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NOTES ON THE NESTING OF THE KURRICHANE BUTTONQUAIL *TURNIX SYLVATICUS* IN THE WILD

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Buttonquails belong to a family of small, secretive, quail-like birds. Their elusive nature makes them difficult to observe in the wild and most of our present knowledge of buttonquails has been deduced from captive birds (Gutiérrez 2011). Buttonquails have an unusual breeding strategy amongst birds as females of most species appear to be sequentially polyandrous with male only parental care (Debus 1996). However, monogamy with limited female parental care has been recorded in the Lark Buttonquail *Ortyxelos meiffrenii* and the Kurrichane Buttonquail *Turnix sylvaticus*. It has been suggested that monogamy may be associated with sub-optimal breeding conditions when biparental care is necessary for successful breeding (Debus 1996).

Here I report on data collected at three nests in South Africa's Limpopo Province: two nests in the Polokwane Nature Reserve (PNR) (S23 56.900 E29 28.433) in January 2007 and another on the farm AI3 De Loskop (DLK) (S23 30.567 E29 19.250) in January 2013. At both sites breeding was preceded by exceptionally high rainfall in the two areas resulting in the irruption of other nomadic species such as Monotonous Lark *Mirafra passerina*, Harlequin Quail *Coturnix delegorguei* and Red-billed Quelea *Quelea quelea.* Incubation behaviour was recorded at the DLK nest with a Sony

Fig 1 - Nest of a Kurrichane Buttonquail *Turnix sylvaticus* in the Polokwane Nature Reserve, 29 January 2007. Yellow oval = apron; Red triangle = part of clear patch. See text below for details.

HDR-XR160 digital video-camera recorder placed 1 m from the nest and concealed with vegetation. Egg mass (0.01 g) and dimensions (0.01 mm) were recorded with a portable digital field scale and Vernier callipers.

Fig 2 - Kurrichane Buttonquail *Turnix sylvaticus* nest in the Polokwane Nature Reserve, 29 January 2007. Note the clear patch in front of the nest.

Fig 3 - Kurrichane Buttonquail *Turnix sylvaticus* nest in a fallow land at Al3 De Loskop farm, 13 January 2013.

The three nests were found on 29 and 31 January 2007 (PNR) and 13 January 2013 at DLK (Figs. 1–3) respectively. The PNR nests were located in open *Acacia* savannah and the DLK nest was found in a fallow field. The clutch size was three at all nests. All three nests were placed at the base of a grass tuft and one of the nests was afforded additional concealment by the presence of an *Aloe greatheadii* and an *Acacia* sapling (Fig. 2).

The eggs had the typical blotched pattern of buttonquail eggs. Egg dimensions ($\bar{x}_{\text{length}}$ = 22.33 ± 0.72 mm, range 21.20-23.27; $\bar{x}_{\text{width}}$ = 17.98 ± 0.64 mm, range 17.00-18.83) compared well with values

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provided by Dean (2005), namely $\bar{x}_{\text{length}}$ = 23.8 mm (range 20.8-26.2) and $\bar{x}_{\text{width}}$ = 18.4 mm (range: 17-20). The average clutch mass was 11.39 g, representing 22.9% of the mean mass of an adult female. The mean egg mass was 3.81 ± 0.39 g (range: 3.20–4.37 g) which represents 7.7% of the mean mass of 49.8 g of an adult female (Dean 2005). Interestingly, this percentage is based on the mean mass of 23 females (see Dean 2005), but I caught two females in PNR in mist-nets during the 2007 breeding season and both weighed 74 g. Thus, it is possible that the 7.7% estimate obtained here may well be considerably less. These results suggest that Kurrichane Buttonquails may lay very small eggs for their size. Small eggs relative to female body size is not unusual in species exhibiting reversed sexual dimorphism such as buttonquails (Weatherhead and Teather 1994).

Observations at the two nests in PNR and analysis of 23.6 hours of video footage spanning 4 days at the DLK nest confirmed that only males incubated. The concurrent irruption of other nomadic species at both sites suggests conditions were optimal for breeding and female assistance was therefore not a requirement for successful breeding of Kurrichane Buttonquail. This lends support to Debus' (1996) hypothesis that monogamy and biparental breeding may be more likely when conditions for breeding are sub-optimal.

The video footage revealed that the male at DLK incubated 56.8% of the time. Incubation spells were relatively short: $\bar{x}$ = 30.25 ± 18.20 minutes, range: 4-57 (median = 33 minutes). Recess bouts ranged from 1-56 minutes ($\bar{x}$ = 21.00 ± 22.26 minutes, median = 7.00). Although the incubation on- and recess bout values presented here are based on a relatively short period of observation, it represents the first records of the incubation behaviour of the Kurrichane Buttonquail in the wild. Not surprisingly, these values deviate substantially from Wintle's (1975) observations of recess bouts of 5-15 minutes and eight or more incubation on-bouts per day for birds in captivity. Breeding behaviour of birds in captivity is likely to differ from wild conspecifics as a result of differences in the likelihood of predation, disturbance and time required for foraging, amongst others.

Fig 4 - Kurrichane Buttonquail *Turnix sylvaticus* male during an incubation recess. Note the raised feathers on its back.

During recess bouts, males seldom wandered far from the nest. Most of the shorter recess bouts were spent on nest maintenance. This involved throwing material, e.g. pieces of grass, rootlets, pieces of bark and small stones, towards the nest and clearing debris in the vicinity of the nest. This had two effects: i) the nest dimensions and amount of nest material (lining) increased substantially as incubation progressed, and ii) nests in advanced stages of incubation had a well-developed, clear patch in front of the nest. This is demonstrated

Fig 5 - The "puffed-up" display of an incubating male Kurrichane Buttonquail *Turnix sylvaticus*.

well in Figures 1–3. Fig 1 was photographed in the latter stages of incubation and this nest shows a fair amount of lining, a clear patch (although not clearly seen in this image) and an apron, i.e. an extension of the nest to form a platform at the nest entrance. The apron comprised mainly of stones and small pieces of vegetation. Fig 2 also shows a nest in advanced incubation with lots of lining, a clearly defined nest cup and a well-developed clear patch in front of the nest. The nest in Fig 3 was photographed shortly after clutch completion as is shown by the small amount of lining and an "untidy" patch in front of the nest.

The video footage also revealed some other interesting behaviour. For example, the male had a peculiar habit of raising the feathers on its back from time to time while clearing the area in front of the nest (Fig 4). Another type of behaviour was observed during incubation and involved the male occasionally "puffing" his contour feathers, resulting in the male resembling a feathered ball (Fig 5). I am uncertain as to what initiated these behaviours as nothing was seen or heard on the video recording which may have initiated this behaviour, e.g. the presence of a conspecific rival/mate or something approaching out of view of the camera.

Since chicks hatch synchronously, are precocial and leave the nest soon after hatching, it is difficult to determine the outcome of a breeding attempt. However, at one nest circumstantial evidence led me to conclude that all three chicks hatched successfully and left the nest just prior to my arrival for routine nest inspection. In this instance, incubation lasted a minimum of 15 days which corresponds with values given in the literature (Dean 2005).

To conclude, although these observations are based on a small sample size, it revealed interesting baseline data on nesting of the species which can be used as a base for future studies on these secretive birds.

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