

# The status and distribution of oxpeckers (Aves: Passeriformes: Buphagidae) in Kavango and Caprivi, South West Africa/Namibia

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The status and distribution of oxpeckers in the Kavango and Caprivi are presented. The redbilled oxpecker is the predominant species in the Kavango. In the Caprivi the yellowbilled oxpecker is predominant along the river courses and in the floodplains. The dominant host throughout was cattle.

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Die status en verspreiding van renostervoëls in die Kavango en Caprivi word bespreek. Die rooibek-renostervoël oorheers in die Kavango. In die Caprivi het die geelbek-renostervoël langs die riviere en in die vloedvlaktes oorheers. Die dominante gasheer was deurgaans beeste.

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Oxpeckers are specific predators of ticks and other ectoparasites adapted to feeding on large herbivorous animals (Moreau 1933; Attwell 1966). The reduction in the numbers of their preferred wild host species and the widespread use of poisonous dipping agents for domestic stock have led to a dramatic reduction in the former distribution range of oxpeckers in Southern Africa (Stutterheim & Brooke 1981; Stutterheim 1982). They occur primarily in areas with an average annual rainfall higher than 500 mm, but also in areas with a lower rainfall where the vegetation cover is adequate to support a sufficiently high host density and their preferred tick species (Stutterheim & Brooke 1981; Stutterheim 1982).

Oxpeckers are largely confined to game reserves and private game farms in South Africa (Stutterheim 1979), while in South West Africa/Namibia they occur predominantly on cattle in the northern farming areas. The existing literature on the distribution of both species of oxpeckers has been summarized by Stutterheim (1979). The aim of the present study is to expand the distributional data presented by Stutterheim (1979) and to give an indication of the relative abundance of the two species.

## Methods

The study was made in the northern parts of South West Africa/Namibia excluding military zones of western Caprivi, Ovamboland and the interior of Kavango during a 16-day period in April 1984. Oxpeckers/mammal relationships were calculated from ground counts over a distance of 2 875 km following the procedures of Stutterheim (1979). The study area was subdivided into zones based on veterinary districts, to investigate possible differences in the oxpecker/mammal relationship. Population estimates are based on stock figures supplied by the Department of Veterinary Services for March 1984. Distribution records were mapped in 1/4° squares. Additional distribution records were obtained from local ornithologists, farmers and field cards of the Department of Nature Conservation and Agriculture.

## Results

### Distribution of *B. africanus*

The records of *B. africanus* collected during this study are compared to those of Stutterheim (1979) in Figure 1 from which it appears that *B. africanus* occurs throughout the Caprivi, although information on the status in western Caprivi is limited. In the Kavango *B. africanus* occurs along the Okavango river in the Mahango Game Reserve and the vicinity of Popa Falls. These oxpeckers appear to be nomadic groups following the movement of buffalo (*Syncerus caffer*)

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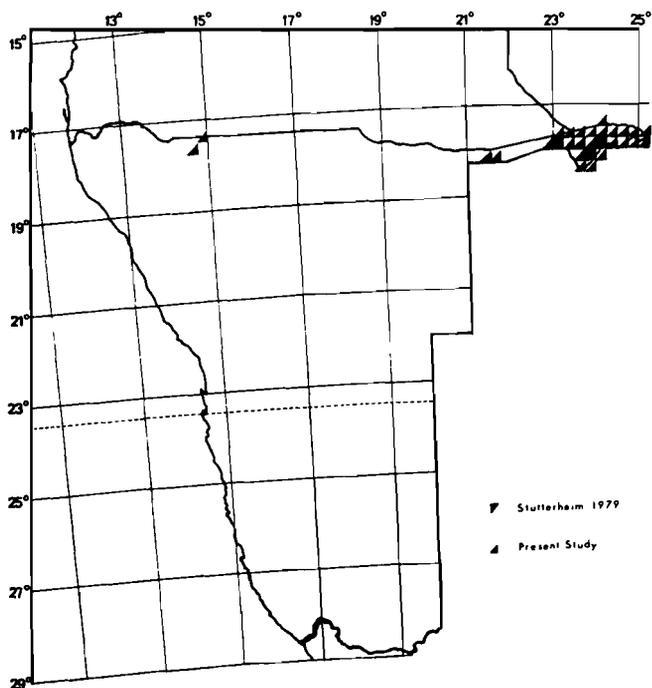


Figure 1 The distribution of *B. africanus* in SWA/Namibia.

between Botswana and the Mahango Game Reserve. Two records exist for *B. africanus* in western Ovamboland (Field cards, Department of Nature Conservation and Agriculture). This population could be continuous with the Angolan populations, as suggested by Hall & Moreau (1970).

Distribution of *B. erythrorhynchus*

Records of *B. erythrorhynchus* were mapped in Figure 2 and compared with those summarized by Stutterheim (1979). In the Kavango *B. erythrorhynchus* is concentrated along the floodplains of the Okavango and other smaller rivers, because of the large cattle concentrations in these areas.

The status of *B. erythrorhynchus* in Ovamboland is not known although stock inspectors report the widespread oc-

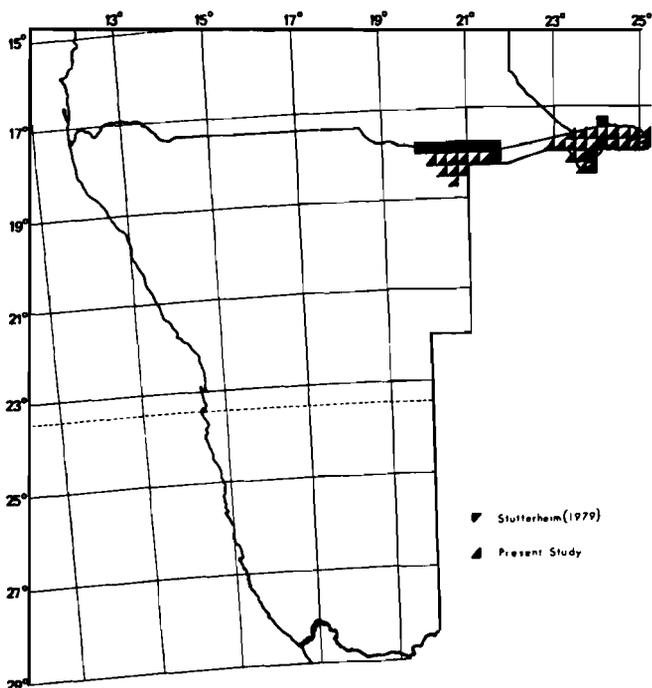


Figure 2 The distribution of *B. erythrorhynchus* in SWA/Namibia.

currence of oxpeckers (species unknown) in Ovamboland and the floodplains of the Omatako River (Potgieter, pers. comm.). This is confirmed by P.J. Buys (pers. comm.) who identified them as *B. erythrorhynchus*.

Status of oxpeckers (*B. erythrorhynchus* and *B. africanus*) in the Kavango

Oxpecker counts in the Kavango were conducted along the Okavango River, east of Rundu. Ground counts were done over a distance of 1 214 km over eight days. The observed oxpecker/mammal ratios are given in Table 1.

Table 1 The relationship of redbilled oxpeckers to mammals along the Okavango river as calculated from 1 214 km of count during April 1984

Mammal species	Number of animals observed	Number of oxpeckers observed	Oxpecker: mammal ratio	Estimated oxpecker numbers
Donkey	18	16	0,889	13
Horse	11	3	0,273	29
Mule	2	—	—	—
Sheep	20	1	0,050	3
Cattle	3 126	119	0,038	1 151
Goat	818	10	0,012	92
Steenbuck	1	—	—	—
Lechwe	27	—	—	—
Bushbuck	2	—	—	—
Pig	4	—	—	—
Total	4 029	151	0,037	1 285

The preferred symbionts were donkeys, horses and cattle respectively. Goats were less frequently used. A single redbilled oxpecker was seen perching on one individual from a group of 20 sheep, but no feeding behaviour was observed. Totals of 4 029 mammals and 151 redbilled oxpeckers were counted from which a ratio of 0,04 oxpecker per mammal was calculated. Estimated population size of the redbilled oxpecker population along the Okavango River is 1 285 birds.

Oxpecker sightings are plotted (Figure 3). Some degree of bias is introduced by the occurrence of roads in the areas and the military restrictions placed on travel off the main roads.

The status and oxpecker: mammal ratios for oxpeckers on cattle were calculated separately for each cattle zone (Figure 3) as indicated in Table 2. This ratio differed significantly between the different zones ( $\chi^2 = 73,02; p < 0,001$ ). There is a general trend towards an increase in the oxpecker: cattle ratio eastwards (0,030–0,071). The ratio of yellowbilled oxpeckers to redbilled oxpeckers in Zone 6 is 1:75. The estimated yellowbilled oxpecker population in this zone is five birds.

Status of oxpeckers *B. erythrorhynchus* and *B. africanus* in the Caprivi

Ground counts of the Caprivi were conducted over a distance of 1 661 km during a period of eight days in April 1984. The observed oxpecker/mammal ratios are given in Table 3.

Oxpeckers were found mainly in association with human settlements. Totals of 3 853 mammals and 373 oxpeckers of both species were counted from which a ratio of 0,10 oxpeckers per mammal was calculated. In the case of redbilled ox-

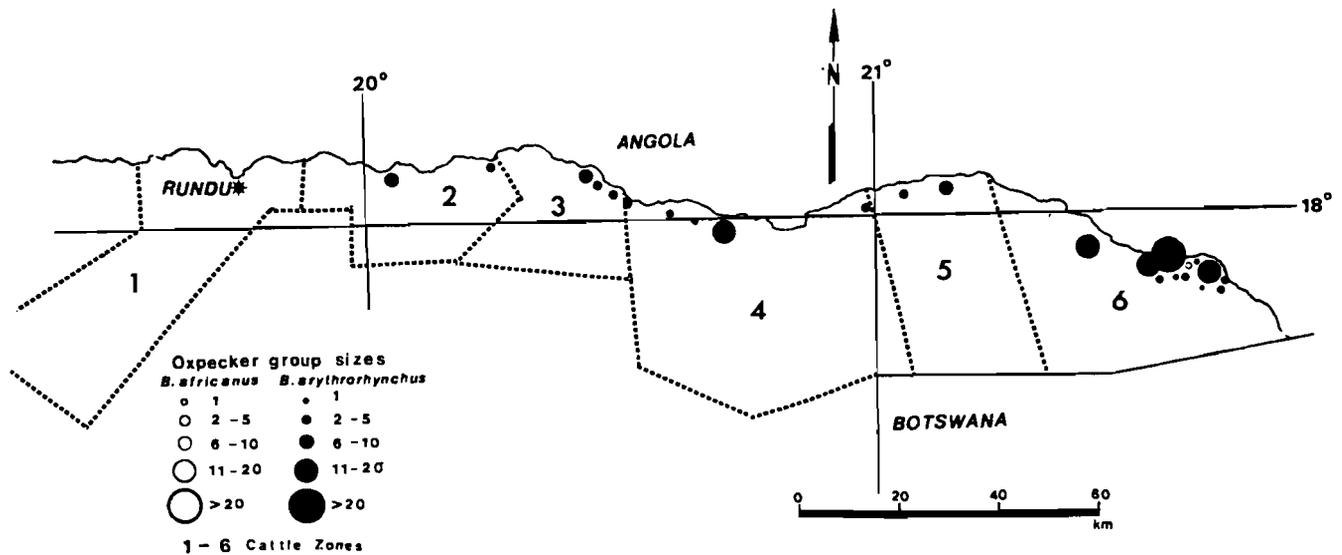


Figure 3 The distribution of oxpeckers along the Okavango river as determined from 1 214 km counts in April 1984.

Table 2 The ratio of redbilled oxpeckers to cattle in six districts along the Kavango river as indicated in Figure 3, calculated from 1 214 km count during April 1984

District	Total number of cattle	Number of cattle observed	Number of oxpeckers observed	Oxpecker: cattle ratio	Estimated oxpecker population
1	2 289	642	—	—	—
2	5 597	336	10	0,030	167
3	6 946	353	12	0,034	236
4	10 805	632	15	0,024	256
5	1 514	105	7	0,067	101
6	5 519	1 058	75	0,071	391
Total	32 670	3 126	119	0,038	1 151

Table 3 The relationship of oxpeckers to mammals in the Caprivi as calculated from 1 661 km counts in April 1984

Mammal species	Number of animals	Number of RBO	Number of YBO	RBO : mammal ratio	YBO : mammal ratio	Estimated RBO population	Estimated YBO population
Cattle	3 683	188	181	0,051	0,049	2 285	2200
Goat	112	4	—	0,036	—	29	—
Elephant	70	—	—	—	—	—	—
Hippo	18	—	—	—	—	—	—
Total	3 853	192	181	0,050	0,047	2 314	2200

RBO = redbilled oxpecker; YBO = yellowbilled oxpecker

peckers a ratio of 0,051 oxpecker per mammal was calculated, while the ratio for yellowbilled oxpeckers was 0,049 oxpecker/mammal. The total oxpecker population in the Caprivi is estimated to be 4 254, of which 2 613 are yellowbilled and 1 641 redbilled. This means that 61% of the oxpecker population consists of yellowbilled oxpeckers.

Estimates of oxpecker status were calculated separately for each area (Table 4) and mapped in Figure 4. There are significant differences of oxpecker: mammal ratios between the various cattle zones ( $\chi^2 = 215,85$ ;  $p < 0,001$  for redbilled oxpeckers and  $\chi^2 = 150,23$ ;  $p < 0,001$  for yellowbilled oxpeckers). Zones 3,5 and 6 are dominated by redbilled oxpeckers, while the other four zones are dominated by yellowbilled oxpeckers. The redbilled oxpecker:mammal ratio varied from

0,114 in Zone 6 dominated by redbilled oxpeckers (ratio redbilled oxpecker:yellowbilled oxpecker = 1:6) to 0,023 in Zone 4 dominated by yellowbilled oxpeckers (ratio yellowbilled oxpeckers:redbilled oxpeckers = 2:1). Yellowbilled oxpecker:mammal ratio showed even larger variation from 0,129 in Zone 1 to 0,006 in Zone 3.

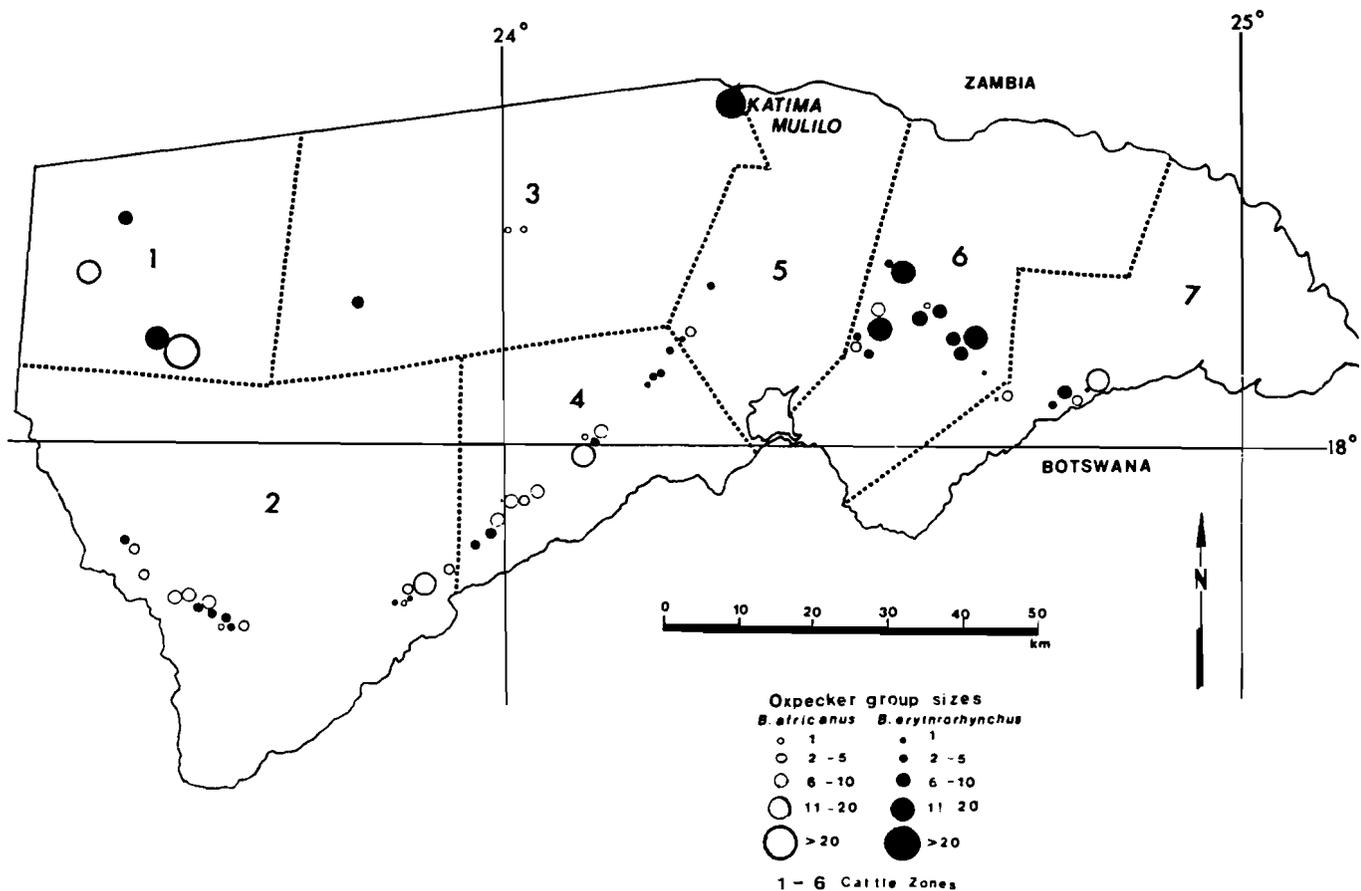
### Discussion

Redbilled oxpeckers are widely distributed throughout the Caprivi and Kavango. In the Kavango they are concentrated along the floodplains. There is uncertainty about their status along the floodplains away from the Kavango River, but the records collected support the findings of Bezuidenhout (1972) that their distribution follows the annual game

**Table 4** The ratio of redbilled and yellowbilled oxpeckers to cattle in seven cattle zones (as indicated in Figure 4) in the Caprivi, calculated from 1 661 km counts during April 1984

Cattle zone	Total no. of cattle	Cattle observed	RBOs observed	RBO: mammal ratio	Estimated RBO population	YBOs observed	YBO: mammal ratio	Estimated YBO population	Mammal/oxpecker ratio	Oxpecker/mammal ratio	Estimated oxpecker population
1	2 295	201	12	0,060	137	26	0,129	297	5,29	0,19	434
2	5 433	633	15	0,024	129	57	0,090	489	8,79	0,11	618
3	5 159	310	25	0,081	416	2	0,006	33	11,48	0,09	449
4	7 423	1 133	26	0,023	170	52	0,046	341	14,53	0,07	511
5	3 797	313	10	0,032	121	3	0,010	36	24,08	0,04	157
6	5 937	800	91	0,113	65	15	0,019	111	7,55	0,13	176
7	14 716	293	12	0,041	603	26	0,089	1 306	7,71	0,13	1 909
Total	44 760	3 683	191	0,052	1 641	181	0,049	2 613	9,90	0,10	4 254

RBO = redbilled oxpecker; YBO = yellowbilled oxpecker



**Figure 4** The distribution of oxpeckers in the Caprivi as determined from 1 661 km counts in April 1984.

migrations.

The redbilled oxpecker is the predominant species in the Kavango where the yellowbilled oxpecker is considered nomadic. The distribution of redbilled and yellowbilled oxpeckers overlap in the Caprivi. In this area of overlap 21% of the oxpecker groups are mixed redbilled and yellowbilled. The status and distribution of oxpeckers in Ovamboland are uncertain.

Estimates of population numbers are thought to be minimal, as population sizes for the larger game species are presently unknown. Redbilled oxpecker concentrations on cattle in the Kavango showed a gradual increase eastwards. The oxpecker:mammal ratio of 0,071 in the eastern zone of the

Kavango is significantly lower than the ratio of 0,120 found by Stutterheim & Stutterheim (1981) for cattle in the Pilanesberg complex (25°40'S/27°15'E) before the onset of dipping  $\chi^2 = 12,65; p < 0,05$ . The fact that the redbilled oxpecker spends most of its active time on its mammalian symbionts (Stutterheim 1976) should exclude possible bias that could have resulted from such variables as time of day and activity of cattle. Stutterheim & Stutterheim (1980) showed that the average rainfall affected oxpecker/mammal ratios in the Kruger National Park. The below-average rainfall over the past four years would have resulted in a decrease in the numbers of their preferred tick species (Howell, Walker, & Nevell 1978). The decrease food supply might have resulted in a lo-

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wered oxpecker:mammal ratio.

The oxpecker:mammal ratio in the Caprivi of 0,101 birds/head of cattle is significantly higher than the same ratio (0,037) for the Kavango ( $\chi^2 = 104,89$ ;  $p < 0,001$ ) possibly relating to the higher rainfall and thus a better food supply. From the relative number of redbilled and yellowbilled oxpeckers in the different cattle zones in the Caprivi it appears that even though both species occur on the same host there are significant local differences in the composition of oxpecker groups. Yellowbilled oxpeckers predominate along the river courses and in the floodplains, while redbilled oxpeckers predominate elsewhere. This could possibly be related to the distribution of their preferred tick species in the area. Insufficient data exist on the distribution of ticks in the Caprivi and on the specific ecological requirements of the two oxpecker species.

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