

## **Appendix XXV<sup>+</sup>**

### **Jatayu 4: A newsletter of the project Conservation of Critically Endangered Gyps Species of Vultures in India**

<sup>+</sup> JPG images of newsletter inserted, real version available  
with hard copy of final report



# Jatayu 4

A Newsletter of the Project; Conservation of Critically Endangered Gyps Species of Vultures in India

**BNHS** A Joint Project of  
Bombay Natural  
History Society

Forest Department of  
Haryana

Funded by  
Darwin Initiative for  
the Survival of Species  
UK

Published by

**VCBC** Vulture Conservation  
Breeding Centre  
Pinjora, Haryana

The BNHS was founded in 1883 for the purpose of exchanging notes and observations on natural history and exhibiting interesting specimens. Today, it is the largest non-governmental organization (NGO) in the subcontinent engaged in the conservation of nature and natural resources, education and research in natural history with members in over 30 countries.

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## Editorial

The year 2005-2006 will go down in the history of vulture conservation as a year of conservation action. Implementation of the two major recommendations of the vulture recovery plan released in February 2004, was taken up in earnest. The Prime Minister, Dr. Manmohan Singh announced in the Wildlife Board meeting held in April 2005 that veterinary diclofenac – the killer drug of vultures will be phased out within six months. Although the drug has not been banned so far, there are growing evidences of government machinery working towards achieving it. The proactive role of the Ministry of Environment and Forests is laudable.

Much headway was also made in the Vulture Conservation Breeding programme. The first Slender-billed, the most endangered vulture and perhaps the most endangered raptor, in the world, was brought into captivity for the conservation breeding programme. In early December 2005, the vulture was caught at Dholia, Tinsukhia district, Assam and was flown to Delhi from Guwahati. So far, we have 23 sub-adults and juvenile Slender-bills, caught and being reared for the conservation breeding programme. The year 2005-2006 indeed brought some hope of saving the vultures from the brink of extinction.

Another key achievement was the



successful testing of a safe alternative drug to diclofenac. Meloxicam, also an NSAID given to cattle, was found to be safe for vultures as well as for other scavenging birds. Scientists from Indian Veterinary Research Institute (IVRI) led by Dr. Swarup, Head of Medicine, along with the colleagues from Bombay Natural History Society (BNHS) and Haryana forest department, conducted the test at Vulture Conservation Breeding Centre, Pinjora.

The studies on the veterinary care of wildlife is woefully inadequate in our country and more so for wild birds. We were fortunate to have Dr. Andrew Routh, the head veterinarian from London Zoo, who ran a week long intensive workshop for veterinarians from various states who would potentially be employed in different vulture centres. It was a very comprehensive workshop on vulture husbandry, care and

disease management. The high level of competency achieved in the vet care workshop was evident when the team of vets under the tutelage of Dr. Routh successfully saved all 21 vultures which were injured by kite strings during the celebration of the Ultrayain festival in Ahmedabad, Gujarat. These were later brought to Pinjora.

The second vulture conservation breeding centre also started functioning at Rajabhatkawa, outside Buxa Tiger Reserve, West Bengal. The centre is at a picturesque location on the edge of a Sal Shorea robusta forest.

I am sure if this rapid pace of conservation action continues, there will be real hope for vultures and our children will be able to marvel at the majestic flying and soaring vultures in the years to come.

**Vibhu Prakash**  
Principal Scientist  
Bombay Natural History Scientist

**Stop Press: The Drug Controller General of India, Dr. Ashwini Kumar in his letter dated 11 May 2006 has instructed all the state drug controllers that the licence granted to manufacture diclofenac formulations for veterinary use should be withdrawn and marketing of such formulations to be phased out within a period of three months. Wonderful News.**

# Jatayu

## UK Minister visits VCBC



Mr. Jim Knight, UK Minister for Rural Development, Biodiversity and Landscapes, visited the Centre on 4th February 2006 to understand vulture conservation efforts and get an idea about how the money, a grant of Darwin Initiative, is being

spent. He was accompanied by Mr. Jain, IAS, Secretary, Forests, Haryana, Mr. J. P. L. Srivastava, IFS, Principal Chief Conservator of Forests, Dr. J. K.

Rawat, APCCF, Mr. Rao Dhan Singh, Parliamentary Secretary of Haryana State Assembly, and various Forest Department and District level officials. He was received at the centre by Dr. Mark Avery, Director, Conservation, Royal Society for the Protection of Birds, U.K. Mr. Chris Bowden, Director, Vulture Programme, RSPB, and Dr. Asad R. Rahmani, Director, BNHS. He was given a guided tour of the centre. Tea and lunch were organized by the Forest Department where the Press had a chance to interact with the Minister. Mr. Knight was very happy with his visit and commented during the press meet that the Darwin money was being well spent. He congratulated the Haryana forest department and BNHS for the excellent work being done at the centre.

## VCBC activities

### □ Vultures at the centre

A total of 117 vultures are housed at the centre. Of these, 45 are White-backed vultures, 56 Long-billed vultures, 14 Slender-billed vultures and 2 Himalayan griffons. All the vultures have a plastic ring, a wing tag, and a transponder for individual identification.

The majority of the White-backed and Long-billed vultures are housed separately in the two completed colony aviaries. The remaining nestling birds are spread between the smaller aviaries.

All the Slender-billed vultures are housed in the old flight aviary except one which is still in quarantine.

All the 21 vultures (18 WBV and 3 LBV) from Gujarat, with injuries due to kite strings, are in temporary quarantine aviaries at village Nandpur.

### □ Construction at the centre



The lab has been upgraded with construction of a haematology and computer room. A store room has been constructed adjoining the lab.

Two new quarantine aviaries have been constructed at the farthest end of the 5 acre land.



Three new temporary quarantine facilities of 20'X20'X12' were specially erected to house the 21 vultures, injured by kite strings, brought from Gujarat. The aviaries are made up of iron pipes and netlon. They can be easily erected and pulled down within couple of days. Wooden perches wound with coil ropes and water troughs have been provided with. The area around the facility has a chain link fence to prevent trespassers and wild and domestic animals.

### □ CCTV Cameras installed



The Gyps vultures are very sensitive and cautious birds. It was very difficult to observe them from spy holes in the gallery of the aviaries as they would detect our presence and would appear nervous. To overcome this problem, close circuit television cameras were installed in the two colony aviaries. The monitor is kept in the laboratory. The camera can rotate almost 180° and can also move 90° up and down. The optical zoom is 28X which gives a very clear picture of the birds wherever perched in the aviary. The birds have got used to the camera and do not show any signs of nervousness, when operated. Video recording is also possible. It is now possible to get quality information on behaviour, pairing, health condition and nesting attempts without disturbing the birds.

### □ Laboratory

The lab has been upgraded with the addition of ELISA reader and PCR machine. Dr. Clyde Hutchinson of the Zoological Society of London, visited the centre in February 2006 to set up the PCR and ELISA Reader Machines. He standardized the techniques for sexing vultures by PCR or Polymerase chain reaction, an enzyme-driven process for amplifying short regions of DNA in vitro. He also carried out Diclofenac ELISA tests. ELISA or Enzyme-linked immunosorbent assay technique is a series of methods which allow for the detection and quantification of antibodies and antigens.

### □ First vulture breeding attempts



This year saw the first nesting attempts at the centre. Two pairs of White-backed vultures attempted breeding in colony aviary. One pair nested on concrete ledge while the other on a ledge of jute mat edged with wooden frames. One egg was laid in each of the nests. The first egg was laid in the second week of December and the other in the second week of January. The pairing and courting had begun from September 2005. Both the sexes shared equal responsibilities in nest building and incubation. The nest material in the form of small branches of various trees including Pinus roxburghii, Acacia catechu, Ficus bengalensis were regularly provided on the ground. Fresh twigs with green leaves were provided till they abandoned the nesting. However, nesting was not successful as one egg broke in the nest and the other egg failed to hatch in spite of an extended incubation period. This egg has been collected for processing.

Experience from other breeding programmes shows that first attempts are often unsuccessful, so the laying of two eggs should be seen as a positive sign of better things to come.



## VCBC activities

### Vulture veterinary workshop



There is very little information on the veterinary care of captive birds. There are very few people trained in captive care of birds in our country. Dr. Andrew Routh, Senior Veterinary Officer, Zoological Society of London, an acknowledged expert in avian disease management was invited to run a training workshop at the breeding centre, Pinjore during October 2005. Dr. Vibhu Prakash, Dr. Devojit Das and Dr. Percy Avari were the other resource persons. There were five Indian veterinarians and a veterinarian from Nepal who attended the course. These veterinarians are potential employees at vulture captive breeding centres being planned in India and Nepal. The areas focused during the workshop were avian anatomy and physiology, pharmacology, avian anaesthesiology, surgery and orthopedic care, principles of rescue and rehabilitation, housing and release techniques, post-release monitoring of wild animals and sampling techniques.

There were both classroom and practical sessions. The practical training was conducted at the breeding centre, Pinjore.

Dr. M. R. Almeida, Chairman-Research and Collection subcommittee, BNHS, on his visit to the centre, met the participants and thanked Dr. Routh for carrying out this important workshop.

### Safety testing of Meloxicam at VCBC



Once established, that Diclofenac is the major cause of vulture mortality; the next important task was to get the veterinary use of the drug banned. Diclofenac was considered to be a very cheap and effective drug for cattle and was available even in the remotest corner of the country. The authorities were reluctant to ban the drug unless a suitable safer alternative was available. The Ministry of Environment and Forests, Government of India, gave permission to BNHS and IVRI to carry out the safety testing of an alternative drug. Based on a survey done across the globe on the use of non-steroidal anti-inflammatory drugs in zoos on vultures and other birds it was found that, Meloxicam, a second generation anti-inflammatory non-steroidal drug was the only one which had caused no mortality in any species of birds, it was given to. The Meloxicam was also found safe for African White-backed vulture and Cape vulture in a study carried out jointly by Pretoria University, RSPB, BNHS and IVRI. Earlier a study done by the Pretoria University had found Diclofenac as toxic to African White-backed vulture as it was to the Indian White-backed vulture. Safety testing of Meloxicam on the White-backed and Long-billed vultures and other scavenging birds which feed along with vultures was carried out at the centre.

The testing was carried out in three phases. The recommended doses of drug were given orally (by gavage) to White-backed and Long-billed Vultures during the first phase and to the four species of other scavenging birds during the second phase. The vultures were fed on the meat and fat of buffaloes which were treated with the recommended doses of Meloxicam during the third phase.

The team from IVRI led by Dr. Swarup, Head of Medicine, carried out the testing. The centre's veterinarians took the blood samples while Dr. Swarup's team gave the drug and meat to the vultures.

The blood samples were collected before giving the Meloxicam and also 48 hrs and 72 hrs after giving the Meloxicam.

There was no adverse reaction to the drug. The vultures and other scavenging birds remained healthy and no clinical signs suggestive of toxicity were observed following administration of Meloxicam. No statistical variation in hematological and biochemical parameters were observed in birds.

So, the study provided enough evidence to suggest that Meloxicam is totally safe for vultures and other scavenging birds. It is known to be as effective in treating cattle as Diclofenac.



### Visitors to the centre, Pinjore

1. A visit to the centre has become part of the various technical courses conducted at the country's premier forest training college - Forest Research Institute at Dehradun. Batches of officers and field staff regularly visit the centre.



2. Dr. M. R. Almeida, Chairman, Research and Collection Subcommittee, BNHS, visited the centre on 16th October 2005 and inaugurated the close circuit television camera. He expressed his appreciation for the centre.

3. Mr. R.P.S. Katwal, IFS Additional Director General of Forest, MOEF, New Delhi, visited the centre on 7th March 2006. He was accompanied by Dr. J. K. Rawat, Additional Principal Chief Conservator of Forest, and Dr. R.D. Jakati. He took a round of the centre and expressed satisfaction with the progress of the centre.

4. Mr. K. Koshi, Director General of Police, Haryana, visited the centre on 22nd February 2006 along with Dr. Jakati. He showed keen interest in the Vulture Conservation.

5. Mr. Dave Dick, Mr. Roger Broad and Mr. Duncan Orr-Ewing from RSPB came to do their sabbaticals between February and March 2006.

6. Mr. Shekhar Reddy, Assistant Conservator of Forests, Nehru Zoological Park, Hyderabad, Andhra Pradesh, visited the centre on 22nd and 23rd March 2006 to see the facilities developed and husbandry and care of vultures practiced at the centre. The Zoological Park is setting up a captive breeding facility of vultures with financial support from Central Zoo Authority.

## Vulture trapping and nestling collection

Following the release of the vulture recovery plan, setting up of at least three conservation breeding centres, each having 25 breeding pairs of each of the three species was a priority. Hence, construction of breeding centres and collection of vultures were of paramount concern. During the months of March and April

collection of nestlings was the major activity of the project. The nestlings were collected as the objective was that 70% of the breeding stock should be juveniles, as these are likely to be better breeders in the long term. Besides collection of nestlings, trapping of juveniles was also carried out during the year.

### Trapping of Slender-billed vultures



Based on our estimates, not more than 200 pairs of Slender-billed vultures *Gyps tenuirostris*, survive in wild and most of the population is in Assam. The birds were trapped at Durduma in Tinsukhia district, very close to the border with Myanmar.

We utilized the services of our ace bird trapper Mr. Ali Hassan and his team of brothers, sons and nephews. Ali Hassan has a very effective, totally non-invasive, inexpensive and a quick method of vulture trapping. He would position a fresh cattle or goat carcass and would wait, sitting in a grass hide some 10-15 m from the carcass, for vultures to come. He uses a long bamboo pole, which is about 60ft long and collapsible. The terminal segment of the bamboo is very supple, thin and

bifid at the end. Ali Hassan applies glue which is a mixture of the latex of *Ficus religiosa* and mustard oil. It is important to get the right consistency of the mixture, which makes it extremely sticky. When the vultures start feeding on the carcass, Ali Hassan, sitting in a grass hide, gradually slides the bamboo pole towards the foraging vultures. When the bird is 4-5 feet away, Ali Hassan swiftly thrushes the stick, which sticks to the feathers, on the selected vulture. The vulture is then unable to fly. Ali Hassan then rushes and grabs the bird. The glue does not damage the plumage and comes out easily with any vegetable oil. We used this technique to trap the 23 Slender-billed vultures.

Trapping in remote areas can be very exciting but sometimes a bit scary. The locals find it difficult to understand our purpose of trapping. They sometimes spread wild rumours and try to obstruct work. In one area we were branded as cattle killers and vulture smugglers! The presence of dogs and other scavengers can further complicate trapping. Vulture trapping is a typical wait and watch situation. Sometimes it takes days to attract vultures and on other days it is just a matter of minutes. Our average catch was one bird per week.



## Collection of Long-billed vulture nestlings



and only then the trapping is commenced. Once the bird is caught, the information is sent immediately to the local DFC, who in turn gives a 'Transit Pass' which enables us to transport vultures from one state to another. It takes 3-4 days to get the paper work done.

The birds nest on inaccessible cliffs and rocky outcrops. Quite often, they nest in deep caves on a vertical face of the cliff. The nestling collection was only possible because of a rock climbing team consisting of Dr. Richard Cuthbert, Research Biologist, RSPB and his climbing colleagues, Richard Wrightman from U.K. and Richard Wesley from New Zealand. Collection of nestlings is a very specialized job in torrid hot summer days when the temperature hovers around 50° C.

Once the nestlings are brought down, they are transported in wooden boxes. This is to prevent them from hurting themselves. The wooden boxes of 2.5x1.5x2.5' have coarse non-slip flooring. They have good ventilation and are top opening. There are no perches inside the boxes. The boxes are big enough for the birds to stand and sit but not enough to turn around or flap their wings, to prevent injuries. One box houses one bird. The birds are then driven to the nearest airport and then flown to Delhi and are then driven to Pinjore.

## Collection of White-backed vultures



Injured wild birds. Every year during kite flying, which is part of the festival 'Utrayan', a good number of birds get serious injuries due to kite strings. Ground glass is used to coat the string so that in a duel with other flying kites, the ground glass coated string cuts through the strings of other kites. The flying birds get entangled in the strings and suffer serious injuries. Many birds suffer serious wing damage and are maimed for life, while many die of excessive bleeding.

In all, 21 White-backed vultures *Gyps bengalensis* were brought to the centre. Eighteen birds were brought from the Animal Health Foundation, a voluntary organization which looks after sick and dying, stray animals in Ahmedabad, Gujarat. The foundation is doing wonderful work of saving

Two nestlings were collected from Maharashtra, one each from Nashik, and Chiplun, and one from Haryana, from Badisher.



## Second VCBC opens in WB



of understanding was signed between the Forest Department of West Bengal and Bombay Natural History Society for a 15 years collaboration for the Conservation Breeding Programme at Rajabhatkhowa.

The centre is located 15 km from the nearest big town of Alipurduar, Jalpaiguri, North Bengal. It is just outside the Buxa Tiger Reserve within the Rajabhatkhowa (east) range. The Buxa Tiger Reserve shares its boundaries with Assam and Bhutan.



According to the South Asia Vulture Recovery Plan, released in the year 2004, six vulture conservation breeding centres have to be established in south Asia including four in India. The Rajabhatkhowa was found to be suitable for the second centre.

The West Bengal government has given BNHS permissive possession of 5 acres of land for fifteen years to establish the centre. A memorandum

## Perimeter energised fence



Field Director, Mr. Lepcha, told us about the curious nature of the elephants and their inquisitiveness towards any thing new coming up in the area, and advised us to go in for the electric fencing. We took Mr. Lepcha's advice and immediately ordered the fencing. It is six feet high and has eight strands of wire of which five are energized and have 11 KV current flowing through. The current does not harm the animal but just gives it a good thud which deters them from coming back. It runs on solar panels which are installed at the site.

We are now very happy that we took Mr. Lepcha's advice seriously. Every day we have elephants coming close to the fence and once or twice they have even tried to force their way in but the fence could ward them off. It is a pleasure to watch elephants passing by, protected by the electric fence!

## Construction of aviaries

Different aviaries are built for different purposes. The aviaries are designed on the same plan as they have been done at Pinjore. We have so far constructed

three quarantine aviaries, one hospital aviary, two nursery aviaries and one display aviary. One colony aviary is nearing completion.

## Vultures at the centre

In all, 16 vultures are housed at the centre, of which 12 are Slender-billed, 3 White-backed and 1 Himalayan Griffon. The 12 Slender-billed are housed in two quarantine aviaries. There are two White-backed vulture nestings

which are housed in one of the quarantine aviaries. One adult White-backed vulture with a broken wing is housed in the hospital aviary and one juvenile Himalayan Griffon is housed in display aviary.

## Building for laboratory

A building for setting up a laboratory has been given by the forest department in the forest complex, Rajabhatkhowa. The building has been repaired and soon

the laboratory will be set up. It is proposed to set up a basic hematology lab, post mortem room and facility for storing samples.

## Office and Staff accommodation

The building allotted to the project for office and accommodation is an old forest rest house known as Tiger lodge. It is a two storied wooden

building, standing on stilts, with four rooms, two on the ground floor and two on the first floor. There are covered balconies in front of the room overlooking the forest.

## Vulture relief camp



injured in kite flying during the celebration of "Utrayan" festival in Ahmedabad, Gujarat. The program was conducted in collaboration with Gujarat Forest Department and Animal Health Foundation, Gyaspur, Gujarat.

During the program, 9 injured White-backed vultures were successfully anaesthetized and survived surgery and post-operative care. Besides vultures, a number of Kites, a Peacock, a Painted stork, an Egyptian vulture and a Pintail were also operated upon. Many small birds with minor injuries recovered with first aid care. All the nine vultures have now been brought to Pinjore and are part of the breeding programme.

Mr. Pradeep Khanna, IFS, the Chief Wildlife Warden of Gujarat thanked BNHS and requested them to conduct this program every year. Mr. Khanna very kindly gave us space to set up a temporary facility for treating birds at the Van Chetana Kendra.

A vulture relief camp was organized in January 2006 to provide first aid care and surgery, as necessary, to vultures

## Project Staff

Dr. R. D. Jakati, IFS, Chief Wildlife Warden, is the project leader and is supported by his team of Mr. Sada Ram, Wildlife Inspector and Mr. Rakesh Sharma, Forest Guard.

Mr. S. Saravanan, Senior Research Fellow and Dr. Devojit Das, Veterinarian form the research team

supported by Mr. Jai Kishan and Shagun Chand, vulture keepers, Mr. Mahindra Singh and Mr. Rajesh Kumar, drivers, in Pinjore.

Mr. Ujjawal Bhattacharya, Chief Conservator of Forests, is the project leader assisted by Mr. Lepcha, IFS, Field Director and Mr. Rajiv Sharma Dy. Field Director, Buxa Tiger Reserve, for

the West Bengal centre. Mr. Sachin Ranade, Senior Research Fellow, Drs. Percy Avari and Jeherul Islam, Veterinarians, form the Research team in Rajabhatkhowa, West Bengal supported by Mr. Amar, driver. Dr. Vibhu Prakash, Principal Scientist, is the overall in-charge of the conservation breeding programme.

## The Last Word

As you are all aware that investigations into the cause of the vulture declines are reliant on a supply of freshly-dead vultures for post mortem examination, Please do all you can to help us obtain these necessary carcasses. Also, if you observe sick vultures, please inform Dr. Vibhu Prakash directly at the Vulture Project Office.

Thank you.

## Thank you

We gratefully acknowledge the funding provided by the Royal Society for the Protection of Birds for the VCBC, Rajabhatkhowa and for construction of new aviaries and part of the running cost at Pinjore. We thank the National Birds of Prey Trust, U.K. for funding the construction of one colony aviary at Pinjore.

We are most grateful to Mr. Malakar, Chief Wild Life Warden, Assam for allowing us to catch Slender-billed vultures from Assam.

We would like to thank Mr. Pradeep Khanna, Chief Wildlife Warden, Gujarat for kindly allowing us to bring 21 vultures with damaged wings housed at Animal Health Foundation for Conservation Breeding program at Pinjore. We would like to thank Mr. Rahul Sehgal of Animal Health Foundation for looking after the injured vultures and Mr. Kartik Shastri for all logistic support in Gujarat.

We would like to thank our member volunteers, Mr. B Raha, Mr. Vishwas Kaldare, Mr. Dilsher Khan, for helping in collection of nestlings.

## Vulture Carcass Submission Protocol



Put the carcass into a strong plastic bag and seal this bag to make it watertight press out any air in the bag before sealing it.

Repeat step 1. so the vulture is now within two strong, sealed plastic bags.

Place the bagged vulture on ice packs\* in a thermo cool box and cover the carcass as much as possible with ice packs\*.

Seal the thermo cool box by taping the lid on tightly with strong sticky tape. Tape all the way around the join between the lid and the box.

Immediately contact Dr. Vibhu Prakash (BNHS Pinjore 01733-232924/264426) to arrange for the carcass to be sent by the fastest way possible to the Vulture Care Center, Pinjore. The cost for sending the carcass will be borne by BNHS. Remember - time is of the essence.

Include with the carcass (by placing in a sealed envelope taped to the outside of the thermo cool box) details of the carcass as follows:

- Species of vulture
- Age of vulture if known
- Location where carcass was found
- Date and time of day carcass was found and collected
- Any other relevant information e.g. state if vulture was known to have been sick (and for how long) before it died.

To create ice packs, fill plastic bottles with water, replace the lids securely and place into a deep freezer. Please note, if you are monitoring vultures and likely to find carcasses, it is a good idea to have quite a number of ice packs ready-made in a freezer to avoid delays in submitting carcasses for post mortem examination.

**PLEASE DO INFORM THE LOCAL WILDLIFE/FOREST DEPARTMENT AFTER COLLECTING THE CARCASS AND OBTAIN PERMISSION. PLEASE INFORM US IN CASE OF DIFFICULTY**

### Please contact us on the following addresses:

B-3, Forest Complex  
Pinjore - 134102, Haryana

F-23, HMT Colony  
Pinjore - 134101, Haryana

Phones :  
01733-232924, 264426, 240305,  
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Further information on Darwin Vulture Project can be obtained from Dr. Vibhu Prakash at the Project Office

or Project Website at: www.vulturansoc.org

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## **Appendix XXVI<sup>+</sup>**

### **Conservation of Asia's critically endangered vultures**

<sup>+</sup> JPG images of RSPB report inserted, real version available with hard copy of final report



## Conservation of Asia's critically endangered vultures

Indian white-backed vulture



Chris Gomersall (rspb-images.com)

**The catastrophic decline of three species of Asian vultures has driven concerted research efforts by the RSPB and several international groups over the past five years. The identification by The Peregrine Fund and partners of the role of the veterinary drug diclofenac in Pakistan was a major step forward in identifying the cause of the Asian vulture declines.**

Detailed work by the RSPB and partners has confirmed the presence and role of diclofenac in vulture declines across India and Nepal. In addition, further research by the RSPB has shown that only a very small proportion (<1%) of livestock carcasses need to contain lethal diclofenac residues to have produced vulture declines at the observed rate. Preliminary results from sampling livestock carcasses across India indicate that

there is more than enough diclofenac in the environment, and confirm that diclofenac is the main, if not the only, cause of the vulture population declines.

Following extensive discussions and a report prepared by the RSPB and partners for a meeting of the Indian Wildlife Board, the Indian Prime Minister announced on 17 March 2005 that the use of diclofenac in veterinary medicine will be phased out within six months. This announcement is a tremendous boost for the conservation of vultures in India and the surrounding region.

The RSPB is now working to identify a vulture-safe alternative to diclofenac to ensure that it can be replaced at the earliest possible opportunity. Surveys by veterinarians in zoos and raptor rehabilitation centres worldwide have provided valuable information on the potential

safety of alternative drugs to vultures. In collaboration with veterinarians and scientists in India and South Africa, safety testing of alternatives has been undertaken on captive and wild African white-backed vultures and, more recently, on Asia's long-billed and Oriental white-backed vultures.

Further research involving satellite telemetry of vultures is underway in Nepal, India and Cambodia. The tracking will provide important information on the seasonal movements and foraging range of breeding vultures, so that conservation measures can be implemented within these areas with the support of local communities, to ensure that the remaining breeding colonies remain viable.

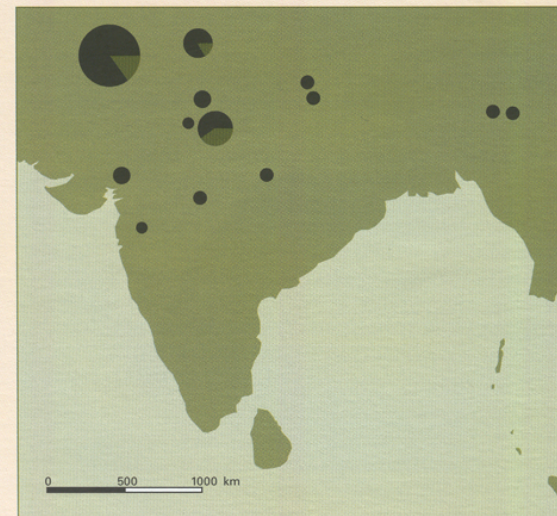
**Contact:**  
[richard.cuthbert@rspb.org.uk](mailto:richard.cuthbert@rspb.org.uk)

Volunteers from South Africa and Namibia assist in ringing an African white-backed vulture.



Richard Cuthbert

**Localities where dead and dying vultures were found in Asia. Circle areas scaled according to the number of birds collected at each site (1–10, except top left = 259 vultures from Peregrine Fund study in Pakistan). The proportion shaded black shows the proportion of birds with diclofenac residues, visceral gout (indicative of diclofenac poisoning) or both.**



Partners in this work included Bombay Natural History Society, Bird Conservation Nepal, Zoological Society of London, Central Science Laboratory (York), Indian Poultry and Diagnostic Research Centre, Conservation Biology Group (University of Cambridge), Pretoria University, Vulture Study Group, BirdLife South Africa, National Birds of Prey Trust, Wildlife Institute of India, Indian Veterinary Research Institute, De Wildt Cheetah and Wildlife Trust, Rare and Endangered Species Trust Namibia, and Natural Research Ltd UK.

This study was supported by the Darwin Initiative for the Survival of Species.

Green RE, Newton I, Shultz S, Cunningham A, Gilbert M, Pain DJ and Prakash V (2004) Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. *Journal of Applied Ecology* 41: 793–800.

Shultz S, Baral H, Charman C, Cunningham A, Das D, Ghalsasi G, Goudar M, Green RE, Jones A, Nighth P, Pain D and Prakash V (2004). Diclofenac poisoning is widespread in declining vulture populations across the Indian subcontinent. *Proceedings of the Royal Society, London B* (Supplement) 271: S458-S460. DOI 10.1098/rsbl.2004.0223.

**See also: 2001: 25**



## **Appendix XXVII<sup>+</sup>**

### **Finding a cause for and solution to the decline of Asia's endangered vultures**

<sup>+</sup> JPG images of RSPB report inserted, real version  
available with hard copy of final report



## Finding a cause for and solution to the declines of Asia's endangered vultures

In 1999, scientists from India's Bombay Natural History Society (BNHS) reported that there had been dramatic declines in the number of vultures at breeding colonies in several sites in western India. As a close collaborator with BNHS, the RSPB was invited to support repeat surveys to establish if these declines were widespread.

Teams from the BNHS retraced the route of road-transect surveys undertaken in the early 1990s, driving more than 6,000 km across India in search of vultures. The results confirmed that India's *Gyps* vultures had undergone a catastrophic decline: one species – the long-billed vulture – had decreased by 92% and another – the Oriental white-backed – by 96% in just 10 years. Further surveys in 2002 and 2003 confirmed that these declines were continuing and also applied to the other Indian resident *Gyps* vulture species, the slender-billed vulture. Surveys of vultures in Pakistan and Nepal revealed similar rapid declines. In the 1980s, the the Oriental white-backed vulture was considered to be probably the most abundant large bird of prey in the world; the combined populations of the three *Gyps* species may have exceeded 40 million. All three species are now listed by IUCN as Critically Endangered.

With confirmation of the population crash, urgent research was begun to establish the cause of the declines. In late 2003, Lindsay Oaks, working

in Pakistan with the US-based Peregrine Fund and the Ornithological Society of Pakistan, discovered that the veterinary drug diclofenac was toxic to vultures. Diclofenac is a painkiller and anti-inflammatory drug commonly used to treat sick and injured domestic livestock across south Asia. It was introduced to the region at about the same time that the decline in vultures began. Vultures die from kidney failure when they consume carcasses of livestock that contain toxic residues after being treated with diclofenac a few days before death.

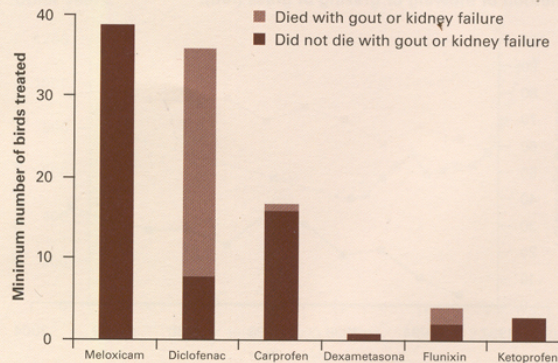
Research by the RSPB and its partners confirmed the toxicity of diclofenac to *Gyps* vultures and its role in declines across India and Nepal, and demonstrated that only a very small proportion (<1%) of livestock carcasses would need to

contain lethal diclofenac residues to have caused the observed declines. Sampling across India found diclofenac in more than 10% of cattle carcasses, confirming that diclofenac was the main cause of the declines.

An international workshop on vulture conservation agreed that a rapid diclofenac ban was essential to save Asia's vultures, and that this needed to be backed up by establishing conservation breeding centres to guarantee the species' survival. Two vulture centres have now been set up in northern and western India, with plans for more in India, Pakistan and Nepal. These currently house 127 vultures and two pairs attempted to breed for the first time in 2005, several years ahead of schedule.

To facilitate a diclofenac ban, the RSPB led an urgent search to find an

Results of a questionnaire survey of zoos and veterinarians on the effects of pain-killers and anti-inflammatory drugs on six species of *Gyps* vulture.



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alternative drug that could be used to treat livestock and that is safe to vultures. Questionnaires were sent to zoos and veterinarians requesting details on the safety of painkillers and anti-inflammatory drugs used to treat birds of prey. The survey highlighted other drugs with similar toxic effects to diclofenac, but also found that the anti-inflammatory drug, meloxicam, had been used safely in the treatment of hundreds of birds, including 39 *Gyps* vultures. In collaboration with scientists from India, South Africa and Namibia, detailed safety testing was carried

### Vulture in the BNHS and Haryana Forest Department's breeding centre at Pinjore, India.

out, initially on the abundant and closely related African white-backed vulture, and then on the affected species in India. This confirmed that meloxicam, which is an effective drug for treating livestock, is a safe alternative to diclofenac for vultures and other scavenging birds.

The last major obstacle hampering a diclofenac ban was thus removed. In May 2006, the Indian government ordered all drug companies in India to halt the production and sale of diclofenac within three months and to promote the use of meloxicam as a safe alternative. There is still a long way to go, but the acceptance by the Indian government of the role of diclofenac and safety of meloxicam is the critical first step to ensure the survival of Asia's vultures. Achieving this rapid and high level of acceptance from government was a direct result of the carefully targeted and co-ordinated research effort from the multinational group of conservation scientists involved.

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Partners in this work included Bombay Natural History Society, Bird Conservation Nepal, The Zoological Society of London, Pretoria University, BirdLife South Africa, The National Birds of Prey Trust, the Wildlife Institute of India, The Indian Veterinary Research Institute, Haryana Forest Department, The De Wildt Cheetah and Wildlife Trust's Vulture Unit, Wildlife Biological Resource Centre (South Africa), the Rare and Endangered Species Trust Namibia, Natural Research Ltd UK and the University of Aberdeen.

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**See also:** 2001: 25; 2005: 34



