BRUSH CUCKOO *Cacomantis variolosus*: THIRD RECORD FOR SOUTH AUSTRALIA WITH SOME OBSERVATIONS ON MOULT, AGE AND HABITAT. On 8 December 2002, I (CR) visited Tolderol Game Reserve (35°22'S, 139°08'E, *c.* 10 km SE Langhorne Creek). While driving along the embankment near the pump-house, I disturbed a cuckoo that flew into a dead tree. With a Leica 77 APO spotting scope at 30 m distance I obtained a dorsal view of the perched bird and observed a grey-brown head and upperparts, lack of a yellow eye-ring and relatively square-ended tail with fine buff barring to the outer rectrices. These features suggested a Brush Cuckoo *Cacomantis variolosus*. Consequently I played an audio-cassette of the Brush Cuckoo (Buckingham and Jackson 1990) and drove opposite the line of low trees that runs behind the pump-house. Within a few seconds the bird flew out and landed on the road directly in front of my vehicle, revealing lightly-barred grey flanks and breast. No further attempts were made to sight the bird until an hour and a half later when John Cox (JC) joined me. The tape was then played several times and the bird re-appeared from the direction of the embankment from which it had initially been flushed. At no time was the bird heard to call. Close views (within 7 m) were obtained during the periods 1545–1600 h and 1740–1815 h using Bushnell 8 x 42 and Nikon 10 x 50 binoculars. Although a strong wind was blowing from the south-east, the light was good. The following description was prepared from notes taken at the time by CR and JC:

> The head and upperparts were plain slate grey-brown. The eye-ring was pale grey and the bill was dark, but the inner portion of the lower mandible was pale. The throat appeared paler than the head. The plain slate grey-brown of the head extended to the breast where it merged with grey barring on the breast and flanks. The lower belly and under-tail coverts were unbarred and pale buff in colour. In some lights the primaries and neck had a rusty tinge. The central portion of the upper-tail was plain grey-brown, but the outer three feathers were finely barred buff. A buff terminal bar on a square-ended tail was noted. The under-tail showed indistinct but even brown and fine buff barring. The feet were pale, but not obviously pink or yellow and contrasted with the black claws. In flight, buff underwing coverts were noted.

The Fan-tailed Cuckoo *C. flabelliformis* is distinguished by a prominent yellow eye-ring in all plumages and in adult plumage the buff-rufous of the breast extends to the throat and chin. Fan-tailed Cuckoo also has a relatively longer and rounded tail—features that are not always obvious in the field. By contrast, the plumage of the Tolderol bird consisted of a grey-brown head, grey eye-ring, paler grey throat and grey breast and plain grey-brown upperparts with grey barring on the breast and flanks. The tail was square-ended with light-buff barring on the dorsal surface of the outer three rectrices. These features are all those of some adult plumage phases of Brush Cuckoo *C. variolosus*. However, not all the plumage details are consistent with adult Brush Cuckoo. An examination of Higgins (1999, pp. 677–686 and Plate 32) shows that the under-tail appears to be that of a juvenile while the head, body and upperparts are typical of adult plumage suggesting that the bird was in moult. That conclusion appears to be supported by a later observation on 22 December that the bird had lost several rectrices. Ageing the bird therefore presents an interesting challenge.

Higgins (1999, p. 683) states that Brush Cuckoo fledges in distinct juvenile plumage before undergoing two moults to reach adult plumage. The first is a complete post-juvenile moult to immature (first basic) plumage when less than four months old. The second is a complete pre-basic moult when about one year old. Juvenile Brush Cuckoo has a distinctive plumage consisting of extensive and bold rufous-brown barring and spotting and elements of this plumage are often retained after the post-juvenile moult. Immature plumage is said to be similar to adult, but usually separable by retained juvenile secondaries that are barred and notched buff. Immature males (first basic plumage) may show buff spots and half bars along edges of rectrices, show subdued vermiculation on breast and belly, and have a varying number of upper-wing coverts with buff fringes and tips. Immature females are only reliably separated from adults if retained juvenile secondaries are present (Higgins 1999, p. 684). Apart from these differences immature plumage is said to be similar to adult, but is not illustrated by Higgins (1999) or the field guides (Slater, Slater and Slater 1986; Simpson and Day 1996; Pizzey and Knight 1997; Morcombe 2000).

Of particular interest in ageing the Tolderol bird is the distinction between the under-tail of juvenile, immature and adult Brush Cuckoo. The Tolderol bird had an under-tail similar to that

illustrated on the juvenile bird, number 5 in Plate 32 of Higgins (1999, p. 673). Furthermore, Higgins (1999, Plate 32 and pp. 677-678) shows a significant difference between the under-tail of juvenile and adult Brush Cuckoo, but there is no illustration of immature under-tail. The differences between juvenile and adult under-tail highlighted by Higgins (1999) can be summarised as follows. The under-tail of juvenile Brush Cuckoo has relatively even but narrow rusty and brown barring[1]. The terminal spots to the outer rectrices on the under-tail are a slightly lighter buff, but are not particularly prominent. The three outer upper-tail feathers of juvenile Brush Cuckoo are boldly notched rufous-brown (number 7 in Plate 32 of Higgins (1999) shows a juvenile Brush Cuckoo in flight). The adult Brush Cuckoo shows an under-tail in which the outer rectrices are plain grey but tipped with a prominent white spot while the inner edges of the outer rectrices are lightly barred white[2]. The upper-tail has the outer rectrices lightly barred/spotted white with a narrow white terminal bar.

On the basis of the descriptions provided by Higgins (1999) the possibility that the bird was undertaking its post-juvenile moult can probably be ruled out by the absence of bold rufous-brown barring, spotting and notching on any of the under and upperparts that is characteristic of juvenile Brush Cuckoo. Apart from some rusty tinges to the plumage noted above, there was no sign of juvenile plumage on the head, upperparts or breast and under-tail coverts of the Tolderol bird. In particular there was no obvious sign of buff fringes to the wing coverts or secondaries that would indicate retention of some juvenile plumage after the post-juvenile moult; although it should be noted that this feature of immature plumage is not always present, especially in females. The wings were the grey-brown of adult Brush Cuckoo and were devoid of any buff spots or fringes. The upper-tail pattern on the Tolderol bird consisted of narrow buff and grey-brown barring on the outer rectrices which is also consistent with the immature plumage described by Higgins (1999) above. The one ambiguity concerns the under-tail pattern which contrary to Higgins (1999) did not exhibit the grey under-tail and plain outer rectrices with prominent white terminal spots characteristic of adult Brush Cuckoo, or even a pale version of the adult plumage. The under-tail of the Tolderol bird was more like a pale version of the juvenile under-tail illustrated in Higgins (1999, Plate 32 number 5). Without further information on the under-tail pattern of immature Brush Cuckoo this issue must remain unresolved. There seem to be three possibilities based on plumage: (i) a juvenile female undergoing its post-juvenile moult and showing virtually no traces of juvenile plumage apart from the tail and rusty tinge on the neck and wings; (ii) an immature bird undergoing its complete pre-basic moult into adult plumage, but retaining its juvenile rectrices which were in a worn state; or (iii) an immature bird undergoing its complete pre-basic moult into adult plumage, with some of the rectrices missing at the time of the first observation on 8 December and their absence distorting the under-tail pattern.

This ambiguity notwithstanding, on the basis of the general plumage and moult details provided in Higgins (1999) it seems reasonable to conclude that the Tolderol bird was a Brush Cuckoo in moult. The weight of evidence suggests that it was an immature Brush Cuckoo undergoing its pre-basic moult into adult plumage. If engaged in its pre-basic moult the bird would be about one year old. In all respects the bird seemed to be acquiring adult plumage and the complete absence of brown-rufous barring suggests that it was not in post-juvenile moult. The fine indistinct buff and brown barring on the outer rectrices of the upper-tail and grey vermiculations on the breast and flanks are consistent with immature Brush Cuckoo. In other respects the bird appeared to have mostly acquired adult plumage; the upperparts, head, breast and under-tail coverts were all consistent with adult Brush Cuckoo. The barring on the breast and flanks is, however, not necessarily an age or sex related characteristic as both immature males and some adult female Brush Cuckoos have faint grey barring on the chest Higgins

[1] The distinction from juvenile Fan-tailed Cuckoo is quite marked. Apart from the longer tail, juvenile Fan-tailed Cuckoo has broad dark bands or spots above prominent pale tips to the outer rectrices. The impression is of a more mottled rusty and brown under-tail with prominent pale tips to the outer rectrices by comparison to the even rusty and brown barring of juvenile Brush Cuckoo (Higgins 1999, Plate 32).

[2] The popular Field Guides show variation and inconsistency with the details provided by Higgins (1999). Morcombe (2000, p. 191) shows adult Brush Cuckoo with heavy white barring on the underside of the outer rectices which is absent in Higgins (1999), Simpson and Day (1996) and Pizzey and Knight (1997). Morcombe (2000) also shows little difference between the under-tail pattern of juvenile and adult Brush Cuckoo, *contra* Higgins (1999).

(1999, p. 677)[3].

On the basis of the plumage characteristics, in particular, the grey-brown head and breast, the grey eye-ring, grey barring on the breast, and the square-ended tail the bird was identified as a Brush Cuckoo. Although not conclusive the evidence points to an immature bird of about 12 months of age moulting into adult plumage. This observation represents the third known record of Brush Cuckoo for South Australia. Interestingly, the previous two records of Brush Cuckoo (adult birds) in South Australia occurred approximately 15 km N of Tolderol Game Reserve at Ferries McDonald Conservation Park on 12 November 1992 and 23 November 1993 (Figwer and Britten-Jones 1994; Paton *et al.* 1994).

The habitat at Ferries McDonald was principally ridge-fruit mallee *Eucalyptus incrassata* with an understorey of broombush *Melaleuca uncinata*, daisy bush *Olearia passerinoides* and some scrubby cypress pine *Callitris canescens* (Figwer and Britten-Jones 1994). The habitat at Tolderol Game Reserve, however, appeared to be most unsuitable for a Brush Cuckoo. Apart from two distinct rows of low trees, the habitat consisted mainly of reeds, low sedge and samphire filled bays with thistle and other low bushes along the embankments. The nearest mallee was several kilometres away and separated from this location by open paddocks and samphire on three sides and Lake Alexandrina on the other. The fact that the bird was moulting, and at some point after the initial sighting had lost some of its rectrices, may account for the length of its stay in what appeared to be unsuitable habitat.

Although Higgins (1999) notes that Brush Cuckoo is rarely recorded in grassland with scattered trees, it has been recorded in heathland. At one point the bird was observed on the ground hunting from low bushes on the embankment and was also observed consuming a large hairy caterpillar (unidentified sp.). This feeding behaviour is consistent with the observation in Higgins (1999, p. 679) that Brush Cuckoo will '...forage on the ground among grass and shrubs'. Interestingly the location regularly yields records of Horsfield's Bronze Cuckoo *Chrysococcyx basalis*, particularly during winter, and there appears to be a significant food supply in the form of insects, insect larvae and caterpillars.

[3] The situation is further complicated because adult female Brush Cuckoo is polymorphic; barred and unbarred morphs occur (Higgins 1999). However, in this case it seems that the barred morph can be ruled out as barring is not sufficiently extensive—on the barred morph female the barring extends up the throat and chin.

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REFERENCES

Buckingham, R. and Jackson, L. 1990. *A field guide to Australian birdsong. Audio-cassette 5: Regent Parrot to Masked Owl.* Bird Observers Club of Australia, Melbourne.

Figwer, K. and Britten-Jones, R.E. 1994. First record of a Brush Cuckoo in South Australia. *South Australian Ornithologist*, 32 (1), 20.

Higgins, P.J. (ed.). 1999. *Handbook of Australian, New Zealand and Antarctic birds. Volume 4, parrots to Dollarbird.* Oxford University Press, Melbourne.

Morcombe, M. 2000. *Field guide to Australian birds.* Steve Parish Publishing, Archerfield, Queensland.

Paton, J.B., Britten-Jones, R.E., Figwer, K. and Holder, A. 1994. A second record of the Brush Cuckoo in South Australia. *South Australian Ornithologist*, 32 (1), 21.

Pizzey, G. and Knight, F. 1997. *The Graham Pizzey and Frank Knight field guide to the birds of Australia.* Harper Collins, Sydney.

Simpson, K. and Day, N. 1996. *Field guide to the birds of Australia.* Fifth edition. Viking, Penguin Books Australia, Melbourne.

Slater, P. Slater, P. and Slater, R. 1986. *The Slater field guide to Australian birds*, Rigby Publications, Sydney.

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