Report from 4th meeting of

Saving Asia's Vultures from Extinction

SAVING ASIA'S VULTURES
FROM EXTINCTION

Hotel Dhaka Garden Inn, Dhaka, Bangladesh

20th - 23rd November 2014

Report compiled and edited by Chris Bowden, SAVE Programme Manager

January 2015

[Photo credits: Sarowar Alam Dipu/IUCN, David Woodfall]

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1. About this report

The format of this year's report follows the new Blueprint for the Recovery of South Asia's Critically Endangered Gyps Vultures document and reports against all actions agreed in that document.

Note the Green (on track), Yellow (Some concerns) & Red (Behind Schedule) colour codes for each action.

We have updated the SAVE priorities for the region, although the changes are relatively minor refinements since last year, and the Blueprint also has some relatively minor updates and refinements, so for easy reference, the updated version is also included here as an Appendix.

Acknowledgement of support for the meeting

SAVE warmly acknowledges the financial support of the RSPB and of the Bangladesh SRCWP vulture project for making this meeting possible. RSPB supported the majority of participants travel costs and shared in-country costs with the SRCWP. Also thanks to the individual donors on the SAVE website who have further assisted the cause, and to those participants who were able to fund their own travel or seek alternative funding for their attendance.

In addition, the IUCN Bangladesh office devoted huge energy and attention to ensure the smooth running of the meeting which was appreciated by SAVE and by all participants. Thank you!

2. Updated SAVE priorities for vulture conservation 2015

- An immediate ban of diclofenac manufactured for human medicine in vials or ampoules larger than 3ml

- An effective system of regulation of veterinary drugs, based upon safety-testing on vultures (protocol already agreed for India) initiated and underway for all current painkillers (NSAIDs) and for all potential new ones entering veterinary practice

- Improve the availability of more effective meloxicam formulations thereby facilitating take up by veterinary practitioners

- Veterinary licenses to be withdrawn for two drugs – ketoprofen and aceclofenac - based on the good existing evidence that they are unsafe for vultures

- Major efforts urgently needed within South Asia to address the immediate and increasing gap in funding for vulture conservation which now jeopardises the programme

- Promotion of network and approach of 'Vulture Safe Zones' across South Asia with expansion to include trans-boundary cooperative efforts.

- Maintain and support the existing vulture conservation breeding programmes throughout South Asia

- Prepare for first soft releases of captive bred vultures in India by 2016

- Link SAVE activities and meetings to closely support the 'Regional Steering Committee' in order to facilitate the urgent implementation of the 2012 Delhi Regional Agreement

3. 4th SAVE Meeting Programme & Excursion

19th Nov Arrival of delegates at Hotel Dhaka Garden Inn
19.00 Dinner at hotel

20thNov:
09.00 Welcome from hosts (Mr. Enam Ul Haque, Founder, Bangladesh Bird Club)
09.05 Chairman's welcome (Prof. Ian Newton)
09.15 Outline of meeting with reference to the Blueprint (Chris Bowden)
09.30 TAC update & overview of the year (Rhys Green)
09.45 FACC update & overview of the year (Chris Bowden)
10.00 Regional Steering Committee and other Govt initiatives
10.10 Tea/coffee

Country summary presentations of 2014 Updates

11.00 India
11.20 Nepal
11.40 Pakistan
12.00 Bangladesh
12.20 Cambodia
13.00 Lunch

Technical Sessions:

14.00 Removal of NSAIDs
15.45 Tea/Coffee
16.00 Vultures Safe Zone approach – Ananya Mukherjee/ Toby Galligan
17.30 Save Vulture Awareness Initiatives from South India – S. Bharati, Arulagam
18.00 Close

21st Nov: At Hotel Dhaka Garden Inn, Dhaka

Technical Sessions:

09.00 **Preparing for Releases**- Chairman: Professor Ian Newton Rapporteur:
10.30 Tea
10.45 **Fundraising** – Chairman: Mr. Homi Rustam Khusrokhan
Including presentation Poonam Madan (attracting CSR funds & Govt support – India)
GEF update & inputs from all countries/partners
12.30 Lunch
13.30: **Updates to Blueprint** - Chairman: Homi Khusrokhan Rapporteur:
15.00 Tea
15.15 **Summary of meeting**
15.30 Close of Technical Session

22nd Nov: Inaugural Session - Pan Pacific Sonargaon Hotel

08.00 Transfer participants to Pan Pacific Hotel by vehicle
09.00 Registration
10.00 Welcome Address by **Mr. Ishtiaq Uddin Ahmad,** Country Representative, IUCN Bangladesh Country Office
10.05 Screening of a film on " Raise Your Voice for Survival of White-rumped Vulture"
10.10 Speech on "Vulture Conservation: Global Aspect" by **Professor Ian Newton,** Chair, SAVE
10.15 Speech on "Vulture in Bangladesh" by **Mr. Enam Ul Haque,** Founder, Bangladesh Bird Club
10.20 Speech by Special Guest **Mr. Md. Nojibur Rahman,** Secretary, Ministry of Environment and Forests (MoEF),Government of the People's Republic of Bangladesh
10.25 Speech by Chief Guest **Mr. Abul Maal A Muhith,** Hon'ble Minister, Ministry of Finance (MoF),Government of the People's Republic of Bangladesh
10.35 Concluding Remarks by **Mr. Md. Yunus Ali,** Chief Conservator of Forests, Bangladesh Forest Department, Government of the People's Republic of Bangladesh
10.40 Refreshment

Chief Guest, Minister of Finance speaking to SAVE. Photo: Sarowar Alam Dipu

1100- 1200 Technical Session, Chair: Professor Ian Newton, Chair, SAVE

1100- 1110	SAVE/Regional Overview: **Mr. Chris Bowden**, SAVE Programme Manager
1110- 1140	Country Overview: Overview of the 5 SAVE Countries
1140-1150	Priorities for Vulture: Open Discussion
1150-1155	Vote Of Thanks
1150-1200	Closing Remarks by **Professor Ian Newton**, Chair, SAVE

Excursion - departure to Sylhet, Srimongol Tea Estate (6 hours drive)

Dinner & Overnight at Tea Estate

23rd Nov

06.00	Vulture Safe Zone site visits (2 forest sites with vulture colonies) then return to Dhaka from mid afternoon
21.00	Dinner at hotel back in Dhaka

24th Nov **Departure of delegates**

The painting presented to Ian Newton by SAVE members with thanks for

his term as SAVE Chairman since inception February 2011

4th SAVE Meeting Attendees

Prof Ian Newton FRS Chair	Uzma Saeed (WWF) Board (rep)
Jemima Parry-Jones, (Dir ICBP) TAC & Board	Chris Bowden (RSPB) Prog Manager FACC
Dr Tim Stowe (Dir International, RSPB) Board	Dr Asad Rahmani (Dir BNHS) FACC & Board
Campbell Murn (HCT-UK) TAC	Chiran Pokheral (NTNC) Board (rep) & FACC (rep)
Khadananda Paudel (BCN) TAC	Dr Mohini Saini (IVRI) & TAC
Dr Toby Galligan (RSPB) TAC	Dr Devendra Swarup FACC
Prof Rhys Green (TAC Chair)	Dr Amarinder Kaur (APCCF Wildlife Haryana)
Dr Monirul Khan TAC	Alam Sarowar Dipu (BNVRC) Board
Dr Vibhu Prakash (BNHS) TAC	Enam Ul Haque, President, Bangladesh Bird Club
Sum Phearun (BirdLife Cambodia)	Md. Modinul Ahsan, ACF, BFD
Dr Ananya Mukherjee (RSPB)	Dr. Tapan K. Dey (CF Wildlife & NC Bangladesh)
Nick Lindsay (ZSL), FACC	Ashit Ranjan Paul (Dep CF Bangladesh)
Narendra Pradhan (Dir BCN), FACC & Board	Chandra Shakhar Chaudhary (DNPWC Nepal)
Percy Avari	Rasel Ahammed, IUCN Bangladesh
Ishtiaq Uddin Ahmed (IUCN Country Rep Bangladesh),	Khadija Rawshan, IUCN Bangladesh
Paul Thompson	Rashique Hassan, IUCN Bangladesh
Md. Towfiqul Islam, DFO, Moulvibazar, BFD	

Apologies/unable to attend:

RD Jakati, PR Sinha (IUCN India), Mr Bonal (CZA), Maheshwor Dhakal (DNPWC), Yam Malla (IUCN Nepal), Ganga Jung Thapa (NTNC), Mandar Kulkarni (BNHS), Rinkita Gurav (BNHS), Rohan Shringarpure (BNHS), Simon Mahood (WCS Cambodia), Nic Masters (ZSL), Michael Krause (RSPB), Chris Parish (TPF), Scott Perkin (IUCN Asia), Mark Taggart (UK) Dr. Pradeep Vyas, IFS, APCCF (Wlife) W Bengal, BC Choudhury FACC, Dr Anil Sharma (IVRI) FACC, Uzma Khan (WWF).

4. Updated SAVE Membership & Website

Chris Bowden (SAVE Programme Manager)

Two additional partners were formalised during the year bringing the total number of SAVE partners to thirteen. They are the Bangladesh National Vulture Recovery Committee nominated as a Core Partner, and the Bangladesh Forest Department as a Government Member.

Chairman – Prof Ian Newton

Board – **Core Partners** of Bombay Natural History Society, Bird Conservation Nepal, Bangladesh National Vulture Recovery Committee, National Trust for Nature Conservation, International Centre for Birds of Prey, Royal Society for the Protection of Birds, WWF Pakistan have nominated: Asad Rahmani, Narendra Pradhan, Govinda Gajurel, Jemima Parry-Jones, Tim Stowe and Uzma Khan respectively.

BCN ICBP NTNC Pakistan

Project Partners – Zoological Society of London, Hawk Conservancy Trust, Wildlife Conservation Society, The Peregrine Fund.

Research & Govt Partners – Indian Veterinary Research Institute, Bangladesh Forest Department.

SAVE Programme Manager – Chris Bowden

Technical Advisory Committee (TAC) – Rhys Green (Chair)
Jemima Parry-Jones (Co-chair), Vibhu Prakash, Campbell Murn, Chris Parish, Mohini Saini, Naresh Subedi, Mark Taggart, Monirul Khan, Khadananda Paudel, Nic Masters

Fundraising, Advocacy and Communications Committee (FACC) - Ram Jakati (Chair)
Homi Khusrokhan, Asad Rahmani, Devendra Swarup, BC Choudhury, Uzma Khan, Nick Lindsay, Michael Krause, Anil Sharma, Chris Bowden.

Associate Members – new category currently being formalised

5. SAVE activities since 3rd SAVE meeting

- 3rd SAVE meeting report was circulated/posted promptly in December 2013.
- Blueprint was finalised/posted after re-circulations and comments from all partners by February 2014 and has subsequently been circulated and accepted at RSC as basis for Regional Action Plan
- SAVE button donations slightly improving (see fundraising) but again a single donor (£2,000) in January has been key.
- SAVE Associate category has been proposed and agreed by sub-committee members (with some helpful reservations/feedback from two people) – and Chris visited Arulagam in Tamil Nadu, in July (last week!) with the criteria and will circulate positive feedback as first potential Associate Partner. They are carrying out exemplary VSZ work and using the SAVE definitions and model. Two further NGOs have been contacted for similar visits and treatment, ie SMN in Maharashtra and Corbett Foundation working in Kutch as well as in MP and elsewhere.

www.save-vultures.org

The website has been developed substantially since the launch in November 2011 with assistance of a volunteer at RSPB and we are again very grateful to Mr Nigel Bush for his ongoing help! RSPB is still planning to develop and upgrade the site further in the coming year and to include the facility for online live maps of individual tracked vultures.

Updates and who looks at SAVE website? There have been updates and additions made to the site (averaging 1-2 per month) and the pages most frequently visited include (in descending order) latest news, solutions to the problem, people, how my donation helps, resources (publications) and identification of the species.
The numbers of visitors have more than doubled consistently throughout the year, from an initial 120/month to around 600-650/month last year to 1200-1400 in recent months.

Initially, most visitors were from UK, India and USA, but this has changed and now India accounts for 50%, followed by UK, USA, Nepal and Pakistan. Then a substantial number from Bangladesh, and a range of European countries, Canada, Australia, Japan, South Africa and many more.
Note that the Vulture Rescue website is to be discontinued, but this has not yet happened.

Donate button. The number of online donations has remained similar, with a slight reduction (of £500) despite a single donation of £2,000 in January – the same donor who did the same two years back.

Funds raised from the SAVE donate button 1 Nov 2013 – 1 Nov 2014 = £2,997 (GBPounds)

2013/14	GBP £	2014	GBP £	
Nov	117	May	80	
Dec	51	Jun	91	
Jan	2030	July	185	
Feb	200	Aug	80	
Mar	0	Sept	45	
Apr	42	Oct	76	
Annual Total for SAVE year in GBPounds				2,997

SAVE website online donations November 2013 - October 2014
We will welcome suggestions, especially from the SAVE Partners, for material/updates to post on the website, and please send ideas and material to the SAVE Programme Manager, Chris Bowden.

Contact: SAVE Board email account: board@save-vultures.org
SAVE Contact email account: contact@save-vultures.org

6. Regional Steering Committee & Regional GEF Proposal

April 2014 meeting in Delhi was slightly less well attended than previously – notably the Indian Govt was not represented at a high level, and Bangladesh again by only NGO representation. However, the updates were of a high standard and despite some renewed signs that the GEF proposal was moving ahead, and the successful letters of support and commitment from all four Governments prompted by respective IUCN offices in each country, we have subsequently heard the bad news that it has almost certainly failed.

- National Vulture Recovery Committees have now been nominated by all four countries and Pakistan and Bangladesh have so far met and agreed some important actions. India unfortunately has not yet met.
- One National Action Plan update is well developed and in process – Nepal – and that is being led by BCN with strong government engagement.
- No progress on this for the other three countries.
- The GEF regional proposal was reinvigorated at the meeting, but at a $5m level rather than the $16m level originally discussed.
- Letters of support and commitment from all four Governments were generated by July 2014 in time for GEF submission.
- Nepal has offered to take on chairmanship of RSC and we await news on whether funds are available for them to do this and when the next meeting will be.

8. List of Acronyms and abbreviations

BCN	Bird Conservation Nepal
BFD	Bangladesh Forest Department
BNHS	Bombay Natural History Society
BNVRC	Bangladesh National Vulture Recovery Committee
CWW	Chief Wildlife Warden
DFO	District Forest Officer
DNPWC	Department of National Parks and Wildlife Conservation (Nepal)
FACC	Fundraising, Advocacy and Communications Committee (of SAVE)
HCT	Hawk Conservancy Trust (UK)
ICBP	International Centre for Birds of Prey (UK)
IFS	Indian Forest Service
IUCN Bng	International Union for the Conservation of Nature Bangladesh
IUCN India	International Union for the Conservation of Nature India
IUCN Nep	International Union for the Conservation of Nature Nepal
IVRI	Indian Veterinary Research Institute
LBV	Long-billed Vulture
NTNC	National Trust for Nature Conservation (Nepal)
OWBC	Oriental white-backed vulture (=white-rumped vulture)
PCCF	Principal Chief Conservator of Forests
RHV	Red-headed vulture
RSPB	Royal Society for the Protection of Birds (UK)
SBV	Slender-billed vulture
SRCWP	"White-rumped Vulture (*Gyps bengalensis*) Conservation in Bangladesh: Establishment of the toxic drug free Vulture Safe Zones (VSZ) and Monitoring of the Population trend". This is a sub-project component of the "Strengthening Regional Cooperation for Wildlife Protection' Project" of the Bangladesh Forest Department, funded by World Bank.
TAC	Technical Advisory Committee (of SAVE)
TPF	The Peregrine Fund (USA)
VCBC	Vulture Conservation Breeding Centre
WCS	Wildlife Conservation Society
WWFPak	WWF Pakistan
ZSL	Zoological Society of London

APPENDICES

Advocacy Reports

AD1 Achieve the removal from the market of vials of diclofenac supposedly intended for human medicine in excess of 3 ml capacity.

2014 - Propose restrictions on large vials to the Regional Steering Committee, governments and pharmaceutical industry. Establish the restrictions.

India: Rinkita Gurav/Ram Jakati/Chris Bowden/Vibhu Prakash
This ongoing issue has been given the highest priority by BNHS ahead of mentioning other important topics, and the Advocacy head has been following up almost daily since February with the Ministry of Health, Central Drugs Standard Control Organisation, and Ministry of Agriculture.
UPDATES: Letters with relevant research papers were sent to the Ministry of Health and Family Welfare by The Economics of Ecosystems and Biodiversity (TEEB) in 2013. After studying the issue with the large vials of diclofenac for human use, the Drug Controller General of India issued a notification for inviting public comments on the 14th of July 2014 under GSR 503 (E) to reduce the manufacturing size of 30 ml. This will be prohibited and only the smaller ampoules will be manufactured for human use under section 12 and 13 of the Drugs and Cosmetics Rules, 1945. This rule will be known as the Drugs and Cosmetics (9th Amendment) Rules, 2014. The gazette notification to public is set to be published before the end of 2014
Broadcasting proposal to Doordarshan and All India Radio (AIR), India. Rinkita Gurav
For mass awareness of the vulture crisis and issues, BNHS approached Doordarshan and AIR which has 27 channels along with various radio channels respectively across India for broadcasting Public Service Announcements (PSA-Advertisements on vulture conservation) and Documentaries produced by BNHS. Doordarshan has agreed and the proposal has been forwarded to the former Minister of Information and Broadcasting Mr Prakash Javadekar. Further talks on working out the time slots for broadcasting the PSAs on television are going.

Bangladesh: Sarowar Alam Dipu/Monirul Khan
The Bangladesh Vulture Recovery Committee (BNVRC) approached the Drug Control Authority and the Government to restrict the size of human formulation of diclofenac to 3 ml. Accordingly, the BNVRC applied to the Government and the application has endorsed and supported by the Forest Department.
It is still under process, so the large vials for human formulation are still in the market. Moreover, awareness activities and campaigns are ongoing to aware people not to use human diclofenac for veterinary use.

Nepal: Khadananda Paudel/Chris Bowden
Restriction of >3ml. vials of human intended diclofenac was raised once with Officers at Department of Drug Administration, but later it has not been discussed.
Note however that the one Nepalese company producing large vials was already successfully stopped last year and no indications of further Nepalese companies doing so.

Pakistan: **Uzma Khan/Campbell Murn/Uzma Saeed**
Three human formulations of diclofenac (one local and 2 imported from China) are available at Nagarparker and Kasbo. It still needs to be confirmed if there is any evidence that these are used by the local communities for veterinary purposes. The only vial size available is 3ml.
It has been reported by the Drug Regulatory Authority (DRA) that diclofenac is being used under the labels of Herbal and Homeopathic medicines for animals; there are at least 311 such products (sale points indicated at Rawalpindi Veterinary Medicine Market, Shamsabad). This requires further investigation, which the DRA is pursuing by making unannounced visits to dispensaries in a number of cities. The situation will continue to be monitored via links between the DRA and WWF-Pakistan.

AD2 Achieve the banning of the veterinary use of ketoprofen and aceclofenac in India, Pakistan, Bangladesh and Nepal.

2014 - Discuss the issue with the Regional Steering Committee (RSC), governments and pharmaceutical industry using research results.

Bangladesh **Sarowar Alam Dipu/Monirul Khan –**
Following the recommendations of the BNVRC to ban the veterinary use of ketoprofen, formal letter has sent to the Ministry of Environment and Forests and other relevant ministries of the Government. Formal banning of ketoprofen is under process. However, two Vulture Safe Zones (VSZ) that have recently been formalized have included in its declaration that ketoprofen and other untested veterinary drugs harmful for vultures are forbidden to use in the VSZs. Aceclofenac, on the other hand, is not popular in Bangladesh, so there is no initiative to ban it.

India: **Chris Bowden**/ Rinkita Gurav/Ram Jakati/Vibhu Prakash
Due to the top priority focus on getting multidose vials ban in place, only limited prominence of this topic has been given at interactions with Ministry officials by BNHS so far. It has however been raised, and there is acknowledgement of the issue at mid levels within the Ministry of Health and Family Welfare, Central Drugs Standard Control Organisation, Department of Animal Husbandry (Ministry of Agriculture).
Letters along with relevant research papers have been given to the Deputy Drug Controller, Director-Drugs in Health Ministry and Animal Husbandry Commissioner in Ministry of Agriculture. Plans are in place to develop and follow up this topic more proactively once (hopefully!) the multidose vials ban is achieved.

Nepal: No activity reported

Pakistan: **Uzma Khan/Campbell Murn/Uzma Saeed**
Dialogue has been started with the representatives at the Drug Regulatory Authority of Pakistan, Government of Pakistan (Ministry of National Health Services, Regulations and Coordination) in order to know how many pharmaceutical companies

are manufacturing ketoprofen and aceclofenac in Pakistan. This issue will be raised in the upcoming meeting of the
Drug Registration Board (DRB) in Islamabad, expected in December 2014 or early 2015.

Figure 1: Aceclofenac and ketoprofen (on left) and human formulations of diclofenac sodium (on right) are available at the local medical stores at Vulture Safe Zone

AD3 Establish a procedure in India and Nepal through which identification by testing of a drug hazardous to vultures at or below maximum likely exposure levels leads to a ban on its use for veterinary purposes.

2014 - Initiate discussions with the Regional Steering Committee, governments and pharmaceutical industry. Establish a procedure.

India: **Vibhu Prakash**/Chris Bowden/AK Sharma
No significant progress reported although discussion initiated by BNHS Advocacy Head in Indian Ministries with Drug authorities. But no steps taken, and no activity reported from the RSC. This has not been discussed with pharmaceutical companies directly at this stage.

Bangladesh: Sarowar Alam Dipu
A meeting with pharmaceutical companies is scheduled in December 2014. This issue will be raised in the upcoming meeting where representative of Regional Steering Committee (RSC), Bangladesh National Vulture Recovery Committee (BNVRC) and other relevant government officials are expected to be present.

/Nepal/Pakistan: No activity reported

AD4 Establish procedures in India and Nepal by which veterinary drugs with unknown effects on vultures have their approval for veterinary use withheld or withdrawn until scientific testing on Gyps vultures establishes their safety at maximum likely exposure levels.

2014 - Initiate discussions with Regional Steering Committee, governments and pharmaceutical industry. Establish procedures.

India: Chris Bowden/Ram Jakati/Rinkita Gurav/Vibhu Prakash
No significant progress reported although discussion initiated by BNHS Advocacy Head in Indian Ministries with Drug authorities. But no steps taken, and no activity reported from the RSC. This has not been discussed with pharmaceutical companies directly at this stage.

Bangladesh: Sarowar Alam Dipu
This will be discussed on an upcoming meeting with pharmaceutical companies scheduled in December 2014 where member of Regional Steering Committee (RSC), Bangladesh National Vulture Recovery Committee (BNVRC) and relevant government officials are expected to be present.

Nepal/Pakistan – no progress reported

AD5 Work with both the pharmaceutical industry and governments to identify, by a robust safety testing and approval process, NSAIDs that are safe for vultures. Currently meloxicam is the only such drug.

2014 - Provide encouragement and technical advice. Chris Bowden

India: Chris Bowden/Ram Jakati/Rinkita Gurav/Vibhu Prakash
A safety testing procedure has been developed and submitted by IVRI to Government for approval and funding. There is currently no indication of whether or not this is likely to be implemented in the near future. It is unclear how this can best be promoted for urgent action, but it is hoped that it will be an agenda item for the next Indian National Board of Wildlife chaired by the Primer Minister and this route is being actively pursued.

Bangladesh: No activity reported
Nepal: No activity reported
Pakistan: No activity reported.

AD6 Contribute, with government agencies and pharmaceutical companies, to maintaining pharmacovigilance and regulation of veterinary drugs, to prevent their negative effects on wild vultures.

2014 - Use monitoring information on the performance of the regulatory procedures and propose improvements.

India/Pakistan/Bangladesh/Nepal: No activity reported

AD7 Establish a SAVE alert system for veterinary drugs which combines information of levels of use from pharmacy surveys and analyses of cattle carcasses with results from safety testing to draw attention of governments to potentially hazardous drugs.

2014 - Establish system within SAVE. No progress to report

AD8 Improve the availability of more effective meloxicam formulations thereby facilitating take up by veterinary practioners

[Note this action has been added as omitted from original Blueprint but was an agreed priority at 2013 SAVE meeting]

India: Chris Bowden/Ram Jakati/Rinkita Gurav/Vibhu Prakash
There are developing plans on this for India, and contact details have been compiled for the 72 Indian meloxicam producers by BNHS Advocacy Head. A set of visits and letters to key companies is planned early in 2015 (BNHS/RSPB) involving an NSAIDs expert to progress this. Little other progress on this so far.

Bangladesh: Sarowar Alam Dipu
In Bangladesh, there are only 4 pharmaceutical companies which produce meloxicam. A discussion will be held on production of more effective meloxicam in scheduled meeting with pharmaceutical companies in December 2014. Moreover, White-rumped Vulture Conservation in Bangladesh project will take an initiative to render free meloxicam to users soon.

Nepal: Khadananda Paudel
Meloxicam of higher than 10 mg/ml. concentrations are not still available in Nepali market. So, dialogue needs to be initiated with veterinary drug distributors in Nepal why the 10 mg/ml. concentration meloxicam are not imported to Nepal.

Pakistan: Uzma Khan/Campbell Murn/Uzma Saeed
Formulation testing of six meloxicam formulations from Pakistan in the UK showed high pH levels and that the osmolarity needed improvement. ICI-Pakistan has taken steps to improve the formulation of meloxicam in its product named 'Melonac'. This has improved the formulation (**Certificate of Analysis** is awaited from ICI-Pakistan).

Other pharmaceuticals such as Leads Pharma, SJ & G Fazul Ellahie, Selmore Pharma, Star Labs and Breeze Pharma, from where the meloxicam samples were sent to the UK for testing, will be approached to improve their meloxicam formulations as well, using example of ICI-Pakistan.

Conservation Breeding Reports

CB1 Conservation breeding of OWBV, LBV and SBV at VCBC Pinjore (India).

2014 – Maintain the captive population in good health. Produce as many fledglings as possible of all three species, using artificial intervention as appropriate.

Vibhu Prakash/Jemima Parry-Jones/Nic Masters

There are 64 White-backed Vultures, 88 Long-billed, 25 Slender-billed Vultures and 2 Himalayan Griffons at the centre. A total of 22 nestlings including 7 White-backed, 14 Long-billed and 1 Slender-billed hatched and successfully fledged. A new dimension was added to the Vulture Programme when a chick exchange trial was carried out at VCBC, Pinjore. We wanted to see how viable the second clutches of eggs were as hatchability under the parents had been somewhat low. By returning the chicks of the first clutch hatched in incubators back to their parents on nests, we were able to take charge of the second clutch of eggs, and tried to improve their success rate to hatching. The second clutch was then artificially incubated and the nestlings were hand reared in groups as we have done previously with the first clutches of eggs. By doing this we hoped to increase the hatchability of the second clutch. Of the 11 targeted pairs, only one pair, a LBV, did not double clutch. Nine pairs, 8 of LBV and 1 of SBV, double clutched within a month of removing eggs, and one, a WBV, recycled after 40 days. Ten nestlings went back to their respective nests, while one, a 4 day old nestling was placed in a nest of an experienced foster pair, as its own parents had never reared a chick on the nest. One more nestling could not be exchanged as the parents did not double clutch and hence had to be hand reared. In bargain, we got 11 second clutch eggs for artificial incubation. Of the 11 second clutch eggs, 7 eggs hatched successfully. All the nestlings that were returned to their nests fledged successfully.

There were three mortalities at the centre. One Juvenile Long-billed Vulture died because of obstruction in GI tract. One White-backed Vulture died of possibly old age and the cause of mortality in one bird is still not clear and we are waiting for laboratory results.

Microflora studies in the three Gyps species of vultures in captivity - Documentation of normal microflora of the *Gyps* vultures in captivity was undertaken to generate valuable reference to ensure the fitness of the birds to be reintroduced in the wild which would eventually contribute to the success of the Conservation Breeding Programme.

For the study, cloacal and choanal swabs were collected from thirty two wild caught and seventeen captive bred vultures from the three species in captivity at the centre. Study of cloacal swabs will indicate the gastrointestinal microflora and choanal swabs will represent the respiratory microflora. Further, to study the succession of bacterial species at various growth stages of captive vultures, fecal samples were collected from sixteen artificially hatched and hand reared vulture nestlings at six different stages of their growth.

Escherichia coli (found in 84% of wild caught and 77% of captive bred birds) and *Enterococcus* spp (found in 52% of wild caught and 25% of captive bred birds) were found to be normal facultative anaerobic flora of the gastrointestinal tract. *Escherichia coli* was found to colonize the gastrointestinal system of vulture nestlings at the one week stage of growth (found in 81% birds at this stage). It was thereafter found to be the normal component of the microflora. *Staphylococcus* spp. especially *S. epidermidis* and *S. avium* and *Streptococcus pneumoniae* were found as commonly occurring bacteria of the respiratory tract.
The study successfully documented the aerobic and facultative anaerobic microflora of the gastrointestinal tract and respiratory tract of captive, resident *Gyps* vultures of three species of different to age groups nestlings, juveniles and adults. As no information on the normal and pathogenic microbes of these vultures was available, this study provided the baseline information to study the infectious diseases caused by bacteria in vultures.

Molecular sexing of vultures at VCBC, Pinjore - Sexing of 109 vultures has been successfully carried out at the Vulture Conservation Breeding Centre, Pinjore during the past 3 years. Among total 109 samples, 40 were of White-backed vultures, 40 of Long-billed vultures and 19 of Slender-billed vultures. The following are the results of molecular sexing. 25 of the White-backed Vultures were found to be males and 15 were females, of the total of 40 Long-billed Vulture samples, 14 were found to be males and the rest were females and of the 19 Slender-billed samples 9 were found to be males and 10 were females.

CB2 Conservation breeding of OWBV, LBV and SBV at VCBC Rajabhatkhawa (India).

2014 - Maintain the captive population in good health. Produce as many fledglings as possible of all three species, but with special emphasis on SBV, using artificial intervention for that species if appropriate.

Vibhu Prakash/Jemima Parry-Jones/Nic Masters

The centre was established in 2005 and today we have 102 birds of all the three species including 19 Long-billed Vultures, 67 White-backed Vultures and 16 Slender-billed Vultures. All the three species housed at the centre have been breeding successfully in captivity. Till date, 23 nestlings of the three species have hatched and fledged at the centre of which 18 are White-backed Vultures, 3 Slender-billeds and 2 Long-billeds. The White-backed vultures commenced breeding at the centre for the first time by hatching a chick in 2010. The centre had the privilege of breeding the most endangered Slender-billed Vulture for the first time ever in captivity during 2009. Successful breeding of the Long-billeds was achieved in 2013-14.

All the three species bred successfully this year (2013-14). Two Long-billed vulture eggs hatched for the first time at the centre. The Long-billed vultures had laid last year also but they did not hatch. A total of 10 nestlings, 7 White-backed vultures, 1 Slender-billed vulture and 2 Long-billed vultures, have hatched this year.

At Rajabhatkhawa, only buffalo meat and meat from wild animal carcasses were offered to vultures. This was done to reduce the food cost as there was a big funding gap in the project.

There was no mortality in birds this year. There are two colony aviaries, one display aviary, one hospital aviary and five holding/breeding aviaries at the centre. There is a well equipped laboratory, a walk in freezer and an interpretation room at the centre. The new incubation facility is under construction and possibly will be ready by next year.

Two colony aviaries are urgently required to keep the species separately.

CB3 Conservation breeding of OWBV and SBV at VCBC Rani (India).

2014 - Maintain the captive population in good health. Produce as many fledglings as possible of both species, but with special emphasis on SBV, using artificial intervention for that species if appropriate.

Vibhu Prakash/Jemima Parry-Jones/Nic Masters

The Assam Forest Department in collaboration with Bombay Natural History Society established the conservation breeding centre for vulture at Rani in pursuant of the recommendation of the Recovery Plan released in February 2004 (ISARPW 2004)). A Memorandum of Understanding was signed on 8th February 2007 between The Government of Assam acting through Chief Wildlife Warden, Assam and The Bombay Natural History Society, Mumbai for "the Conservation breeding of two Critically endangered Gyps vultures, (White-backed Vulture and Slender-billed Vulture) in Assam". It was renewed in 2013 for further five years.

There were 70 vultures of two species (39 White-backed and 31 Slender-billed) at the centre. This year, 3 White-backed and 2 Slender-billed vultures fledged successfully. Thus, a total of 6 white-backed and 4 Slender-billed vultures have hatched in captivity and were raised successfully during the last 3 years. There is no artificial incubation facility at the centre.

No mortality was recorded at the centre. There is a colony aviary and two holding aviaries at the centre and a perimeter electric fence. The centre also has an interpretation centre and a laboratory. One colony aviary is most urgently required at the centre to avoid overcrowding in the existing aviaries.

CB4 Conservation breeding of OWBV at VCC Changa Manga (Pakistan).

2014 – Maintain the captive populations in good health. Produce as many fledglings as possible by natural methods and artificial incubation as necessary. Transfer of birds to release programme as appropriate.

Uzma Khan/Campbell Murn/Uzma Saeed

Currently there are 14 White-backed vultures at the facility with three active pairs (see table). Breeding, both natural and by artificial incubation, is a priority for the facility despite some setbacks in recent years. The facility has capacity for at least double the number of birds currently being held. Transfer of any birds to a release programme is not expected or planned until 2019.

The birds are fed six days a week, less in the warmer months. The facility breeds goats and rabbits as a food supply. There is a small flock of goats (one male, six females) of which three are breeding, in addition to a small breeding group of 15 rabbits. Donkeys and other livestock purchased for food supply are kept and managed on site at the facility for the necessary withdrawal period before being slaughtered.

The annual health programme consisted of usual aviary cleaning/disinfection, veterinary health checks, de-worming and external parasite treatment. All birds are in good condition and show expected behaviour and feeding patterns. Bird behaviour data is monitored by facility staff and recorded on activity sheets five times a day at two hourly intervals from 7am to 3pm. There are eight possible nest sites and three pairs of birds are established for the 2014/2015 breeding season.

The facility comprises one main aviary, four smaller aviaries and surrounding paths, livestock enclosures and boundaries. These were all maintained for cleaning/disinfection, perch repair/replacement, nest site restoration and general maintenance.

A designated veterinarian from the University of Veterinary and Animal Sciences (UVAS) in Lahore regularly visit the vulture facility and the diagnostic lab of UVAS provides its services on a regular basis.

Centre Name Changa Manga	Nov 2013 Total no. birds	Oct 2014 Total No. birds	Total no. Pairs that laid	Total Eggs laid	Chicks hatched	Chicks fledged 2014 (Juvs)	Total 1 yr old birds (2013)	Total 2 yr olds birds (2012)	Total 3 yr olds (2011)	Total 4 yr olds (2010)	Total 5 yr olds (2009)	6+ yrs olds
OWBV	15	14	3	3	1		0		3	3	2	6

	Known males	Known females	Unsexed birds	Deaths during period
OWBV	4	10	0	1

1. Brief cause of deaths (PM Results):
   - Inconclusive. High parasite load.

2. Details of breeding managements (any artificial incubation etc) and synopsis of outcomes:
   - The facility is equipped with artificial incubation equipment. Success in the 2013/2014 breeding season was inhibited by gaps in training and experience, which are now being addressed.
   - One egg was incubated and hatched. The chick did not survive beyond 20 days.

3. Plans/requirements for development, additional aviaries, incubators or other facilities:
   - Training for new staff is required, especially egg incubation and chick rearing methods
   - No new aviaries or other facilities are planned

4. Funding (sources and scale) available and required for the above:

- The facility is funded by the Hawk Conservancy Trust
- A development budget is available to send staff for training in India (perhaps at Buxa, as previously)

5. List any related publications during the period (or previous) in relation to breeding:
   - No publications related to breeding

Figure 2: The captive breeding facility at Changa Manga Forest, Punjab, Pakistan

CB5 Conservation breeding of OWBV at VCBC Chitwan (Nepal).

2014- Maintain the captive population in good health. Produce as many fledglings as possible by natural methods.

Chiranjibi Prasad Pokheral/Khadananda Paudel/Navaratna Pradhan

Summary:

Overall health status of vulture was found to be normal this year. There were no clinical cases and mortality. Annual health checkup reveals none of the bird required immediate health attention. There was increase in pair formation, nesting behavior and number of eggs laid compared to previous year. A vulture pair that had shown good nesting behavior was able to hatch an egg and raise this chick thus proving success by natural method in captivity for the first time in Nepal.

Health status:

Clinical cases: There was no any clinical cases recorded this year. However, Case of bumble foot from health checkup(2013) had undergone recovery. This vulture was later returned back to colony aviary on 12.02.2014.

Mortalities: There was no any mortalities this year.

Health checks. Annual health checkup was conducted on September 23-24. All the bird had general physical examination and blood samples were collected for molecular sexing as well as blood profile study. On general examination, all the birds had normal health status except a bird tagged H85(Y) was suspected with respiratory abnormalities (i.e noisy left abdominal air sac). Blood parameter of this bird revealed normal status of leukocyte count and other haematological parameters indicating no prompt treatment necessary. The cases of bumble foot were not observed on health checkup of this year. The blood samples for molecular sexing were stored at proper temperature until it would be further processed.
Parasitology: Pooled faecal samples from both aviaries were collected and examined by microscopy for endoparasites two times during the year. Evidence of only low levels of nematode infestation (ascarid spp) was found and hence no treatments were

administered. Furthermore, no ectoparasites were found on any of the 58 birds physically examined during the annual health check. There was no evidence of haemoparasites on the haematology performed.

Behavioral Status:

Breeding Season :

The behavioural study at breeding season has shown that there was progress in nesting behaviour, pair formation , egg laying and even first hatch in the history of VCBC. Among eleven eggs laid, only one egg had success in hatching. Altogether five distinct pair formation were observed and eleven egg were laid. Hatching took place on vulture pair that showed good nesting behaviour making success rate for this year as 9.09% by natural method in captivity . The status of pair formation, egg laying and hatch is shown in table below.

Table 1: Status of pair formation. Egg laid and hatch of Nepal vultures (2014)

S no	Colony Aviary	Wooden cot	Location	Pair formed	Date of egg laying	Incubating bird	Date of abandon
1	B	A3	East	F24(B)+F38(B)	3rd Nov	Both	3rd January (After 62 days)
2	B	M4	North	RX(R)+F29(B)	3rd Nov	Both	24th Nov (After 22 days)
3	B	A4	East	-	28th Nov	F42(B)	6th Dec (After 8 days)
4	B	A2	East	F32(B)+F28(B)	29th Nov	Both	25th Jan (After 58 days)
5	B	M1	East	-	3rd Dec	TC(R)	22nd Jan (After 51 days)
6	B	A1	East	RC(R)+ F49(B)	27th Dec	Both	28th February After 64 days
7	B	M2	East	F37(B)+F40(	15th	F37(B)	**None** -

				B)	Jan		**Chick seen after 61 days**
8	B	A4	East	-	14th Jan	F30(B)	**15th March(After 60 days)**
9	A	M5	North west	-	15th Jan	F20(B)	14th Feb After31 days
10	A	M2	East	-	16th May	-	-
11	B	On sand floor	West	-	7th June	-	-

Status of fledged vulture chick:
On 16.03.2014, chick was seen on wooden cot M2 at 3:30AM. Both of the pair i.e. it's parent (F37(B)+F40(B)) were seen rearing this chick. Fledging of this bird took place four months after hatching. Later it was isolated along with other birds familiarising with group behavior, feeding and flight. It was transferred to the colony aviary after health checkup. The health status of this chick was normal.

CB6 Conservation breeding of OWBV and LBV at CZA centres (India).

2014 - Training of staff and preparation of facilities **Vibhu Prakash/CZA**

The coordinating meeting of Expert group on Conservation Breeding for Vulture Conservation Breeding Programme of Central Zoo Authority.

A coordinating meeting was held on 28 January 2014 at Pusa Institute, New Delhi under the chairmanship of Mr. B. S. Bonal, IFS, Member Secretary, Central Zoo Authority.
Apart from the member of Conservation Expert group namely, Dr. B. R. Sharma, IFS, Member, Dr. Gautam Narayan, Mr. P. C. Tyagi, IFS, Dr. Vibhu Prakash, the Directors or their representatives of Nandankanan Zoological Park, Odisha, Director, Van Vihar National Park, Bhopal, M.P., Curator, Nehru Zoological Park, Hyderabad, A. P., Biologist, Nehru Zoological Park, Hyderabad, Biologist, Shakkarbaugh Zoo, Junagarh, Gujarat were also present. The Chief Wildlife Warden of Haryana, Country Representative, IUCN, India were also invited to the meeting. Dr. Devendra, Scientific Officer, Central Zoo Authority, New Delhi also participated.

The following decisions were the important outcomes of the expert committee meeting and panel discussions:

The Committee agreed to shift birds between centres for genetic management of the captive vulture populations.

2. The following will be the tentative plans for shifting of birds to various centres

A. Five pairs of Long-billed Vultures to be sent from Pinjore centre to Bhopal centre.

B. Five pairs of White-backed Vultures to be sent from Pinjore centre to Bhubaneshwar centre (Subject to evaluation of facility by the expert team)

C. Five pairs of White-backed Vultures to be sent from Rani centre to Bhubaneshwar centre. (Subject to evaluation of facility by the expert team)

D. Pairs of White-backed Vultures to be sent from Shakkarbaug Zoo to Hyderabad Centre.

3. CZA will write a letter to all the Chief Wildlife Wardens to send the rescued birds housed in their zoos to the nearest Vulture Conservation Breeding Centre, in future.

4. Role of CZA, the Chief Wildlife Warden of states where centres are established and Bombay Natural History Society needs to be spelt out clearly.

5. Preparation of a Conservation Breeding plan by the respective 5 centres should be in place along with a Memorandum of Understanding with Bombay Natural History Society based on the Madhya Pradesh model as soon as possible.

6. It was decided that species should be kept in the centres which occur within their distribution range. The following species were suggested for various centres according to their distribution range:

Pinjore: White-backed Vulture, Long-billed Vulture and Slender-billed Vulture
Rajabhatkhawa: White-backed Vulture and Slender-billed Vulture
Rani: Slender-billed Vulture
Bhopal: White-backed Vulture and Long-billed Vulture
Nandankanan: White-backed Vulture and Long-billed Vulture

7. Location of the Centre: It is important that Vulture centres are located at least 5 km from a zoo or any animal collection to prevent possible disease transmission. Centres within the zoo premises will have to take strict bio-security measures like having dedicated team of biologist and veterinarian, vulture keepers and watchmen which will have no interaction with the zoo staff.

8. Minimum Facilities required for one Species at a centre: One complete colony aviary of dimension 100x40x20' with provision of construction of a second colony aviary within a year, four holding cum hospital aviaries of dimensions 20x20x20', two Quarantine aviaries at least five km from the centre, a laboratory for basic hematology with microscope, centrifuge, hemacue and related equipment for blood sampling, a trained biologist and four vulture keepers.

9. Genetic Management of population in a centre: Genetic Diversity of the founder population should be determined. Birds should be shifted between centres to prevent

inbreeding, specially the siblings, and they should be shifted to centres within the known distribution range of the species. 25 pairs of parent stock and 25 pairs of F1 generation should be kept at the centre. Progenies of F1 generation could be released in the wild once the reintroduction programme begins. To avoid overcrowding only 12 pairs should be kept in a colony aviary. It is very important to mark all the birds with leg ring, patagial tag and micro-chip. Birds of only one species should be kept in an aviary.

10. Quarantine Facility: It is important to have the quarantine facility 5 kms away from the centre. The centre should have all the facilities mentioned in the working manual for Vulture Conservation Breeding Programme.

11. Basic laboratory is needed for monitoring the health of the birds. Facilities for molecular sexing need not be developed at all the centres as one facility at the coordinating zoo will be enough.

12. Artificial incubation is important in this programme and every centre should have an artificial incubation facility as described in the working manual.

Progress report on Vulture Conservation Breeding Centers located in various Zoos funded by Central Zoo Authority (India)

a. **Vulture Conservation Breeding Center, Nandankanan, Odisha**: One colony aviary and two breeding/holding aviaries are ready and rest of the facilities will be developed soon. The birds need to be shifted from Pinjore or Rani centre. The design is according to the working manual produced by the Central Zoo Authority.

b. **Vulture Conservation Breeding Centre, Bhopal**: An MoU has been signed between BNHS and Van Vihar Zoological Park for running the centre and money has been transferred to BNHS. The centre has a colony aviary and four holding aviaries. There is a perimeter fence around the centre. There are twenty birds at the centre of which 7 are White-backed Vultures and 13 are Long-billed Vultures. The design is according to the working manual produced by the Central Zoo Authority.

c. **Vulture Conservation Breeding Centre, Nehru Zoological Park, Hyderabad, Andhra Pradesh** is located within the zoo premises. There are five White-backed Vultures at the centre and one pair laid an egg which failed to hatch. The centre has a colony aviary, one holding and one quarantine aviary. The design of the colony aviary is according to the working manual produced by the Central Zoo Authority.

d. **Vulture Conservation Breeding Centre, Shakkarbaugh Zoo, Junagadh, Gujarat** is located within the zoo and has 47 White-backed and 5 Long-billed vultures. Two nestlings of White-backeds successfully fledged last year. The centre has a breeding aviary, hospital aviaries and a holding aviary.

f. **Vulture Conservation Breeding Centre, Muta, Ranchi** has a colony aviary and four holding/breeding/hospital aviaries. The design is according to the working manual produced by the Central Zoo Authority.

CB7 Conservation breeding of OWBV in Bangladesh.

2014 - Consider the development of a VCBC in Bangladesh.
Sarowar Alam Dipu/Monirul Khan/Tapan Dey

Bangladesh Forest Dept. tries to establish a Vulture Conservation Breeding Centre (VCBC) in Bangubandhu Safari Park, Gazipur on a small scale. Dhaka Zoo has a breeding pair of vultures and it tries to facilitate more in breeding success.
No large scale breeding programme is envisaged, only small scale where it is feasible.

CB8 Conservation breeding of OWBV at VCBC Bhopal (India).
(Note this Action has been added since original Blueprint)

2014- Establish and maintain the captive population in good health. Produce as many fledglings as possible initially by natural methods.
Vibhu Prakash/Jemima Parry-Jones/Nic Masters

Vulture Conservation Breeding Centre, Bhopal
The Vulture Conservation Breeding Centre (VCBC) was established in December 2013, as one of the eight centres in India to breed vultures in captivity. It is a collaborative initiative between Bombay Natural History Society, the Madhya Pradesh Forest Department and Central Zoo Authority to save the two species of *Gyps* vultures, the Oriental white-backed and the Long-billed vulture from possible extinction. The VCBC lies at the edge of a Reserve Forest area, near Kerwa Dam in Bhopal. It is 9 km from Bhopal city, and 7 km from Van Vihar National Park. The centre covers 5.5 acres of Madhya Pradesh Forest Department's land near village Mendori. The centre is ideally located away from human habitation, and yet is accessible from the main city so the day to day requirements of the centre can be easily organised.

Existing Infrastructure

- **Aviaries at the centre**
  - One Colony Aviary
  - Two Holding Aviaries
  - One Nursery Aviary
  - One Hospital Aviary
  - Quarantine facility

- **Management Building**
  - Office cum CCTV camera monitor room
  - Haematology laboratory
  - Staff accommodation

Vultures at the centre

Presently the VCBC, Bhopal has a total of 20 vultures including 7 of Oriental White backed vulture and 13 of Long billed vulture. It is planned to transfer additional fifteen vultures from VCBC, Raja Bhat Khawa, once the second Colony Aviary is complete.

Recurring budget for day to day running of the centre

A total of 54.66 lakhs has been sanctioned as the recurring budget for the centre for the financial year 2014-15. This budget covers the major expenses such as vulture food, staff salaries, vulture trapping and transport, laboratory equipment and supply and other operational expenses.

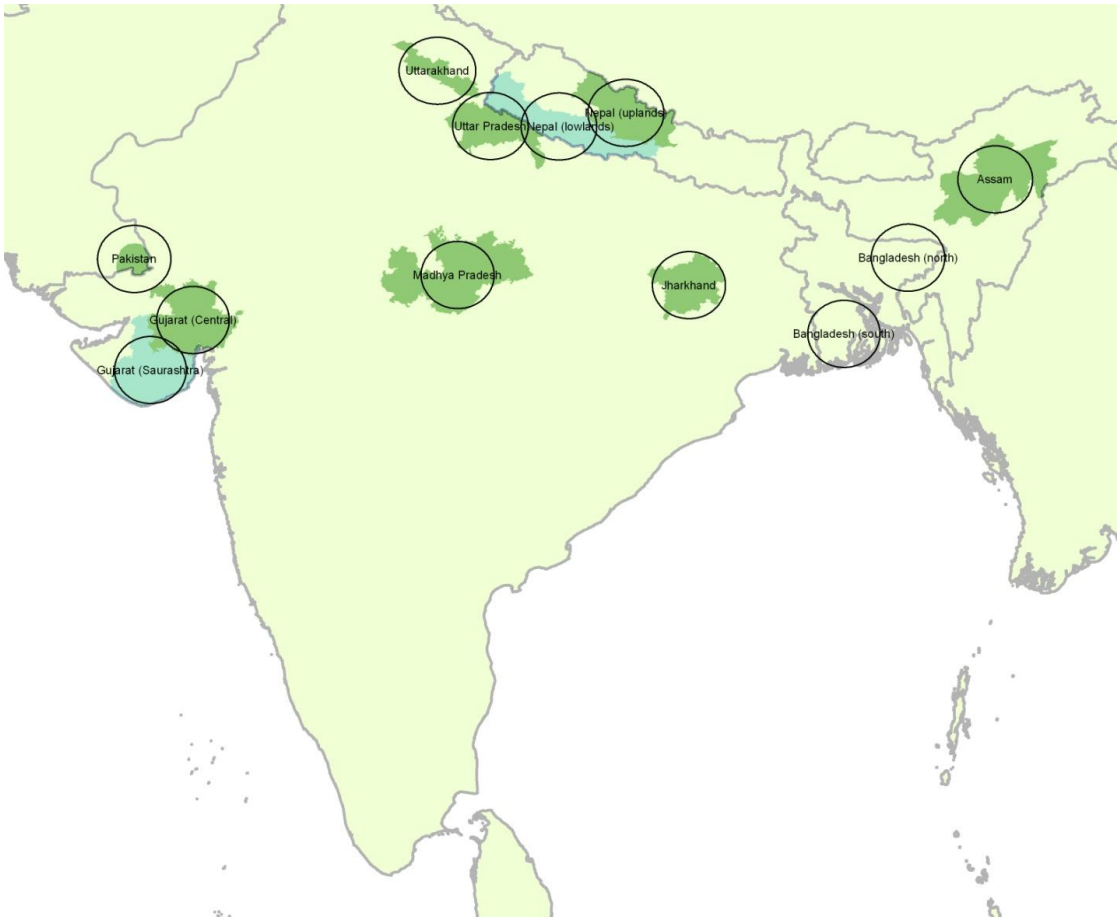
Plans for expansion

- Construction of second Colony Aviary has been initiated by the M.P. Forest Department.
- It is proposed to develop artificial incubation facility and veterinary section during the financial year 2015-16. Will be undertaken by M.P. Forest Department.
- It is proposed to construct third Colony Aviary during the financial year 2015-16. Construction will be undertaken by M.P. Forest Department.

The M.P. Forest Department has forwarded a proposal for development of Interpretation Centre for awareness and education of the members of public regarding vulture issue. Funding will be sought from M.P. Ecotourism.

1. Vulture Safe Zone Implementation Reports

Map of where Vulture Safe Zone Work initiated by SAVE Partners 2014



[Map produced by P Donald/RSPB]

VS1 Identification and selection of new provisional Vulture Safe Zones (pVSZs) in India, in particular for LBV.

***2014 Planned action: Collect information and select pVSZs*.**

Vibhu Prakash/Paul Donald/Toby Galligan/Rhys Green

BNHS and RSPB are currently working in pVSZs in Assam, Central Gujarat, Southern Gujarat and Uttar Pradesh. The latter connects with the pVSZ in Nepal. BNHS and Rio Tinto are establishing a pVSZ in Madhya Pradesh, which is a good area for LBV; however, a nesting colony for LBV in the MP pVSZ has not been confirmed. Note that VSZ area in Assam is a good area for SBV and nesting is confirmed.

VS2 Capacity building and local advocacy of provisional Vulture Safe Zones (pVSZs) in India.

2014 Planned action: Develop capacity in pVSZs (India).

Ananya Mukherjee/Vibhu Prakash

Capacity Building for BNHS pVSZs in UP, Gujarat, and Assam

Gujarat: Due to staffing changes, the management is now placed under two local co-ordinators both of whom have been involved over many years, in Central and Saurashtra Gujarat respectively. In addition, two new staff (Field Biologists) were appointed in each of these areas, and including former volunteers which helps with training process. Ongoing changes have meant these teams are not fully established as yet.

The Assam VSZ team has three field biologists and two field assistants and have been successful in progressing the work to a great extent.

Recruitment of suitable candidates for **UP VSZ** has taken longer with a series of interviews in July and September. There were two full time staff working on the UP vulture project along with a third new recruit who have been training with the Assam vulture team. We hope the team composition will soon stabilize.

Keeping in view the ongoing need for new recruits, a Vulture Volunteer Scheme was introduced in July 2014. Based on the scheme, new entrants interested in working for vultures are given an opportunity to learn about vulture conservation work especially activities related to vulture safe zone work. Candidates showing promise are subsequently appointed. This has a couple of advantages: a) it saves staff training and capacity building time b) acts as a buffer in case of sudden departure of staff from the VSZs.

Local Advocacy in VSZ states

Local advocacy work continues to progress with key players at a village, district and state level. Local communities continue to be engaged to carry out the awareness and advocacy work. Their capacity and motivation varies considerably across the VSZs making it challenging to manage. However, every effort is being made to involve key players at a local level to get the support of these valuable people and on several occasions, they are the guardians and strongest advocates of the vulture nesting and roosting areas as seen in Gujarat and Assam.

In UP, advocacy work has started at various levels within the community using an advocacy strategy targeting key stakeholders systematically to spread awareness. BNHS team in UP has had introductory meetings with the key stakeholders viz. the Forest department officials i.e. the Principal Chief Conservator of Forests, District Forest Officers, Chief Conservator of Forests and Range Officers. In the Animal Husbandry department- the Joint Secretary Animal Husbandry, Director & Dep. Director Animal Husbandry; CEO of the UP Livestock Development Board; Drug Controller of UP, Assistant Drug Controller of UP.

Repeated visits and continuous lobbying for the last twelve months has resulted in steady support from the State Animal Husbandry and the Food & Drug Control

department in UP. BNHS has been given opportunities to network and give presentations and awareness talks in these community health centres to sensitise community people on the negative effects of not having vultures within the community. The team has also liaised with local puppet groups to bring in the religious context of saving vultures widely prevalent in Hindu epic mythology mainly to highlight the importance of saving vultures.

District level advocacy with multiple stakeholders have also commenced but a spectacular milestone has been the announcement of the diclofenac ban and the campaign to save the vultures in UP by the State animal husbandry department through a State-wide press release. A strong implication of this announcement is the State level support, recognition and appreciation from the key players such as Animal Husbandry department, State Education board and the State Health department including the forest department. This level of state support for vulture conservation work has been unprecedented and has given a boost to the vulture conservation work as the team has been able to organize district level workshops with District Magistrates, Chief Veterinary Officer and Chief Medical Officers much more readily. BNHS has also received state wide recognition for their efforts in vulture conservation work following the extensive media coverage of the vulture advocacy and awareness work in UP Involvement of senior district and state level officials including workshops has led to widespread awareness on the misuse of the veterinary diclofenac. Enforcement of the ban has been strongly endorsed by the District magistrates, District and senior forest officials, Drug Controller of UP, Assistant Drug Controller of UP who are the key decision-makers as far as the diclofenac ban is concerned. In a workshop organized by BNHS in October in Pilibhit district, a public announcement was made that anybody caught selling or using diclofenac on animals will be arrested. Following this a letter was issued by the District Magistrate endorsing the same.
Relation with the UP forestry remains cordial and the team continues to work with the state and district level forest officials without arousing hostility.

In Central Gujarat, Advocacy work has spread in the districts of Mehsana, Ahmedabad, Surendranagar, Viramgam and Anand with various stakeholders viz. cattle shelter owners, village heads, livestock inspectors, veterinarians. Awareness programmes have targeted village level heads such as the Sarpanch and the local villagers and discussed with them the importance of vultures and some of the issues related to it, such as sighting of vultures in the villages, treatment of cattle and general awareness about the vultures.

In Assam, awareness programme with all veterinary doctors have been completed and the team is preparing to target the paravets and untrained vets. Lobbying with the Chairman, Secretary of Association of Pharmacists, Assam and the Association of Drug Dealers in Assam continues and the team is preparing a district wise targeted awareness programme in the next couple of months after the pharmacy survey work is completed. Regular advocacy and awareness meetings with community people, cattle owners, local schools and forest officials continues to progress steadily though there were some setbacks due to bad weather conditions. Assam team begins a new round of pharmacy surveys in October after the monsoon period.

Vulture Safe Zone, Bundelkhand, Madhya Pradesh

A joint project of Bombay Natural History Society and Forest Department, Madhya Pradesh
Sponsored by: Rio Tinto Exploration India Limited

The Vulture Safe Zone, Bundelkhand project is a part of *in situ* conservation programme of BNHS to save the three critically endangered Gyps vultures from possible extinction in India. The project commenced from 1st May 2014. During the initial months the newly recruited staff were imparted intensive training both at Vulture Conservation Breeding Centre, Pinjore and in field at Vulture Safe Zone, Madhya Pradesh. The team is based at Bunder project camp of the Rio Tinto Exploration India Limited in Madhya Pradesh The proposed Vulture Safe Zone covers districts Chhatarpur, Sagar, Damoh, Tikamgarh and Panna in Madhya Pradesh and parts of a district Jhansi of Uttar Pradesh covering over 30,000 sq. km. area. The protected areas including Panna National Park, Bandhavgarh National Park, Kanha National Park, Bamhori Range are on the periphery of this Zone.

The project currently has 6 member of staff including Mandar Kulkani the coordinator, three biologists, Yogesh Kumar, Arindam Aditya and Purbasha Banerjee and two field assistants, Mr. Lakhan Vasudev and Mr. Raphikuddin.

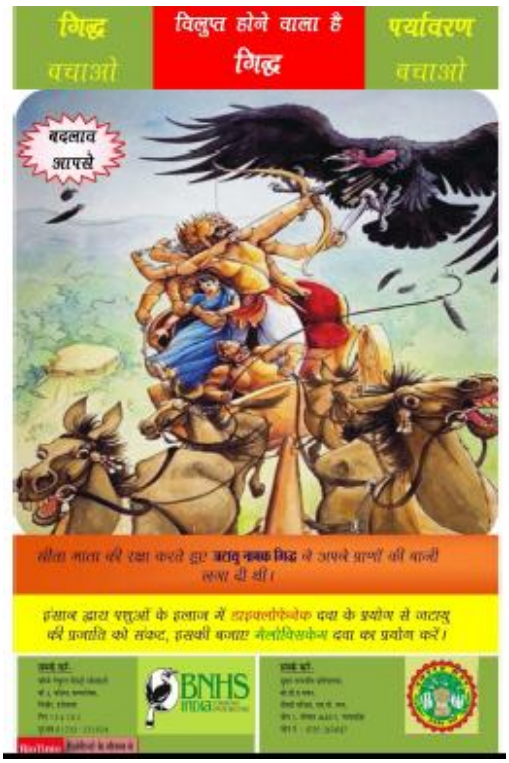
The main objective of the project is eliminate the veterinary use of the non steroidal anti-inflammatory drug, diclofenac and other toxic drug in the area by targeted awareness and advocacy. The effectiveness of the targeted advocacy and awareness would be evaluated by monitoring the availability of diclofenac in pharmacies for veterinary use and prevalence of diclofenac in cattle carcasses available to vultures and population of vultures in the area.
The population of vultures is being monitored by carrying out road transects and monitoring the nesting colonies of vultures in the area. There are three vulture colonies identified within the proposed safe zones and one is being intensively monitored.

An undercover pharmacy survey was conducted in the VSZ area, which revealed that 49% of the pharmacy stores still sell diclofenac for veterinary use. Advocacy and awareness programmes with various stake holders including pharmacists to prevent the misuse of multidose vials of diclofenac for human use in treating cattle.

So far over 125 awareness meetings and over 60 advocacy meetings have been conducted in the VSZ area. The government and non-governmental agencies have been very supportive and more than 10 letters have been issued by the agencies for enforcing the ban on veterinary use of diclofenac in the VSZ area.
A few examples of resource materials developed for the project are as follows:

1. Vulture Safe Zone, Bundelkhand, Madhya Pradesh Banner

Handouts for Vulture Safe Zone Project



Poster for Vulture Safe Zone Project

VS3 Selection of pVSZs in India suitable for conversion to full VSZs.

2014 Planned action: Selection and conversion of pVSZs to full VSZs based upon undercover pharmacy monitoring data and monitoring of fates of tagged vultures.

Paul Donald/Toby Galligan/Vibhu Prakash/Rhys Green/Ananya Mukherjee

The Western Lowlands of Nepal and Southern Gujarat have low availability of diclofenac in undercover pharmacy surveys (Phase 1 monitoring; see ZM4).

VS4 Maintenance and review of VSZs in India

2014 Planned action: Continue VSZ implementation. Potential removal of VSZ status if monitoring shows that conditions have changed.

Paul Donald/Vibhu Prakash/Rhys Green/Ananya Mukherjee

Undercover pharmacy surveys to assess pVSZ occurred in 2014 and will continue in 2015.

VS5 Release of captive-bred vultures in VSZs in India.

Planned action 2014: N/A.

VS6 Maintenance and review of VSZs in Nepal.

2014 Planned action: Continue VSZ implementation and expansion

Khadananda Paudel/Paul Donald/Rhys Green

VSZ implementation and expansion work has been going smoothly in Nepal. This year, three new districts have been added as new "Diclofenac-free" districts making a total of 36 such districts covering an area of 72,967 km^2. Thirty-three of these districts are contiguous stretching from the far western lowlands to the central lowlands and north through the central hills and mountains. Although this area has been considered one pVSZ in the past it is probably best considered two pVSZ in Nepal: 1) western lowlands; and 2) central hills and mountains. The western lowlands is greater than 30,000km^2 in area, has relatively more livestock and NSAID use and has been the focus of BCN's work for longer. The central hills and mountains is approaching 30,000km^2 in area, has relatively less livestock and NSAID use and has more recently been the focus of BCN's work.

Awareness activities:
Meetings and discussions with Jatayu Restaurant Management Committees (JRMCs) and community people have been regularly conducted (at least once in a month). From November 2013 to October 2014, altogether about 4269 people (including participants of IVAD 2014) were participated in our workshops, trainings, meetings and other awareness campaigns for vulture conservation in western lowland and mid-hills of Nepal. The participants were representatives from district level as well as village level government and non-government institutions such as Village Development Committee (VDC), CBOs, NGOs, District Development Committees (DDCs).

Awareness materials:
4th issue of Jatayu Newsletter
In order to disseminate the efforts and challenges in vulture conservation to the general public, 1000 copies of third issue of Vulture Newsletter "Giddha Sandesh" has been published and distibuted widely for the concerned stakeholders. In this issue articles related to community based vulture conservation has been covered.

Posters on "Stop Diclofenac and Use Meloxicam"
1000 copies of size (17*23 inch) and 5000 copies of A4 size posters having the message on "Stop Diclofenac and Use Meloxicam" with pictures have been published and being distributed across Nepal. This aims to disseminate the information on vultures are declining due to diclofenac in Nepal. Additionally, through these posters an important message to stop diclofenac and use meloxicam is highlighted.
Dead, injured and rescued birds
A total of 17 vultures were found dead (9 Himalayan Griffon, 4 White-rumped Vulture, 2 Cinereous Vulture and 2 Egyptian Vulture) and 5 vultures were rescued (4

Himalayan Griffon and 1 White-rumped Vulture) during November 2013 to October 2014.

VS7 Release of wild-taken and captive-bred vultures in VSZs in Nepal.

N/A until 2016

VS8 Identification and selection of additional pVSZs in Pakistan.

***2014 - Identify and select pVSZs*.** **Uzma Khan/Uzma Saeed/Campbell Murn**

There is currently one pVSZ identified, in the vicinity of Changa Manga. This area has been selected as it is the site of the breeding facility and also the location of what was once the largest known colony of OWBV on record. Lack of programme resources has prevented any work to begin implementation of this pVSZ.

VS9 Maintenance and review of pVSZs in Pakistan.

2014 – Continue VSZ implementation and expansion.
Uzma Khan/Campbell Murn/Uzma Saeed

The 2014 *Gyps* vulture population assessment survey in Sindh Province indicated that the VSZ should be extended. The proposed new area is towards the Umer Kot District, northwest of the Nagar Parkar area and the existing VSZ (see Figure 3 below). Small numbers of OWbV and other vulture species have been recorded there.

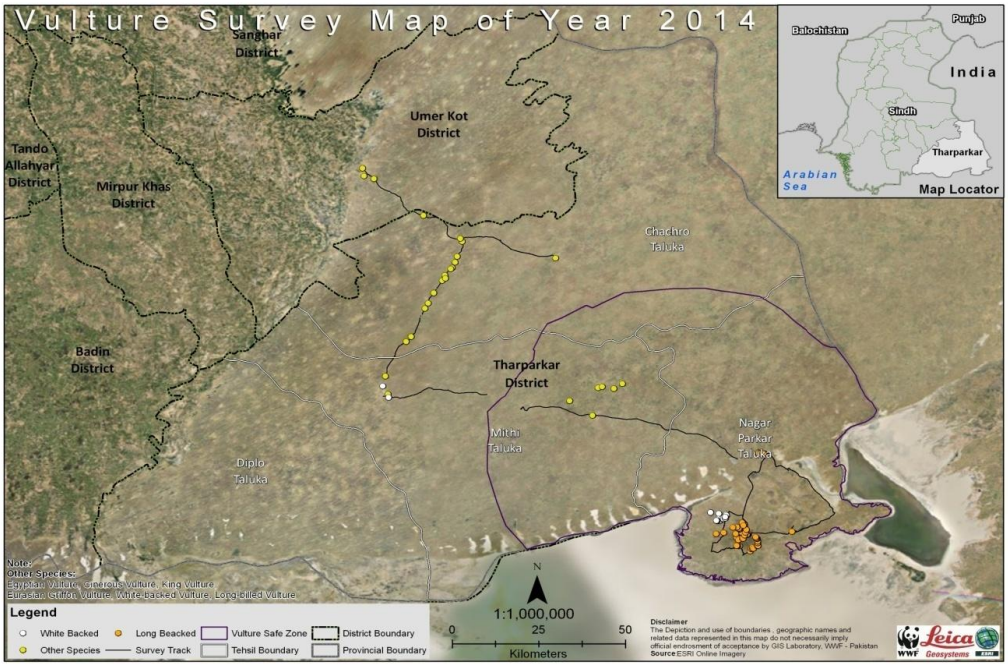


Figure 3: Vulture Safe Zone in Sindh Province and location of Umer Kot District

As part of VSZ monitoring and review, a total of three livestock assessment surveys were carried out at selected villages around the two *Gyps* vulture colonies in the VSZ,

in order to determine the livestock abundance and their prevalent diseases. The first survey was carried out in the Vulture Safe Zone in June 2012 covering a total of 32 villages to establish a baseline. The survey revealed a total of 49,453 livestock (including goat, sheep, cow, donkey, buffalo and camel) in these villages.

VS10 Release of captive bred vultures in VSZs in Pakistan.

N/A until 2019.

VS11 Livestock management and husbandry training in pVSZs and VSZs in Pakistan.

2014 – Develop and implement training programme.
Uzma Khan/Campbell Murn/Uzma Saeed

As a follow-up to the first livestock survey that was completed in the VSZ, a second survey was carried out in June 2013 covering a total of seven villages around the *Gyps* vulture colonies (see Figure below). This survey aimed to identify villages having the highest number of livestock, in order to establish de-worming and animal husbandry camps. The survey revealed a total of 12,315 livestock in these villages.

A third survey was completed in December 2013 and covered a total of 42 villages (Fig. 4). Focused group discussions conducted during the survey revealed a total of about 50,503 livestock present in these villages. A wide range of livestock diseases and conditions were identified during these surveys, and included Sheep pox, Black quarter, PPR (Peste Des Petits Ruminant), Haemorrhagic septicaemia, Enterotoxemia, Anthrax, Foot and Mouth, Contagious Pleuro- pneumonia, Skin disease, Rinderpest and Rabies. The medicines being used there include Gentamicin, Anacin, Triben, Nilverm, Alben, B12, Avil, Meloxi, Lasix, Ivorin, Ivomec Super, Oxytetracycline, B complex.

Future plans include maintaining the livestock surveys during February and March 2015, which will be conducted through the community-based NGO the Parkar Foundation (see below – section VS13).

ICI-Pakistan will be approached to request the establishment of more free livestock de-worming camps.

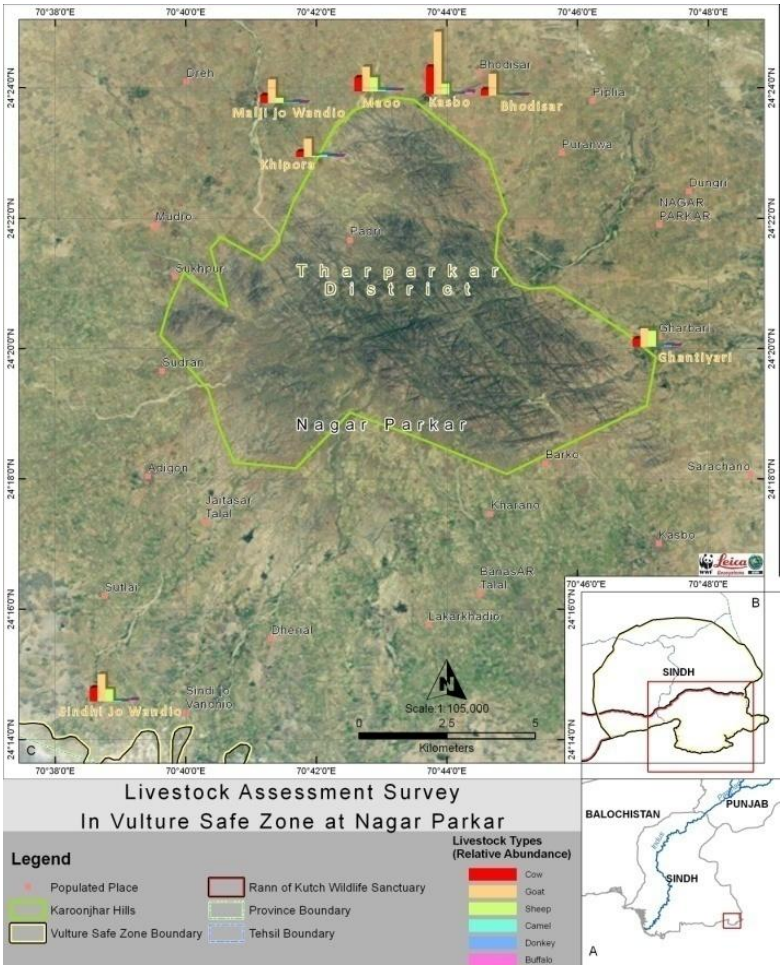


Figure 4: Locations of the first livestock assessment survey in the VSZ around OWbV colony in 2013

VS12 Free veterinary camps in pVSZs and VSZs in Pakistan.

2014 – Develop and implement programme. **Uzma Khan/Campbell Murn/Uzma Saeed**

A total of 5196 animals were de-wormed in the VSZ at Nagar Parkar in November 2013 in collaboration with ICI-Pakistan. Additionally, information in the form of brochures and pamphlets was also provided to livestock owners about better animal husbandry practices (see Figure 5). The livestock de-worming camps were set up at villages *Malji Jo Wandio*, *Maoo* and *Kasbo*.

Figure 5: Free livestock de-worming with ICI-Pakistan

VS13 Community led vulture based eco-tourism in pVSZs and VSZs in India, Nepal and Pakistan.

2014 – Develop and implement programme.

Pakistan: **Uzma Khan/Campbell Murn/Uzma Saeed**
A community based organisations called 'The Parkar Foundation' has been registered and established in the seven priority villages located around the *Gyps* vulture colonies in the Vulture Safe Zone.

The Parkar Foundation has the mandate to conserve local biodiversity via community participation, awareness-raising and to initiate *in situ* conservation measures with a special focus on critically endangered *Gyps* vultures. It aims also to improve living conditions of marginalized communities through provision of health care and education facilities, and ensuring that the participation of remote area communities in the decision-making process is considered. Through advocacy, the Parkar Foundation aims to raise awareness among the masses regarding social, cultural, environmental and economic issues. The foundation also hopes to enhance the socio-economic conditions of marginalized communities through eliminating the drivers of poverty and providing alternate livelihood opportunities.

With these stated aims, there is a clear need to build capacity of the Parkar Foundation so that it may operate independently, make new partnerships and secure funding at local and national levels. A grant of **300,000 PKR** was been secured in **August 2014** from the Small Grants programme of WWF-Pakistan to build capacity and enhance local stewardship by strengthening local communities. This training aims to provide basic computer literacy, training on essential finance management, training on conducting community and scientific surveys, training on GPS usage, species identification, etc. WWF-Pakistan's Karachi office will facilitate the capacity building exercise. The other objectives of this project includes establishing links with the Sindh Livestock & Fisheries department, veterinarians and veterinary and medical store owners to stop use of harmful NSAIDs (diclofenac, ketoprofen and aceclofenac).

The eastern Sindh Province is a remote part of Pakistan that is infrequently visited by tourists. Unlike some other VSZs or pVSZs there is relatively little opportunity at present to develop vulture-based ecotourism in this area.

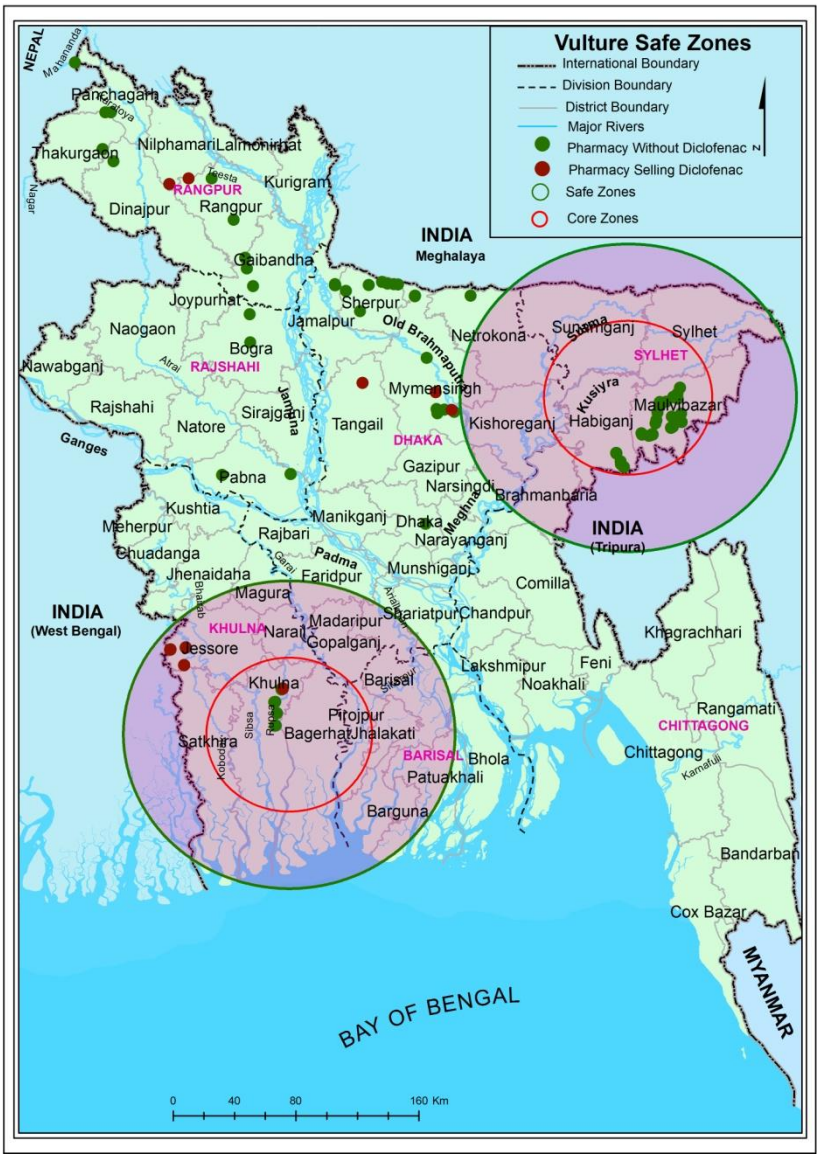
India:
No vulture-led ecotourism reported from India.

Nepal: **Khadananda Paudel**
Efforts have been made to promote vulture-based ecotourism in pVSZs in Nepal through interaction with tourism entrepreneurs close of pVSZs and through workshops.
During November 2013 to October 2014, one eco-tourism promotion was organized in Dang on 19 February, 2014.

VS14 Identification and selection of pVSZs and VSZs in Bangladesh.

2014 - Identify and select pVSZs. **Sarowar Alam Dipu**

Vulture hotspot is the centre of Vulture Safe Zone (VSZ). For the identification of vulture hotspots the nesting, roosting and feeding sites of vulture were surveyed during March-July 2014 in different potential sites of Greater Sylhet (Northeast) and Greater Khulna (Southwest) of Bangladesh. Based on this survey and on the previous research findings, GIS-based maps of two VSZs have produced, each of which includes a circular area with 100 km radius (area over 30,000 km^2). The total area of VSZs of Greater Sylhet and Greater Khulna are 19,663.18 km^2 and 27717.26 km^2, respectively.



VS15 Implementation of pVSZs in Bangladesh.

2014 - Implement VSZ programme. **Sarowar Alam Dipu**

Significantly, VSZs have been declared under the Wildlife (Conservation and Security) Act, 2012, as specialized 'landscape zones' recognised within the Wildlife Act. The VSZs are under jurisdiction of the Forest Department. The field-level Forest Offices, in collaboration with other relevant govt offices and local communities, will take necessary steps to ensuring the proper management of VSZs. The declaration of a VSZ provides an outline of activities, prohibition and penalties under the Wildlife Act as an implementation guideline. Moreover, Vulture Conservation Teams (VCT – see below) are being established in VSZ areas that are responsible for vulture population monitoring, pharmacy survey, awareness campaign, etc.

The institutional mechanism involves relevant stakeholders from national to site level, which helps in regular communication, regular monitoring of banned drugs and the vulture populations and also the status of implementation of action plan. Of the three components, Regional Steering Committee (RSC) and Bangladesh National Vulture Recovery Committee (BNVRC) aggregate with site level local committees and develop communication and linkage mechanisms to link with the national committee with local one through the project (Fig. 6).

RSC was established by the Regional Declaration on the conservation of South Asia's Critically Endangered vulture species at New Delhi on 4th May 2012. This umbrella body guides and supervises vulture conservation and recovery initiatives in Bangladesh, India, Nepal and Pakistan. Two members of Bangladesh represented the country. On 25 July, 2013 BNVRC was developed by the Ministry of Environment and Forest (MoEF) in response to the Regional Declaration for saving Asia's Critically Endangered vultures at Delhi in May 2012. Additional Secretary, MOEF being the chair and IUCN is the Member Secretary and includes a wide range of 14 members.

Successful implementation of Vulture Safe Zones (VSZs), action plan and sustainability of monitoring for conservation of vulture population will depend on the capacity of local stakeholders. The project develops site level local committees named as Vulture Conservation Team (VCT). Awareness programmes for discontinue use of diclofenac, ketoprofen and other untested drugs, promote use of meloxicam, pharmacy survey and vulture population monitoring are the main objectives of formation of VCT. VCT has been formed in 3 levels – Community level, Local level and Division level (Fig. 7). In Greater Sylhet division, 2 units under community level were formed. Local stakeholders (community, govt. and non-govt. officials) and willing persons are the members of VCT. Monitoring of vulture hotspot area, rescue of vulture, pharmacy survey, data collection, compilation and dissemination and reporting are the duties of VCT. 3 VCT contains 36 trained people. A user friendly data collection, compilation and reporting protocol helps VCT members to do their jobs.

VCT Activities

- Vulture population and colony monitoring
- Pharmacy survey of veterinary drugs
- Rescue of injured or dead vulture

- Data collection (on population, pharmacy etc) and compilation by team leaders
- Monthly report submission by team leaders to project unit
- Arrange bimonthly meeting
- Arrange awareness programs

Figure 6: Institutional setup for vulture conservation in Bangladesh

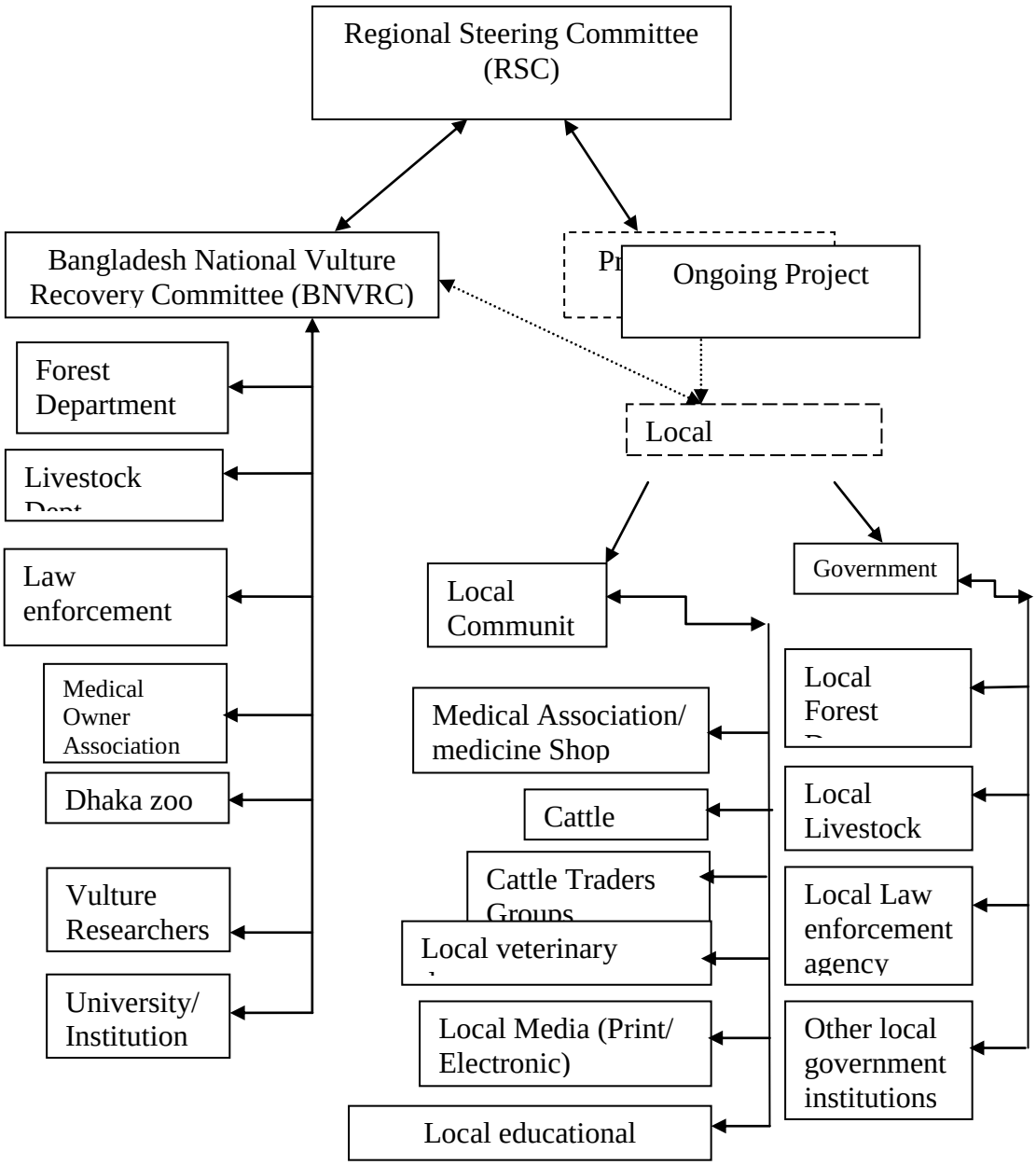
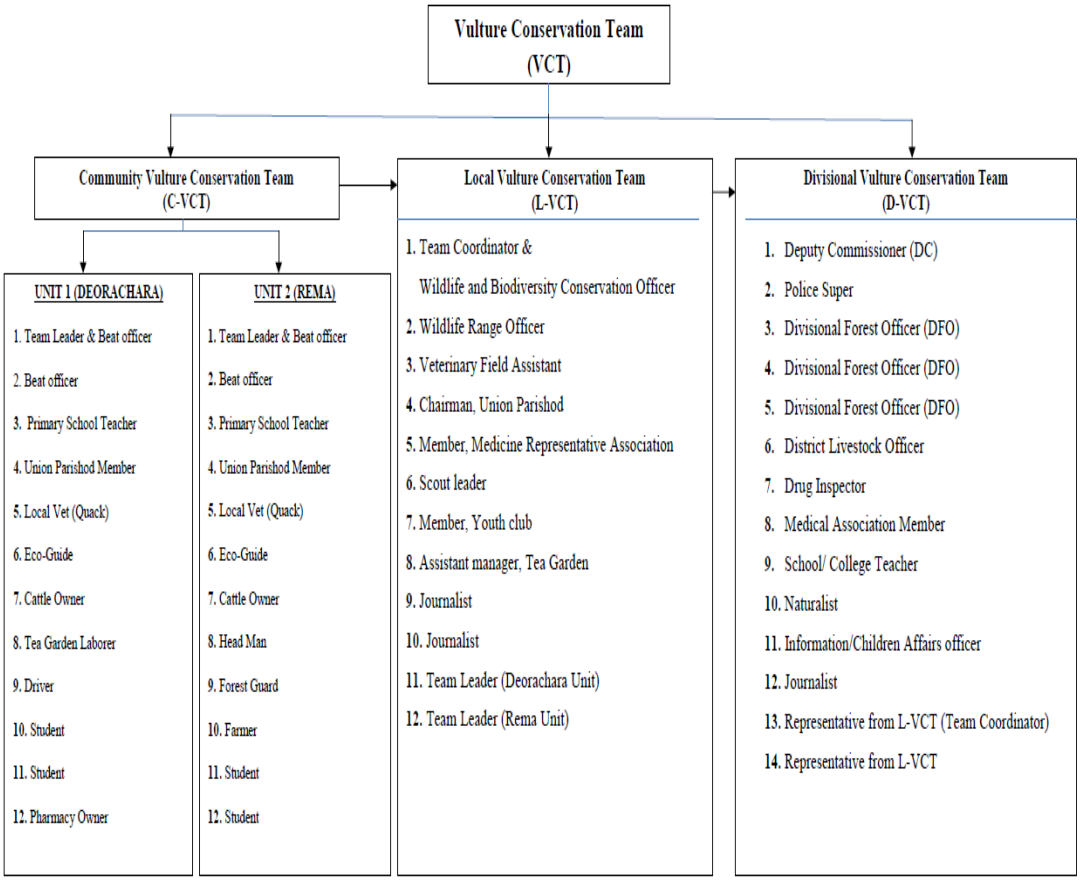


Figure 7: Vulture Conservation Team



2. Vulture Safe Zone Monitoring Reports

ZM1: Monitoring of survival and causes of death of wild vultures with GPS PTTs in pVSZs and VSZs in India and VSZs in Nepal

Planned action 2014: Seek permits for capture and tagging of wild vultures in VSZs.

No action in Nepal.

ZM2: Monitoring of survival and causes of death of released vultures with GPS PTTs in pVSZs and VSZs in India and VSZs in Nepal

Planned action 2014: N/A.

ZM3: Monitoring of survival and causes of death of wild and released vultures with GPS PTTs in pVSZs and VSZs in Pakistan.

Planned action 2014: N/A.

ZM4: Monitoring of availability of NSAIDs for veterinary use in representative samples of pharmacies and other outlets in pVSZs and VSZs in India, Pakistan, Bangladesh and Nepal

Planned action 2014: Conduct undercover surveys of outlets for veterinary drugs. Record NSAIDs offered for use for veterinary purposes. Identify the provenance and vial size of diclofenac offered illegally for veterinary use.

India & Nepal: **Toby Galligan**/Vibhu Prakash/Khadananda Paudel/Rhys Green

We have data from two undercover pharmacy surveys conducted in 2012 and 2013 in Assam, Central Gujarat, Southern Gujarat, Western Lowlands of Nepal and Uttar Pradesh; as well as the former pVSZ in Jharkhand and Uttarakhand. Overall and in all locations we have observed a substantial decrease in diclofenac availability. The 2014 undercover pharmacy survey has either started or is about to start in Assam, Central Gujarat, Southern Gujarat, Nepal and Uttar Pradesh.

This year, BCN surveyed both animal and human pharmacies and found that 30ml vials of diclofenac was available in both (note: India has only mixed animal and human pharmacies). Analysis also showed that those settlements where diclofenac was sold were geographically closer to the Indian border than those settlements where it was not sold, which is not surprising considering Nepal does not produce 30ml diclofenac but India does.

In addition, we conducted open surveys in Andhra Pradesh (AP), Assam (AS), Jharkhand (JH), Madhya Pradesh (MP), Western Lowlands of Nepal (NP), Southern Gujarat (SG), Uttar Pradesh (UP), Uttarakhand (UK) and West Bengal (WB). Meloxicam (61.3%) was the most commonly encountered NSAID overall, followed by nimesulide (13.3%) and diclofenac (9.8%). Because these surveys were conducted

openly, the number of settlements with diclofenac are inaccurate (i.e., pharmacists did not show surveyors diclofenac).

Bangladesh **Sarowar Alam Dipu/Monirul Khan**

The undercover pharmacy survey of 235 pharmacies was carried out to the local drug stores in 22 districts (out of 64 districts) during April-September 2014. As active ingredient, diclofenac, ketoprofen and meloxicam were found to have in 24%, 40% and 24% of surveyed stores, respectively. Out of the total number of diclofenac drug offered for veterinary use, 50% were of Indian origin and the large vials (30 ml) were produced for human use, as mentioned on the labels. Large number of cattle are imported from India and the diclofenac illegally comes with the cattle traders. Keto-A Vet (a brand name of ketoprofen) was the most commonly encountered drug sold in 66% of the surveyed drug stores while Mel-vet (a brand name of meloxicam) was the second most commonly encountered drug sold in 45% of drug stores (Table 4). Injectable brands were available in a range of sizes with 10 ml (43%), 30 ml (30%), 50 ml (13%) and 5 ml (13%) vials. Huge demand was reported for Keto-aid Vet, Keto-A Vet (injection), Renafen, Mel-vet (bolus), C-Fenac (Vet) and Vovenac, which are different brand names of ketobrofen and meloxicam. The survey team found banned diclofenac in Trishal (Mymensingh), Taraganj (Rangpur) and Syedpur (Nilphamari), Madhupur (Tangail), Khulna Sadar (Khulna), Navaron (Jessore), Sarsha (Jessore), and Benapole (Jessore). Among these areas, the highest level of dicofenac selling drugstores were found in Jessore (particularly in India-Bangladesh border area). During this survey two NSAIDs manufactured by Korean companies (viz., Fortis and Tolfamin) were found in Bera (Pabna).

Table 4: Summery of Undercover Pharmacy Survey of Veterinary Drugs in Bangladesh

Sl No.	NSAID	Brand Name	Manufacturing Company	Volume/ Concentration	Price (BDT)	District Where Found
1.	A. Diclofenac (injection)	C-Fenac (Vet)	CHEMIST Laboratories Ltd	50ml	100.00	Rangpur, Nilphamari, Mymensingh, Tangail, Khulna, Jessore
		Depain Vet	FNF Pharmaceuticals Ltd	30ml	70.00	Rangpur
		Vovenac (human formulation)	Pharma Crop Inc.(P) Ltd. (India)	30 ml	18	Jessore (particularly India- Bangladesh border area)
		Diclonec M (human formulation)	Amba Research Laboratories (India)	30 ml	20	Jessore (particuarly India- Bangladesh border area)
	B. Diclofenac (bolus)	Parafenac Vet	PARADISE	100mg/tab	10/Tablet	Mymensingh, Khulna
		Diclomic+ (human formulation)	Herb Edge Health Care PVT. Ltd (India)	50mg/tab	1/Tablet	Jessore (particularly India- Bangladesh border area)
3.	A. Ketoprofen (injection)	Keto-A Vet	The ACME Laboratories Ltd	30 ml	311.16	All Districts
		Keto-Aid Vet	POPULAR Pharmaceuticals Ltd	30 ml	281.06	All Districts
		Kop-Vet	SQUARE Pharmaceuticals	10 ml	112.15	All Districts

			Ltd			
		Kynol Vet	ESKAYEF Bangladesh Ltd	10 ml	110.00	All Districts
		Ketoflam	OPSONIN Pharma Ltd	10 ml	110.42	All Districts
		Renafen	RENATA Ltd	10 ml	110.00	All Districts
		Ketovet	TECHNO drugs Ltd	10 ml	110.41	All Districts
		Ketochem	CHEMIST Laboratories Ltd	5 ml	65.00	All Districts
		Ketonac Vet	NAVANA health care ltd	10ml	110.00	Habiganj
	B. Ketoprofen (bolus)	Keto-A Vet	The ACME Laboratories Ltd	400mg/tab	10/Tablet	All Districts
4.	A. Meloxicam (injection)	Mel-Vet	The ACME Laboratories Ltd	10 ml	35.00	All Districts
		Mel-Vet Plus	The ACME Laboratories Ltd	10ml	95.00	All Districts
		Meximol Vet	ETHICAL drugs Ltd	10	65.00	All Districts
		MP-Vet	CHEMIST Laboratories Ltd	10 ml	100.00	All District s
		FIP-Vet	KEMIKO Pharmaceuticals Ltd	100mg/tab	10/Tablet	Sherpur
	B. Meloxicam (bolus)	Mel-Vet	The ACME Laboratories Ltd	100mg/tab	6/Tablet	All District
5.	Phenylbutazone & Sodium Salicylate (injection)	Arthrivet	FNF Pharmaceuticals Ltd	30 ml	200.00	Khulna, Bogra, Panchagarh
6.	Flunixin meglumine (injection)	Fortis	DONG BANG (Korea)	50ml	700.00	Pabna (Bera)
7.	Tolfenamic acid (Injection)	Tolfamin	HAN DONG (Korea)	50ml	500.00	Pabna (Bera)

(Note: Illegal drugs are marked in red)

ZM5: Monitoring of wild vulture populations and breeding success in pVSZs and VSZs in India, Pakistan, Bangladesh and Nepal.

Planned action 2014: Conduct surveys over representative areas of the zone, including nest counts and/or road transect surveys, as appropriate.

Toby Galligan/Sarowar Alam Dipu/Vibhu Prakash/Khadananda Paudel/Rhys Green

No action in **India.**

Bangladesh

The population survey of vulture has carried out through field survey in 22 districts (out of 64) and secondary information gathered from different locations in two more districts of the country. A total of 16 nests were found, of which 7 were with fledglings in Rema-Kalenga Wildlife Sanctuary (Habiganj district). The nesting and roosting trees of the vulture were identified in different areas of the country. Work has already started on vulture monitoring of colonies with the establishment of a vulture conservation team (VCT).

Nepal

Monitoring of vulture colonies has continued in 12 districts in Nepal by BCN and volunteers. In this breeding season, a total of 388 active nests of white-rumped vultures were monitored, including nests in two newly found colonies in Kapilbastu

and Dang district. The overall number of active nests continues to increased (Figure 8, Table 4).

Figure 8: The overall number of white-rumped vulture nests survey in five breeding seasons between 2009 and 2014.

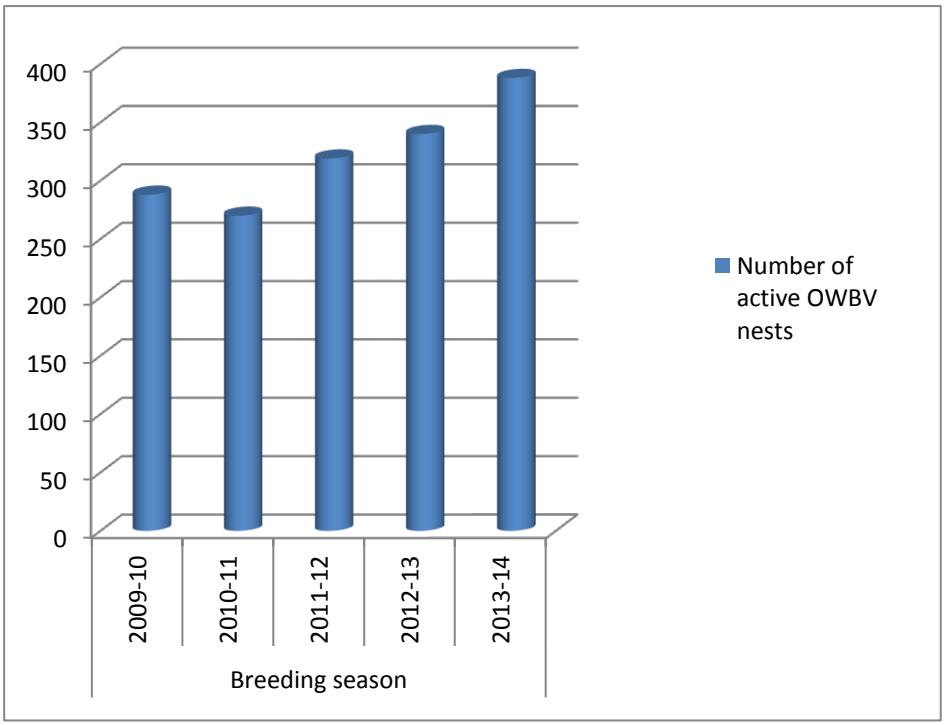


Table 4: number of active and succesful nests and breeding success as a precentage for five species of vulture monitored in the pVSZ in western lowlands of Nepal in the 2013/14 breeding season.

Species	Active nests	Successful nests	Breeding success (%)
White-rumped vulture	**374**	**245**	**65.5**
Egyptain vulture	**16**	**12**	**75.0**
Bearded vulture	**2**	**0**	**0.00**
Himalayan griffon	**50**	**31**	**62.0**
Slender-billed vulture	**3**	**3**	**100.0**

Pakistan: A description of this colony, its numbers and spatial dynamics since 2011 has been accepted by *Bird Conservation International.* (Murn, C., Saeed U., Khan, U. & Iqbal, S. Population and spatial breeding dynamics of a Critically Endangered Oriental White-backed Vulture *Gyps bengalensis* colony in Sindh Province, Pakistan).

3. Research & Monitoring Reports

RM1: Develop method for GPS PTT vulture tracking and corpse recovery in VSZs.

***Planned action 2014: Complete tagging and recovery tests on RHV and LBV. Evaluate corpse* recovery using simulated tagged corpses. Test tag attachment methods on captive Gyps vultures.** **Toby Galligan**/Paul Donald/Rhys Green

BNHS have been tracking four redheaded vultures in northern India since 2013. In 2014, three of these vultures died. One vulture was recovered, examined and its tissues were sampled for NSAID analysis. The organs of this carcass were too decayed to observe visceral gout. No abrasion injuries associated with the tag harness were observed. Another vulture was found and tissues were sampled. The third vulture was not found. The two tissue samples have been sent to IVRI for analysis.

The above experiences have highlighted numerous challenges to recovering dead vultures, which we are currently solving by improving tag programming, remote tracking methods, response to downed vultures, locating downed tags and relationships with wildlife authorities.

This year, BNHS aimed to deploy another three satellite tags on three red-headed vultures in Rajasthan, India. The location was chosen because red-headed vultures were present and the terrain would enable relatively easy tracking compared to Haryana, India. Baiting has occurred off and on for over one year with no success. This is the result of a series of problems relating to the scarcity of the species, the behaviour of individual vultures, politics and restrictions associated with the location, accessibility to suitable baiting sites and personal problems among staff.

BCN were to observe trapping as part of their preparation to trap three red-headed vultures in Nepal, but this has been postponed as a result of BNHS's bad luck and has postponed the start of BCN trapping in Nepal.

No further tagging and recovery tests have been carried out in 2014.

In early 2015, the RSPB with VulPro will trial mounting backpack tags on the patagium of Africa white-backed vultures in South Africa. Patagial tags are often considered safer that backpack tags, but do not come in small sizes; we hope that a smaller backpack tag will work just as well on a vulture's patagium as on the back. The trial is expected to run for 6 to 12 months and will inform us of the suitability of such methods for South Asian vultures.

RM2: Road transect surveys of vulture numbers in India.

Planned action 2014: Conduct surveys using same methods as in previous surveys.

Vibhu Prakash/Toby Galligan/Rhys Green

Nationwide road transect survey of vultures was planned for the year, but had to be postponed. The problems that caused the postponement have been resolved and BNHS is preparing for road transect survey in 2015. Next year, new transects through the pVSZ will be added to the survey. Results are likely to be published in 2016.

RM3: **Road transect surveys of vulture numbers in Nepal.**

Planned action 2014: Conduct survey using same methods as in previous surveys. Western lowland surveys annually. Mid-hills and East-West highway survey every four years.

Khadananda Paudel/Toby Galligan/Rhys Green

BCN conducted their 10th road transect survey of vultures in the Western Lowlands in May 2014. They covered 638 km of the east-west highway from Chitwan to Kanchanpur; and four Mid-hill routes running perpendicular to the highway. Sixty-eight white-rumped vultures were counted, which was more than was counted in 2013 and comparable to that counted in the past five years (Figure 9). These data will be prepared for publication early next year. The population trend, thereby, appears stable. Other vultures were counted, but, as with previous years, only in small numbers.

BCN also conducted their biennial Mountain transect survey of vultures in the Upper Mustang in August 2014. Ninety-six Himalayan griffons and 13 Lammergeiers were counted, which is comparable to recent years. These data will be included in a publication currently in review.

India/Nepal: Additional vulture population monitoring:

TPF – Munir Virani/Rick Watson

The Peregrine Fund continued monitoring populations of critically endangered Long-billed Vultures (LBV) in the **Indian states** of Rajasthan and Madhya Pradesh. During the 2013-14 breeding season, we recorded 468 occupied nests of LBV, compared to 427 recorded during the 2007-08 breeding season, six years ago when the veterinary drug diclofenac was first banned. Over the same period, numbers of occupied nests of LBV in Protected Areas at our study sites have remained stable at between 201 and 244 (mean = 221). In the non-Protected Areas, numbers of occupied nests of LBV ranged between 154 and 209 (mean = 177) while at the historic monuments at Gwalior and Orchha, numbers of occupied LBV nests ranged between 24 and 37 (mean = 33).

Nepal: We followed our 2013 Himalayan Vulture (HV) survey with a second one in May 2014 in the Annapurna Conservation Area of Nepal where we recorded 128 HV over a seven-day period. This was almost twice as many than we recorded during our pre-diclofenac ban surveys conducted annually between 2002 and 2006.

Overall, our vulture survey results in south Asia mirror those of other researchers and highlight the overall success of vulture conservation efforts in stemming the catastrophic crash of critically endangered Gyps vultures in the region. While our results are highly encouraging, we remain cautious about interpreting them. We emphasize the need for continued work to restore vulture populations, especially *Gyps tenuirostris*, continued vulture population monitoring, and public awareness, especially on the emergence of new non-steroidal anti-inflammatory drugs (NSAIDs) in the veterinary market that could potentially jeopardize vulture conservation efforts in the region.

(Note we made two presentations of post-diclofenac ban vulture surveys from India, Nepal and Pakistan at the World Raptor Research Conference at Bariloche, Argentina, October 21-24, 2013, and at the 8th ARRCN Conference in Pune, India, 6-9 February 2014.)

RM4: Vulture population monitoring in Pakistan and Bangladesh.

Planned action 2014: Continue to develop and conduct repeatable population surveys.

Bangladesh Sarowar Alam Dipu/Monirul Khan

The Population survey of vulture has carried out through field survey in 22 districts (out of 64) and secondary information gathered from different locations of two more districts. Out of 24 districts, vultures were found in only seven districts. Most of the vultures were found in Habiganj (n=53), Jessore (n=17) and Khulna (n=12, Figure 10) districts. Moreover, members of community level Vulture Conservation Team continuously monitor vulture population in their respective locations.

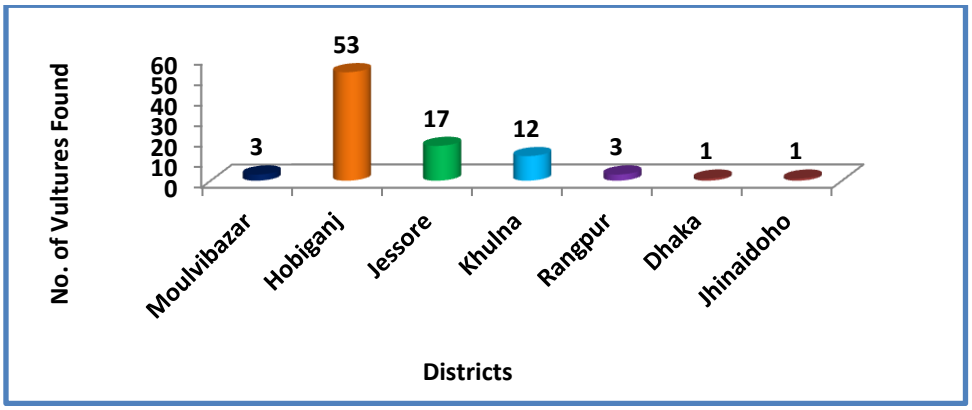


Figure 10: Vultures sites found and vulture counts in Bangladesh

Pakistan: Uzma Khan/Uzma Saeed/Campbell Murn

Assessments of *Gyps* vulture populations have conducted at least annually since 2011. Up until 2014 a small breeding colony of White-backed Vultures in the VSZ has shown an increase in numbers from 11 to 34 nests.

RM5: Monitoring of NSAID contamination of ungulate carcasses in northern India and Nepal.

Planned action 2014: Complete current round of sample collection in several states. Measure concentrations of all NSAIDs thought to be potentially hazardous to vultures.

Toby Galligan/Vibhu Prakash/Khadananda Paudel/Mark Taggart/Rhys Green

The fifth carcass survey in India is all but complete with *** from *** cluster-sites. BNHS will make this a priority before next year's road transect survey. In October 2014, Mark Taggart worked with BNHS to train a new laboratory biologist to

carryout extractions at Pinjore. Mark and the biologist then extracted ¾ of the samples. The biologist will continue the extractions into next year. Extracts will then be sent to Mark early next year for analysis. BNHS will begin the sixth survey in 2016.

BCN have continued to collect carcass samples in the pVSZ. Last year alone they collected 879 samples. These samples will be sent to Mark early next year for analysis. BCN will continue to sampling in 2015.

BCN conducted an experiment to determine the effect of saturated salt solution (their storage medium) has on diclofenac residue in different tissue. Mark has analysed these samples and determined that diclofenac residue in liver is rapidly drawn into solution. This finding has obvious implications for carcass surveys in Nepal, which we are currently resolving. However, we are confident that we can obtain qualitative, if not quantitative, data from these surveys (i.e., NSAID presence/absence).

MT has 400 samples from Nepal from previous surveys. He is trialing a method of extraction and analysis for samples in saturated salt solution. It is worth noting that it is twice as expensive as that for frozen samples. In 2015, he will analyse the above samples from India and extract and analyse the above samples from Nepal. MT and the RSPB will lead preparation of two papers for publication – one for each country – in 2016.

RM6: Monitoring of causes of death and NSAID contamination of wild vultures in India, Pakistan and Nepal. [Note Bangladesh added since last year]

Planned action 2014: Collect as many dead wild and released vultures as possible. Conduct post mortem examinations to determine causes of death. Take liver and kidney samples and determine concentrations of all NSAIDs known to be in veterinary use. Trial methods to detect NSAIDs in bone and other hard tissues. Retain carcasses frozen for future use. Publish the results periodically.

Toby Galligan/Vibhu Prakash/Khadananda Paudel/Sarowar Alam Dipu/Monirul Khan/Mark Taggart/Rhys Green/AK Sharma/Mohini Saini.

In the winter of 2013/14, we know that 135 dead raptors (e.g. Himalayan griffon, Egyptian vulture, steppe eagle) were found at a Rajasthan carcass dump. Unfortunately, none of these birds were examined or had their tissues sampled.

Starting this winter, BNHS, funded by RSPB, will survey two carcass dumps in Rajasthan, including the one above. A research base will be set-up nearby with a laboratory and freezer. A dedicated field biologist and assistant will regularly search the dumps and collect, examine and sample tissues of all dead raptors they find. IVRI will analyse samples using ELISA for diclofenac. The project will run for one year initially and result in one or more publications.

Currently, we are not permitted to export extracts from wildlife tissue from India. This needs to be resolved, as we have agreed LCMS is our gold standard method for detecting NSAIDs.

IVRI is keen to further develop the ELISA method for other NSAIDs.

India: Diclofenac monitoring by ELISA at IVRI

On 15th March, 2014, Himalayan griffon vultures were found dead in Tarai West forest division, Ramnagar, after eating a buffalo carcass suspected for diclofenac toxicity. Time interval for collection of liver, kidney and crop content was 24h after death of the birds. Samples of intestine, liver, kidney and crop content collected after postmortem of 16 vultures were sent to IVRI for analysis. One dead bird and the piece of meat of buffalo carcass were also received. One buffalo meat sample and 30 liver and kidney tissue samples from 15 vultures were analyzed for the presence of pesticides, heavy metals and diclofenac residue by ELISA. These tissues tested negative for pesticides or heavy metals but the buffalo meat as well as liver and/or kidney tissue samples of 11 birds were found to positive for diclofenac with concentration in the range of 12.698 to 324.707 ppb (µg/kg). Liver and kidney tissues of these birds revealed hepatitis and nephtitis in histopathology.

In addition, both liver and kidney tissue samples collected during postmortem of one Himalayan griffon from Ramnagar at IVRI were found to contain diclofenac residues.

Draft of the manuscript "Illegitimate veterinary diclofenac residue is an incessant threat to Gyps vultures in Asia: A case study on *Gyps himalayensis*" is under preparation.

Also, 18 vulture and 12 ungulate carcass samples collected by BNHS when analysed at IVRI by indirect competitive ELISA, seven vultures and one cattle detected diclofenac.

Pakistan: Uzma Khan/Campbell Murn/Uzma Saeed.

Three dead White-backed Vultures (1 adult and 2 chicks) and one (01) dead Long-billed Vulture (adult) were found in the Nagar Parkar area in March 2013 – in all cases the bodies were partially decomposed and not able to be sent for post mortem. Two dead White-backed Vultures were reported in January and April 2014. The VSZ is in a remote area and there is currently no mechanism for sending dead specimens for post mortem and to check for NSAID contamination. This is mainly due to unavailability of funds.

Elsewhere in Pakistan there are no resources available to monitor causes of death in vultures or measure potential NSAIDs contamination. Without significant additional funding, this monitoring activity will be limited to the VSZ in Sindh.

Bangladesh: One dead vulture was found, but it was too late to send to the laboratory. It was badly rotten and post mortem examination could not be conducted.

RM7: Safety testing on captive vultures at Pinjore of NSAIDs of uncertain toxicity.

***Planned action 2014: Obtain wild Himalayan griffon vultures and house in captivity for* safety *testing programme*. Vibhu Prakash**/AK Sharma/Toby Galligan/Rhys Green

No action. Postponed until IVRI has received funds to conduct activity.

RM8: Monitoring of availability of NSAIDs for veterinary use in pharmacies and other outlets in India, other than in VSZs. Equivalent surveys in Nepal are mainly in VSZs and covered by ZM4.

Planned action 2014: Complete current round of undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4).

Toby Galligan/Vibhu Prakash/Khadananda Paudel/Paul Donald/Rhys Green

Some data on NSAID availability was collected from carcass survey sites, which are outside pVSZs, in India. No data was collected outside pVSZs in Nepal. [See ZM4 for more discussion].

RM9: Monitoring of availability of NSAIDs for veterinary use in pharmacies and other outlets in Pakistan.

***Planned action 2014: Conduct undercover surveys of outlets for veterinary drugs. Record NSAIDs offered for use for veterinary purposes. Identify the provenance and vial size of diclofenac offered illegally for veterinary use*. Uzma Khan/Campbell Murn/Uzma Saeed**

Similar to monitoring vulture mortality and NSAID contamination, there are zero funds available to begin work on pharmacy surveys or NSAID monitoring in other areas of Pakistan.

RM10: Estimation of the former and potential future value of the ecosystem services provided by wild vultures.

Planned action 2014: Conduct a survey of costs of cattle carcass disposal, feral dog control and other ecosystem service measurements.

Vibhu Prakash/Toby Galligan/Rhys Green

A preliminary 3-month study has started this year with BC Choudhury in the Dehradun area to establish if the data we want to measure ecosystem services exists and is available to us. Issues transferring funds caused a lengthy delay. Based on the results from this study, a larger study will commence.

**Note that IUCN India have recently received funds to carry out TEEB work in 2015 and should be approached for update next year.*

RM11: Investigate factors affecting use of vulture-safe NSAIDs by veterinarians, paravets and livestock owners.

Planned action 2014: Conduct questionnaire studies, choice experiments and other investigations, as appropriate. No action.

4. Cambodia Reports

(All reports compiled by Sum Phearun, CVCP Coordinator)

CAM1: Monthly supplementary feeding in at least six sites

2014 objective: Provide at least one dead cow per month at vulture restaurants

Monthly vulture restaurants have being coordinated at six project sites (Table 5 below) to the north and north east of Cambodia. All project partners have agreed during the quarterly meeting at BirdLife's Phnom Penh Office on 10 August, 2014, that each organisation will do at least one vulture restaurant per month to provide supplementary food for vultures and aim to maintain stable numbers of vulture visits to each restaurant every month. Western Siem Pang IBA also provides two vulture restaurants (two dead cows) per month due to the number of vultures visiting this restaurant location are higher, around 150 individuals. At this location vultures have been observed to arrive prior to the commencement of the restaurant. This suggests that vultures have learnt to assemble at this regular food source. This practice has now been standardized at Western Siem Pang for the last few years.

Table 5. Locations of vulture restaurants in Cambodia

Site name	Abbreviation	Province	UTM	NGO
Preah Vihear Protected Forest	PVPF	Preah Vihear	0554004-1540043	WCS/SVC
Western Siem Pang IBA	WSP	Stung Treng	0649256-1563359	BirdLife
Seasan	ACCB	Stung Treng	0665280-1510845	ACCB
Lumphat Wildlife Sanctuary	LWS	Ratanakiri	0706761-1488186	BirdLife
Mondulkiri Protected Forest	MPF	Mondulkiri	0736926-1432100	WWF
Siphandone, Stung Treng, Kratie	SSK	Kratie	0671307-1448976	WWF

CAM2: Improve population monitoring

2014 objective: Census vulture restaurants in March, June, September and December

To increase our efforts to better understand the status and population trend of vulture species in Cambodia coordinated census counts have been undertaken four times a year at vulture restaurants in March, June, September and December. Each year an annual census count is coordinated in June, and two restaurants and census counts are made in this month (Figure 11&12).

Data indicates that from 2008 to 2014, the earlier June restaurant has recorded fewer vultures than the second restaurant (Table: 1). This is may be because vultures, do not disperse far from where the original carcass was placed and check the area regularly after feeding there earlier in the month. Worryingly, taking either the 10th June or the 20th June data set individually, since 2010 there has been a year on year decline in the number of vultures attending the census restaurants (figure 11). Further investigation is required to confirm this trend..

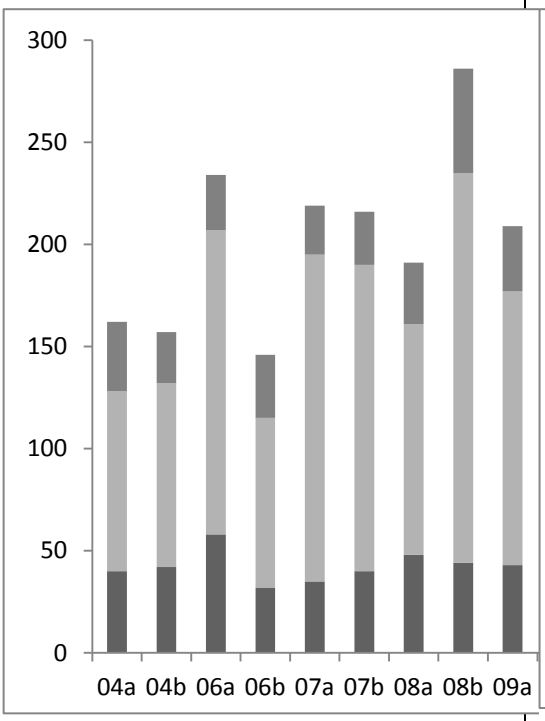


Figure 11. The number of vultures recorded at the two annual June censuses

Note: bars depict (from top to bottom) numbers of Slender-billed, White-rumped and Red-headed Vultures; numbers on the horizontal axis refer to years, abbreviated for reasons of space.

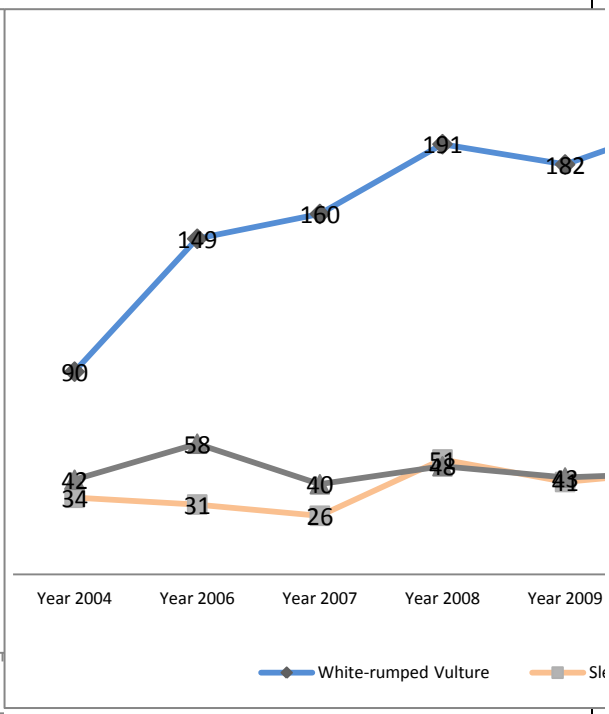


Figure 12. Population trend of three vulture species recorded at ten census years

CAM3: Safeguard nesting areas from logging

2014 objective: Check all known nest locations; improve law enforcement at key sites

All nest data from each site are reviewed and stored in a central dataset for future study. Searches for new nest locations are also undertaken. Based on previous vulture nest data, nest location and distribution maps (Figure 13) are developed for each site for assisting field staff in finding and searching for nest locations. Each project site is managed independently by the responsible organisation depending on capacity and need. Law enforcement to secure critical habitat is available for most sites, however due to limited financial support Sesan and Lomphat sites don't have enforcement units in place. This is becoming a concern as some nesting trees can be chopped for wood. Illegal logging is now the highest threaten that can impact the nesting success of birds. Despite enforcement capacity being low all project partners are trying really hard to work with all concerned partners and authorities to protect all known existing nesting habitat from logging and/or disturbance

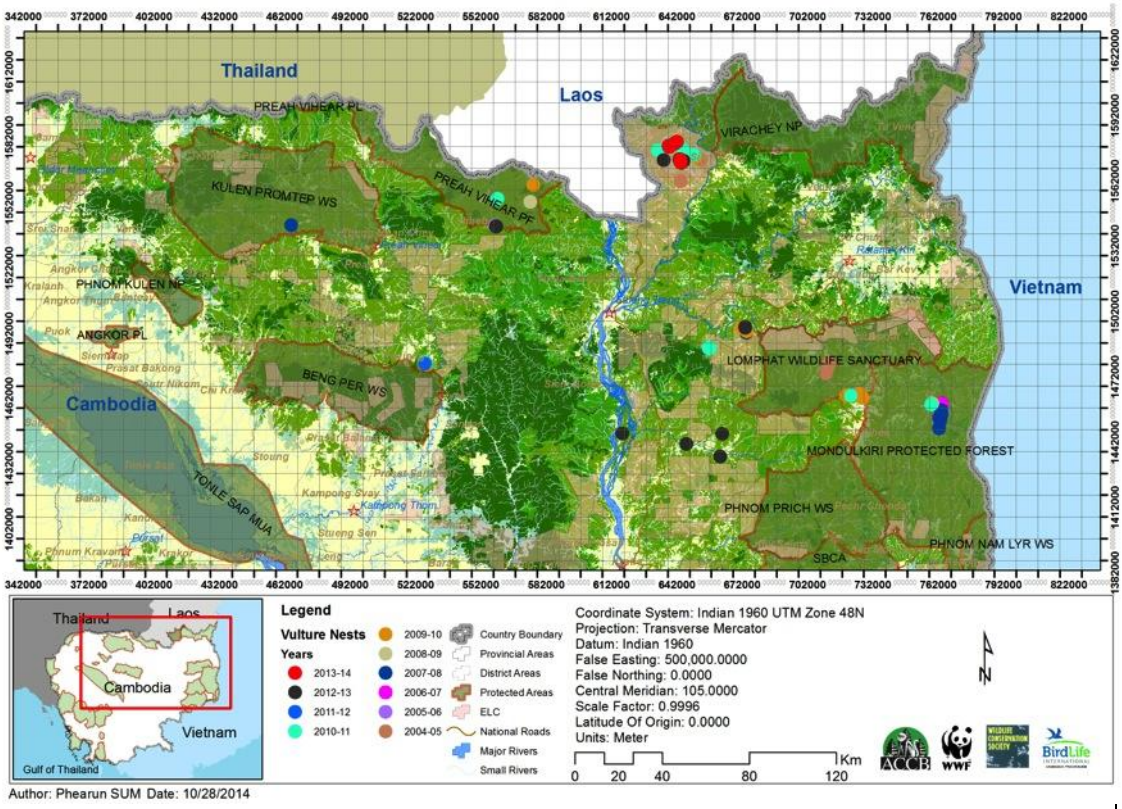


Figure 13. Map of Cambodian Vulture nest location distribution across seven target project areas to the north and north-eastern of Cambodia

CAM4: Protect vulture nests from human predation

2014 objective: Evaluate effectiveness of nest protection across sites

In Cambodia, vultures begin nesting in November or December and the chicks fledge in March or April. Vulture rangers at all sites are encouraged to work with local people to find and protect vulture nests. The number of nests found and protected varies from year to year. A total of 13 nests were found in 2011-12, comprising three Red-headed Vulture, three Slender-billed Vulture and seven White-rumped Vulture. Twenty five nests were found in 2012-13, these comprised one Red-headed Vulture, eleven Slender-billed Vulture and thirteen White-rumped Vulture. Nine nests were found in 2013-14, comprised nine Slender-billed Vulture and one Red-headed Vulture (report for Western Siem Pang only).

Data suggest that nesting success was high in both years across sites except year 2013-14, when the project was less well coordinated, having no coordinator in place to facilitate, maintain and manipulate project data. Most of the vulture nests were not guarded merely checked 2–3 times each week. This indicates that vulture nests are not particularly threatened by nest robbers. All nests in the SSK were guarded (Trapeang Kak, Sre Chhouk and O Dei Roback). Typically vultures in Cambodia nest at least 10 km from human habitation, this pattern must be a direct result of persecution or loss of suitable nest trees closer to humans. Nests are probably only successful now

because they are so remote that people rarely or never visit the areas in which they can still be found. In the past vulture nests have fallen victim to troops of macaques, but this is outside of the influence of nest protectors. The Red-headed Vulture nests that failed in the 2011-12 season in WSP did so because the trees close to them were felled for timber.

CAM5: Monitor sales of veterinary drugs at key sites

2014 objective: Quarterly monitoring of veterinary drug sales at key sites

The CVCP did not conduct any systematic monitoring of sale or use of veterinary diclofenac during the last project period. Normal project activities did not yield any indication that diclofenac was being sold or used for veterinary purposes. A systematic monitoring for sale or use of veterinary diclofenac are taken into account and being implementing during this current project period 2014-2016 of which the project will use graduate students from universities to do this standardized survey across all seven target project sites. This survey will take place from December.

Five dead vultures from two different poisoning accidents in Western Siem Pang Important Bird Area, four in 2013 and one in 2014 were sent to necropsy analysis. All culture indicated suspected poisoning but no indication of diclofenac contamination.

CAM6: Increase sustainability of CVCP

2014 objective: Integrate vulture conservation activities into other NGO activities

The project has identified a few local civil societies out of our current consortium members to be implementation partners on Cambodain Vulture Conservation Project. These include two universities; Panasastra University of Cambodia and Royal University of Phnom Penh and one local organization; Sam Veasna Center. They have played some important roles in the past to support and assist in project activities including student support for ground surveys and thesis research, integrated experience and knowledge into university capacity building programme, promote ecotourism to support vulture restaurant activities.

5. Fundraising Reports

7.1 Cambodian Vulture Conservation Project (CVCP) fundraising report [Incorporating BirdLife Cambodia & WCS]

Sum Phearun, CVCP Coordinator

Birdlife International Cambodia Programme has just taken over the Cambodian Vulture Conservation Project in early 2014. BirdLife and its NGOs partners have set a joint commitment to secure vulture conservation project in Cambodia together in both project implementation and fund raising. All partner members have agreed to meet and discuss on project implementation and outlining for grant opportunity to keep running vulture project in Cambodia. In late 2013, BirdLife Cambodia Programme lead a consortium of NGOs in a funding application to CEPF which was successfully granted on April 2014. A second application has been written to LifeWeb, the application is still pending. BirdLife is looking for other potential donors and partners to continue building a stable long-term national vulture conservation programme for the three Critically Endangered vulture species found in Cambodia.

Number of funding proposals submitted (v brief details)
So far, we submitted three proposals for funding including to secure vulture conservation project in Cambodia including CEPF, VIG and LifeWeb.

Number of successful funding proposals
There are two successful proposals are CEPF and VIG that we are implementing right now, please see the following description:

For successful applications, areas of work, duration, and total funding received or expected

- CEPF funded project entitle " Securing the Long-Term Future of Vulture Conservation in Cambodia" is a joint developed project proposal led by BirdLife International comprising of its partners including WCS, WWF and ACCB. The project is targeting to implementing in seven protected area and IBA across five provinces to the north and northeastern Cambodia [Preah Vihear province (Preah Vihear Protected Forest), Stung Treng province (Western Siem Pang IBA, Seasan, Mekong Flooded Forest), Mondulkiri province (Mondulkiri Protected Forest), and Ratanakiri province (Lumphat Wildlife Sanctuary)]. It is two years project period from 1st Jan 2014 – 31st Dec 2015 with approximately total funding of $130K.
- VIG funded is a one-year project period (1st Sep 2014 - 31st Aug 2015) to secure monthly vulture restaurant activities at Lomphat Wildlife Sanctuary that hasn't covered in the CEPF project proposal with total of $7,300.

Any additional core funding or in-kind support given by your organization
Vulture restaurant activities are sole commitment for each partner organisation to make this activity still kept going on every month. This activity is not funded under current CEPF/CVCP project. Staff time and core-funding sources are used to cover this activity while we don't have funding source from other donors to cover this

important project activity. It is estimated of $ 10,000 per each restaurant per year.

Communications – number of web links from your own website to the SAVE website

- Web address: www.birdlife.org
- Facebook: https://www.facebook.com/BirdLifeInternationalCambodiaProgramme
- YouTube: https://www.youtube.com/channel/UCX8vWUXkpE2N6krs-wQacHA

Please also add mention of any other ways in which your organisation has been able to highlight SAVE activities or priorities.

- BirdLife is highly appreciated to list and mention SAVE as one of our potential partner onto our web address, media release, communication and funding proposal. Meanwhile, BirdLife with its consortium and SAVE are working together in National and regional level to conserve globally rarest vulture species.

5.2 Summary of Bangladesh Fundraising Efforts

[incorporating Bangladesh National Vulture Recovery Committee & Bangladesh Forest Department]

Alam Sarowar Dipu

Two funding proposals were submitted: Darwin Initiative and Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project for White-rumped Vulture Conservation in Bangladesh Project.

Success came with the award of the SRCWP Project awarded to IUCN Bangladesh - a project entitled “White-rumped Vulture (*Gyps bengalensis*) Conservation in Bangladesh: Establishment of the toxic drug free Vulture Safe Zones (VSZ) and Monitoring of the Population trend” . This is a sub-project component of the "Strengthening Regional Cooperation for Wildlife Protection' Project" of the Bangladesh Forest Department, funded by World Bank.

The areas of work are in different parts of Bangladesh, but emphasis given in the Greater Sylhet (northeast), Greater Khulna (southwest) and Greater Mymensingh (north) areas. The duration of the project is two years (from March 2014 to March 2016).

The total funding received is 191,066.839 USD.

No additional funding support will provided from IUCN.

www.iucn.org/bangladesh can be used as a communication tool to the SAVE website.

IUCN Bangladesh provided major technical support to 4th SAVE meeting in November 2014, Dhaka. The project also supported components of the meeting and the post-meeting excursion.

5.3 Fundraising efforts by BNHS 2013-14

Vibhu Prakash/Asad Rahmani

An overview/summary on fundraising efforts during the year

1.1 Successful Applications:

a. Efforts were made to raise funds from Government, Public and Private sectors. In all a total of INR 154 Lakhs (GBP 1, 54000) was raised during 2014-15.

In addition INR 35000 (GBP 350) was raised through personal donations.

An application was sent to Central Zoo Authority and we were successful in getting Rs. 18 Lakh (GBP 18000) for vulture food.

The Madhya Pradesh Forest Department agreed to give recurring cost to run the VCBC, Bhopal, Madhya Pradesh. For the current financial year Rs. 56 Lakh (GBP 56000) were sanctioned.

One Application was sent to the Haryana Forest Development Corporation, a Public Sector Undertaking, and we succeeded in getting INR 10 Lakh (GBP 10,000) for expenses at VCBC, Pinjore.

We also succeeded in getting INR 23 million (GBP 23,00,000) for 5 Years from Rio Tinto Exploration Ltd., a diamond mining firm for establishing Vulture Safe Zone at Bundelkhand, Madhya Pradesh. The first year budget was INR 70 Lakh (GBP 70,000).

b. Personal donations of Rs. 10,000.00 and 25,000.00 were received from Mr. V. M. Goshalia of Mumbai and Mr. Sunil Zaveri of Dubai for Vulture Programme

c. The Haryana Forest Department constructed the food processing room, did electrification of all the aviaries and made drainage system at the centre. The total cost for this establishment was close to INR 10 Lakhs

1.2 Unsuccessful/in pipe line applications.

a. Application was sent through Chief Wildlife Warden, Haryana for getting funding for construction of aviaries and establishing Vulture Safe Zone in Haryana to MoEF from the Endangered Species Recovery Plan. Total Budget was of Rs. 151 Lakhs (GBP 151000) for five years. The first year budget was INR 25 Lakhs (GBP 25000). **Money was not sanctioned**.

b. Application sent for Enhancement of Facilities for housing and breeding of vultures at Vulture Conservation Breeding Centre, Raja bhat khawa, West Bengal to MoEF for funding from Endangered Species Recovery Programme. Amount Rs. 50,99,071/- for this year (2014-15). **Outcome awaited**

c. Application was sent through PCCF,WL, Assam to MoEF for funding from Endangered Species Recovery Programme for the proposal "Enhancement of facilities for housing and breeding of vultures at Vulture Conservation Breeding Centre, Rani Assam" for Rs. 36,23,000/-. **The proposal was not supported.**

d. Proposal sent to Assam State Govt.: "Enhancement of facilities for housing and breeding of vultures at Vulture Conservation Breeding Centre, Rani Assam" for the sum of Rs. 25,05,000/- during 2013-14. **The proposal was not supported.**

e**.** A application was sent to the Naveen Jindal Group of Industries, Karnal, Haryana for Rs. 25 Lakhs**. Did not succeed in getting any funding.**

f. Application sent to Tata Power for funding making a Public Service announcement for Doordarshan. Budget Rs 4.59 lakhs. **Outcome awaited.**

g. A proposal of Rs. 12 Crore for Vulture Conservation Programme including for breeding centres, safety testing of drugs, establishment of Vulture Safe Zones was submitted for funding from Member of Parliament Fund (through Mr. Rahul Shewale, MP). **Outcome awaited.**

Number of funding proposals submitted (v brief details): 11 Applications

Number of successful funding proposals: Four

For successful applications, please briefly describe areas of work, duration, and approximate total funding received or expected

1. The Funding of Rs. 18 Lakhs received from CZA was for the food cost of vultures at Pinjore centre during 2013-14.

2. The funding of Rs. 10 Lakhs from Haryana Forest Development Corporation was for the expenses at Pinjore centre during 2013-14.

3. The funding received from Rio Tinto is for establishing the Vulture Safe Zone at Bundelkhand in Madhya Pradesh. The funding is for the staff cost, awareness and education programme, carcass sampling to study the prevalence of diclofenac.

4. The recurring cost of INR 56 Lakhs for Vulture Conservation Breeding Centre at Bhopal is for staff cost, vulture food and other recurring expenses during 1913-14 and would be continued till at least 15 years.

Any additional core funding or in-kind support given by your organisation
The following in-kind support was provided by the Haryana Forest Department for the VCBC, Pinjore. The total cost was over INR 10 Lakhs (GBP 10,000)

1. A food processing room was constructed by Haryana Forest Department at the centre. The construction was initiated in July 2014.

2. Electricity connection was extended by the Haryana Forest Department to all the aviaries and up to the Interpretation Centre. This was a requirement of the Central Zoo Authority.

3. The Forest Department laid the pipelines from all aviaries to the soak away pit. This will go a long way in ensuring that the used water from the aviaries is disposed off safely. This was initiated in July 2014.

Communications – number of web links from your own website to the SAVE website. None as yet.

Any other ways in which your organisation has been able to highlight SAVE activities or priorities. Though 'Mistnet' and other BNHS publications.

7.4 RSPB Fundraising update for SAVE

Alex Hipkiss

Summary of fundraising efforts during the year.

No formal bids for grants submitted this year. However we successfully negotiated the resumption of support from the pharmaceutical company Boehringer Ingelheim with a €100,000, 12 month grant in August.

A further £20,000 has been received from The Rufford Foundation for core operations

Significant effort was put into supporting BNHS to develop its own Vulture fundraising. programme through funding a consultant to design a corporate funding package. BNHS will report on the progress of this.

Number of funding proposals submitted

Boehringer Ingelheim to support core operations of RSPBs commitments to vulture breeding and vulture monitoring.

Progress report to the Rufford Foundation to secure this years core funding support.

1. **Number of successful funding proposals**

Two – see above in 2.

2. **Any additional core funding or in-kind support given by your organisation**

Core grant funds – Total 283,339 GBP

- India Breeding Programme - 225,447 GBP
- India Advocacy Programme - 11,234 GBP
- India Carcass Sampling - 9,000 GBP
- Nepal Feeding Programme - 16,000 GBP
- Nepal Advocacy Programme - 2,000 GBP
- Nepal Breeding & VSZ - 19,658 GBP

In addition there is support for three full time RSPB staff and related costs

Ongoing Grant Funds (SOS) – Total 81,708 GBP

Communications – number of web links from your own website to the SAVE website

There are three SAVE links from RSPB web-pages and prominence is given to the SAVE donate button.

7.5 ICBP/NBPT Fundraising Report

Jemima Parry-Jones

Although there has been no raising of funds for the SAVE project Jemima Parry-Jones representing both ICBP and NBPT has visited India twice in 2014 and Nepal once, hence this is a significant in-kind contribution since this is time away from her own centre.
The first trip was to help and advise on increasing the production of chicks through changes in the methods of double clutching the breeding vultures. This was achieved with great success and answered a number of questions that had not been possible to answer subsequently.

The second trip was to assist in catching up as many of the birds as possible at Raja Bhat Kawa, Rani and Chitwan. In a grueling 12 day trip, with 8 flights and three long road trips Nic Masters from ZSL and Jemima Parry-Jones accomplished vet checks, identification markings (rings and microchips) checks, weighing and taking blood for DNA sexing from over 120 of the vultures. Sexing the birds is vital for the future of the breeding programme and the results will help us to identify the breeding and potential breeding birds and possible some birds for release in the future. Also meaning that we can make sure that the right ratios of sexes of vultures are moved to the new Centres at Bhopal. Orissa and possibly Jharkhand.

As an important note of interest; The National Birds of Prey Trust that has been a good part of the fund raising for the captive breeding project is now in the process of winding up and the Trust will cease to exist by the end of January 2015. Thus it will sadly no longer be a source of funding in the future.

There is substantial information and a video clip on the ICBP Website about the vulture Crisis and Save, and a collection box in the entry of ICBP which is being used. A new website is in the throes of being built for ICBP as it goes charitable at the end of 2014. SAVE and the vulture crisis's worldwide will be highly featured.

A grant application was made earlier in the year to the AZA raptor tag to be forwarded to any zoos that are involved in vultures in the US, nothing has been heard as yet.

7.6 IVRI Funding Report

AK Sharma & Mohini Saini

- **Number of funding proposals submitted**

Project entitled "Assessing the Safety to Vultures (*Gyps* Spp.) of Non-Steroidal Anti-Inflammatory Drugs in Veterinary Use in India" has been submitted to MoEF" was submitted in Nov. 2012. We are pursuing the progress. So far the project has neither been declined nor sanctioned.

- **Number of successful funding proposals**

IVRI is funding a Research project on "Development of cell culture based model for toxicity testing of Diclofenac" wherein we aim to establish protocol for immortalization of avian kidney cells taking Chicken as a model initially. Total contingency funding received so far is 3, 00,000 INR in addition to infrastructure and manpower.

- **Any additional core funding or in-kind support given by your organisation**

IVRI has always been supporting vulture conservation efforts. We have been testing diclofenac residue by ELISA in vulture carcass samples received from BNHS or Forest departments. Last year, 18 vulture and 12 ungulate carcass samples collected by BNHS were analysed at IVRI. Seven vultures and one cattle detected positive for diclofenac.

In addition, IVRI analysed diclofenac residue in one buffalo meat sample and 16 Himalayan Griffon vulture liver and kidney tissues (including the necropsy of one bird at IVRI) suspected to die after eating this buffalo in Ramnagar Forest. The presence of diclofenac residue in buffalo meat as well as in 11 vultures and nephritis in their kidney tissues detected in histopathology alarms that this banned drug is still posing a threat to *Gyps* vultures.

- **Communications – number of web links from your own website to the SAVE website**

IVRI Website is being updated to include the link.

7.7 ZSL Fundraising Report

Nick Lindsay

Overview/summary of fundraising efforts during the year.

Due to competitive in-house process for grant and fund applications in ZSL it is not easy to get approval to make a proposal submission. This limits the effort that is put into seeking funds for the vulture work. However time is committed to this process and when possible proposals prepared and submitted. Keepers in the two ZSL zoos raised funds in September for the International Vulture Awareness Day. Funds raised in 2013 were transferred to Nepal to support work in the centre in Kasara and the VSZ in Nawalparasi and to buy equipment for use in Indian centres.

ZSL coordinated the collection and transfer of funds in memory of John Ellis.

Number of funding proposals submitted (v brief details)

- One pre-proposal but it was received in Japan 30 minutes too late after the deadline – although it was not stated on the application form and was hit by time zones.
- A second proposal was submitted to the National Birds of Prey Trust for the final dispersion of funds from that Fund. This application was not successful.

Number of successful funding proposals - None

Any additional core funding or in-kind support given by your organisation

- Through IVAD weekends at Whipsnade and London Zoos ZSL raised nearly £2,000. These funds went to provide equipment in Pinjore (total of £520) and to Nepal to provide an upgrade of their CCTV system at the centre and a solar powered backup power system for the centre. These weekends are set-up and run by ZSL staff in work time.

- Funds given in memory of John Ellis (£3,500) paid for the development of the Visitor Information Centre at Kasara and to enable the community in Nawalparasi to set up new electric fence-lines to keep rhino and tigers off the land around the vulture restaurant making it safer for visitors and people working in that area.

- ZSL supported 2 visits to India and Nepal by the head of Veterinary Service, Nic Masters, totalling 22 days of travel, plus Nic's time for preparing reports and dealing with any correspondence and advice though the year. ZSL also contributed £5,000 to the Revised Vulture Conservation Action Plan workshop programme in Nepal.

Communications – web links from your own website to the SAVE website

Over the IVAD weekends ZSL was able to talk about the vulture crisis to visitors to the 2 zoos, possibly totalling over 5,000 people. There have been several articles, news stories, talks, etc. by ZSL staff on the vulture programme many of which will direct people to the SAVE web-site or mention SAVE.

7.8 Hawk Conservancy Trust Fundraising Report

Campbell Murn

Hawk Conservancy Trust continues to raise awareness for the project in Pakistan and SAVE through its visitor centre, publications and online.
Funds are raised internally, via grant applications and also through a network of partners

Number of funding proposals submitted:

£1500 for running the breeding centre at Changa Manga
£1000 for running the breeding centre at Changa Manga
US$8,800 for VSZ monitoring

Number of successful funding proposals

£1000 for running the breeding centre at Changa Manga

Any additional core funding or in-kind support given by your organisation

The Hawk Conservancy Trust continued to support the running costs of the conservation breeding centre at Changa Manga:

- £10,800 during the reporting period

HCT continues to provide an unquantified but substantial amount of in-kind and time support as the principal technical advisor for the WWF-Pakistan project in the Punjab and Sindh Provinces.

Communications – number of web links from your own website to the SAVE website

Number of web links from HCT website to the SAVE website remained the same (three)

Please also add mention of any other ways in which your organisation has been able to highlight SAVE activities or priorities.

SAVE and the activities of HCT and its partner WWF-Pakistan are highlighted to visitors each day. SAVE and project activities are highlighted in our annual report, quarterly newsletters and occasional web updates to members and supporters.

7.9 Bird Conservation Nepal Fundraising Report

Khadananda Paudel

During November 2013 to October, 2014, altogether eight small projects were applied to from different funding organizations worldwide and among them four have been awarded, three rejected and one organization hasn't yet decided on the outcome of the application. Recently we have been applying a project to strengthen Vulture Safe Zone at Hariyo Ban Programme, WWF Nepal.

Awarded Projects in 2014

Rufford Small Grant Foundation, UK awarded a project "Protecting the critically endangered vultures of Suklaphanta Wildlife Reserve and Kailali District, Nepal through community-based integrated approaches." The budget for this project remains GBP 5,874.00

Oriental Bird Club (OBC), UK awarded a project "Ecological monitoring and conservation of vultures in Jajarkot District, Nepal." The budget for this project remains GBP 1500.00

WWF-Nepal, ZSL-Nepal and RSPB supported fund for the revision of Vulture Conservation Action Plan. The fund amount remains USD 8,400.00

Rufford Small Grant Foundation, UK awarded a project "Strengthening the local communities for in-situ conservation of critically endangered vultures." The budget for this project remains GBP 4,995.00

Applied for (2014) and rejected

Project entitled "Ecological Study and Conservation of Critically Endangered Red-headed Vulture in Western Nepal" was applied for ZSL EDGE FELLOWSHIP but was rejected.

The budget was GBP 9,900.00

Project entitled "Integrated landscape conservation of critically endangered vultures in western Nepal" was applied for People's Trust for Endangered Species (PTES) but was rejected. The budget was GBP 4,325.00

Project entitled "Strengthening Vulture Safe Zones in western lowlands of Nepal" was applied for Flora and Fauna International but was rejected. The budget was GBP 4,840.00

Pending project

Project entitled "Strengthening Vulture Safe Zone for future release of Critically Endangered Vultures in Nepal" has been applied to VAN TIENHOVEN FOUNDATION FOR INTERNATIONAL NATURE PROTECTION and decision of funding has not been done yet. The budget for the applied project remains Euro 14,300.00

National Trust for Nature Conservation (NTNC) Fundraising Report

Apart of the funding receiving from the RSPB through BCN and ZSL, NTNC is using the core fund at around NRs **2,500,000** per year for the conservation and management activities in Vulture Conservation & Breeding Centre at Kasara, Chitwan.

WWF Pakistan Fundraising Report

(No funding report received but see VS13 & Hawk Conservancy above)

The Peregrine Fund - Fundraising Report

(No report received) but no fundraising reported apart from the in-kind support for survey work

A Blueprint for the Recovery of South Asia's Critically Endangered *Gyps* Vultures

February 2014

(with January 2015 additions)

The Current State of South Asia's Vultures

Twenty years ago there were tens of millions of vultures in the Indian subcontinent. They provided a valuable ecosystem service by disposing of millions of tonnes of waste carrion from dead cattle each year. Now they, and the services they provided, are nearly all gone. Three species of *Gyps* vultures endemic to South and Southeast Asia, oriental white-backed vulture (*Gyps bengalensis*), long-billed vulture (*G. indicus*) and slender-billed vulture (*G. tenuirostris*), are the worst affected and are threatened with global extinction after rapid population declines, which began in the mid-1990s. They are listed by IUCN as Critically Endangered, the highest level of endangerment short of extinction in the wild. The oriental white-backed vulture population in India in 2007 was estimated at one-thousandth of its level in the early 1990s. Veterinary use of the non-steroidal anti-inflammatory drug (NSAID) diclofenac is the major cause of these declines. Diclofenac has been used to treat symptoms of disease and injury in domesticated ungulates in many parts of the Indian subcontinent since the 1990s. The effects of diclofenac have been studied experimentally on captive individuals of three of the global total of eight *Gyps* vulture species. In all of the species tested, death occurred within a few days of treatment with a single dose of diclofenac and severe kidney damage and extensive visceral gout (accumulation of the excretory product uric acid) were observed post mortem. The kidneys of vultures that died in these experiments showed similar pathology to that found in the majority of vulture carcasses collected from the wild since the declines began. A large-scale survey of the amount of diclofenac in liver tissue from carcasses of domesticated ungulates available as food to vultures in India in 2004 – 2005 showed that the prevalence and concentration of the drug at that time was more than sufficient to cause the observed rapid population declines which were occurring then.

There are important differences between Southeast Asia and the Indian subcontinent in the problems faced by vulture populations. Cambodia still supports small but stable remnant populations of oriental white-backed vulture, slender-billed vulture and red-headed vulture (*Sarcogyps calvus*) numbering hundreds of individuals in total. Diclofenac appears not to be widely used for veterinary purposes in the Southeast Asian countries where surveys have been conducted, including Cambodia and Myanmar. Most recorded vulture deaths in Cambodia are attributed to accidental poisoning. Hunters use poisoned bait to catch and kill quarry species such as waterbirds and poisoned bait is also used to kill problem dogs or cattle. Cambodia's vultures are also thought to be chronically food limited. Populations of wild ungulates on whose carcasses they previously relied upon have undergone severe declines. The free-ranging herds of domestic bovids that replaced them are now also declining, as a result of mechanisation of agriculture. Infrastructure development and illegal logging are increasingly bringing people into remote areas where vultures remain.

Conservation Responses

Soon after research had indicated the severity of the effects of diclofenac on vulture populations, the governments of India, Pakistan and Nepal commenced actions to prevent the contamination of vulture food supplies with the drug. India's National Board for Wildlife recommended a ban on veterinary use on 17 March 2005. In May 2006, a directive from the Drug Controller General of India was circulated to relevant officials, requiring the withdrawal of manufacturing licences for veterinary formulations of diclofenac. This directive was further strengthened in 2008, when it was made an imprisonable offence to manufacture, retail or use diclofenac for veterinary

purposes. Similar measures were introduced in Pakistan and Nepal at about the same time. Veterinary use of diclofenac was banned in Bangladesh in 2010.

Action to prevent the extinction of *Gyps* vultures in South Asia is co-ordinated by Saving Asia's Vultures from Extinction (SAVE), a consortium of eleven organisations with established expertise in vulture conservation, which was established in 2011. The national and state governments of the four vulture range states in the Indian subcontinent are engaged in conservation measures through national action plans, and are linking their activities through the Regional Steering Committee for Vulture Conservation (RSC), set up to implement the recommendations of the inter-governmental Declaration on Vulture Conservation within the region in May 2012. For more details of the composition and function of SAVE see Appendix I.

Conservation actions undertaken so far, in addition to the restrictions on diclofenac use, include surveys to measure the effectiveness of the ban on veterinary diclofenac, regular surveys of vultures to measure their population trends, awareness raising to make the ban more effective, advocacy for enforcement of the ban, contact with the pharmaceutical industry, testing to establish which veterinary drugs are safe and which are harmful to vultures, the creation of Vulture Safe Zones in which intensive campaigns are undertaken to remove toxic NSAIDs from the food supply of the remaining small populations of wild vultures, and conservation breeding to provide a secure captive population and a surplus of captive-bred birds for reintroductions.

Vulture conservation measures in Cambodia differ from those employed in the Indian subcontinent because the threats are different, especially in the absence of a significant threat from diclofenac. Conservation actions taken so far include monthly supplementary feeding at up to seven

sites in the north and east of the country, nest protection and advocacy against inappropriate use of agricultural chemicals as poisons.

There is Hope for South Asia's Vultures

These conservation actions have achieved substantial success and have resulted in the following major achievements.

1. All vulture range states in the Indian subcontinent have banned the veterinary use of diclofenac.
2. Regular monitoring of NSAID residues in cattle carcasses shows that the level of diclofenac contamination of the vulture food supply has fallen substantially.
3. Safety testing identified a safe alternative drug, meloxicam, and monitoring of NSAID residues in cattle carcasses shows that its use has increased markedly in India. Veterinary meloxicam has become widely available in Nepal and Bangladesh.
4. Vulture Safe Zones, which were pioneered in Nepal, are being introduced in other states, expanded, tested and developed.
5. Population monitoring in Cambodia indicates that the small populations of vultures there are approximately stable.
6. Captive populations of all three of the endangered *Gyps* species have been established. The captive birds are surviving well and juveniles of all species have been bred in captivity.
7. In India, regular monitoring of vultures using the repeatable survey method of road transect counts shows that vulture declines have slowed or ceased. Evidence from vulture monitoring in Nepal,

Pakistan and Bangladesh also indicates that the population declines there have slowed or reversed.

What remains to be done?

These are all hopeful signs, but the following serious concerns remain.

1. Vulture populations are precariously small and will remain vulnerable to adverse events until numbers have increased substantially. This vulnerable period will be lengthy because the low natural reproductive capacity and long duration of immaturity of vultures means that, even under the most favourable conditions, the shortest period in which a wild vulture population can double in size is about ten years. The rate of the recent population decline was much more rapid than the most rapid possible rate of increase, with the population of the species most strongly affected by diclofenac halving every year in India and Pakistan. Even when diclofenac has disappeared, conditions may not permit the maximum possible rate of recovery because of other problems caused by the vulture decline (see points 2 and 3 below) and effects of other NSAIDs (see points 5 - 7 below).
2. In the Indian subcontinent, the disappearance of vultures has led to cattle carcasses being disposed of in ways, such as burial, that may restrict the availability of carrion as food for a recovering vulture population in the future. In Southeast Asia, low populations of wild and domesticated ungulates continue to limit the small vulture populations there.
3. Increases in populations of feral dogs and other predators, caused by enhancement of their carrion food supply in the absence of vultures, may be increasing the frequency of predation of livestock and, as a

response, the deliberate placement of poison baits in carcasses to kill the predators. This in turn leads to unintended poisoning of vultures. Large populations of feral dogs and other species of scavengers give rise to other problems, such as an increased risk of dog bites and rabies in humans and other types of disease and public nuisance. Dealing with these problems imposes substantial extra costs on government agencies and charities.

4. Contamination of cattle carcasses with diclofenac has declined, but it has not been eliminated yet. Diclofenac intended for human use is easy to obtain, and easy to misuse for the treatment of livestock because pharmaceutical companies market the drug in larger vials than are required for human medicine. Consequently, carcasses of wild vultures continue to be found with traces of diclofenac in their tissues and post-mortem findings continue to indicate that diclofenac poisoning was the cause of death.
5. The veterinary use of another NSAID (ketoprofen) known to be toxic to *Gyps* vultures is legal and has increased. Other NSAIDs are also in legal use which may be harmful to vultures, but have not yet been tested.
6. Aceclofenac, an NSAID that is likely to be metabolised into diclofenac after being administered to cattle, is beginning to be used. It is likely to kill vultures that feed on contaminated carcasses.
7. There is no co-ordinated, well-established and efficient regulatory mechanism by which legal restrictions are imposed upon veterinary drugs known to cause harm to vultures or on those whose effects have not yet been studied.
8. In some areas, the sparse remaining populations of vultures are threatened by loss or disturbance of nest sites through tree-felling or development.

The Need for a Blueprint for Vulture Recovery

At the moment, encouraging signs of success in the recovery of South Asia's Critically Endangered vultures are mixed with evidence of the continuation of impacts of partially-solved problems and the emergence of new ones. Hence, it is time to establish a more robust long-term vision for the recovery and future safeguarding of South Asia's vulture populations. The ultimate objective is to recover the populations of all of the *Gyps* vulture species to levels where they are secure against future threats and are providing services and functions in both natural and artificial ecosystems. This will not necessarily involve a full recovery to the high population levels of the early 1990s. The future carrying capacity for vultures of the Indian subcontinent may be lower than it was. Because of the lack of vultures, methods for the disposal of cattle carcasses are changing and this is likely to reduce the vultures' food supply. Lack of food is also a problem in Southeast Asian range states such as Cambodia, where carcasses of both domesticated and wild ungulates are scarce and probably limiting the vulture population. In future, it should at least be the case that there are healthy vulture populations sufficient to consume the remains of the large numbers of carcasses of wild ungulates killed annually by predators, diseases and floods in National Parks and other natural and semi-natural areas. Currently, vultures are scarce or absent even in these areas, which demonstrates that protection of natural ecosystems alone is insufficient for the effective conservation of vulture populations. Parks are too small to achieve this on their own. Satellite tagging has shown that vultures range over huge areas in search of carrion and so the presence of diclofenac-contaminated cattle carcasses around the margins of even the largest of the National Parks has been sufficient to eliminate or greatly reduce their vultures.

What is required now to achieve the objective of large and self-sustaining populations of wild vultures is a long-term programme, which links together all the necessary strands of regulatory and conservation action with scientific research and monitoring. This programme is outlined in the following tables, which present Action Timelines for each strand of activity. The timelines cover the period up to 2025. The vulture range states with the largest remaining populations are already covered by the Action Timelines and it is hoped that the inclusion timelines for of other states such as Myanmar, Laos and Bhutan may become possible in future. The programme moves through phases of completing the removal of diclofenac from vulture food supplies in areas with remaining vulture concentrations, to achieving this throughout the vulture range states, preventing similar hazards from other drugs arising in future and countering other emerging threats. In this period, the conservation breeding elements of the programme will move from establishing a self-sustaining captive population of vultures to providing birds for reintroduction and supplementation of remaining wild populations and then, on to maintaining a population in captivity in the longer term as insurance against new threats. Even if conditions for vultures in the wild become favourable again, their low maximum reproductive rate means that they will be slow to recolonise areas where they are now missing. Hence, reintroduction into areas where vultures are absent is likely to be an important tool in restoring their distribution.

SAVE is proposing this blueprint in the first instance, but it is hoped that it will be added to and implemented jointly as a partnership between conservation organisations, government agencies and the pharmaceutical industry.

The Action Timelines

Action timelines are organized by type, except for Cambodia where all actions are presented together.

Action Timelines for advocacy, awareness raising and regulation at the national level (AD). Part 1.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2024	2023	2025
AD1	Achieve the removal from the market of vials of diclofenac supposedly intended for human medicine in excess of 3 ml capacity.	Propose restrictions on large vials to the Regional Steering Committee, governments and pharmaceutical industry. Establish the restrictions.			Provide technical assistance and advice on the operation of the ban, using information from monitoring.								
AD2	Achieve the banning of the veterinary use of ketoprofen and aceclofenac in India, Pakistan, Bangladesh and Nepal.	Discuss the issue with the Regional Steering Committee, governments and pharmaceutical industry using research results.			Provide technical assistance and advice on the operation of the ban, using information from monitoring.								
AD3	Establish a procedure in India and Nepal through which identification by testing of a drug hazardous to vultures at or below maximum likely exposure levels leads to a ban on its use for veterinary purposes.	Initiate discussions with the Regional Steering Committee, governments and pharmaceutical industry. Establish a procedure.			Provide technical assistance and advice on the operation of the procedure, using information from monitoring. Engage with the pharmaceutical industry to do this.								
AD4	Establish procedures in India and Nepal by which veterinary drugs with unknown effects on vultures have their approval for veterinary use withheld or withdrawn until scientific testing on *Gyps* vultures establishes their safety at maximum likely exposure levels.	Initiate discussions with Regional Steering Committee, governments and pharmaceutical industry. Establish procedures.			Provide technical assistance and advice on the operation of the procedures, using information from monitoring. Engage with the pharmaceutical industry to do this.								

Action Timelines for advocacy, awareness raising and regulation at the national level (AD). Part 2.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2024	2023	2025
AD5	Work with both the pharmaceutical industry and governments to identify, by a robust safety testing and approval process, NSAIDs that are safe for vultures. Currently meloxicam is the only such drug.	Provide encouragement and technical advice.											
AD6	Contribute, with government agencies and pharmaceutical companies, to maintaining pharmacovigilance and regulation of veterinary drugs, to prevent their negative effects on wild vultures.	Use monitoring information on the performance of the regulatory procedures and propose improvements.											
AD7	Establish a SAVE alert system for veterinary drugs which combines information of levels of use from pharmacy surveys and analyses of cattle carcasses with results from safety testing to draw attention of governments to potentially hazardous drugs.	Establish system within SAVE.			Operate system and provide advice to the Regional Steering Committee, governments and pharmaceutical industry.								
AD8 (action added Nov. 2014)	Improve the availability of more effective meloxicam formulations thereby facilitating take up by veterinary practioners	Contact and sensitisation of pharma industry. Sensitise drug regulation authorities in each country to take appropriate steps to favour production of well formulated veterinary meloxicam.											

Action Timelines for conservation breeding (CB). Part 1.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CB1	Conservation breeding of OWBV, LBV and SBV at VCBC Pinjore (India).	Maintain the captive population in good health. Produce as many fledglings as possible of all three species, using artificial intervention as appropriate.				Maintain the captive population in good health. Produce as many fledglings as possible of all three species, using artificial intervention as appropriate, but with less emphasis on OWBV and more on SBV and LBV, using artificial intervention for those species if appropriate. Transfer of surplus immatures to release programme.					Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		
CB2	Conservation breeding of OWBV, LBV and SBV at VCBC Rajabhatkhawa (India).	Maintain the captive population in good health. Produce as many fledglings as possible of all three species, but with special emphasis on SBV, using artificial intervention for that species if appropriate.				Maintain the captive population in good health. Produce as many fledglings as possible of all three species, but with special emphasis on SBV, using artificial intervention for that species if appropriate. Transfer of surplus immatures to release programme.					Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		
CB3	Conservation breeding of OWBV and SBV at VCBC Rani (India).	Maintain the captive population in good health. Produce as many fledglings as possible of both species, but with special emphasis on SBV, using artificial intervention for that species if appropriate.				Maintain the captive population in good health. Produce as many fledglings as possible of both species, but with special emphasis on SBV, using artificial intervention for that species if appropriate. Transfer of surplus immatures to release programme.					Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		
CB4	Conservation breeding of OWBV at VCC Changa Manga (Pakistan).	Maintain the captive population in good health. Produce as many fledglings as possible by natural methods and artificial incubation as necessary. Transfer of birds to release programme as appropriate.									Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		

Action Timelines for conservation breeding (CB). Part 2.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CB5	Conservation breeding of OWBV at VCBC Chitwan (Nepal).	Maintain the captive population in good health. Produce as many fledglings as possible by natural methods.		Maintain the captive population in good health. Produce as many fledglings as possible by natural methods. Transfer some wild-bred birds to release facility.		Maintain the captive population in good health. Produce as many fledglings as possible by natural methods. Transfer captive-bred immatures to release facility.					Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		
CB6	Conservation breeding of OWBV and LBV at CZA centres (India).	Training of staff and preparation of facilities	Transfer of captive-bred OWBV and LBV from VCBC Pinjore.	Maintain the captive population in good health. Produce as many fledglings as possible by natural methods.				Maintain the captive population in good health. Produce as many fledglings as possible by natural methods. Transfer captive-bred birds to release facility or other centres.			Maintain the captive population in good health. Produce sufficient fledglings to replace adult losses.		
CB7	Conservation breeding of OWBV in Bangladesh.	Consider the development of a VCBC in Bangladesh.											
CB8 (action added Nov. 2014)	Conservation breeding of OWBV & LBV at VCBC Bhopal (India)	Establish & maintain a captive population in good health – primarily through supply and exchanges of subadult birds from other existing centres.				Maintain the captive population in good health Produce as many fledglings as possible of both species, initially through natural breeding but subsequently using artificial intervention as appropriate.. Transfer of surplus immatures to release programme and fully integrate the management of this population with the wider release plans and any exchanges required to optimize genetic and sex-ratio aspects of the Indian captive populations of these species as a whole.					Maintain the captive population in good health. Continue to supply birds for release programme. Produce sufficient fledglings to replace adult losses.		

Action Timelines for Vulture Safe Zone implementation (VS). Part 1.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VS1	Identification and selection of new provisional Vulture Safe Zones (pVSZs) in India, in particular for LBV.	Collect information and select pVSZs.											
VS2	Capacity building and local advocacy of provisional Vulture Safe Zones (pVSZs) in India.	Develop capacity in pVSZs.											
VS3	Selection of pVSZs in India suitable for conversion to full VSZs.	Selection and conversion of pVSZs to full VSZs based upon undercover pharmacy monitoring data and monitoring of fates of tagged vultures.											
VS4	Maintenance and review of VSZs in India	Continue VSZ implementation. Potential removal of VSZ status if monitoring shows that conditions have changed.											
VS5	Release of captive-bred vultures in VSZs in India.		First transfers of captive-bred vultures to holding aviaries in VSZs.	First releases of captive-bred vultures in VSZs.	Continued releases of captive-bred vultures in VSZs.								
VS6	Maintenance and review of VSZs in Nepal.	Continue VSZ implementation and expansion											
VS7	Release of wild-taken and captive-bred vultures in VSZs in Nepal.			Releases of wild-taken OWBV not likely to breed from Chitwan VCBC.			Releases of captive-bred OWBVs.						
VS8	Identification and selection of additional pVSZs in Pakistan.	Identify and select pVSZs.	Develop capacity										
VS9	Maintenance and review of VSZs in Pakistan.	Continue VSZ implementation and expansion.											
VS10	Release of captive-bred vultures in VSZs in Pakistan						Releases of captive-bred vultures in VSZs						

Action Timelines for Vulture Safe Zone implementation (VS). Part 2.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VS11	Livestock management and husbandry training in pVSZs and VSZs in Pakistan	Develop and implement training programme.											
VS12	Free veterinary camps in pVSZs and VSZs in Pakistan.	Develop and implement programme.											
VS13	Community-led vulture-based ecotourism in pVSZs and VSZs in India, Nepal and Pakistan.	Develop and implement programme.											
VS14.	Identification and selection of pVSZs and VSZs in Bangladesh.	Identify and select pVSZs.											
VS15.	Implementation of pVSZs in Bangladesh.	Implement VSZ programme.											

Action Timelines for Vulture Safe Zone monitoring (ZM).

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ZM1	Monitoring of survival and causes of death of wild vultures with GPS PTTs in pVSZs and VSZs in India and VSZs in Nepal	Seek permits for capture and tagging of wild vultures in VSZs.		Capture and tag samples of wild vultures with GPS tags. Monitor to identify foraging sites, recover corpses and establish cause of death.									
ZM2	Monitoring of survival and causes of death of released vultures with GPS PTTs in pVSZs and VSZs in India and VSZs in Nepal			Tag all captive-bred vultures prior to release with GPS tags. Monitor to identify foraging sites, recover corpses and establish cause of death.									
ZM3	Monitoring of survival and causes of death of wild and released vultures with GPS PTTs in pVSZs and VSZs in Pakistan.					Capture and tag wild vultures in VSZs. Tag released captive-bred vultures. Monitor to identify foraging sites, recover corpses and establish cause of death.							
ZM4	Monitoring of availability of NSAIDs for veterinary use in representative samples of pharmacies and other outlets in pVSZs and VSZs in India, Pakistan, Bangladesh and Nepal	Conduct undercover surveys of outlets for veterinary drugs. Record NSAIDs offered for use for veterinary purposes. Identify the provenance and vial size of diclofenac offered illegally for veterinary use.											
ZM5	Monitoring of wild vulture populations and breeding success in pVSZs and VSZs in India, Pakistan, Bangladesh and Nepal.	Conduct surveys over representative areas of the zone, including nest counts and/or road transect surveys, as appropriate											

Action Timelines for research and monitoring at the national level (RM). Part 1.

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
RM1	Develop method for GPS PTT vulture tracking and corpse recovery in VSZs.	Complete tagging and recovery tests on RHV and LBV. Evaluate corpse recovery using simulated tagged corpses. Test tag attachment methods on captive *Gyps* vultures.		Begin tag deployment on *Gyps* vultures in pVSZs and VSZs.									
RM2	Road transect surveys of vulture numbers in India.	Conduct surveys using same methods as in previous surveys.	Publish results of the survey done in the previous year.		Conduct surveys using same methods as in previous surveys.	Publish results of the survey done in the previous year.		Conduct surveys using same methods as in previous surveys.	Publish results of the survey done in the previous year.		Conduct surveys using same methods as in previous surveys.	Publish results of the survey done in the previous year.	
RM3	Road transect surveys of vulture numbers in Nepal.	Conduct survey using same methods as in previous surveys. Western lowland surveys annually. Midhills and East-West highway survey every four years.											
RM4	Vulture population monitoring in Pakistan and Bangladesh.	Continue to develop and conduct repeatable population surveys.											
RM5	Monitoring of NSAID contamination of ungulate carcasses in northern India and Nepal.	Complete current round of sample collection in several states. Measure concentrations of all NSAIDs thought to be potentially hazardous to vultures	Publish NSAID monitoring results and expected effects on vulture death rates	Collect samples in several states according to previous protocol. Measure concentrations of all NSAIDs thought to be potentially hazardous to vultures		Publish NSAID monitoring results and expected effects on vulture death rates	Collect samples in several states according to previous protocol. Measure concentrations of all NSAIDs thought to be potentially hazardous to vultures		Publish NSAID monitoring results and expected effects on vulture death rates	Collect samples in several states according to previous protocol. Measure concentrations of all NSAIDs thought to be potentially hazardous to vultures		Publish NSAID monitoring results and expected effects on vulture death rates	

Action Timelines for research and monitoring at the national level (RM). Part 2.												
Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
RM6 (B'desh added Nov. 2014)	Monitoring of causes of death and NSAID contamination of wild vultures in India, Pakistan, Nepal and Bangladesh.	Collect as many dead wild and released vultures as possible. Conduct post mortem examinations to determine causes of death. Take liver and kidney samples and determine concentrations of all NSAIDs known to be in veterinary use. Trial methods to detect NSAIDs in bone and other hard tissues. Retain carcasses frozen for future use. Publish the results periodically.											
RM7	Safety testing on captive vultures at Pinjore of NSAIDs of uncertain toxicity.	Obtain wild Himalayan griffon vultures and house in captivity for safety testing. programme.	Conduct testing of four NSAIDs. Apply to test four more NSAIDs.	Conduct testing of four NSAIDs. Review safety testing programme and decide on testing needs.	Continue testing programme as NSAIDs posing potential hazards are identified by the SAVE alert system (see timeline AD6).								
RM8	Monitoring of availability of NSAIDs for veterinary use in pharmacies and other outlets in India, other than in VSZs. Equivalent surveys in Nepal are mainly in VSZs and covered by ZM4.	Complete current round of undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4).	Publish NSAID availability monitoring results.	Conduct undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4).	Publish NSAID availability monitoring results.	Conduct undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4).	Publish NSAID availability monitoring results.	Conduct undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4).	Publish NSAID availability monitoring results.				
RM9	Monitoring of availability of NSAIDs for veterinary use in pharmacies and other outlets in Pakistan.	Conduct undercover surveys of outlets for veterinary drugs. Record NSAIDs offered for use for veterinary purposes. Identify the provenance and vial size of diclofenac offered illegally for veterinary use.											

Action Timelines for research and monitoring at the national level (RM). Part 3.													
Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
RM10	Estimation of the former and potential future value of the ecosystem services provided by wild vultures.	Conduct a survey of costs of cattle carcass disposal, feral dog control and other ecosystem service measurements.											
RM11	Investigate factors affecting use of vulture-safe NSAIDs by veterinarians, paravets and livestock owners.	Conduct questionnaire studies, choice experiments and other investigations, as appropriate.											

Action Timelines for Cambodia (CAM).

Timeline code	Activity	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CAM1 (minor rewording Nov. 2014)	Monthly supplementary feeding in at least six sites	Provide at least one dead cow per month at vulture restaurants											
CAM2	Improve population monitoring	Census vulture restaurants in March, June, September and December											
CAM3	Safeguard nesting areas from logging	Check all known nest locations, improve law enforcement at key sites	Law enforcement to prevent logging at key sites										
CAM4	Protect vulture nests from human predation	Evaluate effectiveness of nest protection across sites	Continue nest protection if found to be effective	Continue nest protection if found to be effective	Evaluate effectiveness of nest protection across sites	Continue nest protection if found to be effective	Continue nest protection if found to be effective	Evaluate effectiveness of nest protection across sites	Continue nest protection if found to be effective	Continue nest protection if found to be effective	Evaluate effectiveness of nest protection across sites	Continue nest protection if found to be effective	Continue nest protection if found to be effective
CAM5	Monitor sales of veterinary drugs at key sites	Quarterly monitoring of veterinary drug sales at key sites											
CAM6	Increase sustainability of CVCP	Integrate vulture conservation activities into other NGO activities	Develop sustainable financing where possible	Evaluate CVCP activities and effectiveness	Develop sustainable financing where possible	Nationalize management of CVCP							

Appendix I - The composition and structure of SAVE

The consortium of eleven organisations was formally established in February 2011 under the banner 'Saving Asia's Vultures from Extinction (SAVE). These organisations have the common understanding to agree, prioritise and help implement the actions required to conserve three Critically Endangered resident *Gyps* vultures, based on sound scientific grounds.

SAVE has been chaired from its formation by world-renowned raptor biologist, Professor Ian Newton FRS, FRES, drawing on his earlier experience in the DDT poisoning issue, the California condor recovery programme and his wealth of experience in raptor population biology and ecology. The composition of SAVE organisations is as follows, and this is likely to expand further in the near future.

Core members - BNHS India, Bird Conservation Nepal, National Trust for Nature Conservation Nepal, Bangladesh National Vulture Recovery Committee, International Centre for Birds of Prey, Royal Society for the Protection of Birds, WWF Pakistan have nominated: Asad Rahmani, Narendra Pradhan, Govinda Gajurel, Jemima Parry-Jones, Tim Stowe and Uzma Khan respectively.

BCN ICBP NTNC Pakistan

Project Partners – Zoological Society of London, Hawk Conservancy Trust, Wildlife Conservation Society, The Peregrine Fund.

Research & Govt Partners – Indian Veterinary Research Institute, Bangladesh Forest Department.

SAVE meets to review priorities each year, and has two sub-committees, which report to these meetings. The composition of these sub-committees is as follows:

SAVE Technical Advisory Committee (TAC)

Rhys Green (Chair) - Cambridge University Professor of Conservation Science & RSPB Principal research Biologist
Jemima Parry-Jones (Co-chair) - World expert raptor captive breeding & raptor biology
Vibhu Prakash - Principal Scientist BNHS and renowned raptor biologist
Mohini Saini – Principal Scientist, Wildlife Section at Indian Veterinary Research Institute
Monirul Khan – Assoc Professor, Dept Zoology, Jahangirnagar Univ., Dhaka, Bangladesh
Naresh Subedi – Project Chief of NTNC's Biodiversity Cons Centre, Nepal
Toby Galligan – Snr Research Biologist, International Research Dept, RSPB, UK
Mark Taggart – Snr Scientist, NSAIDs expert, Univ of Highland & Islands, UK
Khadananda Paudel – Vulture Conservation Officer, Bird Conservation Nepal
Campbell Murn – Head of Conservation & Research, Hawk Conservancy Trust (UK)
Chris Parish – Director of California Condor reintroduction at The Peregrine Fund (USA)
Nic Masters – Head of Veterinary Services, ZSL & London Zoo

SAVE Fundraising, Advocacy and Communications Committee (FACC)

Ram Jakati (Chair) – Director Indira Gandhi National Forest Academy (retd)
Homi Khusrokhan – President of BNHS India
Asad Rahmani – Director BNHS India & renowned ornithologist
Devendra Swarup – Director IVRI (retd) & NSAIDs & veterinary expert
BC Choudhury – Senior Scientist at Wildlife Institute of India (retd)
Uzma Khan – Director Biodiversity & Vulture head, WWF Pakistan
Nick Lindsay – Head of International Zoo Programmes, ZSL
Michael Krause – Head of Funding Development, RSPB (UK)
Anil Sharma – Principal Scientist & Incharge, Centre for Wildlife Conservation, Management & Disease Surveillance, IVRI
Chris Bowden – Globally Threatened Species Officer & Vulture Programme Manager, RSPB

The SAVE programme is coordinated by **Programme Manager** – Chris Bowden (see above) – Email: contact@save-vultures.org
Website: www.save-vultures.org