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Agenda Item 25.1

PROPOSAL FOR THE INCLUSION OF THE LAPPET-FACED VULTURE *(Torgos tracheliotos)* ON APPENDIX I OF THE CONVENTION

Summary:

The Government of Saudi Arabia has submitted the attached proposal* for the inclusion of the Lappet-faced Vulture *(Torgos tracheliotos)* on Appendix I of CMS.

A proposal for the inclusion of the same taxon on Appendix I of CMS has been submitted independently by the Government of Israel. The proposal is reproduced in document UNEP/CMS/COP12/Doc.25.1.16(a)

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PROPOSAL FOR THE INCLUSION OF THE LAPPET-FACED VULTURE *(Torgos tracheliotos)* ON APPENDIX I OF THE CONVENTION

A. PROPOSAL

Listing the entire population of Lappet-faced Vulture *Torgos tracheliotos* on CMS Appendix I.

B. PROPONENT: Government of the Saudi Arabia.

C. SUPPORTING STATEMENT[1]

1. Taxonomy

1.1 Class:	Aves
1.2 Order:	Accipitriformes
1.3 Family:	Accipitridae
1.4 Genus, species and subspecies, including author and year:	*Torgos tracheliotos* (Forster, 1791) *T. t. tracheliotus* (Forster, 1796), *T. t.negevensis* (Bruun *et al*., 1981), *T. t. nubicus* (Smith, 1829)
1.5 Scientific synonyms:	*Torgos tracheliotus*

1.6 Common name(s), when applicable:
EN - Lappet-faced VultureFR - Vautour oricou
ES - Buitre orejudo, Buitre torgo
AR - Nesir Al Udoun

2. Overview

The Lappet-faced Vulture is Endangered having been moved up to this higher category of extinction risk in the 2015 IUCN Red List assessment. Shimelis *et al.* (2005) highlighted significant population declines in Lappet-faced Vulture throughout its range in Africa and the Middle East. More recently published data have revealed significant and rapid pan-African vulture declines precipitated by a variety of threats including intentional and unintentional poisoning, belief-based use and trade, reduction in food availability, habitat loss/ degradation and disturbance. (Ogada *et al.* 2016; Botha *et al.* 2012; Monadjem *et al.* 2012; Thiollay 2007; Rondeau & Thiollay 2004; Brown 1991). The species considered extinct as breeding species in several countries in the Middle East, e.g. Israel, Jordan and the Syrian Arab Republic (BirdLife International 2017). These declines are likely to continue into the future and suggest there may be a continental-scale problem, potentially comparable to the declines witnessed in vulture populations in Asia in the 1990s. Only one vulture species – the Endangered Egyptian Vulture (*Neophron percnopterus)* currently benefits from CMS Appendix I listing.

The Lappet-faced Vulture was added to the Raptors MOU Annex 1 (List of Species) on the basis of evidence of its migratory behaviour (according to CMS definition) and categorized in Annex 3 (Action Plan), Table 1 as Category 1 (globally threatened species) at Raptors MOU MOS2 (October 2015).

While many vulture species may not traditionally have been seen as migrants, it has become clear that the movements made by Lappet-faced Vultures are consistent with the CMS definition of a ‘migratory species’. Research has revealed the very large size of this species’ home range (often hundreds of thousands of km^2) and the scale and frequency of the movements that it undertakes. Single individuals pass through several countries in a year and movement pattern differs between seasons and among age groups within the population.

International cooperation will be an essential ingredient in the recovery and long-term conservation of this wide-ranging species.

[1] Unless otherwise referenced, this proposal draws on information from BirdLife International (2016).

3. Migrations

3.1. Kinds of movement, distance, the cyclical and predictable nature of the migration

Vulture movement patterns are not generally well understood (Monadjem *et al.* 2012). However, our knowledge is expanding rapidly, particularly owing to increased use of satellite tracking technology. Many of the commonly held assumptions about the scale of vulture movements have been over-turned by recent evidence from satellite tracking and marking and there has been a proliferation of satellite tracking studies, particularly of African vulture species, in recent years.

Vultures are necrophagous and individuals can travel vast distances in a short space of time as a response to a high degree of spatial and temporal variation in their food resources (Murn *et al.* 2013; Urios *et al.* 2010). Use of soaring flight allows vultures to maintain extremely large foraging ranges and there is increasing evidence that vultures may undertake predictable, cyclical seasonal movements; for example clustering around migratory herds of ungulates during the dry season when herds experience highest mortality (Kendall *et al.* 2013). They may also display predictable seasonal changes in foraging range driven by food availability and detectability (Phipps *et al.* 2013; Schultz 2007; Cronje 2002), but also by seasonal changes in the availability of thermals to aid sustained soaring flight (Mundy *et al*. 1992; Boshoff *et al.* 1984). In many vulture species different patterns of movement may be observed in adults during breeding versus non-breeding seasons, with movements of adults often being more constrained during the breeding season, not least by ties to the nest-site.

Vultures tend not to breed in their first three years and, partly because their foraging ranges are not restricted by ties to a nest site (Mundy *et al.* 1992; Houston 1976), in general immature birds tend to range over much larger areas than adults (Ogada 2014a; Margalida *et al*. 2013; Phipps *et al*. 2013; Duriez *et al.* 2011; Bramford *et al*. 2007; Meyburg *et al.* 2004; Mundy *et al.* 1992). With satellite tracking of vultures in its relative infancy, the indications are that adults of many vulture species are making movements that cross national boundaries, while immature individuals are making even wider-ranging movements such that it may not be uncommon for them to cross not just one, but multiple national boundaries in a period of just a few months. This behaviour is likely to affect exposure of immature individuals to risk from various threats and have consequences for their survival prospects (Grande *et al.* 2009; Ortega *et al.* 2009). The threats outlined in section 5.3 affect both adult and immature vultures. The demographic consequences of high mortality among breeding adults along with high mortality of immatures and consequent reduction in recruitment to the breeding population are potentially significant.

3.1.1. Movements of Lappet-faced Vulture

Bildstein (2006) lists this species as a partial migrant and rains migrant. Ferguson-Lees and Christie (2001) describe the species as ‘often sedentary, but even adults are highly nomadic at times’. In West Africa there is some dispersal in response to seasonal rains. Vagrants have been reported in Morocco, southern Libya, Jordan (where they may possibly have bred) and Spain (Ferguson-Lees and Christie 2001). Murn and Botha (unpubl.) satellite tagged an individual which was seen to move more than 200 km from the capture site in South Africa and travel into Mozambique. Immatures are especially wide-ranging, with one individual known to have travelled over 800 km from northeast South Africa to Zambia (Ferguson-Lees and Christie 2001). An individual ringed in Namibia in 2007 was killed in a poisoning incident in Botswana (BirdLife Botswana). C. Kendall (*in litt.* 2015) found an average home range size of 22,000 km^2 and found individuals moved between Kenya and the United Republic of Tanzania. Radio tagged nestlings in Saudi Arabia were located 300 km away from the nesting site two months after fledging (Shobrak 1996). In addition, two immature individuals satellite tagged in Saudi Arabia (Shobrak 2014) had a mean home range size of 283,380 km^2 and moved away from the capture site in winter to areas around 400 km distant before returning in the autumn.

3.2. Proportion of the population migrating, and why that is a significant proportion

While information is incomplete, it is likely that the majority of Lappet-faced Vulture adults make wide-ranging movements, following a predictable seasonal pattern that would be consistent with the CMS definition of 'migratory'. It also appears that there are predictable differences in patterns of movements associated with different age groups, with immature birds tending to make even more wide-ranging movements than adults (see 3.1). The evidence being amassed suggests that crossing of national boundaries is likely to be a not infrequent occurrence in adults and may be more common among immatures. The logistics and current expense of satellite tracking mean that information can be gathered on relatively few individuals, but there is no reason to believe the (in many cases very expansive) movements recorded are not representative of those taking place in the wider population. Overall, on the basis of available information it seems likely that the majority of the Lappet-faced Vulture population is undertaking movements consistent with the CMS definition of migration at some, if not all stages of their life cycle.

4. Biological data (other than migration)

4.1. Distribution (current and historical)

This species breeds in Egypt, Senegal, Niger, Mauritania, Mali, Burkina Faso, Chad, Sudan, Ethiopia, Somalia, the Democratic Republic of Congo, Rwanda, Uganda, Kenya, the United Republic of Tanzania, Zambia, Malawi, Mozambique, Namibia, Botswana, Zimbabwe, South Africa, Swaziland, Saudi Arabia, the United Arab Emirates, Oman, Yemen and possibly Libya (Massa 1999; Jennings 2010).

Shimelis *et al*. (2005) reported that at that time the species also occurred in the Gambia, northern Guinea, Côte d'Ivoire, Benin, Central African Republic and southern Angola (Shimelis *et al.* 2005).

It is no longer thought to breed in Côte d'Ivoire (G. Rondeau *in litt.* 2007). Mundy *et al*. (1992) reported it to be extinct in Algeria and Tunisia since the 1930s, with small populations then remaining in southern Egypt, and Mauritania. The last records from Morocco concerned two birds in 1972 (Shimelis *et al.* 2005). It is considered likely to be extinct in Western Sahara, as it has not been recorded there since 1955 (Shimelis *et al.* 2005). In Nigeria, there has been a major decline since the late 1970s and it may now have been extirpated (Brown 1986, Shimelis *et al.* 2005). It probably previously bred in Jordan (Evans and Al-Mashaqbah 1996), has largely disappeared where formerly common in Somaliland (Somalia) (A. Jama *in litt.* 2009), and is considered extinct in Israel, where three birds remained until 1994 (Shimelis *et al.* 2005).

Vagrants are occasionally recorded from Algeria, Burundi, Libya, Morocco and Togo (BirdLife International 2016).

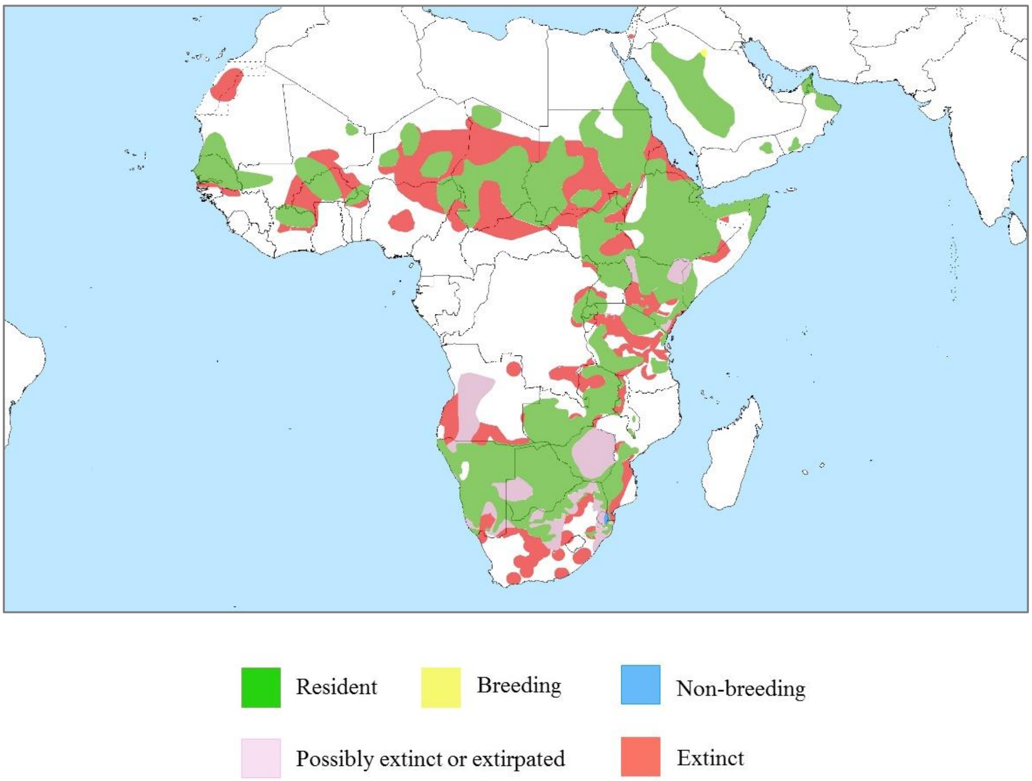

Fig 4.1.3. Range map of Lappet-faced Vulture (BirdLife International and Handbook of the Birds of the World 2017 modified with input from the Vulture MsAP review process).

4.2. Population (estimates and trends)

The species was not recorded during surveys in 2004 in northern Mali and Niger along the same transects that yielded 96 birds in 1971-1973 (Thiollay 2006). The combination of these results with comparable transect surveys from Burkina Faso indicate a decline in abundance of c.97 per cent in rural areas and c.39 per cent in national parks between 1969 and 1973 and 2003 and 2004 (Rondeau and Thiollay 2004), and declines of 50 per cent were also recorded between 1978 and 1986 and 2003 and 2005 on transects in the Masai Mara, Kenya (Virani *et al.* 2011). It is suffering a slow decline in southern Africa (Boshoff *et al.* 1997) and populations are likely to disappear in South Africa should current levels of exploitation and other pressures continue (McKean *et al.* 2013). However the population in central Mozambique is probably stable (Parker 2005). There are possibly 1,000 pairs (almost 3,000 individuals) in southern Africa, at least the same in east and north-east Africa, and possibly only c.500 pairs in West Africa and the Sahara, giving a total rough estimate of the African population of at least 8,000 individuals (Mundy *et al.* 1992). There may also be 500 individuals in the Middle East. This gives a total population of at least 8,500 individuals, roughly equivalent to 5,700 mature individuals.

The total population is estimated to be declining at a very rapid rate. Ogada *et al.* (2016) estimated the population in Africa was declining by 80 per cent over three generations (range: 65-87 per cent). Although the population in Saudi Arabia showed recently a slight declining in the breeding pairs (Shobrak in litt. 2017), but if assumed that a stable population of 500 mature individuals in Arabia, applying the median decline in Africa reported by Ogada *et al.* (2016, 80 per cent) to a population of 5,700 mature individuals in 1992 results in a global decline at a rate of around 74 per cent. Taking the upper quartile for the African data (65 per cent) results in a global decline of 58 per cent.

4.3. Habitat (short description and trends)

Owing to their feeding ecology, vultures require open areas in order to locate carcasses. They therefore tend to occur in open habitats and be less common in areas of dense woodland/

forest habitat.

Lappet-faced Vultures inhabit dry savanna, arid and semi-arid plains, deserts, and open mountain slopes (Shimelis *et al.* 2005; Jennings 2010; Shobrak 2011), up to 3,500 m (A. Shimelis *in litt.* 2007). In Ethiopia, they are also found at the edge of forests, having been recorded at Bonga forest and forest in Bale Mountains National Park in 2007, as well as the Afro-alpine habitats of the national park in 2005 (A. Shimelis *in litt.* 2007). The species prefers undisturbed open country with some trees, where there is little or no grass (Ferguson-Lees & Christie 2001, BirdLife International 2000, Brown *et al.* 1982). Trees are required for roosting and nesting. Solitary nests (usually containing just one egg) are built, often in *Acacia* (its distribution sometimes being limited by these trees' distribution; Boshoff *et al.* 1997), but also in Balanites, Terminalia and *Maerua* (Shimelis *et al.* 2005; Shobrak 2011).

4.4. Biological characteristics

Vulture life history is characterized by delayed maturity, low productivity (a maximum of one fledgling per pair per year), and relatively high adult survivorship (annual adult survival >0.9; del Hoyo *et al.* 1994). Vultures have some of the lowest reproductive rates among birds. These demographic traits make their population trends very sensitive to additional mortality of adults caused by non-natural factors.

Although Lappet-faced Vultures are perhaps less congregatory than many other vulture species they do engage in social feeding behaviour and use cues from conspecifics and other scavenging species to find food sources (Shobrak 2000). This means that a single toxic food source can cause high mortality (Kendall *et al.* 2012, Ogada *et al*. 2012a).

Although vultures have high visual acuity, their visual field and foraging ecology make them particularly vulnerable to collisions with power lines and wind turbines (de Lucas *et al.* 2012; Martin *et al.* 2012). Vulture visual fields contain a small binocular region and large blind areas above, below and behind the head, and whilst foraging, vultures adopt a slight downward in-flight head posture (Martin *et al.* 2012) making them susceptible to collision with man-made structures.

4.5. Role of the taxon in its ecosystem

Vultures are highly effective scavengers, and as keystone species, their declines have a range of socio-economic, as well as ecological, cultural and health impacts. There may be considerable economic costs of loss of vultures, not least, those associated with knock-on effects on human health (Markandya *et al.* 2008).Most notably, vultures dispose of carrion, reducing the spread of disease and protecting the health of humans, domesticated animals, and wildlife. The abundance of other scavengers, some of which are well-known disease reservoirs, increases substantially at carcasses without vultures (Ogada *et al*. 2012b; Pain *et al.* 2003, Prakash *et al.* 2003). Scavenging of carcasses by vultures promotes the flow of energy through food webs (Wilson and Wolkovich 2011; DeVault *et al.* 2003), and vultures have been shown to facilitate African predators, such as lions and hyenas, in locating food resources (Houston 1974; Schaller 1972). In Saudi Arabia out of 35 per cent of carcasses around Mahazat as-Syed protected area available for scavengers, the lappet-faced vultures' estimated to consume nearly 31 per cent (Shobrak 2000).

In Kenya, in the absence of vultures, carcass decomposition time nearly tripled, and both the number of scavenging mammals and the time they spent at carcasses increased threefold. Further, there was nearly a threefold increase in the number of contacts between mammalian scavengers at carcasses without vultures, suggesting that the demise of vultures could facilitate disease transmission at carcasses (Ogada *et al.* 2012b).

5. Conservation status and threats

5.1. IUCN Red List Assessment

The Lappet-faced Vulture was moved to Endangered, a higher category of extinction risk in the 2015 IUCN Red List assessment (BirdLife International 2016). See Section 4.2 for further information on population trends supporting the Red List assessment.

5.2. Equivalent information relevant to conservation status assessment

N/A

5.3. Threats to the population (factors, intensity)

Lappet-faced Vultures are susceptible to loss of wild ungulates leading to a reduced availability of carrion, unintentional poisoning, electrical infrastructure, hunting for trade, human persecution, and habitat conversion to agro-pastoral systems (Ogada *et al*. 2016; Phipps *et al*. 2013a; Monadjem *et al*. 2012; Virani *et al*. 2011; Thiollay 2007; Thiollay 2006; Allan 1989).

Table 5.3 Threats affecting Lappet-faced Vultures and their overall severity across this species' range based on outcomes of MsAP regional workshops and questionnaires (Botha et al. in prep).

Threats	Level of Threat[1]
Unintentional Poisoning	
Human-animal conflict	
Vermin control	
Poisoning from environmental contamination	
Lead from ammunition	
Industrial pollution	
Poisoning from Pharmaceutical products	
Veterinary Drugs (NSAIDs, tranquilisation, livestock dips and euthanasia)	
Targeted Vulture Poisoning	
Belief-based use and bushmeat	
Sentinel Poisoning	
Direct Persecution	
Electrocution	
Powerlines	
Collisions with infrastructure & vehicles	
Powerlines	
Wind turbines	
Communication Towers	
Vehicle Collisions	
Decline of Food Availability	
Reduced availability of livestock carcasses	
Decline of wild ungulates	
Improved carcass disposal	
Change in cultural practices	
Change in foraging patterns due to different spatial availability of food	
Habitat Loss	
Loss of trees and cliffs	
Bush encroachment/ reforestation	
Human settlement expansion within historical foraging range	
Degradation of rangelands	
Disturbance from human activities	
Recreation	
Construction of infrastructure	
Agricultural/Forestry	
Research & Monitoring	

Threats	Level of Threat[1]
Mining & Blasting	
Diseases	
Diseases	
Climate Change	
Climate Change	
Other threats:	
Drowning	
Illegal Killing, Taking & Trade	
Sport Hunting	
Indirect threat - missing or ineffective policies, laws and enforcement	
Lack of appropriate legislation	
Lack of or limitations to enforcement	

[1] Threats are colour-coded as follows:

Critical	Very high	High	Medium	Low	Unknown

[2] Ranking of threats is based on scope, severity, and irreversibility. Based on outcomes from Regional Vulture MsAP Workshops and Questionnaires.

5.3.1. Poisoning

5.3.1.1 Unintentional (secondary) poisoning

Unintentional secondary poisoning is the unintentional killing or harming of vultures through consumption of contaminated carcasses or remains.

Human-wildlife conflict

In East Africa, unintentional secondary poisoning is an important, widespread issue that occurs primarily outside protected areas. Many farmers use poisons in response to human-wildlife conflict or as pest control, including use of strychnine for predator control and poisoned livestock baits to kill carnivores like jackals, lions, and hyenas (Ogada 2014b). In Namibia in 1995, over 100 vultures (mainly Lappet-faced Vultures) were killed in one strychnine poisoning incident (Simmons 1995). More recently synthetic pesticides like carbofuran have increased in use and contributed significantly to declines of vultures (Brown 1986, P. Hall *in litt.* 2000, Otieno *et al*. 2010, Ogada 2014b). Several Lappet-faced Vultures were found to have died after feeding on the carcass of a poisoned jackal in Namibia (Komen 2009) and two birds were killed as a result of feeding on a poisoned carcass in Kenya (Kendall and Virani 2012a). Increasing use of agricultural pesticides has also been highlighted as a potential problem for Lappet-faced Vultures breeding in Saudi Arabia (Ostrowski and Shobrak 2001; Shimelis *et al*. 2005).

Veterinary drugs

Diclofenac, one of a group of non-steroidal anti-inflammatory drugs (NSAID) used to treat livestock (and then fatal to vultures feeding on livestock carcasses), has been identified as the key cause of decline in South Asian Gyps vulture species (Green *et al*. 2006; Oaks *et al*. 2004; Shultz *et al.* 2004; Green *et al.* 2004). Some NSAIDs have since been found to be toxic to at least some other raptor species, but it is not yet known whether Lappet-faced Vultures are susceptible. In 2007, diclofenac was found to be on sale at a veterinary practice in Tanzania. It was also reported that in Tanzania a Brazilian manufacturer has been aggressively marketing the drug for veterinary purposes (C. Bowden *in litt.* 2007) and exporting it to 15 African countries. Introduction of diclofenac or other NSAIDs may represent a potential future threat to vultures (BirdLife International 2016).

Lead poisoning

Lead poisoning through ingesting lead bullets and bullet fragments in carcasses is a further potential threat (Boshoff *et al.* 2009) and one that has been confirmed in other vulture species

(Pattee *et al.* 2006; Garcia-Fernandez *et al.* 2005; Mateo *et al*. 2003; Clark and Scheuhammer 2003; Miller *et al*. 2000; Platt *et al*. 1999; Mateo *et al*. 1997; Adaudi *et al*. 1990).

5.3.1.2 Targeted vulture poisoning

Deliberate targeting of vultures with poisons can occur for a variety of reasons:

Sentinel poisoning

'Sentinel poisoning' or deliberate poisoning of vultures linked to poaching of elephants has increased rapidly since 2012 with significant effects on vulture populations (Hancock 2009, Roxburgh and McDougall 2012, Ogada *et al*. 2015, Ogada *et al*. 2016). Poachers lace carcasses of poached animals with poison after removing ivory and other trophies, to intentionally kill vultures whose circling flights above the carcass might otherwise alert the authorities (Ogada *et al*. 2015). A single poisoned elephant carcass can kill over 500 vultures (Ogada *et al*. 2015). Eleven known vulture poisoning incidents at elephant carcasses occurred across seven African countries between 2012 and 2014, killing over 2,000 vultures (Ogada *et al*. 2015). 191 vultures including at least 15 Lappet-faced Vultures were killed at a single poisoning incident associated with elephant poaching in Gonarezhou National Park in Zimbabwe in 2012 (Groom *et al*. 2013). In Botswana 326 vultures (largely African White-backed Vultures, but with four Lappet-faced Vultures killed) were estimated to have been poisoned in association with the poaching of three elephants (McNutt and Bradley 2013). When poisoning incidents occur during the breeding season, it is assumed the young of the poisoned vultures also die increasing the numbers killed (Pfeiffer 2016).

Owing to misapprehension about the nature of their diet, Lappet-faced Vulture is sometimes targeted for persecution as a livestock predator (Brown 1986). One major deliberate poisoning incident killed 86 individuals in Namibia (Simmons 1995).

Belief-based use and the bushmeat trade

The acquisition of vulture parts for belief-based use (including perceived 'traditional medicine') has been documented in West and southern Africa (Nikolaus 2001; Sodeinde and Soewu 1999; McKean 2004) and occurs in parts of East Africa (Muiruri & Maundu 2010). Poisoning, while not the only method employed, appears to be a commonly used method for obtaining vultures for belief-based use.

In southern Africa, vultures are caught and consumed for perceived medicinal and psychological benefits (McKean and Botha 2007) through a practice known locally as 'Muthi', and the decline and possible extirpation in Nigeria has been attributed to the trade in vulture parts for belief-based 'juju' practices (P. Hall *in litt.* 2011; Chomba & Simuko 2013). Offtake per annum in West Africa, where Lappet-faced Vultures may be hunted for belief-based cultural reasons (Buij *et al*. 2016), was estimated to be 143-214. This represents a sizeable proportion of regional population, suggesting that trade is likely to be contributing significantly to declines (Buij *et al.* 2016).

In eastern South Africa, it is estimated that 160 vultures are sold and that there are 59,000 vulture-part consumption events each year, involving an estimated 1,250 hunters, traders, and healers. Lappet-faced Vultures are thought to be used for belief-based 'traditional medicine' in South Africa (McKean *et al.* 2013). New belief-based uses are emerging and adding to the toll on vultures, such as use of vulture parts to supposedly increasing the user's chances of winning in betting and gambling (EWT)2 .

Vultures are hunted for food (e.g. bushmeat) in West Africa by some ethnic groups. Many species are sold for belief-based uses alongside those sold for their meat in the same market, or are sold for either purpose. This suggests that belief-based use and bushmeat trades are probably integrated and to some extent interdependent (Buij *et al*. 2016; Williams *et al*. 2014; Saidu and Buij 2013).

2 http://projectvulture.org.za/wp-content/uploads/2014/02/Traditional-medicine.pdf

5.3.2. Reduction of food availability

Lack of food – owing to overhunting, changes in livestock husbandry and habitat change affecting prey availability could have major impacts on vultures and is thought to have contributed to largescale vulture declines throughout their range (Mundy *et al.* 1992; P. Hall *in litt*. 1999; R. Davies *in litt.* 2006; Shimelis *et al.* 2005; Craigie *et al.* 2010; Ogada *et al.* 2015).

The ungulate wildlife populations on which vultures rely have declined precipitously throughout East Africa, even in protected areas (Western *et al.* 2009) and West Africa through habitat modification and over-hunting (Thiollay 2006; Rondeau and Thiollay 2004).

National vaccination campaigns in West Africa have reduced illness in domestic livestock, and sick animals can now be sold rather than abandoned, owing to the proliferation of markets and abattoirs (Rondeau and Thiollay 2004).

5.3.3. Habitat loss, degradation and fragmentation

Habitat conversion is thought to have contributed to largescale vulture declines throughout their range (Mundy *et al.* 1992; Hall *in litt*. 1999; Davies *in litt*. 2006; Ogada *et al.* 2016). Habitat loss and degradation are suspected to have played roles in the dramatic declines (>98 per cent) of large vultures outside of protected areas in West Africa where human population growth has been very rapid (Thiollay 2007, 2006). The ongoing urbanisation in some parts of South Africa, has limited the extent of natural areas for foraging by vultures, perhaps resulting in their reliance in some places on supplementary food at vulture “restaurants” (Wolter *et al.* unpubl.). In Saudi Arabia degradation of the habitat as a result of wood cutting and overgrazing were among the factors have affecting in reducing the availability of the suitable nesting tress for vultures (Shobrak 2003).

Poor grassland management in some areas has promoted bush encroachment, making finding carcasses more difficult for vultures (Schultz 2007). In Ethiopia, the principal threat to Lappet-faced Vultures is habitat loss on the lowland plains (A. Shimelis *in litt.* 2012, 2007). Degradation of habitat by intensive agriculture, cultivation, urbanization, roads, dams, mines, desertification, bush encroachment, afforestation and alien vegetation is thought likely to have affected vulture species, but needs further research (Botha *et al.* in prep).

5.3.4. Disturbance from human activities

Disturbance of nesting vultures by humans can have serious consequences (Ogada *et al*. 2016; Shimelis *et al.* 2005). Nest disturbance, to which Lappet-faced Vulture is extremely sensitive (Shobrak 2003; 2004; Steyn 1982), may be growing with an increase in forest settlements in Ethiopia (A. Shimelis *in litt.* 2007) and the increasing recreational use of off-road vehicles (Mundy *et al.* 1992). In Saudi Arabia, suitable nesting trees may be subject to the most intense human disturbance as shepherds also use the same large trees for shelter for themselves and their livestock (Shobrak 2011).

5.3.5. Electrical infrastructure

Vultures are frequent victims of electrical infrastructure. In Africa this is particularly evident in southern and North Africa, where there has been an increase in electrical infrastructure development from power lines and wind farms. “Green energy” initiatives such as wind farms can be detrimental to vultures, if bird-friendly designs and careful placement of turbines and power lines are not observed (Rushworth and Krüger 2014; Jenkins *et al.* 2010). Given the rapid increase in the development of “green” technology and electricity infrastructure worldwide, this threat is likely to increase in coming decades.

Electrocution and collision with power lines can cause significant levels of vulture mortality (Anderson and Kruger 1995, Janss 2000, van Rooyen 2000) and the recent proliferation of wind farms as a source of green energy production has also had adverse effects (Ogada and Buij 2011). Characteristics of their visual field, head carriage in flight and foraging ecology increase the susceptibility of vultures to collision (de Lucas *et al.* 2012; Martin *et al.* 2012)..

Electrocution on powerlines has been reported to be a problem for the Lappet-faced Vulture (Shimelis *et al.* 2005) in parts of its range.

Shimelis (2005) highlights the threat to Lappet-faced Vultures from electrocutions and collisions from powerlines, reporting 49 individuals known to have been killed between 1996 and 2003.

5.3.6. Other threats

Although the main method of vulture persecution is poisoning, incidents of shooting do occasionally take place.

Raptors occasionally drown after attempting to bathe or drink, with mass vulture drownings probably resulting from group responses to the actions of one bird (Anderson *et al.* 1999).

5.4. <u>Threats connected especially with migrations</u>

Vultures are more vulnerable to a number of the threats mentioned in section 5.3 because of their wide-ranging movements. In relation to the poisoning threat described in secton 5.3.1, owing to their very wide-ranging movements, vultures can come into contact with many food sources distributed over a very wide geographic area within a very short period of time. Modelling of *Gyps* vulture populations in Asia has indicated that only a tiny proportion of carcasses encountered need be contaminated with substances toxic to vultures to have a population level effect. This is not least because vultures are slow-breeding long-lived species (Mundy *et al.* 1992). Contamination of just 0.3–0.7 per cent of ungulate carcasses with a lethal level of diclofenac was shown to be sufficient to cause the population of the White-rumped Vulture *Gyps bengalensis* in Asia to decline at a rate of about 50 per cent per year (Green *et al.* 2004). The most common type of toxin encountered by Lappet-faced Vultures may currently be carbofuran and other similar poisons rather than veterinary drugs, and lethal levels may differ. However there can be little doubt that the population level impacts of encountering even sparsely distributed toxic food sources are likely to be significant in these wide ranging species. A social feeding strategy and reliance on cues from conspecifics and other scavenging species to find food sources mean that large numbers of individuals of several vulture species can congregate at a single carcass (Kendall *et al*. 2012), therefore vultures can suffer particularly high mortality at poisoning incidents (Ogada *et al*. 2012a). The vast areas covered by individual Lappet-faced Vultures during month to month foraging, and particularly during age-related and seasonal movements, increase the likelihood of encountering toxic food sources somewhere within their range. Many individuals will cross national boundaries on a regular basis, so there is a clear need for a consistent approach to addressing the issue of poisoning across all current (and arguably also past) Lappet-faced Vulture range states.

In relation to belief-based trade the wide ranging movements of vultures render many individuals susceptible to killing in several countries. In some countries national level trade in vultures has reduced populations to the extent that national demand is now satisfied through international trade with vultures being killed in neighbouring countries and brought in to national markets. Countries therefore need to work together to address the issue of belief-based use, including stemming the flow of vultures and vulture parts across borders.

The extent of vulture movements means that in parts of their ranges their encounter rate with energy infrastructure is likely to be relatively high. Vultures' use of thermals and associated topographic features to maintain soaring flight means that they tend to coincide with areas of high wind potential where wind energy infrastructure is likely to be located. Proliferation of energy infrastructure within the ranges of vulture species is likely to exact a cumulative and in increasing toll on vulture populations.

5.5 National and international utilization

Vulture species are exploited for commercial trade (for belief-based use and bushmeat) in Sub-Saharan Africa (Buij *et al.* 2015 and see 5.3.1.2). They are also caught and used as pets/display animals (BirdLife International 2016).

6. Protection status and species management

6.1. National protection status

Lappet-faced vultures are not protected by law in all countries of their range and in some countries where they enjoy national protection by law, enforcement measures are insufficient.

6.2. International protection status

All migratory species within the Accipitridae Family are listed on CMS appendix II. Since October 2015, the Lappet-faced Vulture has been listed on Raptors MOU Annex 1 and is categorized in Annex 3 (Action Plan), Table 1 as Category 1 (globally threatened or near-threatened species).

CMS and the Raptors MOU are key intergovernmental conservation mechanisms working with a coalition of national governments, organizations, and vulture experts to develop a Multispecies Action Plan to Conserve African-Eurasian Vultures (Botha *et al*. in prep). This aims to provide a framework and to act as a vehicle for international cooperation to address threats to vultures and improve their conservation status.

6.3. Management measures

Several national scale conservation and research actions are already underway to address threats to Lappet-faced Vultures (BirdLife International 2016):

- Following a workshop, a five-year international action plan for Lappet-faced Vulture was published in 2005, with the aims of stabilizing or increasing populations and improving knowledge of its distribution and population size, determining population trends, and minimizing the impact of human activities at key sites (Shimelis *et al.* 2005).
- A comprehensive study of the species in Botswana was planned for 2007 (P. Hancock *in litt.* 2006), and 221 chicks were marked with patagial tags between 2006 and 2009 (Bridgeford 2009).
- A number of management measures have been taken for vultures more generally which are likely to benefit Lappet-faced Vultures.
- Establishment of protected areas in Saudi Arabia with breeding population of lappet-faced vulture (Shobrak 2011).
- A press release was circulated in July 2007 to raise awareness of the impacts of harvesting for medicinal and cultural reasons in southern Africa (McKean and Botha 2007).
- In 2007, a survey began to establish the extent of diclofenac use for veterinary purposes in the United Republic of Tanzania (BirdLife International 2016).
- In 2008, an awareness-raising campaign at a conference of the World Organisation for Animal Health in Senegal led to a resolution being adopted unanimously by more than 160 delegates to "request Members to consider their national situation with the aim to seek measures to find solutions to the problems caused by the administration of diclofenac in livestock" (Woodford *et al.* 2008, C. Bowden *in litt.* 2008).
- BirdLife Botswana have launched a campaign to tackle illegal poisoning (Anon. 2013).
- In 2016 BirdLife International launched a project to tackle vulture poisoning through improved site management, policy and enforcement, and community engagement in three countries, Kenya, Botswana and Zimbabwe.
- In 2017 BirdLife international, the Peregrine Fund and Nature Kenya are piloting actions to prevent poisoning of vultures in the Masai Mara National Reserve and surrounding areas.
- In 2017 the Nigerian Conservation Foundation has begun a survey of belief-based use markets for vultures and their parts and engaging with stakeholders to reduce the demand in vulture parts.

- At the 2014 Conference of the Parties of the Convention on Migratory Species, a set of guidelines to prevent poisoning of migratory birds was formally adopted.
- The national electricity supplier in South Africa has replaced pylons in some regions with a design that reduces electrocution risk to large birds (Barnes 2000).

6.4. Habitat conservation

The Lappet-faced Vulture has been reported from many protected areas across its range. Twenty Important Bird Areas (IBAs) of global significance in Africa and the Middle East have been identified partly on the basis of their importance for Lappet-faced Vultures (BirdLife International 2016). In 2016 BirdWatch Zambia began a project to adapt and implement the Vulture Safe Zone concept at an IBA consisting of five privately owned farms in Zambia (BirdLife 2016).

6.5. Population monitoring

Raptors Botswana has been monitoring Lappet-faced Vulture since 2012, undertaking applied research for practical use in conservation management planning and prioritizing collection of novel baseline data for Botswana to feed into international/national knowledge and strategies, quantification of key threats, gathering information for population viability analysis, and generating platforms for ongoing monitoring efforts (B. Garbett *in litt.* 2016).

In Niger, Lappet-faced Vulture monitoring activities are carried out by the Sahara Conservation Fund in Termit and Tin Toumma National Nature Reserve in the framework of the transboundary Niger-Chad EU project (monitoring of breeding areas; T. Rabeil *in litt.* 2016).

In the United Republic of Tanzania, Wildlife Conservation Society and North Carolina Zoo are working to monitor and assess threats to vultures and have been working in and around Ruaha and Katavi National Park since 2013 (C. Kendall *in litt.* 2016).

In Saudi Arabia the lappet-faced Vulture population has been monitored in a targeted protected areas since 1992 up to date (Shobrak 2011; Shobrak in litt. 2017).

Despite the scale of the threats facing vultures including Lappet-faced Vulture, relatively little coordinated and comprehensive monitoring of populations has so far taken place within the range of the species. According to Anderson (2004), very little monitoring of vultures in Africa had been undertaken until 2005, mainly due to a lack of qualified observers, limited funding, logistical challenges, and the lack of a standardized monitoring protocol for either cliff- or tree-nesting species that could be implemented by field workers. Although this situation has improved somewhat over the last five years with monitoring programmes being implemented in at least 15 African countries, there are still vast areas in which vultures occur where no monitoring is taking place. In the Middle East similar situation occur especially in the countries were lappet-faced vulture still breeding such as Oman and Yemen. In areas where monitoring has been implemented, considerable declines in vulture populations have been recorded. The Asian Vulture Crisis has unequivocally shown that without systematic monitoring of vultures a population crash can take place virtually undetected (Botha *et al.* 2012).

7. Effects of the proposed amendment

7.1. Anticipated benefits of the amendment

International recognition of the precarious conservation status of Lappet-faced Vulture by countries that support remaining populations is an important step towards reversing population declines. National protection legislation does not cover vulture species in all relevant countries. The greatest threats facing Lappet-faced Vultures are anthropogenic, so can be effectively addressed through government action. It is clear that international cooperation will be an essential ingredient in the recovery and long-term conservation of this species. Most of the key threats thought to be driving declines in Lappet-faced Vulture populations are shared by many countries in Africa and the Middle East and trans-national conservation measures will be required to successfully tackle the issues impacting vultures (Phipps *et al.* 2013). A Multi-species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP) is currently being developed under the framework of CMS, as a broad multi-stakeholder approach to increase and coordinate conservation efforts for these species (Botha *et al*. in prep). Listing the Endangered Lappet-faced Vulture on CMS Appendix I will support the effective implementation of the Vulture MsAP and assist in encouraging range state governments to engage in efforts to reduce threats and work together to restore vulture populations across the continent.

The Lappet-faced Vulture is listed on CITES Appendix II. Appendix II species require an export permit or re-export certificate to be traded internationally, but can be imported without an import permit (unless required by national law). Export permits are only granted if the export is not detrimental to species' survival, the species was not obtained illegally, and transportation is conducted appropriately. Authorization of trade should only be granted in highly exceptional situations. Listing Lappet-faced Vulture on CMS Appendix I would reinforce the provisions already in place under CITES by prohibiting the taking of this species unless for scientific purposes, for the purpose of enhancing propagation or survival, to accommodate the needs of traditional subsistence users, or if extraordinary circumstances so require.

7.2. Potential risks of the amendment

Despite the provisions under CMS Article III to avoid this, listing on Appendix I could unintentionally constrain (or increase the logistical/ bureaucratic burden associated with) captive breeding/ rearing/ rehabilitation or moving of Lappet-faced Vultures and their eggs between countries should this be a necessary conservation action. It could also unintentionally constrain (or increase the logistical/ bureaucratic burden associated with) useful research activities such as capture, marking, tracking, health screening, and research into impacts of toxic substances on vultures. All of the above activities can and do contribute greatly to increasing our understanding of this species and promoting its conservation. However given the restrictions on export already in place by virtue of CITES Appendix II listing and the provision under CMS Article III for exceptions to prohibition of taking for scientific or enhanced propagation/ survival, the conservation benefits of CMS Appendix I listing are likely to far outweigh the risks. The provision under CMS Article III for potential exception to prohibition of taking to accommodate the needs of traditional subsistence users is a potential risk. In the case of Lappet-faced Vulture, traditional belief-based use constitutes a significant threat to this species in some countries of its range and addressing this threat is a key component of the Vulture MsAP. This kind of use is belief-based rather than for subsistence and is highly unlikely therefore to meet the requirements for exception to prohibition of taking.

7.3. Intention of the proponent concerning development of an Agreement or Concerted Action

A regional agreement under CMS already exists, which covers Lappet-faced Vulture. The Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MOU) was concluded in 2008. It has so far attracted 57 Signatories (56 countries and the European Union). Saudi Arabia signed the Raptors MOU on 13 March 2017.

The proponent is actively engaged in development of the Vulture MsAP, which will provide a framework for range states to engage and cooperate on a wide range of key activities to address threats and promote Lappet-faced Vulture conservation throughout its range.

8. Range States

Country occurrence of Lappet-faced Vulture based on BirdLife International (2016).

Country (*CMS parties)	**Lappet-faced Vulture**
Algeria*	Extinct (Vagrant)
Angola*	Non-breeding
Benin	Non-breeding
Botswana	Non-breeding
Burkina Faso*	Non-breeding
Burundi*	Vagrant
Cameroon*	Resident
Central African Republic	Non-breeding
Chad*	Resident
Côte d'Ivoire*	Non-breeding
Democratic Republic of the Congo*	Resident
Djibouti*	Non-breeding
Egypt*	Resident
Equatorial Guinea*	Non-breeding
Eritrea*	Non-breeding
Ethiopia*	Resident
Gambia*	Non-breeding
Israel*	Extinct⧫ (occasional vagrant records)
Jordan*	Extinct⧫
Kenya*	Resident
Libya*	Vagrant
Malawi	Resident
Mali*	Resident
Mauritania*	Resident
Morocco*	Vagrant
Mozambique*	Resident
Namibia*	Resident
Niger*	Resident
Nigeria*	Unknown
Oman	Resident
Palestinian Authority Territories	Extinct ✧
Rwanda*	Resident
Saudi Arabia*	Resident
Senegal*	Resident
Somalia*	Resident
South Africa*	Resident
South Sudan	Resident
Sudan	Resident
Swaziland*	Resident
Togo*	Vagrant
Uganda*	Non-breeding
United Arab Emirates*	Resident
United Republic of Tanzania*	Resident
Yemen*	Resident
Zambia	Resident
Zimbabwe*	Resident

-: not present in the country
⧫ *Previously resident*
✧ *Previously non-breeding*

9. Consultations

10. Additional remarks

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