

Status of Cape Vultures (*Gyps coprotheres*) in the Magaliesberg, South Africa

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Summary

The numbers of breeding pairs of Cape Vultures (*Gyps coprotheres*) at three colonies, Skeerpoort, Roberts' Farm and Nooitgedacht, in the Magaliesberg range in South Africa, were counted during 2006 and their hatching success was assessed. Despite the virtual extinction of the colony at Roberts' Farm, the overall number of breeding pairs in the Magaliesberg appears to be on the increase. Ongoing transformation and fragmentation of habitat, particularly around the breeding cliffs at Skeerpoort, is a thought to be an important threat, but further investigation is required.

Introduction

The south facing cliffs of the Magaliesberg, a quartzite ridge on the border between the North West and Gauteng provinces of South Africa, supports three breeding colonies of the Cape Vulture *Gyps coprotheres*, a southern African near-endemic that is listed as vulnerable (Anderson 2000). The breeding success of the colonies located at Skeerpoort (25°44'59.6"S; 27°45'26.3"E) (also spelled Scheerpoort) and Roberts' Farm (25°49'58.1"S; 27°18'37.4"E) (also variously referred to as Olifantsnek, Olifantshoek or Olifantspoort) in the North West Province and Nooitgedacht (25°51'11.5"S; 27°32'31.9"E) in Gauteng have been monitored for over 50 years, though not continuously (Tarboton & Allan 1984, Benson et al. 1990) and not according to a standard monitoring protocol.

The importance of regular monitoring and the value of adopting standardized methodology for assessing population trends at colonies throughout the breeding range of the Cape Vulture was discussed at the Cape Vulture Conservation Plan Workshop held in 2006 (Boshoff & Anderson 2006), but no methodology was formally adopted. The monitoring protocol subsequently developed by the Vulture Study Group (Benson et al. 2007) forms the basis for the new annual monitoring programme adopted for the Magaliesberg colonies in 2006. Data from the 2006 breeding season are compared to data from the 2003 breeding season (Verdoorn 2004), the most recently published monitoring results for these colonies.

Methods

Each colony was visited at least three

times, i.e. to photograph the breeding cliffs, to estimate the number of breeding pairs early in the season and to count the number of nestlings in mid-season. A series of high-resolution reference photographs covering all known active and historical nest sites was taken at Skeerpoort, Roberts' Farm and Nooitgedacht. A4-sized prints were produced for each section of the cliff face at each colony and these were used for recording the position of all nests, breeding pairs and nestlings following the approach subsequently described by Benson et al. (2007). Spotting scopes (minimum 20X magnification) were used to locate breeding pairs, nests and nestlings; the positions of which were marked on the reference photographs using a dot and unique number for each one. Each observation was independently confirmed by at least one other observer.

Observations were made from a distance of approximately 700-1600 m from the respective breeding cliffs, depending on the location of the most suitable vantage points. At Skeerpoort, observations were made from two parking areas within the grounds of the Leopard Lodge, a resort on the slope below the nesting cliffs (i.e. at 25°45'16.3"S; 27°45'38.8"E and 25°45'13.3"S; 27°45'45"E respectively). All observations at Robert's Farm were made from a single vantage point at the base of the ridge, i.e. 25°50'43.4"S;

27°19'08.3"E. At Nooitgedacht, observations of nests were made from a vantage point approximately midway up the slope of the ridge, i.e. 25°51'31.9"S; 27°32'27"E, on the tarred road leading to the plateau, while nests further to the east were observed from the base of the ridge, i.e. 25°51'45.6"S; 27°33'03.7"E.

Visibility was found to be best during the early morning, but conditions rapidly became unsuitable for observations as the morning progressed. One day was required to complete each of the two main assessments (i.e. the number of breeding pairs and number of nestlings) at Robert's Farm, but two to three days of good visibility were required to complete each assessment at the other two larger colonies. All visits for each assessment at each colony were completed within a week of being initiated. Observations of a particular section of cliff were consistently made from the same vantage point. Counts for each section of each colony were combined to produce a total early season count of breeding pairs for each colony and a total mid-season count of nestlings for each colony.

Cape Vultures usually lay only one egg (Tarboton 2001) and laying takes place in early winter mainly between mid-April and mid-May (Tarboton et al. 1987, Benson et al. 1990). Each colony was therefore visited between late-May and mid-June (i.e. after the majority of eggs were expected to have been laid) to estimate the number of breeding pairs.

For the initial assessment the number of occupied nests (i.e. incubating bird present) and hidden nests (i.e. evidence of birds going into a site which could not be seen) was taken as an estimate of the number of breeding pairs. For most nests, the presence or absence of an egg could not be confirmed as observations were made from below the level of the nesting ledges.

The incubation period of Cape Vultures is approximately 57 days (Tarboton 2001) and in the former Transvaal, young vultures fledge in October-December (Tarboton et al. 1984). Nestling counts were therefore conducted in early-August and supplemented with further counts in late-August and mid-September when the larger size of older chicks was expected to increase their visibility. On each subsequent visit, chicks not observed on earlier visits were added to the colony total. Particular attention was given to sections of each colony where occupied and hidden nests had previously been marked on the reference photographs. The presence of nestlings that were hidden from view on deep ledges and in cracks or caves was inferred from repeated observations of adult birds going into these sites. Nestling mortality was not assessed.

Results

The Skeerpoort colony supported 71% of the Cape Vulture breeding pairs estimated for the Magaliesberg, while Nooitgedacht supported 28% and Robert's Farm only 1% (Table 1). 93% of all breeding pairs were identified from observations of incubating birds on the nest. A further 24 hidden nest were inferred from adult birds repeatedly visiting or carrying nesting material into sites that could not be seen.

Table 1. Number of Cape Vulture Gyps coprotheres breeding pairs recorded for each colony in the Magaliesberg, South Africa, in 2006.

Colony	Number of breeding pairs
Skeerpoort	257
Roberts' Farm	5
Nooitgedacht	100
Total	362

The majority of Cape Vulture nestlings (74%) recorded for the Magaliesberg colonies hatched at Skeerpoort, while 24% hatched at Nooitgedacht and merely 2% at Robert's Farm (Table 2). The majority (92%) of hatchlings were directly observed and only 8% were inferred from the behaviour of adult birds at hidden nests.

Table 2. Number of Cape Vulture nestlings recorded for each colony in the Magaliesberg in 2006.

Colony	Observed nestlings	Inferred nestlings	Total nestling production
Skeerpoort	199	15	214
Roberts' Farm	5	0	5
Nooitgedacht	60	9	69
Total	264	24	288

All of the Cape Vulture breeding pairs recorded for Robert's Farm during the early breeding season colony assessments had nestlings by the second (mid-season) assessment. At Skeerpoort, nestlings were observed in 77% of nests while a further 6% of nests contained inferred nestlings. Nestlings were only confirmed in 60% of nests at Nooitgedacht with a further 9% inferred.

Discussion

Between the 2003 (Verdoorn 2004) and 2006 early breeding season assessments, the number of Cape Vulture breeding pairs at Skeerpoort and Nooitgedacht showed increases of 69 (37%) and 36 (56%) breeding pairs respectively, while the colony at Robert's Farm declined by nine breeding pairs (64%). In total, the number of Cape Vulture breeding pairs comprising the Magaliesberg population increased by an estimated 96 breeding pairs (36%) between the 2003 (Verdoorn 2004) and 2006 assessments (Table 1.).

The estimated number of Cape Vulture nestlings recorded for the

Skeerpoort and Nooitgedacht colonies increased by 57 (36%) and nine (15%) individuals respectively, between the mid-season assessments in 2003 (Verdoorn 2004) and 2006, while production at Roberts' Farm dropped by seven nestlings (58%) between the same two counts. The combined number of Cape Vulture nestlings produced by the three Magaliesberg colonies increased by an estimated 59 individuals (26%) between the 2003 (Verdoorn 2004) and 2006 assessments (Table 2.).

While the 2006 colony assessments suggest an increase in the number of Cape Vulture breeding pairs and nestlings when compared with data from 2003 (Verdoorn 2004), the ratio of nestlings to breeding pairs for the three Magaliesberg colonies dropped from an estimated 86% in 2003 to 80% in 2006. The highest nestling to breeding pair ratio was recorded for Roberts' Farm (100%), with 83% for Skeerpoort and 69% for Nooitgedacht.

Due to time constraints, fledging success was not assessed at the end of the

breeding season. To obtain an estimate of breeding success, future monitoring will need to incorporate an end of season assessment (October-December) during which the number of large nestlings and fledglings are counted (Benson et al. 2007).

The total number and relative distribution of breeding pairs of Cape Vultures amongst the three colonies in Magaliesberg has fluctuated dramatically over the last two decades. The Nooitgedacht colony was abandoned in the 1960s when construction of microwave transmission towers was initiated near to the breeding cliffs (Tarboton & Allan 1984, Verdoorn 2004) and no breeding was recorded at that colony again until 1991 (Tarboton & Allan 1984, Benson et al. 1990, Verdoorn 2004), though small numbers of Cape Vultures continued to use the site as a roost (Verdoorn 1997). In contrast, while Skeerpoort is still the most populated colony, a decline in breeding birds at Roberts' Farm had probably been underway since the 1960s (Tarboton & Allan 1984). Mass electrocution of Cape Vultures in 1996 followed by a mass poisoning of Cape Vultures in 2001 were believed to be linked to the most recent and drastic declines at Roberts' Farm (Verdoorn 2004) and breeding there has now all but ceased (Table 1).

While comparison of estimates between different observers and observation methods should be viewed

with caution, the data suggests that the numbers of Cape Vulture breeding pairs and nestlings are increasing in the Magaliesberg, despite the near extinction of the Roberts' Farm colony. Total numbers of breeding pairs are still approximately 17% below highest estimates for the 1970s and 1980s (i.e. 436 active nests in 1983) (Tarboton & Allan 1984, Benson et al. 1990), but Nooitgedacht and Skeerpoort support more pairs now than they have at any other stage during the previous three decades (Tarboton & Allan 1984, Benson et al. 1990, Verdoorn et al. 1997). The relative contributions of adult immigration and successful recruitment of juveniles into the adult breeding population to the growth of the Skeerpoort and Nooitgedacht colonies is unknown.

Assuming an estimated global population of 3000 breeding pairs (Piper 2005), in 2006 the Magaliesberg colonies accounted for 12% of all breeding Cape Vultures. This is similar to estimates derived from data published by Benson et al. (1990) for the 1980s, though latest population estimates for this species suggest that Cape Vulture numbers may have declined by approximately 19% globally in the last two decades (Piper 2005).

Various factors have been linked to the continuing global decline of Cape Vulture populations with the main threats thought to be to food shortage, poisoning

and collisions and electrocutions associated with powerlines (Benson et al. 1990, Anderson 2000). A potential link between the declining fortunes of the Cape Vultures in the Magaliesberg and agricultural and urban expansion in surrounding areas was proposed more than two decades ago (Tarboton & Allan 1984, Benson et al. 1990). Transformation and fragmentation of the area around the Hartebeespoort Dam (within 3 km of the Skeerpoort colony) continues at a rapid rate and cultivated fields, housing estates, informal settlements and golf courses have replaced extensive areas of natural habitat. Investigation of this threat remains an urgent priority, but fortunately the concern expressed by Benson et al. (1990) that the remaining Cape Vultures would disappear from the Magaliesberg as development continued, has not been realized. This may be attributed to several important factors including extensive ongoing public awareness campaigns about the importance and plight of vultures by key individuals and organizations, ongoing efforts to mitigate powerline threats, restriction of disturbance at colonies by military air-traffic, support of conservation-minded private landowners on whose properties the colonies are located, the establishment of artificial feeding sites, some legislative protection afforded by the Magaliesberg Protected Natural Environment (which includes all three colonies) and the Cradle of Humankind World Heritage Site

(which includes a large area of suitable foraging habitat as well as two regularly-provisioned artificial feeding sites), and an extensive network of informed and concerned individuals who assist in the recovery and rehabilitation of injured and poisoned vultures from areas surrounding the breeding cliffs.

The existence of three breeding colonies in relatively close proximity along the Magaliesberg escarpment may have played an important role in the resilience of the Cape Vulture population in this region, since breeding pairs that are displaced by human interference at one colony may find suitable alternative breeding sites at one of the other two colonies. There is also good potential for re-colonization of an abandoned colony through immigration of individuals from neighbouring colonies as is thought to have happened at Nooitgedacht (Verdoorn 2004).

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