was not accompanied by a photograph, despite a UBR with a 'convincing description of the bird'. This time I was determined to provide evidence, though it would have to be in the form of sound recordings with detailed analysis, rather than imagery.

I produced spectrograms for the two recorded calls using Cornell University's RavenLite software (a spectrogram being a visual representation of the 'spectrum' of frequencies of sound as it varies over time). I also produced spectrograms for the calls from the Morcombe and Pizzey apps (see Fig. 1).

I uploaded all four calls to eBird and produced separate spectrograms. The eBird spectrograms provide a slightly different visual output to RavenLite, displaying not only the frequency but a more precise depiction of the frequency against the duration of the calls (see Fig. 2).

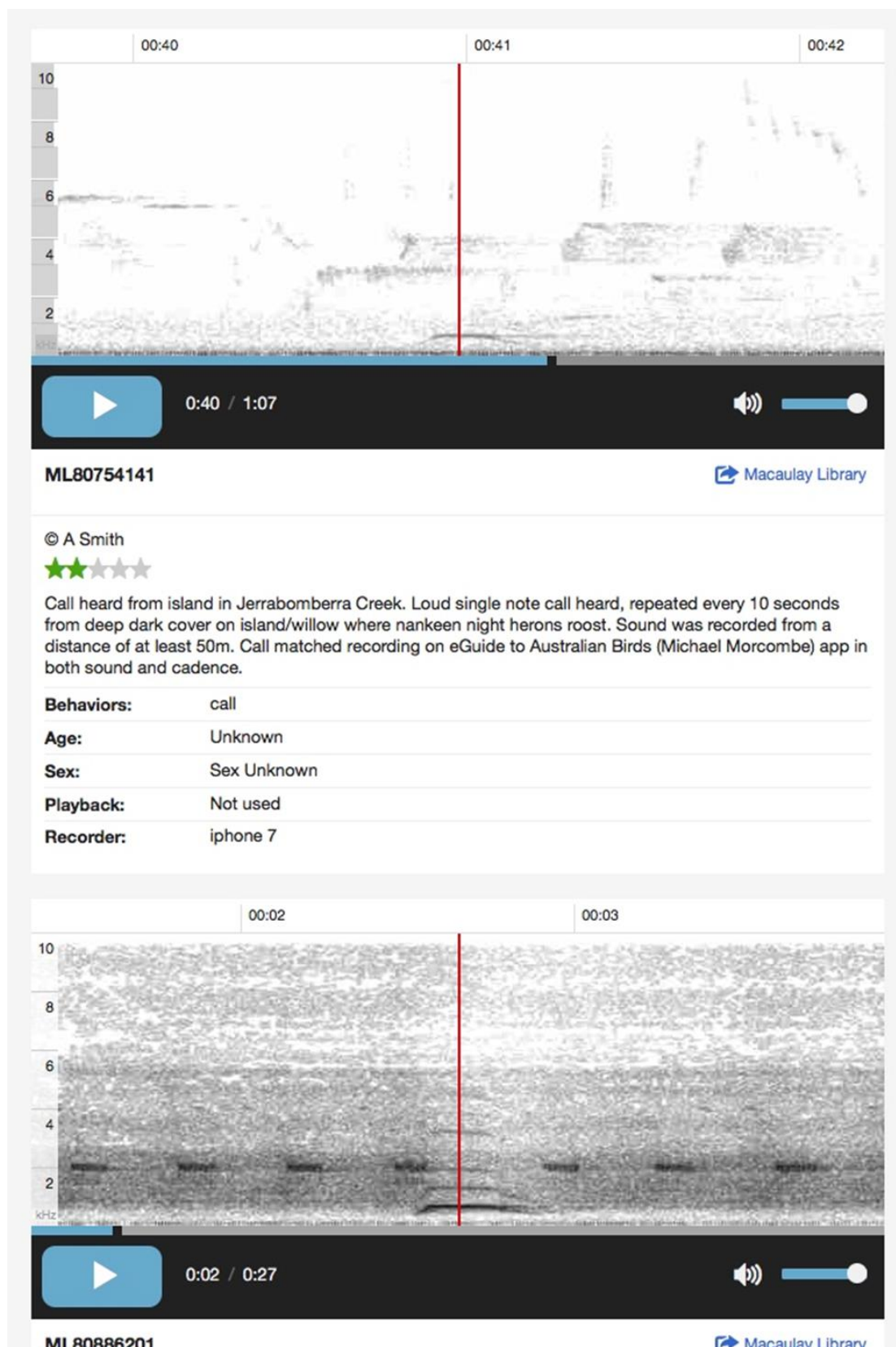


Figure 1. Black Bittern eBird spectrograms of single call note.

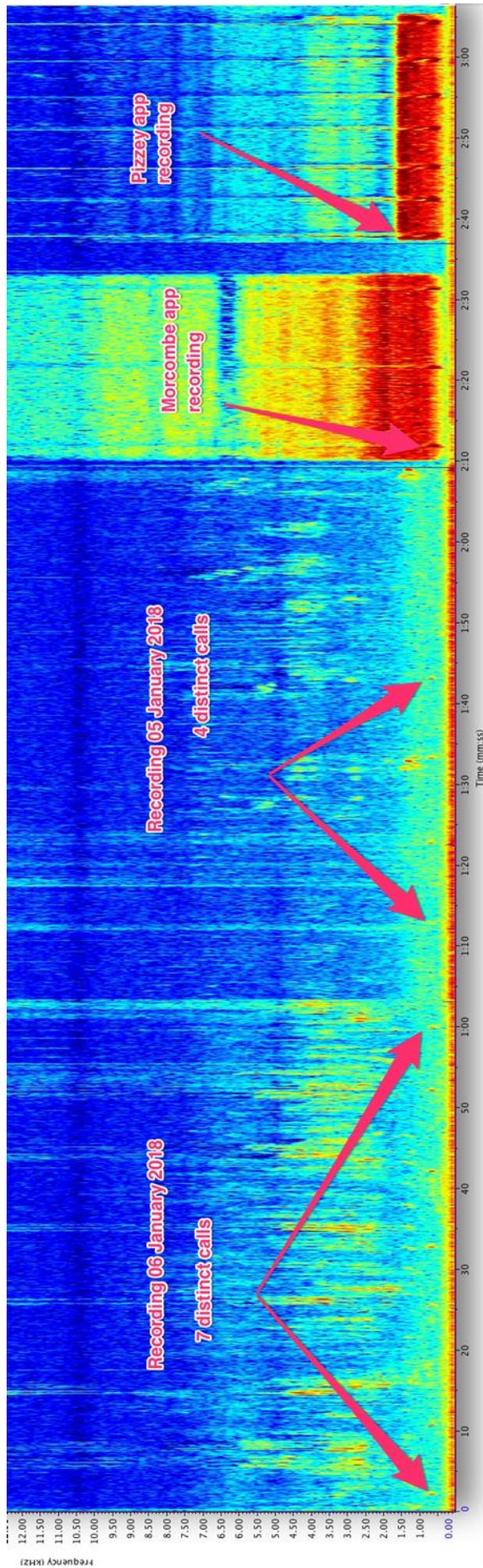


Figure 2. Black Bittern calls from Jerrabomberra Creek and Morcombe and Pizzey recordings. RavenLite analysed my two recordings together in the one analysis with the 'official' Morcombe and Pizzey recordings. This spectrogram provides a visual depiction of the frequency of all four calls, which in all recordings is about 600kHz. The bolder readout for the two professional recordings is simply because they were recorded using professional equipment

With the spectrograms produced I did a simple analysis. I was able to determine that the frequency of the recorded calls from Jerrabomberra Creek was identical to the frequencies of the calls on the two field guide applications. Each call was in the range of 600-700kHz. Furthermore, the cadence of the Jerrabomberra Creek calls, approximately every 10 seconds, was very similar to the calls on the Morcombe app. The cadence of the calls on the Pizzey app was slightly faster with a note about every 3 seconds.

The diagram in Fig. 1. is the eBird spectrogram of the 5 January call (ML80754141), with the recording stopped (vertical red line) on the call note. The second spectrogram (ML 8088621) is the Morcombe recording, again, stopped at the call note. Both show very similar characteristics in respect to frequency, nature and duration of call.

External opinion

While conducting my audio analysis, I thought it appropriate to consult a broader audience, especially those familiar with the calls of the Black Bittern. I posted a request on the Birding-aus email forum and I received two responses and forwarded the audio files to those people.

The first was from Allan Richardson from Morrisett [President of the Hunter Bird Observers Club and a member of both the Hunter Region records appraisal committee and the NSW Ornithological Records Appraisal Committee (ORAC)]. Richardson responded to my request with, 'we have them in the creek behind my house... so I'm familiar with their call' (A. Richardson, *pers. commun.*, 6 Jan 2018). Richardson's assessment was, 'The calls from the first [actually second] recording [6 January] sound right in the pitch and tone range, although a little abbreviated to what I am used to, but the second [actually first - 5 January] recording is right on the money with the call slightly more sustained. Of course, habitat context plays an important part in attributing a call to a species, but there's little doubt in mind that the calls fit very well with Black Bittern.'

Greg Clancy, an ecologist and birding guide from the Clarence Valley in NSW, responded, 'My initial response is yes Black Bittern.' (G. Clancy, *pers. commun.*, 6 Jan 2018). Clancy forwarded the calls to two others, including Darryl Eggins, who wrote, 'The second sound file [first - 5 January] I'd say is definitely Black Bittern. The first [second - 6 January] is interesting; the tone, etc sounds good for Black Bittern though.' Clancy continued, 'There is a bit of variation in the calls on the 2 phone apps. The 1st recording sounds more like the call on the Morecombe (sic) app (David Stewart's recordings). The second sound file sounds spot on for the Pizzey & Knight calls [Fred van Gessel].' (G. Clancy, *pers. commun.*, 6 Jan 2018).

Clancy also forwarded the sound files to the sound recordist Dave Stewart, who responded, 'The two calls are typical of Black Bittern. I can't think of another species that has a call quite like this. The calls are well spaced and if you listen to the recording on my bird app. they are very similar.' (G. Clancy, *pers. commun.*, 8 Jan 2018).

With my audio analysis and external opinion supporting Black Bittern, I completed an UBR and forwarded it to the COG Rarities Panel on 8 Jan 2018. On 26 Jan I was advised by the RP secretary that the RP had endorsed the ACT's first record of Black Bittern (B. Allan, *pers. commun.*, 26 Jan 2018).

Final piece of the puzzle

In the time between submission of the UBR and endorsement of the record, I went back to Jerrabomberra Creek on numerous occasions and was finally rewarded with visual sightings of a Black Bittern perched in a willow and later in flight, flying around the island on 12 Jan. On 20 Jan together with Milburn undertaking Latham Snipe surveys, we saw the Bittern. On these occasions I photographed the bird and also took video. Video, photographs and audio can be seen on the eBird record [S41883953](https://ebird.org/australia/view/checklist/S41883953).



Figure 2. Black Bittern *Ixobrychus flavicollis* (Alastair Smith.)

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NOTES ON THE BREEDING ECOLOGY OF LITTLE EAGLES IN THE ACT IN 2017/2018

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Abstract. *This is a preliminary summary of findings from the first year of a long-term study of the Little Eagle (*Hieraaetus morphnoides*) in and near the ACT. There was a minimum of nine nesting pairs in the ACT in the 2017-2018 breeding season. Six pairs laid eggs and four chicks were reared; one from each of two nests and two from another. Three pairs were seen with nests but were not known to have laid eggs. Pairs were observed at two other locations and the public reported five further potential breeding locations in the ACT. Two additional nests were located in nearby NSW; a chick was reared in one nest and the other nesting attempt failed. Nests were regularly spaced, and found in woodland, partially cleared woodland or a windbreak. Nesting eagles did not appear to avoid or prefer to be near various urban features. The main prey type was small/medium-sized birds, although the most eaten individual species was Rabbit, and lizards were also taken.*

1. Introduction

The Little Eagle (*Hieraaetus morphnoides*) is listed as vulnerable in the ACT and NSW. The Little Eagle Research Group considers that a thorough study of the species is needed to gain insight into the bird's breeding ecology and so improve advice on the bird's conservation. The bird is a small eagle of woodland and open country which is migratory and widespread over the Australian mainland where it is a generalist feeder; taking mainly small to medium-sized mammals, birds and reptiles (Marchant and Higgins 1993, Debus 2017).

The aim of this study is to describe the Little Eagle population status, breeding success, dispersion, habitat use and diet. The study area includes adjacent parts of NSW to obtain a wider sample, so as not to study the birds of the ACT in isolation and to include the full breeding territories of birds ranging across the border. The project has a long-term plan, as long-term studies have been shown to be valuable for ecological understanding and conservation of raptors (*e.g.* Watson and Rae, in press). This report gives a provisional summary of the data from the first year of the project, the 2017-2018 breeding season.

2. Methods

The methods for pair location, nest finding and recording breeding success were based upon those developed by SR and colleagues over many years of raptor research, especially Golden Eagle (*Aquila chrysaetos*), and adopted for national surveys in Scotland (Dennis *et al.* 1984,

Watson *et al.* 1992, Hardey *et al.* 2006, Hayhow *et al.* 2017, Watson and Rae, in press). All previously known sites of Little Eagle nests in the ACT were checked for occupancy, *i.e.* those for which there were records held by the Conservation Research Unit, ACT Government, and other nests known to have been used in previous years by SR and DF. Vantage point watches were made over potential nest sites from August to February to watch for eagle flight behaviour which might lead to locations where any were nesting. When such sites were identified, ground searches were done to confirm nesting. Most of the birds in the study were unmarked with bands. Therefore, as many eagles as possible were photographed at their nest sites to help identify different individuals by their plumage patterns or distinctive features.

To establish occupancy and breeding success of a pair, each potential nest site was visited on at least four occasions. All known eyries were checked for freshly added nesting material, the presence of an incubating bird, or any birds overhead on approach. Incubating or brooding birds were accepted as evidence of eggs or chicks in the nest. The number of young fledged was counted by watching each nest from a distance far enough to watch adult birds land on the nest and feed the young. Young were considered to have fledged once they left the nest for their first flight. The main criteria recorded were: a home range occupied by a pair of Little Eagles (Hayhow *et al.* 2017), a nesting territory where there was a territorial pair with a nest (Steenhof *et al.* 2017), whether eggs were laid or young hatched, and number of young reared.

Nests were used as the focal point of each territory. Each nest tree in the ACT was identified in Google-Earth and the distance between each and its nearest neighbour was measured. Analysis of the regularity of the nearest neighbour distances was done with a G-test (GMSD, geometric mean, arithmetic mean square distance, Brown 1975, Newton *et al.* 1977, Watson and Rothery 1986), in which the resulting figure of 0-1 gives a scale of regularity, where 1 is regular and < 0.65 is random. The distance of each nest was also measured from the nearest urban features: footpath (sealed or unsealed), unsealed vehicle track, sealed road, dwelling (suburban or isolated), industrial or farm building, and urban edge, *i.e.* the limit of continuous suburban or industrial development. The mean distances of all nests from these urban features were then compared by Analysis of Variance (ANOVA) with a set of computer-generated random points within the area north-east of the Murrumbidgee River, the main part of the study area in 2017.

The remains of prey items were collected from below nests and perches used by eagles within groups of trees used for nesting in the ACT and NSW. All remains found of any prey were collected during every nest site visit, bagged individually and recorded in batches by date, so as to avoid counting a prey item more than once, and the minimum number of items per batch was calculated from distinguishable parts (Watson *et al.* 1987, Watson *et al.* 1993). These items were collected from August 2017 when the birds began to spend time at or near their nest sites, until February 2018, when the fledglings left their natal sites. Minimum numbers of any prey species were determined by counting body parts, *e.g.* wing or tail feathers, heads or feet. Pellets ejected by the Little Eagles were also collected and stored like the prey remains. Collection of prey remains and pellets only give unknown proportionate samples of an eagle's whole diet, and each has biases (Watson *et al.* 1987). For example, small items such as insects were not recorded in prey items but might be in pellets, therefore each set will be fully analysed later in the study. The results presented here are only a preliminary summary of the composition of the prey remains. All prey items and pellets were stored for later comparative analysis.

3. Results

3.1. Number of Little Eagle pairs and breeding success

Nine pairs of Little Eagles were confirmed with nests in the ACT in 2017-2018, and pairs were observed at two other locations. Five further sightings of birds at potential breeding locations in the ACT were reported by members of the public. However these have not been included as breeding birds in 2017 as their breeding status was unknown. Therefore, it is considered that not all breeding pairs were found and other birds have likely not been recorded. Of the nine confirmed nesting pairs in the ACT, six laid eggs and four chicks were raised; one from each of two nests and two from another. One pair had an infertile egg and another pair lost their egg to predation by a bird, possibly a raven. One pair's loss of an egg or small chick was unexplained. It is not known if the three other pairs laid eggs. Two nests were found in NSW (<20 km from the ACT), of which one pair reared a chick and the chick in the other nest died for unknown reasons.

The number of young fledged per pair is the most important measure of productivity (Steenhof *et al.* 2017). This was 0.44 from the nine ACT nesting attempts recorded in this study. Other measurements are: 0.67 per pair that laid eggs (n=6) and 1.3 per successful pair (n=3).

3.2. Little Eagle nesting dispersion in the ACT 2017-2018

The nearest-neighbour distances between nests ranged: 2.21–7.40 km, n = 9, \bar{x} = 5.06, std. dev. = 1.99, s.e. = 0.66. The G-test statistic for Little Eagle nest nearest-neighbour distance in the ACT in 2017-2018 = 0.91. This is a high figure of regularity. Therefore, Little Eagle pairs probably nested at regular spacing at a mean distance of about 5 km.

3.3. Distances of Little Eagle nests in the ACT from urban features.

The Little Eagle nests found in the ACT in 2017 were all within Nature Reserves or other areas not designated for urban development and the nests were separated by a mix of woodland, open land and urban development. One pair of eagles was recorded (by camera) mating at one nest; then they built up a second nest substantially before changing sites again to lay in a third nest. This pair were photographed and identified at each nest by their individual plumage characteristics. All other pairs used only one nest. Therefore, eleven nest sites are described. Seven nests were in native eucalypts and four were in exotic pines. Most nests were in woodland or partially-cleared woodland, one was in a windbreak of exotic pines, none was in isolated trees.

All nests were within:

5 km of the urban edge, \bar{x} = 1.36 km, range 0.122–4.030 km, most (9/11) were within 2 km.

2 km of a dwelling, \bar{x} = 0.98 km, range 0.215–1.920 km, approximately half (5/11) were within 1 km.

2 km of an industrial building, \bar{x} = 0.75 km, range 0.065–1.876 km, most (8/11) were within 1 km.

2.5 km of a sealed road, \bar{x} = 0.71 km, range 0.031–2.196 km, most (9/11) were within 1 km.

1.5 km of an unsealed road or track, \bar{x} = 0.26 km, range 0.029–1.262 km, most (8/11) were within 100 m.

250 m of a footpath, \bar{x} = 0.09 km, range 0.024–0.213 km, approximately half (6/11) were within 100 m.

There were no significant differences between these distances and those of a set of random location points (n= 22) from similar features (ANOVA of square root transformed normalised data where significance value of probability is $P < 0.05$): Urban edge, $P = 0.65$, $F = 0.41$ (Fig.1), Dwelling, $P = 0.29$, $F = 1.16$ (Fig 2), Industrial building, $P = 0.70$, $F = 0.15$ (Fig. 3), Sealed road, $P = 0.59$, $F = 0.29$ (Fig. 4), Unsealed road or track, $P = 0.18$, $F = 1.86$ (Fig. 5), Footpath, $P = 0.70$, $F = 0.15$ (Fig. 6). Therefore Little Eagles did not seem to avoid or prefer to be near to these urban features.

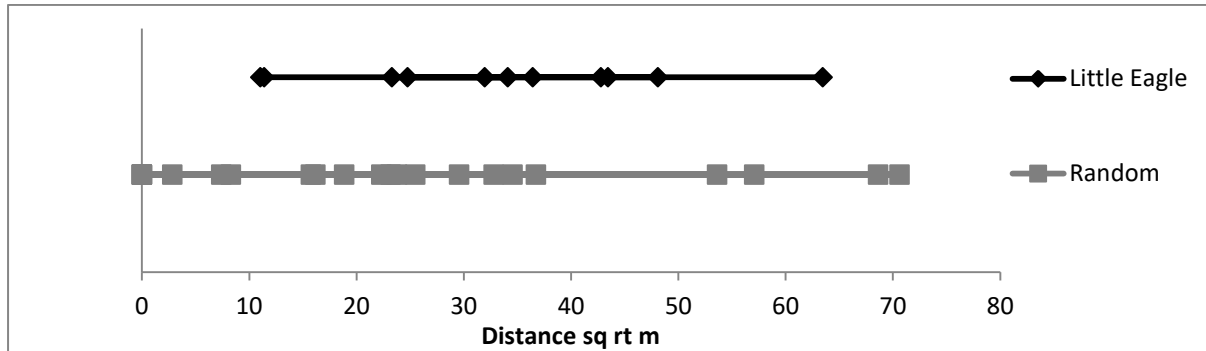


Figure 1. Distances (sq rt m) of Little Eagle nests from urban edge compared with those of random points.

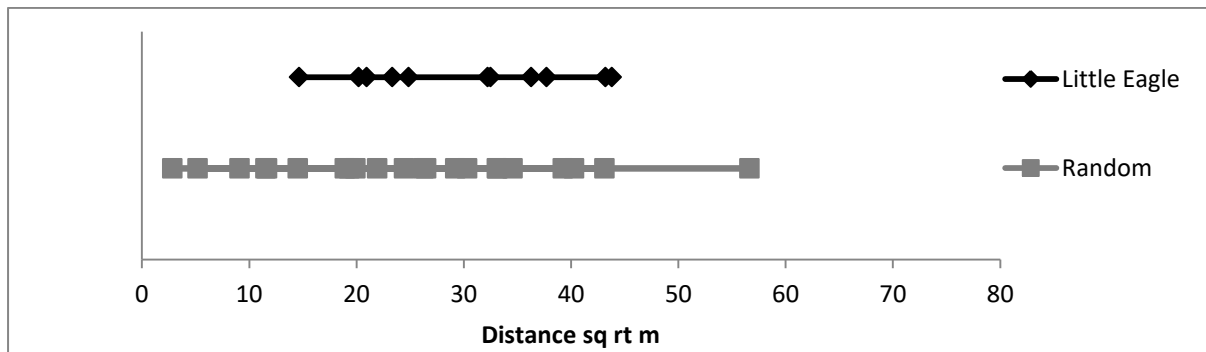


Figure 2. Distances (sq rt m) of Little Eagle nests (n=11) from nearest dwelling compared with those of random points.

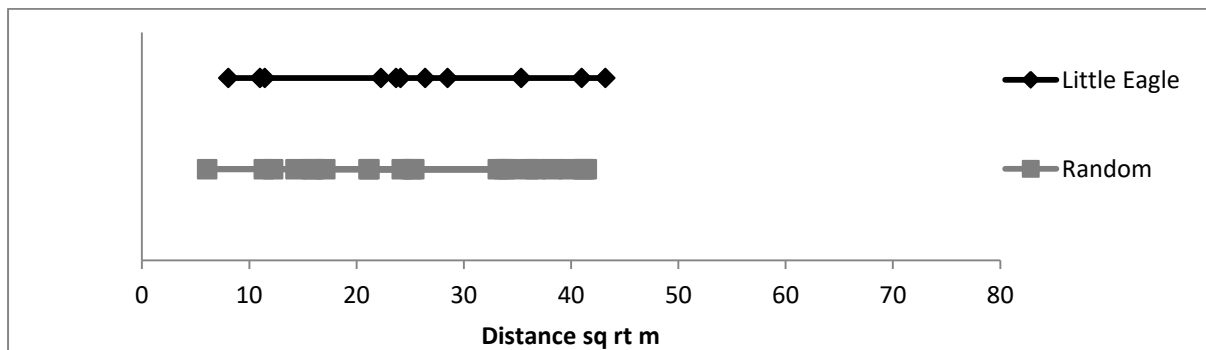


Figure 3. Distances (sq rt m) of Little Eagle nests (n=11) from nearest industrial or farm building compared with those of random points.

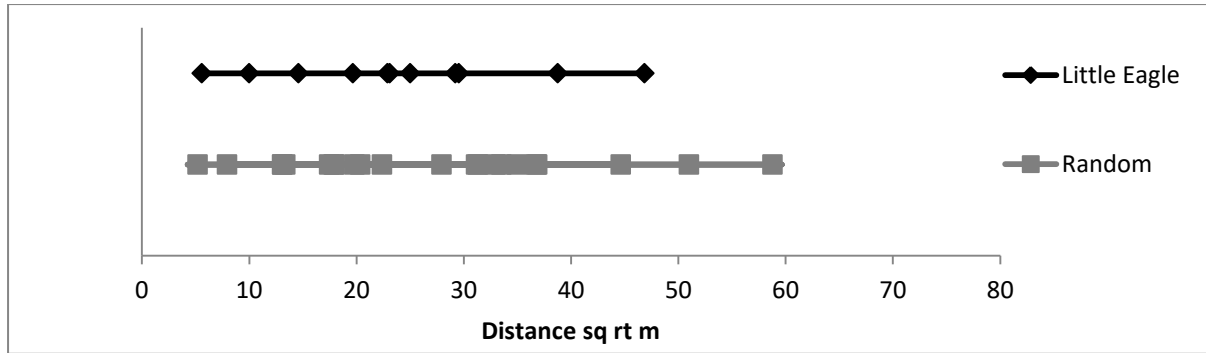


Figure 4. Distances (sq rt m) of Little Eagle nests (n=11) from nearest sealed road compared with those of random points.

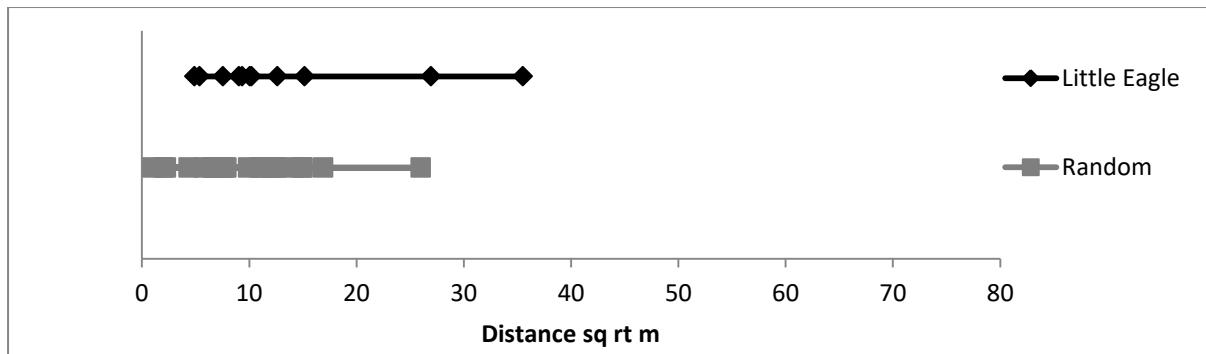


Figure 5. Distances (sq rt m) of Little Eagle nests (n=11) from nearest unsealed road or track compared with those of random points.

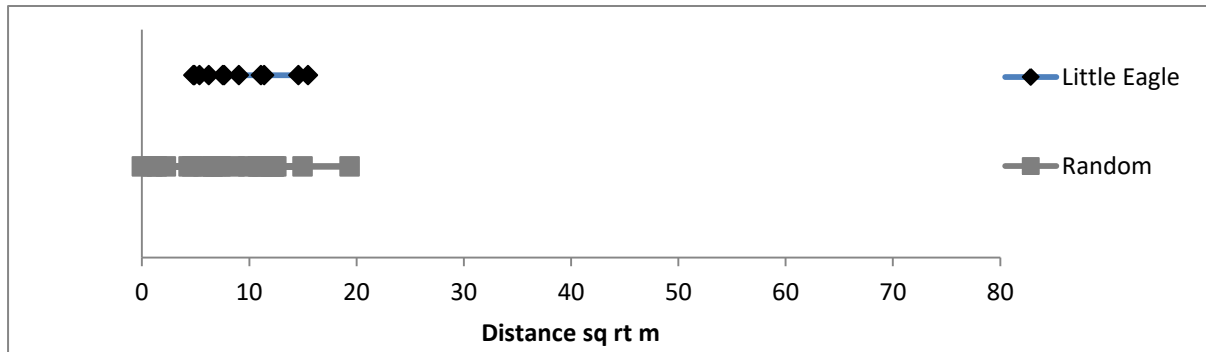


Figure 6. Distances (sq rt m) of Little Eagle nests (n=11) from nearest footpath compared with those of random points.

3.4. Composition of prey remains

The remains of 110 individual prey items were collected. Most of these were from nest sites where there were young in the ACT and NSW (n = 26, 26, 14, 10) and where a pair failed to hatch young (27). Fewer remains were found at sites where there was no incubation recorded (n = 3, 2, 1, 1, 0, 0). In addition to the data reported here, 155 pellets were collected for later comparative analysis.

From the prey remains, the main foods eaten, by number, were birds (55.4%), mammal (28.2%) and reptiles (16.4%). Identification of some remains has yet to be confirmed (10 bird, 4 mammal and 1 reptile), so a full list of prey species is not available. The main bird

species eaten were Crimson Rosella (*Platycercus elegans*) (14 items), Eastern Rosella (*P. eximius*) (5), Starling (*Sturnus vulgaris*) (6), Common Myna (*Acridotheres tristis*) (5), Australian Magpie (*Gymnorhina tibicen*) (4) and Eurasian Skylark (*Alauda arvensis*) (3). The mammals were mostly young Rabbits (*Oryctolagus cuniculus*) (20) and Brown Hare (*Lepus europaeus*) leverets (3). Cunningham's Skink (*Egernia cunninghami*) (6) and Eastern Blue-tongue (*Tiliqua scincoides*) (6) were the most frequently taken reptiles, and there was one Bearded Dragon (*Amphibolurus barbatus*).

4. Discussion

The regularity of the Little Eagle nest-spacing in the ACT in 2017 is indicative of high occupancy, and nesting density can be related to such factors as prey density and habitat (Newton *et al.* 1977). Yet their breeding success was low (0.44 young reared per pair), compared with that in New England in 2008 (0.86 young fledged per pair: Debus and Ley 2009). The breeding success of raptors can vary between years or areas, as in the Booted Eagle (*Hieraaetus pennatus*), a species closely related to the Little Eagle, which has been recorded as ranging between 0.52 and 1.22 young raised per pair (Martinez *et al.* 2006). Other examples are Common Buzzard (*Buteo buteo*) which is of similar size to the Little Eagle (0.5-1.6 per pair), and Golden Eagle (*Aquila chrysaetos*), a larger eagle (0.4-0.8) (Newton 1979). There are numerous reasons for such variations in other species, such as food availability or weather (Newton 1979). However, as this is only the first year of this study, no reasons are drawn for the low productivity of Little Eagles in the ACT in 2017, or the high occupancy.

The nest-spacing in the ACT in 2017 was similar to that in the New England area (NSW) in 2008, where the nearest-neighbour distances were about 2 km for birds nesting in contiguous woodland and about 5 km for pairs separated by open land (Debus and Ley 2009). Therefore, the study area might be favourable for the eagle. However, the habitats between the nest sites varied, with mixes of woodland, open ground and urban areas. Assessment of how Little Eagles use different habitats for hunting would help to identify which habitats are most important for their conservation.

Many of the prey species identified could have been caught in woodland or open grassland, e.g. rabbits and the reptiles. However, some species were more likely to have been caught in either woodland or grassland, e.g. Crimson Rosella and Skylark respectively. Little Eagles were also observed hunting over these habitats, i.e. soaring or perching and stooping to make kills. A more comprehensive description of the habitats used for hunting will be possible with further analyses of the proportions of their time spent hunting over each habitat and prey eaten.

In conclusion, there seemed to be a high occupancy by breeding pairs of Little Eagles in the ACT in 2017, and the breeding success was low. The main prey type was small/medium-sized birds, although the most consumed individual species, and possibly the most important, was Rabbit, the main food described previously in the ACT and where available elsewhere (Marchant and Higgins 1993, Debus *et al.* 2007, Debus and Ley 2009, Debus 2011, Olsen *et al.* 2010, 2013). This short report is only a brief description of findings from the 2017-2018 breeding season. Further analysis of data from this and future years will help determine any possible relationships between Little Eagle nesting density or breeding success, and habitat-use, potential prey availability, food eaten, weather or other possible factors.

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THE CANBERRA BIRD BLITZ 2017

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Abstract. *This paper describes the conduct and outcomes of the Canberra Ornithologists Group's thirteenth 'bird blitz', held on 28-29 Oct 2017, and provides comparisons with the twelve previous blitzes. In 2017, 350 datasheets were submitted, from 99 grid cells; 178 bird species were recorded, 81 of them breeding. Highlights included the first blitz records of the Scarlet Honeyeater and the Musk Lorikeet.*

Introduction

On the last weekend in October 2017 (Saturday 28 and Sunday 29), the Canberra Ornithologists Group (COG) held its thirteenth annual 'bird blitz'. In this exercise, we aim to record all species of wild bird present in the ACT over that weekend, to obtain a broad indication of their abundance, and to record breeding status. To achieve this, we set out to conduct a minimum of one 20-minute 2-hectare survey within each of the 165 grid cells covering the ACT (a 2.5-minute grid on lines of latitude and longitude, so each cell measures approximately 3.5 km by 4.5 km). A subsidiary aim of this exercise is to encourage more of our members to get out, survey and submit datasheets.

The data collected are entered in the COG Atlas database, and subsequently contributed to the BirdLife Australia Atlas database. They are available for scientific purposes and as an input to Canberra land-use planning.

Conduct of the blitz

Participants register for their preferred locations or grid cells, on a first-in, best-dressed basis. In the allocation process, some site preference is given to members who survey given sites on a regular basis. More tardy volunteers are cajoled by the organiser into surveying the remaining sites. Less experienced birders may accompany more experienced birders who indicate a willingness to take them along. And as a modest inducement to participants, a variety of prizes are on offer, courtesy of our members. One difference in the conduct of the 2017 blitz was the number of eBird participants who may or may not have realised their records were contributing to the blitz outcome.

Participants are allowed to choose their preferred methodology from the three BirdLife Australia Atlas options: a 20-minute/2-ha survey; within 500 m of a central point, for >20 mins; or within 5 km of a central point, for >20 mins. Incidental records are also welcomed, as are the various options from eBird.

Results and discussion

Operational issues

The weather was adequate for birding, if less than perfect. Those who ventured into the mountains were met with heavy fog until mid-morning on the Saturday. There was a little

light rain on Saturday evening, then Sunday was warm and windy. Most trails in Namadgi National Park were accessible. Unlike 2013, we did not conduct training classes to assist newcomers.

Level of participation and coverage

At least 89 named COG members and friends took part in the 2017 blitz (see Appendix 1). As noted before, this probably equates to well over 100 participants if the unnamed companions are taken into consideration. Twelve of the named individuals participated for the first time. Congratulations must go to the individuals who have supported the blitz each year since its inception: Daryl Beaumont, Matthew Frawley, Stuart Harris, Shirley Kral, Bruce Lindenmayer, Gail Neumann and Philip Veerman, as well as the author.

Datasheets were received from 99 grid cells. Our best coverage was in 2007, when we managed 122 grid cells. Observers clearly prefer surveying areas where they can be assured of seeing good numbers of bird species – an understandable but, for blitz purposes, somewhat regrettable choice. Over 30% of the records came from the ten most popular grid cells covering Jerrabomberra Wetlands and several central Canberran nature reserves. Nevertheless the grid cells surveyed covered most habitat types, so I believe we have a representative sample of ACT avifauna for the weekend. Map 1 shows the grid cells covered, while Fig. 1 indicates the comparisons between blitz years.

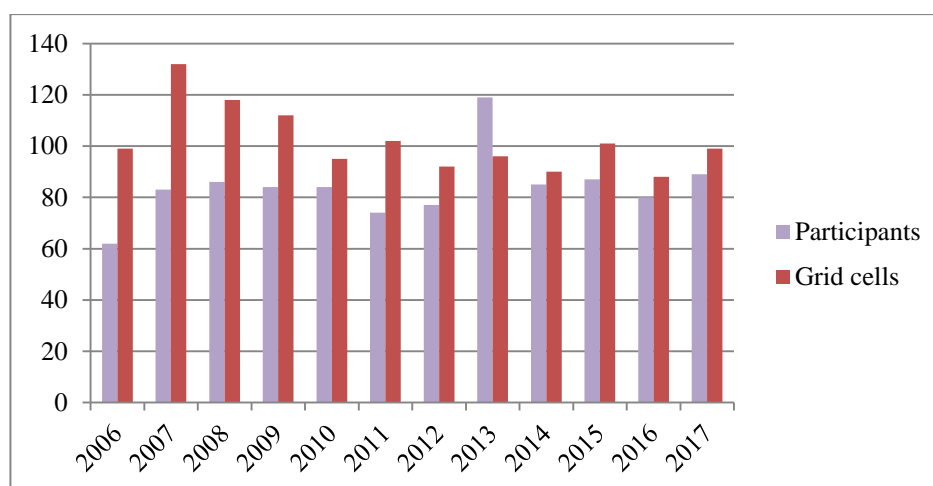


Figure 1. Participants and grid cells.

Datasheets submitted

In the 2017 blitz, a total of 350 eligible datasheets were received, 104 in hard copy, and the remainder via eBird. Datasheet numbers have fluctuated over the 13 years of the blitz from a previous high of 359 in 2013 to a low of 242 in 2006. The actual number each year appears to have more to do with the types of surveys undertaken, and the relative proportion of lengthy surveys. It is at times a difficult trade-off for our blitzers between covering many grid cells and hence generally adopting the ‘20-minute, two-hectare’ survey, and covering fewer areas but doing so more intensively over a longer period with a ‘within 500m’ survey. The situation is further muddled now with eBird contributions avoiding this classification.

Type of survey

As usual, participants were given the option of choosing their survey type to best fit the grid cell or location they were surveying and to allow for personal preference and time or other constraints. Without closer analysis, it is impossible to be definitive about the effects of survey type on outcomes. In the case of the blitz, which is essentially a citizen science exercise involving observers of differing levels of expertise, it is likely that the time spent at each site has a greater bearing on the numbers of species recorded, or the breeding status.

Species recorded

As Fig. 2 and Appendix 2 show, 178 bird species were recorded over the two blitz days in 2017. When all blitz years are considered together, 217 species have been recorded, while 125 species have been recorded every year. By way of comparison, the species total for all of the financial year 2016-17 and the whole of COG’s area of interest, as recorded in the Annual Bird Report, was 254 from 315 grid cells (COG 2018). There have been blitz breeding records every year for only 29 species; while 139 species have been recorded as breeding at least once in the blitz.

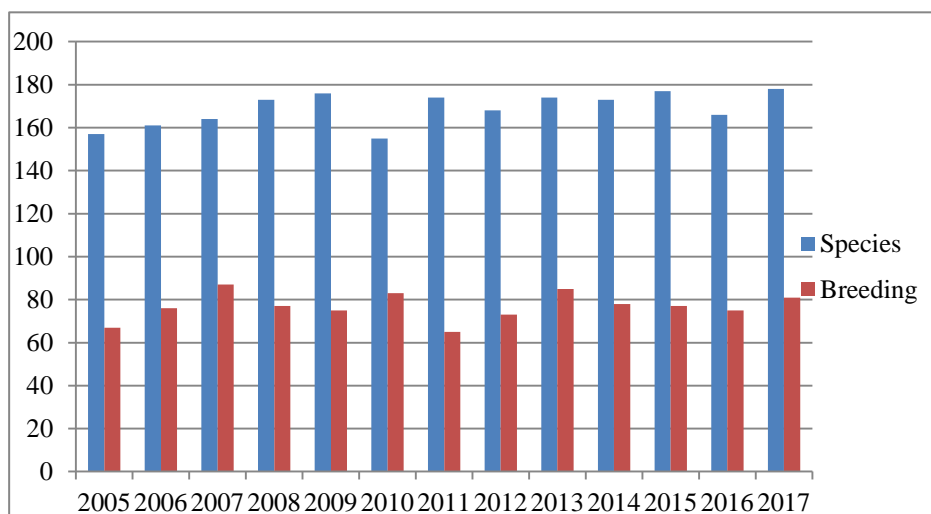


Figure 2. Number of species recorded, and recorded breeding.

Highlights of the 2017 blitz

Two species were recorded during the blitz for the first time. Neither, it must be said, was a complete surprise. Scarlet Honeyeaters *Myzomela sanguinolenta* had been observed and photographed at the Australian National Botanic Gardens by many in the days preceding the blitz weekend, but obligingly stayed around to be counted. The species is an infrequent visitor to our region but not so infrequent as to warrant a mention on the “unusuals” list. The other “first” was the Musk Lorikeet *Glossopsitta concinna*, a species which is being recorded in Canberra more commonly now.

The lone Apostlebird *Struthidea cinerea* continued to be observed at North Watson and the Pied Butcherbird *Cracticus nigrogularis* appears to have established itself in Canberra.

Species most commonly recorded

The Australian Magpie (with 239 records, involving 1312 individuals) retained its usual pre-eminent position as ‘most common’ species. It was followed by the Crimson Rosella (206 records), Grey Fantail (199), Pied Currawong (190), Red Wattlebird (187), Sulphur-crested Cockatoo (184), Magpie-lark (183), Galah (174), Superb Fairy-wren (171) and Yellow-faced Honeyeater (168) (see Collage below).



Photos and Collage of the most commonly recorded species during the 13th blitz (Geoffrey Dabb).

No surprises here. Nine of these species featured in last year’s top ten, albeit in a slightly different order, with the newcomer, the Yellow-faced Honeyeater, just nudging out the common Australian Raven. Apart from being widespread, they are all readily identifiable.

Species recorded only once in blitz 2017

While it was gratifying to record some species which are often overlooked or which are simply not always present in the ACT, it was sobering to note that there were only single records of 18 species. While many of these, such as Blue-billed Duck *Oxyura australis* are thought to be present all year but in very low numbers, and others such as Spotted Harrier *Circus assimilis* are merely occasional visitors, single records of Jacky Winter *Microeca fascinans* and White-fronted Chat *Epthianura albifrons* give pause for thought.

Species not recorded in blitz 2017

Thirty-nine species which had been recorded in previous blitzes were not recorded in 2017. Inevitably, species known to be present in the ACT over the blitz weekend sometimes fail to be recorded. “Resident” crakes, rails and button-quails can be elusive, as was the case in 2017 with Buff-banded Rail *Gallirallus philippensis* and Painted Button-quail *Turnix varius*. Other species with quite restricted distribution in the ACT, such as Bassian Thrush *Zoothera lunulata* and Yellow-tufted Honeyeater *Lichenostomus melanops*, were not recorded in 2017. Several of our occasional visitors did not visit over the blitz weekend, including Great Crested Grebe *Podiceps cristatus* and Channel-billed Cuckoo *Scythrops novaehollandiae*. Waders are always a hit-and-miss proposition for the blitz weekend, mostly the latter on this

occasion. And there were few recordings of arid-zone specialists, suggesting that conditions to our west had not deteriorated badly by October 2017. But the lack of records of Glossy Black-Cockatoo *Calyptorhynchus lathami* reflects a more worrying decline as also reported in the annual bird report.

Of some concern was the absence of many of our high-country specialists, including Red-browed Treecreeper *Climacteris erythroga*, Cicadabird *Coracina tenuirostris* and Rose Robin *Petroica rosea*. There are possible non-worrying explanations for our missing this group of birds. Some are migrants and may simply not have returned by the last weekend in October. Our survey did not coincide with the efforts of a banding team, responsible for previous good returns. We did not have as many observers in the high country and they did not spend as long there as in some years. But it does appear that the 2003 fires are possibly a continuing influence here.

Breeding

As Table 2 and Fig. 2 show, in the 2017 blitz 81 species of bird were recorded as ‘breeding’ – that is a generous interpretation, including the widest parameters recorded such as “display” and “inspecting hollow”. The highest breeding we have recorded in the blitz was 87 species in 2007 and the lowest, 65 species in 2011. Only 29 species have been recorded breeding every year in the blitz, while 139 have been recorded as breeding at least once over the thirteen blitzes. As usual, the species most commonly recorded as breeding were either relatively large and/or conspicuous ones, namely Australian Magpie *Cracticus tibicen*, Common Starling *Sturnus vulgaris*, Magpie-lark *Grallina cyanoleuca*, Pied Currawong *Strepera graculina*, Crimson Rosella *Platycercus elegans*, Australian Wood Duck *Chenonetta jubata*, Pacific Black Duck *Anas superciliosa*, White-winged Chough *Corcorax melanorhamphos*, Black Swan *Cygnus atratus* and Striated Pardalote *Pardalotus striatus*.

Arguably the most pleasing breeding records were that of displaying Crested Shrike-tit *Falcunculus frontatus* in Namadgi NP and nest-building Diamond Firetail *Stagnopleura guttata* at Gilmore. We did record a surprising number of copulations, including that of a pair of Horsfield’s Bronze-cuckoos *Chalcites basalus*.

ACT-listed vulnerable and endangered species

If we exclude the Swift Parrot which is unlikely to be here in late October, and the Australian Painted Snipe and Regent Honeyeater which are seriously rare in the ACT, of the bird species listed as vulnerable or endangered in the ACT, only the Glossy Black-Cockatoo *Calyptorhynchus lathami* was not recorded during the 2017 blitz and in fact has only been recorded in three previous blitzes, most recently in 2008.

As usual, the most widely recorded of the “vulnerables” was the White-winged Triller *Lalage tricolor*, particularly from urban or semi-urban nature reserves, and mostly in low numbers. There were 30 triller records, of 1-11 birds, from 19 widespread grid cells. The triller reporting rate of 8.6% was 13% up on the previous 10-year blitz average. The Scarlet Robin *Petroica boodang* was the next most commonly reported “vulnerable”, with 21 records of 1-5 birds, from 17 widespread grid cells. Its reporting rate of 6% was only slightly below its blitz average. No breeding was recorded this blitz. The Superb Parrot *Polytelis swainsonii* too appears to be holding its own adequately. There were 17 records of 1-9 birds from nine grid cells, all in north and north-west Canberra. Its reporting rate of 4.9% was 55% up on the previous 10 years. There were 8 Varied Sittella *Daphoenositta chrysoptera* records of 1-5 birds from nature reserves in 8 grid cells, at a reporting rate of 2.3%, only very slightly below the 10-year average.

The picture for the other vulnerables is less positive. The Brown Treecreeper *Climacteris picumnus* was only recorded once, from the Naas Valley Fire Trail. Its reporting rate of 0.3% was 68% down on the previous 10 years. The Little Eagle *Hieraetus morphnoides* was recorded three times, all single birds, from two grid cells. Its reporting rate of 0.9% is 43% down on the 10-year blitz average. The Hooded Robin *Melanodryas cucullata* appears to be faring the worst of our vulnerable species, the only record being of two birds near Tharwa bridge. Its reporting rate is 0.3%, down 68% from its 10-year blitz average.



Photos and Collage of the vulnerable and endangered species in the ACT (Geoffrey Dabb).

A case study: Speckled Warbler



Watercolour by Peter Marsack

The endearing little Speckled Warbler *Chthonicola sagittata* is a favourite of many birders. It has been declared vulnerable in NSW so its progress in the ACT is of particular interest. In the 2017 blitz, there were 10 records covering 19 individuals, from eight grid cells, all of them nature reserves. Group size ranged from 1-4. The reporting rate of 2.9% was 48% down on the average of the previous 10 blitz years. There were, however, two breeding records: two dependent young were observed at The Pinnacle NR Hawker, and birds were observed carrying food at Farrer Ridge.

Trends

While the number of records and reporting rate of the majority of species fluctuate, in some cases markedly from year to year, after thirteen blitzes, trends are emerging for certain species, trends which are for the most part also reflected in COG's Annual Bird Reports. I have chosen the reporting rate as the most helpful indicator of trends and have highlighted only those species with sufficient records to make sense of possible movements.

Many of the ducks and other waterbirds are doing very well, perhaps thanks to the increasing number of urban wetlands being created, particularly in north Canberra. While the reporting rate of the Australian Wood Duck *Chenonetta jubata* remained fairly steady, that of others showed considerable increases. The Hardhead *Aythya australis* reporting rate of 9.4% was up 77% on the previous 10 years average; Grey Teal *Anas gracilis* 10.3%, up 44%; Dusky Moorhen *Gallinula tenebrosa* 12.9% up 42%; while the Black-fronted Dotterel *Elseyornis melanops* reporting rate of 4% was up 62%.

The raptors fared less well. While the Nankeen Kestrel *Falco cenchroides* continued to thrive, the Brown Goshawk *Accipiter fasciatus*, Peregrine Falcon *Falco peregrinus* and Whistling Kite *Haliastur sphenurus* all experienced declines. Amongst the parrots, the Rainbow Lorikeet *Trichoglossus haematodus* increased the most (up 215%). The Pallid Cuckoo *Cacomantis pallidus* with a 2017 reporting rate of 4.9% continued to decline. Amongst the honeyeaters, the Red Wattlebird *Anthochaera carunculata* at a reporting rate of 53.4% continued its rise, up 6% on the 10-year blitz average, while the Noisy Miner *Manorina melanocephala* continues doing unfortunately well, with a recording rate of 18.9%, up 3%.

Other “pest” species including the Australian White Ibis *Threskiornis molucca* and the Spotted Dove *Streptopelia chinensis* showed serious increases (118% and 215% respectively), though the Common Starling *Sturnus vulgaris* and the Common Myna *Sturnus tristis* both increased, but less dramatically (12% and 19% respectively).

The small woodland birds were in general not faring well. The Southern Whiteface *Aphelocephala leucopsis* with a reporting rate of only 0.9% was down 43% on the 10-year blitz average, while the Diamond Firetail *Stagonopleura guttata* was down 48% and the Jacky Winter *Microeca fascinans* down 72%.

Conclusions and lessons for the future

Blitz 2017, like its predecessors, has increased significantly the amount of data about Canberra’s birds. Several of the grid cells surveyed would in all probability not have been covered but for the targeted effort of the blitz. The blitz data are made available to the managers of Canberra’s national park and nature reserves. A lesson to be drawn from the blitz is that, when prompted, more of our members will get out, survey and submit datasheets and perhaps revisit favoured spots.

There is, inevitably, an element of “luck of the day” in terms of the results but the long-term trends are already being highlighted. The blitz breeding observations are particularly useful in fleshing out a more detailed overall picture of bird breeding in Canberra. And given the tendency of our vulnerable species to be patchily distributed, the additional blitz information about where they are and in what numbers is highly valuable.

Acknowledgements

First and foremost, thanks must go to all COG members who participated in the 2017 blitz, and particularly to those who put in two full days of birding in remote sites. The assistance of staff at Namadgi National Park in providing advice, and access to areas behind locked gates, is greatly appreciated. Thanks also go to Jaron Bailey for extracting and manipulating blitz data from the COG databases and from eBird, to Nicki Taws for provision of the map, and to Geoffrey Dabb and Con Boekel for their photographs. And sincere thanks too to all those COG members who donated prizes.

References

Canberra Ornithologists Group (2018) Annual Bird Report: 1 July 2016 to 30 June 2017.
Canberra Bird Notes 43: 1-112.

Accepted 3 May 2018

Appendix 1. Known blitz participants 2017.

Barbara Allan	Rob Geraghty	Duncan McCaskill
Richard Allen	John Goldie	Ian McMahon
Geoff Alves	Bill Graham	Peter Milburn
David Baldwin	Jeannie Gray	Laura Mobini
Cedric Bear	Lindsay Hansch	Martyn Moffat
Sue Beatty	John Harris	Terry Munro
Daryl Beaumont	Stuart Harris	Gail Neumann
Terry Bell	Sandra Henderson	Desley O'Mara
Rosemary Birch	Steve Holliday	Barrie Pennefather
Con Boekel	Julie Hotchin	Harvey Perkins
Jenny Bounds	Rhiannon Kiggins	Peter Ramshaw
John Brannan	Bron King	Lucy Randall
Andrew Cadogan	Daryl King	Steve Read
Ryu Callaway	Shirley Kral	Julian Robinson
Jean Casburn	David Landon	Viv Rolland
Brian Chauncy	Kim Larmour	David Rosalky
Grahame Clark	Sue Lashko	Alison Russell French
Julie Clark	Fleur Leary	Ted Simes
Alan Cowan	Christine Ledger	Alastair Smith
Roger Curnow	Michael Lenz	Tod Spencer
Geoffrey Dabb	Matthew Lincoln	Margaret Strong
Christine Darwood	Bruce Lindenmayer	Nicki Taws.
Chris Davey	Joan Lipscombe	Alan Thomas
Dianne & Stuart Deans	Trevor Lipscombe	Philip Veerman
David Dedenczuk	Rod Mackay	Kathy Walter
Alistair Drake	Alison Mackerras	Lucy Wenger
Carmen Drake	Michael Maconachie	Shorty Westin
Matthew Frawley	Liam Manderson	Ignatius Wilson
Peter Fullagar	David McCarthy	Don Wood

Appendix 2. Species recorded during the 2005 - 2017 blitzes.

[X=present;*=breeding]

Common name	05	06	07	08	09	10	11	12	13	14	15	16	17
Emu	X		X	X			X	X				X	X
Stubble Quail		X			X		X		X	X	X	X	X
Brown Quail		X	X	X	X		X	X	X	X	X	X	X
Indian Peafowl	X			X		X			X	X	X	X	X
Magpie Goose				X	X						X		
Musk Duck	X	X*		X*	X*		X	X		X	X		X
Freckled Duck								X	X	X	X		X
Black Swan	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Australian Shelduck											X*	X*	
Australian Wood Duck	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Pink-eared Duck		X	X		X			X	X	X	X	X	X
Australasian. Shoveler	X	X*	X	X*	X	X*	X*	X	X*	X	X*	X	X
Grey Teal	X*	X	X*	X*	X	X*	X	X*	X	X	X*	X*	X*
Chestnut Teal	X	X	X*	X	X	X	X	X	X	X	X	X	X
Northern Mallard and hybrids	X	X	X	X	X	X	X	X	X	X	X	X	X
Pacific Black Duck	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Hardhead	X	X	X*	X	X	X	X	X	X	X	X	X	X*
Blue-billed Duck	X	X		X	X		X			X	X		X
Australasian Grebe	X*	X	X*	X*	X	X*	X*	X*	X*	X*	X	X*	X*
Hoary-headed Grebe	X	X	X	X	X	X	X	X	X	X	X	X	X
Great Crested Grebe	X									X		X	
Rock Dove	X	X	X	X	X	X	X	X	X*	X*	X	X*	X
Spotted Dove				X	X	X	X	X*	X*	X*	X	X	X
Common Bronzewing	X	X	X	X*	X	X*	X	X	X	X	X	X	X
Brush Bronzewing					X								
Crested Pigeon	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Peaceful Dove	X	X		X	X		X		X	X		X	
Wonga Pigeon	X			X				X			X		X
Tawny Frogmouth	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Austral. Owllet-nightjar				X			X	X	X	X	X	X	
Australasian Darter	X	X*	X*	X*	X*	X*	X*	X	X	X*	X*	X*	X*
Little Pied Cormorant	X	X	X*	X*	X*	X*	X*	X	X	X	X	X	X
Great Cormorant	X	X	X	X	X	X	X	X	X	X	X	X*	X
Little Black Cormorant	X	X	X	X	X	X*	X	X	X	X	X	X	X
Pied Cormorant			X	X	X		X		X	X	X	X	X
Australian Pelican	X	X		X	X	X	X	X	X	X	X	X	X
White-necked Heron		X	X		X		X	X	X	X	X	X	X
Eastern Great Egret		X	X	X	X	X	X	X	X	X	X		X
Intermediate Egret				X		X	X	X		X	X		X
Cattle Egret		X					X	X	X	X	X	X	X
White-faced Heron	X*	X*	X*	X	X	X*	X*	X	X	X	X*	X	X
Little Egret				X			X						
Nankeen Night Heron	X	X	X	X	X	X	X	X	X	X	X		X
Glossy Ibis		X	X				X				X		
Australian White Ibis	X	X	X*	X*	X*	X*	X	X	X	X*	X	X	X
Straw-necked Ibis		X	X	X	X		X		X	X	X		X
Royal Spoonbill		X	X	X	X	X			X	X	X	X	X
Black-shouldered Kite	X	X	X	X	X		X	X	X	X	X	X	X
White-bellied Sea-Eagle			X	X			X		X	X	X		
Whistling Kite	X	X	X*	X	X		X*	X	X	X	X	X	X
Brown Goshawk	X*	X*	X*	X*	X*	X*	X	X	X	X	X*	X*	X*
Collared Sparrowhawk	X	X	X*	X	X	X	X	X	X	X	X	X	X*
Spotted Harrier								X	X	X			X

Common name	05	06	07	08	09	10	11	12	13	14	15	16	17
Swamp Harrier	X	X	X	X		X	X	X	X*	X	X	X	X
Wedge-tailed Eagle	X	X	X	X	X*	X*	X	X*	X	X*	X	X*	X
Little Eagle	X	X	X	X*	X*	X*	X	X	X*	X*	X*	X*	X
Nankeen Kestrel	X*	X*	X*	X*	X	X	X*	X*	X*	X*	X	X*	X*
Brown Falcon	X	X	X*	X	X	X	X	X*	X	X	X	X	X
Australian Hobby	X	X	X*	X*	X*	X*	X	X	X*	X	X	X	X
Peregrine Falcon	X	X	X	X	X	X*	X*	X	X	X*	X*	X	X*
Brolga											X		
Purple Swamphen	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Buff-banded Rail		X		X	X				X				
Lewin's Rail								X					
Baillon's Crake				X	X		X		X	X			X
Austral. Spotted Crake			X		X	X	X		X	X	X		X
Spotless Crake								X		X			X
Black-tailed Native-hen					X		X	X					
Dusky Moorhen	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Eurasian Coot	X*	X	X*	X*	X*	X*	X*	X	X	X*	X*	X*	X*
Pied Stilt			X		X				X		X		X
Bush Stone-curlew										X	X	X	X
Black-fronted Dotterel	X	X	X	X	X	X*	X	X*	X*	X	X*	X	X
Red-kneed Dotterel		X	X	X	X				X*	X	X*		X
Banded Lapwing					X								
Masked Lapwing	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Australian Painted Snipe							X	X					
Latham's Snipe	X	X	X	X	X	X	X	X	X	X	X	X	X
Pectoral Sandpiper									X				
Bar-tailed Godwit			X										
Sharp-tailed Sandpiper	X		X		X		X		X	X			X
Painted Button-quail	X			X	X	X	X	X					
Caspian Tern													
Whiskered Tern				X	X								
Silver Gull	X*	X*	X*	X	X	X	X	X	X	X	X*	X*	X
Glossy Black-Cockatoo	X	X		X									
Yellow-tailed Black-Cockatoo	X	X	X	X*	X	X	X	X	X*	X*	X*	X	X
Gang-gang Cockatoo	X	X	X	X	X*	X	X*	X	X	X*	X	X*	X*
Major Mitchell's Cockatoo			X										
Galah	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*
Long-billed Corella				X		X	X		X	X*	X	X*	X
Little Corella	X*	X*	X*	X*	X	X	X	X*	X*	X*	X	X*	X*
Sulphur-crested Cockatoo	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Cockatiel					X								
Musk Lorikeet													X
Rainbow Lorikeet	X	X	X	X*	X	X	X	X	X	X	X	X	X*
Australian King-Parrot	X	X	X	X*	X	X*	X*	X*	X*	X*	X	X	X*
Superb Parrot	X	X*	X*	X	X*	X*	X	X	X	X	X	X	X
Crimson Rosella	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Eastern Rosella	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Red-rumped Parrot	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Blue-winged Parrot											X		
Turquoise Parrot					X								
Eastern Koel			X	X		X*		X	X	X	X	X	X
Channel-billed Cuckoo						X							
Horsfield's Bronze-Cuckoo	X	X*	X	X	X*	X	X	X	X	X	X	X	X*

Common name	05	06	07	08	09	10	11	12	13	14	15	16	17
Black-eared Cuckoo											X		
Shining Bronze-Cuckoo	X*	X*	X	X	X	X	X	X	X*	X	X*	X	X
Pallid Cuckoo	X	X	X	X	X	X	X	X*	X	X	X*	X	X
Fan-tailed Cuckoo	X	X	X*	X	X	X	X	X	X	X*	X*	X	X*
Brush Cuckoo	X	X	X	X	X	X	X	X	X	X	X	X	X
Powerful Owl					X						X		
Southern Boobook	X			X		X		X	X	X	X	X	X
Eastern Barn Owl							X						
Laughing Kookaburra	X*	X*	X	X	X*	X	X	X	X*	X	X*	X*	X*
Red-backed Kingfisher			X	X									
Sacred Kingfisher	X*	X*	X*	X	X*	X*	X	X*	X*	X*	X*	X*	X*
Rainbow Bee-eater	X	X	X*	X*	X	X*	X*	X	X*	X*	X	X	X*
Dollarbird	X	X	X*	X	X*	X*	X	X*	X	X*	X	X	X*
Superb Lyrebird	X	X	X	X	X	X	X	X	X	X	X	X	X
White-throat. Treetreeper	X	X*	X*	X*	X*	X*	X*	X*	X*	X	X	X	X
Red-browed Treetreeper	X	X	X		X	X			X			X	
Brown Treetreeper	X	X	X*	X*	X*	X	X	X*	X	X	X	X	X
Satin Bowerbird	X	X	X	X*	X*	X	X	X	X*	X*	X*	X*	X*
Superb Fairy-wren	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Pilotbird	X				X	X	X		X*				X
White-browed Scrubwren	X*	X*	X*	X*	X*	X	X*	X	X*	X*	X*	X*	X*
Chestnut-rumped Heathwren						X		X					X
Speckled Warbler	X*	X	X*	X*	X*	X*	X*	X	X	X	X*	X	X*
Weebill	X*	X	X*	X*	X	X*	X*	X	X*	X	X*	X*	X*
Western Gerygone	X	X	X	X	X	X	X	X	X	X*	X	X*	X
White-throated Gerygone	X*	X	X*	X	X	X*	X	X*	X*	X*	X*	X	X*
Striated Thornbill	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*
Yellow Thornbill	X	X	X	X	X*	X*	X	X	X	X	X	X*	X
Yellow-rumped Thornbill	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Buff-rumped Thornbill	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Brown Thornbill	X	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*
Southern Whiteface	X	X*	X	X	X	X	X	X		X		X*	X
Spotted Pardalote	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
Striated Pardalote	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Eastern Spinebill	X*	X*	X	X	X	X	X	X	X*	X*	X	X	X
Lewin's Honeyeater												X	
Yellow-faced Honeyeater	X	X*	X	X*	X*	X	X	X	X*	X	X	X	X
Scarlet Honeyeater													X
White-eared Honeyeater	X*	X	X*	X*	X*	X	X	X	X*	X	X*	X	X*
Yellow-tufted Honey.	X						X		X	X	X	X*	
Fuscous Honeyeater	X*	X	X*	X*	X	X*	X	X*	X	X*	X*	X	X*
White-plumed Honey.	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X	X	X
Noisy Miner	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Red Wattlebird	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
White-fronted Chat					X	X	X	X			X	X*	X
Crescent Honeyeater				X	X	X	X		X*		X	X	X
New Holland Honey.	X	X*	X*	X	X	X	X	X	X	X	X*	X	X
Brown-headed Honeyeater	X	X	X	X*	X	X	X*	X*	X	X	X	X*	X*

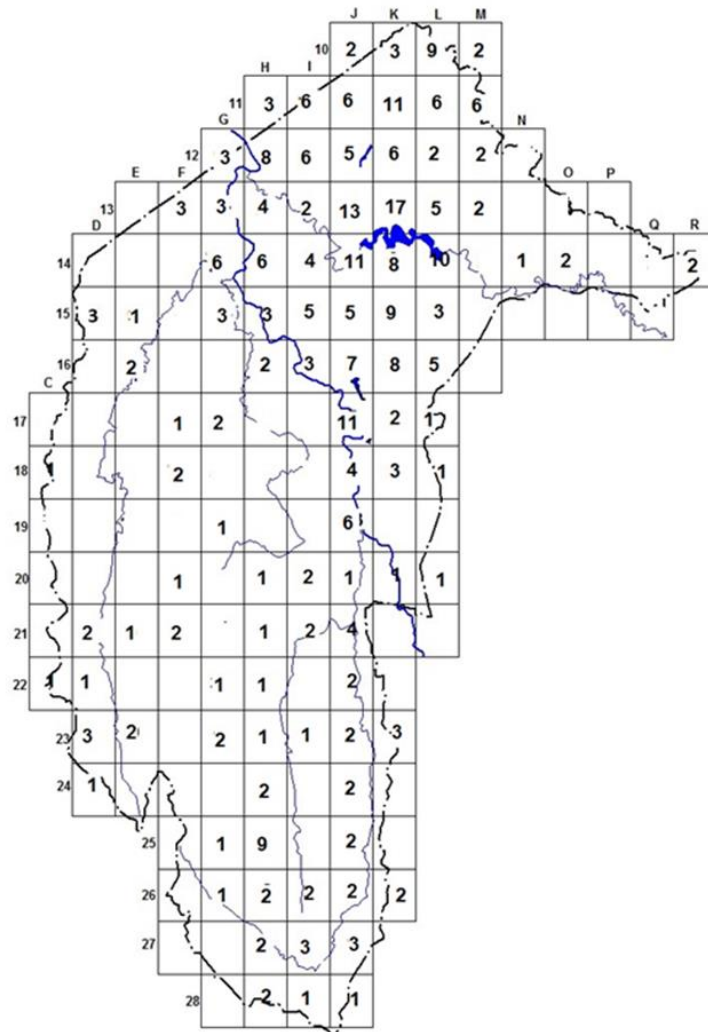
Common name	05	06	07	08	09	10	11	12	13	14	15	16	17
White-naped Honey.r	X	X	X	X*	X*	X	X	X*	X*	X*	X*	X	X*
Noisy Friarbird	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X	X*
Painted Honeyeater										X			
Spotted Quail-thrush	X	X	X	X	X	X	X	X	X	X	X		X
Eastern Whipbird		X	X	X	X	X	X	X	X	X	X	X	X
Varied Sittella	X*	X*	X*	X	X*	X*	X	X*	X*	X*	X*	X*	X
Black-f. Cuckoo-shrike	X	X*	X*	X*	X*	X*	X*	X*	X*	X	X*	X*	X*
Cicadabird				X	X	X		X	X		X	X	
White-winged Triller	X*	X*	X*	X	X	X	X	X*	X*	X*	X*	X	X
Crested Shrike-tit	X	X*	X	X	X	X	X	X	X	X	X*	X	X*
Olive Whistler							X						
Golden Whistler	X	X	X	X	X	X	X	X	X*	X	X	X	X
Rufous Whistler	X*	X*	X*	X*	X	X*	X	X	X*	X*	X*	X	X*
Grey Shrike-thrush	X	X*	X*	X*	X	X*	X	X	X	X	X	X*	X
Olive-backed Oriole	X	X	X*	X*	X	X*	X	X	X*	X*	X*	X	X*
Masked Woodswallow		X	X	X	X		X	X	X				
White-br. Woodswallow		X*	X*	X	X		X	X	X	X			X*
Dusky Woodswallow	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Grey Butcherbird	X*	X*	X	X	X*	X*	X*	X*	X*	X*	X*	X*	X*
Pied Butcherbird										X		X	X
Australian Magpie	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Pied Currawong	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Grey Currawong	X	X	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*
Rufous Fantail	X		X	X	X	X	X		X			X	X
Grey Fantail	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Willie Wagtail	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Australian Raven	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Little Raven	X*	X	X*	X*	X*	X*	X*	X*	X	X	X*	X*	X*
Leaden Flycatcher	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*
Satin Flycatcher	X	X	X	X	X	X	X	X	X	X	X	X	X
Restless Flycatcher	X	X	X		X		X	X	X	X		X	X
Magpie-lark	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
White-winged Chough	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Apostlebird												X	X
Jacky Winter	X	X*	X	X	X	X	X	X	X	X	X	X	X
Scarlet Robin	X*	X*	X	X*	X*	X	X*	X	X*	X*	X	X*	X
Red-capped Robin	X	X*	X*	X	X	X*	X	X	X	X	X	X	X
Flame Robin	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Rose Robin	X	X	X	X	X	X	X		X	X	X	X	
Hooded Robin	X*	X*	X*	X	X*	X	X*	X	X*	X	X		X
Eastern Yellow Robin	X*	X*		X	X	X	X	X*	X*	X*	X	X*	X*
Eurasian Skylark	X	X	X	X*	X	X	X	X*	X	X	X	X	X
Golden-headed Cisticola	X	X	X	X	X	X*	X	X*	X	X*	X	X	X
Austral. Reed-Warbler	X*	X	X	X	X*	X*	X*	X*	X*	X*	X	X	X*
Little Grassbird	X	X	X	X	X*	X	X	X	X	X	X	X	X
Rufous Songlark	X	X	X	X	X	X	X*	X*	X	X	X	X	X
Brown Songlark	X*	X	X*	X	X		X	X					X
Silveryeye	X	X	X*	X	X	X*	X	X*	X*	X	X*	X	X
Welcome Swallow	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Fairy Martin	X	X	X*	X*	X*	X*	X*	X*	X*	X	X*	X*	X*
Tree Martin	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*
Bassian Thrush	X	X		X	X			X	X*		X		
Common Blackbird	X*	X	X*	X	X	X	X*	X*	X*	X	X*	X	X*
Common Starling	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Common Myna	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Mistletoebird	X*	X	X	X	X*	X*	X	X*	X	X	X	X	X*

Common name	05	06	07	08	09	10	11	12	13	14	15	16	17
Double-barred Finch	X	X*	X*	X*	X	X	X*	X	X	X	X	X*	X
Red-browed Finch	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X	X*	X*
Diamond Firetail	X	X	X	X	X	X	X	X	X	X	X	X	X*
House Sparrow	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Australasian Pipit	X	X	X*	X*	X*	X*	X*	X	X*	X*	X	X*	X*
European Goldfinch	X	X*	X	X	X	X	X	X	X	X	X	X	X
Common Greenfinch	X				X	X	X	X	X*	X	X	X	X

Notes

Domestic ducks and geese, which frequent the lakes, have been excluded, as have domestic chickens even when recorded far from civilisation. The peafowl have been included as they appear to be a naturally reproducing “wild” population, in suburbia. The “mallards” group has been lumped as their exact identity cannot be assured – it probably includes crosses with domestic as well as wild birds. The Emu, Brolga and Magpie Geese are – or were - probably part of the semi-captive population at Tidbinbilla Nature Reserve. The Bush Stone-curlews are included as, though initially introduced to the Sanctuary at Mulligans Flat Nature Reserve, they are free to roam.

Map 1. Blitz coverage 2017



NOTES

Canberra Bird Notes 43(2) (2018): 207-209

FIRST CHESTNUT-RUMPED HEATHWREN ACT BREEDING RECORD CONFIRMED WITH PHOTOGRAPHS

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Following a couple of reports of Chestnut-rumped Heathwren (*Calamanthus pyrrhopygius*) exhibiting breeding behaviour at Bluetts Block, ACT (see map linked to eBird checklists below), video of a young bird was obtained on 30 Oct 2017. This is the first confirmed breeding record of this species supported with photographs in the ACT.

On 1 Oct, Jean Casburn recorded the following in her eBird checklist for Bluetts Block:

Seen in the same area as previously. Bright rufous undertail coverts, strongly cocked tail. Suspect feeding young as the bird moved back and forth three times along a log to a potential nest site. Warning calls were given from close range (prior to the sighting).



Figure1. Adult Chestnut-rumped Heathwren carrying food (Shorty Westlin).

This post sparked quite a bit of interest from COG's birdwatchers and there was concern that visits by a large number of people might scare the birds off their task. Jack Holland suggested going on to prove breeding conclusively for the first time in the ACT region, and as Steve Wallace had expressed an interest in the heathwrens, Jean asked him if he would go on with the search. Unfortunately Jean was unable to be involved and therefore showed the location to him and Sue Lashko on 5 Oct. However, the birds could not be located on this visit.

On 22 Oct 2017, Shorty Westlin's eBird checklist recorded a Chestnut-rumped Heathwren carrying food and supported it with photographs (Fig. 1). The location of this sighting was 300 m from Jean's. Others visited the area between the 22 and 30 October 2017 but only Shorty reported heathwrens (2 birds on 29 Oct) and no-one recorded breeding activity in the eBird lists.

On 30 Oct 2017, Steve Wallace visited the area where Shorty had observed the birds carrying food. Initially there was no sign of the birds. They were eventually located only about 15 metres away, feeding a single dependent young bird. While not timid, the birds mostly stayed hidden. The adults and the young bird could be located by the calls but their behaviour limited the capture of video. Brief video of the young bird was eventually obtained (Wallace 2017) and a photograph from it sent to the COG chatline on 1 Nov (Fig. 2). The only other sighting of the young bird (based on eBird reports) after 30 October was on 9 November by Jean.



Figure 2. Juvenile Chestnut-rumped Heathwren (Steve Wallace).

At the time of the sighting of the young bird, the Chestnut-rumped Heathwren was listed as non-breeding on the COG ACT checklist. Two ACT records of dependent young in the COG database had not triggered a change in status. Phil Hansbro recorded four birds including dependent young at Mt Majura on 30 October 1994, and Harvey Perkins, Dan Mantle and Anthony Overs recorded four birds “including 1 dy with tail only half grown” at Vanity's Crossing on 12 Sep 2010, which was included in the 2010-2011 Annual Bird Report (COG 2012).

The distance and time between Jean's observation on 1 Oct and Shorty's on 22 Oct (300m) does raise the question of the number of breeding birds in the area. There is little information about the territory size and behaviour of the Chestnut-rumped Heathwren but references used in Higgins *et al.* (2002, p. 228) indicate that nesting may occur in as little as 4 hectares, that birds may move long distances from the nest to feed and that feeding can occur over a distance of 300m. There is also a report of the male feeding the female during incubation.

Thus the distance and time between the two observations does not preclude them being the same birds.

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BREEDING RECORD OF BLUE-FACED HONEYEATERS IN YASS, NSW

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On the afternoon of 16 Sep 2016 while walking through the grounds of Yass High School I observed an unusual bird flash through the sunlight into the deep shade of a large conifer. Closer inspection confirmed it as a Blue-faced Honeyeater (*Entomyzon cyanotis*). I was able to follow this individual from branch to branch, before it alighted and settled into a roughhewn grass nest. The nest was on a pine limb that arched out and lay horizontal, directly above the exit road of the high school.

I visited again the following afternoon. The nest was still occupied in an on and off manner as I watched over a 30-minute period. I also observed a second bird attending its mate in the nest. I am unsure if food was exchanged or if the birds swapped positions, as they would sometimes both be away from the nest at the same time. The same types of observations were made each day or two over the next week.

The next time I visited was on 24 Oct 2016. The nest was gone, but I observed two adults within the general vicinity, approximately 200 metres from the nest site. There was a lull in activity over the next four months or rather a lull in the activity of this observer.

Blue-faced Honeyeaters were not observed again until 5 Feb 2017, quite incidentally during a morning run, this time slightly to the west in pine trees adjacent to O'Connor Park. I observed three individuals, one potentially a fledgling. However without binoculars I was unable to distinguish any juvenile features.

My next observations were again very incidental: each morning from 10 to 14 Jul 2017 three birds were observed feeding in a Banksia at my workplace in Mitchell Street. They competed vigorously for feeding rights with Red Wattlebirds and seemed to get their fair share. They were not seen again until the summer months of 2017/18, when individuals were heard or sighted during walks around the Yass River, usually close to the Argyle Apples near Riverbank Park.

While no breeding events were observed during 2017, sightings of Blue Faced Honeyeaters in Yass have continued as recently as 19 Feb 2018. Since July 2017, I have not observed or heard more than one individual at a time, as my efforts have been incidental and erratic; therefore I am not certain how many individuals are still present. It appears likely that at least three birds have lived in the Yass area since September 2016, with at least one fledging being raised to adulthood during that period.

Accepted 27 February 2018

AUSTRALIAN WHITE IBIS AND ROYAL SPOONBILL NESTING AT GUNG AHLIN POND

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In preparation for a COG Wednesday the author and Frances Butterfield visited Gungahlin Pond on 18 Feb 2018. As this was an informal walk, and we were not familiar with the area we did not have our telescope with us.

Through binoculars we were surprised to see that some of the Australian White Ibis (*Threskiornis molucca*) on three islands in the middle of the pond appeared to be on nests. Other observers subsequently confirmed that this rookery was well known but advised that a telescope was necessary to see the nests clearly.

For the Walk on 21 Feb the author, and several other members of the group had telescopes and were scanning the islands when the author noticed on the middle island what appeared to be a Royal Spoonbill (*Platalea regia*) standing in a nest towards the top of a tree. A second nest, approximately 1 m lower was clearly occupied by an Australian White Ibis. The possible Spoonbill was very uncooperative in showing its head but two nestlings were clearly visible in the nest.

The bird was thought to be very 'white' in contrast to the rather grubby appearance of the ibis below. After about 10 min of study several members of the group got clear sightings of the spoon-shaped bill and patches of yellow skin above the eyes confirming this to be a Royal Spoonbill. The author believes this to be the third successful breeding event for Royal Spoonbill in the ACT.

Earlier records were in 1998 in Jerrabombera Creek and 2008 on a small island in front of the Cygnus hide at Kellys Swamp. Those events are described in Butterfield (2008, 2009). Two unsuccessful attempts are also known: in Jerrabombera Creek (2007) and the site in front of Cygnus hide (2009).

References

Butterfield M., 2008 A Royal Spoonbill breeding attempt at Kellys Swamp. *Canberra Bird Notes* 33:

Butterfield M., 2009 Royal Spoonbills breeding at Kellys Swamp. *Canberra Bird Notes* 34:

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DO AGGRESSIVE TERRITORIAL PASSERINES DISCOURAGE LITTLE EAGLES FROM NESTING IN ACT WOODLANDS?

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Among several factors to be considered in investigating low rates of breeding success by Little Eagles (*Hieraaetus morphnoides*) is harassment by other bird species. In the absence of better evidence, this note is merely a discussion of some personal observations.

There is some evidence that Wedge-tailed Eagles (*Aquila audax*) have excluded Little Eagles from former nesting areas. If so, that trend might force the excluded Little Eagles into less favourable localities where they are more likely to be at risk of smaller-bird harassment. The Australian Magpie (*Cracticus tibicen*) is a frequent harasser of raptors, especially Little Eagles, particularly during the magpie nesting season. It is not unusual to see one or more magpies launch themselves at a circling Little Eagle, and drive the intruder from their defended space. The Australian Raven (*Corvus coronoides*) and Noisy Friarbird (*Philemon corniculatus*) show similar defensive (or aggressive) behaviour towards Little Eagles.



I know of no reports of smaller-bird harassment causing failure after egg-laying. However, an adverse effect might arise from eagles being deterred from using a particular site, or particular former nest, at the time of site-selection or nest-building or refurbishment. Would a

¹ Photos by the author.

Little Eagle be likely to use a nest site within a territory strongly defended by one or more smaller species? I know one Little Eagle nest within a defended magpie territory. An adult Little Eagle was regularly driven from its 'watch' perch 20m or more from its nest, but was not seen by me to be harassed at or near the nest. That Little Eagle nest was successful.



At other locations I know of several instances where an adult or nestling eagle was repeatedly harassed by friarbirds, woodswallows or Willie Wagtails (*Rhipidura leucophrys*) while at or in the nest. In one example female and nestling cowered in the nest, flinching at each near miss by a particularly aggressive Dusky Woodswallow (*Artamus cyanopterus*) (Video available). Could such experience discourage use of that nest site in a later season?

A related issue is whether nest sites are chosen to reduce likelihood of harassment. A nest in an isolated tall tree is less likely to be prone to attack than a nest in a tree in or adjacent to multi-storeyed woodland with rich insect life. Such places can be nesting hotspots in the ACT spring. In the northern part of the ACT, built-up or cleared areas separate islands of woodland, some in the form of nature parks, where the whole range of nesting species, eagles included, is likely to be concentrated. In that situation, exclusion from some potential nesting areas by Wedge-tailed Eagles, if that is what is happening, is likely to further disadvantage Little Eagles seeking to nest here.

Some Little Eagles in the ACT prefer to nest in clumps of mistletoe or in the dense enfolding foliage of a Radiata Pine. Such positions do not have convenient launching points and would tend to discourage diving attacks by potential harassers. Locally, Brown Goshawks (*Accipiter fasciatus*) sometimes choose similar situations. Indeed there have been several examples of goshawk nests near those of Little Eagles. Perhaps both species follow a similar strategy in choosing nest sites, or perhaps there is a mutual benefit in the co-location.

Accepted 16 April 2018

SOME RECENT INFORMATION ON LATE SIGHTINGS OF LATHAM'S SNIPE

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In our article 'Surveying Latham's Snipe in the ACT and surrounding areas August 2016-March 2017' and published in CBN Vol 42, December 2017 we stated that:

At each wetland there were very few birds present in August, presumably because not all the birds had yet arrived from the northern hemisphere. By March, birds had departed from all three areas. In fact, there were no snipes recorded anywhere in the ACT during March, incidentally or otherwise.

From records submitted to the survey it is correct to say that there were no reports of birds in March 2017 but it has been brought to our attention that there were additional records collected but not reported to the survey. These additional observations show clearly that Latham's Snipe were still present at the Jerrabomberra Wetlands in March 2017.

Subsequent records now show that Latham's Snipe were still present at both Jerrabomberra Wetlands and West Belconnen Pond in March 2018, with further records of Snipe at the Jerrabomberra Wetlands in April 2018. The April observation is of particular interest for according to eBird records this is only one of three records of the species in April 2018 in Australia and only one of a handful ever. It is certainly the latest ever record in eBird for the ACT (Alastair Smith, *pers. comm.*).

Accepted 2 May 2018

COLUMNIST'S CORNER

Canberra Bird Notes 43(2) (2018): 215-216

About your Australian bird list(s)

Anyone seriously birdwatching at the time will remember 1994. That was when Les Christidis and Walter Boles presented their new taxonomic list. The adjective on everyone's lips was 'long-awaited'. C&B was based on a lot of book research, only accepting changes to earlier lists if they were 'substantiated in the literature'. An influential global list, Sibley & Monroe (1990), was extensively referred to, but not followed where 'not based on published studies'. The English names were based on the RAOU's Recommended English Names (1978), with some variation with respect to names 'thought to be unpopular and changed after survey'.

An updated list appeared 14 years later: Christidis & Boles (2008). This took some account, so far as studies to that point permitted, of genetic information. Again, all changes in species circumscriptions depended on 'appropriate substantiation'. There was some use of genetic differentiation, in relation to the albatrosses, for example.

By 2011, it was clear that the gathering pace of taxonomic changes called for a national bird list that could be readily updated. Les Christidis and Walter Boles had indicated they would not be taking responsibility for such a project, so BirdLife Australia (BLA) decided to adopt its own online list.

The new list was for the purpose of BLA's own projects, in particular the Action Plan for Australian Birds. The first draft of the 'Working List of Australian Birds' (WLAB) was a working list that had been generated for the 2010 Action Plan.

Meanwhile the different global lists were evolving into formats designed to appeal to ordinary birdwatchers, in particular to the keen personal list-keepers who were becoming the largest part of the list-using community. A new bird list, Gill & Wright 2006, had been published under the sponsorship of the (then) International Ornithological Congress. It had been compiled for the purpose of promoting uniformity in English names. The 'Congress' has been replaced by a new body, the 'International Ornithologists' Union', but the 2006 list, now mainly a taxonomic list, continues to be published online with the 'IOC' trade-name stated to represent 'International Ornithological Community'.

In 1993 the venerable International Council for Bird Preservation morphed into 'Birdlife International' (BLI). After 2010 it decided to publish its own global species list based on a new method of assigning species status known as 'the Tobias criteria'. In 2014, BLI joined forces with the publisher of the lavishly illustrated *Handbook of the Birds of the World* to present the 'BLI/IBCW list'.

BirdLife Australia has decided that its own list, WLAB, should follow the BLI/IBCW taxonomic list. It is now in the process of settling a Version 3, drawing on both of the now-published volumes of the *IBCW/BLI Illustrated Checklist*.

The BLI/IBW list has been criticised for failing to take sufficient account of genetic information. Currently there is a move to unify, or at least reduce differences between, the other three global lists: IOC, Howard & Moore, and Clements/eBird. In theory, that could deepen the schism between those three on the one hand and the BLI/IBW list on the other. However, so far as Australian birds are concerned, the differences in species recognised is quite small. It is possible that over time, despite contrasting theoretical foundations, the differences will reduce rather than grow, due to the ‘catch-up’ effect.

The BLI/IBW taxonomy tends to be favoured by European countries and organisations, and, importantly for BLA’s objectives, is widely used for international conservation purposes, in particular by the International Union for Conservation of Nature. However it is not always followed in Australian field guides and other publications. A notable example is the 2017 *Australian Bird Guide* (ABG), which is based on the IOC taxonomy. (I take the opportunity to mention here, as recommended reading, the informative essay by Leo Joseph on ‘evolution and classification of Australian birds’, to be found in ABG.)

So, for the foreseeable future you are going to have more than one Australian bird list. You should note that there are other lists than those I have mentioned so far. The Commonwealth government maintains something called the Australian Faunal Directory (available online), which is used for some government purposes, along with the BLI/IBW list. *The Directory of Australian Birds* (‘DAB’ - Schodde & Mason 1999) is an authoritative exposition of the Australian passerines, with detailed information about all the then recognised subspecies as well as species. Such works are not easily updated, though.

So, after you know what lists are out there, it is quite sensible to choose one list for one purpose (say, keeping your personal list) and a different list for another purpose (say, planning a conservation strategy) – and perhaps a different list again if you happen to be a taxonomist. However, you should keep in mind two other points. First, ‘Australia’ can mean different things in different lists. In the C&B volumes there was some untidiness about the geographical scope of the exercise. The ABG covers Australia and its ‘dependencies’, keeping alive widespread confusion about whether the Torres Strait islands are part of Queensland or Macquarie Island is part of Tasmania. ABG does not cover Australian Antarctic Territory, which WLAB does.

The second point concerns rarities, in particular ‘vagrants’. DAB omits many of these on the ground that they are ‘yet to be shown to be integral members’ of the Australian bird fauna. ‘They only reach Australia by chance, usually as single birds in one-off events ...’.

On the other hand, ABG takes a quite different position: ‘Vagrant birds and rarities are utterly absorbing to some specialised birders ...’. ‘[T]he pursuit of rarities has undoubtedly driven some significant advances in Australian ornithology – notably in our collective understanding of identification techniques, moult and plumage cycles, seabird distribution and the avifauna of offshore islands that Australia administers.’

Vagrants and ‘offshore islands’ rarities usually come onto the Australian lists; if they do, through admission to WLAB, via the Birdlife Australia Rarities Committee.

Stentoreus

Birding in Cyberspace, Canberra Style

Your columnist was pleased to receive a contribution from prominent COGite cum eBirder, Martin Butterfield. It is a sad story, though. I agree with Martin that it contains many lessons for both individuals and organisations about data and website management. Martin wrote:

Vale Bird-a-Day

A number of Australian birders have participated in the Bird-a-Day (BaD – formerly at www.birdaday.net) site, headquartered in Florida, which collated birders' attempts to record an addition to their year list each day through the year. This grew out of an informal challenge between a group of Florida birders and was essentially managed by two people from that group. One, Bill, largely provided moral support and developed the annual theme for the website. The other, Trey, had written the code for the site and undertook all the management of the group and the site.

Trey—who did have a day job—spent most of 2016 completely rewriting all the code for the site. This was obviously a huge task, but achieved a much nicer site, which opened in early 2017. For some reason the number of participants was lower in 2017 than 2016 but there were still 67 people—from about a dozen countries—'playing'.

Then in October 2017 Bill passed around the sad news that Trey had suddenly, and unexpectedly, died. Then came the realisation that no-one knew how to access the code for the site. No-one had the passwords to get administrative access to the site and neither Bill nor Trey's family knew where he'd kept them. Bill wasn't a code-cutter so couldn't manage the site anyway, but he couldn't even provide access to people who might be able to.

The site kept functioning until the end of the year (with one participant completing the year). To everyone's amazement it simply ticked over on 1 January 2018 and kept going. About the middle of that month an attempt to put up a new sighting was greeted with a message about 'Server Error in "/" application', and a slew of code. For the reasons above no-one could fix this but it disappeared after a day, so we battled on. On 29 January the Error message appeared again, and this time it has stayed. Goodbye BirdaDay.

So some crucial rules—not guidelines but rules—for operating public access websites:

Make sure that at least a couple of people know where the passwords for such activities can be located;

Keep back-up copies and good doco with someone else (possibly in a safety deposit box with the title to your house, will, etc);

Try to make sure the code can be understood by any competent programmer; and make sure that at least a couple of people know where the passwords for such activities can be located.

Thanks Martin, sound advice.

From time-to-time I receive requests—or see them posted to the CanberraBirds or BirdingAus email distribution lists—for advice about birding apps for use on mobile digital devices. Usually these are from people about to travel to a new area, with the travelling birder keen to have a digital field guide to hand. Clearly this is a common request and, as a consequence, the website **Bird Apps of the World—A List of All Field Guide Apps for Apple and Android Devices** has been developed:

visit <http://www.birderslibrary.com/features/bird-apps-of-the-world.htm>. The author is Grant McCreary. Grant advises that ‘I’m a bird bookaholic...’. His website’s home page presents a map of the world showing the countries and regions covered by bird field guide apps. He explains:

Being able to have a field guide with me at all times is one of the things I like best about my smart phone. Bird field guide apps provide all the material normally found in print guides, plus things like sounds, checklists, and extra information, with more features constantly being added. I love it!

These apps are even better for traveling birders, allowing you to have all the information of a field guide with none of the bulk. Many areas of the world now have a field guide app available for them. Here’s a list of all the apps available for Apple and Android devices.

If I’ve missed any, please let me know in the comments below.

As one would expect, the listing includes, for Australia, the Michael Morcombe and David Stewart *eGuide to the Birds of Australia* app, and the Pizzey & Knight *Birds of Australia* app. A valuable resource for the travelling birder.

Along with many—perhaps most—Australian birders I am saddened each year when I hear about the slaughter of wild native birds in the name of sport. I don’t believe that the word ‘hunting’ is really apposite for this horrible practice, nor is the word ‘sport’. Given that position (and I appreciate that not all readers of this column share my attitudes on the topic) I found it interesting to read a post on BirdingAus last year with the subject line ‘**Canada Geese hang out in urban areas in winter to avoid hunters**’. The author, Laurie Knight, referred readers to an article in *Science Daily* <https://www.sciencedaily.com/releases/2017/10/171023132009.htm> which discusses a piece of academic writing: Dorak, B *et al.* 2017, ‘Survival and habitat selection of Canada Geese during autumn and winter in metropolitan Chicago, US’, *The Condor*, vol. 119, no. 4, pp. 787-99, open access <https://doi.org/10.1650/CONDOR-16-234.1>. *Science Daily* wrote:

It’s open season for Canada geese in Illinois from mid-October to mid-January. Unfortunately for hunters, Canada geese are finding a new way to stay out of the line of fire. Rather than being ‘sitting ducks’ in a rural pond, they’re setting up residence in the city. Ornithologists conducted a recent study to try to find out why there were so many Canada geese in Chicago in the winter... Their arrival demonstrated uncanny timing as well. Approximately 70 percent of the geese the researchers were tracking returned to the Chicago land area prior to open hunting seasons.

Interesting, but what has it to do with us in Australia? Well, BirdingAus contributor Mike Tarburton responded, pointing out that:

Pacific Black Duck numbers increased markedly in the suburban lakes around Perth, each year, within days of the opening of the duck-shooting season. We used to believe this was because of the shooting. I used to be an honorary fauna warden for W.A. and such behaviour was commonly accepted.

And, to conclude, did you see that **eBird has cracked the 500 million bird records barrier?** Yes, half a billion! It happened on 26 March this year, details at <https://ebird.org/news/500-million-ebird-records> . The half billionth record was a Barn Swallow, submitted from Shan, Myanmar.

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.

Details on how to subscribe to *Birding-Aus*, the Australian birding email discussion list, are on the web at <http://www.birding-aus.org/> . A comprehensive searchable archive of the messages that have been posted to the list is at <http://bioacoustics.cse.unsw.edu.au/archives/html/birding-aus>.

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

To unsubscribe, either permanently or temporarily, send an email message to 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>.

BOOK REVIEW

Canberra Bird Notes 43(2) (2018): 220-222

A Photographic Guide to the Birds of the Australian High Country. By Neil Hermes. John Beaufoy Publishing, Oxford OX27NS, England, ISBN 978-1 909612 96-9, 360 pp., Paperback, AU \$45.

Reviewed by PHILIP VEERMAN, Kambah, ACT (pveerman@pcug.org.au)

The purpose of this book is fully described by the title, with the unstated extra that it is only about the south-east corner of mainland Australia's high country. It is based on similar ideas to the historic book by Frith (1969) of almost the same name but with the advance of the years, this is a very different book. The result is immediately likeable and successful in its directness, which is a good outcome considering that the book's production happened rather quickly. This carries through to a guide that is honest and economical. The parts interrelate well, the introductory sections describe the layout and apart from repetitive text (on the names), there is no blank wasted space. The size and weight of the book are not much different to some of the national field guides and some may find that a constraint.

It really would be interesting to know how a new visitor to south-east Australia with a reasonable level of identification skill but no other resources (books or local guides) would manage with just this one book. I think with care taken, this book should be sufficient to get most of the identifications correct, even though with some of the difficult species a few mistakes could easily creep in. This is among the better regional guides.

The introduction is a set of items of general relevance. All of these are well done and with good local context; the few little suggestions which follow could have made a good introduction better. A section on the climate of the region, that curiously mentions extremes but then quotes average temperatures (separate things). The main habitats included in the scope of the book are described next, each with a photo and comments on the typical bird species. Then comes a section headed "Orders and Families", wrongly, because the book refers only to the family taxon. In that little section and indeed throughout the book, I did not find a single mention of the important bird order taxon, other than the indistinct use of the common word "passerine", which actually denotes just one big order (Passeriformes). That order includes about half the species (and the book does not make that connection). Orders have the ending "iformes"; families, being subset of orders, ending in "idae". Then follow comments on residents and migrants, and some other thoughts on general bird biology. I did not find a mention of that the area gets the occasional free-flying escaped bird (such as Rose-ringed Parrakeet). There is an explanation as to how the book uses bird status categories. The bit on calls and song does appear to me to have a slight northern hemisphere bias in terms of the function of song, including for example, the mention of drumming of snipe, which is not relevant in the southern hemisphere. Other than mentioning the lyrebird, it appears to have simply forgotten that many Australian birds use mimicry. It also forgets to mention that the begging calls of juveniles are often very different to the calls of adults. There is a generous eleven-page section on where to watch birds, describing 37 important locations and even including some sample birdwatching itineraries. Then there is a guide to the book. After the species text is a bibliography, acknowledgements, a checklist of birds and an index of both scientific and common names, unusually formatted by first name of each species (e.g. Black Kite is under B, not K) and, as per usual, M for *Milvus*.

The bulk is 317 pages of the main text of 322 species, typically one species per page, each with one, two, three or even four photos. All species are represented by a photo. There are six cases of two species per page, four cases of three species per double page, three cases of five species per four pages (involving splits of text and photo on the next spread) and five cases of one species given two pages. Where two species share a page, seven have a vertical line dividing them but two of those pages have no dividing line. On one of these, page 119, it is unclear from the placement which photo is the Red-necked Stint and which is the Long-toed Stint. Fortunately the photos are good enough to distinguish them. The descriptions of most species are good, giving most of the basic identification information, although a beginner faced with hard-to-identify species will usually need the support of the photos or other sources.

It could fairly be suggested that the photos are the highlight of the book. There is a long list of credits to the photographers, prominently placed before the title page (and in the acknowledgements at the end), although it is far from obvious who took each photo. It would have been nice to give the initials of the photographer at the bottom right under each photo and link that to the credits list. Most photos are excellent. All are worthy of inclusion. Some photos are rather small and some of the printing is a little dark. It may not be fair to pick out particular ones for mention but I am impressed by photos of flying swifts, and the photo of a White-winged Chough shows its awkward manner quite well. The Stubble Quail and Tree Sparrow are probably the least useful photos and there is no photo of the female King Quail (which should be easy to photograph, being a common aviary bird), only the very different male. The Regent Honeyeater is shown as having a wide black band on the yellow tail, but this is actually a shadow. The Weebill is maybe too close to be very useful. I believe the Painted Button-quail is a female, not a male. I doubt that the Rose Robin is correctly identified as a female. I did not detect other misplacements or errors.

The birds are grouped by families, each with an introductory box. The information given there provides a fair summary of the generally relevant features of each family group, even though other references will align some of them differently. The book frequently though inconsistently uses the word “related” for the birds. Of course all life is related, (do we go back to the feathered dinosaurs?) but the word here has different intentions. It comes down to understanding the extent. For example it is stated for the White Ibis “The previous name Sacred Ibis was used when the Australian birds were thought to be related to the African Sacred Ibis.” This implies that the author may be suggesting it is not “related”, but of course it is. It is surely in the same genus, and as for some species, that is a moot point, due to allopatry. By comparison, domestic budgerigars are stated as “distant relatives” (even though clearly the same species) as wild ones. Crows, it is stated, are closest relatives to the birds of paradise. I am surprised at the suggestion that the Owlet-nightjars are closer to the swifts and hummingbirds than sitting neatly within the Caprimulgiformes. This is the first field guide I have seen that widely separates the Falconiformes from the Accipitriformes. Whilst this is arguably technically correct, I don’t see the separation as helpful to the function of the book, as they are functionally and superficially similar and sometimes confusable, regardless of relationship. Historically most books have treated them as the one order. This book distinguishes these two groups with a statement that (among other things) falcons kill with their beaks instead of their feet. This can be a point of difference but is not really so clear cut. Falcons capture prey with their feet; this may kill it (or not, when they will kill with a bite). Hawks will kill with a combination of feet and beak (even eating prey can be the process of killing it).

For each species, the number and location of any described subspecies are listed. Given that the book covers a small geographic area, most species do not have more than one subspecies in the subject area, indeed many listed as having no described subspecies. The author has chosen to give prominence to that information, although it may be a low-priority item for many users.

The book describes the etymology or history of every species' scientific and common names, then concatenates the words (which is a bit obvious), often with a comment as to whether the name is useful. This is a strange priority for a field guide. It is done in a way that is tedious and something of a waste of space. For example the origin of the name "duck" is repeated for every duck, likewise for every honeyeater, *Cacatua* etc. These could have been given in the family headings or as a supplement. Even so there are some interesting stories. The stated origin of the genus name for the King Quail is just weird. No doubt there are many other names that are also very obscure or strange and we would not have that amusement without books like this. I do not accept that the Australian Hobby species name *longipennis* refers to long wing, rather than long feather (the connection to pen being obvious). It is curious to see missing hyphens in some bird group names (Nativehen, Cuckooshrike and Buttonquail), perhaps in an attempt to remove the awkwardness and create new words.

The book also gives names for each species in simplified Chinese (Mandarin). It is not explained why this was done, for how many people and why only this language. I was able to confirm the characters of the names of the Tree Sparrow and Peregrine Falcon from a Chinese (Taiwan) bird book. I wonder how Currawong and Gerygone (and many others) would be translated.

The book is generous in its geographic interpretation of which species deserve to be included under the title (wishful thinking maybe). It includes several inland species like the Bustard and Letter-winged Kite, whose relevance to Australia's high country is marginal at best. Each species has its distribution shown on a small map, which is useful for some species, although for about half of them, there is no suggested regional variation and the map provides little if any information, other than migrant or resident, which is already given by the text.

Under voice, for the Robins, most start with "male song" and Rose Robin is given the possessive "male's song". A curious but unimportant grammar inconsistency.

I will disclose here that I provided some editorial assistance on several species and whilst normally that might go against writing a review of the book, I have taken these as two unrelated processes. I did not proof-read the book but in general reading, the few actual textual errors I found were the wrong spelling of my name in the acknowledgements and using the word "checked" instead of "cheeked" for explanation of the Spiny-cheeked Honeyeater name.

Maybe the book is a bit bigger and more generous in its inclusions than it needs to be. Overall it is a really nicely produced book that is well thought out, consistent, convenient and appealing. It deserves to go very well, particularly among the many visitors coming to mainland south-east Australia who may not wish to be confused by a book covering many other species not found in this corner of the continent.

RARITIES PANEL NEWS

The most surprising report in this edition was most certainly that of the Black Bittern at Jerrabomberra Wetlands. While the bird was not seen, a clear audio record was provided, enabling the Panel to endorse it. This species has been recorded on the South Coast but never previously in our area of interest.

Another surprise was the plethora of Black-eared Cuckoo records. The Bimbi Beach bird obligingly stayed around eating elm beetle larvae for days, enabling many to observe and photograph it and to compare it with the superficially similar Horsfield's Bronze-cuckoo juvenile which was also present.

Avocets are no longer on the "unusuals" list, on the grounds that they are so easy to identify, but while they are regularly recorded at Lake Bathurst, they are seriously unusual in the ACT so this record of six birds at Lake Ginninderra is worthy of mention. It also inspired a memorable talk on avocet preening at the March COG meeting.

The Painted Honeyeater record from Tidbinbilla, a wetter-than-usual location for the species, came from a visiting birder and, while the species no longer on the "unusuals" list, warrants a mention for its location.

Two records are still under consideration.

The Panel received second-hand reports of two interesting species: a Masked Owl at Bywong; and two Powerful Owls at Wamboin in April. Both were supported by other authorities.

ENDORSED LIST 92, MAY 2018

White-throated Nightjar *Eurostopodus mystacalis*

1; 27 Feb 2018, Julienne Kamprad, Hoskinstown

Red-necked Avocet *Recurvirostra novaehollandia*

6; 13 Feb, Steve Wallace, Bimbi Beach, Lake Ginninderra peninsula

Banded Lapwing *Vanellus tricolor*

4, 18 Dec 2017, Martin Butterfield, Plains Rd Hoskinstown

6, 8 Feb 2018, Martin Butterfield, Plains Rd Hoskinstown

Black Bittern *Ixobrychus falavicolis*

1; 5-6 Jan 2018, Alastair Smith, Jerrabomberra Wetlands (see also this issue of *CBN*)

Black-eared Cuckoo *Chalcites osculans*

1, 30 Jan 2018, Alastair Smith, Callum Brae

1; 4 Feb 2018, Steve Read, Glendale Depot

1; 7 Feb 2018, Lindell Emerton, Bimbi Beach, Lake Ginninderra peninsula

Azure Kingfisher *Ceyx azureus*

1; 19 April 2018, Ryu Callaway, Point Hutt Crossing

Black Honeyeater *Sugamel niger*

1, 26 Feb 2017, Alastair Smith & Peter Milburn, Jerrabomberra Wetlands

3; 21 Feb 2018, Michael Lenz, Nelanglo (TSR 48)

1; 7 Mar 2018, Michael Lenz, Nelanglo (TSR 48)

Painted Honeyeater *Grantiella picta*

1; 12 Mar 2018, James Spencer, Tidbinbilla sanctuary

Spangled Drongo *Dicrurus bracteatus*

1; 7 Feb 2018, Graeme Clifton, Wanna Wanna Rd, Carwoola

Metallic Starling *Aplonis metallica*

1; 16 Dec 2018, Rob Parnell, Narrabundah - probable aviary escape

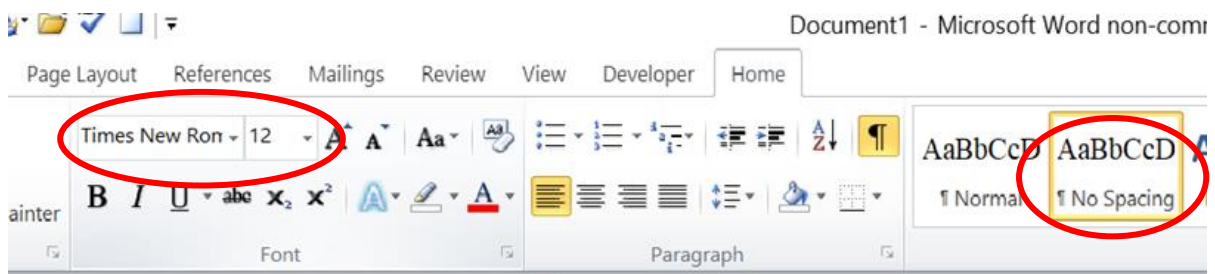
Barbara Allan (allanbm@bigpond.net.au)

Canberra Bird Notes

Canberra Bird Notes is published three times a year by the Canberra Ornithologists Group Inc. and is edited by Michael Lenz and Kevin Windle. Paul Fennell edits the first issue/year, the Annual Bird Report. Major articles of up to 5000 words are welcome on matters relating to the status, distribution, behaviour or identification of birds in the Australian Capital Territory and surrounding region. Please discuss any proposed major contribution in advance. Shorter notes, book reviews and other contributions are also encouraged. All contributions should be sent to one of those email addresses:

CBN@canberrabirds.org.au or 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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We refer to 'contributors' rather than 'authors' as sometimes we publish photographs, as well as written content.

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