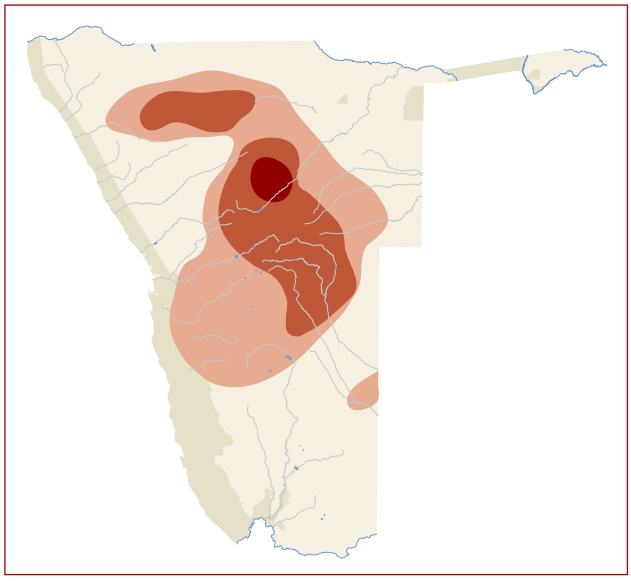
CAPE VULTURE | *Gyps coprotheres*

RE Simmons; CJ Brown | *Reviewed by: P Bridgeford; M Diekmann; H Kolberg*

Conservation Status:	Critically Endangered
Southern African Range:	North-central Namibia, south-east Botswana, South Africa, Lesotho, Swaziland, Zimbabwe
Area of Occupancy:	61,000 km^2
Population Estimate:	Probably fewer than 20 birds, doubtful if still breeding in Namibia
Population Trend:	Long-term decline
Habitat:	Mountains, inselbergs, forages over open grassland within savannah woodland
Threats:	Poisons, bush encroachment, traditional use, electrocution by power lines, drowning

DISTRIBUTION AND ABUNDANCE

This species is endemic to southern Africa, occurring relatively commonly in the Limpopo and Eastern Cape provinces of South Africa, and Lesotho. It is also concentrated in low mountains in south-east Botswana, where it breeds in large colonies. Elsewhere it is rare, occurring in small satellite breeding colonies in southern South Africa and in non-breeding colonies in Zimbabwe and Namibia (Brown 1985a, Mundy *et al.* 1992, 1997, Boshoff *et al.* 1997, Simmons & Bridgeford 1997, Anderson 2000c, Borello & Borello 2002).



In Namibia, it is thinly distributed throughout the central regions and occurs primarily in the Waterberg Plateau Park, where it once bred, and surrounding area. Satellite-tagged birds moving 420 km in a day indicate that the Waterberg birds can forage over Etosha, although they rarely did so in the 18 months that six birds (five adults and one immature) were followed (Bamford *et al*. 2007). Historically, birds occurred in the central Namib Desert where five colonies were known (Brown 1985a). In the 1960s, Cape Vultures were relatively common and occurred in a ratio of 1:2 to 1:4 with Lappet-faced Vultures *Torgos tracheliotos* (Sauer 1973); at Hotsas this represented about 25 birds in 1969. In about 1941 at least 12 birds were seen circling over the then breeding colony at Rotstock and up to 20 birds gathered at carcasses there (H Martin *in litt*.). By 1985, poisoning and other factors had reduced the ratio of Cape to Lappet-faced Vultures to less than 1:100 and none of the Namib colonies were active (Brown 1985a). Reporting rates during the SABAP1 atlas period were less than 20% for Namibia (Mundy *et al.* 1997).

Numbers have plummeted dramatically in the bird's stronghold on the 420 m sandstone cliffs on the north-west side of the Waterberg Plateau. In the 1940s, local farmers estimated that about 500 birds occurred and bred on these cliffs (Brown 1985a). By 1970 about 300 remained, followed by a precipitous crash that resulted in a population of about ten birds by the early 1980s. The decline was halted briefly by the establishment of a supplementary feeding scheme in August 1984 (Brown & Jones 1989) that provided one to four carcasses per month to draw birds away from poisoned carcasses that were rife in the area. The population rose to 13 adult birds and breeding increased from zero in 1983 to three chicks from four active nests in 1984. By July 1991, up to 25 adult Cape Vultures were present at the feeding sites and five immature birds were recorded; five immature individuals were subsequently observed in 1992, 1993, and 1994 (Berry 1997). Thereafter breeding stopped and by 1997 only three adults and one immature remained (Berry 1997). In 2001, a helicopter survey of the cliffs suggested that no breeding occurred there, but that roosting took place (Simmons 2002); this was confirmed by one of the six birds that were satellite-tracked (Bamford *et al*. 2007).

Between 2004 and 2008, when a vulture restaurant north of the Waterberg Plateau Park run by the Rare and Endangered Species Trust (REST) was operating at its peak, one new first-year Cape Vulture was recorded every year (M Diekmann unpubl. data). With REST moving its operation and vulture feeding to south of Otjiwarongo, eight adults, four immatures and four juvenile birds (suspected to be hybrids between a Cape Vulture and a White-backed Vulture *Gyps africanus*) were estimated for the period from about 2011 to 2013. During 2014, the population declined to about three to five birds (M Diekmann unpubl. data). It is now doubtful that there is any breeding at or around the Waterberg colony. The work of REST, including satellite tracking, has raised the possibility of some inter-breeding with White-backed Vultures (Mendelsohn *et al.* 2005, Bamford *et al*. 2007, M Diekmann unpubl. data).

In other regions of Namibia, small numbers of Cape Vultures have recently been reported after many years of absence. One or two birds have been recorded in the Ganab and Tsondabvlei areas of the central Namib since late 2011 among White-backed and Lappet-faced Vultures, and the same has been reported from near the Fish River Canyon, Aus and from Windhoek (Thomson 2013, 2014, C Bohn pers. comm., A Botha *in litt*.).

The closest breeding colony to the Waterberg birds is in Botswana, about 1,000 km to the south-east (Borello & Borello 2002), indicating that the Namibian population, like the non-breeding Zimbabwe colony (Mundy *et al.* 1992), is now a tiny outlier in a population centred in the south-eastern subcontinent. Despite the isolation, young birds move hundreds of kilometres. The furthest movement on record is of a bird ringed and wing tagged at Blouberg, South Africa, and seen at Hotsas in the central Namib, 1,460 km to the west (H Kolberg reported in Thomson 2013). Of some 8,000 birds ringed in South Africa, 11 birds have been resighted or recovered in Namibia, three in the past two years, indicating that genetic interchange can still occur over large distances. The global population was estimated in 1994 at 4,400 pairs or about 12,000 birds (Piper 1994) with 84 breeding colonies. That number appears to have declined to about 3,000 pairs by 2011 (Wolter 2011).

ECOLOGY

The Cape Vulture prefers open montane habitat, where strong winds promote soaring and suitable cliffs provide breeding and roosting sites (Brown & Piper 1988). Small to

very large breeding colonies have been recorded on steep, fractured cliff faces in Botswana, South Africa and Namibia (Brown & Cooper 1987, Brown & Jones 1989, Mundy *et al.* 1992, Borello & Borello 2002). Tree-nesting appears to be rare and associated with hybridisation (Mendelsohn *et al.* 2005, Bamford *et al*. 2007, M Diekmann unpubl. data).

In Namibia, it breeds at the same time as other large vultures, with 93% of clutches laid equally between May and June (n=69). A few records extend into July and August, possibly birds relaying after early failures (Simmons & Bridgeford 1997, Brown *et al*. 2015). This is similar to the breeding season in Botswana, but in both countries, birds breed somewhat later than at most colonies in South Africa, where birds lay mainly in May (Mundy *et al.* 1997, Borello & Borello 2002, Tarboton 2011). Only one egg is laid and chicks hatch about 57 days after laying. The single-egg clutch size and the delayed maturation of young guarantee a slow rate of population recovery. The Cape Vulture's highly social nature makes it possible that a small satellite colony may stop breeding and move elsewhere, possibly as a unit of known individuals, if numbers drop below a critical threshold (Vernon 1997). This appears to have happened at the Waterberg and Zimbabwe colonies (Mundy & Simmons 1999). Alternatively, birds that stay may begin to hybridise with White-backed Vultures, as suspected in two cases at the Waterberg colony (Bamford *et al*. 2007).

The Cape Vulture forages over large distances (Mundy *et al*. 1997) over open grassland and open savannah woodland, generally from heights of 250 m to 350 m, but occasionally up to 1,000 m (Mendelsohn *et al.* 2005). It avoids closed (bush-encroached) woodland, because of its high wing loading and apparent difficulty to take off from within dense tree cover once satiated (Brown 1985a, Schultz 2007, Bamford *et al*. 2009). Experimental provisioning indicated that bush encroachment levels above 2,600 trees per hectare are avoided by foraging birds (Schultz 2007). In Namibia, five adult satellite-tagged birds spent most of their time foraging over freehold farmland and little time over communal lands or the protected areas of the Waterberg Plateau or Etosha, presumably because of the better carrion availability on farmland (Mendelsohn *et al.* 2005, Bamford *et al*. 2007). In South Africa, it is also found more often in farmland, probably because high stock losses provide easy foraging opportunities, and also because vulture restaurants are providing carcasses regularly as part of conservation measures (Anderson 2000c).

The Cape Vulture searches for large carcasses of domestic stock and wildlife by soaring over suitable terrain and watching both the ground and the activities of other birds, e.g. crows as well as other vultures descending onto carcasses (Mundy *et al.* 1992). The home range of five satellite-tagged Namibian birds varied from 11,800 km^2 to 24,500 km^2, an area comparable to that of the entire Etosha National Park (Mendelsohn *et al*. 2005, Bamford *et al*. 2007). In Namibia, the diet continues to comprise wildlife as well as domestic stock (Schultz 2007), with many livestock farms in Namibia converting to wildlife and tourism. Wild ungulate carcasses have become less available in South Africa as farmland and crops replace natural habitat (Anderson 2000c). Food for Cape Vultures in Namibia is unlikely to become limited, given the high number of cattle farms, the increasing number of game farms (Mundy & Simmons 1999) and the growing number of vulture 'restaurants' or feeding sites.

THREATS

The main threat to the Cape Vulture's continued existence in Namibia is a combination of poisoning and the severe bush encroachment that has occurred in the last century around the bird's last breeding site at the Waterberg Plateau (Brown 1985a, Simmons & Bridgeford 1997, Schultz 2007). Poisonings of vultures have been recorded throughout Namibia, including immediately around the Waterberg breeding area (T Cooper in Bridgeford 2001). Altogether 87% of 226 vultures of three species that are known to have died from unnatural causes in the six-year period between 1995 and 2001 were poisoned (Bridgeford 2001, 2002). A few farmers are typically responsible for most of these deaths (Brown 1991, Simmons 1995a), although some are probably deliberately killed for the traditional medicine trade (below). Most known poisoning results from collateral damage from predator control, with farmers targeting species such as jackals, hyenas and leopards. Little direct evidence exists to suggest that Cape Vultures have been victims of deliberate killing, except that the Waterberg birds suddenly stopped breeding after 1994 when the population dropped from about 25 birds to three adults and one immature (Berry 1997). Despite now being banned, some diclofenac, used to treat arthritis in cattle, is used in southern Africa. The extent of the risk of poisoning by diclofenac and its generics, which cause kidney failure in vultures that consume carcasses of treated cattle (Oaks *et al*. 2004), is unknown, but requires constant monitoring. Considerable work has been done and is ongoing by the Namibia Animal Rehabilitation Research & Education Centre (NARREC) to raise awareness on this issue with the Veterinary Council of Namibia, the Ministry of Agriculture, Water and Forestry and companies supplying drugs for livestock (L Komen pers. comm.).

The targeted poisoning of vultures by commercial poachers in north-eastern Namibia and adjacent countries to avoid detection is unlikely to have a significant impact on adult Cape Vultures, because their home ranges remain largely confined to an area around their breeding sites, as shown from birds fitted with GPS satellite back-packs. However, young birds were found to wander over huge

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areas. One immature female from the Waterberg, tracked over 27 months, moved over 350 km into southern Angola (the first record of this species in Angola!), across the Caprivi Strip into south-east Zambia, eastern Zimbabwe, northern Botswana, across to eastern Botswana and into adjacent south-western Zimbabwe and northern South Africa. It moved down through central and south-east Namibia and into the Northern Cape Province of South Africa. Its northern and southern points were about 1,780 km apart, while east-to-west was about 1,520 km. It repeatedly returned to favoured foraging areas, one of which was northern Botswana and the Caprivi Strip, mainly around the Okavango panhandle and the Linyanti area (Mendelsohn & Diekmann 2009). This clearly illustrates how vulnerable young Cape Vultures would be to mass poisoning far from their natal areas.

Bush encroachment has played a decisive role in the Cape Vulture's demise in the Waterberg area. Experiments with carcasses placed in areas of varying tree densities indicated that food was never found (or descended to) in thickets at a density above 2,600 trees/ha. Moreover, those carcasses in thickets near this threshold took longer to find, indicating a cost even when the birds are successful (Schultz 2007). Tree densities between 3,000 and 10,000 trees/ha on farmland extending hundreds of kilometres around the Waterberg have, therefore, made this area unsuitable foraging habitat for Cape Vultures, despite high densities of wildlife and domestic stock. Bush encroachment has now reached levels where Cape Vultures access 25% of their food from less than 2% of their foraging area, associated with fence lines and adjacent vehicle tracks (Schultz 2007) and take longer to find carcasses even in low density thickets (Schultz 2007).

Trade in vulture parts for traditional medicine is known from South Africa and Lesotho (Cunningham 1990, Beilis 1999) but was only recently confirmed in Namibia and could explain the continued vulture poisoning around the Waterberg Plateau, close to the town of Okakarara (Simmons & Bridgeford 1997, Bridgeford 2001, 2002). Of 17 traditional healers from Windhoek and Okakarara who were interviewed (Hengari *et al.* 2004), eight used vulture brain in their trade, seven used feathers and one used the liver. Of the same group of healers, five acquired parts from dead vultures, another five obtained parts from killing vultures, while one got parts from pharmacies or acquaintances. Only one healer claimed he used Cape Vultures (although this is doubted, M Diekmann pers. comm.), and all indicated a preference for vulture nestlings (Hengari 2002, Hengari *et al.* 2004). Given that 1,500 traditional healers have applied to register with Namibia's Ministry of Health and Social Services (Hengari *et al.* 2004), the threat could be much greater than previously recognised.

The most common mortality factor for Cape Vultures ringed and recovered in South Africa was electrocution by power lines (Oatley *et al.* 1998). There have been no reports of electrocution or power-line collision from Namibia to date. A collaborative partnership between NamPower and the Namibia Nature Foundation was established in 2008 to provide a multidisciplinary mechanism to assist NamPower to manage its impacts on the natural environment and vice versa. As part of this programme, all incidents of electrocution and power line collision are documented, mapped and response mechanisms implemented.

Other threats include drowning in farm reservoirs which in South Africa claim more Cape Vultures than any

other species of raptor (120 birds in 21 known incidents: Anderson *et al.* 2002). This may be related to their highly developed social behaviour for foraging and breeding. Two Cape Vultures were removed (alive) from the canal of the Eastern National Water Carrier near the Waterberg, when it was first constructed, but none were subsequently found in several years of weekly to monthly monitoring (Anon 1992).

CONSERVATION STATUS

Cape Vultures are classified as *Critically Endangered* in Namibia because of a 98% decline from about 500 birds in 1940s to 12 birds in 2000 and down to perhaps three to five birds by the end of 2014. Known breeding colonies have also declined from five in the Namib Desert to the one colony associated with the Waterberg Plateau Park, where it is probably no longer breeding. It is classified as globally *Vulnerable* due to its continuing rapid decline (IUCN 2012a). It was listed as *Vulnerable* in South Africa by Barnes (2000a), where its populations are larger and healthier than in other parts of its range. However, there too, the number of roosting and breeding sites has decreased during the last century from 441 to 167 sites, with a suspected 20% decline in numbers in the last three generations (Anderson 2000c). In the most recent update, it has been upgraded to *Endangered* (Taylor *et al*. in press). Like all other old world vultures, it is listed in Appendix II of the Convention for the Conservation of Migratory Species of Wild Animals (CMS) and should be given *Specially Protected* status under any revised or future relevant Namibian Parks and Wildlife legislation.

ACTIONS

In 2010 a number of Namibian and South African organisations met to develop a 'Consolidated Cape Vulture Action Plan for Namibia' (Anon 2010). This plan has four main objectives to address the priority threats, as follows:

- Create a safer environment for vultures in Namibia, the key threats being poison use, power transmission infrastructure, the *muti* trade, farm reservoirs (water tanks), lead bullets and a lack of appreciation of the environmental and socio-economic role and value of vultures.
- Rebuild the Cape Vulture population in Namibia, the key risk being that the Cape Vulture population is at a critically low level and, without conservation intervention, would be unable to recover.
- Monitor the Cape Vulture population in Namibia as part of a national avian scavenger population monitoring programme, because Cape Vultures and other avian scavengers continue to decline.
- Provide an effective information, outreach and education service and information-sharing platform for vulture conservation to facilitate collaborative conservation support in Namibia and the region. This is to tackle the problem that there is inadequate regional information and collaboration to support regional conservation efforts for Cape Vultures and other avian scavengers. Farmers and associated role players are not adequately informed about the situation, and Cape Vultures and other avian scavengers continue to decline.

The Plan has 31 specific actions, which include:

- Legislate against all use of poisons and pesticides for predator control through new Namibian Parks and Wildlife legislation.
- Investigate poison and pesticide outlets and ensure that they (a) know and adhere to the laws, (b) are aware of the potential ecological, human health and legal impacts of malpractice, (c) inform all their staff appropriately, and (d) report any suspected misuse of chemicals.
- Carefully promote the establishment of vulture feeding sites (vulture restaurants), particularly by tourism establishments, in appropriate places, with the correct management, providing appropriate, drug-free food, presenting good environmental information and interpretation, and collecting relevant information.
- Promote lead-free bullets via the Namibia Professional Hunters Association (NAPHA), gun shops and the regulating agency, the Ministry of Environment and Tourism.
- Support bush clearing initiatives, certified environmentally friendly charcoal production from invader bush species and work with the bush encroachment and rangelands committee under the Namibia Agricultural Union.
- Quantify the impact of collisions and electrocutions by Cape Vultures and other scavenging birds with power lines, and map high-risk sites.
- Carry out an investigation (research) into the extent of use of vulture parts in the *muti* trade, covering both medicinal uses by traditional healers and fortune-telling by sangomas.
- Carry out an economic assessment of the value of the ecological role that vultures play and the ecosystem services that they provide in keeping the veld clean, the costs that would result from an increase in mammalian scavengers (many of which are also effective predators), an increase in flies, and an associated increase in diseases (including fly-borne, anthrax, and so on).
- Establish an avian scavenger monitoring system, using existing mechanisms where available.
- Establish a regional web-based avian scavenger information system and platform.

Some of the above are being implemented, others not. The Action Plan requires a strong pro-active champion to drive the process forward, preferably within the Ministry of Environment and Tourism, with good support from all relevant non-state partners.