

# THE KORI BUSTARD IN CENTRAL ZIMBABWE

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## Introduction

The Kori Bustard *Ardeotis kori kori* is resident in Zimbabwe. At Debshan Ranch, located 40 km south-east of Shangani (2029 B1), they occur in relatively high numbers. Observations were made from 16 January to 17 February 1990, and the following is a summary of all contact sightings made. This paper does not include information recorded about the birds' behaviour after the initial sightings were made. Sightings were made by Marios Balorey, Edward Chabikwa, Peter Van Ingen, Peter Mundy, Action Ndou, Dave Tredgold, and myself. Most sightings were made on foot, however a significant percentage of them were made from vehicles. Generally, when in a vehicle, more bustards were seen in a given amount of time, and observations from smaller distances were possible as the birds then seem to be less wary of humans than when they are on foot.

## Results

Table 1 shows the details of all the contact sightings. Altogether 36 sightings were made, with 60 individual birds seen. At least 11 sightings were known to be of birds seen before, making a maximum of 49 individuals observed; but more than likely the true value is less than this. Almost every sighting was made in open grassland, usually with a few scattered trees, shrubs and ant-hills nearby. The grass length and density varied at each sighting. Usually the grass was quite high, but generally ranged from 0,3m to 0,8m. One sighting was made in grass as high as 2m (#31). Two sightings were made in quite densely wooded grassland (## 32 and 33). A Kori Bustard feather was found on 16 February in very dense closed-canopy miombo woodland, but no actual bird was seen. Van Ingen (pers. comm.) reported that he sees the bustards there often. The plants that were common where most sightings were made were *Acacia* spp., *Carissa edulis*, *Cymbogon caesius*, *Eragrostis* sp., *Melinis* sp., *Setaria sphacelata* and *Themeda triandra*.

Twenty-two of the 36 sightings were of lone birds, nine were of two birds together, and five were in groups of more than two. When two or more bustards were seen, they usually remained within 100m of each other. Some of the sightings of the lone birds may have had unseen companions, however I am confident that the majority of them were solitary. It is interesting to note that in all sightings of more than one bird, no size differences were apparent. Males are approximately 65% heavier than females and 20% larger in size (Dale unpubl.), and thus, on at least some occasions, a difference should have been quite obvious if the groups of birds were composed of both sexes. Also of note, 12 of the 17 sightings, where an attempt to sex the birds was made, consisted of males.

Thirteen of the 31 sightings where the presence of mammals at the contact point was noted, had cattle, tsessebe *Damaliscus lunatus*, impala *Aepyceros melampus*, kudu *Strepsiceros imberbis*, or zebra *Equus burchellii* nearby (usually within 100m). No direct interactions between the bustards and the animals were observed, neither bothering about each other.

Also worth mentioning, though not included in Table 1, is the variability in plumage displayed among individual bustards. Differences were most apparent in crest length and colour, wing patch size and colour, and in the presence or absence of wrist patches. Crest size varied from being about one half time the length of the bill to about one and one half times (see Fig. 1 for a good example of a kind with a very short crest). Crest colour ranged from almost entirely black to almost completely grey. Generally the crests were found to be black with a varying amount of grey feathers in the centre. The black and white wing patches found on the lower half of the folded wing (see Fig. 1) varied in size considerably. The wing patches comprised black and white feathers, however, brown and white wing patches do occur (Dale unpubl.). Wrist patches also varied among individuals. Wrist patches are small black and white areas found on the wrist (carpal joint) of the wing or at the junction of wing and body (see fig. 1). Birds were seen with these markings on one side and both sides, and in some birds the patches were not apparent at all. One male had three black and white patches on the upper portion of

the folded right wing, and none on the left wing; this bird was quite distinctive and seen on three separate occasions within a one square kilometre.

TABLE 1.

Contact observations of Kori Bustards at Debshan Ranch, 17 January to 17 February 1990

Numbers in the mammals column represent the approximate distance animal was from the bustard. No size difference noted in the sex column indicates that the sex of the birds was not presumed, and that no size differences within the group were apparent. All sightings were made in grassland with a few scattered trees and shrubs except for sightings 32 and 33 in densely wooded grassland. Grass height varied from 0,3 to 1,0 m at all sightings except for sighting 31 in grass 2.0 m high.

#	Date	Loc-stat (QH)	No.	Sex *	Dist. apart (m)	Behaviour	Mammals present
1.	17/1	730.843	6	no size difference noted	3-100	walking and pecking	cattle
2.	18/1	729.849	5	no size difference noted	10-100	standing or flying	none
3.	18/1	720.842	1	male	-	walking and pecking	zebra (10m)
4.	19/1	754.854	2	unknown	20	walking	not noted
5.	21/1	770.700	2	unknown	not noted	not noted	not noted
6.	22/1	702.841	3	unknown	10-100	preening	none
7.	22/1	705.834	2	unknown	10	walking	not noted
8.	25/1	703.898	3	unknown	not noted	walking	not noted
9.	25/1	777.837	2	unknown	not noted	walking	not noted
10.	28/1	722.839	3	males	10	walking and pecking	cattle, kudu and tsessebe (40m)
11.	1/2	697.800	2	female with just fledged young	10	walking then fly	not noted
12.	1/2	722.838	1	male	-	walking	tsessebe (100m)
13.	2/2	827.763	1	male	-	standing	none
14.	3/2	825.785	1	unknown	-	standing	tsessebe (200m)
15.	3/2	815.777	2	female	4	running	none
16.	3/2	736.835	1	unknown	-	walking and pecking	none

17.	4/2	743.837	1	unknown	-	flying low	none
18.	4/2	729.833	2	unknown	20	walking	none
19.	4/2	740.828	1	unknown	-	walking	tsessebe (25m)
20.	5/2	830.758	1	unknown	-	walking	cattle
21.	5/2	810.690	1	unknown	-	walking	cattle
22.	6/2	710.853	1	unknown	-	standing	none
23.	7/2	827.763	1	female	-	not noted	kudu and impala
24.	7/2	699.832	1	male	-	preening	none
25.	7/2	702.831	2	unknown	40	Fly (flushed)	none
26.	10/2	710.853	1	unknown	-	not noted	tsessebe
27.	12/2	712.854	2	no size difference noted	5	crouching down	none
28.	13/2	735.836	1	male	-	walking	none
29.	13/2	739.832	1	male	-	walking and pecking	zebra and tsessebe (75m)
30.	15/2	727.828	1	unknown	-	flying low	none
31.	16/2	806.788	1	male	-	walking	none
32.	16/2	810.730	1	female	-	walking	none
33.	16/2	880.736	1	male	-	flying	none
34.	17/2	740.8309	1	male	-	walking	tsessebe (60m)
35.	17/2	712.853	1	male	-	walking	cattle
36.	17/2	687.867	1	female	-	walking	none

\* Sex of birds was assumed, but not proved

### Discussion

Kori Bustards are thought to be fairly gregarious birds (Maclean, 1984) and so it seems odd that only 5 of 36 sightings were of birds in groups of three or more. Of all individuals seen, 36% were alone, 30% were in groups of two, and 33% were three or more. In a 13 month study of the northern race of Kori *A.k. struthiunculus* in Nairobi National Park and Kitengela Conservation Area in Kenya, Mwangi and Karanja (1989) counted 371 individuals. Of these 47% were alone, 32% were in twos, and only 21% in groups of three or more. It would appear, then, that the bustards at Debshan Ranch were more gregarious than usual. Mwangi and Karanja point out that "Kori Bustards showed a tendency to form loose and temporary aggregations during and just after the long rains." I take this to mean April and May, which corresponds with the tail end of the known laying season for that area (Brown and Britton 1980). Since the study period at Debshan Ranch was within the peak of Zimbabwe's rains, perhaps the bustards there were exhibiting similar behaviour. This period also marks the end of the known laying and courtship seasons in Zimbabwe (Irwin 1981; Dale unpubl.), and thus perhaps the birds are more willing to congregate when sexual competition between individuals is reduced. Group size data on Zimbabwe's Kori Bustards during the breeding season should show if this is the case. It is interesting to note that of all the groups seen at Debshan, no size differences were

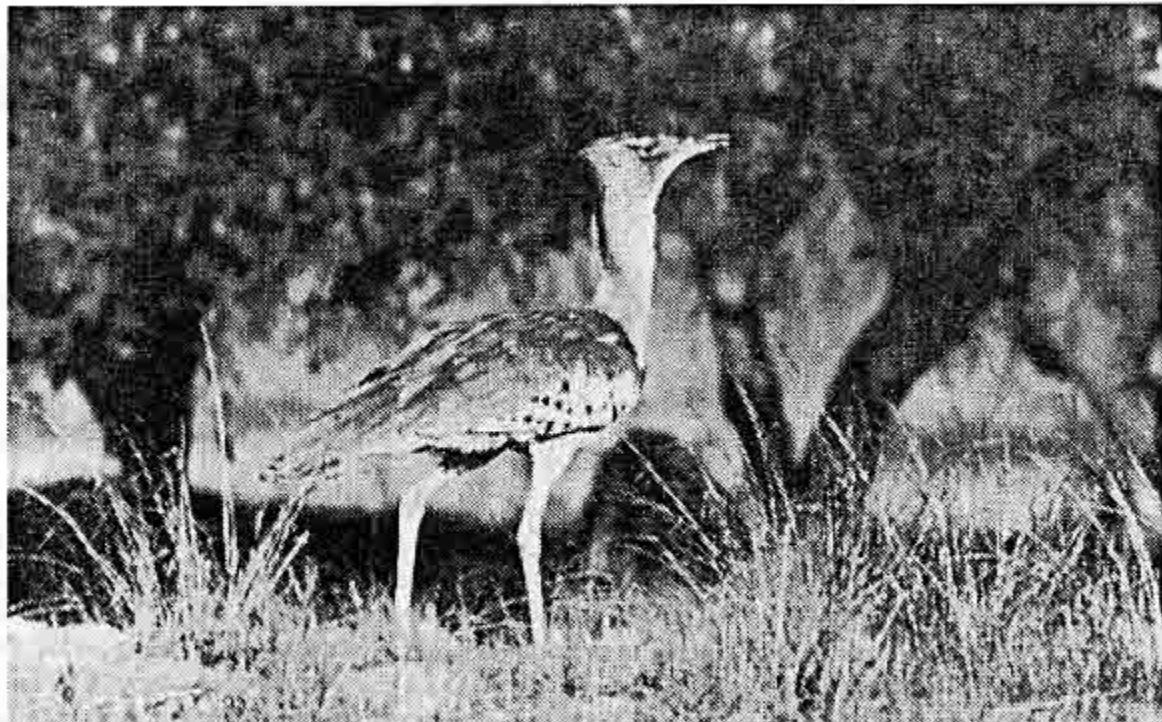


Figure 1. Kori Bustard adult. Note crest length, wing patches and wrist patches.

Photo Peter Steyn

apparent among individuals within a group. It was my feeling that all these groups comprised males. Mwangi and Karanja, however, note that they found no significant deviations from a 1:1 sex ratio in the groups they observed. This may be the case, but I argue that, for this study, at this stage in the bustard's breeding cycle, groups tend to be male-orientated. During breeding males are believed to hold and defend territories, while females are concerned with nest care and raising young. There are no accurate reports of males participating in parental care as far as I know, and David Allan (*in litt.*) remarks that a Kori Bustard nest site which he observed in detail, no male was ever seen helping. Thus, in January and February, when males are free from reproductive duties (territory holding and courtship) and females are still involved with raising offspring, perhaps males gather, more often than females, in loose and temporary aggregations. Rahmani (1987) points out that in the very closely related Great Indian Bustard *Ardeotis nigriceps*, the males and females stay in their own flocks (mixed flocks being very rare) and that flock formation occurs more often during the non-breeding season.

Lack of data on this topic is apparent, and little more than speculations can be offered. Future data on group numbers and sizes throughout the year should be revealing. At any rate, Kori Bustards don't seem to be as gregarious as some sources imply, being found on their own more often than not. When they do gather in groups it is probably to aid in foraging or to reduce predation pressure. Kori Bustards are very wary, and being large and slow they most likely experience predation pressure from hyaenas, jackals (Thomas 1960), cheetahs, serval, man, and possibly very large raptors (Fraser 1981). Thus by remaining in a group, the risks may be diminished.

It is worth mentioning that Kori Bustards being often seen in pairs has encouraged the belief that they are monogamous. Rockingham-Gill (1983) refers to the existence of 2625 "pairs" in Zimbabwe, Irwin (1981) describes the bustard as "rang[ing] in pairs" and numerous other sources imply the existence of mated birds. According to Mwangi and Karanja's data, and my own, Kori Bustards in twos are only noted in 16% of all sightings (or that 32% of all individuals seen have a companion). In addition, there exist few accurate descriptions of a pair of Kori Bustards being composed of a male and a female (let alone a mated male and female). With males being 65% heavier than females it should be quite obvious whether two bustards seen together are the same sex or not. It appears to me unfounded

to conclude that they are monogamous on the basis that they are "often" seen in "pairs".

Twelve out of 17 presumed-sexed sightings made were of males. Assuming that the sexing was correct, then it appears that there is a skewed sex ratio in favour of males. The most likely explanations are that the females are less conspicuous because of breeding, and that individual males were seen repeatedly. Females of the Great Indian Bustard are certainly known to be more secretive than males (Rahmani 1988). Although there is little evidence, it is worth entertaining the idea that females may prefer more densely wooded habitats than do males, as the lack of females in the very open grasslands was striking. This may be intended as females often select nest sites in areas where trees occur (Dale unpubl.), and females with small young may prefer wooded areas than the open grasslands. This would also explain the apparently skewed sex ratio as wooded areas were visited less often and it is much harder to spot them there.

Nearly one-half of the sightings had mammals occurring close by. Rockingham-Gill (1989: 211) argued that an association between large animals and bustards exists as a result of the birds consuming insects flushed by the grazers. If this were true, then one would expect a very tight association in which the bustards stay within a few metres of the animals, as egrets do. This is not the case; usually if mammals are nearby they are not close enough for the bustards to take advantage of disturbed insects. However, a more loose association may exist, in which the mammals warn of danger in much the same way a bustard's companion might do. The tsessebe on Debshan Ranch are very abundant and wary, and could easily warn any birds of oncoming danger. As well, these bustards are known to eat dung beetles (Jackson 1969) and an indirect association may exist in which they feed in areas where game and cattle are abundant.

P. Hangartner (*in litt.*) estimated eleven individuals for 300 square kilometres at Debshan Ranch in 1987. This equals one every 27 square kilometres. Kori Bustards are difficult to count because 1) they are very wary and shy, often crouching down to avoid detection (pers. obs.), 2) they are cryptically coloured, 3) often tsessebe and other animals running away from observers could alert bustards to the observers' presence, 4) the same bird may be counted repeatedly, and 5) a large area must be covered to count a few bustards. Hangartner's estimate was based on twelve days of field work in December done on foot. It is impossible to cover 300 square kilometres on foot in twelve days and be confident that most bustards present were counted. Thus I feel that his density figure is an underestimate. Bearing all this in mind I have estimated the densities at Debshan Ranch: 21 of the 36 contact sightings in this study were all made within a 42 sq. km area. This amounts to 38 birds, of which 11 are known to be repeat sightings, leaving a maximum of 27 individuals in the 42 square kilometre area, the true value being, most likely less than this. I seriously doubt that this area contains 27 birds at any one time. Koris seem to wander extensively so that one seen one day could very easily be gone the next. Approximately nine square kilometres of the study area were surveyed each day and that 279 square kilometres were covered, with twenty seven individuals seen. This gives an approximate density of 1 bustard seen every 10 square kilometres. By Hangartner's estimate, however, there should be only 1 bird every 27 square kilometres — a substantial underestimate. The reason I am dwelling on Hangartner's value is that Mundy (1989) used this figure to estimate the population in Zimbabwe. Mundy's technique seems sound and I use a similar method: Mundy estimated the range in Zimbabwe to cover approximately 200 000 square kilometres, of which half is suitable habitat. I believe that the density at Debshan (1 in 10 square kilometres) represents an unusually high one for the country, and that more generally they would be found at about 1 bird in every 20 square kilometres in most suitable habitat. Accordingly, I estimate the Kori Bustard population for Zimbabwe to be approximately 5000 birds.

### Conclusions

Numbers of Kori Bustards have declined in Zimbabwe (Tree *et al.*, 1979; Irwin 1981). They are absent from regions where they used to be found and those that are left have diminished. One old man at Wabai village (located on the boundary of Debshan Ranch) remarked that he sees far less Kori Bustards now than he did in the "old days". Reasons for the decline are numerous: habitat destruction

from agriculture and development, hunting pressure, and intolerance of high human densities. Allan (1989) has identified collisions with overhead transmission line as a major cause of man-induced mortality. On top of all this, slow reproduction rates make it difficult for them to recover from a decline. As human densities increase and development continues, the bustard population can be expected to shrink further. Using the three other *Ardeotis* species as examples, one can easily see that it will eventually become endangered. Development and increased human densities have caused a major decline in all these birds. The Great Indian Bustard is a rare bird with only 2000 left. Its decline can be attributed to habitat destruction coupled with breeding failures resulting from too much human disturbance (Rahmani 1988). Action in the form of increased research, public education, captive breeding programmes and, most importantly, active management of large portions of suitable Kori habitat is the only way to prevent this majestic bird from becoming yet another one of the many endangered birds of the world.

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