# MEASUREMENTS, MOULT AND RESIDENCY OF KURRICHANE BUTTONQUAIL *TURNIX SYLVATICA* IN SWAZILAND, CAPTURED IN SMALL MAMMAL TRAPS

**Ara Monadjem**

*University of Swaziland, Private Bag 4, Kwaluseni, SWAZILAND*

## Introduction

During an intensive investigation of the population dynamics and community structure of small mammals at a grassland site in Swaziland, small mammal live-traps were set monthly over a 24 month period. It soon became apparent that small mammals were not the only creatures to be captured by these traps. Millipedes, toads, a Mozambique Spitting Cobra and even birds were entering a small per cent of the traps.

The first bird to be captured was a Rufousnaped Lark *Mirafra africana*, but a little later on the same day four Kurrichane Buttonquails *Turnix sylvatica* were also trapped. Since little is known about buttonquail biology in southern Africa, I decided then that I would, in future, bring my ringing gear along and ring all captured buttonquails.

This note reports on the captures and recaptures of eight Kurrichane Buttonquails in Swaziland.

## Methods and materials

A detailed description of the study site and trapping methodology appears in Monadjem & Perrin (in press). A short description follows. The site was situated on eKundizeni Farm in the Middleveld of Swaziland at an altitude of about 700 m a.s.l. with a mean annual rainfall of 928 mm. A total of 300 live-traps were set on three consecutive nights per month over a 24 month period (between June 1995 and May 1997) in a tall *Hyparrhenia hirta* grassland. Buttonquails, however, were only captured between August and December 1995. The buttonquails captured in August were not ringed, but all subsequently-captured individuals were fitted with either a 4,3 mm incoloy or 3 mm stainless steel ring.

## Results and discussion

*Mensural data*

Kurrichane Buttonquails exhibit reversed sexual dimorphism with the female being considerably

**Table 1.** Mensural data for the eight buttonquails captured on eKundizeni Farm, Swaziland.

| Ring no. | Possible sex | Mass first capture/g | Mass last capture/g | Wing length mm | Tarsus mm | Culmen mm |
|---|---|---|---|---|---|---|
| 496129 | F | 55 | 55 | 85 | 23.2 | 11.5 |
| 496130 | F | 42 | 50 | 79 | 22.4 | 11.3 |
| 496131 | F | 50 | 63 | 85 | 23.9 | 12.4 |
| 496133 | F | 55 | 52 | 81 | 24.7 | 11.8 |
| 273589 | F | 52 | - | 82 | - | - |
| 273591 | F | 50 | - | 80 | - | - |
| 273588 | M | 34 | - | 71 | - | - |
| 273590 | M | 38 | - | 74 | - | - |

larger than the male. The eight captured buttonquails fell into two distinct size/weight categories (Table 1), suggesting that the six larger ones were females and the two smaller ones were males. The mass of females was 50 g or more, while that of males was below 40 g. In addition, the wing lengths of females were generally 80 mm or longer, while those of males were shorter than 75 mm. These scant data suggest that it may be possible to accurately sex buttonquails, based on weight and wing length. The measurements reported here lie within the limits given in Roberts' (Maclean 1993), except for the tarsus length which is longer in the present study. Furthermore, the culmen lengths of the four females (in this study) lie within those of the three measured males in Roberts' (11-13 mm), but fall short of those of the three measured females (13-15 mm). There is thus the possibility that the 'females' in this study were actually males. Obviously, larger samples need to be investigated.

*Moult*

Unfortunately, due to logistical difficulties, the birds were only examined for moult on first capture. In September, the head and dorsal body feathers of all four buttonquails were moulting. The remiges looked worn, but were not being moulted (Table 2).

The four birds captured in December were all moulting head feathers. In addition, three were moulting body, tail and covert feathers. Two birds were completing moult of the primary feathers, while the other two had already finished and had a full complement of new primary feathers (Table 2).

Buttonquails undergo two moults per year, a partial pre-breeding moult and a complete post-breeding moult (Debus 1996). It appears likely that the individuals examined in September were undergoing their partial pre-breeding moult. But were the birds captured in December undergoing a complete post-breeding moult? This seems unlikely, especially since peak breeding in the Swaziland region is between October and January, but continues to May (Colahan 1997). It is more likely that these four were juveniles undergoing a full post-juvenile moult. In buttonquails, post-juvenile moult begins early. In fact, moult of the primary feathers begins at three weeks of age before the outer juvenile primaries have even finished growing (Debus 1996). Thus the four buttonquails captured in December were probably juveniles which had hatched in October (although none of them had fleshy gapes).

**Residency**

Dates of captures and recaptures of the eight buttonquails are shown in Table 3. Four buttonquails were captured in August, but since rings were not fitted then their identities remain unknown. It is likely, however, that they were birds 496129/30/31/33 as only these four individuals were captured between September and November. Each of these four birds was trapped within a small area. Birds 496130 and 496131 were trapped on the same 100 m x 100 m grid (Grid 1), while 496129 and 496133 were trapped on another 100 m x 100 m grid (Grid 3) approximately 150 m away from Grid 1. Each grid had 100 trap-stations set out at 10 m intervals (*i.e.* 10 x 10 grid). Even within the 1 ha area of a

**Table 2.** Feather condition and presence of moult in buttonquails captured in September and December 1995 in Swaziland.

| Month | Head/body | Tail | Coverts | Primaries | Secondaries/ tertiaries |
|---|---|---|---|---|---|
| September | moulting | old | old | old | old |
| December | moulting | moulting | moulting | moulting | new |

particular grid, birds were usually trapped at nearby trap-stations. For example, 496133 was only trapped at one trap-station (F5) while 496130 was trapped at trap-station A2 and, two months later, 10 m away at trap-station A3. Buttonquail 496131, however, appeared to be moving over most of Grid 1 from trap-station A1 diagonally across to trap-station I1 (Table 3). Thus these four buttonquails had very small home ranges between September and November 1995.

Buttonquails 273588/89/90/91 were all captured just once in December. No buttonquails were captured or recaptured after December 1995, even though, rodent trapping was continued at the same location until May 1997.

## Conclusions

Buttonquails were resident at the study site in the spring of 1995, but not in the spring of 1996, suggesting that Kurrichane Buttonquails are nomadic at this particular site. During their residency period, however, the buttonquails had fixed home ranges covering much less than 1 ha for most birds. Furthermore, the data suggest that breeding occurred at the site between September and December 1995.

Dickman *et al.* (1994) describe the capture of five species of passerines in small mammal live-traps in the Namib Desert, however, the present study is (to the best of my knowledge) the first to record the capture of a non-passerine in such traps in southern Africa. It would be interesting to know how many birds, and of which species, regularly enter and are captured by these live-traps. It may even be possible to develop techniques for the capture of certain ground-feeding bird species based on small mammal live-traps.

REFERENCES


COLAHAN, B.D. 1997. Kurrichane Buttonquail *Turnix sylvatica*. *In*: The atlas of southern African birds. Vol. 1: Non-passerines. Harrison, J.A., Allan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V. & Brown, C.J. (Eds). pp. 306-307. BirdLife South Africa, Johannesburg.

DEBUS, S.J.S. 1996. Family Turnicidae (Buttonquails). *In*: Handbook of the birds of the world. Vol. 3. Hoatzin to Auks. del Hoyo, J., Elliott, A. & Sargatal, J. (Eds). pp. 44-59. Lynx Edicions, Barcelona.

DICKMAN, C.R., GLASBY, T.M., HIGGS, P.A., CURTIN, A., DRURY, R.L. & HONEYWEED, M.A.J. 1994. Capture of birds in mammal traps: chance or opportunism? *Ostrich* 65: 345-348.

MACLEAN, G.L. 1993. Roberts' birds of southern Africa. Cape Town: John Voelcker Bird Book Fund.

MONADJEM, A. & PERRIN, M.R. 1997. Population dynamics of *Lemniscomys rosalia* (Muridae: Rodentia) in a Swaziland grassland: effects of food and fire. *S. Afr. J. Zool.* (in press).


**Table 3.** Capture/recapture history of eight buttonquails between August and December 1995. The letter-number refers to the trap-station each buttonquail was trapped at *i.e.* trap-station A1 would be the first trap-station in the first row (on a 10 x 10 trapping grid).

| Date | Grid 3 | | Grid 1 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ring No. | 496129 | 496133 | 496130 | 496131 | 273588 | 273589 | 273590 | 273591 |
| Aug | ? | ? | ? | ? | - | - | - | - |
| Sep | J2 | F5 | A2 | G1/A10 | - | - | - | - |
| Oct | J7 | F5 | - | I1 | - | - | - | - |
| Nov | - | - | A3 | F8 | - | - | - | - |
| Dec | - | - | - | - | H6 | J9 | E9 | G3 |