

SYMBIONT SELECTION OF REDBILLED OXPECKER IN THE
HLUHLUWE-UMFOLOZI GAME RESERVE COMPLEX

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INTRODUCTION

In the last few decades the numbers and distribution of the redbilled oxpecker *Buphagus erythrorhynchus* have been greatly reduced in South Africa. Their present distribution is largely confined to game reserves and private game farms (Stutterheim, 1979). This fact underlines the importance of wildlife sanctuaries for the conservation of oxpeckers. An investigation into the general ecology of the redbilled oxpecker in the Hluhluwe-Umfolozi complex (hereafter referred to as the Complex) was undertaken and formed part of a comprehensive study on the biology of Buphaginae in southern Africa.

STUDY AREA

The Complex, encompassing an area of 93 000 ha, is situated in north-eastern Natal. Adequate descriptions of the vegetation and climate and information on the status of the larger ungulate species have been provided by Vincent (1970), Bourquin *et al.* (1971) and Whateley *et al.* (1976).

METHODS

The area was studied over a 33-day period during May and June 1977. The oxpecker/mammal relationship (number of oxpeckers per mammal) was calculated from ground counts over 2 097 km. During these counts the number and species of symbionts, the number of oxpeckers in attendance, locality, time of day and habitat were noted.

RESULTS AND DISCUSSION

Distribution

During the survey, sightings of oxpeckers were plotted on a map as shown in Fig. 1. From this figure it appears that *B. erythrorhynchus* are of wide-spread occurrence throughout the Complex with a more localised distribution in the central Corridor area. However, when considering these results one must keep in mind the methods used. As only road counts were conducted in the Hluhluwe and Corridor areas, the results have been biased by the occurrence of roads in these areas. The results therefore show movement patterns and not the distribution of oxpeckers. Moreover, as would be expected from the habits of the species, their distribution is related to the concentrations of game mammals (Kemp, 1974). During the survey in May, some of the larger ungulate species (buffalo *Syncerus caffer*, zebra *Equus burchelli* and wildebeest *Connochaetes taurinus*) showed a tendency to concentrate in the short grassland areas (Brooks, pers. comm.). For example, 33% of the total number of birds observed were counted at Ngeni in the Corridor. This was probably due to a concentration of buffalo which was observed daily in this area.

Oxpecker/mammal relationship

The mammal relationship is summarised in Table 1. From these calculations it appears that the black rhino *Diceros bicornis* is the most preferred symbiont followed by the white rhino *Ceratotherium simum*, buffalo and giraffe *Giraffe camelopardalis*. Zebra, kudu *Tragelaphus strepsiceros* and wildebeest were less frequently utilized while impala *Aepyceros melampus* and nyala *Tragelaphus angasi* were rarely utilized. Although warthog

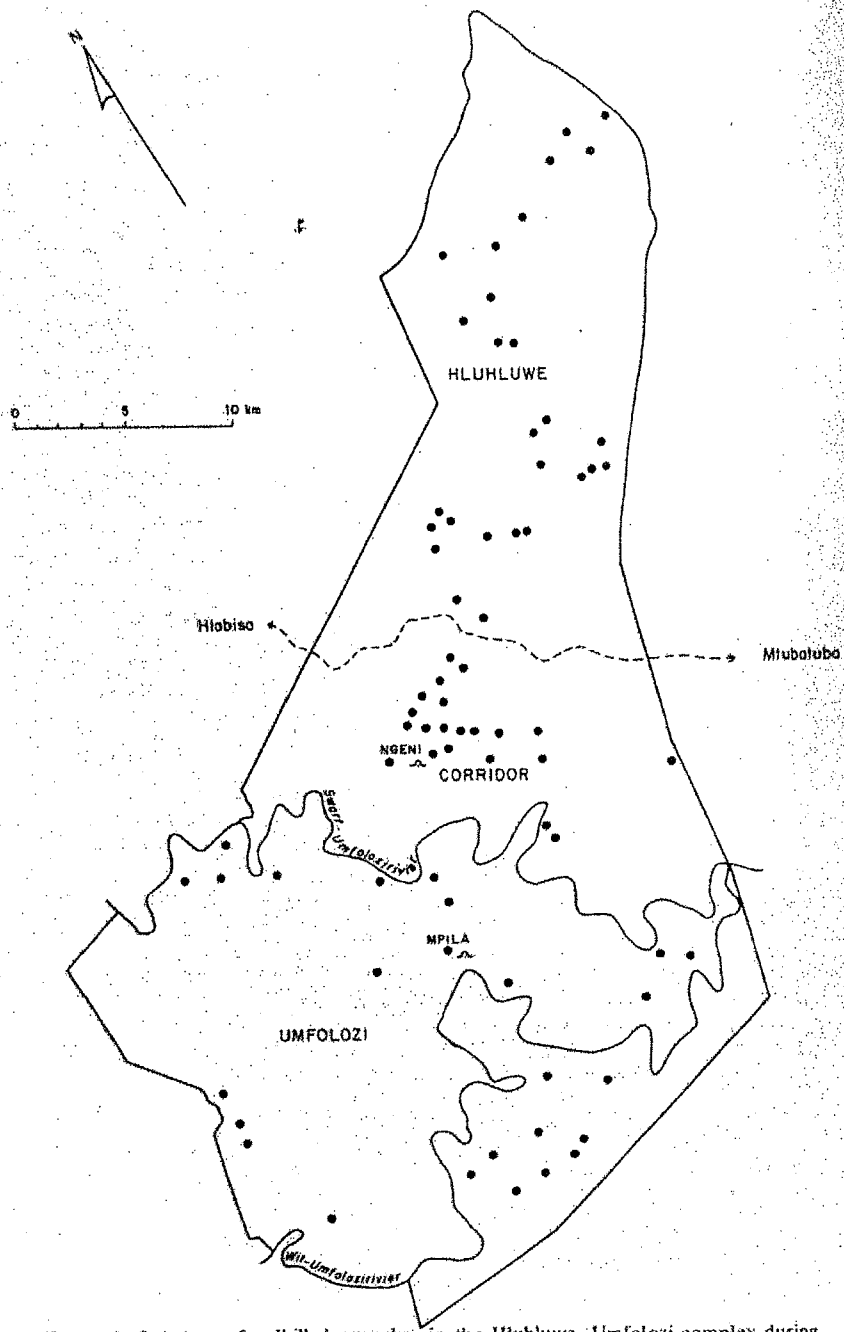


Figure 1. Sightings of red-billed oxpecker in the Hluhluwe-Umfoluzi complex during May and June 1977.

Phacochoerus aethiopicus and bushbuck *Tragelaphus scriptis* are known as symbionts from observations in the Kruger National Park (Stutterheim, 1979), no association was observed from a total of 690 and 4 sightings respectively. No association was also observed for waterbuck *Kobus ellipsiprymnus* (n = 74) but this is probably due to the intolerance behaviour of this species.

The 4 782 symbionts and 341 oxpeckers sighted show that the proportion is 0,071 oxpeckers/symbiont or 14,02 symbionts/oxpecker. This can be compared to the Kruger National Park with 0,074 oxpeckers/symbiont or 13,5 symbionts/oxpecker calculated from 64 970 symbionts and 4 800 oxpeckers sighted (Stutterheim, 1979). No significant difference was found between these two sets of values ($d = 0,657$ p. < 0,05).

The mammal relationship observed in Hluhluwe, the Corridor and Umfolozi is given in Table 2. No statistically significant difference was found between the relationship of each species in the different areas. However, the mean relationship for the Corridor is higher than that observed for Hluhluwe and Umfolozi. This is probably due to two reasons:—

1. A low number of low preference symbiont species (impala and nyala) were observed in the Corridor.
2. The number of oxpeckers associating with white rhino increase in areas of high buffalo numbers. For example, at Ngeni in the Corridor the association was higher (0,83 oxpeckers/white rhino; n = 36) in comparison with the western part of Umfolozi (0,18 oxpeckers/white rhino; n = 40) with a low buffalo concentration.

Only four oxpeckers were observed on a total of 124 kudu sighted in the Complex which indicates a relationship of 0,03 oxpeckers/kudu. Compared to the Kruger National Park, with a relationship of 0,19 calculated from a total of 995 kudu and 193 oxpeckers sighted, this is relatively low. The reason for this is that 88,7% of the total number of kudu were observed in the western part of Umfolozi with a low oxpecker concentration. This again is probably due to a low buffalo concentration in this area.

TABLE 1. The oxpecker/mammal relationship of the redbilled oxpecker (*Buphagus erythrorhynchus*) in the Hluhluwe—Umfolozi complex as calculated from 2 097 km of counts during May and June 1977.

Species of ungulate	Number of animals observed in counts	Number oxpeckers observed	Oxpecker/mammal relationship
White Rhinoceros	197	89	0,45
Black Rhinoceros	12	10	0,83
Impala	1 892	15	0,008
Nyala	476	8	0,017
Buffalo	384	165	0,43
Zebra	382	27	0,07
Wildebeest	446	5	0,01
Giraffe	87	18	0,21
Kudu	124	4	0,03
Warthog	690	0	0
Bushbuck	4	0	0
Waterbuck	74	0	0
Total	4 782	341	
Mean			0,072

TABLE 2. A comparison of the oxpecker/mammal relationship of the redbilled oxpecker (*Buphagus erythrorhynchus*) in Hluhluwe Game Reserve, the Corridor area and Uiafotlozi Game Reserve as calculated from 2 097 km of counts during May and June 1977.

Species of ungulate	Hluhluwe			Corridor			Uiafotlozi		
	Number animal observed	Number oxpeckers observed	Oxpecker/mammal relationship	Number animals observed	Number oxpeckers observed	Oxpecker/Mammal relationship	Number animals observed	Number oxpeckers observed	Oxpecker/mammal relationship
White Rhino	51	21	0.41	64	40	0.63	82	28	0.34
Black Rhino	3	0	0	6	10	1.67	3	0	0
Impala	756	9	0.01	103	4	0.04	1 033	2	0.002
Nyala	282	8	0.03	5	0	0	189	0	0
Buffalo	122	54	0.44	136	78	0.57	126	33	0.26
Zebra	86	7	0.08	72	5	0.07	224	15	0.07
Wildebeest	144	0	0	94	4	0.04	208	1	0.01
Kudu	6	0	0	8	0	0	110	4	0.04
Warthog	272	0	0	28	0	0	390	0	0
Giraffe	35	5	0.14	0	0	0	52	13	0.25
Total	1 763	104	0.059	521	141	0.271	2 498	96	0.039
Mean									

Juvenile recruitment

During the survey 82 oxpeckers were classified in two age classes: adult (birds older than eight months) and immatures (free flying birds younger than eight months which could be distinguished by the absence of adult coloration) (Stutterheim, 1977). From these counts the adult : immature ratio was calculated as 1 : 0,34.

SUMMARY

The redbilled oxpecker is of widespread occurrence throughout the Complex. The oxpecker/mammal relationship calculated for the area is 0,071 oxpeckers/symbiont. Host selection was in order of preference black rhino, white rhino, buffalo and giraffe. The adult : immature ratio during the study period was 1 : 0,34.

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