

Significant population of Egyptian Vulture *Neophron percnopterus* found in Morocco

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The Egyptian Vulture *Neophron percnopterus* population in Morocco has undergone a marked decline since the 1980s to the point of nearing local extinction in the twenty-first century. A field study of some possible sites for Egyptian Vultures was carried out over six days during June 2014 in the Middle Atlas Mountains, Morocco. We counted a total of 48 Egyptian Vultures at three different localities: two occupied breeding sites and one communal roost that hosted 40 vultures of different ages. A (probable) single adult bird at the breeding site was located and a previously occupied site was also visited. A preliminary survey amongst local people indicated that threats faced by this species are predator poisoning in some areas, and the use of vulture parts for traditional medicine. Given that the species is considered globally Endangered and populations continue to decline in many areas, the discovered population reported here, although relatively small, is of national and regional (North-west Africa) importance. We expect this new situation will revive the hopes for studying and conserving this and other vulture species in Morocco and North-west Africa in general.

Keywords: communal roost, Egyptian Vulture, Endangered raptor, *Neophron percnopterus*, nesting, North Africa

The Egyptian Vulture *Neophron percnopterus* is a long-lived medium-sized scavenger with a large breeding range spanning three continents: southern Europe, Africa and Asia. Except for a few areas where the populations are stable or slightly increasing, as on some islands off the Arabian Peninsula (Porter and Suleiman 2012; Angelov et al. 2013) and some Spanish regions (del Moral 2009), the species has experienced a rapid decline in some parts of its range, such as in India (Cuthbert et al. 2006), and a long-term decline in other areas, such as in the northern Sahel of West Africa (Thiollay 2006) and southern Europe (Liberatori and Penteriani 2001; del Moral 2009; Grubač et al. 2014). For these reasons the species was up-listed in 2007 from Least Concern to Endangered on the IUCN Red List of Threatened Species (BirdLife International 2014).

The situation is more worrying in Morocco as there is a considerable lack of information about the Egyptian Vulture and most other vulture species in recent decades and their current status is not well known. The breeding population of the Egyptian Vulture was estimated at 500–1 000 pairs in early 1980s (Thévenot et al. 1985). The same estimation was retained two decades later (Thévenot et al. 2003), although the authors acknowledged that 'there has been a rapid and marked decline since the 1980s'. More recently, the species was considered on the verge of extinction by other authors (El Agbani and Qninba 2011). However, we believe that any assessment should be based on or supported by fieldwork as in the case of

the Bearded Vulture *Gypaetus barbatus* (Godino et al. 2006; Cuzin et al. 2009). Therefore, information about the Egyptian Vulture in Morocco should be considered with caution. This is because we don't know the accuracy of the historical estimations as the data were not gathered using large-scale surveys and it was not updated in later publications (Thévenot et al. 2003). The assessment by El Agbani and Qninba (2011) was most likely inferred from the recent scarcity of information about its breeding, which was mainly obtained from anecdotal observations, i.e. there was only very few known breeding records – mainly in the Middle Atlas Mountains – since 2007 (see El Khamlichi and Prat Duran 2014). In summary, the Egyptian Vulture is Endangered in Morocco (Thévenot et al. 2003; El Agbani and Qninba 2011), but because of a lack of recent studies many aspects of its population are currently not known (e.g. actual breeding range, active breeding sites, population size and breeding parameters).

In Morocco, the Egyptian Vulture starts courtship displays in late February and egg-laying from late March to early May (Thévenot et al. 2003). However, there is no information about breeding success. Apart from rare cases of over-wintering individuals, the whole population is migratory and spends the winter south of the Sahara (Thévenot et al. 2003). The main threat recorded for this species and other scavenging birds is secondary poisoning, mainly by strychnine, which was used legally in the past to control livestock predators (Thévenot et al. 1985, 2003). Although

the use of strychnine now is strictly regulated by the Moroccan Government (Interministerial Committee for the Fight against Echinococcosis), some quantities may still be in the market and thus may still be used illegally by farmers. Other threats, such as direct persecution, disturbance and the use of bird's parts in 'traditional medicine', also occur (Thévenot et al. 1985; MA and REK pers. obs.).

In the context of a global vulture crisis (Ogada et al. 2012), and given the current lack of data on breeding of the Egyptian Vulture in Morocco throughout most of its former range, we carried out a preliminary survey in potential habitats for this species. In this paper we report the discovery of a small, yet significant, population of the species in the Middle Atlas Mountains, Morocco.

The study area is located in the eastern Middle Atlas Mountains between the cities of Fes and Taza in north-central Morocco. The region is characterised by a rugged and mountainous landscape. It is crossed by several rivers, cutting deep gorges in the mountains, which results in several cliffs as suitable nesting sites for vultures. The area in the south-west where the vegetation is sparse except on slopes and valleys is of moderate elevation, whereas the north-eastern area in Tazekka National Park is more mountainous and well covered with primary forests. This area was chosen because it is believed that it may hold some breeding pairs based on informal communications we received from colleagues who observed adult Egyptian Vultures here during the breeding season in the past few years. It is also in this region where one of us discovered a breeding pair in 2013 (El Khamlichi and Prat Duran 2014).

Except some towns and smaller urban centres, the eastern Middle Atlas is much less populated by humans in comparison with other Moroccan mountain ranges such as the Rif in the north. The main land use is grazing and, to a lesser extent, subsistence agriculture. Traditional livestock farming, mainly of goats and sheep but also cattle, is still widespread in the region.

During six days, between 25 and 30 June 2014, the authors surveyed several potential breeding areas in search of Egyptian Vultures. We surveyed an area about 80 km long by road, but intensified our survey by scanning the cliffs wherever we found Egyptian Vultures or suspected their presence. We also carried out a preliminary survey amongst the local people to assess the threats (or their lack thereof) to the species in the area.

During our survey we counted a total of 48 Egyptian Vultures (13 adults, 33 immature birds, and at least two chicks in two separate nests) in three different locations. These birds were located in two occupied breeding sites, and a communal roosting site. One occupied nest in 2013 was unoccupied in 2014. The distance between the roosting site and the three breeding sites (two occupied and one unoccupied) ranged between 16 km for the closest site and 63 km for the farthest site.

At the first occupied breeding site near Fes, one breeding pair and a third-year immature bird were present. The pair was likely attending chicks as we observed both adults returning to the nest, and one of them was carrying food on 26 June 2014. Due to the orientation of the cliff, we could not see inside the nesting cavity to verify the number of chicks.

At the second occupied breeding site located near Taza, we found one nest with a small chick. Both parent birds were seen entering the nest that was located in a cavity on the evening of 29 June 2014. A different adult vulture was seen entering another cavity on the opposite cliff. We could not determine whether the single adult had attempted to breed and failed, or did not attempt breeding at all.

On 28 June 2014, we visited the breeding territory found in 2013 at the northern limit of Tazekka National Park (El Khamlichi and Prat Duran 2014), but we did not observe a single vulture at the nesting site or in the surrounding area.

A communal roosting site that hosted 40 individuals was located in a high cliff. Eight adults and 32 immature birds of different ages were observed leaving the site in the morning (27 June 2014) and did not return until the evening to roost in small groups consisting of 3–12 birds in different cavities in a small area of the cliff wall.

According to our limited qualitative survey, it seems that poisoning is not widely used in the south-west of the study area because livestock predators are apparently not abundant there and also because the herders rely on several herding dogs for guarding. In the north-east (Tazekka National Park and adjacent areas) poisoning is apparently still used because livestock predators, especially jackals/wolves, are abundant in this forested area. In addition, one respondent remembered when the poisoning was conducted by government agencies until the 1980s; this may indicate that the local people still use it, albeit illegally. Pressure from dealers of vulture parts that are used in 'traditional medicine' was also mentioned by some respondents who knew the species very well.

The current situation for vultures in Morocco and North-west Africa is very disturbing, as in the rest of the African continent as shown by a recent assessment of their conservation status (Ogada et al. 2015). In Morocco, two species (Cinereous *Aegypius monachus* and Lappet-faced *Torgos tracheliotos* Vultures) went extinct in the twentieth century, and the populations of the remaining vulture species are small and Endangered according to available information (Thévenot et al. 2003; El Agbani and Qninba 2011). Studies of the current status of vultures are also lacking except for a few surveys of Griffon Vultures *Gyps fulvus* in northern Morocco (Garrido et al. 2005) and Bearded Vultures in the Atlas Mountains (Godino et al. 2006; Cuzin et al. 2009). Therefore, we know very little about what is left of Moroccan vulture populations in recent decades (e.g. Egyptian Vulture as shown above and also whether Griffon Vultures are still breeding or are extinct as a breeding species).

The population discovered in this study, although small, is of significant importance at both the national and regional (North-west Africa) level, given the severe decline of this species in Morocco (Thévenot et al. 2003). Given the fact that the species is now categorised as Endangered and is still declining in many parts of its breeding range (BirdLife International 2014), it is hoped that the discovered population could stimulate more studies of this vulture in Morocco and in North-west Africa in general.

The communal roost reported here is the first Egyptian Vulture roost found in Morocco and North-west Africa (Isenmann and Moali 2000; Thévenot et al. 2003; Isenmann

et al. 2005). In recent times, these communal roosts were practically unknown in the Western Palearctic until the mid-1980s when several were found on both sides of the Pyrenees in south-western Europe (Donázar et al. 1996; Margalida and Boudet 2003; Clouet et al. 2014). Studies of these roosts, especially on the Spanish side, indicate that they are located near areas with predictable sources of food, such as livestock carcass sites, rubbish dumps and feeding stations also known as ‘vulture restaurants’ (Donázar et al. 1996). It has also been shown that communal roosts are quickly established where a source of food is found, for example after the establishment of a vulture restaurant (Benítez et al. 2009). They also disappear as soon as the source of food disappears (Margalida and Boudet 2003; Grande et al. 2009). Both non-breeding adults and immature birds have been shown to visit communal roosts that are sometimes situated over 200 km (Donázar et al. 1996; Benítez et al. 2009) from their natal sites. Breeding adults that nested within a 25 km radius in the surrounding area regularly visited these roosts as well (Donázar et al. 1996; Margalida and Boudet 2003). These communal roosts play a role in the prevention of local extinction by providing replacement of lost mates and recolonisation of abandoned territories in the surrounding area (Carrete et al. 2007). Regions lacking communal roosts, on the other hand, may permanently lose these dispersing individuals (Benítez et al. 2009). Maintaining and conserving these communal roosts has an important conservation implication for the species, not only because of their role in the maintenance of the species in the surrounding area (Carrete et al. 2007), but also because they receive the production of a large number of territories (Donázar et al. 1996; Benítez et al. 2009).

Tracking studies have shown that immature Egyptian Vultures from Europe remain in their wintering grounds in sub-Saharan Africa during their first years of life (Meyburg et al. 2004; unpublished data of the ‘Consejería de Medio Ambiente y Ordenación del Territorio’ of the Andalusian Government, Spain). The use of North-west Africa as a summering area by non-breeding, long-lived raptors from Europe, such as Short-toed Snake Eagles *Circaetus gallicus*, is known thanks to satellite telemetry studies (e.g. Mellone et al. 2011). However, to our knowledge no study has shown that Egyptian Vultures from Europe spend the whole summer in North-west Africa, although some birds may settle temporarily in a few places. Indeed, results from a GPS satellite telemetry study carried out by the ‘Consejería de Medio Ambiente y Ordenación del Territorio’ of the Andalusian Government, Spain, have showed that four out of 11 Egyptian Vultures (non-adults) have stopped-over in different regions (west, centre and south-east) of Morocco. This was during both spring and autumn periods and the stopover duration varied between 3 and 11 d (pers. comm., see Acknowledgements). On the other hand, no stopovers were recorded during the migration of adult Egyptian Vultures tracked by GPS satellite telemetry over several years (López-López et al. 2014). All this indicates that the majority of the birds found at the roosting site are local, rather than European birds, and the relatively large number of birds present at the site is likely indicative of a

healthy population within the wider region of the Middle Atlas Mountains.

Our survey concerning the threats facing the species, although limited and qualitative, indicated that the threats mentioned – especially poisoning – are still a problem in some areas. In other areas, a combination of factors, such as the scarcity of jackals/wolves and the use of herding dogs to guard livestock, has reduced the frequency of poisoning or perhaps eliminated it completely. A further in-depth survey of known and potential threats should be done to validate this information. With these results at least the status of the Egyptian Vulture in Morocco appears to be less bleak than was previously considered to be the case (El Agbani and Qninba 2011). However encouraging these results are, more work is urgently needed in order to determine the current breeding range, population size and breeding parameters of this species in Morocco. Determining existing and potential roosting and feeding sites are important as well. Appropriate actions should also be undertaken to limit the unnatural mortality factors, in particular addressing the use of poisons to control predators and halting the illegal harvest of vultures for traditional medicine, in order to ensure the continued conservation of this vulture in Morocco.

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Photographs and 2 videos of the communal roosting site of the Egyptian Vultures can be found here:

<http://www.magornitho.org/2015/12/egyptian-vulture-population/>