

Articles and Reports

The Status and Conservation of the Cape Vulture in SWA/Namibia

CHRISTOPHER J. BROWN

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THE BIRD

The Cape Vulture *Gyps coprotheres* is a large griffon vulture which feeds almost exclusively on ungulate carcasses. It is the only species of cliff-nesting vulture in South West Africa/Namibia; it nests and roosts colonially and usually gathers at carcasses in large numbers. Cape Vultures, like Whitebacked Vultures *Gyps africanus*, forage by soaring to a great height before travelling across country whilst scanning the ground for dead animals. These they locate by direct observation, by watching the behaviour of mammal and bird scavengers and, perhaps most important, by watching other Cape Vultures. The descent of one Cape Vulture towards food results in the whole Cape Vulture "foraging net" being pulled in. This foraging association means that if 20 vultures are foraging together a much larger area, and possibly 20 times that which would be covered by a single bird, is covered by the group in their search for food. Thus the smaller the foraging group the less effective is their search for food.

Cape Vultures occur most commonly in open areas of grassland, fynbos and karroid vegetation although they are also found in open woodland and forest (Steyn 1982). The generally open habitat chosen by Cape Vultures affords good visibility, particularly at very high altitudes above the ground from where a large area can be scanned for carcasses, and allows sufficient space for landing and taking off. Being a cliff-nester, the Cape Vulture is not as dependent on thermals for its initial early-morning flight as are tree-nesting vultures, as it is able to utilise slope lift on the surrounding mountainsides and cliffs, and so has a considerable height advantage over tree-nesters. The Cape Vulture has therefore evolved a much higher wing loading than have the tree-nesting species, a feature which improves its cross-country flying performance but at the expense of increasing its stall speed and increasing the amount of space needed for take-off. Table 1 lists some pertinent physical parameters of some of the vultures occurring in SWA/Namibia.

STATUS OF THE CAPE VULTURE IN SOUTHERN AFRICA

The Cape Vulture is endemic to southern Africa. It is listed as "threatened and vulnerable.... gives cause for concern" in the S.A. Red Data Book - Aves (Stegfried et al. 1976). The accelerating decline in parts of the population, substantiated statistically from analysis of ring recoveries (Piper et al. 1981), indicates that if the current rate of mortality due to human activities is not curtailed the Cape Vulture could be extinct in 60 years (Ledger 1982). Human-related factors recorded as negatively affecting Cape Vultures include (a) shortage of food resulting from (a) the elimination of the indigenous game herds and recent improvements in animal husbandry and (b) changing land-use patterns with

cultivation replacing stock farming; (ii) electrocution on electricity towers; (iii) collision with wire stays of radio masts and other man-made structures; (iv) drowning in farm reservoirs; (v) disturbance at breeding colonies; (vi) direct and indirect persecution, the most important factor here being the dosing of carcasses with poison to kill jackals (Boshoff & Vernon 1980; Tarboton & Allan 1984; Ledger 1984; Benson & Dobbs 1984; Ledger 1982; Houston 1974; Mundy 1982; Smit 1984).

DISTRIBUTION AND STATUS OF THE CAPE VULTURE IN SOUTH WEST AFRICA/NAMIBIA

The Cape Vulture occurs sporadically over the southern four fifths of SWA/Namibia, except for a strip along the Namib coast (Fig. 1). Formerly, Cape Vultures were fairly common in the Pro-Namib and southern parts of the country, where there were said to be a number of colonies and where evidence of five extinct sites has been found. Counts of Cape Vultures at waterholes in this region were made in 1964 and 1969, and they were found to occur in a ratio of about 1:2 and 1:4 with Lappet-faced Vultures *Torgus tracheliotus* (Sauer 1973). The Cape Vulture is now very rare in these areas (Climning 1980), occurring in a ratio of less than 1:100 (B.R. Rieker pers. comm.), probably as a result of poisoning on adjacent farmlands, where small-stock farming predominates.

The only known site at which Cape Vultures still breed in SWA/Namibia is on the Karakunwa cliffs on the northern side of the Waterberg, some 60 km due east of Otjiwarongo (Fig. 1). This is the most northerly recorded breeding site for the species, on the edge of the species range, and as such may be considered to be a satellite colony (sensu Boshoff & Vernon 1980). It is the status of this last remaining breeding colony that is causing concern, particularly in view of the catastrophic decline in the numbers of birds using and breeding at the colony. Table 2 documents the decline observed over the past 45 years and shows that the population has dropped from about 500 birds in 1939 to about 10 today.

CAUSES OF THE DECLINE OF THE WATERBERG CAPE VULTURE POPULATION

Of the factors that have been found to cause mortality in Cape Vultures, only two are thought to be important to the Waterberg population, namely poisoning of carcasses in an attempt to control "problem animals" and a shortage of food.

Poisoning

The major farming activity in the Waterberg area is cattle ranching. Only a small triangle of land to the east and some 30 km from the breeding colony supports small-stock farming. The use of poisons is generally associated with small-stock farming, and less often with cattle or game ranching. While many farmers in the Otjiwarongo and Grootfontein districts bordering the Waterberg Plateau Park considered the use of poisons in their area to be generally very low, figures obtained from the Veterinary Services' poisons registers (Table 3) indicate that in 1984 52% as much strychnine was legally obtained in these areas as in the predominantly small-stock farming districts in the south. The Bateleur *Terathopus ecaudatus*, which is reliant on scavenged carrion for about 42% of its food in adults and possibly much more in young birds (Tarboton & Allan 1984; Steyn 1980), and which is therefore very susceptible to poisoning, has shown a marked decline in numbers in the Waterberg area (raptor road count data and pers. comm. with farmers), although this could also be attributed to bush encroachment (see below). Corroborative evidence in support of poison being an important cause of mortality in the Cape Vulture is not immediately apparent from adult Whitebacked Vulture numbers. Although it is more

difficult to determine the numbers of the more dispersed tree-nesting Whitebacked Vulture, there is no evidence to suggest that this species, which nests in large numbers within the Cape Vultures' range at the Waterberg, has declined, even though they forage and feed in a very similar manner to Cape Vultures. If poisons were the main cause of mortality in Cape Vultures, one would expect the Whitebacked Vultures to be as severely affected, and while it is possible that they are, there is as yet no evidence to show this.

Food shortage

During visits to Waterberg from May 1983 to March 1984, large numbers of ungulate carcasses were found. These consisted mainly of kudus which had died of rabies. In August a walk of about 3,5 km along the farmland-Waterberg Plateau Park boundary fence, on the north side of the park, produced three fresh unopened carcasses, two carcasses of about two weeks old (and partly eaten) and three skeletons; these were all adult kudus. This situation was typical of the area for many months (A. Cilliers pers. comm.), and certainly throughout the 1983 breeding season; this represented an extremely large potential food supply for the scavengers.

With this abundant supply of food in the immediate vicinity of the nesting cliffs the birds should not have had to fly any further, thereby reducing the likelihood of their ingesting poisons. Nevertheless, the Waterberg colony experienced 100% nesting failure during the 1983 breeding season, and the numbers of adult birds continued to decline.

I suggest that the presence of suitable food and its accessibility may not be directly correlated. On the farmlands surrounding the Waterberg Plateau Park severe bush encroachment has taken place, reducing ground (= grass level) visibility from more than 85% in the early 1940's (many farmers pers. comm., e.g. S. Diekmann) to currently less than 10% in many places. The main encroaching species are *Acacia mellifera* subsp. *deliensis* and *Dichrostachys cinerea* which are indicators of overgrazing and which grow to form dense interlocking thorny thickets, large tracts of which are impenetrable to a man on foot. At present, data on the exact extent of the encroachment are being obtained by comparing the 1961 aerial photographs (the first ever taken of the area) with the latest set, made in 1979. This period spans the main vulture decline (Fig. 2) and on preliminary analysis the difference appears to be considerable, with a bush cover of about 40 to 60% in 1961 and of between 70 to 90% in 1979. As a result of this encroachment carcasses are not accessible to Cape Vultures because (a) they cannot find the food due to the increased ground cover, and (b) they may be unable to land, and more particularly, because of their high wing loading, to take off with a full crop from a restricted, enclosed area. This situation must not be confused with that occurring on top of the Waterberg plateau where the vegetation, an extension of the "Caprivi sandveld", is predominantly broadleaved "Woodland savanna" (Giess 1970). Here, although thickly wooded in areas, the vegetation is relatively penetrable and the presence of large trees in the area means that the vultures can flap up into a tree from whence they can fly. In the thorny thickets below the plateau this is not possible.

To consider the effect the bush encroachment will have on a Cape Vulture colony a comparison must be made with an open habitat situation. At the Potberg colony, an inselberg in the southwestern Cape, Cape Vultures were found to range over an area of up to about 30 km from their nesting cliffs (Boshoff et al., 1984), although most carcasses were located at between 10 and 15 km. A theoretical maximum range of about 2829 km² can be concluded (at Potberg much of this being at sea!). With a ground cover of about 15% (as used to be the case in the Waterberg area), and all

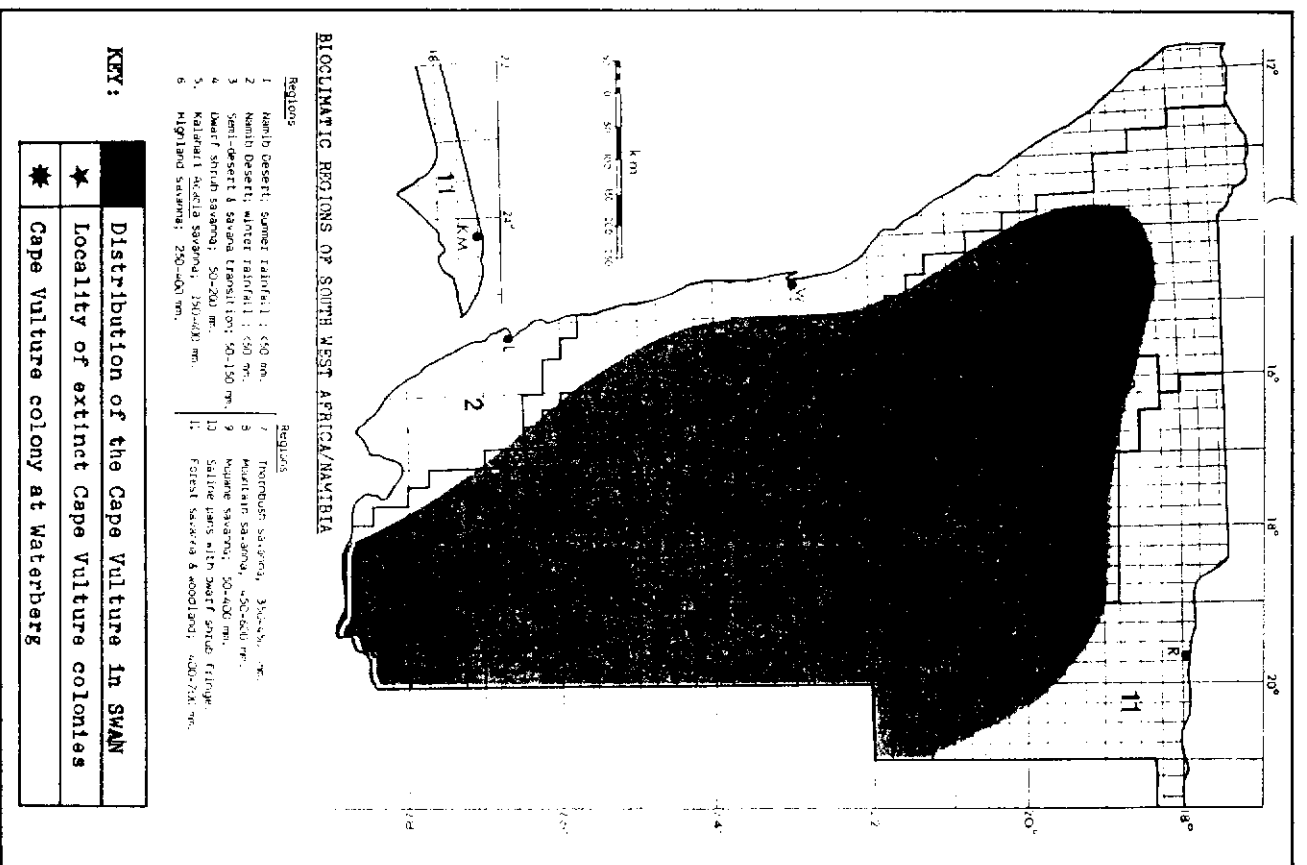


Figure 1. The distribution of the Cape Vulture in South West Africa/Namibia and the localities of extinct and extant colonies.

other aspects such as food supply and number of birds, being equal, the area of ground a bird would have to cover to obtain 2829 km² of "open ground" is 3328 km², or a radius of 32.5 km from their nesting cliffs. Should the ground cover go up to 90% (as is the case in many parts of the Waterberg area today) then the area the bird would need to cover would be about 28290 km², or a radius of 95 km from the cliffs; this would entail overflying the farms of about 680 different landowners. Adult Cape Vultures have been reliably recorded in Etosha National Park during their breeding season (M. Paxton pers. comm.), a distance of about 100 km from the Waterberg cliffs.

I suggest that the patchy distribution of the small areas of suitable open foraging habitat remaining to the Cape Vultures at Waterberg is no longer viable in supporting a healthy, stable population and that the foraging time required to cover the amount of ground necessary to obtain enough food, considering that up to 90% of the ground covered is unsuitable, is greater than the foraging time available to the birds. This may result in birds attempting to fly the long distance to the more open parts of Etosha Pans and National Park, with very little foraging potential en route and over ground with virtually no topographic features to provide soaring assistance in the form of slope lift. This, I believe, is beyond the energetic capability of the birds, particularly in the winter months when thermalling conditions may be fairly weak. Houston (1974) has shown that most food is available to griffon vultures shortly after dawn. Cape Vultures travelling from Waterberg would therefore be at a considerable disadvantage to the resident Whitebacked Vultures. In addition, the length of time that nestlings are left unfed or unattended may lead to their swallowing nesting material (pica) resulting in stomach impactions (a frequent occurrence in hungry Cape Vulture nestlings (Dobbs & Benson 1984)) and death. Opportunities for predation would also increase and Black Eagles *Aquila verreauxii*, common at Waterberg, are known to prey on Cape Vulture nestlings (Benson & Dobbs 1984).

As mentioned earlier, Cape Vultures have a far higher wing loading than the other vulture species occurring in the area. The tree-nesting species can be considered to be more adapted to a woodland savanna habitat and arguably are better able to survive in more heavily wooded areas. Presumably then, they would be able to tolerate a greater degree of bush encroachment than the Cape Vulture, and this would explain the fact that the decline in the Cape Vulture seems to be so much more severe. Although there is no evidence at this stage to indicate a major decline in the adult Whitebacked Vulture population, the breeding of this species may nevertheless have been seriously affected. On one farm in the Waterberg area only one of the approximately 25 pairs present bred during the 1983 season (D. E. Ludwig pers. comm.). It appears that the situation may have reached such severe proportions that even the vultures adapted to woodland savanna are unable to live and reproduce successfully. The situation is further aggravated by the tendency of ungulates dying of disease (e.g. kudus of rabies) to crawl into the centre of a thicket, thereby making themselves inaccessible to vultures (pers. obs.; T. Cooper pers. comm.).

HOW CAN WE SAVE THE CAPE VULTURES AT WATERBERG?

If the Cape Vulture is to be saved in SWA/Namibia, and specifically at Waterberg, long-term solutions to bush encroachment, and education of farmers regarding their attitudes to the use of poisons,

are necessary. The time that such remedies are effective the Cape Vulture will certainly be extinct in this country. Although these long-term steps should be initiated as soon as possible, shorter term solutions are urgently required to ensure that the Cape Vulture population survives to the time when long-term steps become effective. With this in mind two courses of action have been instigated.

Education

An information brochure (in English, Afrikaans and German) has been produced and is to be distributed by post and through farmers' associations to all farmers within a radius of 100 km of Waterberg. This inexpensively produced brochure informs the farmer of the problems faced by the Cape Vultures in their area, their catastrophic decline, and asks for the farmers' assistance in (a) being very careful about the use of poisons and (b) making carcasses available to vultures by pulling them out from bush-encroached areas and placing them in more open sites.

Feeding

The only immediate solution, whether bush-encroachment or poisoning is the main cause of mortality, is to provide an uncontaminated source of food at an easily accessible feeding site. A site was chosen on top of the Waterberg Plateau some 5 km east of the nesting cliffs and at approximately the same altitude. The site is on the crest of a ridge and affords good visibility and space for taking off in all directions. A circular area of about 300 m in diameter was partially cleared of smaller shrubs and bush; the larger trees were left. Once it had been established that the site was used by the birds a hide was built. This site has now been in use since August 1984.

At least one carcass of over 80 kg is placed at the feeding site each week, although usually at least twice this weight of carrion is provided. The Waterberg Plateau Park is managed specifically as a sanctuary for endangered mammal species such as sable and roan antelope, tsessebe, buffalo and white rhino. A number of other species also occur, the most numerous being kudu and gemsbok. While the presence of the latter animals forms an integral part of the park and is necessary to retain the biological diversity and to provide a source of prey animals, so that predators attack fewer of the endangered species, their numbers must be kept below certain levels in order that they do not compete with the endangered species. Instead of having a once yearly kudu and gemsbok cull, a slow removal programme was initiated, with one animal per week being cropped and this carcass is slit along the belly and up the fore and hind limbs prior to being placed at the feeding site.

MONITORING THE POPULATION

- The following population parameters are being monitored:
- (i) The number of free-flying Cape Vultures using the Waterberg cliffs each month, and their respective age classes.
 - (ii) The number of pairs of Cape Vultures that start breeding and the number of nests that produce flying young.
 - (iii) The numbers and ages of Cape Vultures and other species feeding at the feeding site.
 - (iv) The numbers, species composition and age classes of vultures seen at "natural" carcasses in the area, the food type and the extent of encroachment/cover in the area of the carcass.

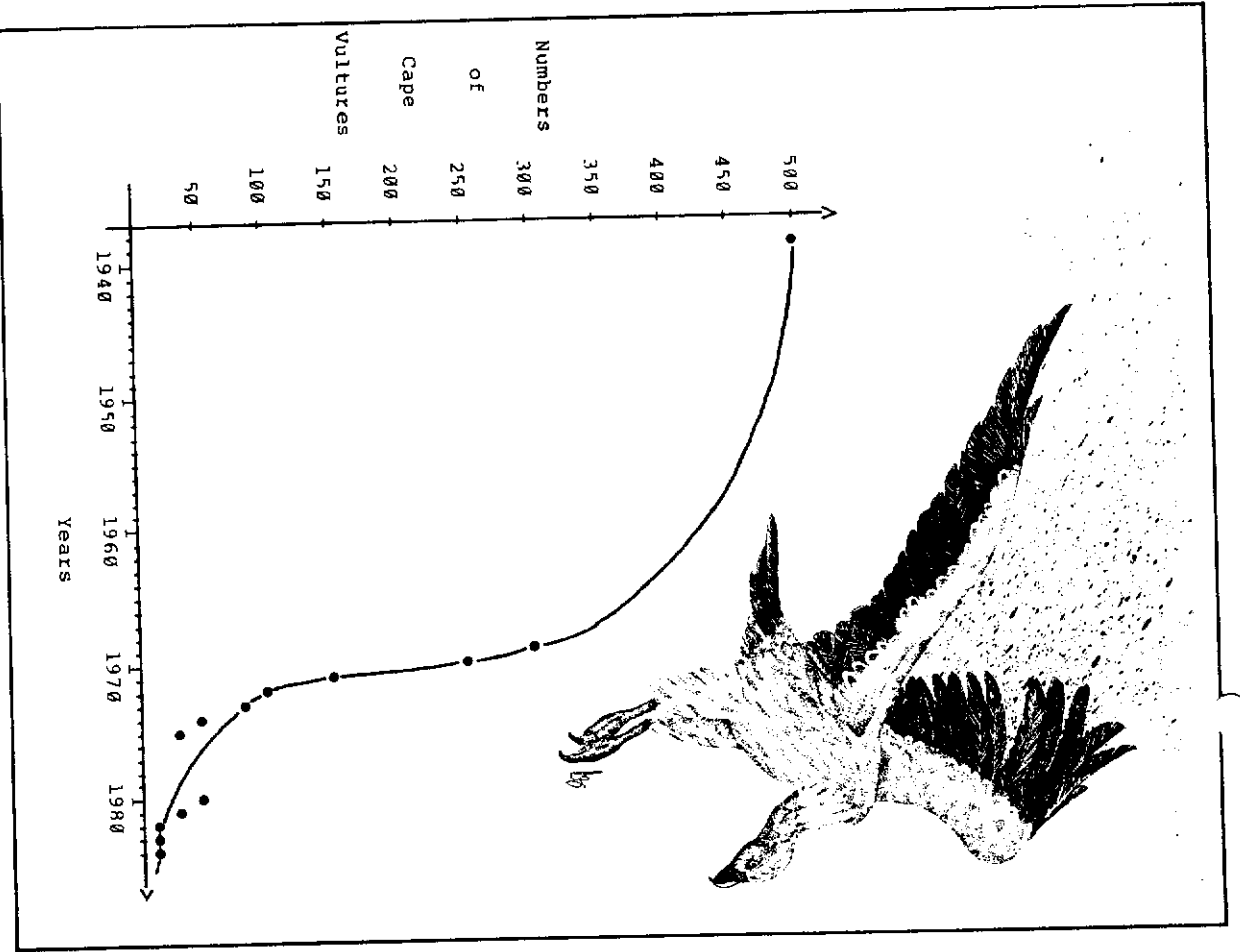


Figure 2. The numbers of Cape Vultures at the Waterberg colony from 1939 to March 1984.

(V) Regular sort are made below the cliffs to obtain dead vultures which are analysed for poisons. With this monitoring programme, any significant changes in the population should be detected.

SOME RECENT RESULTS

In 1984, just prior to the Waterberg breeding season, which commences some six weeks later than in colonies studied in South Africa and Transkei (Mundy 1982; Vernon et al. 1983), nine adult birds were roosting on the cliffs. During the early stages of incubation four active nests were found. In November a dead nestling was found at the base of the cliffs, which when tested was negative for strychnine, organophosphates and chlorinated hydrocarbons. The cause of death was not determined but at the time two dead adult Cape Vultures were found in the Eastern National Water Carrier, an open canal currently under construction and dry at the time. The birds had apparently been attracted to the carcass of a warthog and then could not take off (O. Pesch pers. comm.). These birds may have been the parents of the dead nestling. By January 1985 three fledged young were seen at the feeding site and in February the first young bird was seen at the feeding site.

During the nesting period a maximum of seven adult Cape Vultures was seen at the feeding station at one time. These birds were observed shuttling between the provided carcasses and their nests, departing with full crops and returning with them empty. One bird made three such trips in succession, being away from the feeding site for periods of 18 and 24 min.

While it appears that the feeding scheme has attracted some adult birds to the area (increasing from 9 to 13) and the nesting success rate has increased (from 0% in 1983 to 75% in 1984), the samples are too small and the time period too short to draw any conclusions. Carrion will be provided throughout the year and not just during the breeding season, as (1) the survival of young birds at this "satellite" colony may be important to its long-term survival and young inexperienced birds would be unlikely to survive where adults do not, and (11) by providing a regular source of food it is hoped to retain the birds as close to Waterberg as possible and reduce the number of farms over which they fly, thereby reducing their exposure to poisoning. At the end of the 1985 breeding season the success of the feeding scheme will be evaluated and if it looks promising it will be continued.

SUMMARY

The Cape Vulture is endemic to southern Africa. It is listed as an endangered species and has shown a marked decline in numbers, and breeding colonies in many parts of its range have become extinct. In South West Africa/Namibia the Cape Vulture is now a very rare bird, breeding in small numbers at only one locality, the Waterberg Plateau Park. This population has declined dramatically, from some 500 birds in 1939 to about 10 today. Two reasons for this decline are suggested; (1) the indiscriminate use of poisons by farmers, and (11) the severe bush encroachment that has taken place on the surrounding farmlands. Because of its physical adaptations to cliff-nesting, to open (mostly grassland) habitats and to specialized cross-country flying performance, the Cape Vulture is unable to forage effectively in areas that have become seriously encroached and thicketed. Therefore, despite the potentially high

TABLE 1

SOME PHYSICAL PARAMETERS OF VULTURES OCCURRING IN THE WATERBERG AREA OF SOUTH WEST AFRICA/NAMIBIA

Species	Nest site	Mass (kg)	Wingspan (m)	Wing loading (N/m ²)
Cape Vulture	cliff	8,7	2,58	106
<u>Gyps coprotheres</u>				
Lappetfaced Vulture	tree	6,5	2,80	63
<u>Torgus tracheliotus</u>				
Whitebacked Vulture	tree	5,4	2,20	77
<u>Gyps africanus</u>				
Whiteheaded Vulture	tree	4,8	2,10	54
<u>Trigonoceps occipitalis</u>				

TABLE 3

THE AMOUNT OF LEGALLY ISSUED STRYCHNINE IN DISTRICTS ADJACENT TO THE WATERBERG PLATEAU PARK AND IN PREDOMINANTLY SMALL-STOCK FARMING AREAS OF SOUTH WEST AFRICA/NAMIBIA, FOR 1984.

District	Number of prescriptions	Amount of poison (g)
Groeffontein	25	500
Otjivarongo	18	360
TOTAL	43	860
MEAN	21,5	430
Three predominantly small-stock farming districts	116	2490
MEAN	39	830

(Note: During 1984 a total of 8490 g of strychnine was issued legally to farmers in South West Africa/Namibia. A lethal dose for a human is about 0,025 g. Enough strychnine was issued, therefore, to kill about 339600 people or 3,5 times the population of Windhoek.)

TABLE 2

THE CAPE VULTURE POPULATION AT WATERBERG; 1939 TO 1985

Date	Number of free flying birds	Breeding data	Source
1939	500+	no data	S. Diekmann (pers. comm.)
1969	250 - 300	no data	Ludwig (1974)
1969	200 - 250	no data	Kolberg (1969)
1970	100 - 150	no data	Ludwig (1974)
1972	100 - 150	no data	Ludwig (1974)
1973	80 - 100	no data	Ludwig (1974)
1974	50	9+ nestlings	Ludwig (1974)
1975	35	8+ nestlings	Ludwig (1975)
1981 Nov.	62	22 nestlings	Stutterheim & Cilliers (nest record cards)
1982 Jul.	40	no data	B. Riekert (pers. comm.)
1983 Feb.	28	7 nests from 1982 season	J. Komen (pers. comm.)
1983 May	22 (adults)	not breed. season	CJB (pers. obs.)
1983 Aug.	18 (")	7 active nests	CJB (pers. obs.)
1983 Nov.	11 (")	all nests failed	CJB (pers. obs.)
1984 Mar.	9 (")	not breed. season	CJB (pers. obs.)
1984 Aug.	9 (")	4 active nests	CJB (pers. obs.)
1984 Nov.	8 (")	3 nestlings	CJB (pers. obs.)
1985 Jan.	13 (")	3 fledged young	CJB (pers. obs.)

Food supply, the Cape Vulture is unable to utilize the many carcasses in the area.

Two solutions are presented; (1) the education of farmers in the area around Waterberg, starting with a brochure informing farmers of the situation and asking for their co-operation in (a) the use of poisons, and (b) in making carcasses available by placing them in open areas, and (11) the investigation of a weekly feeding scheme to provide the birds with a regular uncontaminated source of food. A monitoring programme to detect changes in the population is considered essential to future management.

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- Christopher J. Brown, Ornithology Section, Directorate of Nature Conservation and Recreation Resorts, Private Bag 13306, Windhoek 9000, South West Africa/Namibia.



CAPE VULTURE