

CONSERVATION REPORT

The Asian Gyps vulture crisis: the role of captive breeding in India to prevent total extinction

CHRIS BOWDEN

The catastrophic collapse of *Gyps* vulture populations across South Asia since the 1990s has been one of the most rapid and alarming declines in the history of ornithology. The initial priority was to determine the cause of the declines, and then, once identified, there were some very urgent steps needed to prevent their total extinction. Three species have been most severely affected, White-rumped *Gyps bengalensis*, Indian *G. indicus*, and Slender-billed Vultures *G. tenuirostris*; these were placed on the IUCN Critically Endangered list in 2000. The veterinary use of the non-steroidal anti-inflammatory drug, diclofenac, emerged as the main cause of the declines in Pakistan in 2003 (Oaks *et al.* 2004), and by early 2004 it was demonstrated that this was also the case across the subcontinent (Schultz *et al.* 2004). The details and evidence for the discovery are presented in more detail elsewhere (Pain *et al.* 2008), but once established, it was a case of reacting decisively to identify and implement the necessary measures. Three main steps were highlighted in the 2004 Recovery Plan and further clarified in 2006 (MoEF 2006): identifying a safe alternative drug, removing diclofenac from the environment, and establishing a full-scale conservation breeding programme for future reintroduction once diclofenac had been removed.

There was rapid progress in identifying that the veterinary drug meloxicam was safe for vultures and other scavenging birds (Swan *et al.* 2006) and as this was recently out of patent it could be made in South Asia. The Bombay Natural History Society (BNHS) advocacy programme, headed by Dr Nita Shah, was also successful in instigating major steps to ban the veterinary formulations of the drug by the Indian government, which were quickly followed by the governments of both Nepal and Pakistan. Unfortunately, these measures have not yet been sufficient to remove diclofenac from the environment, particularly as it now emerges that human formulations of the drug are being widely used by vets, and White-rumped Vulture populations continue to decline by 44% per year (Prakash *et al.* 2007). This meant that the third recommendation of the action plan, of establishing a captive-breeding programme for all three species, was critical in order to prevent the extinction of vultures within South Asia.

Establishment and running of the breeding centres

The first centre was established at Pinjore, Haryana, in 2002, initially as a diagnosis centre, but once diclofenac was identified as the cause, it was converted to a breeding centre. A second centre was initiated in 2005 at Rajabhat Khawa on the edge of Buxa Tiger Reserve in West Bengal, and in 2008 a third was established in Assam, which is still under construction at Rani Forest near Guwahati. Pinjore is the most advanced and well equipped of the three Indian centres run by Dr Vibhu Prakash of BNHS. All three are built on plots



DAVE DICK

Plate 1. Slender-billed Vulture released from box into aviary.

Plate 2. White-rumped Vulture 'Phoenix' (the first fledgling), May 2008.



VIBHU PRAKASH / BNHS

leased to BNHS by the respective state governments, and in West Bengal a number of Forest Department buildings have been made available to the project, whilst in Assam a purpose-built staff office and visitor reception room has been constructed by the Assam Forest Department. RSPB continues to provide the main support for these centres, which were initiated largely with Darwin Initiative UK Government funding through both RSPB and Zoological Society of London (ZSL). The Rufford Maurice Laing Foundation has also given substantial support through RSPB, and National Birds of Prey Trust (UK) has funded certain aviaries and equipment.

The founding populations are mainly derived from nestlings collected by experienced BNHS teams, often led by expert climber Dr Richard Cuthbert who also heads RSPB vulture research, together with some wild adults and subadults caught by trained BNHS trappers, and sick and injured birds brought to the centres.

The main aviaries, known as 'colony aviaries' were designed by raptor breeding expert Jemima Parry-Jones, who also advises and trains the project staff in raptor husbandry techniques. These colony aviaries are 32 m long, 12 m wide and 6 m tall. There are also a number of smaller more conventional holding aviaries at each centre, as well as temporary quarantine aviaries 5 km away for new arrivals. The programme employs three veterinary staff and veterinary training and advice is given by the ZSL's Chief Vet. Dr Andrew Routh, who carries out regular staff training and visits at least annually. Each centre is run by a manager and employs at least four other staff. The colony aviaries are monitored using CCTV cameras with zoom and pan control, which importantly reduces the risks of human disturbance. One major challenge for the programme is obtaining a reliable and safe source of diclofenac-free meat. Currently this is done by purchasing live goats, which are very rarely treated with diclofenac and also

metabolise diclofenac very rapidly in comparison to cattle; but every possible precaution must be taken, so the goats are kept for at least ten days before slaughter, and then the fresh carcasses are fed to the vultures.

All aviaries need to be leopard- and macaque-proof to avoid the evident risks if they were not, whilst other precautions have been necessary to deter wild rock-bees from the immediate vicinity. Elephant fences have been a further necessity at the two newer centres, and indeed we already know that elephants have approached these on several occasions. The major river defence measures needed for the Pinjore centre have been provided by Haryana State Forest Department. Finally, the establishment of state governing councils, chaired by the state forest departments, have provided clearer links and channels for addressing management problems as they arise, and also for generating the support needed for the centres to function properly and in the longer term.

Progress with breeding

There has been important progress recently with the first two White-rumped Vultures fledged in 2008, and a further three in 2009. Two Slender-billed Vultures also successfully fledged in 2009, and Indian Vultures also laid eggs, giving hope that they will breed successfully in the near future. These early signs are encouraging, suggesting that the methods are largely in place, although we learn more each year to improve techniques—two of these species have never been bred in captivity before and methodology is continually being refined and updated.

Prospects for reintroduction

The programme is by definition a long-term one, and the intention is to release mainly F2 birds (i.e. the offspring of captive-bred birds), building on past experience of Eurasian Griffon *Gyps fulvus* release work in Europe where established groups

Plate 3. Vulture family on ledge, May 2008.



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Plate 4. Assam centre team, February 2008.



CHRIS BOWDEN

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Plate 5. Vultures in colony aviary, February 2008.

of 15–30 birds have been successfully released together. We are also drawing on results from other vulture and condor programmes. Because birds mature at around five years old, and lay only one egg per year, this is necessarily a slow process. We will soon be trialing artificial incubation, which could potentially double breeding output and would be a major boost to the programme. With the complete removal of diclofenac from the environment unlikely in the near future (within 5 years), this may actually mean that the availability of birds for release fits well with realistic prospects for doing so into a safe (diclofenac-free) environment. There are also breeding programmes starting in Nepal and Pakistan, led by National Trust for Nature Conservation and WWF Pakistan respectively, with regional government support as well as technical support from Bird Conservation Nepal and the Hawk Conservancy Trust. Both currently hold smaller numbers of White-rumped Vultures (Table 1), but represent extremely important and welcome initiatives by those countries.

The efforts to remove diclofenac are absolutely key to saving these three vulture species, and more *in-situ* initiatives to intensively remove diclofenac around the remaining colonies are urgently needed. But it only takes a tiny number of diclofenac contaminated carcasses to wipe out a colony, making the breeding programmes an essential

component of the efforts to save these spectacular keystone species.

OBCC contribution and acknowledgements

The third centre in Assam received a grant of £6,000 from OBCC which was used towards the construction of two holding aviaries. A plaque has been placed on the aviaries in recognition of this important contribution by the OBCC.

Special mention is also made of the growing support from the state governments and forest departments of Haryana, West Bengal and Assam, and particularly to Dr R. D. Jakati who was instrumental in the initiation of the programme and centre at Pinjore.

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Chris Bowden,
International Species Recovery Officer
and Vulture Programme Manager,
RSPB, The Lodge, Sandy, Bedfordshire, SG19 2DL UK
Email: Chris.Bowden@rspb.org.uk

Table 1. Numbers of *Gyps* vultures held for captive breeding in India, Nepal and Pakistan in 2009.

	Haryana	W Bengal	Assam	Nepal	Pakistan	Total
White-rumped Vulture	53	48	19	43	14	177
Indian Vulture	54	17	0			71
Slender-billed Vulture	14	12	9			35
All species	121	77	28	43	14	283