Vulture populations in Pakistan and the Gyps Vulture Restoration Project

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Summary

Populations of three critically endangered *Gyps* vultures continue to decline in South Asia, due primarily to veterinary diclofenac. In the Punjab Province of Pakistan, annual rates of decline for breeding populations of Oriental White-backed Vultures *Gyps bengalensis* have ranged between 11% and 61% per year since 2001. Conservation initiatives to address the vulture declines have included the establishment and development of conservation breeding centres. Apart from two such centres currently operating in India, a third regional centre opened in Pakistan in 2007. Herein we describe the *Gyps* Vulture Restoration Project, launched by WWF-Pakistan in 2004, and the conservation breeding centre at Changa Manga, near Lahore in the Punjab Province of Pakistan.

Introduction

The unprecedented decline of *Gyps* vultures in South Asia since the 1990s has seen the introduction of a range of conservation initiatives. Significant among these has been the establishment of conservation breeding centres. There are currently two such facilities in India, and they hold valuable populations of the three species affected: Oriental White-backed Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus* and Slender-billed Vulture *G. tenuirostris*.

The primary aim of these centres is to hold safely a core population of the species affected. Once the environment is safe for vultures, they will act as a source population for reintroductions or as supplementation to wild populations.

However, removing from the environment the primary cause of the vulture declines, veterinary diclofenac, is a significant task. Despite the drug having been banned in three of the range countries (India, Pakistan and Nepal), it is unlikely to be removed quickly from the environment.

Diclofenac has been used widely in Pakistan (Oaks *et al.* 2004, Ahmed & Khan 2005), India (Risebrough 2004) and Nepal (R. Cuthbert pers. comm.). As recently as July 2005, up to 22% of surveyed livestock carcasses in parts of India contained diclofenac residues (Taggart *et al.* 2007). Other recent unpublished reports confirm that it is still available in other parts of South Asia – at least in remote areas where regulatory enforcement is low.

Even if diclofenac is removed from circulation within the next five years, estimated annual rates of decline still remain near 50%, suggesting that extinction, at least across most of the range for these

species, is considered likely (Green *et al.* 2004, Shultz *et al.* 2004).

The task facing these conservation centres is therefore considerable. When compared to the size of the population declines, and the fact the declines are continuing, it appears immense. However, their importance cannot be underestimated.

It is imperative that these centres manage their captive stock well, and have prolonged breeding success over many years, perhaps decades. Without such success, the prognosis for species survival is poor. The long-term husbandry of the captive vultures, breeding success and the preparation of vultures for release requires involvement from a wide range of organisations and people. Their commitment for the duration and continued liaison with researchers working on wild populations is an essential part of the international conservation effort for South Asian *Gyps* vultures.

This paper provides recent information on vulture populations in Pakistan, and outlines the activities of the *Gyps* Vulture Restoration Project, run by WWF-Pakistan. The centrepiece of this project is a vulture conservation centre, recently established at Changa Manga in the Punjab Province of Pakistan, about 80 km southwest of Lahore.

Recent trends of *Gyps* vulture populations in Pakistan

Between 2001 and 2007, rates of decline across the three largest *Gyps bengalensis* colonies in Pakistan ranged from 11% to 61% per year (Gilbert *et al*. 2006, The Peregrine Fund unpubl. data). Two of these colonies, Changa Manga (approximately 80 km south-west of Lahore) and Dholewala (approximately 90 km north-west of Multan), were extinct by the 2003/2004 breeding season. They declined from 758 active nests and 412 active nests respectively in the 2000/2001 breeding season (Gilbert *et al.* 2006).

The third colony, Toawala (approximately 50 km northeast of Multan), numbered 445 breeding pairs in 2000/2001 and declined to 84 pairs in 2005/2006 (Gilbert *et al.* 2006). Surveys by WWF-Pakistan during November and December 2006 showed that from the 2005/2006 breeding season, the Toawala colony experienced the highest rate of decline, when the number of active nests fell from 84 to 33, a 61% decrease in less than one year.

Apart from the 33 active nests observed during this survey, there were observations of only 152 vultures in the Toawala colony (12 sub adults, two juveniles and 138 adults). By mid-April 2007 only two active nests remained at Toawala. One nest had an adult incubating an addled egg; the other nest had one chick next to the remains of a dead adult. This was the only chick collected from the colony during 2007, and is now in the conservation facility at Changa Manga.

Following the loss of Changa Manga colony, Toawala colony was the largest known remaining colony of *Gyps bengalensis* in the world. The demise of

this colony in 2007 highlights the reality of continued population declines for this species.

The November and December 2006 surveys by WWF-Pakistan covered 23 known major and minor breeding colonies in 16 districts across the Punjab Province. Prior to this, between December 2000 and May 2003, Gilbert *et al.* (2004) had monitored breeding *Gyps bengalensis* in the Punjab Province (in addition to Sind Province). A comparison between the two surveys reveals significant changes.

Excluding the colonies of Changa Manga and Dholewala discussed above, Gilbert et al. identified a maximum of 597 active nests across their survey sites. During the surveys by WWF-Pakistan, none of these sites contained any active nests. In fact, at only one site were vultures observed at all (Rasool Barrage – three adults). Overall, in only five forestry plantations were vultures observed in 2006/2007, and breeding pairs were observed in only two areas (Toawala colony, 33 nests and Daphar Plantation, four nests).

Across the remaining 22 breeding sites there were observations of only 20 birds during the survey. In Daphar Plantation (District Mandibahaudin, northwest of Lahore), there were four active nests during December 2006. Only in Toawala colony were sub-adult or juvenile vultures observed.

In late-March 2007, after the breeding season, there were reports of increased vulture numbers at Daphar Plantation. Exploratory observations revealed as many as 150 adult vultures in the area. Conversely, during the same period, the number of vultures at Toawala appeared to decrease significantly.

Vultures can range over significant distances during both the breeding and non-breeding seasons, sometimes travelling over 300 km and covering well in excess of 20 000 km^2 (Gilbert *et al.* 2007). Although unconfirmed, there is a possibility that during the 2007 non-breeding season the residual vulture populations in the Punjab are transient, and might be moving between Toawala and Daphar plantation. These possible explanations require further investigation.

The *Gyps* Vulture Restoration Project

In 2004 WWF-Pakistan launched the Gyps Vulture Restoration Project in Pakistan. The immediate project objective is to conserve a viable population of *Gyps bengalensis* in a safe and secure environment. Once secured, the breeding potential of the captive population must be realised.

Additional project objectives include continued monitoring of wild populations, lobbying for the complete removal of diclofenac from the environment and to build staff capacity for the eventual release of captive-bred vultures.

Plans for Pakistan's first conservation breeding facility for vultures began in 2005. Government approval, land allocation, facility design, fundraising and staff selection took place over the following 18 months.

The project, run by WWF-Pakistan, is a partnership between WWF-Pakistan, the Punjab Wildlife and Parks Department, the Environment Agency, Abu Dhabi and the Hawk Conservancy Trust. WWF-Pakistan is the project manager and staff provider, whilst the Hawk Conservancy Trust has provided technical and training support and will contribute towards facility running costs into the future. The Environment Agency and WWF-US provided keystone funding for the facility construction.

The facility

The vulture conservation centre is located in a secluded area of Changa Manga forest. The location of the centre is significant, in that Changa Manga forest previously held the largest known *G. bengalensis* colony in Pakistan. Government and local officials and project partners attended an official opening of the facility in April 2007. Several press agencies from Pakistan covered the event.

There is currently one large holding aviary (Figure 1). It is 38 m long, 6.5 m high and increases in width from 14 m to 27.5 m. Construction materials consist of 150 mm steel pole supports and welded steel frames on a concrete base. The walls and roof are chain link.

Within the aviary, perch types consist of live trees in addition to a number of artificial perches. One end of the aviary (Figure 2) contains a roosting/nesting ledge, which runs the width of the aviary. This also provides shade and shelter for the birds. Additional shade cloth on the aviary roof provides sun protection over a smaller area near the water pool.

Heat stress in the vultures is evident on hot days. Head drooping is frequent at these times, and the vultures will spend increased amounts of time bathing and drying (Figure 3). Apart from environmental considerations, there are other challenges specific to the management of captive raptors and these necessitate staff training. The development of staff skills in areas such as egg incubation and chick rearing is a key component of the project and will be achieved through training and capacity building.

Within the aviary, potential breeding birds have access to artificial nest sites (shallow woven baskets) and nests retrieved from the wild. These have proved popular already with the birds, and may provide an additional stimulus for courtship and/or breeding activities. Although a tree-nesting species in the wild, captive Oriental White-backed Vultures have shown an occasional preference for nest ledges and artificial 'caves' (Chitty & Murn 2004). To accommodate this, the roosting/nesting ledge in the aviary is fitted with partitions to provide separate areas for potential breeding pairs.

There is an attached service building, storage facilities, and provision for office space (Figure 4). The aviary has a capacity of approximately 30 vultures.

Current population and future plans

In May 2007, there were eleven vultures in the facility. Five were collected as chicks from nests during the 2005/2006 breeding season, with one additional bird collected during the 2006/2007 season. The remaining five vultures are older, and are the remainder of the captive population used during diclofenac toxicity testing work by The Peregrine Fund (Oaks *et al.* 2004). They hatched during the 2002/2003 breeding season. All birds have identification rings and microchip implants.

Future breeding potential with this small population is limited, as there are only three confirmed females in the group. All birds have been sex-tested via blood sample and genetic analysis. The sex of the 2007 chick is currently unknown, but even if this bird is female, breeding potential is still low.

Clearly there is a need to increase the number of vultures at the facility. To this end, trapping of wild vultures will take place in late-2007, following the monsoon season. Small populations and available food will undoubtedly make trapping attempts difficult; however the project aims to trap between 15 and 20 birds.

Second phase building will commence in the last quarter of 2007. The plans for phase two building include four breeding aviaries, plus additional infrastructure.

Apart from providing additional accommodation, the breeding aviaries are an essential part of management. Although wild Oriental White-backed Vultures breed in colonies, difficulties can arise when captive breeding pairs are in the same enclosure as non-breeding birds. The role of the large communal aviary is to provide a venue for breeding pairs to form. Once established, breeding pairs require separate enclosures to avoid disturbance from unpaired birds during the breeding season.

The additional infrastructure will include livestock paddocks, perimeter fencing, a facility for breeding rats for supplementary feeding, permanent electricity connection, and freezer rooms. Facilities to keep livestock are essential. Purchased animals cannot be treated with diclofenac, and must also be kept for at least seven days prior to slaughter to ensure that there will be no diclofenac residues in the carcasses. A major development for the project will be centralising operations at the facility. The connection of a permanent electricity supply will make this possible.

In the longer term, the construction of additional breeding aviaries is a primary goal. Only in this respect, is the time scale favourable. It is likely to be many years before the environment is safe for the release of vultures back to the wild. However, unless the facility can reach a production capacity of at least 10-15 chicks per year, there will be limited potential for any release programme in the future.

Figure 1. The holding aviary for the *Gyps* Vulture Restoration Project, Punjab Province, Pakistan.

Figure 2. The aviary showing the nesting/roosting ledge and an artificial nest within the holding aviary.

Figure 3. Vultures from the *Gyps* Vulture Restoration Project bathing in the holding aviary.

Figure 4. The service building attached to the holding aviary.

Conclusions

The WWF *Gyps* vulture restoration project in Pakistan is part of a regional effort for the conservation of South Asian *Gyps* vultures. The project benefits from a dedicated staff team, solid governmental and partner support and a series of clear targets. Further development and the expansion of facilities will occur over future years, as there is an urgent need to increase the capacity of the facility.

There are no prospects for a rapid conclusion to the conservation of *Gyps* vultures in South Asia. Continuing the lines of communication and sharing information between Pakistan and India will be of benefit to all parties that are working together on this international conservation effort.

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