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

Summary:

The Government of Israel 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 Saudi Arabia. The proposal is reproduced in document UNEP/CMS/COP12/Doc.25.1.16(b)

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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 Israel.

C. SUPPORTING STATEMENT

1. Taxonomy

1.1 Class: Aves
1.2 Order: Accipitriformes
1.3 Family: Accipitridae
1.4 Genus, species or subspecies, including author and year:
Torgos tracheliotos (Forster, 1791)
1.5 Scientific synonyms: none
1.6 Common name(s), when applicable:
English -Lappet-faced Vulture
French -Vautour oricou
Spanish -Buitre orejudo, Buitre torgo
Hebrew -*Ozniyat ha-negev* עוזנית הנגב

2. Overview

T. tracheliotos is classified by IUCN as Endangered and was moved to this higher extinction risk category in the 2015 IUCN Red List assessment. Shimelis *et al.* (2005) highlighted significant population declines in *T. tracheliotos* 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 and degradation and disturbance (Ogada *et al.* 2016; Botha *et al.* 2012; Mondajem *et al.* 2012; Thiollay 2007; Rondeau & Thiollay 2004; Brown 1991). 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)* is currently listed on CMS Appendix I.

Torgos tracheliotos was added to the Raptors MOU Annex 1 (List of Species) on the basis of evidence of its migratory behavior (according to the CMS definition) and categorized in Annex 3 (Action Plan), Table 1 as Category 1 (a Globally Threatened Species) at Raptors MOU MOS2 (October 2015).

The movements made by *T. tracheliotos* 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 their movements. Single individuals regularly pass through several countries 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.

3. Migrations

3.1. <u>Kinds of movement, distance, the cyclical and predictable nature of migration</u>

Movement patterns of raptors are becoming better understood particularly owing to increased use of satellite tracking technology. While still in its infancy, there has been a proliferation of satellite tracking studies, particularly of vultures, in recent years (e.g. Shobrak, 2014; Speigel *et al.* 2013, 2015).

All vultures are necrophagous and individuals can travel vast distances in a short space of time due to a high degree of spatial and temporal variation in their food resources (Urios *et al.* 2010; Murn *et al.* 2013). Use of soaring flight allows them 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 (Cronje 2002; Schultz 2007; Phipps *et al.* 2013), but also by seasonal changes in the availability of thermals to aid sustained soaring flight (Boshoff *et al.* 1984; Mundy *et al*. 1992). In many vulture species different patterns of movement may be observed in adults during breeding versus non-breeding seasons (Spiegel *et al*. 2015), with movements of adults often being more constrained during the breeding season, often due to ties to the nest-site.

T. tracheliotos tend not to breed in their first three years and, partly because their foraging ranges are not restricted by ties to a nest site (Houston 1976; Mundy *et al.* 1992), in general immature birds tend to range over much larger areas than adults (Mundy *et al.* 1992; Meyburg *et al.* 2004; Bramford *et al*. 2007; Duriez *et al.* 2011; Margalida *et al*. 2013; Phipps *et al*. 2013; Ogada 2014). With satellite tracking of raptors 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 (Spiegel *et al*. 2015). 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 a rains migrant. Ferguson-Lees & 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 are reported in Morocco, southern Libya, Israel, Jordan and Spain (Ferguson-Lees & 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 north-east South Africa to Zambia (Ferguson-Lees & Christie 2001). An individual *T. tracheliotos* 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 km² and found that individuals moved between Kenya and the United Republic of Tanzania. Two immature individuals tagged in 1995 in Saudi Arabia (Shobrak 2014) had a mean home range size of 283,380 km² 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 significant

While information is incomplete, it is likely that the majority of *T. tracheliotos* 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 shows that crossing of national boundaries is likely to be a rather frequent occurrence in adults and may be even 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 very expansive movements recorded are not representative of those taking place in the wider population. Overall, on the basis of available information, it seems highly likely that the majority of the *T. tracheliotos* 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

This species currently breeds in Egypt, Senegal, Niger, Mauritania, Mali, Burkina Faso, Chad, Sudan, Ethiopia, Somalia, Democratic Republic of Congo, Rwanda, Uganda, Kenya, the United Republic of Tanzania, Zambia, Malawi, Mozambique, Namibia, Botswana, Zimbabwe, South Africa, Swaziland, Saudi Arabia (an increasing population, in excess of 500 individuals were reported in 2010 by Jennings. However, new reports indicate a declining population in recent years), the United Arab Emirates, Oman, Yemen and possibly Libya (Massa 1999).

Shimelis *et al*. (2005) reported that at that time the species also occurred in Gambia, northern Guinea, Côte d'Ivoire, Benin, the Central African Republic and southern Angola (Shimelis *et al.* 2005). However, G. Rondeau (*in litt.* 2007) claims *T. tracheliotos* no longer breeds in Côte d'Ivoire. The species has been extinct in Algeria and Tunisia since the 1930s, and apparently only small populations remain in southern Egypt, and Mauritania (Mundy *et al.* 1992). 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), and it has largely disappeared where formerly common in Somaliland (Somalia) (A. Jama *in litt.* 2009). The subspecies *T. t. negevensis* definitely bred in Israel and at least three birds remained in Israel until 1994 (Shimelis *et al.* 2005), but the species is considered extinct in Israel as a breeder since 1989 (Meretsky *et al.* 1991).

Vagrants are occasionally recorded from Israel as well as from Algeria, Burundi, Libya, Morocco and Togo (BirdLife International 2017).

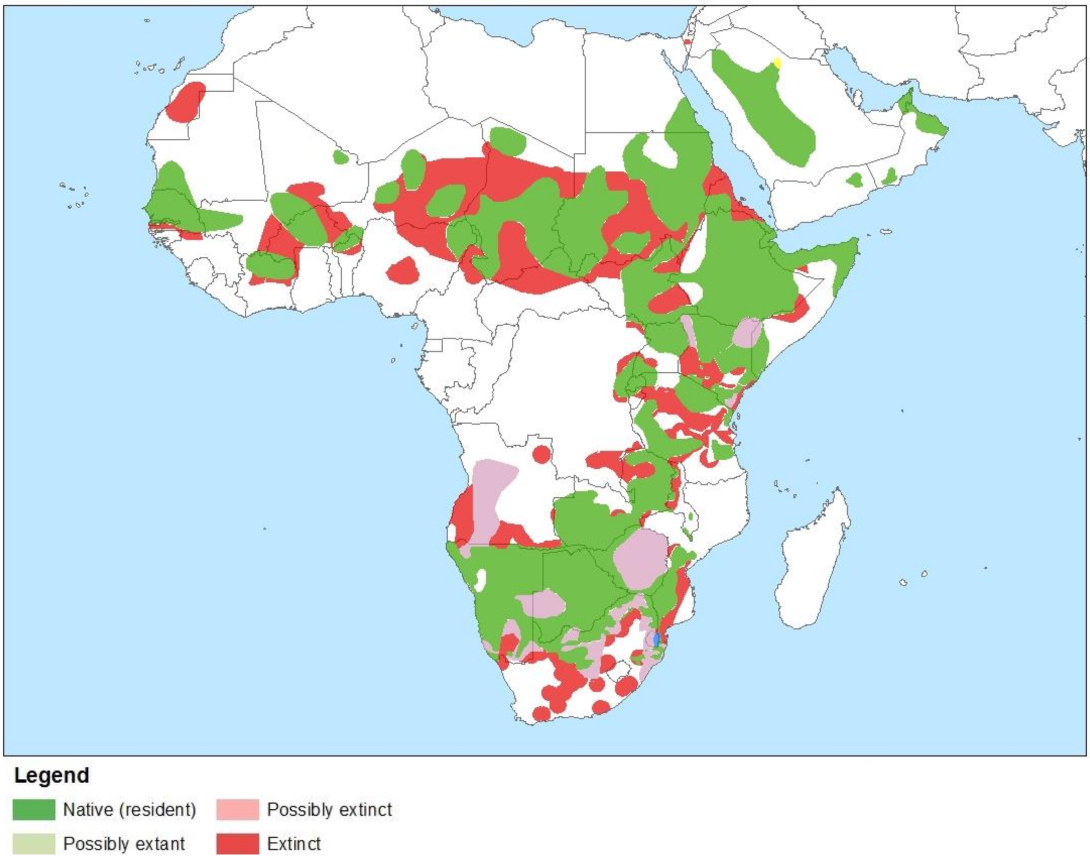

Fig 4.1.3. Range map of T. tracheliotos (BirdLife International 2017).

4.2. Lappet-faced Vulture 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 ca. 97 per cent in rural areas and ca. 39 per cent in national parks between 1969 and 1973 and 2003 and 2004 (Rondeau and Thiollay 2004); 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). *T. tracheliotos* is suffering a slow decline in southern Africa (Boshoff *et al.* 1997) and populations are likely to disappear from 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 in southern Africa, at least the same in east and north-east Africa, and possibly only ca. 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 be about 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 (range: 65-87 per cent) over three generations. Assuming a stable population of 500 mature individuals in the Arabian peninsula, and 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.

T. tracheliotos inhabits dry savanna, arid plains, deserts, and open mountain slopes (Shimelis *et al.* 2005), up to an altitude of 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 (Brown *et al.* 1982; BirdLife International 2000; Ferguson-Lees & Christie 2001). Trees are required for roosting and nesting (Yosef & Hatzofe, 1997). Solitary nests (usually containing just one egg) are built, often in *Acacia* (Yosef &Hatzofe, 1997), such that the birds' distribution is sometimes being limited by these trees' distribution (Boshoff *et al.* 1997), but also in *Balanites* and *Terminalia* (Shimelis *et al.* 2005).

4.4. Biological characteristics

Life history for most vultures 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). *T. tracheliotos* 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 *T. tracheliotos* 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. This means that a single toxic food source can cause high mortality (Kendall *et al.* 2012b; Ogada *et al*. 2012a). For example, 191 vultures including at least 15 *T. tracheliotos* 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) were estimated to have been poisoned in association with the poaching of three elephants (McNutt and Bradley 2013).

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 vultures adopt a slight downward in-flight head posture during foraging (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, providing an extensive array of ecological, economic, and cultural services. 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 & 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 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

In the 2015 IUCN Red List assessment, *T. tracheliotos* was moved from Vulnerable to

Endangered, a higher category of extinction risk (BirdLife International 2017). 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

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

Table 5.3a Threats affecting African vulture species according to IUCN Red List data (using IUCN threat categories) (1 refers to a primary threat, 2 to a secondary threat and 3 to a minor threat

Threats	**Threat significance**
Reduction of food availability	1
Non-targeting poisoning	1
Harvesting for trade	1
Land conversion	1
Human persecution	1
Electrical infrastructure	1
Others	

5.3.1. Poisoning

5.3.1.1 Unintentional (secondary) poisoning

Secondary poisoning is the unintentional killing or harming of carrion-eaters through their consumption of poisoned carcasses or remains. It can occur due to legal or illegal poisoning activities.

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 for pest control, including the use of strychnine for predator control and poisoned livestock baits to kill carnivores like jackals, lions, and hyenas (Ogada 2014). In Namibia in 1995, over 100 *T. tracheliotos* were killed in one strychnine poisoning incident (Simmons 1995). More recently, new-generation pesticides such as Carbofuran, have increased in use and contributed significantly to declines of vultures (Brown 1986; P. Hall *in litt.* 2000; Otieno *et al*. 2010; Ogada 2014). Several *T. tracheliotos* died after feeding on the carcass of a poisoned jackal in Namibia (Komen 2009) and two individuals were killed by feeding on a poisoned carcass in Kenya (Kendall & Virani 2012a). Increasing use of agricultural pesticides has also been highlighted as a potential problem for the species in Saudi Arabia (Shimelis *et al*. 2005).

Veterinary drug

Diclofenac is one of a group of non-steroidal anti-inflammatory drugs (NSAID) used to treat livestock and can be fatal to vultures feeding on livestock carcasses. It 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 from 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). Lead poisoning can also occur when an individual has been non-fatally shot with shotgun pellets containing lead, with subsequent leaching of the lead into the bird's system (Hatzofe, *pers. comm.*)

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 elephant and other big game has increased rapidly since 2012 with significant effects on vulture populations (Hancock 2009; Roxburgh & McDougall 2012; Ogada *et al*. 2015; Ogada *et al*. 2016). Poachers place poison in carcasses of poached animals after removing ivory and other trophies, to intentionally kill vultures whose circling flights above the carcass might otherwise alert enforcement 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). At least 176 White-backed Vultures and 15 Lappet-faced Vultures were killed after feeding on an elephant carcass in Gonarezhou National Park, Zimbabwe in 2012 (Groom *et al.* 2013). When poisoning incidents occur during the nesting season, it is assumed that the young of the poisoned vultures also die of starvation, increasing the numbers killed (Pfeiffer 2016).

Owing to misapprehension about the nature of their diet, *T. tracheliotos* are 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 western and southern Africa (Nikolaus 2001; Sodeinde and Soewu 1999; McKean 2004) and occurs in parts of eastern 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 & Botha 2007), 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 in western Africa, where *T. tracheliotos* may be hunted for belief-based cultural reasons (Buij *et al*. 2016), was estimated to be 143-214 per annum. This represents a sizeable proportion of the 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. *T. tracheliotos* 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)[1].

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

Vultures are hunted for food (e.g. bushmeat) in western 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).

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 in 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 & Thiollay 2004).

5.3.3. Habitat loss, degradation and fragmentation

Habitat conversion is thought to have contributed to large-scale 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 urbanization 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.).

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 *T. tracheliotos* is habitat loss on the lowland plains (A. Shimelis *in litt.* 2012, 2007).

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 *T. tracheliotos* is extremely sensitive (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

Raptors are frequent victims of electrical infrastructure. In Africa this is particularly evident in southern and northern Africa, where there has been an increase in electrical infrastructure development from power lines and wind farms. Such "green energy" initiatives (e.g. wind farms), can be detrimental to vultures, if bird-friendly designs and careful placement of turbines and power lines are not observed (Rushworth & 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). Shimelis (2005) highlights the threat to Lappet-faced Vulture 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. Threats connected especially with migrations

Vultures are more vulnerable to a number of the threats mentioned in 5.3 because of their wide-ranging movements. 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 an increasing toll on vulture populations.

In relation to the poisoning threat described in 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. Modelling of *Gyps* vulture populations in Asia has indicated that only a tiny proportion of carcasses encountered need be contaminated with substances toxic for vultures to have a population level effect. This is partly due to vultures being 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 in Asia to decline at a rate of about 50 per cent per year (Green *et al.* 2004).

The most common type of toxin currently encountered by *T. tracheliotos* may 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*. 2012b), therefore vultures can suffer particularly high mortality at poisoning incidents (Ogada *et al*. 2012a). The vast areas covered by *T. tracheliotos* individuals during foraging, and particularly during age-related and seasonal movements, increases 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) *T. tracheliotos* 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 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.

6. Protection status and species management

6.1. National protection status

T. tracheliotos is not protected by law in all countries of their range; in some countries where they enjoy national protection by law, enforcement measures are insufficient. In Israel, all raptors are fully protected.

6.2. International protection status

All migratory species within the Family Accipitridae are listed in CMS Appendix II. Since October 2015, *T. tracheliotos* has been listed in 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, MsAP (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.

All species in the Order Falconiformes are listed in the Appendices to the CITES Convention (except species of the family Cathartidae, which are not included in the CITES Appendices). *T. tracheliotos* is listed in CITES Appendix II.

6.3. Management measures

Several national scale conservation and research actions are already underway to address threats to the species (BirdLife International 2016):

- Following a workshop, a five-year international action plan for *T. tracheliotos* 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 study on the factors influencing the foraging efficiency in Namibia, using GPS-loggers was published in 2013 aiming to quantify search efficiency and elucidate the factors underlying the observed interspecific differences (Spiegel *et al.* 2013).

A number of management measures have been taken for vultures more generally which are likely to benefit *T. tracheliotos T. tracheliotos*:

- Successful captive breeding efforts were made in Israel in the 1990’s and a small captive ex-situ stock nucleus of *T. tracheliotos* was established. Feeding sites with food that is free of medications are operated in the species former breeding range since 2008.
- 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 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 has launched a campaign to tackle illegal poisoning (Anon. 2013).
- 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

T. tracheliotos 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 *T. tracheliotos* (BirdLife International 2016).

6.5. Population monitoring

"Raptors Botswana" has been monitoring *T. tracheliotos* 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, *T. tracheliotos* 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).

Despite the scale of the threats facing vultures including *T. tracheliotos*, 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 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 could 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 *T. tracheliotos* by countries with remaining populations is an important step towards reversing population declines.

The greatest threats facing *T. tracheliotos* are anthropogenic. 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 *T. tracheliotos* 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 *T. tracheliotos* 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.

T. tracheliotos 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. Listing *T. tracheliotos* 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

Listing the species in Appendix I could unintentionally constrain or increase the logistical and bureaucratic burden associated with captive breeding, conservation rearing or rehabilitation, or moving of individuals or eggs between countries engaged in conservation actions. It could also unintentionally constrain useful research activities such as capture, marking, tracking, health screening, and research into impacts of toxic substances on vultures.

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 *T. tracheliotos*, 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 *T. tracheliotos; t*he Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MOU) which was concluded in 2008. It has so far attracted 57 Signatories (56 countries and the European Union). Israel signed the Raptors MOU in 11 November 2015.

The proponent (Israel) is actively engaged in development of the Vulture Multi-species Action Plan, which will provide a framework for range states to engage and cooperate on a wide range of key activities to address threats to promote *T. tracheliotos* conservation throughout its range.

8. Range States (information from BirdLife International 2017)

Country/ Territory	Occurrence status	Current Presence	Resident	Breeding	Non-breeding
Algeria	Vagrant	Extant			Yes
Angola	Native	Extant			Yes
Benin	Native	Extant			Yes
Botswana	Native	Extant	Yes		
Burkina Faso	Native	Extant			Yes
Burundi	Vagrant	Extant			Yes
Cameroon	Native	Extant	Yes		
Central African Republic	Native	Extant			Yes
Chad	Native	Extant	Yes		
Côte d'Ivoire	Native	Extant			Yes
Democratic Republic of the Congo	Native	Extant	Yes		
Djibouti	Native	Extant			Yes
Egypt	Native	Extant	Yes		
Equatorial Guinea	Native	Extant			Yes
Eritrea	Native	Extant			Yes
Ethiopia	Native	Extant	Yes		

Country/ Territory	Occurrence status	Current Presence	Resident	Breeding	Non-breeding
Gambia	Native	Extant			Yes
Israel	Native	Locally extinct*	Yes		
Jordan	Native	Locally extinct	Yes		
Kenya	Native	Extant	Yes		
Libya	Vagrant	Extant			Yes
Malawi	Native	Extant	Yes		
Mali	Native	Extant	Yes		
Mauritania	Native	Extant	Yes		
Morocco	Vagrant	Extant			Yes
Mozambique	Native	Extant	Yes		
Namibia	Native	Extant	Yes		
Niger	Native	Extant	Yes		
Nigeria	Undetermined	Extant	Yes		
Oman	Native	Extant	Yes		
Palestinian Authority Territories	Native	Locally extinct			Yes
Rwanda	Native	Extant	Yes		
Saudi Arabia	Native	Extant	Yes		
Senegal	Native	Extant	Yes		
Somalia	Native	Extant	Yes		
South Africa	Native	Extant	Yes		
South Sudan	Native	Extant	Yes		
Sudan	Native	Extant	Yes	Yes	Yes
Swaziland	Native	Extant	Yes		
Syrian Arab Republic	Native	Possibly locally extinct			
Togo	Vagrant	Extant			Yes
Uganda	Native	Extant			Yes
United Arab Emirates	Native	Extant	Yes		
Tanzania, United Republic of	Native	Extant	Yes		
Western Sahara	Undetermined	Locally extinct			
Yemen	Native	Extant	Yes		
Zambia	Native	Extant	Yes		
Zimbabwe	Native	Extant	Yes		

*Occasional vagrant records – O. Hatzofe (*pers. comm.*)

9. Consultations

A draft of this proposal was distributed by the Coordinating Unit of the Raptors MOU to all Range States in early May 2017, asking for comments, but by the final date of submission (25 May 25 2017) none was received.

10. Additional remarks

Early drafts of this proposal were based on information provided by the Nick Williams at the Coordinating Unit of the Raptors MOU, in close collaboration with the Technical Advisory Group. The proposal benefitted greatly from the valuable comments of Ohad Hatzofe. The final version was prepared for submission by Simon Nemtzov of the Israel Nature and Parks Authority, CMS Focal Point and CMS Scientific Councilor for Israel, who wishes to acknowledge and thank those mentioned above.

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