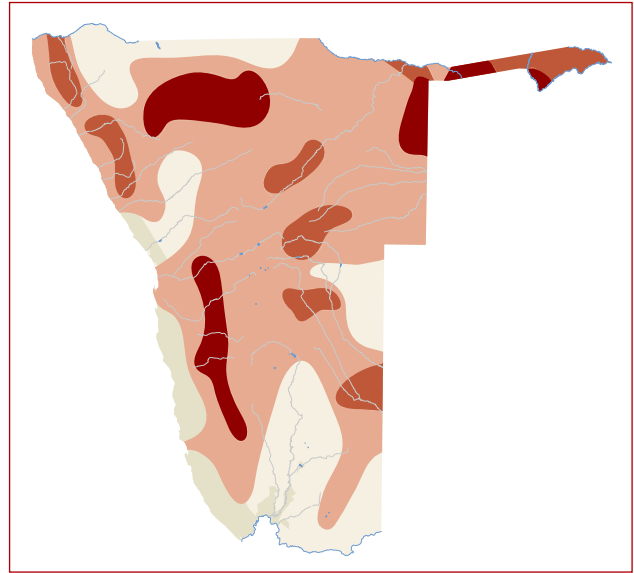


LAPPET-FACED VULTURE | *Torgos tracheliotos*

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Conservation Status:	Vulnerable
Southern African Range:	Namibia, Botswana, northern South Africa, western Zimbabwe
Area of Occupancy:	335,200 km ²
Population Estimate:	500 pairs
Population Trend:	Suspected 10% decline
Habitat:	Arid savannah through to desert watercourses
Threats:	Poisons, nest disturbance, drowning, traditional medicine trade, power line collision and electrocution

the country at low density. Its cores of distribution are centred on the gravel plains in the northern Namib-Naukluft Park, in Etosha National Park, in the ephemeral rivers and their tributaries west of the escarpment in the Kunene region, and scattered through arid and semi-arid farmland where rainfall is less than about 500 mm in central, eastern and southern Namibia (Mundy 1997c). Its breeding range extends as far south as 28.5°S, 30 km north of the Orange River (Cunningham & Strauss 2004), north to the Angola border and east to the Zambezi region (Mundy 1997c). It occupies an area of 335,200 km², of which 20% lies within protected areas including the Namib-Naukluft, Skeleton Coast and Etosha national parks (Jarvis *et al.* 2001).

Numbers of breeding pairs vary between years. An average of 56 pairs of Lappet-faced Vultures is known to breed in any one year in the Namib-Naukluft Park and may range from 22 to 100 pairs (Bridgeford & Bridgeford 2003, Bridgeford 2012, Kolberg & Bridgeford 2013, Kolberg 2014a). Allowing for a non-breeding component of 23% of adults, based on the non-breeding component of eight large eagle species (Vernon 1984), the maximum estimated population in the Namib-Naukluft Park is approximately 126 pairs out of a total of approximately 500 pairs in Namibia (Mundy *et al.* 1992). For Africa as a whole, the Lappet-faced Vulture population is estimated at 8,000 individuals (Mundy *et al.* 1992). Counting just the adult birds, Namibia holds about 12.5% of the global population.

The density of birds along the northern Tsondab River in the Namib-Naukluft Park is one of the highest on record.



DISTRIBUTION AND ABUNDANCE

Formerly a widespread species throughout most arid areas of Africa, the Lappet-faced Vulture occurs as far north as the Arabian Peninsula and Israel and as far south as 29°S in the Northern Cape, South Africa (Mendelssohn 1986, Mundy *et al.* 1992). It is relatively widespread throughout Botswana, the arid western parts of Zimbabwe, and in South Africa, where it is concentrated in the Kruger National Park. Historically it was found in areas where it is now entirely absent in the southern western Cape of South Africa, as far as the Cape Town area (Boshoff *et al.* 1983, Mundy *et al.* 1992). It is the only one of Namibia's six resident vulture species that occurs scattered throughout

Between 1991 and 1999, an average of 11.3 nests was recorded there annually within a 20 to 25 km stretch of riverine woodland, including a particularly large count of 21 nests in 1992. Between 2000 and 2012, this density halved to an average of 5.8 nests per year, with a maximum of 10 nests recorded there in 2009 and 2010 (Bridgeford 2012). However, simultaneous monitoring further north, on the gravel plains around Ganab, indicates a general increase in nesting birds, with between two and 16 chicks ringed there during the 1990s and between 23 and 64 chicks ringed between 2002 and 2012 (Bridgeford 2012).

Density estimates from other areas in the southern Namib and pro-Namib are as follows, Ganab: 75 km² per pair; Saagberg: 70 km² per pair; Sukses: 17.3 km² per pair; Tsauchab River area: 16.4 km² per pair; and Tsondab River area: 14.3 km² per pair (Bridgeford & Bridgeford 2003). Breeding and breeding density changes from year to year in the Namib in response to the abundance of food, which, in turn, is determined by rainfall, the movement of ungulates and mortality during drought periods. A recovery of Lappet-faced Vultures has been recorded in areas that have been converted from small-stock farming to wildlife and tourism. In the Fish River Canyon area, for example, no vultures were seen for the first nine years after about 130,000 ha were acquired for conservation and until the wildlife biomass had increased to about 3.5 kg/ha. Then, for three years, small numbers of mainly Lappet-faced Vultures were sighted periodically. In 2011 the wildlife biomass reached 4.5 kg/ha and one breeding pair of Lappet-faced Vultures became established. In 2014 the wildlife biomass was eight kg/ha and the number of Lappet-faced Vultures had increased to four breeding pairs (CJ Brown pers. obs.).



ECOLOGY

Lappet-faced Vultures prefer to build their nest on the top of trees, sometimes only two metres high, in ephemeral drainage lines (wadis) and seasonal rivers that flow across the gravel plains of the pro-Namib and Namib. They also nest on trees in the Namib sand sea, around salt pans and through the savannah and woodland vegetation zones of Namibia. There are large areas of the Namib without suitable nesting trees, and birds tend to occur at higher breeding densities adjacent to these areas where suitable nesting sites occur, e.g. in mature *Acacia erioloba* trees that line the western Tsondab River near Tsondabvlei. These trees are sustained by underground water, as some of these rivers do not flow annually. Nests are large structures used for many years, in which one egg is laid on 98.4% of occasions (n=871). Two eggs have been recorded on 14 occasions in the northern Namib-Naukluft Park (Brown *et al.* 2015). There are two records of two chicks being raised successfully in the same nest in the Namib-Naukluft Park (Bridgeford *et al.* 1995, Kolberg 2014b), though it is not known if both eggs were laid

by the same female. Egg-laying begins in April, peaks in May to July (96%) and ends in August (n=1,256); there is one laying record for each of March and September. Most eggs are laid in June (51%). The median laying date for Lappet-faced Vultures in the Etosha area of north-central Namibia over a 15-year period (1998 to 2012) was 31 May and somewhat later in the Namib at 8 June (16-year period, 1993 to 2008). This is about three weeks later than the median laying dates for White-backed Vultures *Gyps africanus*. Both vulture species lay about a week earlier in the north of Namibia than in the central and western areas (Brown *et al.* 2015). Eggs laid late in the season are probably replacement clutches (P Bridgeford unpubl. data). Eggs hatch after an incubation period of about 55 days (Tarboton 2011), i.e. from June.

Monitoring of breeding activities in the Tsondab region of the Namib-Naukluft National Park between 1993 and 2008, where rainfall is both low and highly variable (coefficient of variation of 100%, Mendelsohn *et al.* 2002) revealed a weak inverse correlation between the amount of rainfall preceding the breeding season and number of nests started, with more nests being initiated following dry years (P Bridgeford unpubl. data). A similar relationship was found between the amount of rainfall and breeding success (Bridgeford & Bridgeford 2003). When rainfall was low, greater mortality was presumed to occur in prey animals, providing increased food availability, allowing vultures to breed more successfully.

This is Africa's largest vulture, although not the heaviest, and it is often dominant at carcasses (Kruuk 1967, Sauer 1973, König 1983, Brown 1986b, Mundy *et al.* 1992). Despite its size and dominance, it appears to be fairly catholic in its selection of carrion, which includes large ungulates, Ostrich *Struthio camelus*, domestic stock and fairly small animals such as rabbits and hares. It is possible that they take live small prey (P Mundy pers. comm.), though this requires confirmation. Lappet-faced Vultures search from a relatively low altitude, unlike *Gyps* vultures, and would be able to locate small food items such as dead hares.



THREATS

Poisons are the main threats to Lappet-faced Vultures in southern Africa, including Namibia. In southern Namibia, where small-stock farming is common, 77% of farmers admitted to using poisons in the mid-1980s; Lappet-faced Vultures are rare in these areas with only 0.9 birds seen per 1,000 km of road surveys. In areas of the pro-Namib with similar rainfall, and where few small-stock farmers occur, 4.3 vultures per 1,000 km of road survey were recorded (Brown 1986b). Even birds in Namibia's national parks are not immune to poisons because adults forage outside the park boundaries, and young birds often disperse outside of the park. Birds fitted with back-pack radio transmitters in the Namib-Naukluft Park were tracked

up to 170 km from their nests during the incubation period, when one of a pair was at the nest (CJ Brown unpubl. data). The range of these birds is almost twice the size of the park, which, at 5 million ha, and one of the largest in Africa, is too small to contain the foraging range of a single pair of Lappet-faced Vultures.

The birds spend a large proportion of their time outside the park, on private land. The conservation of these and other scavenging species thus requires a co-management approach at a far larger landscape level. Of 873 birds ringed as chicks between 1991 and 2012 in the Namib-Naukluft Park (Bridgeford 2012), re-sightings of 41 colour-ringed or tagged Lappet-faced Vultures and 40 recoveries were recorded by December 2012. Of these, 17 had been poisoned or were suspected to have been poisoned (P Bridgeford unpubl. data). This number may be higher, because in some cases only the ring or tag was found and cause of death was thus unknown (P Bridgeford unpubl. data). Of 143 nestlings ringed in the same region a decade earlier (C Clinning unpubl. data), five ringed carcasses were recovered in the south of Namibia. Three had been killed by strychnine, one had been caught in a gin trap and one had been shot (Brown 1986b). In the worst single incident of poisoning of this species known from Namibia, 86 individuals were poisoned about 50 km north of the Namib-Naukluft Park by a farmer complaining of Lappet-faced Vultures killing his lambs (Simmons 1995a). At least 11 more Lappet-faced Vultures were killed in the same year, resulting in almost 50% of the known population at that time from the Namib-Naukluft Park and adjacent areas succumbing to poisons in 1995 (Simmons & Bridgeford 1997, P Bridgeford pers. comm.). Given these statistics, it is likely that poison, particularly through its irresponsible use in controlling 'problem animals' (small carnivores), has been the single biggest killer of vultures in Namibia since the mid-1980s (Brown 1986b). Lappet-faced Vultures are susceptible to the use of poisons both in carcasses and small baits, similar to the situation faced by other solitary-breeding vultures and scavenging eagles.

Since 2013, a new poisoning threat has arisen. An upsurge in commercial poaching of high value wildlife, particularly in north-eastern Namibia and northern Botswana, has seen the introduction of the deliberate poisoning of vultures. Wildlife carcasses, including elephant, buffalo and giraffe, are laced with poison. Many hundreds of vultures and other scavenging species are killed. The purpose of this action is to reduce vulture numbers so that their presence does not alert wildlife authorities to the illegal activities of the poachers (Hancock 2013). These poisoned carcasses pose a significant threat to both breeding adults in the larger area, as well as young birds.

Disturbance at nests is also known to cause nest abandonment and breeding failures (Steyn 1982). This was evidenced by road construction work on the road to Sossusvlei, near the Tsauchab River, where 10 active nests have declined to five following construction activity (Bridgeford & Bridgeford 2003) and in the northern Namib Desert, regularly visited by tour guides, where a nest has been abandoned (B Brell pers. comm.). Prospecting activities in the Namib are also known to have caused birds to abandon their nests (C Brown pers. obs.). Consistently small numbers of nests (0 to 4) in the Sossusvlei area are thought to be the result of disturbance caused by a high volume of tourist vehicles, people and aircraft (including helicopters and hot-air balloons) offering sight-seeing tours in the area (Bridgeford 2012). The higher density of breeding pairs in regions furthest from human-disturbed areas (e.g. at Tsondabvlei) illustrates how important it is to provide a high level of protection from disturbance to such sites.

The use of Lappet-faced Vulture parts in the traditional medicine trade is also documented (Cunningham 1990, Hengari *et al.* 2004), although some traditional healers report that they avoid 'black vultures'. Drownings appear to be less of a mortality factor for Lappet-faced Vultures than for other vulture species, although, like poisoning incidents, cases of drowning are under-reported. Between 1998 and 2008, 10 drowning in farm reservoirs and one in a natural, steep-sided rock pool have been recorded (P Bridgeford unpubl. data). Collisions with and electrocution by power lines are known to be a threat in South Africa (van Rooyen 2000) and have recently been reported from Namibia (Pallett 2012).



CONSERVATION STATUS

The Lappet-faced Vulture is classified as *Vulnerable* because of a suspected decline in numbers by at least 10% in the last three generations, mainly as a result of poisoning. This estimate is based on a number of poisoning incidents across the country, as well as close to the Namib-Naukluft Park (Simmons 1995a). This represented almost half of the Namib-Naukluft population and possibly 10% of the entire Namibian population, estimated at 500 pairs. An average of 31 vultures were reported poisoned or drowned per year in Namibia over the seven years to 2000 (Bridgeford 2001, 2002, Bridgeford & Simmons unpubl. data, W Versfeld pers. comm.), despite continuing and increasing media coverage, farmer awareness forums and poison awareness campaigns through booklets and posters by the Ministry of Environment and Tourism and non-governmental organisations. These mortality figures are just the tip of the iceberg, as most poisoned birds are not recovered or reported (Brown 1986b, Brown 1991, Bridgeford 2001).

The species was listed as *Vulnerable* in South Africa, largely for the same reasons, but also because of habitat destruction that removes trees used for breeding (Anderson 2000g), which is considered less problematic in Namibia. However, it has now been uplisted to *Endangered* in South Africa (Taylor *et al.* in press). Globally it is listed as *Vulnerable* because of extinctions in Israel and parts of North Africa, and a declining population estimated at 3,000 pairs in southern Africa and 8,000 individuals globally (Piper 2005b, IUCN 2012a). Only in Saudi Arabia is its population known to be increasing, in some areas by threefold over previous estimates (Newton & Shobrak 1993), but breeding sites are largely confined to protected areas because of large-scale disturbance at nests elsewhere (P Cunningham pers. obs.). West African populations are in serious decline (Rondeau & Thiollay 2004, IUCN 2012a). Locally, it needs to be accorded *Specially Protected* status under any revised or future Namibian Parks and Wildlife legislation.



ACTIONS

Actions are needed to decrease and ultimately eliminate the use of poisons in carcasses and small baits. Two strategies are needed to address respectively (a) the use of poisons by commercial poachers where the killing of vultures is a deliberate objective, and (b) the use of poisons by farmers where the killing of scavenging species is collateral damage resulting from attempts to kill mammalian predators. For the first strategy, a protocol has been developed to assist the Ministry of Environment and Tourism to address the use of poisons by commercial poachers (Brown *et al.* 2013), summarised in the White-backed Vulture text. This protocol should be seen as part of a larger initiative and should be embedded in the actions of the local, national and regional networks established to eliminate commercial poaching.

The second strategy, to address collateral poisoning on farmlands, requires making the use of poisons for predator control illegal. Experience from other countries has shown that attempts to encourage a voluntary reduction in the use of poisons, and to influence how poisons are used so as to avoid non-target animals, has had little impact. Endangered scavenging species have continued to decline. The same results have been found in Namibia and throughout southern Africa. Those countries that have banned the use of poisons for predator control, and backed up the legislation with good enforcement, have documented population increases of scavenging birds and mammals almost immediately, and farmers have shifted their approach from killing predators to protecting their livestock. The main actions required for reducing and ultimately eliminating collateral poisoning

of Lappet-faced Vultures and other scavenging birds on farmlands in Namibia are:

- Ensure that new Namibian Parks and Wildlife legislation specifically prohibits the use of all poisons, pesticides and toxins for the killing of predators and all wildlife in Namibia, and that penalties are sufficiently severe to be effective.
- Prepare and widely distribute up-to-date information on scavenging species, emphasising the fact that the use of poisons is illegal, including the penalties for transgression.
- Tighten procedures around sale of toxic substances and specifically make it obligatory to record identification details of all purchasers, their intended use, and to provide information on the illegal use of these substances with penalties.
- Provide information and training to relevant law enforcement and investigative agencies and individuals on the new legislation, the obligations of suppliers of toxic substances, pesticides and poisons, and 'scene of crime' training at poisoning events.
- Distribute material to farmers, rural communities and schools on the beneficial and important role that scavenging birds play in the environment and the threats that face them.

A landscape approach should be adopted for the management of national parks and surrounding areas, engaging actively with both freehold and communal neighbours to develop co-management approaches. Such an initiative would have positive environmental and conservation impacts far beyond just scavenging birds.

Areas where there are nesting concentrations of Lappet-faced Vultures, such as at Tsondabvlei and along the Tsondab River, should be afforded the highest level of protection as Areas of Special Scientific Interest within a Wilderness Area; all forms of tourism should be excluded from such areas. All developments such as prospecting and mining, in areas where there are likely to be nesting Lappet-faced Vultures, should specifically focus on this species and give them high conservation priority.

The current monitoring of breeding density and ringing / marking of young birds should be continued and supported. In addition, the ranges of adult and young birds should be determined using GPS satellite packs to better understand their use of landscape and ecological requirements. The survival of young birds to adulthood also needs to be better understood. Awareness programmes for farmers, school learners, conservation authorities and law-enforcement agencies remain an ongoing priority.