

OBSERVATIONS OF BREEDING WHITE-BELLIED CUCKOO-SHRIKES (DARK- AND NORMAL-MORPH) IN THE LOWER SOUTH EAST OF SOUTH AUSTRALIA

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ABSTRACT

From 18 November 2001 to 15 January 2002, we monitored a White-bellied Cuckoo-shrike *Coracina papuensis robusta* nest at Telford Scrub Conservation Park in the Lower South East of South Australia. We observed the later stages of the breeding cycle, beginning with two chicks in the nest through to fledging and abandonment of the nest by the adults. The parents were different morphs (dark and normal), and enabled assessment of the effort each parent put into brooding and feeding the chicks. We provide a description of nestlings, and aspects of breeding ecology we believe are previously unpublished for this species, i.e. response to raptors, food items fed to chicks, nest refurbishment and adult-adult feeding. We also offer suggestions for future research on breeding of this species, particularly where different morphs are involved.

INTRODUCTION

The White-bellied Cuckoo-shrike *Coracina papuensis* is listed as Rare in South Australia (Threatened Species Schedules in the *National Parks and Wildlife Act, 1972*). Nonetheless White-bellied Cuckoo-shrikes *C.p. robusta* are regular spring–summer visitors to the Lower South East of South Australia, particularly to the 175 ha Telford Scrub Conservation Park (37°41'S, 140°47'E), 14 km N of Mount Gambier (RG, pers. obs.).

On 25 November 2001 we confirmed that a

nest found on 18 November in the south-eastern corner was that of White-bellied Cuckoo-shrike. One of the nesting pair was a dark-morph bird, of which there are only two published records for South Australia (Taylor 1999). Incidentally, Taylor (1999) implies that the subspecies *C.p. robusta* consists of dark-morphs only, but normal- and dark-morphs of *C.p. robusta* have been recorded in South Australia.

The White-bellied Cuckoo-shrike occurs predominantly in eastern Australia, but its range extends west as far as south-eastern South Australia (Pizzey and Knight 1997). South Australian records are mainly from the Lower South East, with occasional records from the Murray Mallee area (Jaensch 1980) and Nantawarra in the Adelaide Plains area (Taylor 1999).

Since December 1998, RG has observed this species in Telford Scrub Conservation Park in January, August and December 1999, August, October and December 2000, and August and October 2001. None of the records include breeding, although the consistent presence of White-bellied Cuckoo-shrikes during the breeding period and the availability of apparently suitable habitat suggest annual nesting in the park. Previously most sightings in the park were along the northern boundary fire trail and approximately halfway along the eastern boundary fire trail (RG, pers. obs.; C. Rogers, pers. comm.). Prior to October 2001 there is only one record from the south-eastern corner of the park, namely a single bird in December 1999.

This paper describes aspects of the breeding effort by two adult birds observed in the park.

METHODS

The Telford Scrub Conservation Park predominantly is comprised of brown stringybark *Eucalyptus baxteri*, swamp gum *E. ovata* and rough-barked manna gum *E. viminalis cygnetensis* with an area of prickly tea tree *Leptospermum continentale*.

Observations at the nest site were made from 18 November 2001 to 15 January 2002 and occurred on 13 days (18, 25, 26, 27, 29 November; 1, 2, 7, 29 December; and 1, 4, 13, 15 January). These observations were made from approximately 30 m north and east of the nest. Equipment used included 12x25 and 10x50 binoculars and a 30x80 Swarovski spotting scope (used on 1

December to view food transfer to the chick). Timed observations of feeding and other behaviour by the adult birds were made on 27, 29 November and 1 December.

Observations of breeding activity generally occurred shortly after dawn each day, and ceased once the second chick fledged between 0900 h on 1 December and 1805 h on 2 December 2001. The only observations after that time were of the adult birds without young.

RESULTS

Description of adults: The normal-morph bird was typical of the *C.p. robusta* subspecies. Morcombe (2000) describes a short black mask joining a dark eye, margined by a fine white, rear eye ring. Upper parts were blue-grey with darker flight and tail feathers.

The dark-morph bird appeared more similar to the description in Pizzey and Knight (1997), than Simpson and Day (1999) or Morcombe (2000). It had a grey capped head, giving more the appearance of an indistinct facial disc than a fully dark head; the throat and breast were very mottled, graduating from almost pure black downwards to become very pale near the lower breast; and the flank was very heavily barred black. This bird also appeared paler underneath than the normal-morph bird but this could be due to contrast with the breast region colouration. This bird was seen sunning itself at the top of a 6 m tall blackwood *Acacia melanoxylon* tree. While it had its feathers ruffled good rear views were obtained. The darker primary feathers were tinged brownish. The tail had a grey centre similar in colour to the bird's back. The three outer tail feathers were all black and had a small white round spot near the tip. This spot was largest on the outside feather and decreased in size towards the middle.

Adult males are distinguished from females by their intense satin-black lore bands (duller and sootier to slaty in females), a small white mark on the posterior peri-orbital ring, and consistently immaculate ventra (Schodde and Mason 1999). The only feature we noted was the prominent white mark behind the eye in the normal-morph bird. When sexing dark-morph birds, males have smutty black head/throat/breast; and females retain grey crowns but have smutty side of head/nape, heavy black barring on breast/flanks (Pizzey and Knight 1997). These features led the authors to believe that the dark-morph bird was

female and the normal-morph bird male, but we offer this conclusion hesitantly without having noted all of the identifying features.

Nest: The nest had a low rim and shallow saucer shaped depression with no concealing foliage (see Morcombe 2000). It was constructed on smooth, grey barked branches in a north-facing fork, and was composed of leaves, strips of bark, and lichen bound together with cobweb. The nest was approximately 15 m above the ground in a swamp gum, which was 40 m from the edge of the park. A horizontal branch 30 cm above the nest may have provided camouflage from above (see Figure).

Conole (1992) observed White-bellied Cuckoo-shrikes nesting in swamp gum woodland, which is consistent with our observations in this park, although we found rough-barked manna gum present.

Nestlings: The two chicks each had a large white throat patch, faint barring on the upper breast, and definite demarcation between the grey lower breast and white stomach. The bill had a matt finish and was duller than the eye-stripe; and the eye-stripe was narrower than that of the adult. While being fed an orange colour of the inside of the mouth was visible.

Parental care: Timed observations of parental duties were recorded at the nest site on three days (27 and 29 November and 1 December) for short periods in the mornings. During that time 42 observations of feeding of young were made over a period of 160 minutes giving an average feed-

ing frequency (f.f.) of 3.8 minutes. The observation period was timed from the first feeding of the morning until the observer departed.

On 27 and 29 December food was delivered to the nest 21 times in 46 minutes (f.f. = 2.2 minutes). On 1 December, food was delivered to the nest 21 times in 114 minutes (f.f. = 5.4 minutes). We believe this difference is due to only one chick being fed on the nest on the last day. The first chick had fledged some time in the 48 hour period prior to the morning of 1 December. During the timed observation period on 1 December the fledged chick was sighted in the canopy being fed by one of the adults but its feeding frequency was not recorded. We believe the second chick fledged between 0900 h on 1 December and 1805 h on 2 December 2001.

Interestingly, of the 42 observations of food delivery to the young, each bird delivered 21 times. However, the proportion delivered by the non-brooding bird (the bird not seen on the nest at first light) was markedly higher on each session's observations. Brooding was performed by both birds with the normal-morph bird brooding at dawn on the first two occasions and the dark-morph bird at dawn on the last.

In a total of 42 feeding observations, 30 (71%) involved the non-brooding bird and 12 (29%) the brooding bird. Even when separating the days, as one adult probably was feeding the already fledged chick on the last day, the results remain similar. The results for the first two days were 15 (71%) by the non-brooding bird and six (29%) by the brooding bird. As the observations occurred only in the morning these results could be biased, and not reflect a true daily f.f., as Marchant (1989) found an f.f. of 15–16 minutes.

We twice observed the dark-morph bird removing a faecal sac from the nest. On one of these occasions, the bird fed the chick, perched on the edge of the nest, reached around to grasp the faecal sac, then flew off with it. Marchant (1989) also reports faecal sac behaviour in this species.

On another occasion the normal-morph bird, after feeding the chick, perched behind the nest and removed an unidentified item from behind/beneath the chick (not a typical white globular sac). It

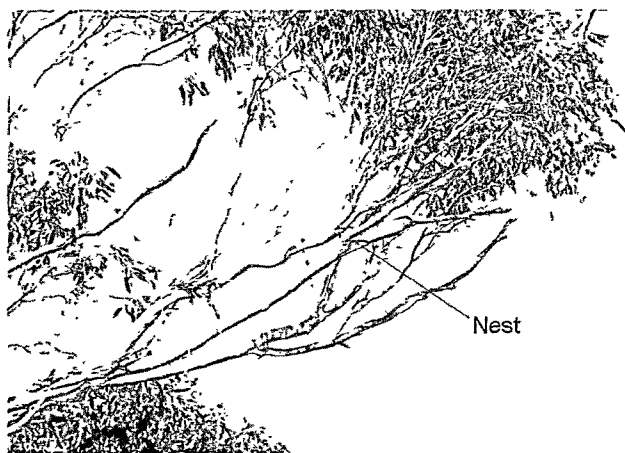


Figure. Nest tree. Photograph taken by B.T. Haywood on 15 January 2002.

resembled insect remains and was dark in colour. On the same morning the normal-morph bird, once again after feeding the chick, perched on the edge of the nest, reached around and grasped a faecal sac in its bill. Just before flying off the normal-morph bird appeared to swallow the sac instead of carrying it in its bill.

Barker and Vestjens (1980) describe various food items taken by White-bellied Cuckoo-shrikes, including plant material such as seeds and fruit, with a large portion of their diet being arthropods and spiders. The Table lists prey items we observed being fed to young from 26 November to 3 December 2001.

On 26 November the dark-morph bird was observed flying north from the adjacent pine *Pinus* sp. plantation into the south-eastern corner of the park with a large dragonfly in its beak. It landed on a low branch of a rough-barked manna gum and proceeded to flick the dragonfly until dead. Over the next few minutes the bird removed the insect's four wings by flicking it against the branch of the tree (with a wing in its beak). The cuckoo-shrike carefully placed the now wingless dragonfly in its beak (head facing in) and flew towards the nest, but the cuckoo-shrike was not observed at the nest or feeding it to the young. Nonetheless the prey item now appeared suitable as food for nest young.

While searching for prey these birds exhibited similar behaviour to Australasian robins (e.g. *Petroica* spp.). They would fly to nearly horizontal branches (mostly dead) high in the canopy, mid-storey and/or close to the ground, perch for a few seconds, then swoop and pick prey from leaves, branches and grasses.

Adult-adult feeding: The differences in morph allowed us to observe the roles of each adult. On eight occasions the dark-morph bird was observed in the canopy and sub-canopy feeding the normal-morph bird. Feeding was observed three times during the period 0555–0602 h on 27 November; and on single occasions at 0600 h and 0602 h on 29 November, and again at 0544 h, 0547 h and 0550 h on 1 December. At 0600 h on 29 November the dark-morph bird was seen flying from branch to branch with prey in its bill, and when it alighted next to the normal-morph bird the food was offered and taken. The normal-morph bird was not observed feeding the dark-morph bird.

At 0544 h on 1 December the normal-morph bird appeared to beg for food, and seemed to

Table. Prey items observed being fed to young, 26 November to 3 December 2001.

Prey Item	No. of Observations
ARACHNIDA	
Spider	2
DIPTERA	
Two-winged insect (suspected large mosquito)	1
LEPIDOPTERA	
Moth	1
Lime green coloured caterpillar	3

prefer following the dark-morph bird to catching prey for itself. This apparent begging behaviour involved the normal-morph bird shuddering its body and shuffling its wings in a similar manner to Grey Shrike-thrush *Colluricincla harmonica* courting behaviour (RG, pers. obs.), and flicking a single wing out straight. This behaviour was continued at 0550 h when it flicked alternate wings a total of seven times. While doing this it used a vastly different from its normal call, but we did not note details of the call. When fed by the dark-morph bird the normal-morph bird ate the food, and was not seen to feed the chicks when food was procured in this manner.

Response to raptors: On several occasions the authors and helpers observed the quiet behaviour, lull in activity and halt to feeding by the adult cuckoo-shrikes when an *Accipiter* species was near the nest, i.e. within approximately 80 m of the nest tree. The adult birds would cease calling, feeding and foraging for several minutes after a raptor was seen or heard in the area. Once the birds were interrupted by a raptor while feeding nestlings and ceased feeding activity for 17 minutes, at a time when regular feeding was otherwise occurring at a rate of every 3.8 minutes.

Marchant and Higgins (1993) describe Collared Sparrowhawks *Accipiter cirrhocephalus* as preying on Black-faced Cuckoo-shrikes *Coracina novaehollandiae*. Since White-bellied Cuckoo-shrike is smaller than Black-faced, we believe that it could fall prey to any of the three *Accipiter* species that occur in this park (Grey Goshawk *A. novaehollandiae*, Brown Goshawk *A. fasciatus* and Collared Sparrowhawk).

Additional observations: On 29 December B.T. and T. Haywood observed the normal-morph bird flying to the nest four times, once carrying a feather. It appeared to be refurbishing the nest, as on each occasion it would sit to help

form the nest shape. RG, A. Boyle and S. Boyle arrived a short time later at 0940 h. We all observed the normal-morph bird flying from the nest and returning to perch on the nest; then it turned in circles and appeared to be rubbing cobweb around the nest perimeter. While it was performing these actions, the dark-morph bird was sunning itself by almost lying in the top of a blackwood with back facing the morning sun, back feathers ruffled and wings splayed (also see Description of adults). Shortly after, the dark-morph bird was observed catching and eating a pale coloured beetle.

The White-bellied Cuckoo-shrike breeding cycle is relatively short, c. 50 days (Morcombe 2000). Due to this short cycle and their apparent attempt to refurbish the nest we believe it possible that the birds intended to nest again but were deterred by unknown factors, and by 13 January no remains of the nest were observed at this site.

After this time the authors made subsequent visits to the site, but failed to find any of the birds until 10 February 2002 when the two adults were observed perching in the canopy about 100 m from the nest site; there was no sign of the juveniles. We did not search the area after that date.

DISCUSSION

The discovery of dark- and normal-morph birds breeding together was an exciting find. Although observed late in the breeding cycle we managed to note various aspects of their breeding ecology that we believe have not been published previously, including response to presence of raptors, description of nestlings, and adult-adult feeding.

There still remain many unanswered questions. Our recorded f.f. of 3.8 minutes was much more frequent than Marchant's 15–16 minutes (1989). Perhaps the difference cannot be explained, however we suggest that future observers record where possible f.f. at all stages of the feeding cycle and at different times of the day, as our observations occurred only in the early morning.

We observed adults modifying their behaviour near the nest in the presence of raptors. Marchant (1989) noted that a flock of ravens probably kept the adults away from the nest. Future studies should note cuckoo-shrike behaviour in the presence of potential predators.

Marchant (1989) briefly described chicks as appearing to be clad in greyish white down when hatched. We add to this a detailed description of

nestlings just prior to fledging. Descriptions of the chicks at all stages, with minimal disturbance to the chicks, should be a priority for observers.

Our observations of partitioning of parental duties were made easier since the pair consisted of dark- and normal-morph birds. We believe future studies of the breeding of a dark- and normal-morph pair, where sex is confirmed, should offer greater understanding of adult-adult feeding and each adult's role in parental care.

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REFERENCES

- Barker, R.D. and Vestjens, W.J.M. 1980. *The food of Australian birds. Volume 2 – passerines*. CSIRO, Melbourne.
- Conole, L.E. 1992. A note on the White-bellied Cuckoo-shrike *Coracina papuensis* in the Geelong area, Victoria. *Australian Bird Watcher*, 5, 225-228.
- Jaensch, R.P. 1980. White-bellied Cuckoo-shrike in the Upper Murray. *South Australian Ornithologist*, 28 (4), 109.
- Marchant, S. 1989. Nesting of the White-bellied Cuckoo-shrike *Coracina papuensis*. *Australian Birds*, 22, 77-81.
- Marchant, S. and Higgins, P.J. (eds). 1993. *Handbook of Australian, New Zealand and Antarctic birds. Volume 2, raptors to lapwings*. Oxford University Press, Melbourne.
- Morcombe, M. 2000. *Field guide to Australian birds*. Steve Parish Publishing Pty Ltd, Archerfield, Queensland.
- Pizzey, G. and Knight, F. 1997. *The field guide to the birds of Australia*. Harper Collins, Sydney.
- Schodde, R. and Mason, I.J. 1999. *The directory of Australian birds: passerines*. CSIRO Publishing, Melbourne.
- Simpson, K. and Day, N. 1999. *Field guide to the birds of Australia*. Penguin Books Australia Ltd, Ringwood.
- Taylor, P. 1999. A White-bellied Cuckoo-shrike near Nantawarra. *South Australian Ornithologist*, 33 (3&4), 59.

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