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ARTICLES

Maximum number of Griffon Vultures ever recorded on active migration in a single day at the Strait of Gibraltar.

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Abstract

The Strait of Gibraltar is the most important bottleneck for Griffon Vulture (*Gyps fulvus*) migration in the Palaeartic but its monitoring has been irregular during the last four decades. The breeding population in Spain and the number of vultures recorded migrating across the Strait have both increased, as has the knowledge about their migratory routes, favourable migratory weather conditions and this species' overall phenology. Despite this, the Griffon Vulture is still one of the least monitored major species in the Strait of Gibraltar. On assessing the weather forecasts during the autumn of 2015 it was predicted that the 28th October was a possible vulture migration "D-Day". The resulting total was an impressive 2,362 Griffon Vultures arriving on the Moroccan side of the Strait of Gibraltar; the biggest number ever recorded in a single day for this species.

Introduction

The Griffon Vulture *Gyps fulvus* is distributed from the Iberian Peninsula and north-west Africa to south-west Asia and northern India (Del Hoyo et al. 1994). Its major population is concentrated in Spain with a minimum of 24,609 breeding pairs, suggesting a population of around 80,000 individuals (Del Moral 2009).

Formerly it was considered as a resident species, but some studies indicated that (predominantly young) individuals from northern Spain leave their colonies and cross the Strait of Gibraltar to reach the Sahelian belt, south of the Sahara (Elósegui & Elósegui 1977, Bernis 1983, Alonso 1984, Griesinger 1998). The first migrating vultures crossing the Strait start as early as August and birds continue crossing into December. The peak period of autumn passage is from late October to early November, with the 30th of October marked as the median date for the migration of Griffon Vultures across the Strait of Gibraltar (Onrubia 2015). This is when the largest flocks congregate on the European side, sometimes waiting weeks for the optimal conditions for the flight across the shortest route to Africa. This sea crossing depends more on wind direction rather than wind force, with NW winds being the most favourable (Griesinger 1998). Griffon Vulture passage across the Strait is also characterised by the concentration of a high number of vultures crossing over just in few days among the autumn migration season (Bernis 1983, Griesinger 1998).

Autumn counts of migrating Griffon Vultures have recorded increasing numbers over the last 40 years, since the early 70s when Pineaud and Giraud (1974) observed fewer than 600 individuals. Subsequently, 734 were counted in 1976 (Bernis 1980); an estimated 1,000 birds were migrating in the 80s (Finlayson 1992), and at least 2,160 (mostly juveniles) in the early 90s (Griesinger 1994). The MIGRES Program recorded 2,649 in 1999 (SEO/BirdLife 1999) and 4,816 in 2000 (SEO/BirdLife 2000). The latest estimates of Griffon Vultures migrating across the Strait are around 8,000 birds during autumn migration (Onrubia 2015), with a maximum of 1,807 birds on 29th October 2008 (Ramírez 2009). This increase is more than likely due to the significant increase of the Griffon Vulture population over the last four decades (Martí 2003). These figures make the Strait of Gibraltar the most important migration spot for vultures in the Palaeartic and the most important one for the Griffon Vulture in the world.

There has been no systematic field work conducted on Griffon Vulture migration in the Strait of Gibraltar carried out since 2013, and there are no published data available from Griffon Vulture migration in the Strait of Gibraltar during the last decade, although there is some information related to movements of Rüppell's Vultures in the area (Ramírez *et al.* 2011). This is largely due to the tendency of this species to migrate mostly during October and November, whereas the majority of migrating species of raptors and storks occurs between July and early October, when most of the monitoring effort takes place. Furthermore, migration fieldwork from the African side of the Strait of Gibraltar has been scarcely carried out and no bibliography is available apart from isolated records (incluir go-south.org) since the 70s (Pineaud & Giraud 1974).

The aims of this work are to address the importance of single mass movements or "D-Days" for the crossing of the Strait of Gibraltar and also to contribute to the only available data of Griffon vulture migration in the Strait of Gibraltar since 2011 (Migres 2011), describing the highest number of migrating vultures ever recorded crossing the Strait in a single day.

Methods and Results

The weather in the Strait during the weeks prior to the 28th of October 2015 included heavy precipitation and strong easterly winds, which inhibited any southward migration. This was reinforced by no observations of migrating Griffon vultures made by local birders during those weeks (Rachid El Khamlichi pers. comm.). The number of vultures remaining on the European side of the Strait kept increasing, with regular groups of vultures arriving from the north, a situation that has been described previously by Finlayson (1992). Given the adverse weather conditions and considering the weather forecast (WindGURU) the author moved to the northernmost point of the Moroccan shore of the Strait on the evening of 27th October in anticipation of a large movement on 28th. The morning of the 28th October 2015 witnessed optimal migration weather - a light west wind (Beaufort Scale force 2), a partially cloudy sky and excellent visibility, which perfectly matched with the previously described requirements for a crossing of the Strait.

From three consecutive locations, Cape Cires (35º54´20.07"N 5º28´53.81"W), Al Marsa Mirador (35º53´18.38"N 5º27´37.52 W) and the Jbel Moussa Southern slope (35º53´6.95"N 5º25´49.92"W), the author (from 08:00 hrs a.m. to 16:00 hrs UTC) recorded 2,362 vultures arriving in off the sea onto the Moroccan shore between 09:30 hrs and 15:30 hrs (UTC). The section of the Moroccan shoreline involved in the arrival is 7.52 km wide, from Cape Cires at the westernmost point and Cape Leona at the easternmost, most birds arriving between Alhamiar and Almarsa capes, all in the Tanger province (Figure 1). This stretch of coastline involves the northernmost tip of Morocco and the shortest sea crossing between Africa and Europe.

Figure 1: Map of the study area in North Morocco, located on the southern shore of the Strait of Gibraltar. The three lookouts are marked and the coast section that comprises the entrance of the vultures is limited with an arrow.

Discussion

The actual number of vultures was probably higher because, during the movements between the three observation locations, recording was interrupted and some vultures would have been able to pass through unrecorded. Regardless, the recorded umber exceeds the previous maximum day record of vultures across the Strait by more than five hundreds birds.

Another observer also recorded (http://www.magornitho.org/) this arrival but from 09:00 hrs to 15:00 hrs, from a fixed location at Jbel Moussa, with an estimate of 3,500 vultures by the end of the day. This number, however, is more than likely an over-estimate, given that some counts were made of inland kettles, instead of rows of gliding vultures heading in off the sea, which provides a more accurate count. Therefore 2,362 should be considered the most accurate minimum count.

This record is the largest number of Griffon Vultures ever recorded crossing the Strait of Gibraltar in a single day, and probably the world. The implication is that more than a quarter of all the Griffon Vultures that have ever been observed, yearly, across the Strait during the last averaged autumns did so in just one day.

The location where the largest counts of migrating vultures were made, and thus probably the most suitable for monitoring the crossing, was Al Marsa Mirador, which comprised birds coming from the direction of Cires and Almarsa capes. Furthermore, some of the vultures passing by Punta Leona fly over the Jbel Moussa Mountain and soar over the slopes to the east of Almarsa cape before finally gliding southwards, and can be counted this way also from Al Marsa Mirador. The temporal distribution of vultures arriving on the Moroccan side (see Figure 2) shows that most crossing were completed in the afternoon, which was more widespread and later in the day than Bildstein (2009) described.

Surprisingly, no vultures were recorded crossing the Strait the next day (29th October 2005), characterised by a light easterly wind (Beaufort Scale force 1-2) accompanied by sunshine and excellent visibility. However a flock of several hundred vultures was detected along the European shore from a distance of at least 21 km.

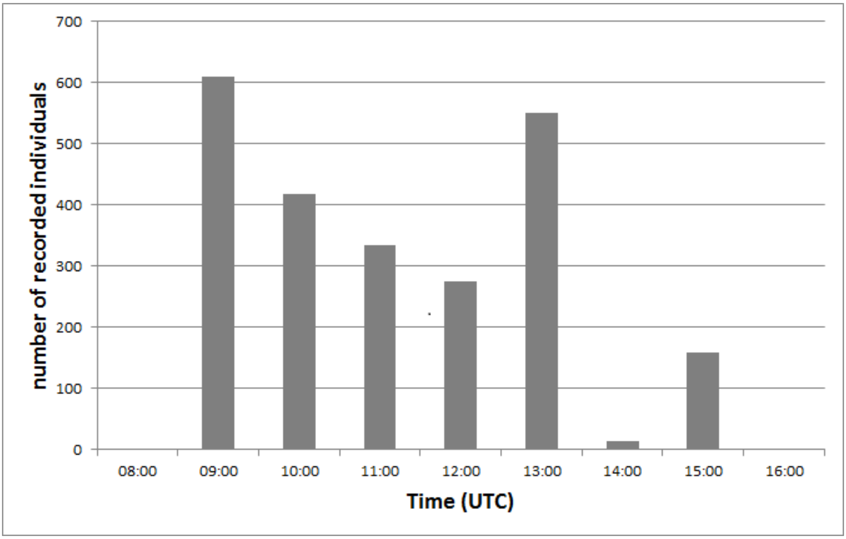

Figure 2: Temporal distribution of vultures arriving on the African shore after crossing the Straits of Gibraltar between 08h00 and 16h00 (UTC).

Conclusion

With the availability of accurate weather forecasting and knowledge of weather over previous weeks in the Strait, it was presumed that the 28th October was the most likely date for recording a massive Griffon Vulture arrival on the Moroccan side of the Strait of Gibraltar. The day turned out to be the best Griffon Vulture migration day ever recorded in the Strait of Gibraltar and so the best for any vultures in the Palearctic. The predictability of these massive events or “D-Days” relies on two key factors, the very specific weather requirements of Griffon Vultures for crossing the Strait of Gibraltar and the phenology of the autumn migration for this species.

In the absence of an ideal specific and systematic monitoring that the Griffon Vulture requires, these predictable and massive "D-Day" counts can be carried out relatively simply and with affordable resources. Such counts can provide useful data about the timing, spatial occurrence and quantity of Griffon Vulture autumn migrations.

Other factors that need to be taken into consideration are the important advantages of counting soaring migrants on the arrival shore of the Strait of Gibraltar instead of the departure coast. This is because the reduced height of the arriving birds on the Moroccan coast makes bird detection easier. More importantly, big flocks of Griffon Vultures sometimes make several abortive attempts at crossing the sea, starting high over the European shore and often gaining several kilometres over the sea before coming back to the original coast. This typical behaviour has been described as 'hesitating' by the main authors that studied Griffon Vulture migration in the Strait (Bernis 1983, Griesinger 1994, Bildstein 2009). This behavioural feature makes monitoring difficult and counting imprecise from the European shore because birds that hesitate or abort attempted sea crossings can return to the Spanish shore and be recounted once they reintegrate into another flock about to depart. This is likely to be the main source of error mentioned by Bernis (1980, 1983) when gathering field data for this species. Duplicate counts, however, are minimised (if not nullified) when those flocks of vultures reach the African shore. They then head rapidly southwards and inland upon seeing an expanse of terra firma.

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Sighting of Red-headed Vultures (*Sarcogyps calvus*) in a group.

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Abstract

Asian vultures are endangered birds included in Schedule 1 of the Wildlife Protection Act, 1972. From the nine species of vultures found in India, five are reported from the Bundelkhand region in central India. An exhaustive survey was done in the Panna Tiger Reserve, Madhya Pradesh, from January to June 2016. Red-headed Vultures (*Sarcogyps calvus*) are solitary in nature but during the survey we collectively sighted a total of 12 Red-headed Vultures in Panna Tiger Reserve, whilst eight were recorded in the region between Hinauta and Dhudhua Seha in one group. Red-headed Vultures are facing serious threats of habitat loss and lack of food availability along with diclofenac poisoning, and they require various conservation measures to maintain their population.

Introduction

The status of vultures in and around the Indian sub-continent is in the spotlight as ornithologists remain concerned over their declining populations (Kushwaha & Kanaujia 2009).

Asian vultures are endangered birds included in Schedule 1 of the Wildlife Protection Act, 1972. There are nine species of vultures found in India of which five species are reported from the Bundelkhand region of Madhya Pradesh, including the Red-headed Vulture (*Sarcogyps calvus*). The Red-headed Vulture was resident throughout the Indian subcontinent and found up to an altitude of about 3,000 m in the Himalayas, but it is sparsely distributed and nowhere abundant (Naoroji 2006). It is a relatively timid bird at feeding sites, compared to other vulture species. It is usually solitary or seen in pairs. The dwindling population of Red-headed Vultures is facing the threat of extinction and is included in the critically endangered category of the IUCN red list. They usually reside in semi-desert areas, deciduous forests, foothills and along riversides.

Apart from declines caused by diclofenac poisoning, vultures have also declined in many parts of their former distribution ranges owing to food shortages and loss of habitat (Pain *et al.,* 2003). The breeding population and status of Red-headed Vultures too is facing a serious threat from habitat loss and other biotic pressures (Chhangani & Mohnot 2004).

There are several likely reasons for the presence of vultures in the Panna Tiger Reserve of Madhya Pradesh. Some of these include: climatic and socio-economic conditions, tradition of livestock rearing, availability of food, shelter and breeding sites (i.e. large trees). They appear to be playing an important role in the conservation of Red-headed Vultures in the Panna Tiger Reserve. The present study reports on the presence of Red-headed Vultures and threats to their existence.

Study Area

The Panna Tiger Reserve (24°27'–24°46'N; 79°45'–80°09'E) is geographically located in the Vindhyan Range and encompasses an area of 542.67 km^2 in Panna and Chattarpur Districts of Madhya Pradesh (Fig. 1). The average rainfall of Panna Tiger Reserve is about 1100 mm. In 1994, it became the 22nd tiger reserve in the country and 5th in the state. In 2007, an Award of Excellence was given to Panna for the best maintained tiger reserve in the country by the Ministry of Tourism. The terrain of the tiger reserve is categorised by widespread plateaux and gorges, and can approximately be divided into three distinct plateaux on the Panna side of the Ken River: the upper Talgaon Plateau, the middle Hinnauta plateau, and the Ken valley.

The moist deciduous forests of the Indo-Gangetic Plains start in the reserve, which is located on the northern teakwood and eastern part of the Kardhai forests. The common tree species are *Diospyros melanoxylon, Madhuca indica, Tectona grandis, Buchanania latifolia, Anogeissus latifolia, A. pendula, Lannea coromandelica* and *Bosswelia serrata.*

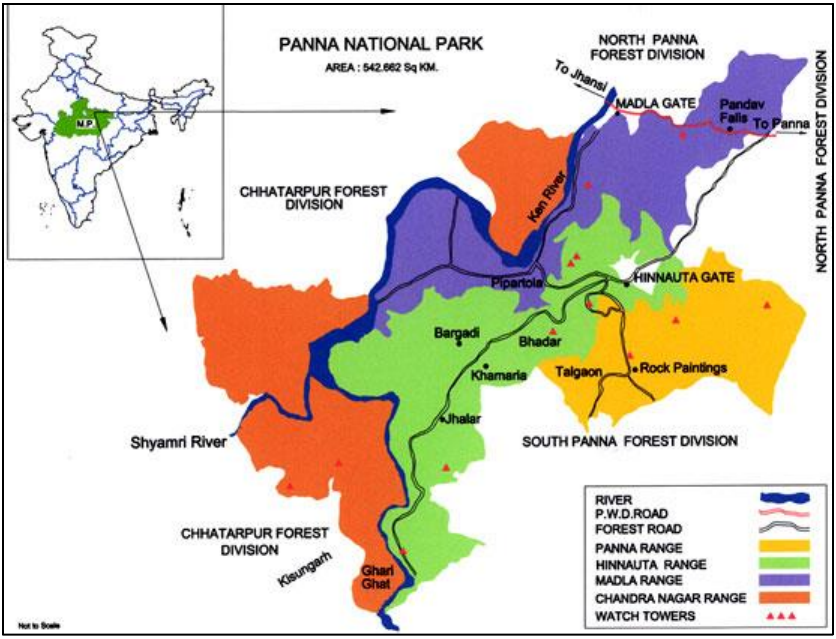

Figure 1: Map of Panna National Park, Madhya Pradesh, India.

Materials and Methods

Extensive surveys for roosting and feeding sites, active nests and their consequent monitoring, were undertaken in the study area using a motorbike for short distances, and a 4X4 vehicle for long distances. For the study, some of the current primary and secondary information of vulture populations (Chhangani 2005, Vardhan *et al.* 2004) was used. A 70 D SLR camera and 50 X Olympus binoculars were used for photographic records. All identifications of vultures were based on Naoroji (2006), Kazmierczak (2000) and Ali & Ripley (1987).

Results and Discussion

Red-headed Vultures were usually sighted either singly or in pairs. Most of them were observed during flight and roosting. Ali & Ripley (1978) and Kazmierczak (2000) record them as being more solitary than most other vulture species; during the survey collectively we sighted a total of 12 Red-headed Vultures in Panna Tiger Reserve. A maximum of eight was reported in the region between Hinauta and Dhudhua Seha in a group at one time attending to Blue bull *Boselaphus tragocamelus* carcasses (Fig. 2, which also includes an adult Long-billed Griffon *Gyps indicus*); two birds were to one side, still feeding. Of these eight individuals, three were females and the rest were males. (The female has the lower scapulars and tertials distinctly white and colour of the eye is brown (Naoroji 2006).) Observations of Long-billed Griffons (Fig. 3) in the reserve are the subject of another contribution (in prep.).

There appears to be a strong correlation between the existence of Red-headed Vultures and that of predators such as Tiger *Panthera tigris*, Leopard *P. pardus*, Striped Hyaena *Hyaena hyaena*, Sloth Bear *Melursus ursinus*, Wild Dog *Cuon alpinus*, and Jackal *Canis aureus*. The predator populations are on the increase, and they deliver a good supply of carcasses for vultures. Other species of vulture, *Gyps indicus, Neophron percnopterus* and *Gyps himalayensis* were also observed during the study. There was only a single nest of the Red-headed Vulture observed in the Dhudhua Seha Range, where the vultures nested successfully in 2013 and 2014.

The presence of Red-headed Vultures in this area is an indication of a healthy environment and the birds' natural dispersion. This area should be regularly monitored as an important locality for Red-headed Vultures. The Panna Tiger Reserve can be developed as a potential breeding site and should also be included in any Red-headed Vulture conservation project or other conservation actions.

Red-headed Vultures are facing serious threats of habitat loss and lack of food availability, change in land use and agricultural practices (Chhangani 2002, 2003, 2005) along with diclofenac poisoning (Oaks *et al.*, 2004). They also require various conservation measures so as to maintain their population.

Conclusion

Efforts for *in situ* conservation in the Panna Tiger Reserve are needed. A more comprehensive study is required to estimate the exact population number and breeding pairs, and the nest locations. The data obtained will also support the managing of a vigorous Red-headed Vulture population as this is one of the zones in the Bundelkhand region where the species still exists.

Figure 2: Red-headed Vultures unusually observed in a group during feeding. Two additional vultures are nearby out of sight.

Figure 3: Other species of vulture *(Gyps indicus)* in Panna Tiger Reserve.

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Keywords: Bundelkhand, Panna Tiger Reserve, endangered, habitat loss, diclofenac

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Alternative methods to mitigate wind turbine collisions for vultures and other soaring birds

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Introduction

The fast pace of development within the wind power industry continues to grow, with numerous major developments in the late stages of planning or already underway (Windustry 2015). The ongoing problem of bird mortalities associated with wind turbine collisions can thus be expected to increase, particularly in situations where development permission has already been granted in sensitive areas. Whilst a number of mitigation methods and new turbine designs are currently available there are a number of drawbacks related to their efficiency of operation or timely implementation (Desholm 2003, Duchamp 2014, Kelly & Fielder 2008, May *et al.* 2012, May *et al.* 2015). A review by May *et al.* (2015) on 26 different post-construction measures currently available to reduce bird mortality at wind farms suggests that those directly altering turbine speed or effecting temporary shutdowns may prove to be most effective. Approaches that aim to alter bird behaviour, including those that provide visual and sound based cues, may also prove to be effective to some degree (May *et al*. 2015). However increasing the attractiveness of areas surrounding a wind farm may well be the preferred option to draw bird species away from turbines (Goodwin 2013, Martin *et.al* 2012, May *et al*. 2015).

Considerations

It is widely known that bird flight is strongly related to meteorological conditions, and flight patterns have long been used to gather qualitative information in this regard (Treep *et al.* 2016, Woodcock 1940). Wind farms are often situated on mountain ridges or hillsides in order to make optimal use of prevailing winds. Soaring birds such as vultures are attracted to these areas in search of orographic updrafts, which they utilise by circle soaring, straight-line soaring or lee wave soaring (Bildstein 2006, Goodwin 2013). Within their southern African range, Bearded Vultures *Gypaetus barbatus meridionalis* actively select ridge tops and upper slopes and predominantly fly at a height that places them at a high risk of collision with turbines. A similar situation exists with the Cape Vulture *Gyps coprotheres* (Rushworth & Krüger 2014).

Research suggests that wind farms also have the potential to significantly affect near-surface air temperatures (Baidya Roy & Traiteur 2010). In addition, turbulent eddies generated in the wake of the rotors enhance vertical mixing of air, significantly affecting the vertical distribution of temperature and humidity as well as surface sensible and latent heat fluxes (Baidya Roy *et al.* 2004). Under natural conditions, thermal eddies are generated by differential heating of the ground resulting from the upward flow of warm air and downward flow of cool air (Koch 2006). Soaring birds take advantage of the energy in buoyant warm air within thermals to gain and maintain altitude whilst expending minimal energy. They then use the potential energy to glide to the next thermal (Bildstein 2006, Koch 2006, Rüppell 1977, Van Loon *et al.* 2011). It has widely been recognised that vultures are attracted to thermal activity, and the potential of using 3D location data from Eurasian Griffons *Gyps fulvus* for estimating wind velocity as well as the strength of thermally driven uplift has recently been explored by meteorologists (Treep *et al.* 2016). Tandem flight behavior in Cape Vultures appears to be more prevalent on days with high thermal or orographic wind activity (Goodwin 2005). As eddies produced by turbine blades closely resemble those within natural thermals they thus have the potential to attract vultures and other soaring birds, particularly on days of reduced thermal activity (Goodwin 2013).

Turbines traditionally employed for commercial power production are commonly in the 2 MW range and the full installation cost is in the region of US $3 - $4 million per turbine (Windustry 2015). For most wind farm projects, current business models and budgets have been based on the average twenty year life span of the standard wind turbine models currently available. In addition each subsequent generation of turbines (based on improvements to these standard designs) has incurred lower repair and maintenance costs, making their ongoing use an attractive option (Wind measurement International 2017). Alternative turbine designs such as Vortex Bladeless® incorporate a vertical bladeless cylinder, which oscillates or vibrates. This configuration offers a promising alternative, being environmentally friendly as well as providing substantial savings in manufacturing and operating costs compared to conventional wind turbines (Vortex Bladeless 2015). However, as with any new technology, these are not without their drawbacks, including concerns related to the design and efficiency of power production (McKenna 2015). As such, these alternatives may take some time to gain popularity within the industry, which suggests that the phasing out of conventional risk-prone technology would be a lengthy process of at least twenty years in many cases.

Whilst there are a number of technical options available for collision mitigation in standard design turbines including avian radar systems and other video based detection systems, all experience some drawbacks. These may include relatively high installation and operational costs, modification to existing structures and control interfaces (with possible warrantee implications) as well as poor reliability related to exposure to the elements and difficulty in the identification of species involved (Desholm 2003, Duchamp 2014, Kelly & Fielder 2008, May *et al.* 2012). Implementation of these systems often entails abrupt braking of wind turbines, which results in costly wear and tear to braking systems and other turbine components, as well as having a negative effect on electricity production, which could be considered impractical and counterproductive. Indeed, it has been implied that their only practical use is to assist developers in obtaining planning approval for wind turbines in potentially sensitive habitats (Duchamp 2014). Various painting trials have also been conducted on turbine blades in order to enhance visibility to birds, although few have proven to be completely effective (Nazzaro 2006). A specific evaluation of the DTBird® video-system at the Smøla wind-power plant in Norway revealed that in White-tailed Eagles *Haliaeetus albicilla* a great deal of flights detected in the area were within the rotor-swept zone. Most of these were direct flights, although a significant number of soaring and circling flights were detected. However the reliability of the system was questionable, with considerable downtime recorded for one of the units employed for the study (May *et al.* 2012).

The southern African population of the Bearded Vulture and Cape Vulture in the Maloti-Drakensberg range are at significant risk associated with proposed wind-farm developments (Rushworth & Krüger 2014). The use of GPS tagging and subsequent spatial analyses of Bearded Vulture movements in the Lesotho highlands and Drakensburg escarpment in southern Africa has suggested poor positioning of two proposed wind farms and that the location of one of these should be reconsidered to reduce the impact on this species (Reid *et al.* 2015). Thus, if developers and authorities cannot be persuaded to site wind farms in areas of reduced potential impact to these birds, then novel or alternative methods for mitigation will be required. Since increasing the attractiveness of areas surrounding a wind farm may be the preferred option to draw soaring birds away from turbines, alternative physical applications should be explored in this regard.

Alternative Mitigation Methods

Asphalt pavement surface temperatures may reach up to 70 °C in summer, creating a rise in temperature of the air above. This is commonly referred to as the 'heat island effect' (Bobes-Jesus *et al.* 2012). The temperature profile in asphaltic paving is affected directly by the thermal environmental conditions to which it is exposed. The primary modes of heat transfer are incident solar radiation, thermal and long-wave radiation between the pavement surface and the sky as well as heat transfer between the pavement and air in direct contact with the surface. The direction of the heat transfer is upward from the pavement as deep sky temperatures typically are significantly lower than pavement surface temperatures (Yavuzturk *et al.* 2005). A possible mitigation method could thus be to exploit this effect via the provision of extensive asphalt paved areas at a suitable distance adjacent to relevant wind farm developments. Rising heat from these areas would provide alternative thermal lift to attract vultures (and other soaring birds) away from impact zones. These inert asphalt surfaces may negate the need for any interference with daily turbine operations and could possibly also double as lay-down storage or parking areas. As a variation on the theme above, solar panels could be installed adjacent to wind farm developments to provide this alternative thermal lift for soaring birds. Solar photovoltaic panels are mainly dark in colour with very low albedo and high emissivity, typically absorbing about 85% of the incoming light, of which 15% is converted into electricity, whilst the remaining 70% of the energy is converted into heat (Golden *et al.* 2007). Due to this, the possible installation of photovoltaic arrays could prove to be a viable alternative, as this would provide additional electrical generation capacity along with rising hot air and thermals, which would also negate the need for interference with normal turbine operation. However, these possible alternatives would bring their own disadvantages, including additional power infrastructure for solar photovoltaic installations, which would need to be positioned and routed appropriately. Similarly, additional infrastructure can cause localised reduction of natural ground cover, which would reduce suitable habitat and foraging areas for both birds and other animals present in that area. Monitoring potential effects of such installations might become possible in the near future in rural Australia, where an estimated 1000 MW of potential opportunities to add solar installations alongside existing wind farms has already been identified. This capacity is expected to double by 2020 (ARENA 2016). Observations on the behaviour of the Wedge-tailed eagle *Aquila audax* in these areas may prove useful in the assessing the suggested alternative methods discussed above.

Conclusion

The potential risk posed to vultures and other soaring birds by existing and proposed wind farm developments may remain for the foreseeable future. Whilst the most suitable methods of mitigation remain the initial location of potential developments to less sensitive sites, and the use of more ‘eco-friendly’ turbine technology, mitigation at existing sites, or developments in the late stages of planning may require some novel thinking.

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SHORT COMMUNICATIONS, NOTES AND REPORTS

Early records of vultures in Zimbabwe

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In August 1967 the author observed a flying White-backed Vulture *Gyps africanus* on the Botleti River, Botswana, silhouetted against a cloud. Vultures were spread out at regular intervals in all directions forming a watching network, which in earlier times extended over most of southern Africa. Cape Vultures *Gyps coprotheres* were described as 'abundant' in southern Matabeleland and Mashonaland (Buckley 1974, Marshall 1900). It is difficult to believe that Cape Vultures (if correctly identified) could be so abundant in early Zimbabwe with only one small breeding colony. The historical absence of vultures in the Matobo National Park (20°33'S, 28°30'E) was said to be demonstrated by a horse not being pecked clean by vultures in 1896 (Donnelly 1985). However, this was in the post-rinderpest era (just) when Selous (1896) referred to the "extraordinary absence" of vultures in the area.

There are no reported early breeding records of vultures from Zimbabwe (Priest 1933; Dean and Milton 2004). However there are a number of sites called "Vulture's Hill" in local languages, for example in Chirisa Game Reserve (17°45'S, 28°10'E), which may refer to previous nesting colonies of Cape Vultures (Irwin 1981). Nowadays vulture breeding is confined to Hwange National Park (17°44'S, 26°57'E), south-east Lowveld and the Zambezi Valley apart from the now erratically used Wabai Hill (near Shangani (19°00'S, 29°45'E) occupied by Cape Vultures (Mundy 1997).

However, one early report of vultures breeding in Zimbabwe was from south of Plumtree (20°30'S, 27°48'E) in October 1908 where Cape Vultures were reported incubating on a tree nest (Mouritz 1910). This clearly refers to White-backed Vultures as Cape Vultures only breed on cliffs. A White-backed Vulture egg was collected at Matetsi (18°05'S, 25°52'E) (James 1970) but no year is given, though the activity dates of the collector (E. Davison) were between 1930 and 1960.

An egg (reported as *Gyps rueppellii!)* was collected from a mimosa thorn tree without locality or date (Buckley 1874). However this expedition only reached present day Zimbabwe in September and October and the laying season of this bird is May-July, so we must conclude this egg was collected further south. The current whereabouts of this egg are unknown but it's not mentioned in Dean and Milton (2004). White-backed and Hooded Vultures *Necrosyrtes monachus* were said to be breeding at Wabai in 1951 (Miles 1951) and a colony of seven White-backed Vulture nests was observed near KweKwe in June 1954 (Harwin 1954). No mention of nest contents is made in any of these accounts but we may presume that birds were seen on the nests. As these birds do not roost on their nests, this is probable breeding at least.

Eggs of three species of vulture in South Africa are reported by Oates (1902) and Wolfe (1938) (including White-headed Vulture *Trigonoceps occipitalis*) but none from Zimbabwe. There was much confusion between *Gyps* spp. in earlier times but a definite difference in nest-sites clarifies breeding records. There are few early instances of breeding for vultures (Dean and Milton 2004) and none for the Zimbabwe plateau. The above is the first record of Hooded Vulture breeding outside its current distribution and the first for White-backed Vulture outside the national parks of Zimbabwe making these records, even if only probable, worth drawing attention to.

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Cooperative kleptoparasitism in a pair of Egyptian Vultures *Neophron percnopterus* in northern Spain

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Kleptoparasitism describes the stealing of already procured food by individuals of one species from individuals of another (Brockmann & Barnard 1979). Cooperative hunting is defined by Ellis *et al*. (1993) as hunting with a clear division of labour and the orderly sharing of spoils with enhanced success, with coordinative signals sometimes present. In true cooperative hunting, a group consists of at least two members that are a stable social unit, and their cooperation should benefit the group rather than just the individual. However, when employed by raptors, separate roles are sometimes evident, but sharing of prey is limited (Eakle *et al*. 2014).

Herein, we describe cooperative kleptoparasitism by a pair of Egyptian Vultures *Neophron percnopterus* robbing a Griffon Vulture *Gyps fulvus* at Matute Griffon colony, La Rioja, Northern Spain 42º 17’ 53’’N, 02º 47’ 46’’W. This cliff hosted twenty three breeding pairs in of Griffon Vultures 2007.

On 24 May 2008, at 16h30 UTC, an adult Griffon arrived at a nest and started feeding a fully-grown, nearly fledged, nestling by regurgitating food onto the nest after the chick’s food begging behaviour (Mundy *et al*. 1992). The nest was centred in a cave suitable for Griffons to breed, with narrow ledges at the extremes suitable for an Egyptian Vulture to perch, but not sufficient for the larger sized Griffon. The nestling started feeding on its own when the Egyptian Vulture pair appeared on the ledge with one bird at each side. These Egyptian Vultures were unmarked, but because there was only a single nesting pair on Matute colony since 1984 (Lopo & Ceballos 1990, Perea *et al*. 1990, Camiña 2008), we believe that these birds were the resident breeding pair. The juvenile Griffon was aware of the pair, turning its head right and left alternately whilst standing over the regurgitated meat. After five minutes one of the Egyptian Vultures slowly approached the young Griffon and tried to snatch some food. The juvenile opened its wings and extended its neck while vocalising with screeches and loud chatters. Then, the Egyptian Vulture moved back and waited. As the Griffon threatened the first bird, its mate moved forward trying to reach the food as well. Then the juvenile Griffon turned toward the second Egyptian Vulture and displayed the same harassing behaviour as seen toward the first one. Both the Egyptian and the Griffon Vultures alternated these forward (aggressive) and backward (defensive) movements for at least 15 minutes. The juvenile moved to one of the narrow ledges and almost fell, providing one Egyptian Vulture the opportunity to take a small amount of food. The nestling recovered its original position and the Egyptian Vulture pair left the ledge with the robbed food at 16h55.

We concluded this behaviour to be ‘cooperative kleptoparasitism’ by the pair of adult Egyptian Vultures. It is similar to what happens with colonial seabirds. Kleptoparasitism seems widespread among raptors such as eagles (Brockman & Barnard 1979, Brown 1980, Love 1983, Berkelman *et al*. 1999), kites (Giacomo & Guerreri 2008) and even Bearded and Egyptian Vultures at feeding or nesting sites (Pascual & Santiago 1991, Margalida & Heredia 2002, Margalida & Bertran 2003, Bertran & Margalida 2004, pers. Obs.). However, we have not found previous references to theft in a cooperative context for vultures (Mundy *et al*. 1992, Donázar 1993). Here both mates coordinated their movements by performing an alternate approach at the Griffon defending the food. This behaviour by Egyptian Vultures has been rarely observed, probably because the scattered and territorial distribution of the species. Kleptoparasitism by Egyptian Vultures would be opportunistic and limited to the end of the Griffons’ breeding season when fledglings spend time alone at the nest while parents are foraging (Pascual & Santiago 1991). The cost for the Griffon Vulture is relatively low, as the total amount of food an Egyptian Vulture can take within its crop and beak is small. Theft is much more likely to be successful when performed cooperatively because of the Egyptian Vulture's small size compared to all other sympatric vultures.

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Key words: Griffon Vulture; Gyps fulvus; cooperative hunting.

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Sighting of critically endangered Red-headed vulture *Sarcogyps calvus* (Scopoli, 1786) in Palamau Tiger Reserve, Jharkhand, India

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Introduction

Palamau Tiger Reserve (23° 25′ to 23° 55′ N and 83° 50′ to 84° 36′ E), was notified in 1973 as one of India's first nine tiger reserves established under Project Tiger. It is located under the western part of the Chhotanagpur plateau and is part of the Central India landscape (Anon, 2013). The vegetation types are broadly categorised as dry moist forest, dry Sal forest, moist Sal forest, high level plateau Sal forest and moist forest (Champion and Seth 1968).

Vultures play an important role as natural scavengers in the ecosystem and help prevent hazardous infectious disease like anthrax and rabies (Ogada *et al.* 2012). However, the widespread use of non-steroidal anti-inflammatory drugs (NSAIDs), mainly diclofenac, caused serious declines of vultures across south Asia (Oaks *et al.* 2004). Globally, there are 16 species of Old World vulture and nine of these are found within the Indian subcontinental region (Ali & Ripley 1987). Four species: White-rumped vulture *Gyps bengalensis*, Slender-billed vulture *Gyps tenuirostris*, Long-billed Vulture *Gyps indicus* and Red-headed Vulture *Sarcogyps calvus* are listed as critically endangered and Egyptian Vulture *Neophron percnopterus* is listed as endangered under the International Union for Conservation of Nature (IUCN) Red List (Birdlife International 2013).

Historical records of Red-headed Vulture exist for Lohardagga in Jharkhand and Manbhum in West Bengal (Dutta *et al.* 2004), during the systematic ornithological survey was carried out by Zoological Survey of India (Fig. 1), but no recent records are reported for the area around Palamu Tiger Reserve.

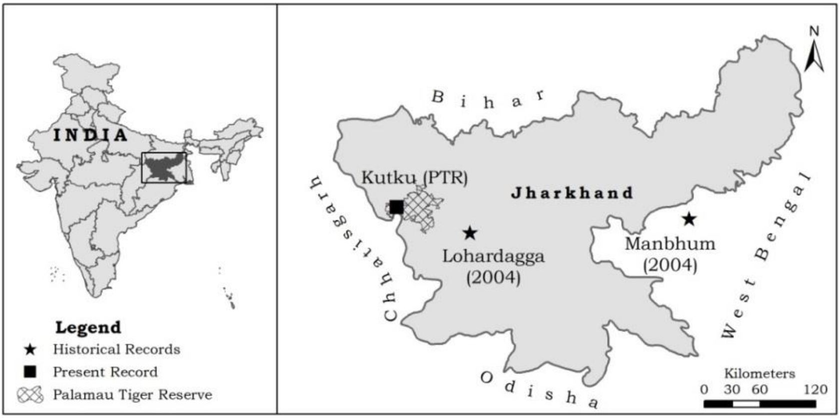

Figure 1: Map showing the historical and present record of *Sarcogyps calvus* in Jharkhand.

Observation

A Red-headed Vulture, also known as the Pondicherry Vulture, was sighted on 17th April, 2014 at 10.30 am, soaring about 30 meters above the ground in clear skies near Kutku village (23°40′47.37″N and 83° 58′13.86″E), within the Daltonganj Core area of Project Tiger. In flight, diagnostic features include a white band on the underside of the wing, and white patches on the thigh and base of the neck are seen through binoculars (Baker 1928); we took photographs for further identification of the species (Fig. 2). The linear distance from historical records is about 77.7 km and 289 km away from Lohardagga and Manbhum respectively (Fig. 1). We discussed with local communities and forest staff about the presence of vulture species found in this region. They replied that after the 1999 cyclone they have never seen Red-headed Vulture in PTR.

Figure 2: *Sarcogyps calvus* near Kutku village in Palamau Tiger Reserve.

Conservation

In Palamau Tiger Reserve, the shrinkage of breeding habitat, shortage of food, urbanisation, changes in agricultural patterns, livestock rearing and the use of chemical contaminated foods are serious causes of population decline. Ornithologists suggested that between 1999 and 2003 the population of *Sarcogyps calvus* decreased by 41-44% (Cuthbert *et al.* 2006). A systematic vulture census needs to be carried out to understand the actual population size and roosting places of *Sarcogyps calvus* for long term conservation of this critically endangered species in the Palamu Tiger Reserve before its extinction from world.

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The time to save Africa's vultures is NOW!

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Humanity's earliest musical roots go back nearly 40,000 years ago when a flute made out of bone was discovered in a cave in Germany. The bone belonged to a vulture! Since that time and probably even earlier, our ancestors have closely interacted with vultures to help dispose of their loved ones through sky burials, as religious insignias for ancient Egyptian and modern Hindu civilizations, and as symbols of eternal flying grace. Fast forward to 2017 and given the growth of our kind, one in five species of all wildlife populations is threatened with extinction. Vultures are without a doubt one of the most highly threatened groups of vertebrates on earth. There are several inherent ecological traits that likely contribute to vultures' extinction risk, including their large body masses, slow reproductive rates and highly-specialised diets. The greatest external threat to vultures, however, is poisoning – lead in California Condors, pesticides in African and European vultures, and non-steroidal anti-inflammatories in Asian vultures.

Vultures play a vital role in Africa's savannah landscapes by rapidly consuming carcasses, which could otherwise spread pathogenic organisms via feral dogs and other mammalian scavengers. Loss of vultures results in a loss in effective nutrient cycling, causing ecosystem imbalance

Our planet has entered an era of mass extinction unparalleled since the dinosaurs died out 65 million years ago. There are 1227 species of birds (nearly 12% of all birds) threatened with extinction – 192 of these are critically endangered. According to a 2015 study co-authored by Paul Ehrlich and colleagues, this spectre of extinction hangs over about 41% of all amphibian species and 26% of all mammals, according to the International Union for Conservation of Nature (IUCN). Over this global disaster are the fingerprints of habitat loss, overexploitation, invasive organisms, pollution, poisoning and climate change. The study also highlighted that **56% of species in Africa have lost 80% of their historical range**.

Why does the loss of populations and biological diversity matter? Aside from being a prelude to species extinction, these losses rob us of crucial ecosystem services such as crop pollination by bees and other pollinators, pest control by insectivores, and water purification accomplished by wetlands. We also lose intricate ecological networks involving animals, plants and microorganisms – leading to less resilient ecosystems and loss of pools of genetic information that may prove vital to species' survival in a rapidly changing global environment. The overall scope of population losses makes clear that we cannot wait to address biodiversity loss. The authors of the study have called for curbs on the basic drivers of extinction – human overpopulation and overconsumption – and challenge society to move away from "the fiction that perpetual growth can occur on a finite planet." The Governments of East African countries will need to take on this challenge to curb the rampant loss of wildlife habitat and the resulting human-wildlife conflict that is affecting many species. Conflict between livestock farmers and carnivores is fuelling the poisoning that is decimating Africa's vultures. From wildlife authorities to researchers to communities on the ground, we must all work together to prevent vulture extinction across the planet while inspiring people to value them and to take positive action to ensure their survival.

Our work along with that of our partners over the last decade has unequivocally shown that vultures in Africa are rapidly declining. Poisoning is rampant across Africa and due to its indiscriminate nature, vultures and many other species of raptors and scavengers are being extirpated. Over the last few years and with a growing global alliance of vulture conservation organisations, great progress has been made in understanding vulture ecology and behaviour, increasing awareness about vultures and creating the next generation of African conservation leaders. Much more is needed if we are to save these denizens of the skies. Without urgent intervention, Africa's threatened vultures face imminent extinction. The time for action is now!

We (humans) dominate the planet, and are responsible for causing an extinction event that threatens not just the species we like, but also those we depend on, thus placing our own future in jeopardy. I wonder if the person who played the vulture-bone flute nearly 40,000 years ago ever envisioned this! Surely we owe it to him …..for the sake of the vulture.

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IUCN Species Survival Commission:

Vulture Specialist Group

Aim: The IUCN SSC Vulture Specialist Group aims to advocate and create greater awareness of the plight of vultures and coordinate effective conservation activities to their benefit.

The Vulture Specialist Group will support and work closely with BirdLife International as the Red List Authority for birds, but with particular reference to the global status of Vultures.

Key activities/Outputs:

Conservation and management:

- Identify and communicate information about emerging threats to vultures globally
- Promote the use of appropriate mitigation measures to address threats where possible
- Facilitate the sharing of expertise and knowledge between regions where appropriate
- Support CITES, at national and international level, in vulture-related issues

Research and monitoring:

- Conduct and promote scientific research on ecology and habitat use by vultures to support management decisions regarding the conservation of these
- Promote and encourage sustained population monitoring at key sites for vultures using appropriate monitoring methods
- Identify gaps in knowledge and promote applied research into such species, threats or habitats where appropriate

Dissemination and Communication:

- Promote and facilitate the exchange of knowledge and expertise with regard to vultures and their conservation
- Use *Vulture News* as the official print journal for the Vulture Specialist Group to disseminate information about vultures and their conservation
- Make available published and unpublished information about vultures on a website
- Ensure that the wider public and interest groups receive regular information and updates on the conservation of vultures

Partnership and Advocacy:

- Work with governments, research institutions, conservation organisations and communities to develop and implement effective conservation measures
- Support and promote the conservation of vultures through the International Vulture Awareness Day working with its partner organisations

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VULTURE
Specialist Group

Vulture updates - October 2017 - Around the World of Vultures & VSG activities

Multi-species Action Plan (MsAP): On 29 Nov 2016 in Mumbai, India, the co-chairs of the IUCN SSC VSG signed an agreement as co-operating partner with the CMS Raptors MoU. This formalises the VSG's support and commitment to implementation of the Raptors MoU in Africa and Eurasia and further cements the working relationship established as a partner in the drafting of the CMS Vulture MsAP. Members are invited to peruse the formatted version of the Final Draft of the Multi-species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP) and also a concise Vulture MsAP summary that are now available online on the CMS COP12 web pages. This Final Draft Vulture MsAP was unanimously endorsed by the CMS Scientific Council at the 2nd Meeting of its Sessional Committee, which was held in July 2017 in Bonn, Germany. Significantly, the meeting also recommended CMS Parties accept the proposals covering all ten species of Old World vulture for listing on Appendix I to the Convention. For more details, please refer to the News item on the Raptors MOU website. A small team of VSG members attended the CMS COP12 in Manila, Philippines from the 22-28 Oct 2017 and participated in a Side-Event co-organised with the CMS Raptors MoU Coordinating Unit, BirdLife International and Vulture Conservation Foundation. The event, entitled *'Conserving African-Eurasian vultures for biodiversity and ecosystem services: the role of the Multi-species Action Plan',* was held on 24 Oct. Further vulture side events at the meeting featured Indian vultures (hosted by Indian Government), and the up-listing of Lappet-faced Vulture (hosted by the Saudi Wildlife Authority).

The Flyway Action Plan for the Conservation of the Cinereous Vulture (CVFAP) is also being finalised (following wide consultation led by VCF) in time for the CMS meeting – (latest version here). It was developed alongside a revised EU Species Action Plan for the Cinereous Vulture, which EU Member States have already commented upon, and it should appear shortly and is incorporated to the MsAP in the same way as the Egyptian Vulture Flyway Action Plan and the SAVE Blueprint for South Asia.

International Vulture Awareness Day included 138 events registered worldwide in 32 countries, and we know there were more, with an associated major surge in media publicity. Do take advantage of the excellent downloadable materials (in many languages) on the website, and start planning for next year's event!

African roundup

The African Wildlife Poisoning Database is now online. This enables registered users to submit information about poisoning incidents and to view basic data on poisoning incidents via a map of Africa. We encourage everyone to submit any recent or historical poisoning incidents and to inform your colleagues/students/ staff about it.

Five species of African vulture have been declared SAFE species by the Association of Zoos and Aquariums (AZA). The SAFE species program is a commitment by AZA to provide special effort and support for protecting designated SAFE species. Corinne Kendall is the program leader.

VulPro is building a new release enclosure, located on the Nooitgedacht Game Reserve, South Africa where a breeding colony of Cape Vultures is located. This is a first of its kind in Africa. The new release /flight enclosure will house captive bred and rehabilitated Cape Vultures from six months up to two years prior to their release.

The Bulgarian Society for the Protection of Birds (BSPB) are coordinating a LIFE project on Egyptian Vultures, titled 'Urgent Action to Strengthen the Balkan Population of the Egyptian Vulture and Secure Its Flyway' as a follow-up to The Return of the Neophron project. The project aims to reinforce the vulture population in the EU's easternmost range by delivering urgent conservation measures that eliminate major known threats in breeding grounds along the flyway in Mediterranean, Africa and the Middle East. The five year project will involve several partners in 12 countries, four of which are African (Nigeria, Ethiopia, Niger & Chad). In early Nov 2017, a group of vulture conservationists from southern- & east Africa will participate in a workshop organized and hosted by the National Socio-Environmental Synthesis Centre (SESYNC) in Annapolis, Maryland, USA. SESYNC integrates science of the natural world with science of human behaviour and decision-making, seeking solutions to complex environmental problems. In this instance, scientists will look at current & possible alternative solutions to the many threats African vultures face. In 2014, Raptors Botswana deployed two satellite transmitters on Hooded Vultures; one bird died within a few months and led the team to a large poisoning incident. The second bird continues to traverse vast areas of northern Botswana and adjacent parts of Namibia, Zambia and Zimbabwe. In March 2017, a further two Hooded Vultures were fitted with transmitters in northern Chobe District. Preliminary data show that they too are ranging widely across international boundaries, and are not restricted to protected areas.

Americas roundup

North America: The latest official count of world population of California Condors is 446 and growing, with 276 in the wilds of California, Arizona, Utah, and Mexico. There are now 78 condors in the Arizona/Utah population. Four new birds were released in Sept (a further 10 earmarked for release in 2018), and a record number of pairs exhibiting breeding/courtship behaviour from which three chicks were confirmed fledged in 2017. The results of Peregrine Fund trapping and lead-testing of 91% of the birds (n=69) last season unfortunately continued to register beyond sustainable levels of lead exposure as has been the case in previous years. All but two of the 23 showing extreme exposure were treated with chelation therapy and released back into the wild. Two had been severely lead-poisoned and died while undergoing treatment for advanced lead toxicosis. Engagement increases with cooperating agencies, tribes and the public continuing towards the ultimate goal of eliminating this preventable threat. Big-game hunters in parts of Arizona and Utah are responding with requests to either use non-lead ammunition or remove the remains of lead-tainted carcasses from the field. The next step is reaching out to other shooters i.e. small-game, varmint, and furbearer hunters and those who might dispatch moribund stock or wildlife (ranchers and law enforcement). Thanks to grants from the Arizona Game & Fish Department & The Phoenix Zoo, 15 new GPS transmitters will be deployed during the upcoming trapping season. Field workers at Hawk Mountain Sanctuary are currently testing the value of behavioral "ground-truthing" of 3 satellite tracked American Black Vultures in Pennsylvania, USA. The observational work, which began in early September, physically locates the tracked birds (and that of other wing-tagged individuals) on a weekly basis and then details their behavior via direct observations, to determine what the birds actually are doing. Detailed information regarding roosting, feeding, and social behavior is being recorded via focus animal sampling. If ground-truthing proves successful, behavioral observations will be expanded to include satellite-tracked Turkey Vultures in North, Central, and South America and eventually, will include tracked Hooded Vultures in Africa. Initial observations suggest that this multi-faceted approach works, at least for Black Vultures in eastern North America.

Latin America: Incidents of poisoning across the region are apparently increasing. In north Argentina 19 Andean Condors were found dead linked to a camelid carcass that was poisoned. There have been a number of similar separate incidents in 2017, involving GPS-tagged condors found dead. In the same way, Turkey Vultures GPS-tagged in Patagonia were found poisoned in the same area, and in central Argentina where these birds are passage migrants. Another threat established (in a publication) to be seriously affecting condors and vultures was lead poisoning, and several birds were received for rehabilitation, including fledglings. Black Vulture mortality factors in Patagonia were attributed to poisoning at rubbish dumps and persecution by farmers that consider they are dangerous for livestock. A tagging project is planned for the three vulture species to study their movements and overlap in feeding areas, and to better understand their role in cleaning the environment. Together with field workers at CONICET in Bariloche, Argentina, Hawk Mountain Sanctuary are building a geographically explicit North and South American distribution-and-abundance dataset based on seasonal roadside counts of Turkey and American Black Vultures, from 50 degrees north through 50 degrees south in the New World. This will allow researchers to model the impact of vulture scavenging behavior geographically throughout the Americas, which will be used to build a case for protecting populations of these abundant and widespread species across their range.

Asia roundup

In **South Asia,** plans for the first ever releases of white-rumped vultures in Nepal have progressed, with the first six birds transferred to the pre-release aviaries in April. Six wild birds are now fitted with PTTs, and are so far showing the area to be safe, and regularly crossing into India, where they have highlighted some key feeding sites. If things remain on track then releases are planned for November. Meanwhile in India, the first Haryana releases of captive-bred White-rumped Vultures look set to take place early in 2018 and preparatory work continues including getting the final PTT permissions in place. Safety-testing plans of the Indian Veterinary Research Institute have progressed, but the work has not yet started. This eagerly anticipated step is arguably the most important one as other drugs such as nimesulide which also appear to be toxic to vultures are becoming established in veterinary practice. And the court case is ongoing, where one Indian drug company has challenged the 2015 restriction of the vial size of human diclofenac injections and threatens to reverse this important measure that makes diclofenac less accessible for illegal use by veterinarians. The annual SAVE meeting will take place in Bangladesh in November, and is linked to the Inter-Government Regional Steering Committee meeting in Dhaka. Finally, the Indian Government banned the use of nylon kite strings which have been responsible for many serious bird (and human) injuries, and poses a threat to vultures in some areas.

West Asia: A short film on scavengers at rubbish dumps in Oman is in final editing stages, and Egyptian Vultures still being satellite tracked in Oman, with more planned next year. A publication is in process on this. Eight captive-bred EVs were released in 2017 as part of a reintroduction project at Mt. Carmel, Israel (2015 & 2016 hatched) bringing the total to 51 captive-bred EVs released since 2004.

Returning EVs include birds hatched from 2011, 2012 and 2013. Overall population of EV in Israel is stable or even slightly growing (55 pairs).

European roundup:

Poison remains the main threat to vultures in Europe (as it is worldwide) – with notable incidents in Sardinia, and in Spain. However, locally birds are still being shot - Griffon Vultures in Armenia, even

Bearded Vultures in Spain. Electrocution is also a major threat to vultures in Europe – so the news that a Spanish court confirmed legal liability from the utility company involved in a vulture electrocution case was welcome. Lead poisoning kills Bearded Vultures and other vultures too, so some pilot projects testing non-lead ammunition are an important initiative to clarify the extent of this. As part of the LIFE RUPIS project, a number of supplementary feeding sites were established to support Egyptian Vultures, and five adult Egyptian Vultures have been tagged in the Douro canyon, one of the strongholds of the species in Iberia – they have all now migrated to Africa. The project also organised a festival in June to celebrate the species. Four captive-bred Egyptian Vultures were released in southern Italy – one of them made it all the way to Africa, while one died and two had to be recaptured.

Bearded Vultures have had a good season in Europe, with two young raised by the reintroduction project in Andalusia (following the first successful breeding two years ago). While in the Alps, 45 pairs produced a record 20 fledglings. In early October, hundreds of people participated in a simultaneous count for International Bearded Vulture Observation Day (IOD). 18 Bearded Vultures were released in the four reintroduction projects, not without some drama - one of them broke its wing just before release but was eventually rehabilitated and is now flying free in Andalusia, while another dispersed long distance to Germany and had to be re-caught and re-released. Some wild individuals were found weakened and rehabilitated and released, like Lea. Other Bearded Vultures were seen in Poland, Holland, Sweden and Germany. In the French Pyrenees at least 44 pairs bred this year with a much better breeding productivity than of late, whilst a new paper suggested that there is plenty of natural food in the Pyrenees and that the species does not actually need supplementary feeding. In Corsica the species again did not succeed to breed in the wild, but two more captive-bred young were released there, like last year. In mid-November the annual Bearded Vulture meeting will be held in Haute-Savoie, with a very attractive programme.

Eight Cinereous Vultures from Spain were transferred to France for the successful reintroduction project there – this year there were 35 breeding pairs, while the species bred again in the Alentejo region of Portugal, confirming recolonisation there. More Cinereous Vultures have been seen in Romania, the Italian eastern Alps, and in northern France, and the species is a rare winter visitor in the Middle East so a bird that entered rehabilitation in Jordan was noteworthy.

Griffon Vultures decreased in Croatia, while record numbers were counted in northern Italy. In Cyprus the very small breeding population bred again after two years without successful breeding. An important colony was affected by the major forest fires that occurred in Portugal this summer, whilst almost 2500 Griffon Vultures were counted summering in the western Alps in 2017 – an increase of 40% on previous years. A number of Griffon Vultures have been tagged in Italy and Sardinia and Bulgaria.

A campaign to ban veterinary diclofenac has been relaunched in Europe, to prevent the drug being approved for veterinary use in Portugal – where there is a new request for use, and to try to prevent the renewal of the permit in Spain. **Please do sign** the petition at www.banvetdiclofenac.com

Let us know if you receive this newsletter indirectly and would like to be added to the mailing list, or to be considered for membership of VSG, and please send us any potential contributions for the next newsletter before 30 March 2018.

Chris Bowden **Andre Botha**

Co-chairs: Vulture Specialist Group Commission

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