

The Farming Community and the Conservation of the Cape Griffon Vulture *Gyps coprotheres* in the Western Cape, South Africa

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ABSTRACT

The Cape Griffon Vulture endemic to southern Africa, is listed as Vulnerable. The world population is estimated at 12,000 birds, including 4,400 breeding pairs. Some 90 individuals (including 30 pairs) are found in the Western Cape Province in an isolated colony near Bredasdorp. In the past, this sub-population declined from over 100 to about 45 individuals. In 1984 a three-pronged conservation strategy was implemented and comprised a colony protection plan, the introduction of a supplementary feeding scheme and a public awareness programme. A working group was established and a conservation programme drawn up. The success of the strategy is evaluated against long-term monitoring data for the sub-population. Up to the end of 1990 the population still showed a slow decline of 1.6% per year. From 1991, however, total counts rose from 59 to 94 individuals in 1998, indicating that the population had stabilised. There was a noticeable increase in both the breeding success and the fledging rate between 1981 and 1990, after which both remained constant. The survival of first-year birds increased from 42% to 69%, and this is statistically significant. These positive trends are attributed mainly to the fact that the farming community has become increasingly involved in promoting the survival of the Potberg colony.

INTRODUCTION

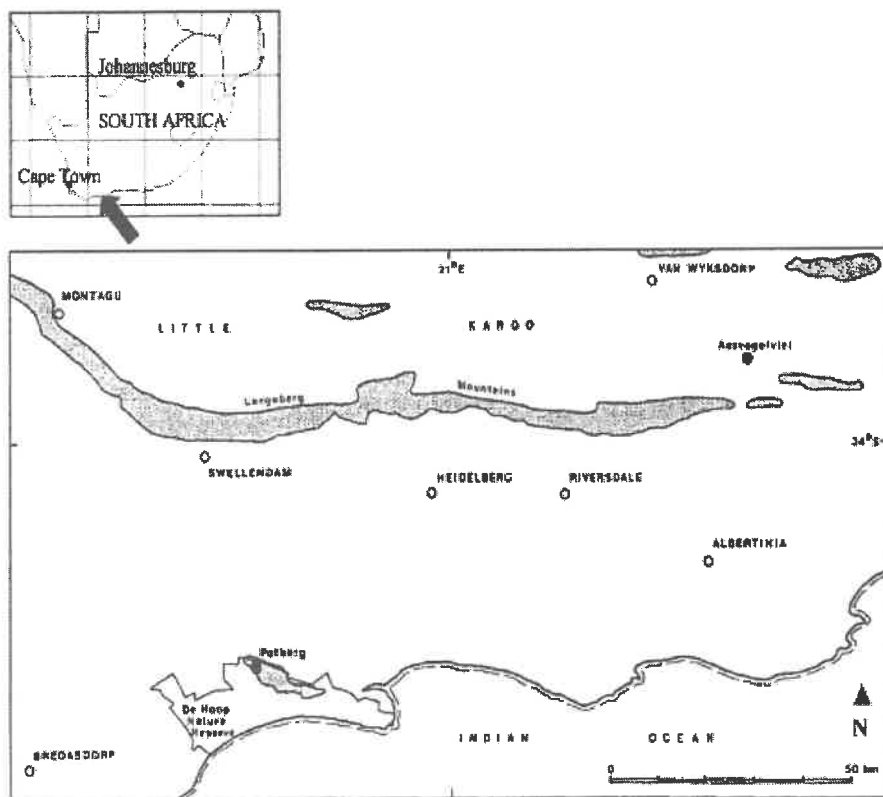
The Cape Griffon Vulture *Gyps coprotheres* is endemic to southern Africa. The world population is estimated at 12,000 individuals, including 4,400 breeding pairs (Mundy, Butchart, Ledger & Piper 1992; Piper 1994; Mundy, Benson & Allan 1997). The species is listed as "Vulnerable" in the South African Red Data Book: Birds (Brooke 1984).

A small isolated sub-population of some 90 birds (including 25 breeding pairs) occurs in a colony on Potberg Mountain in the Overberg region in the Western Cape Province of South Africa, near the southern tip of Africa (Fig. 1). The colony lies within the De Hoop Nature Reserve and has active links with several smaller satellite colonies about 120 km to the north-east, in the Little Karoo area. Due to both its own decline and that of the Cape Vulture population as a whole, the sub-

population has attracted the attention of researchers in the past including Jarvis, Siegfried & Currie (1974), Boshoff & Vernon (1980), and Boshoff & Currie (1981).

This paper describes an integrated conservation plan that was initiated in 1984. The aims of the plan are to protect the Potberg colony and its satellites, both as a contribution to the conservation of the species, and also because of its value for educational and, more recently, ecotourism purposes (Boshoff & Robertson 1985). The strategy has a strong communication component as a means of promoting the participation of the farming community in the conservation programme. This public awareness programme is the focus of this paper. The success of the plan is measured against long-term monitoring data for the sub-population.

Figure 1. Map showing the location of the Potberg and Little Karoo colonies in the Western Cape Province, South Africa (after Boshoff & Robertson 1985; Scott 1997).



THE DECLINE OF THE POTBERG COLONY

A large-scale decline in numbers has been experienced throughout the entire distribution range of many vulture species, including the Cape Vulture (Boshoff & Vernon 1980; Mundy 1982; Brooke 1984; Collar & Stuart 1985; Mundy *et al.* 1992; Piper 1994). At Potberg, Cape Vulture numbers declined from around the turn of the century to the 1980s. Documented counts date from about 100 birds in the early 1970s to about 45 in 1983. Breeding pairs decreased from 37 in 1975 to 14 in 1980, then stabilized at around 25 pairs from 1981. The generally accepted reasons for this decline are outlined below.

For hundreds of years in the past, the Potberg vultures fed on the remains of large to medium-sized indigenous ungulates such as Eland *Taurotragus oryx* and Bontebok *Damaliscus dorcas dorcas* (Boshoff & Vernon 1980). These animals were most likely killed by large carnivores such as Leopards *Panthera pardus* and Lions *P. leo* and the carcasses opened up by scavengers such as Brown Hyenas *Hyaena brunnea*. These wild animals were later hunted on a small scale by indigenous Khoisan people, who also kept livestock (Robertson & February 1986). Hunting escalated with the arrival of European settlers from the 17th century onwards and the once extensive game herds were virtually exterminated.

The disappearance of indigenous ungulates and carnivores was accompanied by a large-scale human modification of the environment. Wheat farming was introduced in the Overberg region in the 1800s, and sheep farming towards the end of the 18th century; grazing pastures for cattle were planted from the 1930s. As a result of these environmental changes, the vultures were obliged to switch over to an almost exclusive diet of domestic stock around the end of the 19th century (Robertson 1983; Robertson & Boshoff 1986). Although large antelope species and Cape Mountain Zebra *Equus zebra zebra* have now been re-introduced to the De Hoop Nature Reserve, the ecosystem is still far from fully functional in terms of the original predator-prey systems.

The Overberg region is some 10,000 km² in size (Robertson 1983) and the present-day agricultural activities are still centred on grain and sheep farming, with some cattle. The Potberg vultures forage predominantly over farmland near the towns of Bredasdorp and Swellendam; this area supports a total of some 300 farmers who farm a combination of stock and grain (K. Robertson & J. Pieterse pers. comm., agricultural extension officers). Stock figures for the area in 1983 comprised some 600,000 sheep and 35,000 cattle. More recently, the trend has been towards increased numbers of cattle and fewer sheep. The vultures feed almost exclusively on dead sheep and lambs, the latter especially during lambing seasons (Robertson 1983). Initially, lambing took place from February to April and during September; more recently, a third season has been introduced, namely from June to July (N. Neethling pers. comm., local farmer).

Domestic stock carcasses ostensibly provide a readily available source of food for the birds (Jarvis *et al.* 1974; Robertson & Boshoff 1986). Seasonal and unpredictable food shortages may be experienced, however, especially at critical times for the vultures, such as the post-fledging period (December to February). Juvenile vultures, especially, are at a disadvantage at small lamb carcasses, due to the dominance of older birds (Robertson 1983; Robertson & Boshoff 1986).

Blowflies *Chrysomya* spp. present a severe and very real problem to sheep farmers in the region, especially during wet, warm periods. The flies lay their eggs in folds of skin on the neck or rear end of the sheep and once the larvae hatch, they feed directly on the flesh of the sheep. The flies are treated by means of agrochemical preparations that are usually applied externally in the form of dips or ointments and are potentially toxic to vultures. Sheep and lamb carcasses are often buried or burnt immediately, to avoid the spread of these parasites, and are thus not made available to the vultures. Carcasses may also be treated externally with agrochemicals and left lying in the fields. Carcasses of stock animals that have been euthanased, for instance by means of barbiturates, present a further threat if not immediately removed. The dangers of pesticide residues to griffon vultures have already been noted (Mundy, Grant, Tannock & Wessels 1982; Boshoff & De Kock 1988). The indiscriminate use of these chemicals therefore presents a severe potential threat to vultures and other scavenging animals.

In the past, farmers in the region were mostly indifferent or openly antagonistic towards wildlife, including vultures. Direct persecution, through the placing of poisons, trapping and shooting was probably not uncommon in the past within the range of the Potberg vultures. These negative attitudes were often transferred to the farmers' families and to their staff. Human disturbance at the Potberg breeding colonies was a further negative factor, aggravated by disturbance by aircraft including helicopters. This threat was reduced with the incorporation of the colony into the De Hoop Nature Reserve in 1978.

A number of factors thus combined to cause a progressive decline in the size of the Potberg and Little Karoo vulture sub-population through the greater part of the 20th century.

CONSERVATION PLAN

A research programme on the decline of the Potberg Cape Vulture colony was initiated by the provincial conservation agency (Cape Nature Conservation) in the 1970s (Jarvis *et al.* 1974; Robertson 1983). The aims were to investigate the possible causes of the decline and to compile a conservation action plan to stabilize the colony and promote positive growth.

A detailed investigation into the feeding ecology of the sub-population (Robertson 1983) indicated, *inter alia*, that the vultures forage almost exclusively over farmland north and north-west of Potberg, mainly within a radius of 10-20 km from the colony, and that they feed predominantly on sheep and lamb carcasses (Robertson 1983; Boshoff, Robertson & Norton 1984). This made it possible to establish a target area for the implementation of conservation action, namely some ten farms in the immediate foraging area, and also the wider distribution area of birds from the colony.

A conservation plan was initiated in 1984, with the specific objectives of improving the survival rate of first-year birds; increasing breeding success; removing or lessening the threat of poisoned carcasses in the foraging area, and reducing pesticide levels in the eggs (Boshoff & Robertson 1985). The plan had three major components, namely colony protection, a supplementary feeding programme, and a public awareness campaign. These elements interact synergistically and are described below.

Access to the colony was restricted to one visit per month by nature reserve personnel, for monitoring purposes. Aerial protection also became possible in co-operation with the South African Air Force Test Flight and Development Centre, which was established 30 km to the south-west of the colony in the early 1980s.

The supplementary feeding scheme for the vultures was introduced in 1984. This involves the placing of a variety of carcasses, which are first slit open to facilitate entry by the birds, at predetermined sites in the vicinity of the colony (Scott & Boshoff 1990, 1994). The vulture "restaurants" aroused much interest among the local community and, in 1993, a small workshop was organized with the farmers (Scott & Boshoff 1994). As a result of the ensuing discussions the farmers largely took over the function of providing more carcasses for the vultures on their farms. Angora goat carcasses are now supplied at the "restaurant" only during bottle-neck times, for instance from December to February, when food for newly fledged birds is scarce.

An intensive public awareness campaign was launched. Pamphlets, booklets and posters were used to make appropriate information available. Communication in the home language of the target group (Afrikaans) was a vital factor. The Vulture Study Group, a working group of the Endangered Wildlife Trust, produced useful publications such as the booklet "Vultures and Farmers" (Butchart 1985), which were also widely distributed as extension tools. A positive working relationship was built with both local and national media. Extensive coverage in newspapers and magazines, on the radio and on television provided information and highlighted positive contributions by farmers and workers, who were both represented in media interviews. Displays were manned at agricultural shows and farmers' days. The vulture extension programme was facilitated by a considerable overlap with a concurrent conservation programme to conserve the Blue Crane *Anthropoides paradiseus* in the Overberg region (Scott 1993). The vulture awareness effort was also extended to the area of the satellite colonies in the Little Karoo, with the help of the Vulture Study Group. The Potberg Centre in the De Hoop Nature Reserve presents regular environmental education programmes involving mainly scholars and students, as well as farm workers. The conservation of the Cape Vulture is an integral part of these programmes. Some 3,000-4,000 people have attended these programmes per year, since 1984.

A vulture liaison group has existed in the Overberg region for some time. In 1995 it was formalized as the Overberg Vulture Group, and became affiliated to the Vulture Study Group. The group holds informal but informative gatherings twice a year, usually accompanied by an excursion to view the Potberg vultures. Members compiled a booklet containing practical guidelines for involvement in the conservation of the Potberg vultures, based on the conservation plan (Scott 1997a). Highlights of the group effort are a strong component for rehabilitating injured or poisoned vultures. This involves a dedicated local veterinary surgeon and his staff, and local farmers (including poultry farmers, who donate food for recuperating vultures). Recently there has also been an active interest

in the ecotourism potential of the vultures, promoted by some of the farmers' wives who have established accommodation facilities on their farms. The vultures are now seen as a unique tourism draw-card for the region.

The increased involvement of the farming community is ascribed directly to personal liaison between conservationists and the farmers and their workers. This constructive contact is supported by increasingly outgoing policies of conservation bodies, with an emphasis on involving communities beyond the boundaries of nature reserves in conservation activities, and working towards joint solutions to problems (Boshoff 1987; Scott & Boshoff 1994; Scott 1997). Greater involvement by private landowners has increased the contribution of both farmers and their workers to aspects such as the feeding programme, monitoring and the rehabilitation of malnourished or poisoned vultures. One of the highlights has been the success story of a juvenile bird from Potberg which was rehabilitated in 1991 after indirect poisoning and subsequently flew 900 km to the Northern Cape (Scott 1991). After a second rehabilitation there, it flew back to the Potberg area, where it was yet again rehabilitated; it has subsequently been seen to occupy a breeding site at the colony. This event obtained much positive publicity for the area and especially for the involvement of the farming community in conserving its vultures.

The younger generation of farmers is showing a more enlightened attitude towards conservation. Many of them now realize that the vultures are in fact an asset to the farmer, both in terms of cleaning carcasses before diseases can spread, and for indicating stock losses. The vultures are also regarded as an invaluable ecotourism resource for the region. This change in attitude has additional positive spin-offs for the wider issues of wildlife conservation, for instance with regard to more responsible control methods for stock predators such as Caracal *Felis caracal*. The stage has now been reached where a farmer and his wife - and their workers - will readily appear on television to speak with pride about their involvement in the conservation of *their* vultures, and to expand on the usefulness of the vultures to the farming community. This is surely a conservation milestone.

EVALUATION OF THE CONSERVATION PLAN

The success of the conservation plan may be evaluated through an analysis of the long-term monitoring data for the colony (Boshoff 1981, 1987; Boshoff & Currie 1981; Boshoff & Vernon 1981; Boshoff & Robertson 1983; Boshoff & Scott 1990; Robertson 1983, 1984; Scott 1997b). These data are supplemented by a recent study on the mathematical demography of the Cape Vulture (Piper 1994; Scott 1997b), which includes the construction of a population model (updated in 1997), based on 171 ringed vultures in the Western Cape population. A total of 409 usable records comprised resightings or recoveries of 79 of these birds.

Maximum annual counts (April - December) of free-flying Cape Vultures at Potberg and the Little Karoo (Fig. 2) show that numbers at Potberg have more than doubled since the inception of the conservation plan in 1984, i.e. from 45 birds to 94 in 1998. Also apparent is the waxing and waning of the satellite colonies in the Little Karoo, up to 1990. As mentioned above, the birds from Potberg and the Little Karoo constitute a single sub-population, which is currently relatively stable. Up to 1990, the Potberg colony had an intrinsic natural rate of increase of -1.6% per year (Piper 1994); by 1995 this rate had changed to +0.1% per year (S.E. Piper pers. comm.).

Breeding success is rather low, estimated at 64.4% in 1990 (Piper 1994). The number of active pairs at breeding sites is seemingly stable from 1981 (Fig. 3), although it does not match the increase in numbers of birds. The number of eggs produced is also relatively stable. The percentages of both nestlings and fledglings produced increased somewhat from 1984 to 1986 (Fig. 3), after the inception of the conservation plan, then also stabilized. The steady increase in population size corresponds with a statistically significant increase in the survival of first-year birds, from 42.3% prior to the start of the supplementary feeding programme, to 68.9% subsequent to its implementation (chi-squared = 8.1, d.f. = 1, $p < 0.01$) (Piper 1994).

Since the inception of the conservation plan there has been a general decline in the frequency of recorded cases of weak, undernourished birds (mostly immature birds, at the beginning of the year) which were brought in from the farms for rehabilitation, and of birds apparently suffering from

Figure 2. Maximum annual counts of free-flying Cape Vultures in the Potberg and Little Karoo colonies, Western Cape (April - December): 1972-1998.

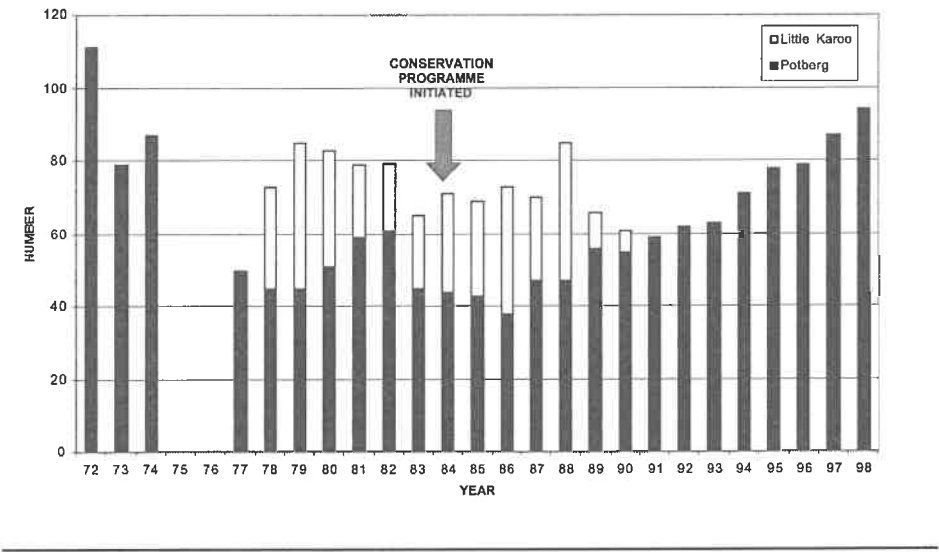
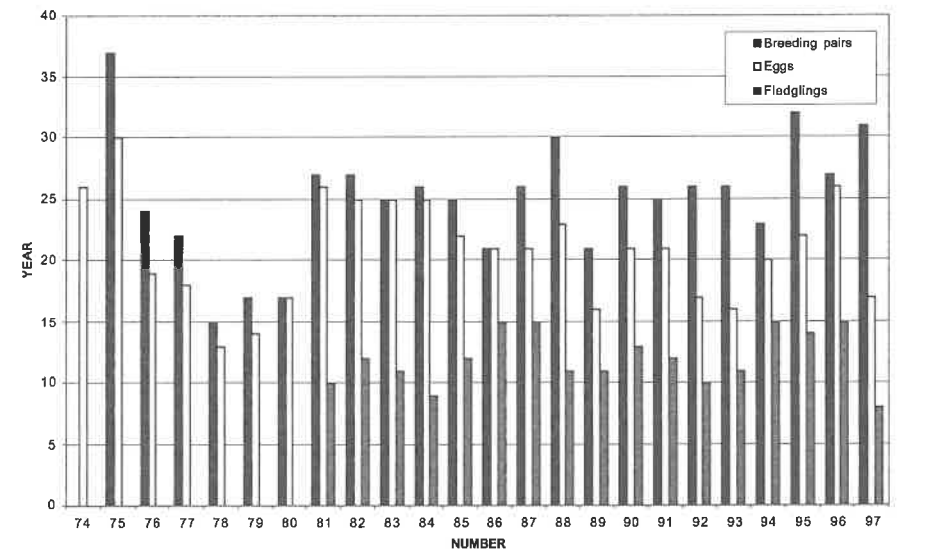


Figure 3. Breeding success of Cape Vultures in the Western Cape: Potberg and Little Karoo colonies combined, 1974-1997.



(indirect) poisoning (Scott 1994). The number of such cases decreased from a total of seven for the 1985-1987 period, for instance, to only three for the 1988-1990 period. The frequency of these cases is an important and immediate indicator of potential problems in the field.

Clearly the fortunes of the sub-population have improved since the mid-1980s and this coincides with the implementation of the conservation plan. While it cannot be categorically stated that this plan was entirely responsible for the halt of the decline in the sub-population, and the ensuing increase in numbers of birds and fledglings, it is apparent that these developments corresponded with the implementation of these far-reaching, practical management actions.

CONCLUSIONS AND THE WAY FORWARD

The increased conservation awareness among the farming community is considered to have played a pivotal role in the conservation of the Potberg/Little Karoo or Western Cape sub-population of the Cape Vulture. It is therefore vital that Cape Nature Conservation continues to implement the conservation plan fully.

The maintenance and co-ordination of the valuable long-term monitoring database is essential, to determine the effectiveness of the conservation plan and to enable adjustments to be made, as necessary. The present level of minimal disturbance at the colony should be maintained, particularly during the breeding season (May to January). Any further ecotourism developments should be handled conservatively and sensitively. Apart from its direct value to the vultures, the feeding programme is an important awareness tool for involving the farming community. Supplementary feeding is essential during bottle-neck periods.

The increasing involvement of the farming community is considered to be the single most important factor contributing to the positive trends in vulture numbers. This is directly attributed to the extension programme and in particular to liaison on a personal level and to the positive attitudes and building up of a relationship of trust between the nature reserve staff and the farming community. There is still a need for increased education programmes for farm workers, however, as these are the people who handle the agrochemicals on the ground.

The Potberg/Little Karoo sub-population is still considered to be highly vulnerable, and it is imperative that the goodwill of the farming community be maintained for its continued survival. With Cape Vulture populations continuing to be at risk, the conservation of the Western Cape sub-population presents a major challenge to today's wildlife managers and could serve as a model for conservation programmes elsewhere. An important spin-off is a more enlightened approach by landowners towards other threatened species, and to environmental conservation in general.

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