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1 **Assessing the strength of evidence for records of Night**
2 **Parrots at Kalamurina Wildlife Sanctuary (South Australia)**
3 **and Diamantina National Park (Queensland), 2016-2018**

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17 **Abstract**

18 The Night Parrot *Pezoporus occidentalis* is one of the least known and most threatened of Australia's bird
19 species. In recent decades, breeding has been confirmed at only two remote regions in inland Australia.
20 Consequently, reports of its presence in new locations have important conservation implications and elicit
21 intense public interest. Between 2016 and 2018, following targeted searches, the Australian Wildlife
22 Conservancy (AWC) reported the presence of Night Parrots on their Kalamurina Wildlife Reserve (South
23 Australia) and the Diamantina National Park (Queensland). In response to questions raised from within

24 the Australian ornithological community, AWC appointed an independent panel to assess the adequacy of
25 the evidence for the presence of Night Parrots at these two locations. The panel was tasked with
26 considering three lines of evidence, a single feather discovered at Kalamurina in 2017, calls recorded on
27 an acoustic recorder at Kalamurina in 2018 and photographs of three nests with eggs at Diamantina
28 National Park in 2016. The panel concluded that each of the three lines of evidence was insufficient to
29 demonstrate conclusively the occurrence of Night Parrots at either Diamantina National Park or
30 Kalamurina Wildlife Reserve. Here we present a summary of the panel's findings, to maintain these
31 findings permanently on the public record.

32 **Key words**

33 Night Parrot; *Pezoporus occidentalis*; Kalamurina Wildlife Reserve; South Australia; Diamantina National
34 Park; Queensland; acoustic recorders; parrot nests; parrot eggs

35 **Introduction**

36 The Night Parrot *Pezoporus occidentalis* is one of Australia's most elusive, enigmatic and threatened
37 birds. Following its broad-scale decline in the late nineteenth century, it has been the subject of many
38 searches, mostly fruitless. The few records after *ca* 1900 have come from remote areas of inland
39 Australia and were not substantiated with hard evidence or repeat observations, until dead birds were
40 found on two occasions in south-west Queensland (Boles *et al.* 1994; Cuppitt and Cuppitt 2008;
41 McDougall *et al.* 2009). In a major breakthrough, a small extant population was found in 2013 at what is
42 now known as Pullen Pullen Reserve in south-west Queensland (e.g. Worthington 2013); and
43 subsequently another small population was discovered in the East Murchison District, in central Western
44 Australia in 2017 (Jackett *et al.* 2017). These discoveries have stimulated valuable research and
45 conservation efforts, and the sites now have great conservation value. However, the outlook for the
46 species remains parlous, and considerable effort has been made to search for additional populations.
47 These searches have generated several reports of possible Night Parrots from new locations, with
48 varying degrees of substantiating evidence.

49 Between 2016 and 2018, following targeted searches, the Australian Wildlife Conservancy (AWC)
50 reported, through publication on AWC's website and enews, the presence of Night Parrots on their
51 Kalamurina Wildlife Reserve (South Australia) and the Diamantina National Park (Queensland). The
52 validity of each of these records was questioned (e.g. Taylor 2018) and we describe the findings of an
53 investigation into the strength of evidence provided for the claims of Night Parrot presence at the two
54 locations.

55 **The Investigation**

56 In response to doubts raised about the strength of evidence for these reports, the AWC adopted the
57 Australian Government's guidelines for investigation – the *Australian Code for the Responsible Conduct*
58 *of Research* ([https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-](https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-research-2018)
59 [research-2018](https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-research-2018)). The guidelines set out a suggested approach involving a preliminary assessment to
60 determine if the case warranted a full investigation. If warranted, the guidelines recommend the formation
61 of a panel to conduct a full investigation, make findings and formally report to the institution which then
62 determines the appropriate actions. Accordingly, an independent panel, comprising the authors of this
63 paper, was appointed by the AWC to assess the adequacy of the evidence provided to support these
64 Night Parrot reports. The panel was tasked with considering the three lines of evidence, a single feather
65 discovered at Kalamurina in July 2017, calls recorded on an acoustic recorder at Kalamurina in 2018 and
66 photographs of three nests with eggs at Diamantina National Park in 2016. The panel evaluated the
67 evidence through examination of internal AWC documents, interviews with people involved, comparisons
68 with Night Parrot specimens in museum collections, comparisons with photographs and descriptions of all
69 confirmed Night Parrot nests, and soliciting opinion from a wide range of independent experts. A
70 summary of findings appeared in an AWC media release on 22 March 2019
71 (<https://www.australianwildlife.org/awc-receives-findings-from-independent-night-parrot-review-panel/>).
72 Here, we report briefly on the panel's deliberations, to maintain these findings permanently on the public
73 record.

74 **Findings**

75 *The Kalamurina feather*

76 In September 2017, AWC published on its website and enews a photograph of a Night Parrot feather
77 reported to have been collected from the lining of a Zebra Finch (*Taeniopygia guttata*) nest at Kalamurina
78 in July 2017. This record was subsequently reported in the media (e.g. McCarthy 2017). In September
79 2018, the AWC sent a feather that was purported to be the same feather as that found in the Zebra Finch
80 nest to the South Australian Museum to retain within its collections, as required under State wildlife
81 legislation. However, staff at the museum noted possible discrepancies between the submitted feather
82 and the feather illustrated on the AWC website.

83 The panel found that whilst the feather photographed in the lining of the Zebra Finch nest was from a
84 Night Parrot, the feather lodged with South Australian Museum, also from a Night Parrot, was not the
85 same feather. Obvious differences between the two feathers are shown in Figure 1. Consequently, the
86 panel concluded that, given the lack of clarity over the origin of the feather submitted to the South
87 Australian Museum, it does not provide definitive evidence of Night Parrot presence at Kalamurina.

88 *Night Parrot vocalisations at Kalamurina*

89 Figure 2 compares pertinent recordings of vocalizations of Night Parrots. Notably, the recordings made by
90 Jackett et al. (2017) from the Kimberley exhibit substantial variation, and such variation is also apparent
91 in calls from different locations (see Leseberg *et al.* 2019),.

92 From that analysis, the panel concluded that the vocalizations of a Night Parrot published by the AWC
93 from recordings made at Kalamurina in September 2018 (through publication on AWC's website and
94 enews), were the result of playback of a publicly available recording (the 'WA antiphonal duet' call at
95 <https://nightparrot.com.au/index.php/resources/night-parrot-calls/>) of a Western Australian Night Parrot,
96 rather than the actual call of a local bird (Figure 2). Given this finding, the panel concluded that, at the
97 date of the report (January 2019), there was no reliable acoustic evidence for the presence of Night
98 Parrots at Kalamurina. Subsequent examination of other recordings made by AWC at Kalamurina in
99 September 2018 provided no evidence of Night Parrot presence (AWC unpublished).

100 Diamantina nests and eggs

101 Knowledge of the nests and eggs of the Night Parrot is limited to a few brief historic descriptions (e.g.
102 McGilp 1931; Ives 1971) and to recent detailed descriptions and photographs of four contemporary nests
103 (three described by Murphy *et al.* 2017 and one by Hamilton *et al.* 2017; see also Olsen 2018 pp 291,
104 310). Because there are no Night Parrot nests and few eggs in museum collections, we have relied upon
105 these recent photographs of confirmed nests for comparison.

106 The panel found that all three nests photographed at Diamantina National Park (Figure 3) are notably
107 different in aspects of positioning and structure to the small set of confirmed Night Parrot nests. Each of
108 the four known Night Parrot nests was constructed within a dense hummock of spinifex (*Triodia* sp.)
109 (Poaceae) and consisted of an entrance tunnel opening above ground in the side of the hummock and
110 leading to a shallow scrape at ground level deep within the hummock and lined with chewed sections of
111 dried *Triodia* leaves (see Murphy *et al.* 2017; Hamilton *et al.* 2017). In contrast, nest 1 from Diamantina
112 National Park is notable for having an obvious bowl made of plant matter including fresh phyllodes (
113 winged leaf stalks which function as leaves), probably of Lancewood (*Acacia shirleyi*) (Fabaceae) (J.
114 Silcock pers comm.), which the panel considered to be highly unlikely for a Night Parrot to gather and
115 incorporate into its nest. Nest 2 is placed within a samphire shrub (*Tecticornia* sp.) (Amaranthaceae)
116 which provides little cover or protection, especially from above, compared with nests built in dense *Triodia*
117 hummocks. It also comprises a well-defined bowl, constructed of dried grasses and *Tecticornia* stem tips.
118 Nest 3 more closely resembles known Night Parrot nests in that it is a scrape in the sand beneath a
119 *Triodia* hummock, however, its position close to the edge of a sparse *Triodia* hummock and the high
120 degree of natural light penetration do not match confirmed nests.

121 To assess the three clutches of eggs depicted in photographs of the three nests, the panel consulted 12
122 ornithologists in Australia and overseas with expertise in oology, a poultry farmer and a bird veterinarian,
123 and each was asked to provide an independent assessment. Most of the consulted experts considered
124 that the eggs shown in photographs of nests 2 and 3 were small parrot eggs that were not inconsistent
125 with the eggs of the Night Parrot. Although some experts cautioned that atypical eggs could occur

126 naturally for various reasons, 8 of the 12 experts considered the two eggs in the photographs of nest 1
127 were not natural (i.e. they were probably artificial), and justified this assessment plausibly through
128 characteristics of the eggs' appearance, including surface texture, lustre, shape and colour. Three other
129 experts considered that there was not enough evidence to make a judgement, and another chose not to
130 offer an opinion. The panel concluded that the eggs in the photographs of nest 1 were not consistent with
131 natural eggs.

132 **Conclusion**

133 The panel concluded that each of the three lines of evidence on which this investigation focused was
134 insufficient to demonstrate conclusively the occurrence of Night Parrots at either Diamantina National
135 Park or Kalamurina Wildlife Reserve. However, the panel noted that Night Parrots had previously been
136 confirmed as present at Diamantina National Park (Cuppitt and Cuppitt 2008).

137 Consequently, the panel made a series of recommendations regarding the AWC's protocols and
138 procedures. These include recording GPS data on photographs, more rigorous protocols for the use of
139 playback and for record keeping, referral of rare bird records to BirdLife Australia's rarities committee, and
140 having acoustic data already collected at Kalamurina Wildlife Reserve and Diamantina National Park
141 verified by independent experts.

142 This episode shows the importance of rigorous scrutiny of newly submitted bird records, especially where
143 they have significant implications for implementing conservation actions and associated research. As
144 national rarities committees usually deal with vagrant birds, rather than poorly known resident species,
145 new processes may need to be implemented.

146 **Acknowledgements**

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148 anonymity). Information and advice were received from members of the Night Parrot Recovery Team,
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154 success), and others who noticed anomalies that led to this investigation.

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193

194 **Potential Conflicts of Interest**

195 John Woinarski acknowledges that he is now a Board member of the Australian Wildlife Conservancy, but
 196 that this appointment postdates the panel's assessment.

197

198 **Figure captions**

199 Figure 1. Comparison between the feather found in a Zebra Finch nest on Kalamurina (left image) and
200 the feather lodged in the South Australian Museum (right image). Left image is the nest feather (taken in
201 the field and image supplied by AWC); right image is the lodged feather (image supplied by AWC and
202 used on their website). Left image has been cropped, sharpened and had contrast slightly increased to
203 aid comparison. Photos: copyright Australian Wildlife Conservancy.

204 Figure 2. A representation of the temporal properties of 15 Night Parrot ‘hollow whistle – didit’ duets.
205 The long first bar represents the initial ‘hollow whistle’ vocalisation. The short bars represent the ‘didit’
206 response. The duets in black were those recorded on Kalamurina in May 2018. The duet in red was
207 posted on the Night Parrot Recovery Team website in 2017. The duets in green were recorded in the
208 East Murchison by Jackett et al. in early 2017 and were all given by the same pair of birds during a single
209 night. Note the consistency in vocalisation length and the gap between the component calls for the
210 black (Kalamurina) and red (website) duets, when compared to the variation in vocalisation length and
211 the gap between component calls from the East Murchison. The duet labelled Murchison Duet 10 is the
212 vocalization that was posted to the Night Parrot website (i.e. the red duet), hence the similarities
213 between those two.

214

215 Figure 3. Selected photographs of each of the three nests purportedly found in Diamantina National Park,
216 Queensland in 2016. Nest 1 differs from the expected structure of a Night Parrot nest built in a *Triodia*
217 hummock by having a well-developed bowl constructed of plant material including green, leaf-like
218 vegetation identified as likely to be phyllodes of *Acacia shirleyi*. The texture and shape of the eggs also
219 differs from those in nests 2 and 3. Nest 2 also differs from known nests in structure and placement as it
220 is placed within a *Tecticornia* shrub which provides little cover or protection compared to nests built in
221 dense *Triodia* hummocks. The well-formed nest bowl appears to be lined with dry grass and some green

222 tips of *Tecticornia*. Nest 3 more closely resembles known Night Parrot nests in that it is a scrape in the
223 sand beneath a *Triodia* hummock, however, its position close to the edge of a sparse *Triodia* hummock,
224 lack of an entrance tunnel and the high degree of natural light penetration do not match confirmed nests.

225 Photos: copyright Australian Wildlife Conservancy.

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