Report of 6th Annual Meeting of

Saving Asia's Vultures from Extinction

(Including NSAIDs Alert Symposium)

SAVING ASIA'S VULTURES
FROM EXTINCTION

Mumbai, India
27-28 November 2016

Hosted by Bombay Natural History Society, at Hotel Mirador, Mumbai

Report compiled and edited by Chris Bowden, SAVE Programme Manager

March 2017

[Photo credits: Sachin Ranade BNHS, Krishna Bhusal BCN & Chris Bowden]

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1. About this report

The main content of this report follows the format of the 'Blueprint for the Recovery of South Asia's Critically Endangered Gyps Vultures' document which was originally developed by SAVE in February 2014 and was then adopted by the Vulture Regional Steering Committee for the four South Asian Governments of Bangladesh, India, Nepal and Pakistan. It reports and updates against each action agreed in that document and the significantly, the 2017 updated version has been updated based on the plenary sessions at the meeting, and appended to this report (p.80) each year since then. Note the Green (On Track), Yellow (Some Concerns) & Red (Behind Schedule) colour codes for each action give a valuable indication of where things stand and again have been agreed with full consultation with all SAVE Partners having the opportunity to comment at the meeting or during a circulated draft. Likewise the SAVE priorities were revised and agreed by all for South Asia (p.5), and subsequent to the meeting a priority list has been developed for SE Asia as it was realized that the priorities list did not reflect the Cambodia actions (p.6).

2. Acknowledgement of support for the 6th Annual SAVE meeting

SAVE warmly acknowledges the support of the RSPB for once again making the annual meeting possible, but this year we especially welcome new support from the Hawk Mountain Sanctuary, USA who provided almost a third of the overall meeting costs with a donation directly to SAVE. We also take this opportunity to thank the individuals who donated during the past year via the SAVE website donate button which made a further important contribution. Several delegates also undertook to pay their own transport or accommodation costs which also helped significantly.

Our hosts BNHS kindly provided significant time (and particular thanks to Mr Sachin Kulkarni who helped well beyond the call of duty) and BNHS temporarily covered some of the costs which was very much appreciated. The Corbett Foundation Director, Mr Kedar Gore helped as to locate the venue, and assisted with negotiating an affordable package with Mirador Hotel who in turn were very helpful with the general meeting arrangements. Sarah Havery and Laura Beasley of RSPB Globally Threatened species team both kindly provided invaluable assistance at short notice with the pre-meeting and this report respectively.

Most importantly we acknowledge all the presenters and contributors to the meeting and those who provided the pre-meeting reports which underpinned the success of an exceptionally productive meeting. The NSAIDs Alert Symposium was a new addition from previous years and the engagement in attendance of the drug regulation officials from the four South Asian countries was an enormous positive. We here warmly acknowledge the attendance of: Dr Om Prakash S Sadhwani, Maharashtra Drug Controller, Mrs Sultana DGDA Bangladesh, Mr Santosh DDA Nepal, and by Skype link: Shaikh Faqeer Muhammad , Director (Drug Licensing) DRAP Pakistan, and we appreciated the very positive and constructive engagement from all. Special mention of both IUCN Pakistan and WWF- Pakistan is warranted for successfully facilitating the Skype link and participation of the Pakistan Government officials, and notably Naeem Ashraf Raja.

3. 2017 Updated SAVE priorities for vulture conservation

3.1 South Asia

(Revised in SAVE plenary Nov 2016)

- Veterinary licenses to be withdrawn for two drugs – ketoprofen and aceclofenac - based on the good existing evidence that they are unsafe for vultures.
- An effective system of regulation of veterinary drugs, based upon safety-testing on vultures initiated and underway for all current painkillers (NSAIDs) and for all potential new ones entering veterinary practice.
- Evaluate safety of nimesulide and initiate the agreed safety-testing project.
- Identifying additional vulture safe NSAIDs (alternatives for vets).
- Defending and communicating the 2015 multidose ban of diclofenac (human formulations) to relevant authorities & stakeholders (India).
- 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.
- Create a safe environment for first soft releases of captive vultures at identified sites (100km radius) in Nepal and India in 2017, requiring satellite monitoring of the released birds.
- Improved availability of well-formulated meloxicam products thereby facilitating their popularity with veterinary practitioners.
- Engage and exploit synergies of SAVE activities with Convention of Migratory Species' Vulture Multi-species Action Plan.
- Closely support National Vulture Recovery Committees and the 'Regional Steering Committee' in order to facilitate the urgent implementation of the 2012 Delhi Regional Agreement and SAVE priorities.

SAVING ASIA'S VULTURES FROM EXTINCTION

3.2 South East Asia

(Developed in consultation with SE Asia Partners and TAC March 2017)

- Implementation of a high profile anti-poisoning campaign (across Cambodia and Myanmar)
- More effective law enforcement within protected sites to halt forest conversion and hunting (targeted law enforcement patrols and nest guardians) to protect priority vulture nesting areas.
- Effective spatial planning to retain the priority forest areas for vulture conservation, ensuring strong environmental impact assessments are carried out to prevent detrimental regional development projects.
- Vulture restaurants maintained at six priority sites (Cambodia) to continue population monitoring.

6th SAVE Meeting– Hotel Mirador, Mumbai

4.1 Programme

Day 1 – November 27th 2016

08.30 Registration/coffee
09:00 Welcomes – Dr Vibhu Prakash - Deputy Director and Principal Scientist BNHS (host), Mr Arunachalam -Deputy Drug Controller India, Professor David Houston - SAVE Chairman.
Brief introductions by all participants
09.25 Outline of meeting agenda - Chris Bowden - SAVE Programme Manager

Country summary updates to SAVE for 2016 (Chair - Professor David Houston)

09.30 Bangladesh – Dr. Monirul Khan
09.45 India - Dr Vibhu Prakash
10.00 Nepal – Krishna Bhusal
10.15 Pakistan – Dr Campbell Murn
10.30 Iran – Ali Reza Hashemi
10.40 Thailand – Kaset Sutasha
10.50 Questions
11.00 Tea

Technical Sessions: (Chair - Dr. Mohini Saini)

11.30 Discussion of Cambodian Vulture Recovery Plan – Phearun Sum
12.10 Multi-dose vials ban implementation in India – Dr Vibhu Prakash
12.20 Questions

12:30 Buffet Lunch

Vulture Safe Zones and Releases (Chair - Ms. Jemima Parry-Jones)

13.30 Indian Release Plan - Dr Vibhu Prakash; Dr Bhojvaid (Chief Wildlife Warden Haryana)
14.00 Nepal Release Plan and VSZ including transboundary issues – Dr Narendra Pradhan; Krishna Bhusal
14.30 Pakistan VSZ including transboundary issues – Dr Campbell Murn
14.45 Bangladesh VSZ including transboundary issues – Dr. Monirul Khan
15.00 Discussion
15.30 Tea

Selected Science Snippets (Chair – Mrs Sarita Jnawali)

16.00 Selected Science Snippets - Dr Toby Galligan; Professor Rhys Green
16.40 Updating the Blueprint
17.30 Concluding remarks - Professor David Houston

17.40 10 minute film (Prokriti O Jibon) Conservation Initiatives in Bangladesh: "A hope for the vultures".
18.00 Close of Day 1
19.30 Dinner at Hotel Mirador

Day 2 - November 28th – NSAID Alert Symposium – Mumbai, India

Blueprint – (Chair – Ms. Jemima Parry-Jones)

09:00 Updating the Blueprint (continued)

10:00 Welcomes – Homi Khusrokhan (President BNHS), David Houston (SAVE Chairman), Mr Arunachalam Drugs Inspector India; Release of NSAIDs dossiers
10.20 Welcome to Pakistan delegation joining via Skype link
10:30 Presentations

1. Introduction – Dr Toby Galligan
2. diclofenac – Dr Vibhu Prakash
3. meloxicam – Dr D Swarup
4. ketoprofen – Prof Rhys Green
5. nimesulide and flunixin – Dr Mohini
6. aceclofenac – Dr Nic Masters
7. NSAID safety testing – Dr Toby Galligan
8. NSAIDs in India – Dr Parag Deori
9. NSAIDs in Bangladesh – Dr Monirul Khan
10. NSAIDs in Nepal – Dr Laxman Poudyal
11. NSAIDs in Pakistan - Mr. Naeem Ashraf Raja, Director Biodiversity/Dr Uzma Khan
12. Effectiveness of Meloxicam and Summary – Professor David Houston

12:30 Lunch and independent discussion in Pakistan (see below)

NSAID Alert Symposium Discussion – (Chair – Homi Khusrokhan)

13:15 Discussion led by Professor Rhys Green TAC Chair

Panel: Dr Om Prakash S Sadhwani, Maharashtra Drug Controller, Shaikh Faqeer Muhammad, Director (Drug Licensing) DRAP Pakistan, Mrs Sultana DGDA Bangladesh, Mr Santosh DDA Nepal, Dr Swarup formerly CRIG and IVRI, to discuss the following three topics (20 minutes each):

1) The procedures required for authorities to ban NSAIDs shown to be toxic to vultures;
2) The procedures required to temporarily suspend the use of NSAIDs not safety tested on vultures;
3) The procedures required to establish future mandatory safety testing on vultures for all NSAIDs before approval for veterinary use.

14:15 Pakistan reports to delegation in India

14:30 Final summary – ways forward for each of the four countries; Om Prakash S Sadhwani, Maharashtra DC
Vote of thanks – David Houston and Deepak Apte (Dir BNHS)
15.00 Official end of NSAID Alert Symposium

Tea

Final Session (Chair - Narendra Pradhan)

15.30 Funding – Tim Stowe - Director of International Programmes

16.00 Updating of Blueprint (continued from earlier)

17.00 Review/revisit of SAVE priorities

17.30 Summary of meeting and any final discussion points including from NSAID alert symposium & close of Technical Session and Meeting – Prof. David Houston

(*18.00 Closed SAVE Board meeting*)

4.2 Meeting record

Day 1 of 6th SAVE Meeting

Chairman David Houston opening

Vibhu Prakash Welcome on behalf of BNHS

Dr.PP Bhojvaid updates on Haryana release (Left). Bangladesh update MM Khan (Right) (Chair Jemima Parry-Jones seated right).

Pakistan update Campbell Murn (Left). Nepal update Krishna Bhusal & Narendra Pradhan (Right).

Cambodia update Phearun Sum (left) SAVE TAC Chair Prof Rhys Green

Dr Mohini Saini (left) & first Thailand attendance at a SAVE meeting Mr Kaset Sutasha

Discussion and presentation regarding court case & upholding human diclofenac multi-dose vial ban in India: Bharathi Dasan & Vibhu Prakash (left)

Day 2 – NSAID Alert Symposium

Introduction from Dr Om Prakash S Sadhwani, Maharashtra Drug Inspector representing the Indian Drug Regulation Authorities (note Pakistan DRA attendance via Skype link behind) and (right) Bangladesh & Nepal

Release & presentation of NSAID SAVE dossiers for nimesulide, ketoprofen, aceclofenac & flunixin by (left) Mrs Nayer Sultana, Bangladesh DG Drug Administration & (right) Mr Santosh K C of DDA Nepal.

Dr Om Prakash S Sadhwani (Indian Drug Regulation Authority) and remote presentation via Skype link (!) to Dr Shaikh Faqeer Muhmmad, Dir DRAP (Pakistan) by David Houston

Left to right: Laxman Prasad Paudel, Devendra Swarup, Nic Masters, Deepak Apte &Tim Stowe (the latter's final SAVE Meeting before retirement)

Chairman Prof David Houston (left) & Dr Parag Deori (right) presenting

5. 6th SAVE Meeting Participants

Prof David Houston, SAVE Chairman	Kaset Sutasha (BCST, Thailand)
Jemima Parry-Jones, (Dir ICBP) TAC & Board	Dr Dieter Hoffmann (RSPB)
Dr Tim Stowe (Dir International, RSPB) Board	Bharathi Dhasan Subbaiah (Arulagam)
Deepak Apte (BNHS Dir) Board	Kedar Gore (Corbett Fndn)
Narendra Pradhan (Dir BCN), FACC & Board	Dr Naveen Pandey (Corbett Fndn)
Prof Rhys Green (TAC Chair)	Abdul Muqeed Majumdar (Prokriti O Jibon) B'desh
Mrs Sarita Jnawali (NTNC) acting Board	Shamim Ahmed (Prokriti O Jibon) Bangladesh
Dr Monirul Khan TAC acting Board	Santosh KC (Nepal DRA)
Dr Vibhu Prakash (BNHS) TAC	Mrs Sultana (DG Bangladesh DRA)
Sum Phearun (BirdLife Cambodia) FACC	Andre Botha (IUCN VSG & CMS MsAP)
Dr Toby Galligan (RSPB) TAC	Nick Williams (CMS Raptors MoU)
Chris Bowden (RSPB) Prog. Man & FACC	Yub Raj Basnet (BCN President, Nepal)
Dr Campbell Murn (HCT-UK) TAC	Dr Om Prakash S Sadhwani (DRA India)
Homi Khusrokhan (BNHS President) FACC	Md Kabul Kalam (Bangladesh Livestock Dept)
Krishna Bhusal (BCN) TAC	Mr Arunachallam (Dy Drug Controller India West)
Dr Devendra Swarup (ret'd IVRI) FACC	Masphal Kry (Cambodia forest Dept)
Dr Mohini Saini (IVRI) TAC	Ung Sam Oeun (Cambodia Env Min)
Nic Masters (ZSL) TAC	Maruti Modgil (Intas Pharmaceuticals, India)
Laxman Poudyal (DNPWC Nepal)	Percy Avari (Bombay Vet College)
Dr PP Bhojvaid (CWW Haryana)	Satya Prakash (Neohuman Society, Jharkhand)
Sachin Ranade (BNHS)	Rohan Shringarpure (BNHS)
Mandar Kulkarni (BNHS)	Nikita Prakash (BNHS)
Hamid Tareh (Min Env. Iran)	Tulsi Subedi (Himalayan Nature, Nepal)
Alireza Hashemi (Birdwatching Soc Iran)	Khimanand Balodi (Uttarakhand, India)
Kiran Srivastava (Raptor Research & Conservation Fndn)	Rajiv KT Srivastava (CWW Tamil Nadu FD)
Dr Parag Deori (BNHS)	Shivangi Mishra (Lucknow Univ)
	Jose Tavares (Vulture Cons Fndn)
Via Skype-link with Islamabad, Pakistan:	
Naeem Ashraf Raja, (Dir Biodiversity, Min CC)	Dr Uzma Khan (WWFP, Pakistan) Board & FACC
Sheikh Faqeer Muhammad, Dir (Drug Licensing), Drug Regulatory Authority of Pakistan, Islamabad	Fauzia Malik, Programme Manager IUCN, Islamabad
Mehmood Akhar Cheema, (Country Representative IUCN, Pakistan)	Ghulam Qadir Shah (National Coordinator IUCN, Pakistan)

Apologies/unable to attend:
RD Jakati, NN Singh (MS CZA), Nick Lindsay (ZSL), Alex Hipkiss (RSPB), Chris Parish (TPF), BC Choudhury, Dr Anil Sharma (IVRI), Amarinder Kaur (PCCF, Haryana India), ABM Sarowar Alam (BNVRC), Bishwarup Raha, Ashok Bhagwat (BNHS), Usha Thorat (BNHS).

6. The Composition and Structure of SAVE with 2016 updates

Background

The consortium originally of eleven (now 17) organisations plus three Associates 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.

6.1 The Consortium

Chair: Professor David Houston.

Core Partners (Board):
BNHS India, Bird Conservation Nepal, National Trust for Nature Conservation Nepal, Bangladesh National Vulture Recovery Committee, BirdLife Cambodia, International Centre for Birds of Prey, Royal Society for the Protection of Birds and WWFP (Pakistan).

BCN ICBP NTNC Pakistan

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

Research & Govt (Project) Partners:
Indian Veterinary Research Institute, Bangladesh Forest Department, Environmental Research Institute, VULPRO, University of Pretoria.

Key Supporting Agencies to SAVE objectives:
Ministry of Environment, Forest and Climate Change (India)
Forest Department, People's Republic of Bangladesh
Ministry of Forest and Soil Conservation, Nepal
Ministry of Agriculture Forestry & Fisheries (Cambodia)
Haryana State Forest Department
West Bengal Forest Department
Assam Forest Department
Madhya Pradesh Forest Department
Central Zoo Authority (India)
Nepal Department of National Parks & Wildlife Conservation
Forestry, Wildlife & Fisheries department, Punjab Province
IUCN Bangladesh Country Office
Punjab Forest, Wildlife and Fisheries Department (Pakistan)
Sindh Wildlife Department (Pakistan)
Ministry of Climate Change (Pakistan)

SAVE Associates:
Arulagam, Corbett Foundation, Prokriti O Jibon

SAVE meets to review priorities each year, and has two sub-committees, which report to these meetings. The current 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 University, Dhaka, Bangladesh
Naresh Subedi – Senior Conservation Officer, NTNC Nepal
Toby Galligan – Snr Research Biologist, International Research Dept, RSPB, UK
Mark Taggart – Snr Scientist, NSAIDs expert, Univ of Highland & Islands, UK
Krishna Bhusal – Vulture Conservation Programme Officer, Bird Conservation Nepal
Campbell Murn – Head of Conservation & Research, Hawk Conservancy Trust (UK)

Chris Parish – Dir of California Condor reintroduction, The Peregrine Fund (USA)
Nic Masters – Head of Veterinary Services, ZSL & London Zoo
Chiranjibi Prasad Pokheral - Project Chief of NTNC's Biodiversity Conservation Centre, Nepal
Alam Sarowar – IUCN Bangladesh.

SAVE Fundraising, Advocacy and Communications Committee (FACC):
Ram Jakati (Chair) – Director Indira Gandhi National Forest Academy (retd)
Homi Khusrokhan – President of BNHS India
Devendra Swarup – Director IVRI (retd) & NSAIDs & veterinary expert
BC Choudhury – Senior Scientist at Wildlife Institute of India (retd)
Dr Uzma Khan – Technical Advisor & Vulture Conservation Programme head, WWFP
Narendra Pradhan – Director Bird Conservation Nepal
Nick Lindsay – Head of International Zoo Programmes, ZSL
Alex Hipkiss – International Funding Unit, RSPB (UK)
Anil Sharma – Principal Scientist & Incharge, Centre for Wildlife, Conservation, Management & Disease Surveillance, IVRI
Enam Ul Haque – Founder Bangladesh Bird Club
Ganga Thapa – National Trust for Nature Conservation, Nepal
Sum Phearun – BirdLife Cambodia
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

6.2 SAVE activities since 5th SAVE meeting

The Blueprint

- The Blueprint (Action Plan to 2025), finalised in Feb 2014 and then updated at the 4th , 5th and 6th SAVE meetings is being used more widely, for example the Government Regional Steering Committee has formally adopted it. The updated Blueprint version was included (as it is here) as part of the 5th SAVE report circulated in January 2016, also being made available on the SAVE website.
  Significantly, the Blueprint is now in the process of being incorporated as a key element of the Multi-species Action Plan for all old world vultures, which is currently being developed by The Convention of Migratory Species (CMS) Raptors MoU.

New Save Partners

- Following recommendations at last year's meeting, we have formalised three new Project Partners (all with strong research emphasis) and welcome them to SAVE. All three have had a long association and commitment to SAVE priority actions, and this step is recognition of this:
    1. **Environmental Research Institute** (Scotland, UK) where Dr Mark Taggart is based, and provides key expertise, and at does this at minimal subsidised costs.
    2. **VULPRO** has provided expertise (of Kerri Wolter) in catching, tagging methodology and crucially injured birds for safety-testing trials
    3. **University of Pretoria** is where Dr Vinny Naidoo is based providing a long history of expertise and safety-testing trials.
- One additional **SAVE Associate** has been added – the first from Bangladesh:
    - **Prokriti O Jibon Foundation** which has supported priority work and the founder, Muqeed Majumdar Babu, strongly publicises key messages in Bangladesh media
- FACC & TAC membership changes:
    - Krishna Bhusal takes over from Khadananda Paudel in his role as Vulture Officer of BCN on FACC (see full updated list p.16-17)

Website

- The number of SAVE button donations remained stable although the total received did decrease compared to previous years due to a lack of any larger donations during the year. However, note that the Hawk Mountain Sanctuary donation was a major additional source of new support.
- SAVE website refresh was carried out in August 2016 by Ian Fisher of RSPB and further improvements and additions are underway.

- The website number of visitors has remained fairly constant, mainly from India (60%), UK, USA, other South Asian countries. www.save-vultures.org . RSPB volunteer Nigel Bush continues to manage the website with main inputs from Chris Bowden.

www.save-vultures.org

Donate button. The number of online donations has remained similar, but no larger donations this year meant a major drop. Funds raised from the SAVE donate button 1 Nov 2015 – 1 Nov 2016 = £673 – compared to 2,079.33 (GBPounds) last year

Table 1: Total value of online donations via SAVE website 2015-2016

2015/16	GBP £	2016	GBP £	
Nov	14	May	(50)	
Dec	125	Jun	0	
Jan	75	July	50	
Feb	36	Aug	50	
Mar	75	Sept	91	
Apr	(50)	Oct	115	
Annual Total for SAVE year in GBPounds				673

7.1 Progress against SAVE objectives during 2016

Advocacy	
AD1	India
	Bangladesh
	Pakistan
	Nepal
AD2	India
	Bangladesh
	Pakistan
	Nepal
AD3	India
	Nepal
AD4	India
	Bangladesh
	Pakistan
	Nepal
AD5	India
	Bangladesh – N/A?
	Pakistan – N/A?
	Nepal
AD6	India
	Bangladesh
	Pakistan
	Nepal
AD7	India
	Bangladesh
	Pakistan
	Nepal
AD8	India
	Bangladesh
	Pakistan
	Nepal

Captive breeding	
CB1	India
CB2	India
CB3	India
CB4	Pakistan
CB5	Nepal
CB6	India
CB7	Bangladesh
CB8	India

Vulture Safe Zones	
VS1	*Completed*
VS2	*yellow*
VS3	*yellow*
VS4	*yellow*
VS5	India
VS6	Nepal
VS7	Nepal
VS8	*green*
VS9	*green*
VS10	*NA until 2019*
VS11	*green*
VS12	Pakistan *- green*
VS13	Nepal
	Pakistan
	India
VS14	*Completed 2014*
VS15	Bangladesh

Vulture Safe Zone Monitoring	
ZM1	India
	Bangladesh
ZM2	*TBC*
ZM3	Pakistan - *TBC*
ZM4	Nepal
	India
	Bangladesh
	Pakistan
ZM5	India
	Bangladesh
	Pakistan
	Nepal

Research & Monitoring	
RM1	*TBC*
RM2	India
RM3	Nepal
	Bangladesh
RM4	Pakistan green
	Bangladesh
RM5	India
	Nepal
RM6	India
	Bangladesh
	Pakistan
	Nepal
RM7	
RM8	
RM9	
RM10	No activity
RM11	No activity

Cambodia
CAM1
CAM2
CAM3
CAM4
CAM5
CAM6

Colour codes identify actions on track (green), some concerns (yellow) behind schedule (red)

Table 2: Progress of each region in the six key outputs over the last year.

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
DGDA	Directorate General of Drug Administration (Bangladesh)
DLS	Department of Livestock Services (Bangladesh)
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
WWFP	World Wildlife Fund Pakistan
ZSL	Zoological Society of London

Appendix I

SAVE Partners updates following Blueprint format

About these reports

The format follows that of the updated 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 indicate SAVE's assessment of the progress of each activity. The 2015 details are given after the overall activity heading in each case, followed by the report and updates.

The 2017 updated version of the Blueprint is given below in Appendix III.

Contributors are listed by initials for each action/country as follows:

AKS – Anil Sharma
AS – Dipu (Alam Sarowar)
CB – Chris Bowden
CM – Campbell Murn
CZA – Central Zoo Authority
BS – Bharathidasan Subbaiah
DS – Devendra Swarup
EH – Enam Ul Haque
GT – Ganga Thapa
JPJ – Jemima Parry-Jones
KB – Krishna Bhusal
KG – Kedar Gore
MaK – Mandar Kulkarni
MK – Monirul Khan
MT – Mark Taggart
MV – Munir Virani
NiP – Nikita Prakash
NM – Nick Masters
NP – Narendra Pradhan
PS – Phearun Sum
REG – Rhys Green
RS – Rohan Shringarpure
RJ – Ram Jakati
SR - Sachin Ranade
TG – Toby Galligan
VP - Vibhu Prakash
UK – Dr Uzma Khan

Advocacy Reports (AD1-8)

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

India – RJ/**CB/**VP/BS

2016: Propose restrictions on large vials to the Regional Steering Committee, governments and pharmaceutical industry. Establish the restrictions.

Following the persistent BNHS/SAVE efforts, especially in Delhi with related ministries, the 2015 gazetted ban remains in place as announced by the Health Ministry of human diclofenac injectable formulations in packaging larger than 3ml vials.

However, there is an ongoing legal challenge to the ban coming from two of the Indian pharmaceutical companies (notably Laborate) which has had four court hearings, and remains unresolved so far. The Indian Health Ministry with Arulagam, BNHS and SAVE inputs has been defending the ban in Chennai court hearings. (further updates at the meeting). Some companies are apparently using this hearing to continue their production of large vials although we believe that production across India has reduced substantially (this needs confirmation).

Bangladesh - **AS**

2016: Make contact and take steps to prevent licensing through drug authorities

The multidose human diclofenac is not produced in Bangladesh. The Government of the peoples Republic of Bangladesh has banned the diclofenac for veterinary use. BNVRC (Bangladesh National Vulture Recovery Committee) has circulated a letter to Ministry of Home Affairs to take necessary actions against illegal drug entering in Bangladesh from India. Multi-dose human diclofenac from India (Table 3) is present in different border areas of Bangladesh.
Extensive awareness campaigns were arranged among the veterinary practitioners, local people, cattle owner and other relevant stakeholder during the project period. 2nd undercover pharmacy survey reveals that multidose diclofenac only present in VSZ-2 which is also reduced to 7% from 24%. Presence of diclofenac has not found in VSZ-1.

Table 3: Status of the diclofenac in the pharmacy market

				1st under Cover Survey			*2nd Under Cover Survey*						*Price*
				Survey Area			*VSZ-1*			*VSZ-2*			
NSAIDs	*Brand Name*	*Manufacturing Company*	*Volume/ Concentration*	*% of drug in different store*	*Local Demand*	*Supply*	*% of drug in different store*	*Local Demand*	*Supply*	*% of drug in different store*	*Local Demand*	*Supply*	
Diclofenac (Inject	C-Fenac	CHEMIST Laboratories Ltd (Bangladesh)	50ml	6	High	High	-	-	-	0	-	-	100.00

ion)	Depain	FNF Pharmaceuticals Ltd (Bangladesh)	30ml	1	High	Low	-	-	-	0	-	-	70.00
	Vovenac	Pharma Crop Inc.(P) Ltd. (India)	30 ml	6	High	High	-	-	-	0	-	-	18
	Diclonec M	Amba Research Laboratories (India)	30 ml	2	Medium	Medium	-	-	-	2	Unknown	Unknown	20
	Diclofenac Sodium	Optima Healthcare (India)	30 ml	-	-	-	-	-	-	2	Unknown	Unknown	
Diclofenac (Bolus)	Diclomic Plus	PARADISE (Bangladesh)	100mg/tab	1	Low	Low	-	-	-	0	-	-	10/Tablet
	Parafenac	Herb Edge Health Care PVT. Ltd (India)	50mg/tab	2	Medium	Medium	-	-	-	0	-	-	1/Tablet

Pakistan – **UK**

2016: make contact and take steps to prevent licensing through drug authorities

Regarded as N/A as large vials of human diclofenac have not been marketed in Pakistan. But no progress.

Nepal: KB, GT

2016: seek ban:- Recorded 30ml Human Diclofenac in three shops in 2016 in eastern district and took all vials then alerted government officials (DLSO) regarding the legal provision on diclofenac use for cattle treatment.

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

2016: Seek ban – follow up on process initiated.

India/Nepal: VP/KG/BS/SR/MK + KB/NP + CB.

2016: Approach State Drug Controllers/Anim Husbandry Dir. to stop Govt supplies to vets & prohibit use by Govt vets (cf Delhi declaration) – plus all VSZ initiatives to do this.

Ketoprofen: For banning Ketoprofen in Nepal, a request letter and necessary reference documents were submitted to Department of Drug Administration (DDA) in 2015 then followed up but no decision was taken as justified by very low availability on the market. (Recommend that be effective banning same time India and Nepal because this is produce and imported from India.)

In India, no significant progress has been made with central Government on this – beyond the localized ban within tamil Nadu (more details to follow – but see last year's SAVE report).

Aceclofenac: No progress

Bangladesh- AS

2016: Enforce ban within VSZs as first step

According to the decision of 5th BNVRC (Bangladesh National Vulture Recovery Committee), the Ministry of Environment and Forests has issued a letter to the Ministry of Health to ban ketoprofen in Vulture Safe Zones as a pilot initiative. If this method works efficiently in the VSZs, initiatives will be taken to ban ketoprofen across the entire country. As per the recommendation of MoEF, to ban ketoprofen across the entire country, a national workshop has been arranged on "Impact of Harmful Drugs on Vultures" on 10 May 2016 with main keynote speaker, Dr. Nic Masters, Head of Veterinary Science, ZSL-London Zoo. The summary of this meeting has been sent to MoEF and the process of banning the ketoprofen is across the country is underway.

Aceclofenac is not popular in Bangladesh, so there is no initiative to ban it.

All + Pakistan: UK + VP/**KG**/BS/SR/MK + KB/**NP + CB**

2016: Discuss the issue with the Regional Steering Committee (RSC), governments and pharmaceutical industry using research results.
SAVE to make more materials available on website specific to these NSAIDs.

Materials were successfully compiled and made available on the SAVE website in October 2016.

Follow up is still required through RSC to take this forward.

Pakistan: The process of dialogue was already initiated with the representatives of Drug Regulatory Authority managed by the Ministry of National Health Services, Government of Pakistan. Several letters were also sent to the representatives of Ministry of National Health Services and Ministry of Climate Change in this connection. No significant progress was made to impose a ban on the veterinary use of ketoprofen and aceclofenac at the national scale so far.

A research paper carrying an update of the vulture conservation work of WWF-Pakistan including both *ex-situ* and *in-situ* initiatives, existing scale of usage of diclofenac and other harmful NSAIDs for veterinary purposes, population status of *Gyps* vultures in Pakistan, existing and potential Vulture Safe Zones in the country, etc. was presented at an international symposium hosted by the IUCN Pakistan in Karachi. This symposium also brought an opportunity to draw attention of the participating relevant government institutions and policy makers towards the key challenges associated to achieve a complete ban over the manufacturing and usage of harmful NSAIDs and protection of vultures in Pakistan. Participants of the event included representatives from the Federal Ministry of Climate Change, Provincial Wildlife Departments, Drug Regulatory Authority, National Vultures Recovery Committee, relevant international experts, etc.

Furthermore, samples of all unsafe NSAIDs including aceclofenac, ketoprofen, and flunixin were collected from local markets and shared with the RSPB which is working to develop dossier for the Government of Pakistan to impose a ban on their manufacturing and usage.

[Given that media can play an instrumental role to lobby and address the immediate need of vulture conservation and impose a ban on the usage of harmful NSAIDs, various leading newspapers and TV Channel were engaged in the exposure visits to the Vulture Safe Zone and *Changa Manga* Conservation Centre on different occasions. A two-day exposure visit for the environmental journalists from the leading daily newspapers of Pakistan including the Dawn, the News, Business Recorder, APP, *Ferozan* Magazine, etc. was organised to the Vulture Safe Zone in *Nagar Parkar* to highlight key aspects of the Vulture Safe Zone related initiatives. Another exposure visit for the journalists to the *Changa Manga* Conservation Centre was organised to give an overview to the *ex-situ* conservation work and its importance to support efforts to achieve a viable population of White-backed vultures.]

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.

2016 – SAVE writes protocol and makes available on SAVE website. TG/CB
Provide technical assistance and advice on the operation of the procedure, using information from monitoring. Engage with the pharmacy industry to do this.

India/Nepal - VP/CB/AKS
This is now progressing. Further updates will be presented at the meeting.

Funding has been allocated by the Indian Government and permissions granted for the use of the proposed site for the safety-testing in Haryana as well as for the capture of Himalayan Griffons. Haryana Forest Department, IVRI and BNHS leading.

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.

2016 – SAVE (all partners coordinated by RSPB) writes protocol and make this available on SAVE website (for comment)

- *Provide technical assistance and advice on the operation of the procedures, using information from monitoring. Engage with pharmaceutical industry to do this.*
- *Discuss with NVRCs*

CB/RJ/VP/AKS/DS (+ UK, + KB + AS)

India/Nepal - **CB**/RJ/VP/AKS/DS

This process (for India at least) is directly linked to the establishment of the safety-testing mechanism, which is entrenched within Government. See AD3 above. The precise mechanism once that happens remains in need of clarification. No direct contact with the industry is envisaged on this until the process has progressed.

Bangladesh – AS

No activity reported.

Pakistan - UK No activity reported but see AD2 above.

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.

2016 – Promote funding of IVRI safety-testing and discuss revision of list of drugs to test. Also provide encouragement & technical advice. VP/AKS/DS/CB

India/Nepal - **CB/**VP/AKS/DS - See AD3 above

Bangladesh - AS No activity reported. Awaiting outcomes from India?

Pakistan - UK No activity reported. Awaiting outcomes from India?

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

2016 – Initiate discussions with RSC, national committees, governments & pharma industry. Establish procedures. CB/RJ/VP/AKS/DS (+ UK, + KB + AS)

India/Nepal/Pakistan - CB/VP/AKS/DS
No progress. See AD3 above and note that NSAIDs Alert Symposium at SAVE meeting is in response to this.

Bangladesh – AS 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.

2016 - Establish system within SAVE. Operate system & provide advice to RSC, national committees, governments & pharma industry.
2016 – Add SAVE website feature on this (includes updates on pharma surveys)
All Partners to alert SAVE on any changes & post on website.

REG/TG/AKS/VP/MT/AS/KB/UK

India/Nepal/Pakistan/Bangladesh - TG/MT/REG/AKS/AS
Increasing attention is being given to this point, with the NSAID Alert symposium at 6th SAVE meeting and new attention being given on the SAVE website with the NSAID dossiers now available..

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

2016: Contact & sensitise pharma industry (approach major co.s for support). Sensitise drug regulation authorities in each country to take appropriate steps to favour production of well formulated veterinary meloxicam.

CB/RJ/VP + any inputs please from AS, KB, UK.

India/Nepal - **CB**/RJ/VP/KP

Following the February 2015 work contacting Indian pharma companies, (see 5th SAVE report) there has been no proactive follow-up during 2016. It is hoped that the companies are taking this forward themselves and we will (need to) update on how this is developing in future with further proactive contact with the companies.
Note that no activity was reported for Nepal on this issue.

Bangladesh -AS

Two of the leading drug companies in Bangladesh, RENATA Limited and ACME Limited, have already shown their interest and commitment towards vulture conservation after advocacy initiatives were taken from the project to engage the private sectors and pharmaceuticals companies.

RENATA has been producing a 'stronger' formulation of meloxicam (brand name: Melocap) based on the drug formulations and protocols provided from the project.
RENATA has disseminated a leaflet to promote safe drugs for vultures. ACME has encouraged the use of safe drugs by printing a slogan on the vial of their veterinary drug and provided subsidies on free meloxicam distribution programs.

RENATA has eagerly agreed to support all kinds of conservation efforts regarding vultures including support to the Vulture Feeding Station.

Pakistan - UK

Testing of six different meloxicam formulations from Pakistan in the UK have shown 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.

Other pharmaceuticals including 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. No further progress could be made afterwards.

Conservation Breeding Reports (CB1-8)

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

2016 - Maintain the captive population in good health. Produce as many fledglings as possible of all three species, using artificial intervention as appropriate.

VP/JPJ/NM/MaK/NiP

VCBC, Pinjore, Haryana

Vultures at the centre

There are 226 vultures at the centre including 118 Long-billed Vultures, 75 White-backed Vultures and 33 Slender-billed Vultures.

a. Brief cause of deaths (PM Results)

1. H39, Long-billed vulture. The vulture was housed in colony aviary of the centre. On 26th December it was observed with an injury in the wing. On closer examination it was found to have broken its humerus bone. The vulture was immediately shifted to hospital aviary and was under continuous observation and treatment. On 27th December a surgery was performed on the vulture. The surgery went off well and the bird regained consciousness after surgery. Post surgery the vulture was kept in a thermo controlled room under observation. The vulture looked normal and alert until midnight. However; in the morning of 28th December it was found dead.

2. E24, Long-billed vulture This bird died on 23rd June 2016.A post-mortem was carried out the same day and it was found to be suffering from a chronic infection as liver showed remarkable enlargement with pale discolouration and necrotic foci. The necrotic plaque on mouth indicated both deficiency of Vitamin A or Trichomoniasis which encouraged infection by other organism. Death of the bird was due to an infection but further conclusion could be drawn only after getting the reports from the laboratory of samples submitted.

Details of breeding managements (any artificial incubation etc) and synopsis of outcomes

A total of 39 nestlings including 9 White-backed vultures, 26 Long-billed vultures and 4 Slender-billed vultures fledged successfully.

Plans/requirements for development, additional aviaries, incubators or other facilities

JPJ: VCBC Pinjore is doing well, the change over from getting the birds to double clutch, removing the first egg and allowing the parents hatch and rear the second egg, to removing the first egg and then replacing the second egg with the first chick, has significantly increased the hatchability (and productivity) of the second clutch as anticipated. Thus the number of birds produced has been increased.

Also a priority to be done is an exchange with vultures between the centres. The blood lines at Pinjore are now close to being over represented. An exchange with WBV's from Buxa will improve the breeding potential and reduce the risk of inbreeding.

We are considering reducing the breeding at Pinjore for the 2017/18 breeding season by allowing the birds to hatch and rear their own young and not doing double clutching or artificial incubation that year. Not only will that reduce the number of young produced, but will also give us an idea of how good the parents are at natural hatching and rearing. Many that had not reared before have now done so when given a strong healthy chick. By letting them have a chance to do the whole breeding cycle with no interference, we will learn more about these birds.

At Pinjore, we have a number of disabled OWBVs. The females do breed and so are valuable to the colony, however the males are unable to breed, so it was thought that the best use of these three birds is to place them into the release aviary to use as decoy birds to bring back released vultures to the release aviary and food supplies. The 3 birds in this category - were shifted from Colony aviary to release aviary on 30th September 2016.

We need to ensure that ALL the colony aviaries at all centres have a balanced ratio of males to females. A new biologist was hired for focusing on molecular sexing of vultures so that by next August all the birds in all the colony aviaries at all centres in India are sexed - and those that are over represented by males or females will be balanced by removing the excess sexes and replacing them with the right ratio. This is very important so that we do not waste colony aviary space. This would also be the ideal time to exchange birds within the three older centres to make sure that we have the optimum blood lines and no potential inbreeding.

The release program was initiated by releasing two Himalayan griffons housed in the pre-release aviary on 3rd June 2016.

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

During 2015-16, the project received a total amount of Rs. 153. 86 Lakhs for running the centre of which Rs. 107.36 lakhs were received from MoEF&CC and Haryana State Forest Department through the Central Sponsored Species Recovery Programme, Rs. 17.25 Lakhs from Haryana Forest Development Corporation and Rs. 29.24 from Royal Society for the Protection of Birds, U.K.

During 2015-16, the money was also received for the release and monitoring of vultures. A large part of funding Rs. 18.9 Lakhs came through MoEF&CC and Haryana Government through the Centrally Sponsored Scheme of the Species Recovery Programme. The RSPB funded the purchase of two vehicles for the project.

A total funding of Rs. 192 Lakhs is sanctioned by the Ministry of Environment and Forests, Government of India from Recovery Programme for saving critically endangered species and habitat under Centrally Sponsored Scheme - Integrated Development of Wildlife Habitats-Haryana during 2016-17. The funding will be shared in the ratio of 60:40 by Central and State

Governments. The Royal Society for the Protection of the Birds, U. K. would be approached for bridging the funding gap of Rs. 34 Lakhs for the year 2016-17.

List any related publications during the period (or previous) in relation to breeding: Nil

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

2016 - 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.

VP/JPJ/NM/SC/SR

Vultures at the centre

There are a total of 114 vultures housed at the centre, of which 75 are Oriental white-backed, 16 Slender-billed and 23 Long-billed.

Brief cause of deaths (PM Results)

One sub-adult White-backed vulture (Ring No RZ) died on 13th September 2015 in holding aviary 7. The bird was found dead in the aviary at 6 am in the morning. The post mortem was carried out on 14th September 2015. The cause of death appeared to be cardio respiratory failure. Tissue samples for further investigations were taken and stored and were being processed.

Details of breeding managements (any artificial incubation etc) and synopsis of outcomes

A total of 6 eggs hatched in the breeding season of which 4 were of White-backeds and 2 of Long-billed vultures. All 6 nestlings fledged successfully. 3 nests were built by Slender-billed vultures but none of them were successful.

Plans/requirements for development, additional aviaries, incubators or other facilities

JPJ: There are more than 40 birds in each of the two existing colony aviaries which is beyond the carrying capacity. Hence, two colony aviaries are urgently needed at the centre.

Once more aviary space is achieved and the number of birds reduced in the colony aviaries, we need to do two things:

1. We need to ensure that ALL the colony aviaries at the centre have a balanced ratio of males to females. This is very important so that we do not waste colony aviary space. This would also be the ideal time to exchange birds within the three older centres to make sure that we have the optimum blood lines and no potential inbreeding.
2. We then need to instigate artificial incubation and double clutching at Buxa. The issue of lightning strikes at both centres is a serious issue for incubation equipment (also the CCTVs), but there are ways to overcome or at least work around this – accepting that there may be some additional related costs. This, plus making sure that we do not have

over-crowded colony aviaries, and that the sex ratio is even, should improve the breeding success at the Assam and West Bengal centres substantially.

Funding (sources and scale) available and required for the above

During 2015-16, a total of Rs. 72 Lakhs were spent on running the centre. The major expenses were on vulture food. There was increase in the price of goat and buffalo meat which resulted in little over-expenditure in vulture food. There is an urgent need for a colony aviary at the centre but there was no money in the budget.

The proposed budget for 2016-17 is Rs. 125.24 Lakhs for the centre. Apart from the routine expenses for running the centre, there is an urgent need for construction of a colony aviary in the centre as there are over 115 vultures of three species but there are only two aviaries. The capacity of one aviary is not more than 30 birds.

A budget of Rs. 35 Lakhs is proposed for the aviary which will be of 110x40x20' dimension. It will have galleries on both the sides and one in the middle. It would be able to house 30 vultures of one species.

An application for funding was sent to the Ministry of Environment and Forests, Government of India through the West Bengal Forest Department but the money was not sanctioned so far. The money is also requested from the RSPB, U.K. and funds for at least the running cost will be released soon.

List any related publications during the period (or previous) in relation to breeding: Nil

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

2016 - 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.

VP/JPJ/NM/SR

Vultures at the centre

There were 90 vultures of two species (54 White-backed and 36 Slender-billed) at the centre.

Brief cause of deaths (PM Results)

No mortality was recorded

Details of breeding managements (any artificial incubation etc) and synopsis of outcomes

This year, 7 White-backed and 2 Slender-billed vultures fledged successfully. Thus, a total of 18 White-backed and 10 Slender-billed vultures hatched in captivity and were raised successfully during the last 3 years. There is no artificial incubation facility at the centre.

Plans/requirements for development, additional aviaries, incubators or other facilities

JPJ: One additional colony aviary is required urgently so that the two species of vultures could be kept separately for breeding. More than 40 birds are housed in the colony aviary. One holding aviary, a hospital aviary and a staff room are also required for the centre.

Funding (sources and scale) available and required for the above

A total of Rs 58.58 Lakh was spent on running of the centre. The entire funding was received from RSPB.

A budget of Rs. 116 Lakhs prepared for the running of the centre as well as construction of colony aviary. An application for funding was sent to the Ministry of Environment and Forests, Government of India through the Assam Forest Department but the money was not sanctioned so far. The funding request has been sent to RSPB, U.K and we are hopeful of getting at least the running cost.

List any related publications during the period (or previous) in relation to breeding: Nil

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

2016 - 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.

UK/CM

The birds at the *Changa Manga* Conservation Centre had five pairs made during 2015-16 breeding season of which three pairs attempted to breed. One egg incubated but did not hatch. The two other pairs each produced chicks that hatched in February. This marks the first successful breeding of the species in captivity in Pakistan. Both chicks are now over eight months old and continue to grow well with other birds at the facility (Fig. 1). Both chicks have been ringed for individual identification. One of the successful breeding pairs laid fertile eggs in previous breeding seasons, and although the eggs hatched, the chicks only survived for a short time in previous years.

All birds at the facility are in good condition and exhibit expected normal behavioural and feeding patterns. Bird behaviour is monitored and recorded on data collection sheets five times a day at two hourly intervals from 7am to 3 pm. Transfer of any birds to a release programme is not expected or planned until at least 2019. The facility comprises of one main aviary, four

smaller aviaries and surrounding paths, livestock enclosures and boundaries. The birds are fed six days a week to provide sufficient food to the fast growing chicks; however, otherwise there are one to two fasting days in a week.

The facility breeds goats and rabbits to provide a sustainable food supply. These include a herd of goats comprised of four male, and eight females as well as a small breeding group of 25 rabbits. Regular vaccination and deworming of these animals is also carried out to maintain a health stock. 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. Moreover, there are regular visits of a veterinarian from the Lahore Zoo for the health checks of food animals and also the birds.

This breeding season five pairs have been formed (2016/2017) so far. Three eggs have been laid; two by the pairs which bred successfully during last breeding season in addition to a third pair.

A few photographs of the two chicks at the *Changa Manga* Conservation Centre during various stages of their growth

CB5 Conservation breeding of OWBV at VCBC Chitwan (Nepal)

2016- Maintain the captive population in good health. Produce as many fledglings as possible by natural methods.

Dr. Chiranjibi Prasad Pokheral/ Bed Bd Khadak/ Dr. Amir Sadula/ Krishana Pd Bhusal/Jemima Parry-Jones/ Dr. Nic Masters

There are a total of 57 Vultures (including a juvenile bird) in the VCBC. Overall, the health status of the vultures was found to be normal this year. There were two clinical cases and one mortality. The annual health checkup revealed none of birds required immediate attention. There was an increase in pair formation and nesting behavior, though the number of eggs laid was less compared to the previous year. There was a single hatching of an egg this year. The juvenile vulture hatched last year was doing well.

Vultures in the VCBC

Altogether there are 57 vultures in all aviaries. The numbers of the vultures in different aviaries are as follows (table 4):

SN	Aviary	No of vultures	Remarks
1	Colony aviary A (Old colony aviary)	26	
2	Colony aviary B (New colony aviary)	24	
3	Holding aviary A	4	All females held for release
4	Holding aviary B	3	All females held for release
5	Quarantine Aviary (Sauraha)	0	

Table 4:Number of vultures in aviaries of VCBC

Health Status: There were 2 clinical cases recorded this year. RF and newly hatched chick were sick this year.

1. On 14 July, a vulture chick which hatched in 2016 was injured in an attack by adult birds in colony aviary A. The bird had injuries to its head and eyes. The bird was treated with oxytetracyclin and meloxicam for the first day and enrofloxacin and meloxicam for the next 4 days. The Chick died on 20 July.
2. On 19 October, RF vulture from colony aviary A was found sick and unable to fly to a perch. It had difficulty to consume food. The vulture was isolated in the passage in the front of colony aviary A.

Mortalities

There was one mortality in the center: the newly hatched chick of 2016 was injured in an attack from an adult bird on 14 July 2016 and found dead on 20 July 2016. Post mortem examination revealed that there were injuries to head and eyes. More lesions were observed; sub-cutaneous hemorrhage over thigh muscle, pericardial hemorrhage, severe enteritis and hemorrhagic pneumonitis.

Molecular Sexing result of Vultures of VCBC

Molecular sexing of the vultures was performed in the Centre of Biotechnology, Agriculture and Forestry University Rampur using blood samples collected in the annual health check-up in 2014. Of 58 individuals, 32 were females and 26 were males. For the molecular sexing, F37 (female) and F40 (male) were used as a control (successful pair). Now at the centre we have 57 birds, of which 32 are females and 25 males, as we lost F40 between health check-up and molecular sexing. Molecular sexing was performed by Mandar Kulkarni from BNHS, Dr. Amir

Sadaula from NTNC-BCC, Dr. Himal Luitel from AFU supported by Dr Bikash Deubanjar from BCN.

Health Check

Annual health checkup was conducted on 17-18 September 2016. All the birds received a general physical examination and were found to have normal health status. Cases of bumble foot were not observed on any birds during the health check-up of this year. The general health check-up did not reveal any clinical signs of disease in the vultures. The annual health checkup was performed by Dr. Navaratna Pradhan and Dr. Tulsi Pandey (BCN) and supported by Krishna Pd Bhusal (BCN), Kalpana Thapa (NTNC-BCC), Ranjan Chaudhary (NTCN-BCC), Suraj Harijan (NTNC-BCC), Jemima Jones from ICBP and Chris Bowden from RSPB. With excellent work from the above team the vultures were moved around to get the right sex ratio. Now the vultures are kept in a 1:1 sex ratio in both aviaries as: - Colony A-13 Pairs, Colony B- 12 Pairs according to the results of molecular sexing results. The extra six females and one unknown individual were separated to a holding aviary with the aim to release them in the first year of Vulture Release Program 2016-2019.

Behavioral Status, Breeding Season Spring 2016

There was an increase in pair formation and nesting behavior though the number of eggs laid was less compared to the previous year. There was a single hatching of an egg this year. Three eggs were laid on the floor and four laid on the nest, but these fell down just after being laid. The status of the breeding has been shown in table 5.

Egg	Colony Aviary	Wooden cot	Location	Pair formed	Date of egg laying	Incubating bird	Date of abandon
1	B	1	East	D88+RC	12th Dec 2015	Both	18th Dec.
2	B	2	North	SG+HF	3rd Nov 2015	Both	24th Nov. (After 22 days)
3	B	3	East	-	28th Nov 2015	F42(B)	18th Dec. (After 8 days)
4	B	4	East	F44 B+F30 B	29th Nov 2015	Both	18th Dec. (After 58 days)
5	B	M1	East	D21+D41	3rd Dec 2015	TC(R)	18th Dec.
6	B	5	East	RC(R)+ F49(B)	27th Dec 2015	Both	28th Feb. (After 64 days)

7	B	M2	East	F19B +RF red	15th Jan 2016	-	Hatched (Chick observed after 61 days)
8	B	A4	East	-	14th Jan 2016		15th Mar. (After 60 days)
9	A	M5	North west	-	12th Dec 2015		19th Dec. (After 31 days)
10	A	5	North west		26th Jan 2016		18th Feb.

Table 5: Status of pair formation, and eggs laid by vultures at VCBC, Nepal (2016)

Summary

Annual health check-up was conducted on September 17-18, 2016. The general health check-up revealed no any clinical signs of disease and injury on vultures.

Previously these vultures were kept randomly with unknown sex ratio in two colony aviaries. During the health checkup make sure the 1:1 sex ratio on both aviaries as:- Colony A-13 Pairs, Colony B- 12 Pairs. The extra six female and one unknown individual separated to holding aviary which will aims to release on first year as a part of Vulture Release Program 2016-2019.

During the breeding season of 2015, fourteen eggs were laid, among these one was laid on sand floor. Two eggs were not incubated by vultures. Five eggs were broken on the nest for unknown reasons. Among the rest one chick was hatched by pair F19B + RF in February 2016 at Colony Aviary A.

On 14 July 2016 the hatched chick was attacked by adults with severely injured, right eye was almost damaged along with anterior and posterior slight wound at neck. Then the vulture was separated and treated but unfortunately on 20 July 2016, this injured vulture was dead.

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

Conservation breeding of OWBV and LBV at CZA centres

Four Central Zoo Authority supported Vulture Conservation Breeding Centres have been established within the country. They are 1. Sakkarbaug Zoo, Junagadh, Gujarat 2. Nehru Zoological Park, Hyderabad, 3. Nandan Kanan Zoo, Bhubaneshwar, Odisha 4. Muta Zoo, Ranchi, Jharkhand.

Population and breeding success at the centres

1. Sakkarbaug Zoo, Junagadh, Gujarat

The centre houses a total of 59 vultures of which 54 are White-backed vultures and 5 Long-billed vultures. Two eggs of White-backeds hatched and fledged successfully in the breeding season of 2015-16.

2. Nehru Zoological Park, Hyderabad, Andhra Pradesh

The centre took off with 5 adult White-backed vultures. Six White-backed vultures were acquired from Sakkarbaug Zoo in 2014 resulting in 11 vultures. They have not recorded any successful fledging till date although eggs have been laid by a pair since last 2 years.

3. Nandan Kanan Zoo, Bhubaneshwar, Odisha

Centre is ready with all required facilities to house birds. An MOU is to be signed with BNHS for transfer of vultures from VCBC Assam to Odisha

4. Muta Zoo, Ranchi, Jharkhand

Centre is ready with all required facilities to house birds. An MOU is to be signed with BNHS for transfer of vultures from VCBC Pinjore to Ranchi.

2016 - Transfer of captive-bred OWBV and LBV from VCBC Pinjore.
VP/CZA

A total of 25 vultures of two species, the White-backed and Long-billeds were transferred from VCBC Pinjore centre to Madhya Pradesh in two batches of 10 birds (6 Long-billeds and 4 White-backeds) and 15 birds (10 Long-billeds and 5 White-backeds) on 16th June 2016 and 6 October 2016 respectively. Criteria of selection of birds depended on 1.

Non relatedness of the birds with the already present birds at VCBC, Bhopal, 2. Some adult birds to increase the chances of breeding at the centre 3. Two active breeding pairs were included to initiate breeding. This was done for better genetic management of the captive population.

CB7 Conservation breeding of OWBV in Bangladesh.

2016 – [since this (a breeding centre) is not anticipated, any updates on captive birds etc will still be good to update here]
AS

There are 53 vultures (4 White-rumped vultures, 47Himalayan griffon vultures and 2 Cinereous vultures) present in different zoos and safari parks of Bangladesh. No update on the conservation breeding program in Bangabandhu Safari Park and Dhaka Zoo.

CB8 Conservation breeding of OWBV at VCBC Bhopal (India).

2016 - Establish and maintain the captive population in good health. Produce as many fledglings as possible initially by natural methods.

VP/RS/JPJ/NM

There are a total of 46 vultures housed at the centre of which 16 are White-backeds and 30 Long-billed vultures

Brief cause of deaths (PM Results)

No mortality recorded

Details of breeding managements (any artificial incubation etc) and synopsis of outcomes

There has been no breeding so far as most birds are still not adults. The centre is now in its 3rd year of running and 60% of the birds housed are juveniles. During this year 2016-17, there is some evidence of birds pairing up and nest building.

Plans/requirements for development, additional aviaries, incubators or other facilities

A total of 25 vultures of two species, the White-backed and Long-billeds were transferred from VCBC Pinjore centre in two batches of 10 birds (6 Long-billeds and 4 White-backeds) and 15 birds (10 Long-billeds and 5 White-backeds) on 16th June 2016 and 6 October 2016 respectively.

Criteria of selection of birds was 1. Non relatedness of the birds with the already present birds at VCBC, Bhopal, 2. Some adult birds to increase the chances of breeding at the centre 3. Two confirmed breeding pairs to initiate breeding this year itself.

The construction of second colony aviary is complete. The budget proposal has been given for setting up incubation facility and the funding will come through next year from the state government.

Funding (sources and scale) available and required for the above

The funding is assured by the Madhya Pradesh Forest Department.

List any related publications during the period (or previous) in relation to breeding: Nil

Vulture Safe Zone Implementation Reports

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

Planned action: Completed – no report required (VP/TG to add only if relevant)

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

2016: Develop capacity in pVSZs. *(please describe the number of staff in each VSZ initiative, their levels of training/expertise & any wider networks of relevant stakeholders who have engaged in the VSZ work – max half-page per VSZ)* **VP**/MaK/SR/KG/BS

Vulture Safe Zone Project, Uttar Pradesh (BNHS)

The Vulture Safe Zone project in Terai region of Uttar Pradesh is a collaborative project of Uttar Pradesh Forest Department and Bombay Natural History Society and is funded by Royal Society for Protection of Birds. It is a trans-boundry project with Nepal and the Bird Conservation Nepal is working of the project in the Nepal part of the Vulture Safe Zone.

This project was initiated in April, 2016 when the BNHS team started working in the area and was based at the Sitapur. This brief report covers ongoing activities of the project from April-December, 2017. The area covers the mainly the terai districts of Lakhimpur Kheri, Bahraich, Bhinga, Siddharth Nagar, Maharajganj, Gonda, Basti, Balrampur, Pilibhit, Sitapur, Gorakpur.

The project has two field stations. One is at Sitapur and the another at Dudhwa National Park. The team is strategically based at Sitapur to cover targeted advocacy and awareness programmes and at Dudhwa National Park to cover the monitoring of vultures in and around Dudhwa National Park and Katerniaghat Wildlife Sanctuary. The accommodation at Dudhwa National Park is provided by the U.P. Forest Department.

The Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden of Uttar Pradesh is the Project leader and State Drug Controller is the advisor to the project. The day to day running of the project is carried out by Bombay Natural History Society; Dr. Vibhu Prakash, Principal Scientist and Dy. Director, Bombay Natural History Society is the Project in-charge. The project team comprises of Dr. Mandar Kulkarni, Coordinator, Ms. Alka Dubey In-charge, Mr. Virat Singh and Mr. K P Upadhyay, Research biologists who are assisted by Mr. Ram Krishna, Driver cum assistant and Mr. Ranjit Pandey, Field assistant.

The major objective of the project is conservation of the remnant population of critically endangered *Gyps* vultures viz. White-backed vulture and Long-billed Vulture in the area which is close to Nepal, by conservation action which involves targeted advocacy and awareness programmes for removal of diclofenac from livestock treatment which is responsible for crash in vulture population. The evaluation of conservation actions is done by monitoring the prevalence

of diclofenac and the vulture population. The details of the activities carried out during the year are highlighted as follows.

1. Targeted advocacy

The main objective of targeted advocacy was to sensitize the decision makers about vultures decline and urging them to help the cause of vulture conservation by issuing instructions to their sub-ordinates and also to the related Government departments to abide by the ban on veterinary use of diclofenac. A summary of the advocacy meetings conducted over the last year is given below.

Table 6: Number of advocacy meetings carried out with various departments over the last year

Sr. No.	Department	Number of meetings
1	Forest Department	127
2	Animal Husbandry Department	74
3	Food and Drugs Administration	104
Total		305

Table 7: Number of advocacy meetings carried out with various departments over the last year (Department wise break up)

A. Forest Department		
Sr. No.	**Officer designation**	**Number of meetings conducted**
1.	Forest Minister	4
2.	Principal secretary	7
3.	Special secretary	6
4.	Secretary	8
5.	PCCF	5
6.	PCCF (WL)	16
7.	7 Regional CCFs	15
8.	DFO- sitapur	20
9.	DFO – Lakhimpur	8
10.	DFO- Pilibhit	2
11.	DFO – Shajahanpur	6
12.	DFO- Gonda	5
13.	Director – DNP	7
14.	DNP- Range officers	3
15.	Director kisanpur WLS	3
16.	Director katerniaghat	2
17.	Dy. Director - DNP	10
B. Animal Husbandry Department / Livestock Development Board		
1.	Principal secretary	2
2.	Special secretary	2
3.	Secretary	5
4.	Director	12

5.	CEO – LDB	20
6.	Director disease control	9
7.	CVO- Pilibhit	2
8.	CVO – Shajahanpur	7
9.	CVO- Gonda	3
10.	CVO – behriach	3
11.	CVO – Gorakhpur	2
12.	CVO- Lakhimpur	3
13.	IVRI –Director	2
14.	CVO- maharajganj	2

Vulture Safe Zone Project, Bundelkhand, Madhya Pradesh (BNHS)

The Vulture Safe Zone project in Bundelkhand, Madhya Pradesh is a collaborative project of Madhya Pradesh Forest Department and Bombay Natural History Society and is entirely funded by Rio Tinto India Pvt. Ltd. This project was initiated in April, 2014; wherein the BNHS team started working in the area from May, 2014 and were based at the Bunder camp of Rio Tinto Exploration India Pvt. Ltd. Now the project is more than 2 years old and has successfully established the baseline information on population and distribution of vultures in the area. This report covers the ongoing activities of the project from January-December, 2016.

Currently the project is based at Damoh, the team working at Bunder camp shifted to Damoh in August, 2015 for project expansion and for facilitating monitoring the conservation work from an independent work base. The Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden of Madhya Pradesh is the Project leader and State Drug Controller is the advisor to the project. The day to day running of the project is carried out by Bombay Natural History Society; Dr. Vibhu Prakash, Principal Scientist and Dy. Director, Bombay Natural History Society is the project in-charge. The project team comprises of Dr. Mandar Kulkarni, coordinator, Mr. Yogesh Kumar, Mr. Arindam Aditya, Mr. Sandeep Chouksey and Mr. Ashish Kambale, research biologists who are assisted by Mr. Mahesh Sen, driver cum assistant and Mr. Rafik Uddin, field assistant.

The major objective of the project is conservation of the extant population of critically endangered *Gyps* vultures viz. White-backed and Long-billed Vulture in the area by conservation action which involves targeted advocacy and awareness programmes for removal of diclofenac from livestock treatment which is responsible for decline in vulture population. The evaluation of conservation action is done by monitoring the prevalence of diclofenac and the vulture population. The details of the activities carried out the year are highlighted as follows.

Targeted advocacy

The main objective of targeted advocacy is to sensitize the decision makers about vultures decline and requesting them to help the cause of vulture conservation by issuing instructions to their sub-ordinates and related Government departments to abide by the ban on veterinary use of diclofenac. A summary of the advocacy meetings conducted over the last year is given below.

Table 8: Number of advocacy meetings carried out with various departments over the last year

Sr. No.	Department	Number of meetings
1.	District Administration	11
2.	Forest Department	21
3.	Animal Husbandry Department	16
4.	Drug Administration	12
Total		60

Targeted awareness

The main objective of the targeted awareness is to sensitize the end users, drug sellers and other stake holders about vultures and their important role in conservation of vultures by not selling or using human formulations of diclofenac for treating livestock. A Summary of the awareness programmes conducted over the last year is given below.

Table 9: Number of people targeted for vulture awareness through one to one meetings and group meetings in villages

Sr. No.	Number of villages approached for awareness	Number of people made aware
1.	242	10059

Table 10: Number of awareness programmes arranged in the last year

Sr. No.	Number of Awareness Programmes	Number of people made aware
1.	11	665

Evaluation of the Conservation action

1. Monitoring the population of vultures

The vulture population in the area is monitored to evaluate the rate of decline in the vulture population. This could only be studied and monitored if we have good baseline information on the population of vultures and it is monitored periodically. Therefore, information on population of White-backed Vulture and Long-billed Vulture was collected at the beginning of the project and thereafter it is being monitored every month. Following three methods are followed for monitoring the population of vultures in the area.

a. Road transect census method
b. Nesting census method
c. Absolute counts at the carcass dumps

The trends in the population of both Long-billed vulture and White-backed vulture suggest that the population is declining however in the recent months the population of both the species was found to be more or less stable.

Monitoring the prevalence of diclofenac in the area

Establishing the prevalence of diclofenac in livestock treatment and subsequently monitoring the decrease in the prevalence of diclofenac because of advocacy and awareness programmes, are crucial to the success of the project. The prevalence of diclofenac is monitored by following the undercover pharmacy surveys and cattle carcass sampling. The details of this method are highlighted as follows.

a. Undercover pharmacy surveys

The undercover pharmacy surveys was carried out by going to pharmacy stores which sell veterinary drugs by a local undercover person acting as a cattle owner. He would then ask for an inject able painkiller for treatment of his injured cattle for pain and inflammation. The first drug offered is purchased by the surveyor. Likewise the complete vulture safe zone area is surveyed. This survey was carried out 3 times in the last 2 years of the project and it was recorded that the prevalence of diclofenac decreased from 50% to 20% pharmacies.

b. Cattle carcass sampling

Cattle carcass sampling is another method to find out the prevalence of diclofenac in domestic ungulate carcasses which are available for vultures to feed. This is done by collecting liver sample from dead animals across the vulture safe zone. The team has collected 800 liver samples from as many cattle carcasses and they all be tested for estimation of diclofenac.

Evaluation of impact of vulture decline on hide and bone trade

Vulture decline has resulted in loss of crucial ecosystem services. The hide and bone trade relied heavily on vultures for their quick services, but after the vulture decline one has hardly looked into the problems faced by people engaged in bone and hide trade. The hide and bone collectors belong to the poorest strata of the society and rely on the availability of carcass for collection of hide and then bones for their livelihood. This group of individuals was surveyed using questionnaire sets and it was attempted to evaluate the impact of vulture decline on the hide and bone trade. The questionnaire survey revealed than more than 90% of the skinners have reported loss to the trade either due to loss of skin and bone to other scavengers in absence of vultures or locating the carcasses.

Vulture Safe Zone Project, Assam (BNHS)
Vulture Safe Zone Project, Tamil Nadu (Arulagam)

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

2016: Selection and conversion of pVSZs to full VSZs based upon undercover pharmacy monitoring data and monitoring of fates of tagged vultures.

TG/VP/REG

[no areas are yet 100% clear of all NSAIDs likely to be harmful to vultures but a more complete evaluation/reporting will be carried out here in future]

VS4 Maintenance and review of VSZs in India

2016: Continue VSZ implementation. Potential removal of VSZ status if monitoring shows that conditions have changed. (Note for each VSZ please clarify radius reached, numbers of settlements where activities occurred during 2016, any key indicators of progress or otherwise, numbers of pharmacy surveys/pharmacies visited etc… 1 page max per VSZ)
VP/TG/REG/MK/SR/KG/BS

[More complete reporting will be supplied next year on this, including by SAVE Associates but see above accounts]

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

2016 First transfers of captive-bred vultures to holding aviaries in VSZs & releases of first vultures in VSZ. **VP**/TG

[Birds were successfully transferred to pre-release aviaries in Haryana, and a trial release with Himalayan Griffons was successful, but progress has halted due to the issue of satellite telemetry permissions not being granted by Indian authorities. This is being treated as highest priority by all concerned.]

VS6 Maintenance and review of VSZs in Nepal.

2016 Continue VSZ implementation and expansion (please clarify the areas now incorporated as VSZ) KB/TG/CB

Eight more districts were declared Vet Diclofenac Free District adding the area of 12,268 sq. km for the VSZ in 2016. This makes the total number of Diclofenac Free Districts 54 covering the area 113428 sq. km out of 147,181 sq. km area of Nepal.

All six Vulture Safe Feeding Sites (VSFS) have been operating smoothly. They have been able to raise some internal funds through selling of bones and skins, selling of tickets to the visitors and raising small proportion of the profit from income generation activities. VSFSs have been playing a good role in publicizing vulture works in Nepal; supporting in disseminating the message to stop diclofenac and conserve vultures and supporting in maintaining Vulture Safe Zone.

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

2016 release of wild taken OWBV not likely to breed from Chitwan VCBC **KP**/TG/CB

Nepal Vulture Release Plan (2016-2019) was endorsed by Department of National Park and Wildlife Reserve (DNPWC). The main aim of this plan is a telemetry study of White-rumped Vultures to measure the prevalence of diclofenac in wild vulture food and to test the assimilation of captive vultures into the wild. The permission for the telemetry tag to wild and captive vultures (20+20 WRV) is recently approved by Ministry of Soil and Forest Conservation, Government of Nepal. To implement the vulture release program there are two committees established as follows:-

1. **National Coordination committee**

Coordinator:- Deputy Director General, Department of National Park and Wildlife Reserve
Member:- Chief Executive Officer, Bird Conservation Nepal
Member:-Senior Officer, National Trust for Nature Conservation
Member Secretory:- Ecologist, Deputy Director General, Department of National Park and Wildlife Reserve

2. **Field Implementation committee**

Coordinator:- Chief Conservation Officer, Chitwan National Park
Member:- Vulture Conservation Program Officer, Bird Conservation Nepal
Member:-Office in charge NTNC/BCC
Member Secretory:- Assistant Conservation Officer, Chitwan National Park

VS8 Identification and selection of additional pVSZs in Pakistan.

2016 - Identify and select pVSZs. **UK/CM**

One pVSZ, in the Azad Jammu & Kashmir (AJ&K) was identified as an outcome to the population assessments conducted in 2014 and 2015, that aimed to explore remaining breeding population of the Egyptian vulture (*Neophron percnopterus*) and White-backed vulture (*Gyps bengalensis*) in the AJ&K. A total of 1050 km distance was covered during these surveys covering *Bhimber, Mir Pur, Kotli, Sudhnoti, Poonch, Bagh* and *Muzaffarabad* Districts in the AJ&K. The population estimation for the White-backed vultures was 30 individuals and 68 individuals for the Egyptian vultures in 2014. A notable increase in the population of both species was recorded in same areas in 2015. Estimated abundance of the White-backed vultures was increased to 50 and for the Egyptian vulture 160 during 2015. A total of 14 active nests of White-backed vultures were also identified in the AJ&K.

Lobbying with the Azad Jammu & Kashmir (AJ&K) Wildlife, Forest and Fisheries Department was initiated to establish a VSZ in the region. Efforts were also made to raise funds through different proposals, however, nothing has been successful so far. Subsequently, population assessment results, maps of the potential VSZ region and requirements of establishing a VSZ together with WWF-Pakistan's VSZ work in *Nagar Parkar* were shared with AJK wildlife officials in August 2016. No further progress was made, possibly due to the political unrest in

AJK and change in the wildlife administration, however, WWF-Pakistan plans to continue its efforts to establish another VSZ in AJK.

VS9 Maintenance and review of pVSZs in Pakistan.

2016 - Continue VSZ implementation and expansion.
UK/CM/Aisha Hamera
Conservation efforts are continuing in the VSZ in Sindh Province and as part of which, *Gyps* population assessment are conducted on an annual basis. Additionally, various initiatives to improve community-based livestock management practices to reduce use of NSAIDs and minimise vulture mortality are continuing in the area. Furthermore, support to enhance livestock welfare through improved veterinary facilities such as deworming and vaccination camps is being extended to the local communities. This, together with various awareness-raising initiatives through the establishment of nature clubs in local schools are in place to develop a sense of ownership about the conservation of vultures and other natural resources of the area amongst the youth.

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.

2016 - Develop and implement training programme.
UK/CM/Aisha Hamera

Improving livestock management practices

Two baseline livestock assessment surveys and Focus Group Discussions (FGDs) were conducted in 18 villages around *Gyps* vulture colonies in *Nagar Parkar*. These surveys were aimed at identifying those villages that have highest number of livestock and their prevalent diseases in order to organise de-worming and animal husbandry camps. The survey revealed a total of 20,066 livestock including goats, sheep, cattle, camels and donkeys in these villages.

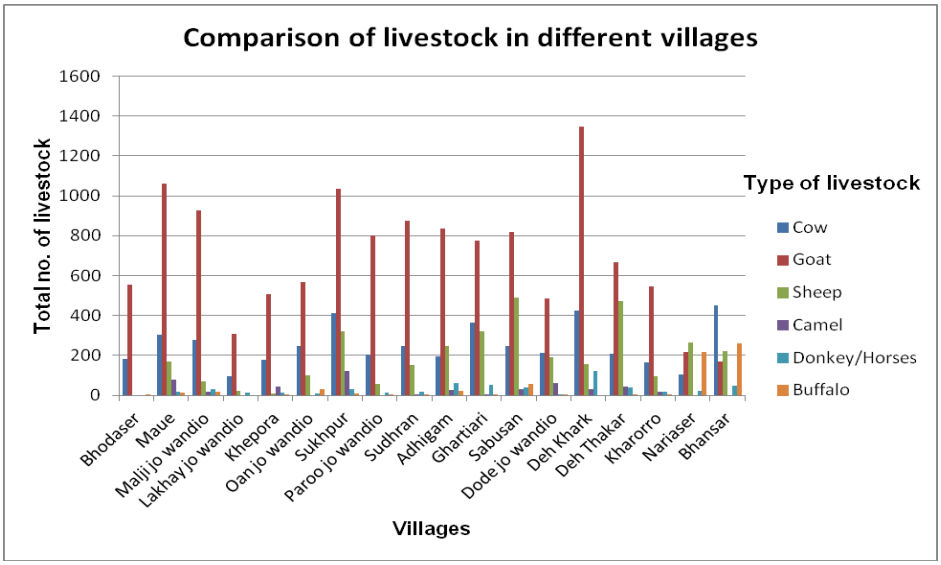


Figure 1: Livestock census results in 18 villages in Nagar Parkar within and around Vulture Safe Zone

Prevalent diseases in target villages

A range of livestock diseases prevalent in the study area were identified during these surveys. These included Sheep pox, Goat pox, Mouth infection, Enterotoxaemia, Worm infection, Diarrhoea, Mange, Foot and Mouth Disease, Contagious Pleuro- pneumonia, Anthrax, Black quarter, Colic, Skin infection, Haemorrhage septicaemia, Ephemerao fever, Rabies, etc.

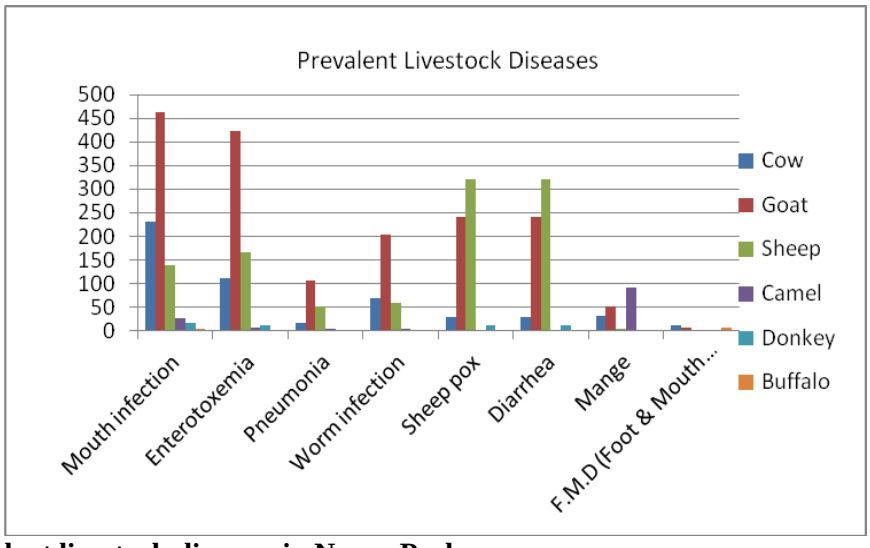


Figure 2: Prevalent livestock diseases in Nagar Parkar

Meetings were also conducted with the local veterinarians from different villages to understand prevalent diseases in the area. The veterinarians also gave suggestions on to minimize risks of vulture mortality caused by NSAID and for the effective implementation the existing vulture conservation work in *Nagar Parkar*.

Training of Master Trainers

Two veterinarians from the University of Veterinary and Animal Sciences, Lahore were the lead trainers of capacity building training organised in January 2016 for the members of *Parkar* Foundation and local community representatives. The training covered topics on livestock management, the use of Meloxicam, and highlighting the ecological role of vultures. The Department of Livestock and Animal Husbandry, *Nagar Parkar*, Sindh was also a part of the training. A presentation was made by a senior staff of the Department on livestock husbandry practices.

The training also included hands on sessions in which the participants learnt basic livestock management techniques such as handling of animals, proper administration of intra-muscular injections, oral drug intake, temperature monitoring and identifying differences between a healthy and diseased animal feeding management. A brochure carrying details of livestock diseases in the local language was also distributed among the participants.

Figure 3: Brochure developed on livestock diseases in the local language

Construction of Well in *Mulji Jo Wandio* village:

Additionally, a water well has been dug in *Mulji Jo Wandio* village, to improve communities' access to water in the Project area, considering that the area have been hit by drought in the previous years. Additionally, an agreement has been signed with the community to encourage communities to grow fodder for livestock. This would help to protect vulture's nesting trees which otherwise are being cut and used as fodder. The well will benefit over 600 residents of this village which hosts the highest number of White-backed Vultures known to nest in Sindh Province.

Figure 4:Water well dug in *Mulji Jo Wandio* village

VS12 Free veterinary camps in VSZs in Pakistan

2016 - Develop and implement programme.
UK/CM/Aisha Hamera

Livestock Deworming Camp at Nagar Parkar - A three day livestock deworming camp covering three villages including *Mulji Jo Wandio, Sukhpur* and *Ghartiar* at Nagar Parkar was organised in collaboration with ICI-Pakistan from 28th to 30th of March 2016. This activity was aimed at promoting the alternate safe drug Meloxicam and to eradicate the use of diclofenac and other harmful.

A total of 5,500 animals including sheep, goat, cattle and camels were treated with de-worming medicines by a team of veterinarians from ICI-Pakistan together with team members of WWF-Pakistan and Parker Foundation.

The local community and farmers were briefed to avoid use of Diclofenac Sodium to treat their livestock and to use the alternate safe drug Meloxicam for the protection of Critically Endangered, White-backed Vultures and, vitally, the Long-billed vultures which are only found in *Nagar Parkar* in Pakistan.

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

2016 - Develop and implement programme (after ensuring viability & ensuring no disturbance)
KB/TG (also inputs as appropriate from VP/UK/SAVE Associates as appropriate)

Nepal - Promotion of ecotourism to VSZs is an important contribution towards sustaining the vulture safe feeding site and dissemination of information. Organize five ecotourism promotion workshop and tourism entrepreneur's field exposure visit to VSFS of five respective districts. Tourism related entrepreneurs and concerned authorities from the respective sites came together to develop the site as a popular destination for ecotourism in the country.
Nepal Tourism Board, Government authority for tourism promotion partially supports for the ecotourism promotion activities in VSFS area and also highlighted these sites on their official sites.

Pakistan - **Meetings/Sessions with the local communities**

The consultative sessions and seminars were organised for the local communities, Parkar Foundation and the veterinarian community at *Mithi*. Talks were delivered on the vulture crisis and ongoing work on the vulture conservation undertaken by WWF-Pakistan. Screening of a documentary *Missing Vultures* to highlight the conservation needs of the critically endangered White-backed Vulture and the Long-billed vulture was also a part of these events .

Awareness material such as a fact sheet in Sindhi and English languages on the *Gyps* vulture crisis and the conservation initiatives by WWF-Pakistan was also developed. This was used

throughout in the consultative, capacity building and awareness sessions. Vulture identification cards were developed and were distributed among the relevant stakeholders.

Figure 5: Education and awareness material developed in English and local language

Establishing Nature Clubs in local schools

A total of fifteen Nature Clubs have been established in different schools of Nagar Parkar, to highlight the importance of vultures in the ecosystem. A number of activities are part of these clubs includes poster competitions, tree plantations and celebrating significant environmental days, etc.

International Vulture Awareness Day

International Vulture Awareness Days were organised in collaboration with Parkar Foundation and were attended by students, journalists, activists and volunteers both in 2015 and 2016 at the Lahore Zoo. These events included screening of a documentary Missing Vultures, which highlights *Gyps* vulture crisis in Pakistan and efforts that are in place for their conservation. Additionally, a quiz, solid waste clean-up activities were also organised. Participants which included zoo visitors, students, media, etc. were briefed about the vultures and the role they play to clean the ecosystem through interactive games and vulture species identification cards. Vulture saviour certificates and badges were distributed amongst the children to change their perception about vultures and enhance their image as clean and helpful birds in our environment. An awareness walk was also conducted in Nagar Parkar to mark International Vulture Awareness Day in September 2016.Students, activists, volunteers and relevant Government officials participated to highlight their interest in the cause.

Media Exposure Visit to Nagar Parkar

Given that media can play an instrumental role to lobby and address the immediate need of vulture conservation and impose a ban on the usage of harmful NSAIDs, various leading newspapers and TV Channel were engaged in the exposure visits to the Vulture Safe Zone. A two-day exposure visit for the environmental journalists from the leading daily newspapers of Pakistan including the Dawn, the News, Business Recorder, APP, *Ferozan* Magazine, etc. was organised to the Vulture Safe Zone in *Nagar Parkar* to highlight key aspects of the Vulture Safe Zone related initiatives.

India: No vulture-led ecotourism reported from India.

VS14 Identification and selection of pVSZs and VSZs in Bangladesh.

2016 - Identify and select pVSZs. Completed 2014 (see previous SAVE reports)

S15 Implementation of pVSZs in Bangladesh.

2016 - Implement VSZ programme.
AS

The Government Republic of Bangladesh has declared two Vulture Safe Zones (VSZs) in Greater Sylhet and Khulna division of Bangladesh on 23 December, 2014. VSZs have been declared under the Wildlife (Conservation and Security) Act 2012, as specialized 'landscape zones' recognized within the Wildlife Act. The total area of VSZs of Greater Sylhet and Greater Khulna are 19,663.18 km2 and 27717.26 km2 respectively. These VSZs share boundary with India. For the management of VSZs Bangladesh government has already approved a three tiers institutional mechanism which includes already formed RSC (Regional Steering Committee), BNVRC (Bangladesh National Vulture Recovery Committee) and local level conservation team named as Vulture Conservation Team (VCT).

Major activities for Management of Vulture Safe Zone in Bangladesh

1. Activities of Vulture Conservation Team

Regular bi-monthly meeting of Vulture Conservation Team (VCT) were held to monitor their activities. VCT has participated in vulture nest monitoring, protection of vulture and their habitat, rescue of vultures, sensitization of local people about the use of veterinary drugs highlighting the harmful effects of diclofenac to vulture through awareness raising campaigns, conduct pharmacy surveys and community-based vulture feeding station management. Rema VCT also has fenced the vulture habitat at Rema to protect the illegal entrance of the people (see figure 6 below). A total of 13 vultures (Himalayan Griffon) were rescued by VCT and local forest department during November 2015 to March 2016.

Figure 6: Fencing the breeding ground of vulture at Rema-kalenga Wildlife Sanctuary

2. Reduction of usage of diclofenac and other untested veterinary drugs

a) Open pharmacy survey/ awareness campaign

The Open Pharmacy Survey is the second step of three tires survey (see figure 7 below). A total six awareness campaigns were carried out which involves sensitization of pharmacy owners about the harmful and safe drugs for vulture and necessities of vulture for the environment. The vulture team sensitized pharmacy owner not to sale banned drug diclofenac highlighting the harmful effects of diclofenac to vulture. Campaigners distributed and pasted awareness-raising poster to pharmacies, cattle markets etc enablingthem to understand the problem at different upazillas of Habiganj, Moulvibazar, Sylhet, Panchagarh Jessore, Khulna and Bagerhat districts. Moreover, meloxicam distribution campaign also carried out at border areas of Jessore. Free Melxicam distribution campaigns were arranged in VSZ-1 to remove harmful drug within the VSZ.

b) Undercover Pharmacy Survey

The second undercover pharmacy survey was conducted in Vulture Safe Zone-1 and Vulture Safe Zone-2 respectively in December 2015 and January 2016. Different numbers of pharmacies were surveyed in different districts and vet-human drug stores were surveyed mostly. The 2nd undercover pharmacy survey showed that no diclofenac was found in VSZ-1.

Figure 7: Open pharmacy survey in VSZ-2

4. Strengthening the Bangladesh National Vulture Recovery Committee (BNVRC)

The 5th meeting of the Bangladesh National Vulture Recovery Committee was held on 08 November 2015 and decision was made on various issues.

5. Community-based vulture feeding station

In Bangladesh, supplemental feeding station for vulture started on October 2015 (see figure 8 below). A total of 30 cattle were given within this time with the help of community people. The cows are ensured to be free of any harmful drugs. The carcass is observed from the monitoring room until the carcass has been fully finished.

In VSZ-1, maximum number of white-rumped vultures was 53 observed with 12 juveniles and on average 20 vultures are seen at any given time at the feeding station in Rema-Kalenga Wildlife Sanctuary.

Figure 8: Community-based vulture feeding station at Rema, Chaunarughat

6. Advocacy and awareness development program

A series of advocacy was conducted with relevant government officials, pharmacy owner, and veterinary doctor for the better protection of the vulture habitat, remove unsafe drugs within the VSZ during November 2015 to October 2016. School education program (9 nos) and awareness

campaigns were also conducted in VSZ-1 and VSZ-2. Higher concern authorities of Bangladesh Forest Department, news reporters, local leaders visited the vulture feeding station and observed the vulture conservation activities (see figure 9 below). A new project was also launched on August 2016 which is titled "Community-based vulture safe zone management in Bangladesh" by the support from RSPB.

Figure 9: Vulture observation center and plantation program in VSZ-1

7. Celebration of the International Vulture Awareness Day

The International Vulture Awareness Day-2016 was celebrated in Chunarughat of Habiganj District of Sylhet, in the heart of the country's first Vulture Safe Zone. Art competitions in local schools, colorful rallies, educational activities, discussion sessions, distribution of free Meloxicam and vulture observation commemorated the special day and people from all walks of life attended the celebration along with representatives of local administrations, forest department officials and IUCN Bangladesh staffs. International Vulture Awareness Day is dedicated to increasing awareness on the importance of vultures and spur on conservation efforts.

Figure 10: Photos from International Vulture Awareness Day 2016

8. Workshops

Two important workshops were held in 2016. As per the recommendation of the 5th BNVRC meeting, a national workshop was arranged jointly by IUCN Bangladesh and Bangladesh Forest Department on "Bangladesh Vulture Conservation Action Plan" on 10 April 2016 at Bangladesh Forest Department. The workshop was set to present the draft 'Bangladesh Vulture Conservation Action Plan' to scientists, experts and other stakeholders to receive their remarks and suggestions to finalize the proposed action plan. Vulture Action Plan of Bangladesh was endorsed by the Government.

An important workshop entitled "Impact of Harmful Drugs on Vultures" was held on 10 May 2016 to take initiative to ban ketoprofen in the Vulture Safe Zones and all over Bangladesh.

Figure 11: A National Workshop on Impact of Harmful Drugs on Vulture; B- Workshop on Bangladesh Vulture Conservation Action Plan

9. Preparation and dissemination of awareness materials

Posters, brochure, notepad, bag, raincoat, T-shirt, ruler, pen, pencil box were distributed to different stakeholders. A children story book was prepared and distributed among school children. Six billboards were established for creation of awareness among the mass people of the vulture habitat (see figure 12 below). A school near vulture habitat has been painted with vulture art to understanding the vulture conservation.

Figure 12: Conservation education of vultures

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

2016 India: Seek permits for capture and tagging of wild vultures in VSZs & capture/tag wild vultures with GPS tags. Monitor to identify foraging sites, recover corpses and establish causes of death. **VP/KB/**TG/REG/

*2016 India**:** Seek permits for capture and tagging of wild vultures in VSZs & capture/tag wild vultures with GPS tags. Monitor to identify foraging sites, recover corpses and establish causes of death.*

(permissions have been applied for)

2016 Nepal/Bangladesh/Pakistan: Seek permits for OWBV capture/tagging of wild vultures in VSZs.
KB/AS/UK

Nepal Three wild Red-headed Vulture were trapped and fitted with telemetry tag on 26th September, 2015 in Kaski, Nepal. After that these telemetry tagged vultures are monitoring on desk as well as with ground truthing. On ground truthing active nest of one telemetry tagged vulture was found in Kaski district and results breeding success for this breeding season.

One tagged vulture was found dead in Tanahu district on 24 February 2016. Collected samples from that dead tagged RHV were sent to National Forensic Laboratory, Khumaltar, Kathmandu for lab analysis. However the lab test of extracted visceral organ from dead vultures could not find the reason for mortality.

Nepal The permission for the telemetry tag to wild and captive vultures is recently approved by Ministry of Soil and Forest Conservation, Government of Nepal.

Bangladesh – AS
No activity is reported

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

2016: Tag all captive-bred vultures prior to release with GPS tags. Monitor to identify foraging sites, recover corpses and establish cause of death. VP/KB/**TG**/REG/AKS/

[permissions being finalised in both countries. See above.

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

2016: N/A.

(UK) [no plans/funds currently in place?]

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

2016: 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.

TG/AS/VP/KB/REG/UK/KG/BS

Nepal

Undercover and general pharmacy survey was also extend to eastern lowland of Nepal by selecting 80 places randomly in 2016. There is no record of Diclofenac on veterinary shops but record 30ml Diclofenac in one human pharmacy during the undercover survey. Open vet pharmacy survey had also conducted in 310 vet shops where found 30ml human diclofenac in three vet outlets.

Bangladesh-AS

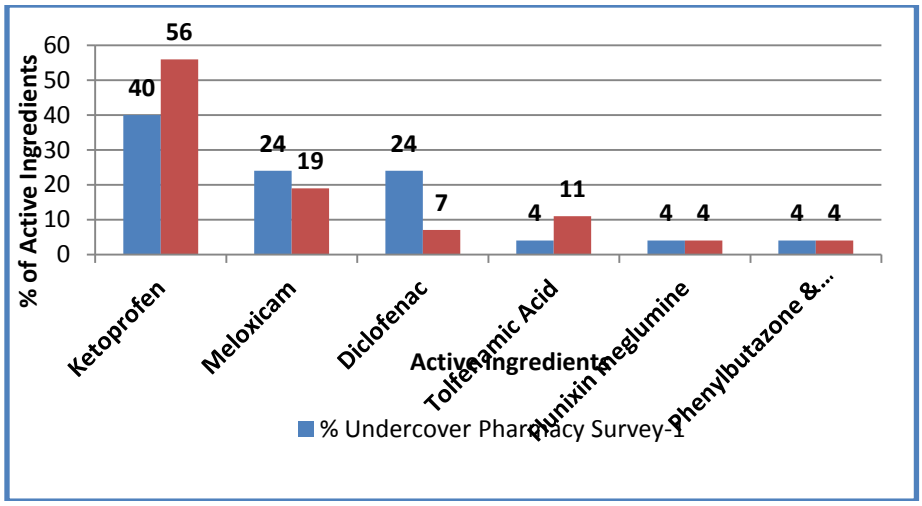
The second undercover pharmacy survey was carried out in nine and twelve districts in Vulture Safe Zone-1 and Vulture Safe Zone-2 respectively in December 2015 and January 2016. Different numbers of pharmacies were surveyed in different districts. Most of the veterinary medicines found in two safe zones were in injection form. No suppository was found during the survey.

In two safe zones, 20 and 24 different kinds of drugs were found respectively of which Keto-A-Vet was the mostly (52%, 62% in VSZ-1&2 respectively). No diclofenac was found in VSZ-1. However diclofenac was found in the border areas of VSZ-2. In VSZ-2, 30 ml diclofenac have found in market (see figure 13 below).

A total 18 manufacturing companies found of which two (Amba Research Laboratories and Optima Health Care) were Indian and three (Dong Bang Co. Ltd, Dongbu Farm Hannong and HANDONG Ltd) were Korean. Among Bangladeshi companies, ACME produced most of the drugs of ketoprofen and available in the market.

Extensive local demand was found for Keto-A-Vet (Inj.),Keto-A-Vet (Bolus),Ketochem (Bolus), kynol-vet, Renfen, Melvet (Inj.), Melvet (Bolus), Melvet Plus was observed. In feedback to the local demand, Keto-A-Vet (Inj.), Keto-A-Vet (Bolus), Ketochem(Inj.), Ketochem (Bolus), Keto-Aidvet (Bolus), Kopvet, Renfen, Melvet (Inj.) have high supply availability in both the VSZs.

Figure 13: Percentage of active ingredients of veterinary drugs found during undercover pharmacy survey 1&2 respectively



Pakistan – UK/CM/Aisha Hamera

Undercover surveys of veterinary stores in and around the Vulture Safe Zone were continued during 2016 to validate availability of Diclofenac Sodium and other harmful NSAIDs. These results have confirmed availability of human formulations of Diclofenac Sodium in 12 veterinary stores within the Vulture Safe Zone.

Another survey of veterinary stores in Lahore was also conducted in 2016 to collect data about Meloxicam and harmful NSAIDs including aceclofenac, ketoprofen and flunixin available in the market with different names. Samples of these drugs were bought to record details of dosage, formulations, manufacturer etc. which are summarised in the Figure 14 mentioned below

Brand Name	Packing	Manufacturer	Active Ingredient	Drug Strength	Dosage Recommended
Flunixin					
Loxin Injection	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses/Camel:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg Dogs:0.5-2ml/45kg
Nixsym Injection	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Flunixin Meglumine	(83mg)	Horses:1ml/75kg Cattle:2ml/75kg Sheep/Goat:2ml/75kg Dogs:0.5-2ml/75kg
Maxin	50ml	Star Laboratories (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses/Camel:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg Dogs:1ml/45kg
Phonix Injection	50ml	Mylab (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg

Tricure inj.	100ml	ICI Pakistan	Flunixin(as Meglumine)	(50mg)	Horses/Camel:30-40ml Cows/Buffalo:25-35ml Sheep/Goat:3-6ml
Aceclofenac					
Fev-o-nil	50ml	S.J. &G. Fazullellahie	Aceclofenac	25mg/ml	According to Veterinarian prescription
Ketoprofen					
KETO-P	50ml	Star Laboratories (pvt) Ltd.	Ketoprofin B.P	(100mg)	Horse:1ml/45kg Cattle:1ml/33kg
Profenol Inj.	50ml	Leads pharma	Ketoprofin B.P	(100mg)	Horse: 1ml/45g Cattle: 1ml/33kg Dog/Cat: 0.5ml/25kg
Dinalgen Inj.	50ml	Mylab (pvt) Ltd.	Ketoprofin B.P	(100mg)	Horses/Camel:1ml/45KG Cattle/Sheep/Goat:3ml/100kg
Meloxicam					
Meloxi-10	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(10mg)	Horses/Camel:7.5-11.25ml Cattle/Buffalo:6-7.5ml Sheep/Goat:1.5-3ml Dogs:1.5-2.25ml Cats:0.35-0.75ml
Diclostar Super Injection	50ml	Star Laboratories (Pvt) Ltd.	Meloxicam B. P.	(5mg/ml)	Cattle: 2ml/45kg Horse: 1ml/45kg
Camilox Injection	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(0.75%)	Horses/Cattle:6-8ml/200kg Sheep/Goat:0.5-1ml/20-35kg Cat/Dogs:0.2-0.5ml/5-20kg
Melocsym Inj.	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(5mg/ml)	Horses/Camel:30-40ml Cattle/Buffalo:25-35ml Sheep/Goat:03-06ml
Diclosym	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Meloxicam	(7.5mg)	Horses/Camel/Cattle/Buffalo/Sheep: 1ml /25-37kg
Metrym	50ml	Nawan Laboratories (Pvt) Ltd.	Meloxicam B. P.	(20mg)	For large animals: 2.5/100kg For small animals: 2.0ml/100kg

Figure 14:Details of NSAIDs bought in veterinary store survey 2016

Furthermore, process of dialogue was already initiated with representatives of the Drug Regulatory Authority managed by the Ministry of National Health Services, Government of Pakistan to impose a ban on manufacturing and sale of harmful NSAIDs. There is however, no significant progress was made to impose a ban on the veterinary use of ketoprofen and aceclofenac at the national scale so far.

India: [report not completed, but will be given in full next year. Preliminary indications show some serious concerns, and partially coved elsewhere in this report]

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

2016: Conduct surveys over representative areas of the zone, including nest counts and/or road transect surveys, as appropriate. (Summarise results and frequency of surveys etc)

TG/AS/KB/VP/REG/UK/KG/BS

India - [report not completed, but will be given in full next year. Preliminary indications show some serious concerns, and partially coved elsewhere in this report]

Nepal

12th annual road count survey of vultures was conducted across terai lowland following east-west highway covering 560 km in May 2016. During that survey observed 74 White-rumped Vultures that indicate the population trend is on stabilization with improving on recent years.

Vulture colonies were monitored in the breeding season 2015-16. In this breeding season monitored a total of 356 active nests of White-rumped Vulture (75.70% breeding success), 2 nests of Slender-billed Vulture (100% breeding success), 4 nests of Red-headed Vulture (50% breeding success), 9 nests of Egyptian Vulture (89% breeding success), 67 nests of Himalayan Griffon (68.65% breeding success) and 2 nests of Bearded Vulture (50% breeding success).

Bangladesh-AS

About 260 white-rumped vultures are known to be in Bangladesh from 12 districts. A total of 28 (27 white-rumped vulture and 1 nest of Slender-billed vulture) and 24 (white-rumped vulture) nest was observed in 2014-15 and 2015-16 respectively. Breeding success was 53.57 % and 54.17% respectively during the two study period.

Pakistan - UK/CM/Aisha Hamesh

Estimated population abundance of White-backed vultures was recorded 125 and 142 in 2015 and 2016 respectively in *Nagar Parkar* during surveys. Population of long-billed vultures was comprised of 686 individuals in 2015 and 681 in 2016. Additionally, estimation of population abundance of Egyptian vulture was 584 in 2015 and 548 for 2016. Future population assessment of this region as well as exploration of additional colonies and nesting sites is planned during the coming year for the monitoring of population trends.

The population assessment surveys carried out in 2015 in Nagar Parkar recorded 31 active nests of White-backed vultures (*Gyps bengalensis)* which reduced to 27 in 2016. A similar change was observed for the Long-billed vulture (*Gyps indicus*) in Nagar Parkar, where the number of active nests was 183 and 147 in 2015 and 2016 respectively.

These surveys identified an intensification of the cutting of vulture nest trees, which is likely to be an important contributor towards the decline of number of nests of White-backed vultures in Nagar Parkar. Communities of *Nagar Parkar* are dependent on these trees for fodder and fuel-wood. Results of these surveys further highlighted unsustainable extraction of a medicinally important shrub *Guggul* (*Commiphora wightii*) which grows on the Karoonjhar Hills in proximity to the nesting sites of Long-billed Vultures, and this is considered a key contributor to decline in the number of nests. Community guards have been deployed in the area to overcome this challenge but the issue still persists.

Research & Monitoring Reports

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

(From 2015: Complete tagging and recovery tests on RHV and LBV. Evaluate corpse recovery using simulated tagged corpses. Test tag attachment methods on captive Gyps vultures)

2016: Begin tag deployment on Gyps vultures in pVSZs & VSZs
TG/REG/VP/JPJ/KB

(to update here)

RM2: Road transect surveys of vulture numbers in India.

2016: Publish results of the road-transects survey. **VP/**TG/REG

[unpublished data was presented at the meeting, but has been delayed and is subject to peer review]

Peregrine Fund monitoring (India) - MV

With kind permission from the forest departments of Rajasthan and Madhya Pradesh we continued monitoring populations of Long-billed Vultures (LBV) in the two Central Indian states of Rajasthan and Madhya Pradesh. Between 2007 and 2012, numbers of occupied nests of LBV remained relatively stable with no declines observed. However, over the last four breeding seasons (2012-2015), numbers of occupied nests of LBV declined by 19% over this period .

This decline was more pronounced in the state of Rajasthan and correlates with a free human and veterinary drug distribution scheme launched in 2012 by the State Government of Rajasthan. This downward trend in numbers of occupied nests particularly in the state of Rajasthan is of concern. New anti-inflammatory veterinary drugs in the South Asian market present fresh conservation challenges for vulture conservation, and reinforce the need to continue with our vulture population monitoring efforts.

More details are being submitted for publication on this work.

RM3: Road transect surveys of vulture numbers in Nepal.

2016: Conduct survey using same methods as in previous surveys. Western lowland surveys annually. Mid-hills and East-West highway survey every four years.
KB/TG/REG

Nepal
The 12th annual road count survey of vultures was conducted across the terai lowland following east-west highway covering 560 km in May 2016. During that survey observed 74 White-rumped

Vultures that indicate the population trend is on stabilization with this slight improvement on recent years.

Peregrine Fund population monitoring (Nepal) – MV

RM4: Vulture population monitoring in Pakistan and Bangladesh.

2016: Continue to develop and conduct repeatable population surveys. **UK/MV/AS/**MoK

Bangladesh – AS

Community-based vulture nest monitoring:

Nest monitoring by the community people was held during 2014- 2015 and 2015-2016 at Moynabill of Rema Reserved Forest.

Nest monitoring was conducted by Rema Vulture Conservation Team with closely monitoring by the project team. A total of 28 (27 White-rumped vulture and 1 nest of Slender-billed vulture) and 24 (White-rumped vulture) nest was observed in 2014-15 and 2015-16 respectively. Breeding success was 53.57 % and 54.17% respectively during the two study periods. All the nests were recorded using two nesting tree species of garjan *Dipterocarpus* sp. and Bonak *Schima wallichii.*

Breeding season of the white-rumped vulture was extended to late September to early May in 2015-16. First nest building was observed on 27th September, 2015 which was extended to 4th January 2016. The range of nest building period was 47 to 68 days with an average 58.3 days (n = 7). Range of incubation period was 49 to 53 days with an average of 51.3 days (n = 3). The highest number of observations was recorded for roosting (48.7%), followed by incubation (48.6%) in 2014-15. During the incubation period in 2015-16, vultures had spent 30.6%, 38.1% and 31.3% (n= 396) time in incubating, sitting beside the nest and not in nesting site respectively. Presence of the vultures on the nesting site varied significantly between successful and unsuccessful nests. About 32.3% and 67.7% (n = 124) of the time vulture were absent on the nesting site in successful and unsuccessful nest respectively.

Pakistan – UK/Aisha Hamera

The population assessment surveys carried out in 2015 in Nagar Parkar recorded 31 active nests of White-backed vultures (*Gyps bengalensis)* which reduced to 27 in 2016. A similar change was observed for the Long-billed vulture (*Gyps indicus*) in Nagar Parkar, where the number of active nests was 183 and 147 in 2015 and 2016 respectively.

These surveys identified an intensification of the cutting of vulture nest trees, which is likely to be an important contributor towards the decline of number of nests of White-backed vultures in Nagar Parkar. Communities of *Nagar Parkar* are dependent on these trees for fodder and fuel-wood. Results of these surveys further highlighted unsustainable extraction of a medicinally important shrub *Guggul* (*Commiphora wightii*) which grows on the Karoonjhar Hills in proximity to nesting sites of Long-billed Vultures, and this is considered a key contributor to decline in the number of nests. Community guards have been deployed in the area to overcome this challenge but the issue still persists.

Estimated population abundance of White-backed vultures was recorded 125 and 142 in 2015 and 2016 respectively in *Nagar Parkar* during surveys. Population of long-billed vultures was comprised of 686 individuals in 2015 and 681 in 2016.

Additionally, estimation of population abundance of Egyptian vulture was 584 in 2015 and 548 for 2016. Future population assessment of this region as well as exploration of additional colonies and nesting sites is planned during the coming year for the monitoring of population trends.

Peregrine Fund population monitoring (Pakistan) – MV

[see above – awaiting publication]

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

2016: (Publish NSAID monitoring results) Collect samples in several states according to previous protocol & (not India) measure concentrations of all NSAIDs potentially hazardous to vultures.
TG/VP/AKS/KB/MT/REG

Nepal
646 vials of extracted cattle carcass samples were exported to the UK for the lab analysis of NSAID contamination in April 2016. Results are not yet available.

India - [full update to follow next year]

RM6: Monitoring of causes of death and NSAID contamination of wild vultures in India, Pakistan, Bangladesh and Nepal.

2016: 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.
TG/VP/AKS/AS/UK/KB/MT/REG

Bangladesh-AS
No death of vulture was reported during this reporting time.

India/Nepal – TG/VP

[update to follow next year]

Pakistan
The population assessment of Egyptian and White-backed vultures in the Azad Jammu & Kashmir (AJ&K) discovered an additional cause of vulture declines in this region. The AJ&K region constitutes the habitat of the Common Leopard (*Panthera pardus*). Local communities of this region often come into conflict with leopards which attack their livestock primarily because of free grazing of livestock and poorly constructed corrals. This human-leopard conflict also manifests as the retaliatory killing of leopards. The communities often poison livestock carcass to kill leopards. These poisonous carcasses have caused secondary poisoning of vultures.

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

2016: (from 2014/15: Obtain wild Himalayan griffon vultures and house in captivity for safety testing programme). 2016: 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.
VP/AKS/TG/REG

[updated at the meeting, suggesting that following delays this work is looking poised to proceed. Next year's report will hopefully detail some important progress here]

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.

2016: Complete current round of undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4 – and note this is from 2014, and from 2015): Publish NSAID availability monitoring results.
Conduct undercover and open pharmacy surveys linked with sampling of ungulate carcasses (see timeline RM4)

TG/VP/KB/REG

[update to follow in detail next year]

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

2016: 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.
UK/CM/Aisha Hamera

Undercover surveys of veterinary stores in and around the Vulture Safe Zone were continued during 2016 to validate availability of Diclofenac Sodium and other harmful NSAIDs. These results have confirmed availability of human formulations of Diclofenac Sodium in 12 veterinary stores within the Vulture Safe Zone.

Another survey of veterinary stores in Lahore was also conducted during 2016 to collect data about meloxicam and harmful NSAIDs including aceclofenac, ketoprofen and flunixin available in the market with different names. Samples of these drugs were bought to record details of dosage, formulations, manufacturer etc. which are summarised in Figure 15 mentioned below;

Brand Name	Packing	Manufacturer	Active Ingredient	Drug Strength	Dosage Recommended
Flunixin					
Loxin Injection	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses/Camel:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg Dogs:0.5-2ml/45kg
Nixsym Injection	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Flunixin Meglumine	(83mg)	Horses:1ml/75kg Cattle:2ml/75kg Sheep/Goat:2ml/75kg Dogs:0.5-2ml/75kg
Maxin	50ml	Star Laboratories (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses/Camel:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg Dogs:1ml/45kg
Phonix Injection	50ml	Mylab (Pvt) Ltd.	Flunixin Meglumine	(50mg)	Horses:1ml/45kg Cattle:2ml/45kg Sheep/Goat:2ml/45kg
Tricure inj.	100ml	ICI Pakistan	Flunixin(as Meglumine)	(50mg)	Horses/Camel:30-40ml Cows/Buffalo:25-35ml Sheep/Goat:3-6ml
Aceclofenac					
Fev-o-nil	50ml	S.J. &G. Fazul ellahie	Aceclofenac	25mg/ml	According to Veterinarian prescription
Ketoprofen					

KETO-P	50ml	Star Laboratories (pvt) Ltd.	Ketoprofen B.P	(100mg)	Horse:1ml/45kg Cattle:1ml/33kg
Profenol Inj.	50ml	Leads pharma	Ketoprofen B.P	(100mg)	Horse: 1ml/45g Cattle: 1ml/33kg Dog/Cat: 0.5ml/25kg
Dinalgen Inj.	50ml	Mylab (pvt) Ltd.	Ketoprofen B.P	(100mg)	Horses/Camel:1ml/45KG Cattle/Sheep/Goat:3ml/100kg
Meloxicam					
Meloxi-10	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(10mg)	Horses/Camel:7.5-11.25ml Cattle/Buffalo:6-7.5ml Sheep/Goat:1.5-3ml Dogs:1.5-2.25ml Cats:0.35-0.75ml
Diclostar Super Injection	50ml	Star Laboratories (Pvt) Ltd.	Meloxicam B. P.	(5mg/ml)	Cattle: 2ml/45kg Horse: 1ml/45kg
Camilox Injection	50ml	Selmore Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(0.75%)	Horses/Cattle:6-8ml/200kg Sheep/Goat:0.5-1ml/20-35kg Cat/Dogs:0.2-0.5ml/5-20kg
Melocsym Inj.	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Meloxicam B. P	(5mg/ml)	Horses/Camel:30-40ml Cattle/Buffalo:25-35ml Sheep/Goat:03-06ml
Diclosym	50ml	Symans Pharmaceuticals (Pvt) Ltd.	Meloxicam	(7.5mg)	Horses/Camel/Cattle/Buffalo/ Sheep: 1ml /25-37kg
Metrym	50ml	Nawan Laboratories (Pvt) Ltd.	Meloxicam B. P.	(20mg)	For large animals: 2.5/100kg For small animals: 2.0ml/100kg

Figure 15: Details of NSAIDs bought in veterinary store survey 2016

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

2016: Conduct a survey of costs of cattle carcass disposal, feral dog control and other ecosystem service measurements.

VP/TG/REG

India (BNHS) - VP/TG/REG

[no activity reported but final publication of IUCN study awaited]

Pakistan – UK/CM

[no activity reported]

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

2016: Conduct questionnaire studies, choice experiments and other investigations, as appropriate.

No studies reported as undertaken.

Cambodia Reports

(All reports compiled by Sum Phearun, CVCP Coordinator)

CAM1: Monthly supplementary feeding in at least six sites

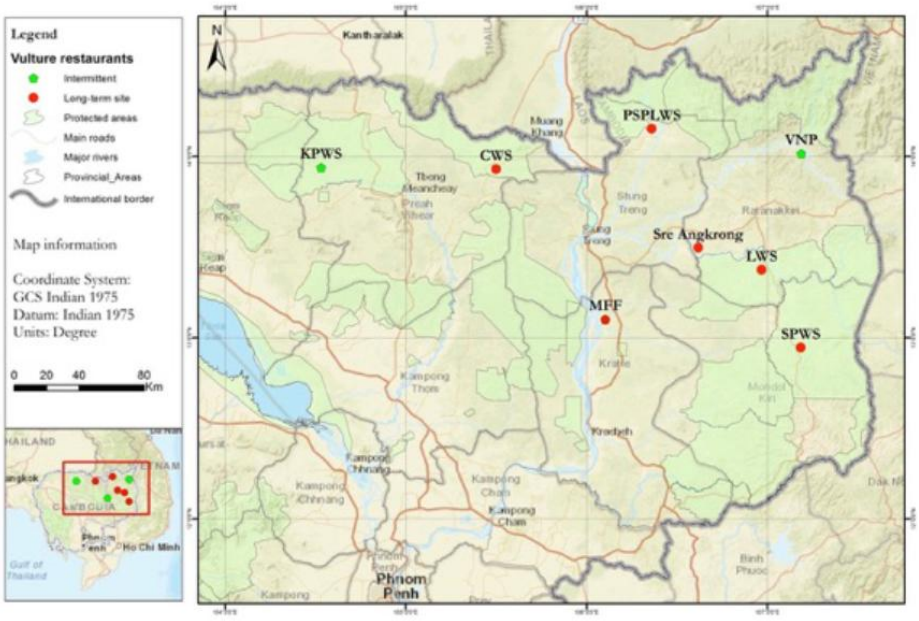
2016 objective: Provide at least one dead cow per month at vulture restaurants **SP**

Monthly vulture restaurant have been being coordinated at six project sites (see table & figure below) to the north and northeastern Cambodia. Two main project sties, Western Siem Pang and Chep Wildlife Sanctuary (former Preah Vihear Protected Forest) have been providing supplementary foods (vulture restaurant) more than two times per month due to its high number of vultures and with low density of natural carcasses available in the forest. These two main sites support highest number of nest found every year. The Preah Vihear site where the project is open to attach tourist benefit to grassroots conservation and vultures experienced of conducting around five to seven restaurant per month, but heppend only during high season of tourists come only. This is one of suitability practice to secure long-term vulture conservation for this site while vultures considered of receiving plenty of food for survival year round especially during breeding season. One piece of our concern is WWF/Mekong Flooded Forest site request to stop conducting vulture restaurant at their own site due to reason of no vulture came to the restaurant while they need to allocate money to some other priority issue rather than keep doing this with no vulture. The next partnership meeting will be help in December 2016 and this will be one of our agenda to discuss how we can engage WWF or help the site to get attach vulture to the restaurant.

Table 11: Location 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/Sre Angkrong	ACCB	Ratanakiri	0665280-1510845	ACCB
Lumphat Wildlife Sanctuary	LWS	Ratanakiri	0706761-1488186	BirdLife
Mondulkiri Protected Forest	MPF	Mondulkiri	0736926-1432100	WWF
Mekong Flooded Forest	SSK	Kratie	0671307-1448976	WWF

Figure 16: Map showing vulture restaurant locations to the north and north-eastern Cambodia.



CAM2: Improve population monitoring

2016 objective: Census vulture restaurants in March, June, September and December

SP: To increase our effort to know about three vulture population status and trend we've managed to conduct census at vulture restaurants five times per year of which take into account in March, June (two times), September and December. Despite, we determined the two census events in June are annual vulture census events. Each restaurant has to conduct census vulture restaurant two times during this month of the year (see figure & table 12 below).

Species monitoring efforts have been undertaken over the last 12 years at each vulture restaurant. The minimum population estimate for the vulture population in Cambodia is generated by an annual census of coordinated vulture restaurant counts at all sites. In 2016 the census recorded total number of 172 individuals. The highest census result of year 2016 is lower that mean of 12 year censuses data (M12y=198). Total number of white-rumped vulture (N=109) is higher than last year 2015 (N=91) and first census year of 2004 (N=88) counts but lower than the count from 2005 to 2014 even lover than mean of its 12-years period (M12y-WRV=126). The total count for red-headed vulture (N=37) is standing above mean of its 12-year census data (M12y-RHV= 32) and it's two times higher than last year count and moderate higher than the count of year 2013 and 2014. This is likely its population is slightly recovered for year 2016 (Figure: 17 & Table: 12). Total count of slender-billed vulture (N=26) is the lowest count ever recorded and it's much lower that mean of its 12-years census data (M12y-SBV=40).

Table 12: Brief list of vulture census data across all Cambodia landscape, the count from 2004 to 2016, the result revealed the 2016 census data is the third lowest result since the project was formed.

Years	Census date	WRV	SBV	RHV	Total Count
Year 2004	10th June	88	34	40	162
	26th June	90	25	42	157
Year 2006	10th June	149	27	58	234
	24th June	83	31	32	146
Year 2007	10th June	160	24	35	219
	24th June	150	26	40	216
Year 2008	10th June	113	30	48	191
	20th June	191	51	44	286
Year 2009	10th June	50	84	11	145
	20th June	209	30	13	252
Year 2010	10th June	156	45	44	245
	20th June	201	42	46	289
Year 2011	10th June	146	42	27	215
	20th June	183	45	39	267
Year 2012	10th June	112	27	23	162
	20th June	113	46	45	204
Year 2013	10th June	93	46	19	158
	20th June	125	64	29	218
Year 2014	10th June	137	52	25	214
	20th June	133	52	17	202
Year 2015	10th June	91	47	15	153
	20th June	73	34	18	125
Year 2016	10th June	72	26	18	116
	20th June	109	26	37	172

***Note:** WRV = white-rumped vulture, SBV= slender-billed vulture, RHV= red-headed vulture*

The data revealed a better figure of red-headed vultures found attending the restaurant while a reverse trend appeared on slender-billed vulture for data of year 2016. By the way it seemed slight different for white-rumped vulture attending restaurant compare to last few year data.

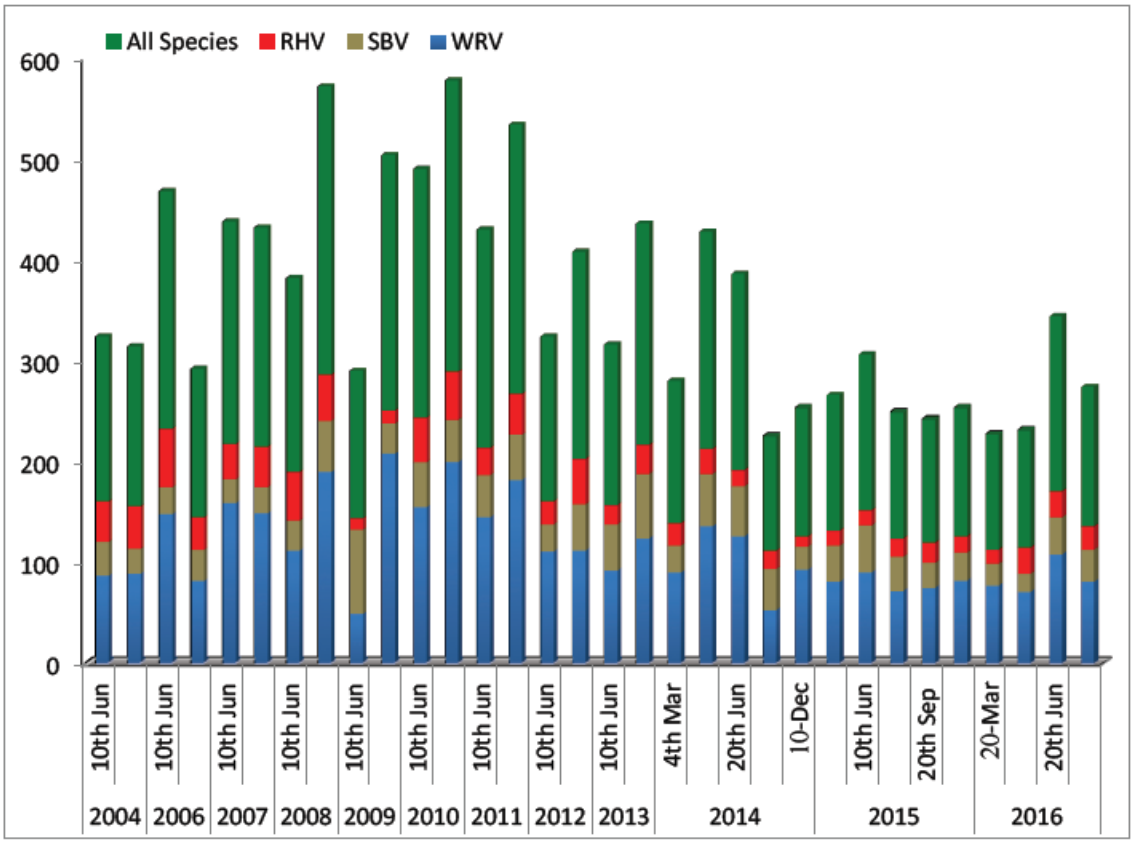


Figure 17: Graphic illustrates total number of three Cambodia vulture species and its total count across all species from 2004-2016

Standardized vulture restaurant census event five times per year have being conducted from 2014 to keep data more accurate on population monitoring purposes. Figure 17 revealed that June sill the best month of the year to get highest count at the time that most breeding pairs finish their nesting season and families both adults and chicks left the nest trees to join restaurant events. Otherwise, each project partner still commit to continue the standardizing census scheme for longer time to keep detecting the real trend of three vulture species.

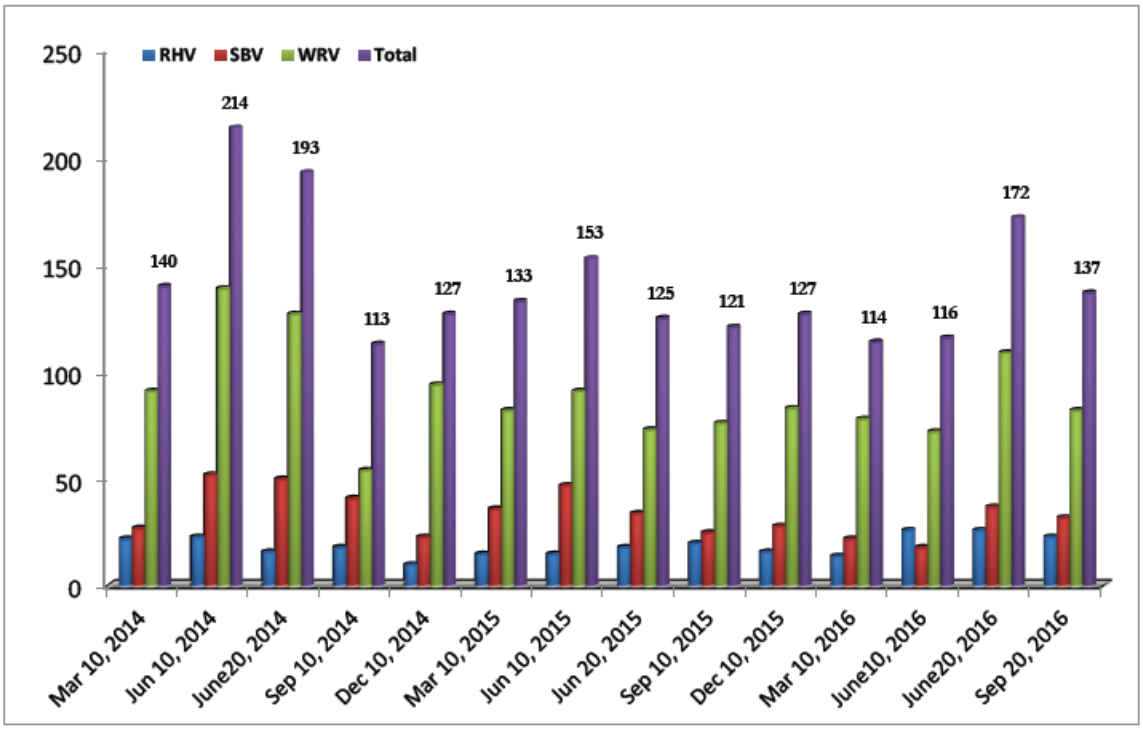


Figure 18: Standardized vulture restaurant census event five time per year to keep data more accurate on population monitoring aspect

Statistic test by using Multiple Regression models and ANOVA tests were deployed to understand about vulture population trends and its future perdition trends (table 13 and figure 19). The analysis result produced from 11 years census result reveal a strong down trend on three vulture species populations. The test for various data set of individual species and total number providing the same analysis result with DF = 20, R2 t = 0.02, R2 WRV=0.02, R2 SBV=0.017, R2 RHV= 0.023 with all P-values <0.001 (table 13). The testing model to predict about future trend of these three vulture species (2016-2018) confirmed all are remaining on downtrend (figure 19). This is assuming that, if there's no other conservation intervention actions to recover this three species the trend will keeping down generously.

Table 13: Multiple regression models for vulture population trend at all study sites.

Variables	Sites	df	SE	*F-value*	R^2	Coefficients	Significance F
All three species	6	20	45.16	0.41*	0.020	211.3	0.53
White-rumped Vulture	6	20	28.99	0.41*	0.020	135.7	0.53
Slender-billed Vulture	6	20	8.64	0.35*	0.017	39.97	0.56
Red-headed Vulture	6	20	6.46	0.46*	0.023	30.31	0.50

(*)= data is significant difference at 95% confident interval

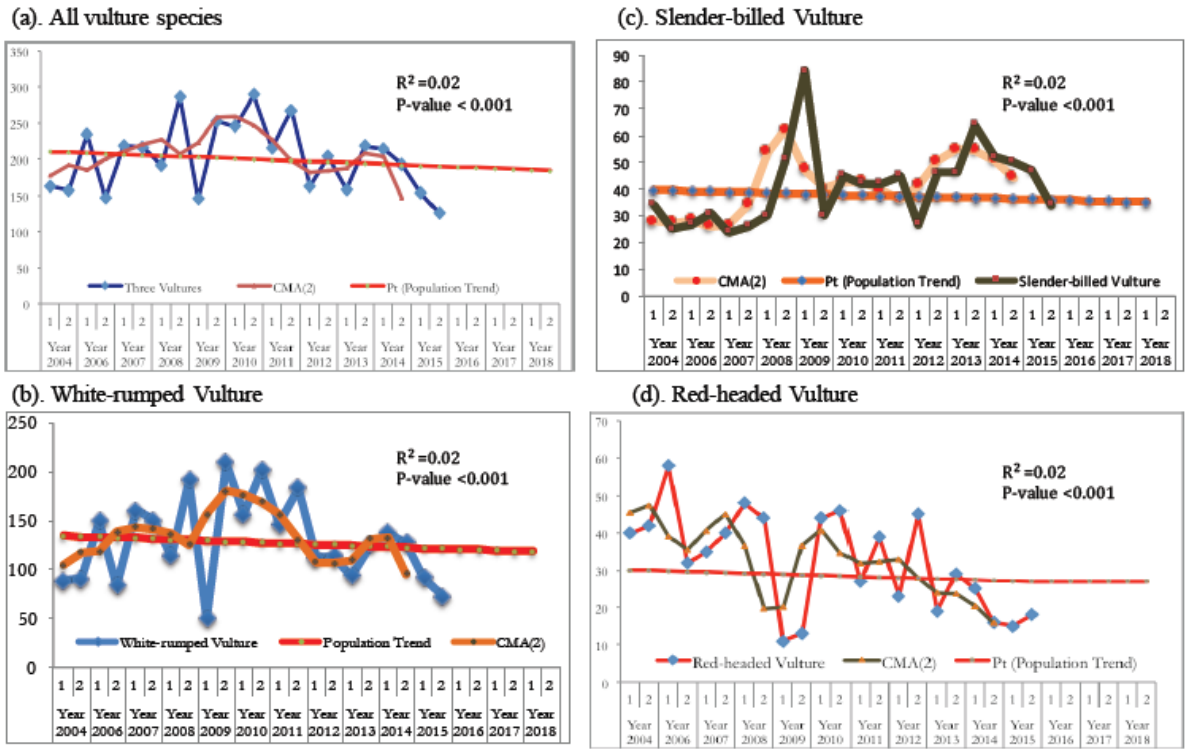


Figure 19: Graphic illustrates three vulture population trend and perdition trend for next year performance base on vulture population census data.

CAM3: Safeguard nesting areas from logging

2016 objective: Law enforcement to prevent logging at key sites **SP**

There was a big changed in the Cambodia dry forest landscape during breeding season of 2015-2016, a powerful and untouchable logging companies who the owner known as closed relationship to the high government officers operated his large scale of logging business throughout the country especially Western Siem Pang where suffer the most from this activity. NGO's patrolling team got no power to deal with this big issue until this operation last in this last 2016. As result, four of the Slender-billed Vulture nests at Western Siem Pang were reported failed due to human disturbance and other four nests were failed due to tree cutting for timbers.

To respond to this issue, BirdLife has deployed nest guardians to guard at all remained active vulture nests in Western Siem Pang to reduce disturbance and incidental tree cut down. The result prove that majority of nest failures were linked to human disturbances and logging activities causing by powerful companies that's over capacity of any NGO to deal with this issue directly and timely.

CAM4: Protect vulture nests from human predation

2016 objective: Continue nest protection if found to be effective **SP**

Major of three vulture nests found at Chep Wildlife Sanctuary (former Preah Vihear Protected Forest) and Siem Pang Kang Lech Wildlife Sanctuary (former Western Siem Pang IBA). A total of 21 nests of three vulture species were found during the 2015-2106 breeding season with only 13 nests (59%) successfully fledged. The number of nests recorded at Sesan declined over the reporting period and no nests were found in 2016. Furthermore no nests were found at Srepork Wildlife Sanctuary (former Mondulkiri Protected Forest) and Phnom Prich Wildlife Sanctuary (PPWS) where vulture nests were formerly frequently found (figure 20).

Eleven of twenty-two nest found in Western Siem Pang (8 slender-billed vultures, 1 whiterumped vulture and 2 red-headed vultures) where 4 slender-billed nests failed before deploying nest guardian to guard the nest (read CAM3 above) causing total number of chicks successfully fledges down rapidly to 63% of total nest found for this important site. Breeding season 2015-16 is the season that white-rimped vulture nest found in Western Siem Pang site. Five nests (3 red-headed vultures and 2 white-rumped vultures) found at Chep Wildlife Sanctuary, Preah Vihear of where one red-headed vulture failed. All nest found at this site were employed local people to guard the nest since the nests were found till progress end, therefor, at least 80% of nests found were successfully fledged. One redheaded vulture nest found at Sesan site and one white-rumped vulture nest found at Mekong Flooded Forest site where both nests were successfully fledged (see table and figure below).

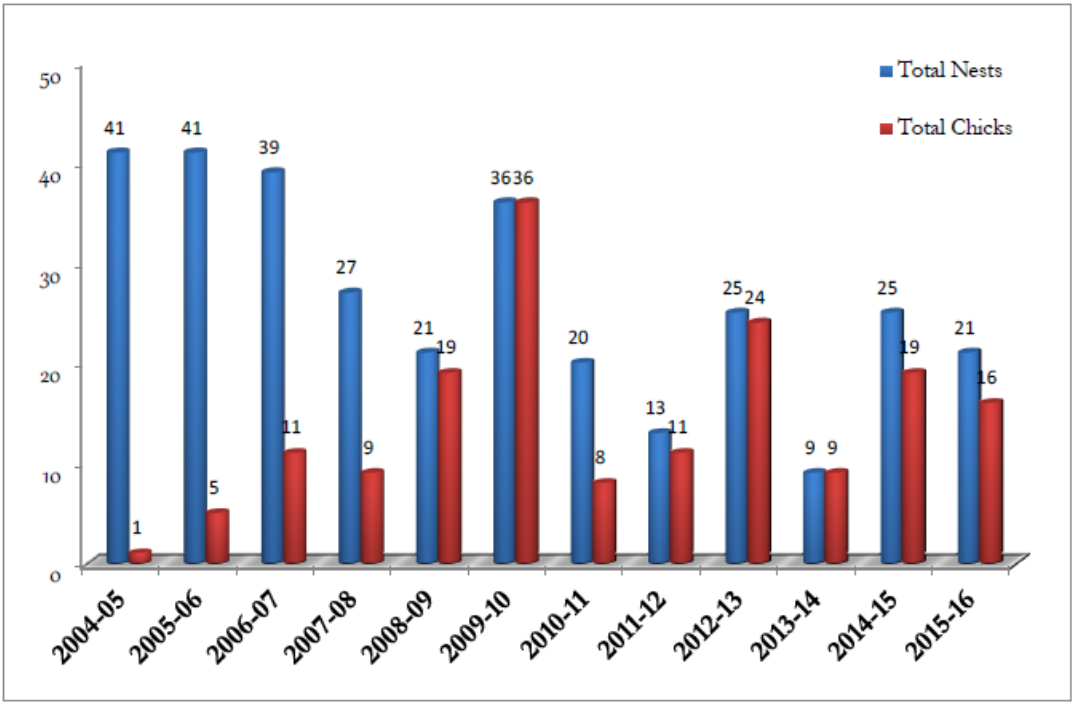


Figure 20: Graphic illustrates total nest found and number of chicks fledged from 2004-2016

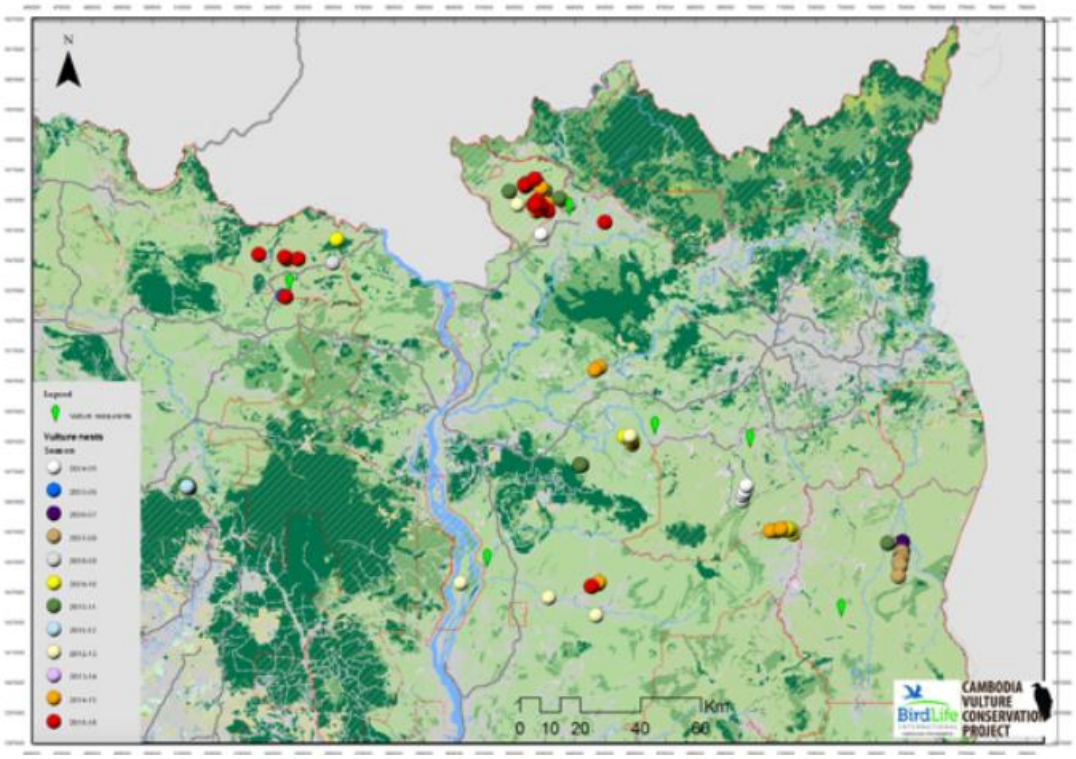


Figure 21: Map showing distribution of nest found across three vulture ranges from 2004-2016

CAM5: Monitor sales of veterinary drugs at key sites

2016 objective: Quarterly monitoring of veterinary drug sales at key sites **SP**

Based on the results from our previous study, revealed that Cambodia is not suffering from any forms of harmful veterinary drugs being sold or used. Although there is no immediate risk to Cambodian vultures from diclofenac, history has shown that vultures are at risk of catastrophic declines due to poisoning incidents. Following this comprehensive survey, we recommend that pharmacy surveys are repeated every few years (not quarterly) to continue to sample drug use and monitor for the introduction of new drugs, such as toxic pesticides like Carbufuran, responsible for recent vulture decline in Africa. This will enable a swift response should the patterns of drug use change.

Recently observation after having an incidental poisoning happened Vietnamese land concession area inside Lomphat Wildife Sanctuary found that there several kinds one poisoning drugs have being sold and used throughout vulture territory. Somehow, local people use to drug to poison birds and any other wildlife for food or sold on the market. This is a really worrying issue the project is facing recently. Thus, fighting with the use poisoning drugs to kill wildlife is the most major threat for Cambodia vulture conservation and we need to act now to protect them.

CAM6: Increase sustainability of CVCP

2016 objective: Evaluate CVCP activities and effectiveness **SP**

Cambodia Vulture Conservation Project is great achievement implemented by each project partner at each target conservation site. We're together working hard to ensure longterm survival of three species and below are some of what we strongly achieved from our performances.

- Vulture restaurants: Provide supplemental feeding to increase breeding success whilst enabling population estimates.
- Nest protection: Direct intervention to prevent disturbance or destruction of key breeding sites. Currently the number of nests found is low compared with other vulture populations in other parts of the world due to the habitat preference for remote forested nest locations.
- Poisoning investigation, diagnosis and anti-poisoning awareness. Investigation into poisonings is essential to inform mitigating or preventative actions such the awareness campaign currently employed by the CVCP.
- Sustainable financing of vulture restaurants: Whilst alternative methods for providing carcasses for vulture restaurants has been explored currently carcasses are still often bought at market rates.
- Monitoring of banned/restricted pesticides sold in the black market chain: Although it is known that the majority of pesticides misused for illegal wildlife poisoning are distributed, stocked and sold breaking licensing laws and regulations, attempts by
- CVCP partners to address this are hindered by sub-optimal enforcement of customs laws, chemicals management and licensing practices.