



# गिद्ध सन्देश

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Vulture Bulletin (गिद्ध सन्देश) is produced annually from Bird Conservation Nepal as a major newsletter on vulture conservation, usually comes in both language English and Nepali. It aims to inform issues, initiatives and recent advances of vulture conservation in Nepal to members, researchers, policy makers and all well wishers of BCN. This publication has been made possible with funding from Royal Society for the Protection of Birds.



Egyptian Vulture © Hari Basnet



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# FOREWORD

The vultures are part of our culture and they also have a very important ecological role of serving as a biological waste controller. Since the discovery of the catastrophic decline of the vulture population in Nepal close to 91% and its main cause being diclofenac. Nepal has been continuously putting huge efforts to halt its decline. Our major steps being successful ban on manufacture and import of veterinary diclofenac since 2006. Nepal is well known for its community led program and the establishment of Community Managed Vulture Safe Feeding Sites popularly known as Vulture Restaurants is a major component of our success in vulture conservation. Without the support and ownership from community, our conservation efforts will not bring good results and we would not have achieved at this level. We have also pioneered the idea of Vulture Safe Zone and till the date declared 70 districts as Diclofenac Free Zone which occupies more than 95% area of Nepal safe for vulture. Vulture Conservation Action Plan 2009-2013 and 2015-2019 endorsed by the government of Nepal are key to our actions on the ground.

Additionally, the setting up of Vulture Conservation Breeding Centre at Kasara in Chitwan National Park in 2008 and running a successful breeding program jointly with Department of National Parks and Wildlife Conservation, National Trust for Nature Conservation and Royal Society for the Protection of Birds, UK. Nepal has led the release of captive White-rumped Vultures along

with wild birds each bird fitted with telemetry tags to monitor their movements. In 2017 and 2018 we celebrated our

conservation breeding success by releasing

10 captive reared and 8 captive bred

vultures becoming the first country

to complete the cycle of catching,

breeding and releasing vultures

back into the wild. The long term

monitoring result indicated that the

rapid decline of the White-rumped

and Slender-billed Vulture population from

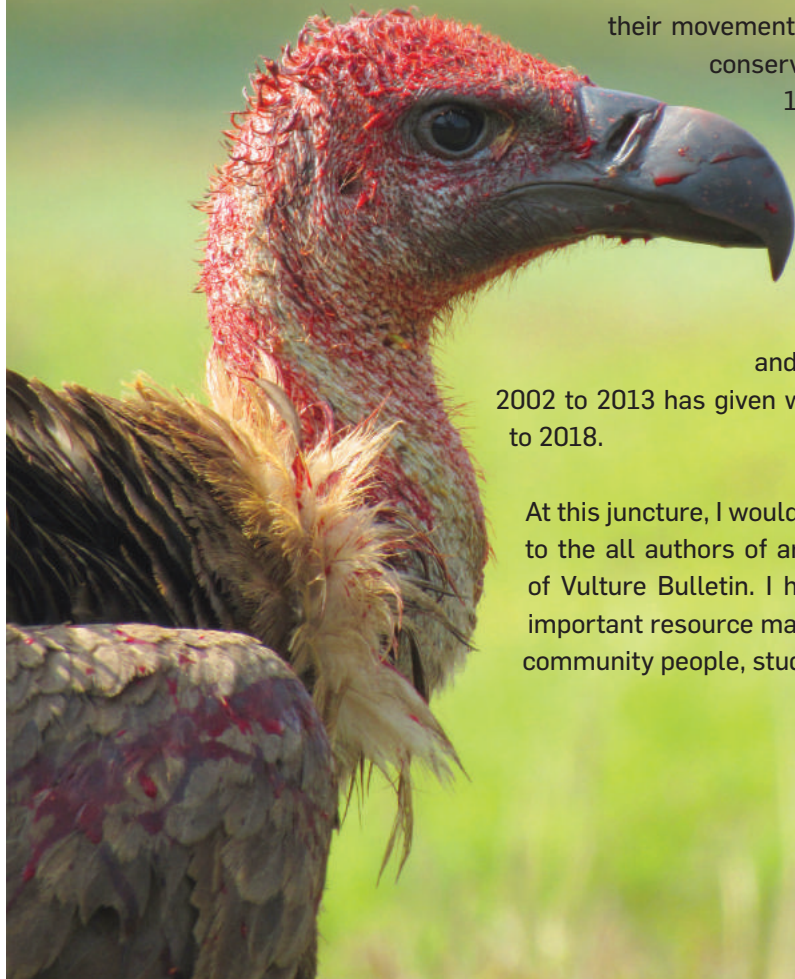
2002 to 2013 has given way to a partial recovery between 2013 to 2018.

At this juncture, I would like to express my sincere appreciation to the all authors of articles compiling on this especial issue of Vulture Bulletin. I hope that this bulletin will serve as an important resource material for a wide range of audience from community people, students, researcher and policy makers.

**Ishana Thapa**

*Chief Executive Officer*

**Bird Conservation Nepal**





# Building a Vulture-Safe Zone

Toby Heath Galligan\*

Nepal is set to have the world's first Vulture Safe Zone. Presently, the Royal Society for the Protection of Birds and Bird Conservation Nepal are tracking dozens of wild and captive-released White-rumped Vultures *Gyps bengalensis* in the country's provisional Vulture Safe Zone (pVSZ). Fitted with satellite transmitters, these vultures will show just how safe the pVSZ really is. In fact, it is the only way to be certain that we have stopped the

major threats – that is, diclofenac and other vulture-toxic NSAIDs – to vultures. Considering White-rumped Vultures are Critically Endangered, this might sound like risky business, but we are confident that Nepal's pVSZ will prove to be a true Vulture Safe Zone.

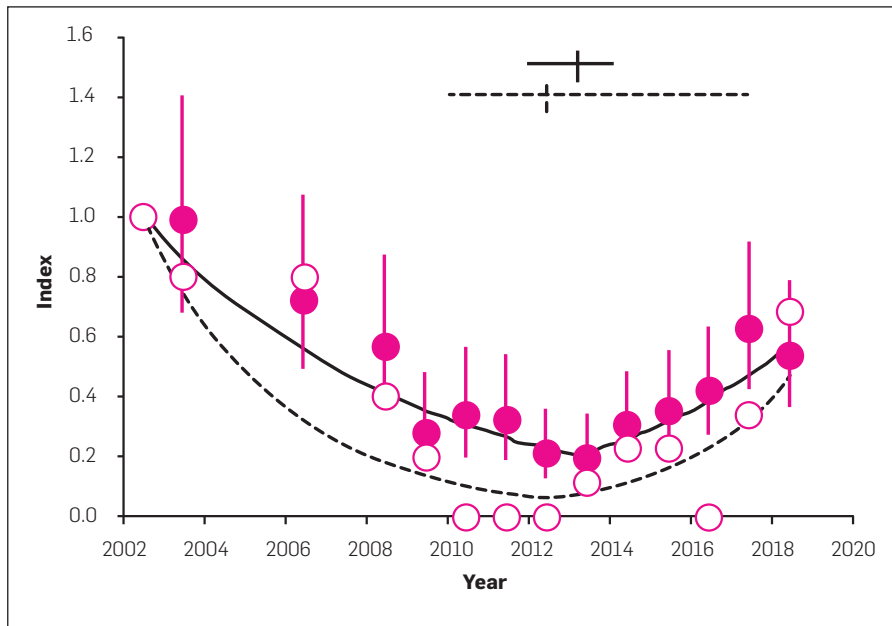
In a recent publication in *Bird Conservation International*, we present the data that gives us our confidence, namely:

a decrease in sales of diclofenac in veterinary pharmacies; an increase in sales in meloxicam (the vulture-safe alternative to diclofenac); and an increase in White-rumped Vulture and Slender-billed Vulture population.

Not long after the catastrophic declines in vulture populations began in Nepal, we began monitoring vulture species throughout Nepal. We use the country's



White-rumped Vulture © Ankit Bilash Joshi



**Figure: Annual index values for populations of White-rumped Vulture (WRV: filled circles) and Slender-billed Vulture (SBV: open circles) Vultures in Nepal for 2002–2018, relative to 2002. Vertical lines for the WRV points are 95% confidence intervals from the quasi-Poisson model. Curves show results from the fitted piecewise log-linear regression models for WRV (solid line) and SBV (dashed line). Crosses in the upper part of the diagram show the estimated breakpoints and their 95% confidence intervals.**

major roads as a series of transects on which we count vultures. We analyzed 14 years of data in this paper. We showed population declines between 2002 and 2012/13 followed by partial recoveries between 2012/13 and 2018. The partial recovery was better than expected if it was due to reproduction alone, suggesting that the populations are being bolstered by immigration as well.

Following the national ban on veterinary diclofenac in 2006, we began monitoring diclofenac and other veterinary drugs in pharmacies in what would become the pVSZ. We used both overt and covert methods – the former enabled us to enforce the ban at the same time; and the latter enabled us to gather accurate data on the illegal diclofenac. We measured the number of shops that had diclofenac

(overt) or sold diclofenac (covert). Our overt surveys showed a dwindling number of shops stocking diclofenac between 2007 and 2010 and no shops stocking the drug between 2011 and 2016. Our covert surveys showed approximately 2% of shops sold diclofenac between 2012 and 2016. The opposite was true for meloxicam, increasing among shops between 2007–2016 and being sold in approximately 93% of shops between 2012 and 2016.

From 2012 onwards, Nepali veterinarians and livestock owners had stopped using diclofenac and were more often using meloxicam instead; and, as a result, Nepal's vultures were no longer dying, and their numbers were being supplemented with survivors from other countries. These are super encouraging findings. But how did we achieve this?

The ban on diclofenac did not bring about this positive change alone. We worked hard advocating vulture conservation and educating communities on the vulture-toxic-NSAID problem. Our aim was to rid Nepal of diclofenac and prevent another vulture-toxic NSAID taking its place. We achieved this through wide community engagement, from local decision makers and authorities to veterinarians and farmers, and small conservation organizations to national media outlets. We swapped meloxicam for diclofenac, managed Vulture Safe Feeding Sites, developed vulture ecotourism and celebrated vultures and their ecosystem services. It is these activities, on the back of the ban, that have truly benefitted Nepal's vultures.

**Table: Proportion of veterinary pharmacy survey shops in the Western Terai region at which diclofenac and meloxicam was offered for sale during open and undercover surveys.**

Years	Number of shops visited	Number offering diclofenac	Number offering meloxicam	% shops with diclofenac	& shops with meloxicam
<b>Open surveys</b>					
2007-2009	208	49	152	23.6	73.1
2010	435	7	405	1.6	93.1
2011	352	0	305	0.0	86.6
2012-2016	707	0	659	0.0	93.2
<b>Undercover surveys</b>					
2012-2016	215	5	201	2.3	93.5

\* Formerly Senior Conservation Scientists, RSPB Centre for Conservation Science  
(Source: <https://community.rspb.org.uk/ourwork/b/biodiversity/posts/building-a-vulture-safe-zone>)



# Distribution of vulture species and their nesting in Chitwan-Annapurna Landscape (CHAL), Nepal

Ganga Shah<sup>1\*</sup>, Jose D. Anadon<sup>2</sup>, Pramod Kumar Jha<sup>3</sup> and Nanda Bahadur Singh<sup>4</sup>

## Abstract

Vultures provide essential ecosystem services, yet they are among the most threatened groups of birds worldwide. In Nepal most of the researches on vulture species is focused on the small area mostly on lowland but research on landscape level is limited. So the study was conducted to assess altitudinal/seasonal distribution, document nest sites and to know the threats to vultures through the local people's prospective in Chitwan-Annapurna Landscape. The study was conducted in summer and spring season from 123m in Nawalparasi to 3550m altitude in Manang district. Line transect method was used to document the nesting sites and vulture species. Similarly, questionnaire survey was carried out to know the local people's perception and threats to vultures. Among the nine, eight species of vultures were recorded except Indian Vulture in spring season. Similarly, all the six resident vultures were recorded in the summer season. 25 nests of White-rumped Vulture, three nests of Egyptian Vulture and one nest of Red-headed Vulture were recorded during the study period. Out of 120 questionnaires 81% people believed vultures are decreasing in their locality and thought by the food scarcity, diclofenac, electrocution and deforestation. For the long term vulture conservation, community based conservation programmes should be strengthen by government authority and concern organizations.

## Introduction

Vultures are the natural scavengers, which provide essential ecosystem services, yet they are among the most threatened groups of birds worldwide. New World family Cathartidae and of the old World family Accipitridae of vulture habitually feed on carrion (Ogada *et al.*, 2015). Total 23 species of vultures are reported globally while Nepal supports all nine Accipitridae species of vultures that are found in Indian sub-continent (DNPWC 2015).

Out of nine species, White-rumped Vulture (*Gyps bengalensis*), Slender-billed Vulture (*Gyps tenuirostris*), Himalayan Griffon (*Gyps himalayensis*), Red-headed Vulture (*Sarcogyps calvus*), Egyptian Vulture (*Neophron percnopterus*) and Bearded Vulture (*Gypaetus barbatus*) are resident



Himalayan Griffon © Chungba Sherpa

breeders whereas Griffon Vulture (*Gyps fulvus*) and Cinereous Vulture (*Aegypius monachus*) are winter visitors and Long-billed Vulture (*Gyps indicus*) is vagrant in Nepal (DNPWC, 2015). The anti-inflammatory veterinary drug diclofenac, used to treat domestic livestock, has been identified as the cause of vulture mortality (Oaks *et al.*, 2004). Human disturbance, habitat destruction, food scarcity, carcass poisoning, electrocution, collisions and wild fire are found as associated threats for vultures in Nepal (Gautama and Baral, 2013).

## Materials and Methods

### Study area

This study was performed in **Chitwan-Annapurna Landscape (CHAL)** in central Nepal is known for its rich biodiversity covering an area of 32,057 square kilometers, with elevations ranging from 100 m to 8,091 meter above sea level. CHAL is a major hotspot for biodiversity in central Nepal. It is a part of Greater Himalayan Landscape and is envisioned as a potential biological corridor for north-south linkage (Basnet *et al.*, 1999, 2000).

The study sites of CHAL were **Nawalparasi** (Elevation – 300m to 2000m, latitude 27.6498°N, longitude 83.8897°E with area of 2,162 km<sup>2</sup>), **Palpa** (Elevation – 300m to 2000m, latitude 27.8253°N, longitude

83.6348°E with area of 1,373km<sup>2</sup>), **Kaski** (Elevation – 450m to 8091m, latitude 28.2622°N, longitude 84.0167°E with area of 2,017 km<sup>2</sup>) and **Manang** (Elevation – 1000m to 6400m, latitude 28.6419°N, longitude 84.1857°E with area of 2,246 km<sup>2</sup>).

### Materials

Generally GPS (GARMIN etrex10), Camera (NIKON D3200), Binocular (Bushnell 8×42), Topographic Map (1:50,000), Measuring Tape and Birds of Nepal book were used as materials.

### Methods

#### Line Transect

Line Transect survey was conducted in all study sites to gather information on the altitudinal and seasonal distribution,

no of nests and threats to vulture species in CHAL. Survey was done from 08:00 hours to 16:00 hours. Transect of 20 km was made on each study sites in spring season and same transect was followed on summer season.

### Seasons and Visit

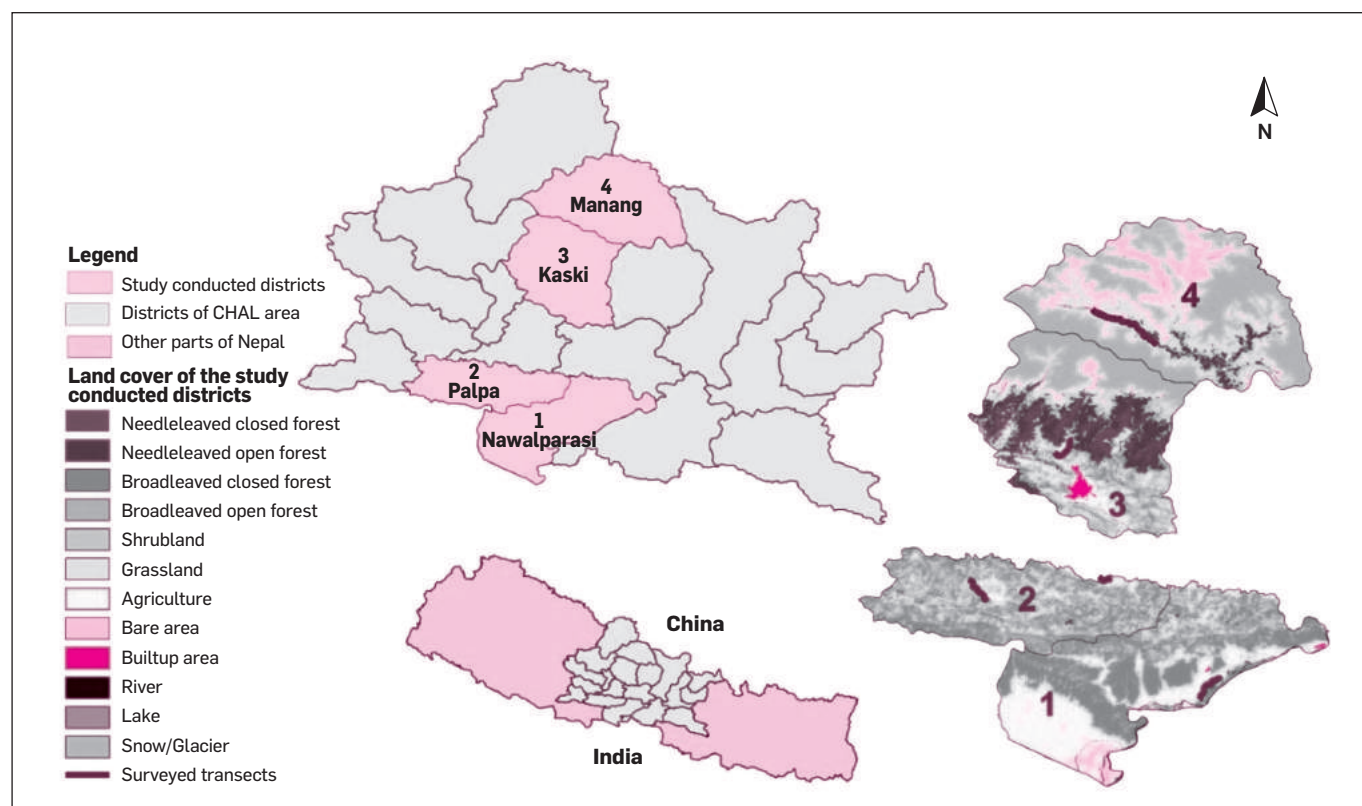
First survey was started from 3-18 April, 2016 in spring season and second survey was conducted from 13 July to 28 July, 2016 in summer season.

### Nest Count

The Nest identification and counting was done while walking on transect in the study area. Nests only sighted with eyes were recorded while walking on transect. The nest was differentiated as occupied and unoccupied nest based on the presence or absence of vulture on the nest.

**Table: 1 Transect Characteristics**

SN	Name of the Transect	Length (km)	Elevation (Meter)		Study District
			Min.	Max.	
1.	Kawasoti- Krishnasar forest	20	125	177	Nawalparasi
2.	Bejhad- Batasedanda	20	308	1547	Palpa
3.	Ghachowk- Milanchowk	20	962	1118	Kaski
4.	Chamche- Gangapurna lake	20	2173	3550	Manang



**Figure 1: Map of study area**



## Questionnaire Survey

Questionnaire surveys were done with both male and female local people to collect the information regarding threats to vultures in both spring and summer season. Total 120 questionnaire survey was conducted throughout the study area.

## Data analysis

Collected data were analyzed both qualitatively and quantitatively. The altitude and number of Vulture species was kept in two separate columns for two separate seasons and were interpreted by one-way ANOVA in R package software (2016) to test significance of altitude on number of Vulture species. The vulture nests and threats to vulture were qualitatively analyzed in Microsoft Excel 2010.

## Results

### Altitudinal and Seasonal distribution of Vulture Species

The negative correlation was found between altitude and vulture species in spring ( $r = -0.317$ ) and summer ( $r = -0.438$ ) seasons. Eight species (*G. bengalensis*, *G. himalayensis*, *G. tenuirostris*, *G. fulvus*, *S. calvus*, *N. percnopterus*, *A. monachus* and *G. barbatus*) were observed in spring season while six species (*G. bengalensis*, *G. himalayensis*, *S. calvus*, *N. percnopterus*, *A. monachus* and *G. barbatus*) were observed in summer season from 125m to 3550m altitude.

### Altitudinal distribution of vulture species in spring season

We recorded White-rumped, Slender-billed and Egyptian vulture from 129m to 1500m altitude. Himalayan vultures were recorded from 358m to 3550m altitude. Red-headed vultures were recorded from 308m to 1550m altitude. Cinereous and Griffon vultures were recorded from 1000m to 1500m altitude. Bearded vultures were recorded from 2204m to 3550m altitude in spring season (Figure 2).

### Altitudinal distribution of vulture species in summer season

We recorded White-rumped, Red-headed and Egyptian vultures from 123m to 1500m altitude. Himalayan vultures were recorded from 411m to 3550m altitude. Slender-billed vultures were recorded below 500m altitude. Bearded vultures

were recorded from 2665m to 3550m altitude in summer season (Figure 3).

### Nesting Sites of different vulture species

All together 29 nests were recorded in the CHAL area. Among them 8 productive and 3 occupied nests were of White-rumped vulture in Nawalparasi, 12 productive and 2 occupied nests were of White-rumped vulture in Palpa district. All three productive nests of Egyptian vulture were in Nawalparasi, Palpa and Kaski district. Only one occupied nest of Red-headed vulture was found in Palpa district. No nest of Himalayan and Bearded vulture were recorded during the survey.

### Threats

Among the respondents 81% responses vultures number is decreasing in their locality, while only 8% believes vultures are increasing in their area and 11% people had no idea about the changes of vulture



Vultures feeding carcass at Vulture Restaurant, Nawalparasi © BCN

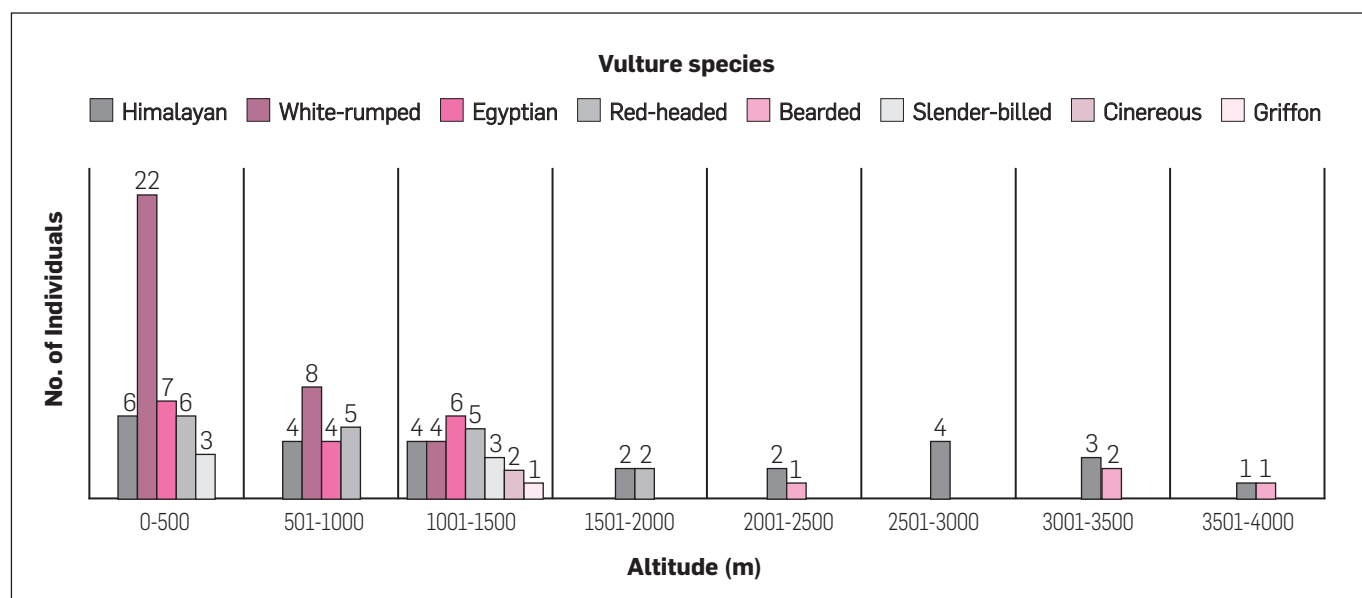


Figure 2: Altitudinal distributions of Vulture Species in spring survey

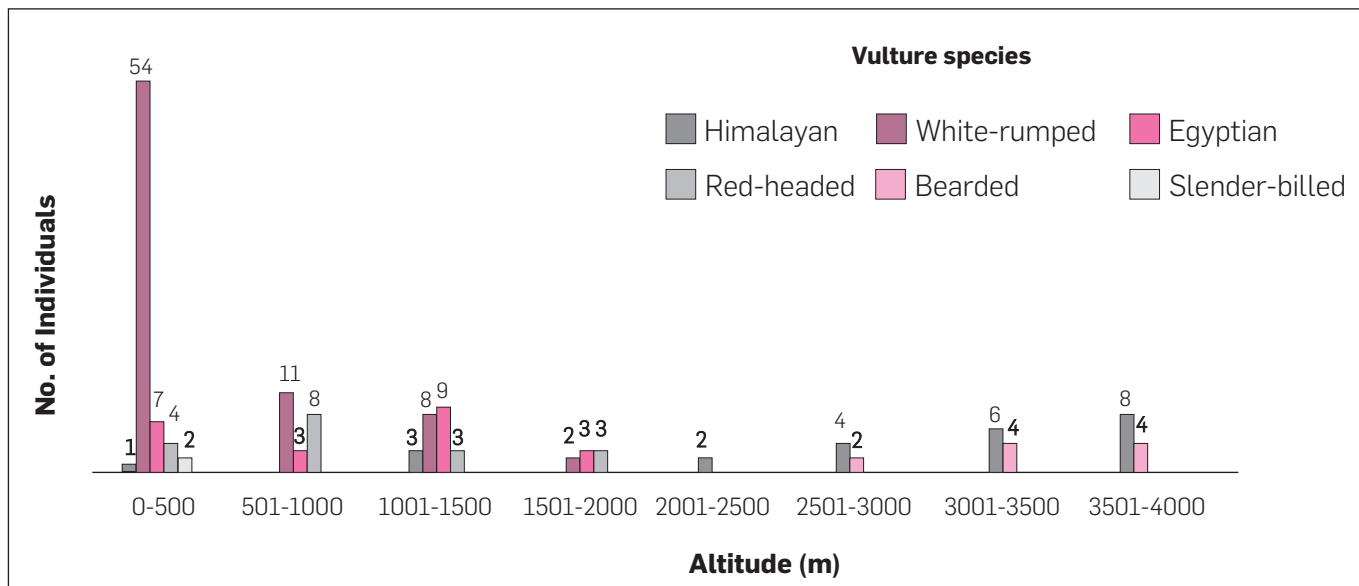


Figure 3: Altitudinal distributions of Vulture Species in summer survey

population. Respondents said that the major threats to the vulture in CHAL is food scarcity (35%), diclofenac use (22%), electrocution (16%) and deforestation (8%).

## Discussion and Conclusion

### Altitudinal distribution of Vulture species

Altitude was found to be statistically significant on vulture species which is universal as altitude increases species richness decreases. The result of this study revealed that the Himalayan Vulture was found to be recorded between 358m to 3,550m altitude. Bhusal (2011) recorded Himalayan vulture at the altitude of 1,732m to 2,200m from Gherabhir, Arghakhanchi in summer season, in contrast, Inskipp *et al.* (2016) mentioned Himalayan vulture record up to altitude of 6100m, as this survey was limited up to 3550m.

White-rumped vultures were recorded from 123m to 1,565m during the study. Gurung (2013) and Inskipp *et al.* (2016) also recorded White-rumped vulture between 75m to 1800m altitude. Bearded vultures were recorded between 2204m and 3,550m altitude which is similar with record in Khodpe, Baitadi at the altitude of 2260m Karmacharya (2011).

Red-headed vultures were found to be distributed between 123m to 1,550m asl. Shrestha and Devkota (2010) recorded Red-headed vulture in Dang Valley at the altitude of 150m, Gurung (2013) recorded Red-headed in Tanahau within the altitude of 310 to 1120m altitude, which is similar

with the finding.

The result of this study revealed that the Egyptian Vultures were recorded between 123m to 1,553m altitude. Gurung (2013) recorded Egyptian vulture in Tanahun, with in the altitude of 1120m altitude. Similarly, Phuyal (2012) recorded Egyptian vulture at Ramechhap district at the comparable altitude between 100-200m. In contrast Subedi (2015) recorded 19 Egyptian vultures at higher altitude range 2050m in Thoola kharkha, Kaski.

Only two Cinereous Vultures were recorded at the altitudes 1078m and 1,093m respectively in this study. In contrast Inskipp *et al.* (2016) record Cinereous Vulture species at 3000m altitude which is high altitude than finding of this study.

The result of this study revealed that the Slender-billed vultures were recorded altitude between 125m to 1,070m. Gautam and Baral (2009) recorded similar altitude at 1,288m in Kaski district, Similarly, Subedi (2015) also recorded contrasting altitude at 2050m in Thoolakharka, Kaski.

The result of this study revealed that the Griffon Vulture was recorded at the altitude of 1,093m. Subedi *et al.* (2014) recorded at an altitude 2050m in Thoola Kharka Raptor, Kaski.

### Seasonal distribution of Vulture species

Eight vulture species in spring season and six vulture species in summer season were recorded in this study. Dhakal (2011) recorded very close number of vulture species; seven vulture species in spring

season and five vulture species in summer season in Rupandehi and Dang districts. Similarly, Gurung (2012) recorded six vulture species in spring season in Tanahun district. Bhusal and Dhakal (2011) also recorded five vulture species in summer season in Arghakhanchi, which shows similar finding and suggests that more species in spring and less in summer season.

### Nesting of different Species of Vulture

Total 11 nests of White-rumped vulture were recorded in Nawalparasi. Upadhaya (2008) recorded 34 nests, Gurung (2012) recorded 45 nest and Inskipp *et al.* (2016) recorded 27 active nests of White-rumped vulture in Nawalparasi. One productive nest of Egyptian vulture in Nawalparasi was recorded, which is same nest as finding of Gurung (2012) and Inskipp *et al.* (2016). Total 14 nests of White-rumped vulture was recorded in Palpa. As Gautam and Baral (2014) recorded 32 active nests in Rampur in 2013/14 breeding period. Only one productive nest of Egyptian Vulture was recorded in Palpa. Similar with finding as Subedi and DeCandido (2014) recorded one nest of Egyptian in Palpa district in 2012. One nest of Red-headed vulture was recorded in Palpa. Similar with the finding as, Dhakalet *et al.* (2014).

### Threats

Result showed vultures species were decreasing (81%), As BCN (2016) study in TAL also found 91% respondent believes vultures were decreasing too. Major cause of vulture decline said by the respondent was food scarcity (35%), followed by diclofenac (22%) and Electrocution (16%)



as same was the finding of Maming and Xu (2015) in China, Oaks *et al.* (2004).

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*\*for the author correspondence, e-mail: gangashah2016@gmail.com*

<sup>1</sup>Central Campus of Science and Technology, Mid western University, Birendranagar, Surkhet, Nepal.

<sup>2</sup>Department of Biology, Queens College, The City University of New York, New York, United states of America.

<sup>3</sup>Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

<sup>4</sup>Central Department of Zoology, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

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# Status and Distribution of Accipitridae Vultures in Salyan District, Nepal

Suman Ghimire<sup>1\*</sup>, Krishna Prasad Bhusal<sup>2</sup>, Suman Bhattarai<sup>3</sup> and Pratik Pandeya<sup>4</sup>

## Abstract

Salyan district is home of two Globally Threatened; Red-headed and Egyptian Vulture and two Near Threatened; Himalayan Griffon and Bearded Vulture. This study was aimed to generate baseline information about status and distribution of these different vulture species in Salyan district, Nepal. Three road surveys were conducted following the fixed route and 141 identifiable individuals of four different vulture species were recorded; eight individuals of Red-headed Vulture, 27 Egyptian Vulture, 18 Bearded Vulture and 88 Himalayan Griffon were observed during the study period. Except Kalimati rural municipality vultures were found to be distributed in all other local municipalities of Salyan district. The baseline information generated in this study is important for future research monitoring and preparation of site level conservation plans.

## Introduction

Vultures are the fastest obligate scavengers of terrestrial ecosystem and are at the risk of extinction due to their catastrophic decline during the last two decades. Historically, vultures were very common raptors in the world. In South Asia *Gyps* vultures began to decline in the mid-1990s at rates of up to 50% per year. Unintentional poisoning by veterinary use on cattle of the toxic NSAID diclofenac is the sole reason behind such rapid declination of vulture in South Asia (Prakash *et al.*, 2007, Paudel *et al.*, 2016 and Safford *et al.*, 2019). Besides the ecological importance vultures also have high economic and socio cultural values. Decline of vultures has many associated impacts such as economic effects for those engaged in industries such as cattle skinning and bone collecting, and for villagers who have to find alternative means of disposal of carcasses; human, livestock and wildlife disease effects; and cultural/religious effects (Prakash *et al.*, 2004). Further, declination of vultures' population favor increase in feral dogs and facultative scavengers (Cunningham *et al.* 2001) which could have serious consequences for human and wildlife health, as dogs are carriers of several diseases like rabies, distemper, and canine parvovirus (Pain *et al.* 2003). Additionally, they also have an important role in some cultures that believe in sky burials which require vultures for consumption of human corpses as in Manang and Mustang districts of Nepal. Nepal supports all nine species of vultures recorded from South Asia (Paudel *et al.*, 2016).

Detail study of these threatened species in new and potential habitats is crucial for their long term conservation. Bird Conservation Nepal has recorded four species of vultures; Red-headed Vulture, Egyptian Vulture, Bearded Vulture and Himalayan Griffon, particularly along the "Rapti Highway" connecting Dang, Salyan and Rukum districts (BCN 2013) but status and distribution of vultures throughout the Salyan district was unknown. Therefore, this study fulfilled this gap.



Red-headed Vulture © Kewal Chaudhary



## Methods

### Study Area

Salyan is geographically located at 28° 22' 43N latitude and 82° 10' 13E longitude between 457m to 3,049m elevation covering an area of 1642 km<sup>2</sup>. About 65.7% of the total land area of the district is covered by forest which is very high compared to the national average. The district lies outside the protected areas but small section of Kalimati rural municipality is inside the buffer zone of Banke National Park. Near the southern border of the district there is a Vulture Safe Feeding Site at Tulshipur Sub metropolitan city, Dang. Forests of Salyan district comprises *Shorea robusta* and Pine forest in the south and northern halves respectively, with cliffs and scattered human settlements around the forests, which provides favorable habitat for different vulture species.

### Field Survey

Three surveys were carried out at a regular interval of three months to know the vulture diversity and breeding status from June 2017 to February 2018. The survey was done using a vehicle that was run with limited speed between 20 to 25 kilometers per hour from 07:00hrs to 17:00hrs which is same as of nationwide vulture survey (Galligan et al 2019). We also scanned the possible area from vantage points. Each of the observed individuals were recorded by following Vulture Monitoring Guideline of Bird Conservation Nepal. The geographic location of vulture sighted point was recorded by using GPS (Grain, Etrex 10) and habitat type was also noted. Days of extreme weather conditions; windy, heavy rainfall and dense cloudy were avoided because of low detection probability. Further, when vulture was sighted around the settlement, we used to do consultation with local people to know the nesting sites and status.

## Results

### Local peoples' knowledge about vultures

Local people are used to categorize

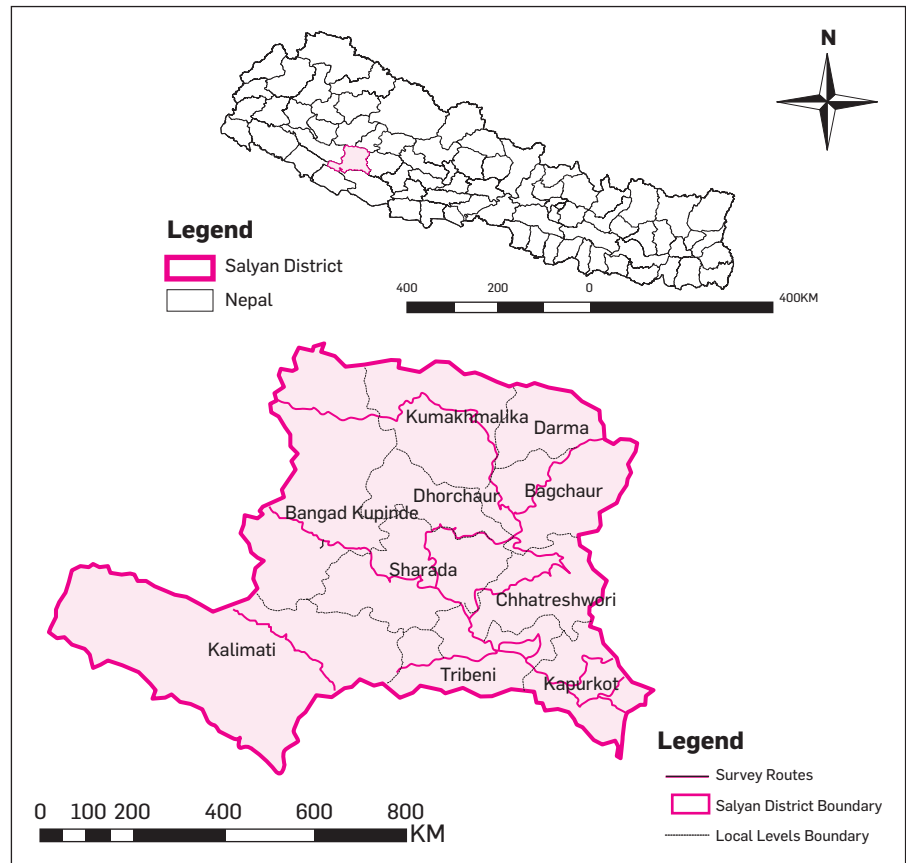


Figure 1: Location of Salyan district in Nepal and the survey routes

vultures broadly as “**chhop khane giddha**” i.e. carcass eating vultures” and “**challa khane giddha**” i.e. chicken killing vultures”; the former term was used to call for the real vulture species while the latter one was used for the hunting raptors (Kite, Eagle, Falcon). People have different local name to call each vulture species.

### Status of vultures

Four species Red-headed Vulture, Egyptian Vulture, Bearded Vulture and Himalayan Griffon were recorded from the district. Two species Himalayan Griffon and Bearded vulture were recorded in all three surveys while Red-headed and Egyptian Vultures were recorded only during two surveys (June 2017 and February, 2018).

We recorded eight Red-headed Vultures, 27 Egyptian Vulture, 18 Bearded Vulture and 88 Himalayan Griffon following the seven transect in three surveys. We recorded the

significant number of immature individuals of all species from the area which means they may have fledged around the areas.

### Distribution of vultures

Except in Kalimati rural municipality, vultures were recorded in all political geographical parts of Salyan district. In Chhatreshwori and Tribeni rural municipalities recorded all four species of vultures. In Kapurkot rural municipality only Red-headed vulture was recorded while only Himalayan Griffon was recorded from Dama and Kumakhmalika rural municipalities. Bearded vulture was recorded from only four rural municipalities (Tribeni, Chhatreshwori, Dhorchaur and Bangad Kupinde). Egyptian and Himalayan Griffon were recorded from seven rural municipalities and Egyptian vulture was not recorded in Kapurkot, Kalimati and Kumakhmalika rural municipalities whereas Himalayan Griffon

Table 1: Vultures of Salyan district

English Name	Scientific Name	Nepali Name	Local Name	Reason behind the Local Name
Bearded Vulture (BV)	<i>Gypaetus barbatus</i>	Hardfore giddha	Hade giddha	Its feeding behavior
Egyptian Vulture (EV)	<i>Neophron percnopterus</i>	Seto giddha	Guiye giddha	Its availability in dumping sites
Red headed Vulture (RhV)	<i>Sacrogyaps calvus</i>	Sun giddha	Bhale giddha	Presence of wattles like in cock
Himalayan Griffon (HG)	<i>Gyps himalayensis</i>	Himali giddha	Thulo giddha	Its body size

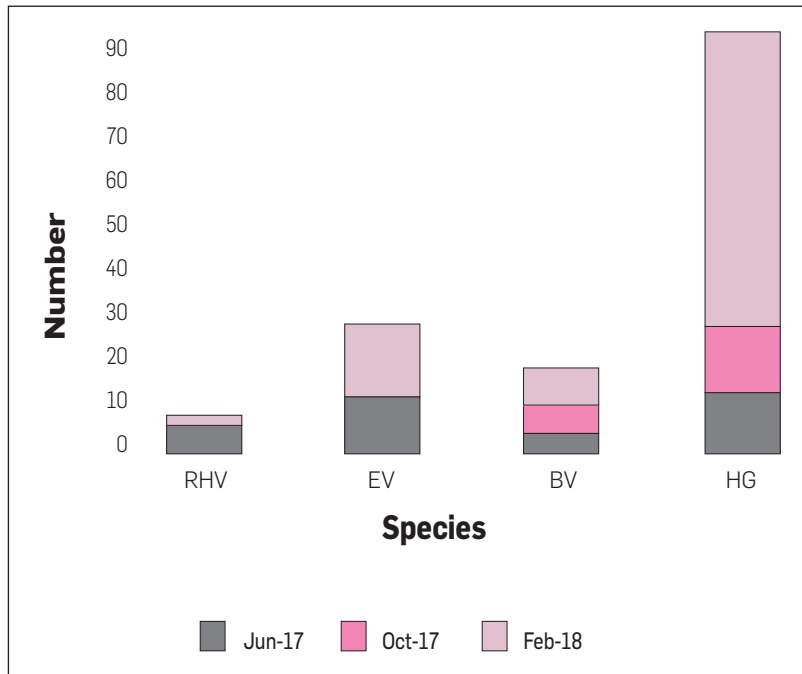


Figure 2: Individuals record of vulture species in different survey months

was not recorded in Kapurkot, Kalimati and Dhorchaur rural municipalities.

### Nest Distribution

We recorded the nesting locations of Egyptian Vulture, Himalayan Griffon and Bearded Vulture on rock cliff from Kapurkot, Chhatreshwori, Dhorchaur and Bangad Kupinde municipalities (figure 4).

### Discussion and Conclusion

This was the first detailed study on vultures carried out by covering whole Salyan district. People are experiencing declining in vulture population with compare to past 10 to 15 years. Most of them said that in the

past they used to see hundreds of vultures feeding carcasses along the river, stream and pasture areas. Keshab Basnet, a local resident from Kafalpani village, pointing a cliff opposite to his house and claimed that many vultures used to occupied that cliff but now the cliff is unoccupied. People thought that change in carcass disposal practice might be the major reason for

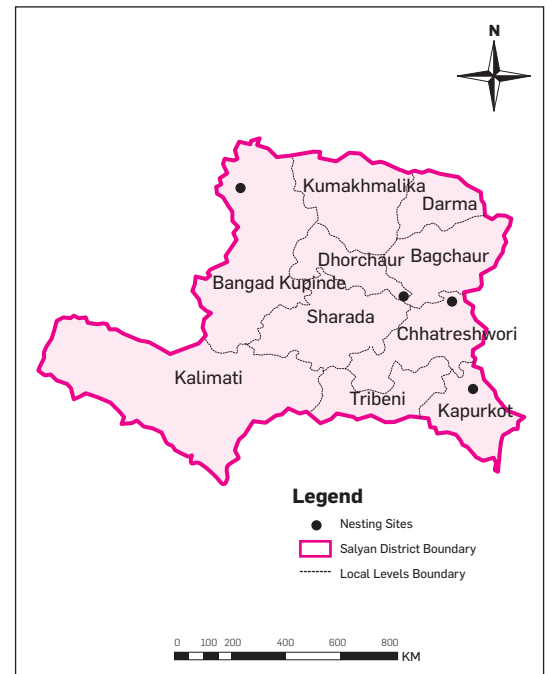


Figure 4: Location of Nesting sites of EV, BV and HG in Salyan district

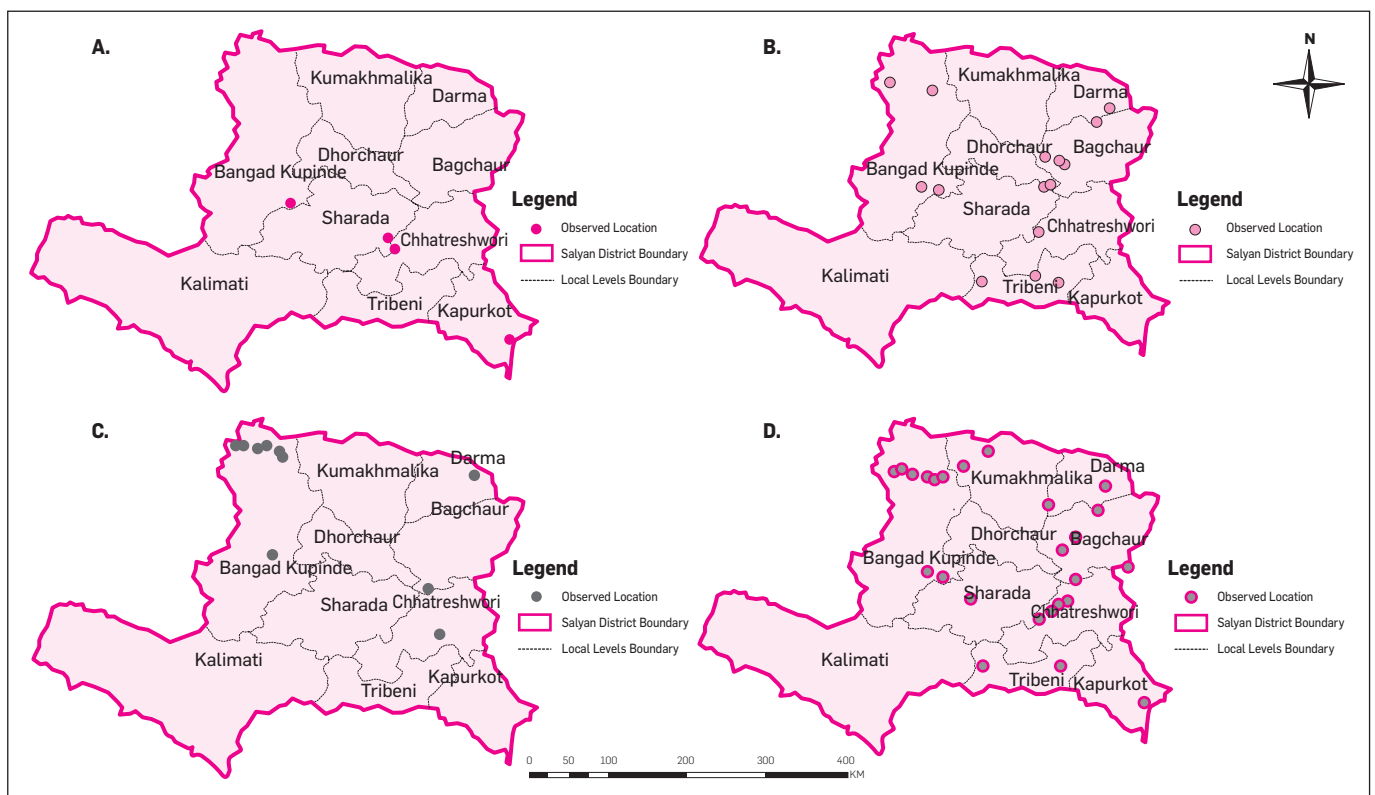


Figure 3: Species wise distribution map based on rural municipalities (a) Red-headed Vulture, (b) Egyptian Vulture, (c) Bearded vulture and (d) Himalayan Griffon



vultures disappearing from their locality. Local people also believed disturbance to habitat (cliff) because of road construction is another reason of their loss. Some people also predicted that the medicine provided to livestock might also have bad effect to vultures. With the complete ban on use of Diclofenac on veterinary practices; Salyan was declared as vet Diclofenac Free District in 2012 which constitute the important part of Vulture Safe Zone of Nepal (Bhusal K.P., 2018).

(Inskipp *et al.* 2016) had reported the estimated national population of Red-headed Vulture, Egyptian Vulture, Bearded Vulture and Himalayan Griffon is 400, 1000, 500 and 10,000 respectively. In this study we recorded eight Red-headed vultures, 27 Egyptian vultures, 18 Bearded vultures and 88 Himalayan Griffon which is more or less similar with that national ratio. Though we have recorded Red headed vulture from five local municipalities of Salyan district, (Subedi and Decandido, 2014) had reported no record of Red-headed vulture till 2013. The record of Red-headed vulture in this study is also irregular as we didn't sight it in October 2017. BCN (2013) had reported the presence of all four species of vultures which is in line with our finding.

Bhusal (2012) had observed six nests of Himalayan Griffon, two nests of Egyptian Vulture and one active nest of Bearded Vulture from Damachaur area which is now located in Chhatreshwori rural municipality. But now all those nests were almost abandoned. Vultures were seen soaring around the nesting sites but none of the old nests were in use. This might be due to the disturbance created due to road constructed just below (approx. 5m from nests).

The data obtained from this study has generated detailed baseline information about the four different species of vultures found in Salyan district. This could be used for future monitoring and prepare site level conservation plans. Construction of road very near to the nesting site of vultures seems to have created disturbance to the vultures causing abandonment of the nests. Thus, the minimum distance of 500m (Margarida *et al.*, 2010) between source of disturbance and breeding colony should be maintained since minimum human disturbance is critical to successful breeding of raptors (Chomba & M'Simuko, 2013). If tall trees with strong branches, which are sparsely distributed are located, marked and protected, there is high probability of colonization by Red headed vulture because loss of large trees affects nesting behavior of vultures negatively (Chomba and M'Simuko, 2013). The rural

municipalities should initiate conservation education program at schools, vulture based ecotourism activities and conservation friendly development activities for the long-term conservation of these threatened vulture species.

## Acknowledgement

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*\*for the author correspondence, e-mail: sumanghimire038@gmail.com*

*1 Department of National Parks and Wildlife Conservation, Kathmandu, Nepal*

*2 Bird Conservation Nepal, Kathmandu, Nepal*

*3 Institute of Forestry, Pokhara, Nepal*

*4 Faculty of Forestry, Agriculture and Forestry University, Hetauda, Nepal*

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# Status and Distribution of Vultures in Sankhuwasabha District, Eastern Nepal

Pramisha Karki<sup>1\*</sup>, Bishnu Prasad Bhattarai<sup>1</sup> and Krishna Prasad Bhusal<sup>2</sup>

## Abstract

Studied the status, distribution, threats and local people perception towards vultures in Sankhuwasabha district, eastern Nepal from January 2018 to January 2019. During the study period through transenc survey observed 18 individual of Himalayan Griffon and six individuals of Bearded Vulture from five different sites of study area. There was not recorded the vulture nest in study area. During the vet pharmacy surveys vulture killer drug diclofenac was not found. With the support of this study the district was declared as vet diclofenac district in 30<sup>th</sup> May 2019 by the concern government authorities and Bird Conservation Nepal. The main threats to vultures found in this area were food scarcity, habitat destruction, use of pesticides and herbicides etc.

## Introduction

In Nepal nine species of vultures are found of which, White-rumped Vulture, Slender-billed Vulture, Egyptian Vulture,

Red-headed Vulture, Himalayan Griffon and Bearded Vulture are resident breeders whereas Eurasian Griffon is passage migrant, Cinereous Vulture is winter visitor and Indian Vulture is vagrant (Grimmett *et al.*, 2016).

In the past decades, vultures were most common raptor species in Nepal. Between 1995 to 2011 monitoring of vulture population in lowland of Nepal, reveled declines of 91% and 96% for White-rumped Vulture and Slender-billed



Himalayan Griffon © Chungba Sherpa

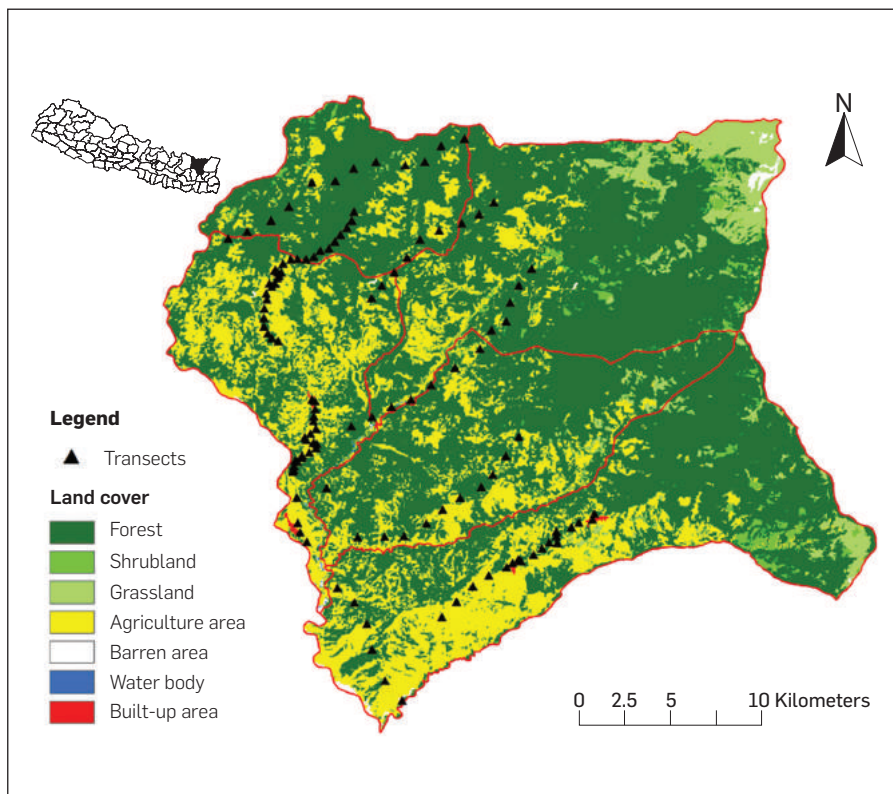


Fig 1: Map showing survey transects and land cover

Vulture respectively (Chaudhary *et al.*, 2012). Similarly, population of Bearded Vulture and Himalayan Griffon in upper mustang declined by 80% during 2002-2008 (Acharya *et al.*, 2010) and 70% during 2000-2005 respectively (Acharya *et al.*, 2009).

The population of vulture collapsed dramatically in the decade of 1990s mainly by veterinary drug diclofenac. Except that there are also other hazards like deliberately poisoning, electrocution and collisions with power lines, habitat loss (Paudel *et al.*, 2016).

## Materials and Methods

### Study Area

Sankhuwasabha district lies in Koshi zone of Eastern Nepal. It covers 3,468.38 sq.km areas. The district extends within 27° 06' to 27° 55'N latitudes and longitude of 87° 57' to 87° 40'E with the lowest elevation 250m and the highest elevation point 8463m above the sea level. Mt. Makalu, fifth highest peak of the world lies in the district.

### Vulture Survey

The trails used by local people were taken as transect for the vulture survey. The vulture species seen along transect were recorded and the individual number

counted. There were seven transects and the average length of transect was 6.5km as the length of transect cover vary according to the settlement, altitude, weather etc. Transect survey was started from 07hr to 18hr every day (Figure 1).

## Perception of local people and threats to vulture

Questionnaire survey was done with local people to acquire their experience, knowledge and perception towards vultures and its conservation. Questionnaire survey was conducted in Chichila, Chisapani, Manebhanjyang, Guwabari, Nayabazar, Dhungana gaun and Kerabari. People above 20 years were selected as the respondents and interviewed. A total of 200 respondents were surveyed. NSAIDs survey in different agro-vet shops was also done to find out the status of NSAIDs in market. Direct observation made to know the other threats to vultures in the field like food scarcity, habitat etc.

## Results

### Status of vultures

During the 40 day field work, vultures were seen in the three transects of seven transects. Two species, Himalayan Griffon and Bearded Vulture were observed from three transects. In total 24 individual of vultures recorded of which 18 were Himalayan Griffon and 6 were Bearded Vulture. All were observed from western part of the district elevation ranges from 1020m to 2056m. Himalayan Griffon were sighted in two locations at an elevation of 1880 and 1887 m. from sea level.

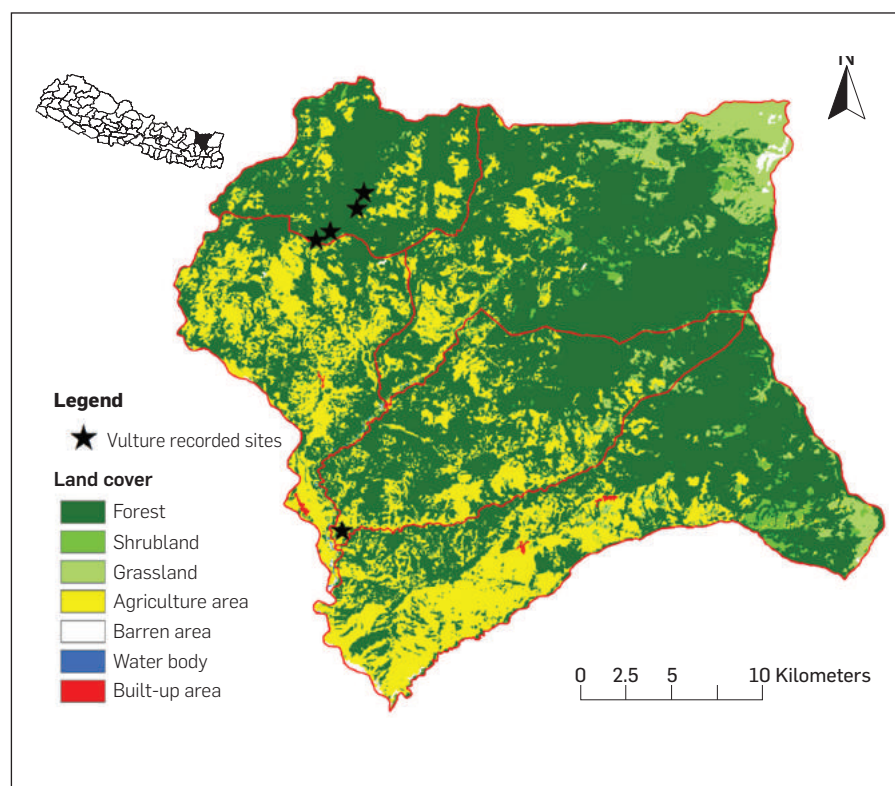


Figure 2: Map showing vulture recorded sites and land cover



Bearded Vulture were sighted from the three locations of the elevation 1020m, 1958 and 2056 m from sea level. Nests of vulture were not found in study area. Along with vulture other raptors like Steppe eagle, Black kite, Common kestrel and Black eagle were also sighted during the study period.

In the questionnaire survey of 200 respondents 186 (93%) have seen vultures and 14 (7%) haven't seen the vultures in their locality since last five years. In total respondents 181 (97.31%) thinks vulture are decreasing in their area and 5 (2.69%) has no idea either increasing or decreasing the vulture number in their area. None of the respondents thinks the vultures are increasing.

### People Perception on vulture conservation

Among the all respondents, 182 (91%) respondents thought vultures are useful for the environment because they eat up carcass, control outbreak of disease, keeps environment clean and prevent spread of bad smell while 18 (9%) respondents thought they aren't useful but the sign of bad luck. None of respondents has ever killed vultures. When the respondents were asked about the effort and works that could be done in their locality to save vulture, maximum respondents (35%) answered that the vulture can be save by increasing food (carcass) availability and by removing the killer drug Diclofenac and poisoning.

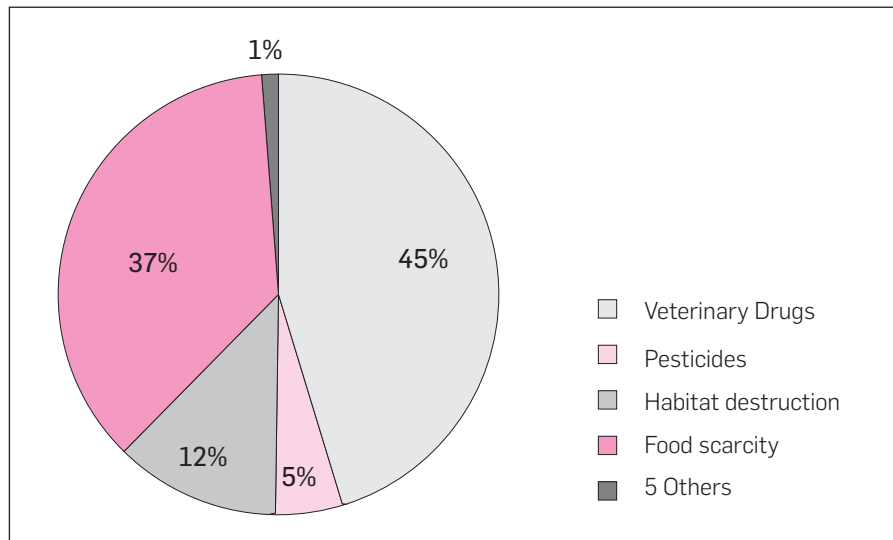


Figure 4: Reasons for decreasing of vultures

### Threats to vulture

Owners of Agro-vet shop and veterinary practitioners were also interviewed in the study area. Directly visited to 7 veterinary shops to know the status of NSAIDs use. None of the Agro-vet shops was found to be selling diclofenac. Since last 3-5 years they were selling Meloxicam in replace of diclofenac. All vet practitioners were aware about the ban of diclofenac. Found the Meloxicam with trade name Xycloten-P, Melox, Melocam plus, Proxyvet MP. The district therefore declared as the vet diclofenac free district by the district level concern stakeholders in coordination with Bird Conservation Nepal.

In total of 200 respondents, 111 (55.5%)

respondents own the livestock and 89 (44.5%) respondents didn't own the livestock. Every respondent was asked about the reason for the change in livestock farming; most of them total 61% respondent answered it was because of the change in occupation, 41.5% said because of urbanization and modernization. Only 41% consult with veterinarian for the livestock treatment and 59% of respondents do not consult with veterinarian. Total 40% respondents had confirmed their livestock were dead because of the disease and 60% respondents answered no livestock were dead due to any disease.

Most of the respondents 45% said vultures are decreasing because of the use of veterinary drug like Diclofenac. Among the respondents 37% thought that the vultures are decreasing because of food scarcity. Vultures are not getting enough food (carcass) because people nowadays bury the dead animals and 12% said habitat destruction is the cause of the decline of vultures. Pesticides also thought as threats for vultures by 5% of respondents and 1% of respondent said it's because of other reason like electrocution, persecution, poisoning and herbicides (Figure 4).

### Discussion and Conclusion

Vultures have selective diet, large territory and lower breeding rate they are directly influenced by the change in environment. Use of veterinary drugs, ingestion of chemicals and lead, poisoned bait, anthropogenic climate change, non-food items, low food availability and deforestation threatened the vultures (Richard, 2013).

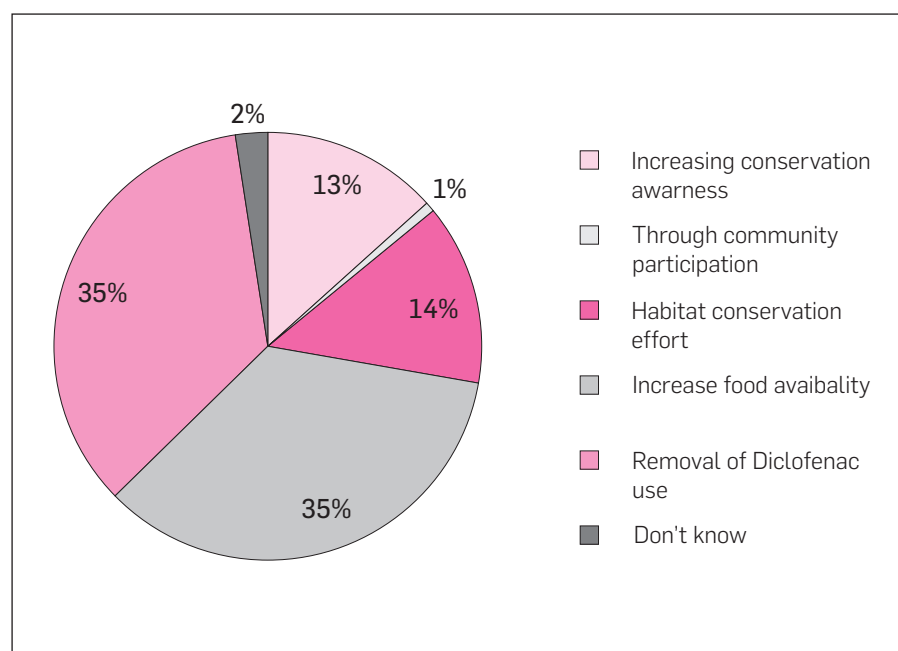


Figure 3: Local people feedback for vulture conservation



Bearded Vulture © Shambhu Bhattarai

Himalayan Griffon and Bearded Vulture were recorded as soaring and flying from the site. Vultures have large territory and traveled far for feeding that's may be reason for not finding the evidence of nest in the study area. During the conversation with local people the nest of vultures used to be found in Ramite Danda and Dhande Bhir which are now abandoned. When the photographs were shown to the respondents, they said they have seen Himalayan Griffon, Bearded Vulture, Red-headed Vulture and Cinereous Vulture also. Carcass was not found in the study area may be due to the environment sanitation campaign. That seems the unavailability of food for vultures. During the road construction disturb the vulture nesting and even some road passes through the potential cliffs. There is no record of diclofenac and District Veterinary Office organized the awareness program on effect of diclofenac to vulture and other raptors.

The deliberately poisoned carcasses impact the vulture (Baral *et al.*, 2002) but such incidents were not observed during the study period. The occasional fire in the forest in dry season is the threat to vulture because at that time chick developed in fledging stage. Also the excessive use of pesticides and poison in agriculture and the climatic variation might be threatened vultures in the area and over the range.

No use of diclofenac was found in the area but the unavailability of carcasses, habitat destruction and rapid developmental activities are creating unfavorable condition for vulture's existence in the

district. Most of the respondents answered that the conservation of vulture is needed. The veterinarians should make aware as they can play important role in the society to change the attitude of the society towards vulture.

## Acknowledgements

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\*Author for correspondence, e-mail- pramisha775@gmail.com

<sup>1</sup>Central Department of Zoology, Institute of Science and Technology, Tribhuvan University, Kirtipur, Kathmandu, Nepal

<sup>2</sup>Bird Conservation Nepal, Lazimpat, Kathmandu, Nepal

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# Distribution of vulture species across the Nepal- An opportunistic photographic evidences since 2013

Hari Basnet\*

## Introduction

Among nine species of vultures found in Nepal, White-rumped Vulture (WRV), Indian Vulture (IV), Slender-billed Vulture (SBV) & Red-headed Vulture (RHV) are

Critically Endangered and Egyptian Vulture is Endangered. Moreover, Bearded Vulture, Cinereous Vulture, Himalayan Griffon are vulnerable and while last one Griffon Vulture is least concerned in global list (DNPWC 2015, Inskipp et al.

2016). Beside their immense ecological services in the ecosystem, four species of Vultures (WRV, IV, SBV and RHV) declined sharply putting great danger of extinction in the Indian sub-continent in 1990s as they are highly intolerant to the NSAID

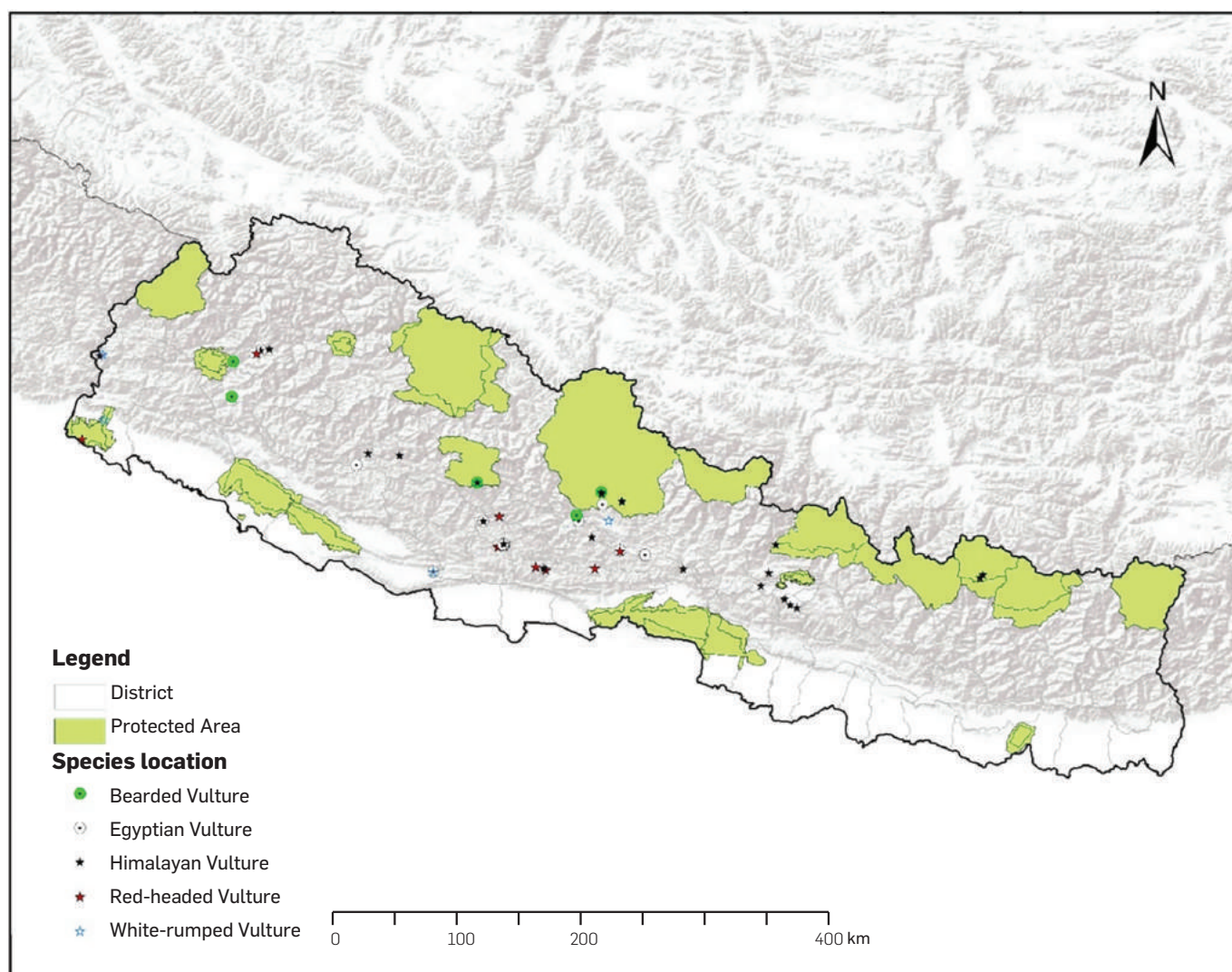
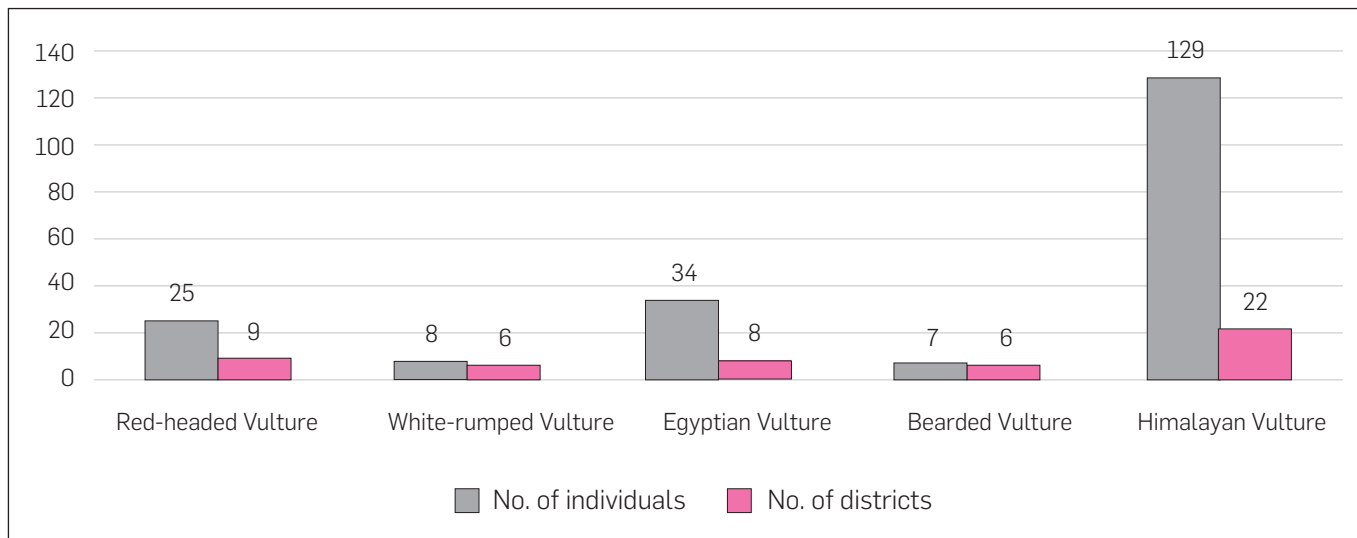


Figure 1. Map showing the distribution of vulture species in Nepal.





**Figure 2. A chart showing the no. of vultures and district recorded since May 2013 in different parts of Nepal.**

diclofenac, which they were exposed to through the consumption of carcasses of recently treated livestock (Chaudhary et al., 2012). In order to halt the decline of these critically endangered birds, the Government of Nepal banned the production and use of veterinary diclofenac in 2006 and endorsed the first and second Vulture Conservation Action Plan (VCAP) for Nepal (2009-13, 2015-2019). The main objective of VCAP was to prevent the extinction of vulture by ensuring a safe food supply, maintaining suitable habitat, captive-breeding for re-introduction, and better understanding the ecological importance of these birds in Nepal. In the past research are concentrated on observations record, status and distribution studies have been carried out on vulture species across various parts of Nepal. However recent telemetric studies wide open the knowledge on movement and migration pattern of vulture in Nepal (Bhusal. et, al 2018). Many vulture habitats still unexplored in different part of Nepal. This paper tries to address the distribution of five species of resident vulture recorded opportunistically during different field visit from May 2013 to June 2019. All the photograph taken during field visit was accessed to extract feature evident (capture date, geographic location, number of individuals and species) from the photos along with field notes for extra information and number of individuals. This information will encourage the young graduate and researcher to focus on the new areas for vulture research as well as contribute to formulate policy and take conservation actions in local level.

## Result and discussion:

A total of 203 individuals belonging to five species of vulture were extracted from the 75 photographs which were taken during

the field visit. These are very carefully noted to avoid the duplication as well missing from the photo frame. These vulture species were (Himalayan Vulture, Egyptian Vulture, Red-headed Vulture, Bearded Vulture and White-rumped Vulture) recorded from 22 districts across the Nepal (Figure 1).

In total 129 individuals of Himalayan Vulture were recorded between 513-3615 m asl. from 22 districts across Nepal was the highest among these species. Similarly, 34 individuals of the Egyptian vulture were recorded from eight district and 25 individuals of Red-headed Vulture were recorded from nine districts. Furthermore, eight and seven individuals of White-rumped Vulture and Bearded Vulture were recorded from six districts respectively. Among these records, Red-headed Vulture is not reported from Achham, Baglung, Bajura, Parbat and Tanahun as mentioned

in Redlist of Nepal's Birds. Moreover, detailed research should be conducted in Badimalika municipality and surrounding areas as juvenile of Red-headed was recorded from Sallena area. Moreover, White-rumped Vulture are reported from the district Kanchanpur, Tanahun, Baitadi, Gulmi and Dang. Furthermore, the species has been recorded above their usual elevation range in Gulmi (1559m asl) and Baitadi (1627m asl) district; the usual upper limit for the species is 1500m asl (BirdLife International 2017). Similarly, Egyptian Vultures were recorded from Parbat, Jajarkot, Bajura, Gulmi, Tanahun and Dang districts. The record of Egyptian Vulture in Parbat, Achham and Bajura districts are also reported in the Inskipp et al. 2016.

*\*Small Mammals Conservation and Research Foundation,  
Email: - haribasnet88@gmail.com*

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# Nesting Characteristics and Habitat Preferences of Critically Endangered White-rumped Vulture *Gyps bengalensis* in Rampur IBA, Palpa, Nepal

Bikash Ghimire<sup>1\*</sup>, Raju Acharya<sup>1</sup>, Kuppusamy Sivakumar<sup>2</sup>, Sas Biswas<sup>3</sup> and Chhimi Dorji<sup>4</sup>

## Abstract

Nepal supports all nine species of vultures that are found in Indian sub-continent; out of them four are categorized under Critically endangered and one under Endangered category of IUCN red list. Due to various casual elements, diclofenac being the principal one, population status of vultures depletes in a disastrous rate. *Gyps* vultures start to breed at the age of five to seven years and the season starts from September to May. Both the sexes share nest building activities and nurturing of eggs, hatchlings and fledglings. This study has assessed the nesting characteristics and habitat preference of White-rumped vulture in Khaireni Community Forest, Rampur, Palpa and observed a huge 94% breeding success for the year 2016; by using nest observation from existing trails using binoculars, tagging of nesting trees, counting active and passive nests, habitat analysis methods. The site is favorable for vultures due to habitat conditions and less anthropogenic activities.

## Introduction

Nepal is home to nine Accipitridae vultures including six residents [Bearded Vulture (BV), Egyptian Vulture (EV), Himalayan Griffon (HG), Red-headed Vulture (RHV), Slender-billed Vulture (SBV) & White-rumped Vulture (WRV)], one winter migrant Cinereous Vulture (CV), one passage migrant [Griffon Vulture (GV)] and one vagrant Indian Vulture (IV) species. Out of these nine species, four species (WRV, IV, SBV and RHV) are categorized as Critically Endangered (CR) and EV as Endangered (E) in the IUCN red list category (DNPWC, 2015).

Mainly three species of vultures (WRV, IV and SBV) of Indian sub-continent have seen a highly disastrous population decline consequential to their CR status. RHV also

experienced similar fate and the reason for mass mortality was a harmful Non-Steroidal Anti-inflammatory Drug (NSAID) diclofenac, a drug to treat livestock suffering from pain and inflammation, (Harris, 2013) resulting in severe danger of extinction from their distribution range (DNPWC, 2015). The small remaining population may have threatened by poisoning, habitat loss, localized shortage of food, electrocution, etc. (Bhusal K. P., 2018). The harmful NSAID diclofenac has been banned since 2006 and a safe alternative drug meloxicam has been promoted subsequently (DNPWC/MoFSC/GoN 2009). Over 90% decline in population was observed in between 1995 and 2009 (Chaudhary et.al, 2012).

Government of Nepal has formulated Vulture Conservation Action Plan (VCAP)

in two regular successions. VCAP (2009-2013) was successfully implemented and the second VCAP 2015-2019 is in implementation now aiming at complete eradication of diclofenac, increase in wild breeding population, management of science based information system, conservation awareness and partnership with national and international organizations (DNPWC, 2015).

Baral & Gautam, 2007 recorded WRV along with other six species of vultures' viz., EV, SBV, RHV, HG, CV and GV in Rampur valley, western Nepal. The study has revealed that since 2002, there have been gradual declines in vulture populations and breeding success in Rampur. Diclofenac removal program was initiated in Rampur and Tanahu, Nepal following the declination. The adult mortality rate



Nesting site of White-rumped Vulture in Rampur Palpa © Bikash Ghimire

was found to be low in Rampur (Baral and Gautam, 2007). Rampur valley has the highest density of breeding WRV in Nepal (Baral *et al.*, 2005) and the valley has been included in the list of Important Bird and Biodiversity Areas (IBA) in Nepal (Baral and Inskipp, 2004).

The biological maturity of vultures to breed vary, however *Gyps* vultures start to breed at the age of five to seven years. They form monogamous pairs and both the sexes share the incubation and care of the hatchlings. Nests are generally built on trees or cliffs and are colonial in some species. (SAVRW, 2004). Nests can be used year after year. Both birds participate in nest construction with often one bringing sticks and the other doing the building (Mundy *et al.*, 1992). They produce one egg during each subsequent breeding season. Annual survival rates of large raptors are typically high (Mendelssohn & Leshem, 1983).

The breeding displays of the *Gyps* vultures are poorly described however, it appears that 'tandem flying' and 'jetting in' are generally noted courtship displays. Sitting and roosting together and some mutual preening are also being recorded (Mundy *et al.*, 1992).

Study shows that, a WRV has a span of over 6 months from September to May for breeding behaviors. Egg laying starts in the month of December. It takes about two months for an egg to hatch. The nestling

then grows up to the fledgling in a period of 3 months approximately (Ali and Ripley, 1983). This study was undertaken to understand the nesting characteristics and habitat preference of *Gyps bengalensis* in Khaireni Community forest of Rampur Valley, Palpa district Nepal.

## Methodology

### Study area

Rampur municipality (27° 51' 80" N and 83° 54' 24" E) lies in the South-West of Nepal. Its mean elevation is 442 m. The area has

been included in the list of Important Bird and Biodiversity Areas of Nepal (Baral and Inskipp, 2004).

### Status and Distribution of Nests

The study area was rigorously visited, in the month of February and April 2016, from east (Seulibazar) to the west (Changling) following the river belts. Only riverine belt of Rampur IBA, of Palpa district was assessed for this study. Informal group discussions with local people was carried out to understand about the historic

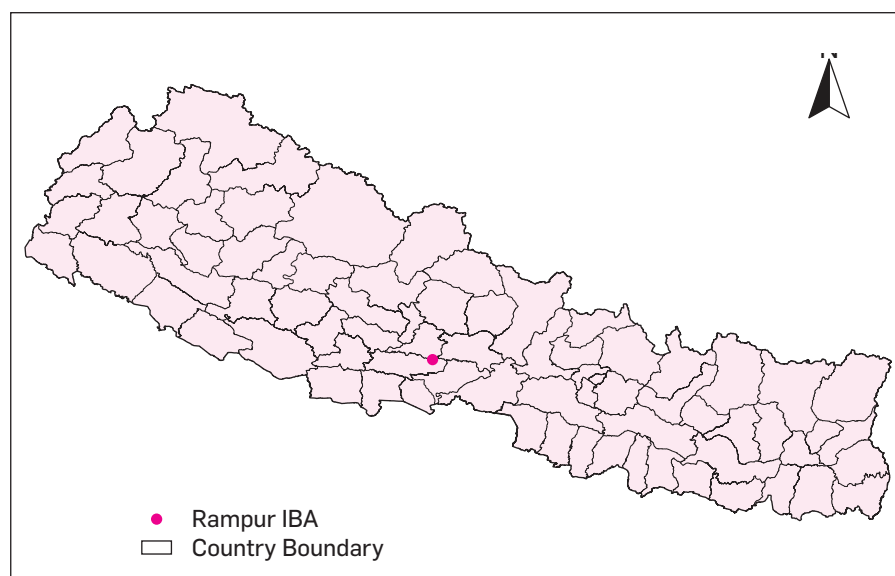


Figure. Location of Rampur IBA in the map of Nepal



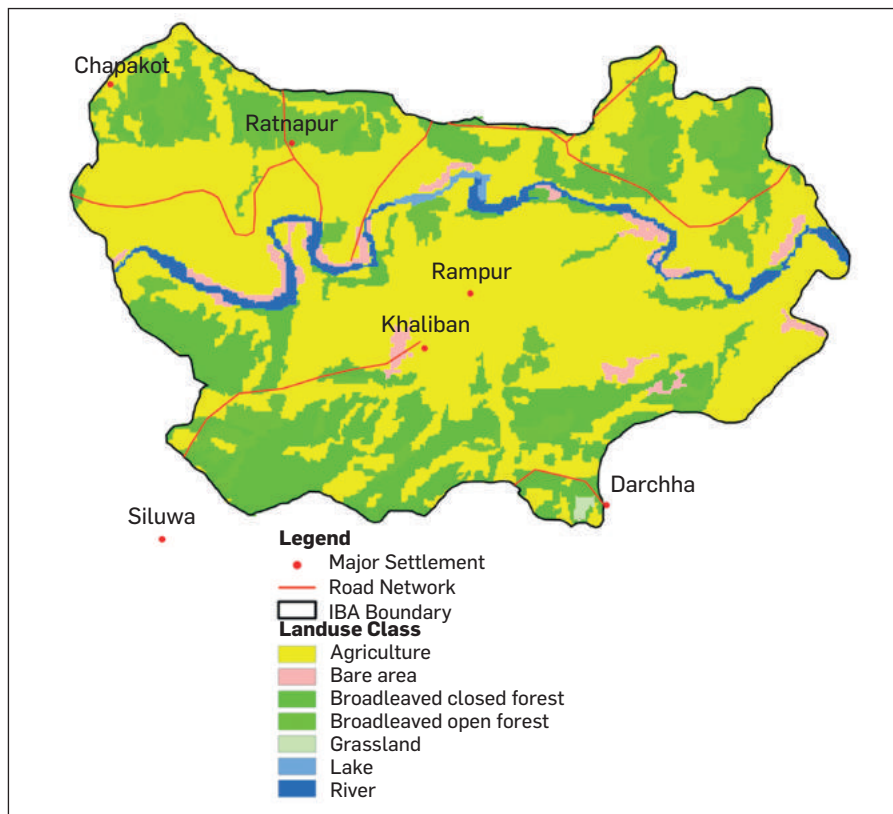


Figure. Rampur IBA (Source: BCN)

nesting sites and existing nesting and roosting sites in their locality. After the nesting and roosting sites were identified, nest counting along with study of nesting characteristics followed by habitat assessment was carried out.

Based on local information and existing knowledge, careful observations of potential vulture nesting habitat were made. Nesting vultures were thoroughly searched for by scanning potential nesting trees in open areas. Nests were monitored using binoculars to document number of individuals and their status (nesting/roosting/perching).

Nest observations were made from existing trails in Khairani Community Forest, keeping distance to least disturb the vultures. Data regarding nesting characteristics such as latitude and longitude of the nesting tree using a garmin GPS, height of nesting tree and nest height using Abyne's level, location of nests in the canopy, direction of nest, nesting materials and shape of nests were documented.

In order to study breeding ecology, nests were counted and nest occupancy, presence of active and passive nests, number of hatchlings, terrain preferred to build nest and distance of nesting tree from nearest water body were recorded. Trees were marked with appropriate symbols and numbers for future reference. Active nests were differentiated following

Postupalsky, 1974. To find out the breeding success number of successful nests was divided by total number of active nest and times by 100.

### Nesting and Roosting Habitat

Nesting of White-rumped Vulture was only present in Khairani community forest (28.16 Ha.) in the breeding season of 2016. Vegetation survey was carried out by laying 15 m radius plots for trees

and 5m\*5m plots for shrubs inside each circular plots. All the trees and shrubs were identified and enumerated. Diameter of all the vegetation excluding herbs was measured with the help of measuring tape for trees and digital caliper for shrubs. Species area curve was prepared to find out the minimum number of circular plots needed to survey the area adequately.

Once number and size of quadrate was fixed, the plots were randomly distributed in the forest. The geographic location of the center of each circular plot was noted. In each plots the number of species, corresponding number of individuals and diameter of each individual trees exceeding 10 cm diameter at breast height (dbh, at 1.37 m above the ground) was measured.

For quantitative analysis of the vegetation density, frequency, basal area and their relative values and importance value index (IVI) of tree species were calculated following (Mueller & Ellenberg, 1974). For the assessment of vegetation diversity (excluding herbs) of nesting sites, Shannon-Weiner Diversity index was followed (Magurran, 2004).

## Results

### Status and Distribution

This study was carried out between February to April 2016 so the pre-breeding activities of White-rumped vultures couldn't be recorded. However, Recorded the all 21 nests of White-rumped vultures in Khairani community forest in which 17 (81%) nests were active and 4 (19 %) nests were passive in that breeding season. All nests were found in *Bombax ceiba* trees except one which was in *Toona ciliate* tree.

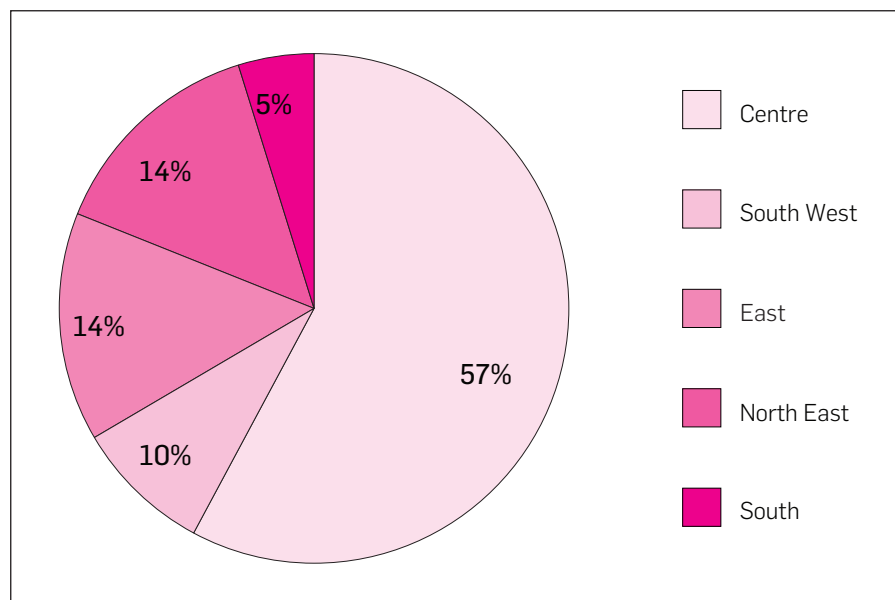


Figure 1. Direction of nests at Canopy

Out of 17 active nests found, 16 nestlings were successfully raised to fledglings whereas one nestling was found dead in the nest on 29<sup>th</sup> March 2016. The reason of mortality could not be found. The breeding success for White-rumped vultures in the valley thus becomes 94% in 2016.

Mostly small branches and twigs with dry leaves were using to build the nests. However, dry grasses and shrubby materials were also observed. Nests were mostly present at the center of the canopy followed by east and southeast sides. The maximum numbers of nests were found at the top canopy of the forest, but upper middle part of the canopy was also mostly occupied.

The nests were preferred in flat terrain (mostly in trees at riverbanks), at close distance from water-body (Mean distance: 186 meters), in a mean height of 22 meters (may be for protection from threats) and in forested landscape. Maximum nests were in Centre and eastern side, which may be for early warming from eastern sun to maintain body temperature to take for soaring.

It had been observed that White-rumped vultures build two or more nests in a same tree, however, maximum nests were found one in a single tree.

## Nesting and Roosting Habitat Preferences

A total of 17 tree species (10 trees and 4 shrubs species) were identified 3 species of shrubs couldn't be identified and are mentioned as Species A, B and C. The species area curve showed that maximum

12 species were present in maximum 3 plots while determining the minimum number of plots to be laid for this analysis.

The diversity of trees and shrubs was measured with the help of Shannon-Weiner index which resulted 2.44, which indicated that the area is fairly diverse in vegetation. Furthermore, The IVI table shows that in tree category, *Bombax ceiba* (78.01) has the highest IVI followed by *Ailanthus excelsa* (28.35) and in shrub category *Clerodendron* spp (25.65) has the highest IVI; which infers that *Bombax ceiba* and *Clerodendron* spp. are the most dominant species of trees and shrubs. The vulture nesting preference is strongly correlated with the highest IVI of *Bombax ceiba* in the area and it is due to the availability of large *Bombax* trees for nesting and roosting.

## Discussion and Conclusion

Present nesting site, Khaireni community forest is mostly being preferred for nesting and roosting since more than decade (Gautam et al. 2014). WRV nests in a concentrated area, which may be due to protective nature of *Gyps* vultures to their nestlings and hatchlings. The area is well protected from disturbances, as the CFUG is well aware about vulture conservation. Logging, sand mining, grazing and browsing of cattle is not allowed in the forest, which makes it favorable for nesting and roosting for vultures.

Study by Baral et al. 2005 reported that WRV bred from October to April and total of 70 nests were found in the six vulture colonies. Keeping this in view, the present status is confined in the single area and

having the very less number of nest in comparing that.

The overall breeding success of White-rumped Vulture in Nepal is reported 75.54% (BCN 2016) which also includes the study site also. However, the breeding success of the species in the Khaireni community forest was found to be 94.12%, which is comparably very high. It is assumed that all chicks would survive after successfully fledging in April. If true, breeding failure is low and it may not be causing decline in vulture population in the area. The reason of mortality of one nestling could not be assessed; the nest of dead chick appeared whitish while monitoring.

Encouragingly, the nests were in good numbers (21) in the small patch of forest and are in well-protected. Rampur IBA is a good stronghold of vultures. If the habitat is undisturbed and use of chemical toxicants harmful for vultures is as low as it is in present, there is huge possibilities of reversing the population status of vultures in the study area. If any actions to conserve the vulture habitat as well as food availability are not taken on time, there will be further decline of population, which may challenge the existence of the vultures in near future. If immediate actions are taken, there is sufficient time to intervene and establish viable vulture populations in Rampur, Nepal.

Vultures mostly preferred *Bombax* trees for nesting and roosting which need to be conserved. Trees in community forests are now safe as logging of *Bombax* trees from the Community forests is not followed but local people are willing to sell the trees in high prices which may hamper the habitat of vultures. Kali Gandaki River Basin is potential for vulture nesting, roosting and foraging so need the intensive surveys. Management strategies and policies should be collaborative to local government authority. Future research should focus on extending the areas to cover wider geographical range to find out the pockets of habitat and population. The provision of food is must as the traditional livestock practices are lowering in number and developmental activities are in peak. Regular all season studies and research should be carried out to best find the population dynamics over the periods to know the resident and migratory species found in the valley. Estimating age-specific survival and breeding rates in addition to overall abundance and growth rates of WRV in the wild will help to understand the extinction probability from the area.

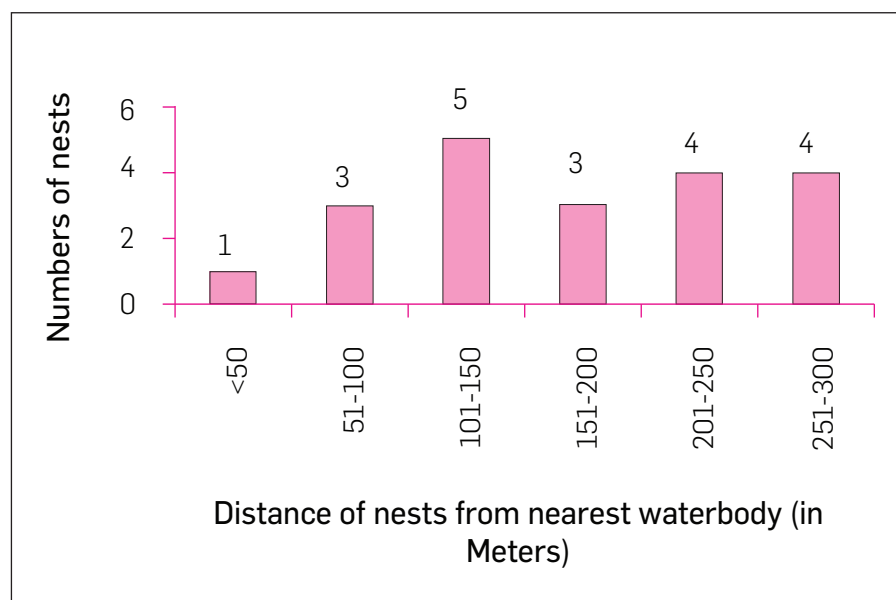


Figure 2. Nesting site preference

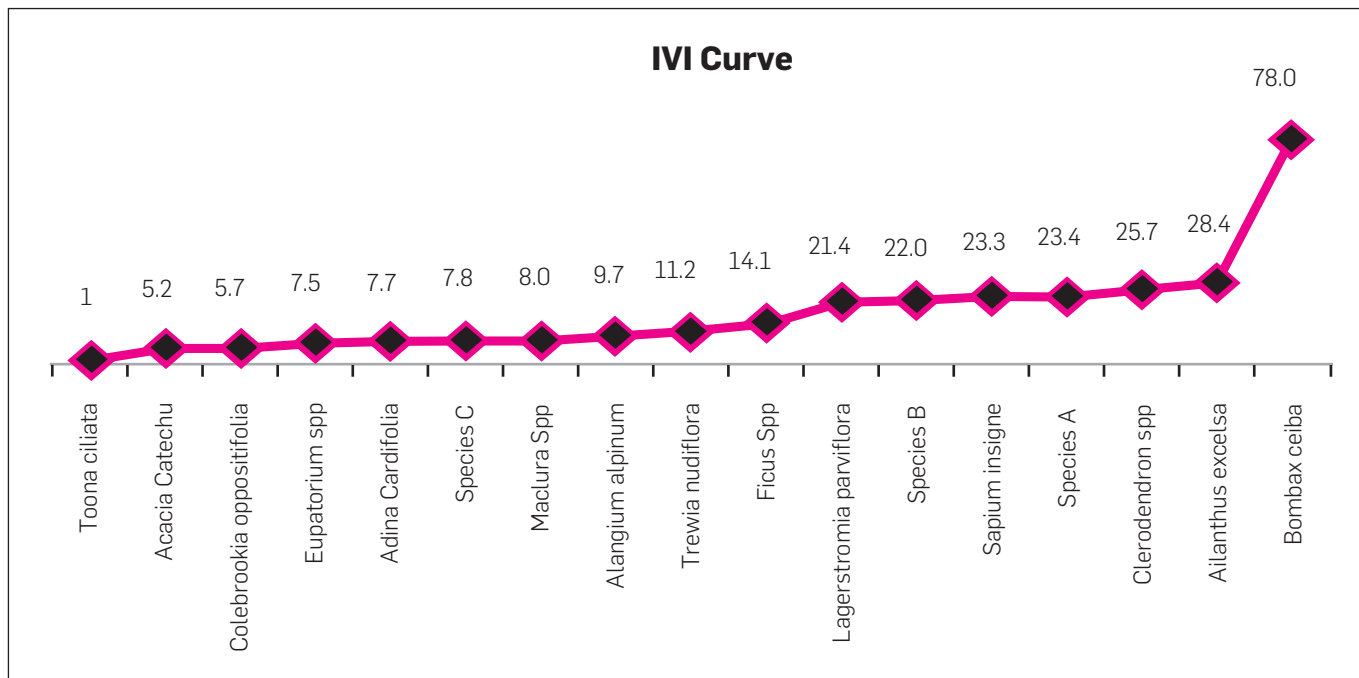


Figure 3. Vegetation dominance in the study area.

## Acknowledgements

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\* Author for correspondence, e-mail- ghimirebiku1991@gmail.com; bghimire@fonnepal.org

1 Friends of Nature, Kathmandu, Nepal.  
2 Wildlife institute of India.

3 Institute of Biomedical & Natural Sciences, Uttarakhand, India  
4 Tsirang Forest Division, Bhutan

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# Nesting of Critically Endangered Slender-billed Vulture *Gyps tenuirostris* more than decade in Nepal

Krishna Prasad Bhusal\*, Ishwari Prasad Chaudhary, Hiru Lal Dangaura, Deu Bahadur Rana and Ankit Bilash Joshi

## Introduction

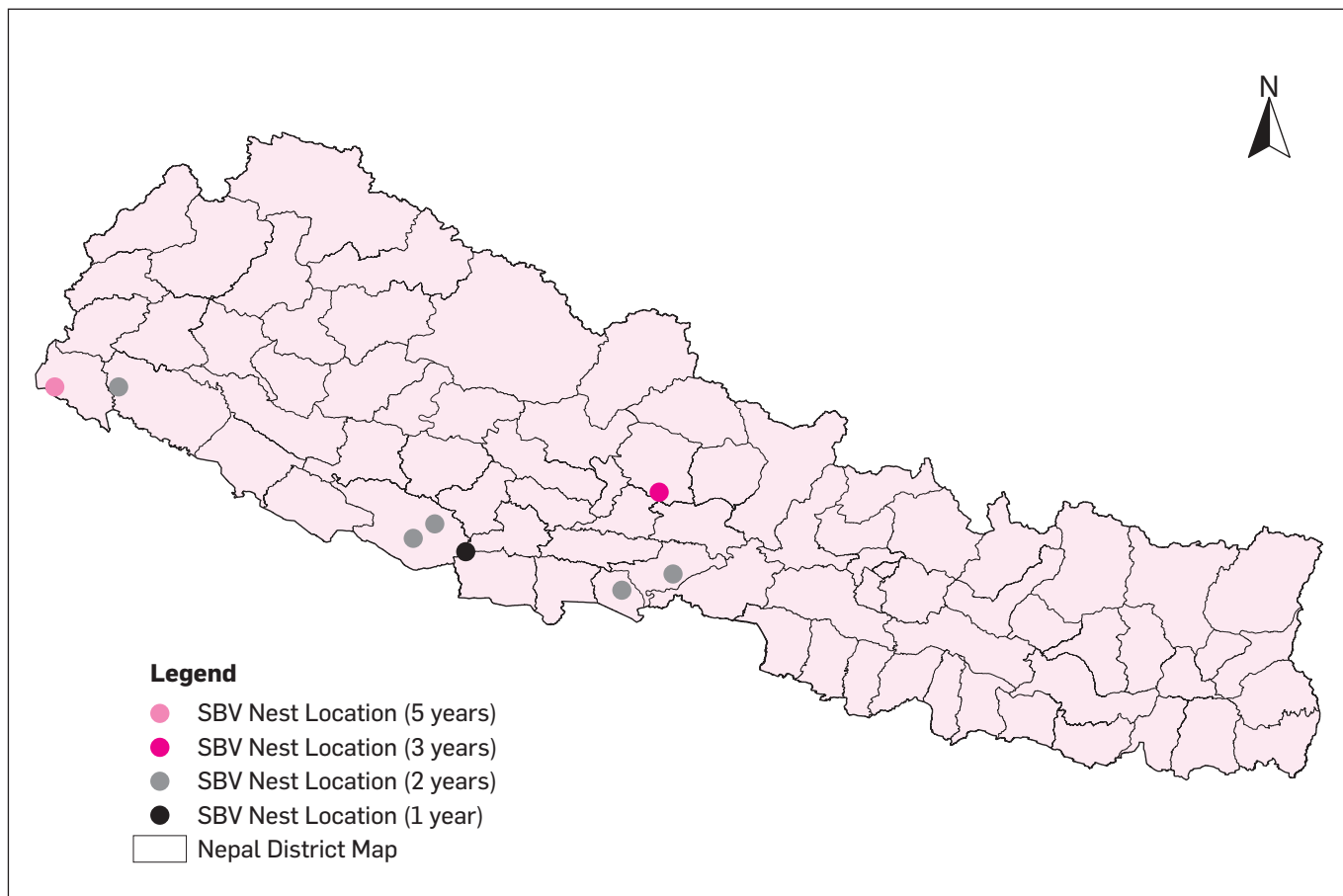
The Critically Endangered Slender-billed Vulture (SBV) *Gyps tenuirostris* is the most threatened species of vulture, now extremely rare in the east of Nepal and uncommon in the center and west of Nepal. In Nepal, it is distributed

between 75-1800 m above sea level, and its estimated population is 50-75 individuals (Inskipp et al, 2016). Globally the species has also been recorded from Bangladesh, Cambodia, India, Laos, Malaysia, Myanmar, Thailand and Vietnam (BirdLife International 2019). This species has suffered an extremely rapid population

decline across the Indian subcontinent as a result of feeding on carcasses of animals treated with the veterinary drug diclofenac (Pain et al. 2008). In Nepal, the population of Slender-billed Vulture has declined by 96% between 2002-2011 (Chaudhary et al, 2012). But the rapid decline of Slender-billed Vulture gave way to partial



Slender-billed Vulture chick on nest © Pratap Gurung



**Figure 1: Slender-billed Vulture nesting location in Nepal**

recovery in Nepal from about 2012 to 2018 (Galligan et al, 2019). This is likely due to the effectively banned of diclofenac on veterinary use and implementation of Vulture Safe Zone on reducing the availability of diclofenac in a large part of the range of this species in Nepal (Bhusal, K. P., 2018).

Slender-billed Vulture uses open country mixed with some wooded patches to forage, feed, roost and nest. Pairs make nest in tall trees sometimes in loose colonies of just a few other breeding pairs. The Slender-billed Vulture builds a sturdy nest made up of sticks and twigs. The female usually lays one large egg and both the male and the female share incubation duties. Once the nestling hatches, it grows quickly and therefore, requires a lot of food to help it grow healthy and strong. A nestling vulture's diet is composed entirely of regurgitated food until it is old enough to feed itself. Breeding occurs October-May. Pairs typically reuses a success nest in consequent breeding years.

## Methods

### Nest Monitoring

Observations of nests in tree were made from the ground without disturbing the

vulture. Monitoring of each nest was done to assess the nest status and breeding success in every breeding season since 2009. In each breeding season we visited to known vulture nesting site and also explored the potential nesting site beyond. At least three visits were made to monitor each nest in one breeding season. Following Postupalsky (1974), an active nest was defined as a nest in which an egg had been laid and a successful nest was defined as a nest from which a chick had fledged. Annual breeding success of Slender-billed Vulture was calculated as the ratio of the number of successful nests to the number of active nests.

## Result

### Nest Distribution

We counted nests and monitored breeding success of Slender-billed Vulture in every breeding season. Since last decade we have been continued this study mainly in provisional Vulture Safe Zone of western Nepal where it resides. One nesting was recorded from the Pokhara Valley of Kaski district; mid hill and all rest nests were located in the Terai Arc Landscape of Nepal. We had been monitoring the SBV nests for more than five consecutive years in Shuklaphanta National Park,

Kanchanpur, more than three years in Pokhara, Kaski and more than two years in Nawalparasi, Dang and Kailali district. Comparatively, its nesting density is high in Dang district where one of its nest was located in between of the huge breeding colony of White-rumped Vulture. The elevation of nesting location of Slender-billed Vulture ranges from 180 to 785 m above the sea level.

### Nest Status

We observed two active nests of Slender-billed Vulture in Nawalparasi district and one was successful in 2009. One nest was found in Kalkate area of Dang in 2010 and only one nest was active in Nawalparasi in 2010. There was no record of SBV nest in 2011 and 2012 in the previously recorded site as well in the potential locations. In 2013 we explored the nesting in Kailali district of far west Nepal. SBV recommenced the nesting in Nawalparasi in 2017. The record of active nest has increased consistently in between 2013 and 2019 in Nepal. The breeding success of SBV is more than 50% in the breeding season. This is an apparent increase in the number of nests and constant success rate. All nests are in the tree at an average height of 30 m above the ground level.

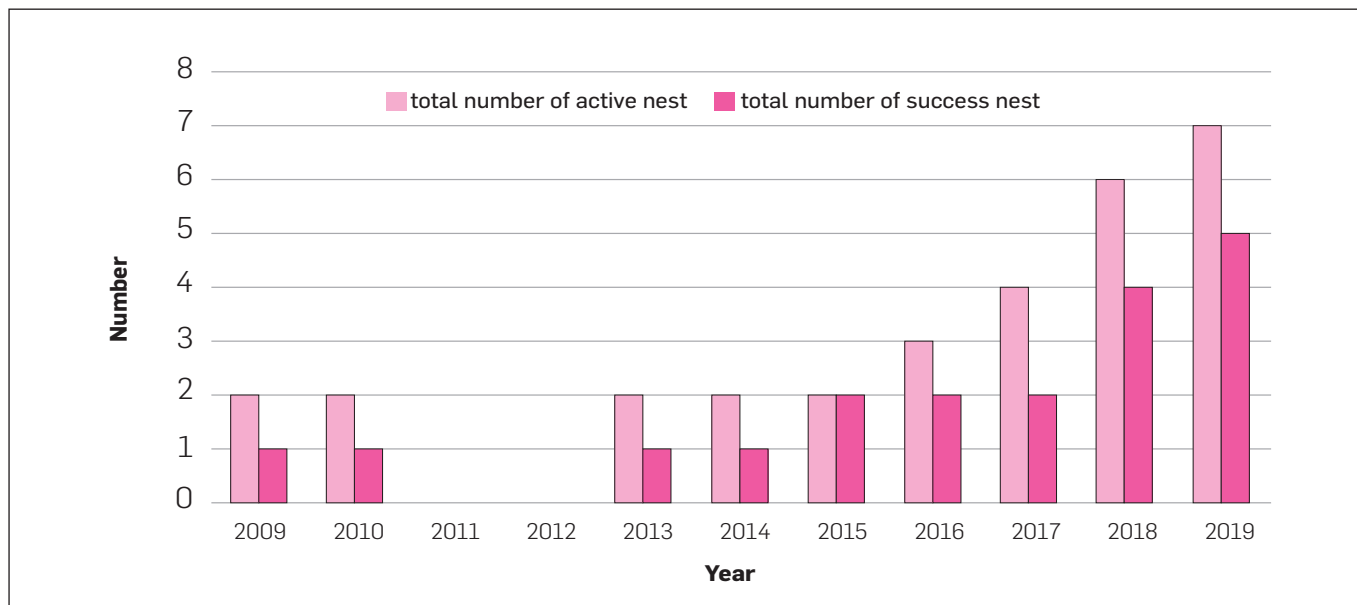


Figure 2: Slender-billed Vulture nest status in Nepal

## Discussion and Conclusion

The trend in active and successful nests of Slender-billed Vultures correlates with the population decline in the early 2010s (Chaudhary et al. 2012) and the population recovery from about 2012 onwards (Galligan et al, 2019). This suggests that vulture populations may now be benefiting substantially by the integrated Vulture Safe Zone work, in addition to the national ban on veterinary diclofenac. The absolute number of nests is increasing each year and specific nest sites are being reused each year which is good evidence that these species are doing alright and perhaps better than alright. This is also supporting the objective of Vulture Conservation Action Plan for Nepal 2015-2019 where anticipated to increase Slender-billed Vulture population and nesting by 10% as of 2014 baseline.

All authors affiliated to Bird Conservation Nepal

\* for author correspondence, e-mail: - krishna@birdlifeneal.org



Slender-billed Vulture family © Samjhana Karki

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# Monitoring of Nest and Breeding Status of White-rumped Vulture *Gyps bengalensis* in Nepal

Deu Bahadur Rana\*, Ishwari Prasad Chaudhary, Hiru Lal Dangaura Ankit Bilash Joshi and Krishna Prasad Bhusal

## Abstract

*Gyps* vulture species are carnivore species and are highly dependent on dead carrions of animal. Due to this inimitable feature of being a group of obligatory scavengers, the vulture plays a crucial role in cleaning the environment by consuming large amount of carrion in a very short time. Catastrophic decline of vulture population in late 90s was ascertained due to the use of Non-Steroid Anti-Inflammatory Drugs (NSAID) called Diclofenac. In between 15 years of conservation efforts, the population of White-rumped Vulture in Nepal have partially recovered. We monitored the nesting colonies of the White-rumped Vulture which were widely distributed to 12 districts in western Nepal. The result shows that the minimum and maximum density of nest within the colony were 6 and 83 respectively. The breeding success of the species was high in the year 2016 although 2008 grades the highest in the calculation, it was due to small coverage data in the initial phase. The absolute number of nests are increasing in the recent years. The study also reveals that the most preferable nesting tree species for vulture nesting was found *Terminalia tomentosa* in low-land and *Pinus roxburghii* in mid-hills with an average nesting height of 27 meter.



White-rumped Vulture pair on nest © Krishna Bhusal

## Introduction

*Gyps* species of vulture are responsively depending on the dead carrion. Since vultures are scavengers and colonial in feeding behavior, they consume large mass of dead animal in a short period. Due to their unique digestive ability, they play a significant role on controlling rampant of many communicable diseases to humans and animals such as rabies, diarrhea, plague and anthrax, tuberculosis, brucellosis respectively. Thus, vulture provides invaluable clean-up services to the ecosystem.

Vultures population of Indian Sub-continent saw chronic decline since last two decades that leads to 95% of its previous population (Chaudhary et al., 2012; Gilbert et al., 2002; Prakash et al., 2005). The reason behind the catastrophic decrease of these vulture species was large scale use of NSAID Diclofenac which was used

for treatment of pain and inflammation in cattle (Oaks et al., 2004; Shultz et al., 2004). If 1% diclofenac residues remain in carrion there will be 50% probability of vulture death (Prakash et al., 2005). Other NSAIDs currently available in Nepal are vulture-toxic too, specifically: aceclofenac (Galligan et al., 2016); ketoprofen (Naidoo et al., 2009) and nimesulide (Cuthbert et al., 2015). The toxicity of yet more remain unknown.

Since 1990's all the conservationist, researcher and bird lovers were stroke with the issues of the disastrous decline of vulture population. Bird Conservation Nepal (BCN) is one of the leading organizations in Nepal for the conservation of birds has been working on vulture conservation action practicing both in-situ and ex-situ conservation initiative in Nepal. White-rumped Vulture (*Gyps bengalensis*), is globally Critically Endangered species (IUCN, 2016) and breeding resident in Nepal. With continuous effort on the vulture conservation the status of White-rumped Vulture population is on the way of partial recovery after the year 2013 (Galligan et al., 2019).

## Method

White-rumped Vulture is a low breeder bird heavily distributed on western part of Nepal. Its nesting distribution is largely confined in the Terai Arc Landscape (TAL)

$$\text{Breeding success} = \frac{\text{Number of Success nest}}{\text{Number of Active nest}} * 100$$

including the mid hills mostly in Chitwan Annapurna Landscape (CHAL) of Nepal. This study area includes the six community managed Vulture Safe Feeding Site and three Provisional Vulture Safe Zone.

The detail of nesting site was also closely observed followed by detail of site including bird activities, nesting tree species, height of the tree and distance from the settlement etc. The geographical location of each nest were recorded with the help of Garmin GPS. At least three visits were made to monitored each nest from October to April in each breeding season.

In order to study the breeding ecology, total nest was counted, breeding status and their general behavior were recorded. During the survey, observation and monitoring of vulture was made with minimum disturbance from the ground level and somewhere vantage point was instigated. To identify the productive nest a minimum criteria of presence of fledging in and around the nest and confirmation of the nest that are built possibly in a following year was followed. Thus, those nests from which a chick fledged are characterized as the productive nest for

the following breeding season. Breeding success was calculated by using following formula:

## Results

### Distribution of breeding colony

White-rumped vulture preferably found in Terai to the valleys of Mid-hills. Our study was also designated to find their distribution throughout the study areas as well potential sites beyond. The breeding colonies of White-rumped Vulture were recorded from Nawalparasi, Rupandehi, Kapilvastu, Dang, Kailali and Kanchanpur districts of Terai and Tanahu, Kaski, Syanja, Palpa and Arghakhanchi districts of mid hills. The high nesting colony density and maximum number of nests were recorded from the Dang district followed by Kapilvastu district. Furthermore, Syanja district had less number of nest among the districts. Majority of the nests were found in low land except the district Banke and Bardiya. Palpa district had the maximum number of nest and high density among the district of mid-hills. The lowest elevation record of White-rumped Vulture

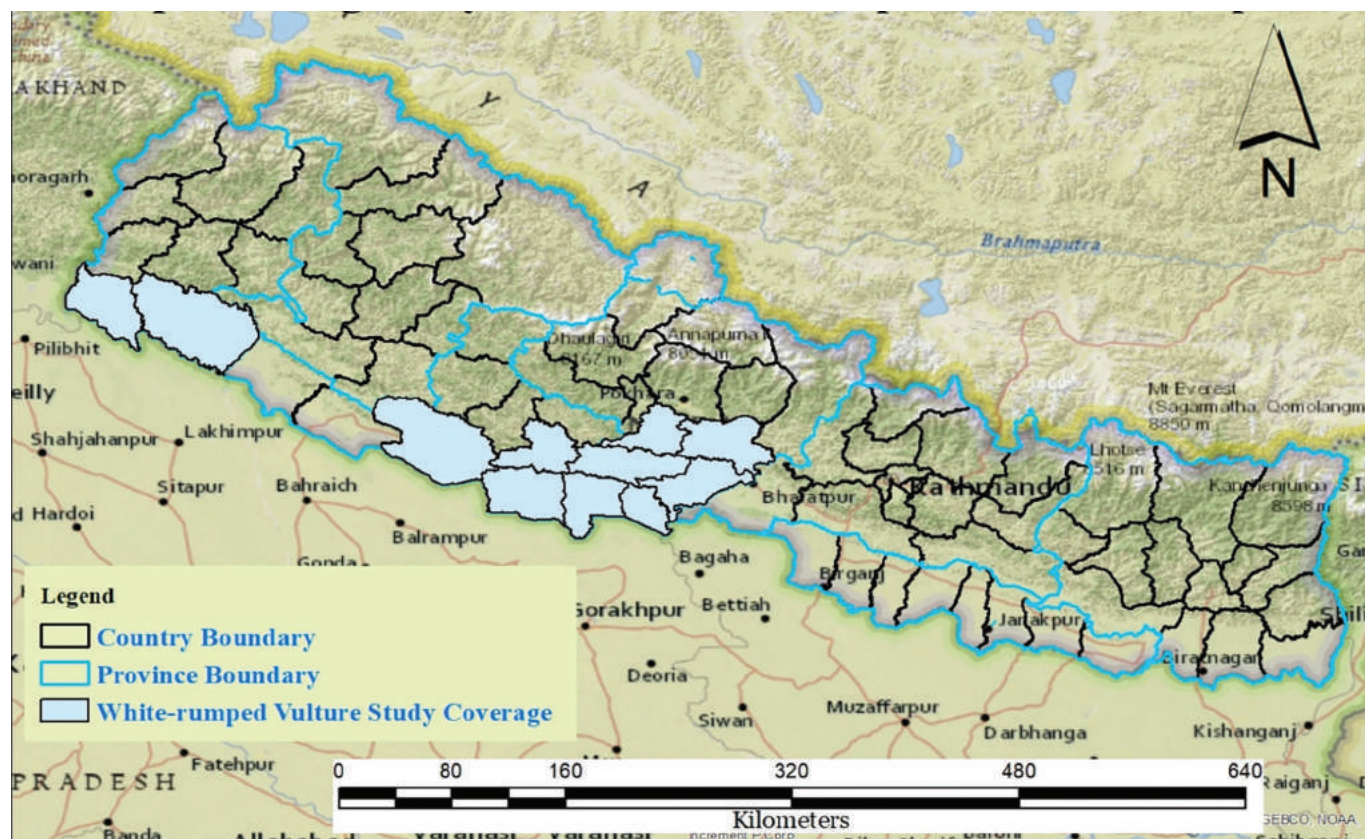


Figure 1: Map showing the White-rumped vulture nesting district



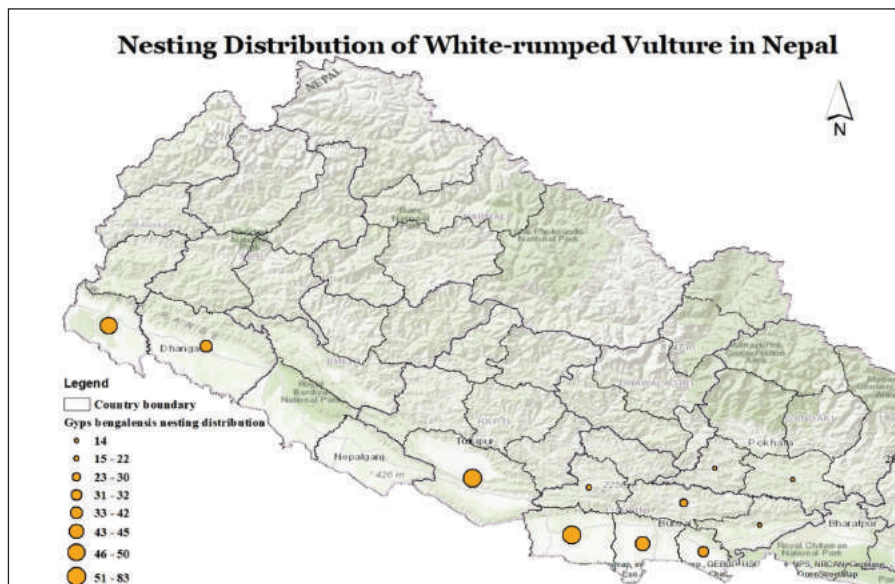


Figure 2: Nesting Distribution and Occurrence

nesting was 91 m. in Kapilvastu district and the highest elevation was recorded 1422 m. in Arghakhanchi district.

### Nest Status

Systematic and continuous monitoring of White-rumped Vulture nests and their breeding ecology was studied since 2008. In 2008, the nests of vultures were only monitored in and around Vulture Safe Feeding Site, in Nawalparasi district. From 2009 we explored more areas and monitored nests in more districts in western Nepal and followed them in subsequent years. The absolute number of active nests are increasing in the recent years (Figure 3) as on average two new

nesting colonies were explored every year. At the same time some of the existing nesting colonies were disappeared so it was suspected that the shifting of them in to new areas.

The long-term monitoring of breeding status of White-rumped Vulture in Nepal reveals the breeding success ranges from 42 to 75% however more consistent monitoring of the nest status from 2011 to 2019 ranges from 53 to 75% (Figure 4). The breeding success also correlates with the increase the number of active nests however it fluctuates more randomly. Breeding success is exceptionally high in 2008 possibly because of small sample size which was monitored around the Vulture Safe Feeding Site only.

White-rumped Vulture usually prefer the tall trees with greater diameter for nesting, roosting and perching. Mostly

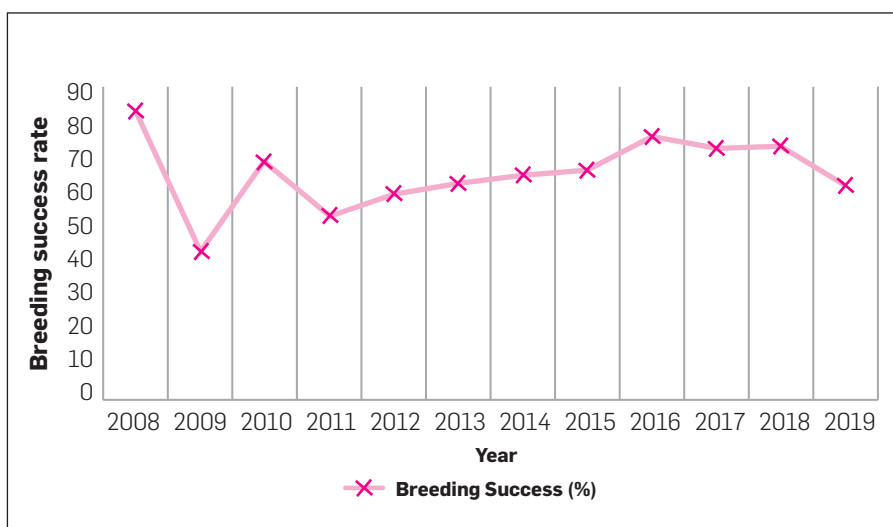


Figure 4: White-rumped Vulture breeding success in Nepal

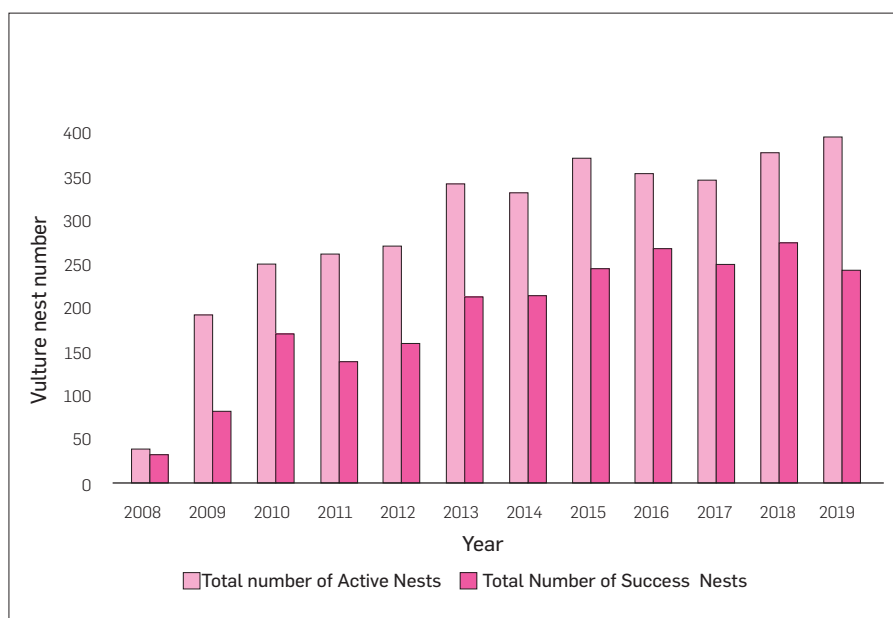


Figure 3: White-rumped Vulture active nest and success nest status in Nepal

nests were observed in the canopy of trees usually recorded the single nest on each tree however observed up to five active nests in a single tree. The study shows that majority of the nesting was found on *Terminalia tomentosa* species followed by *Shorea robusta* in low land whereas *Pinus roxburghii* was mostly preferred in mid-hills followed by *Bombax ceiba*. The survey also showed that the average estimated nest height was 26.80 m whereas the average estimated tree height was 32.07m from the ground level.



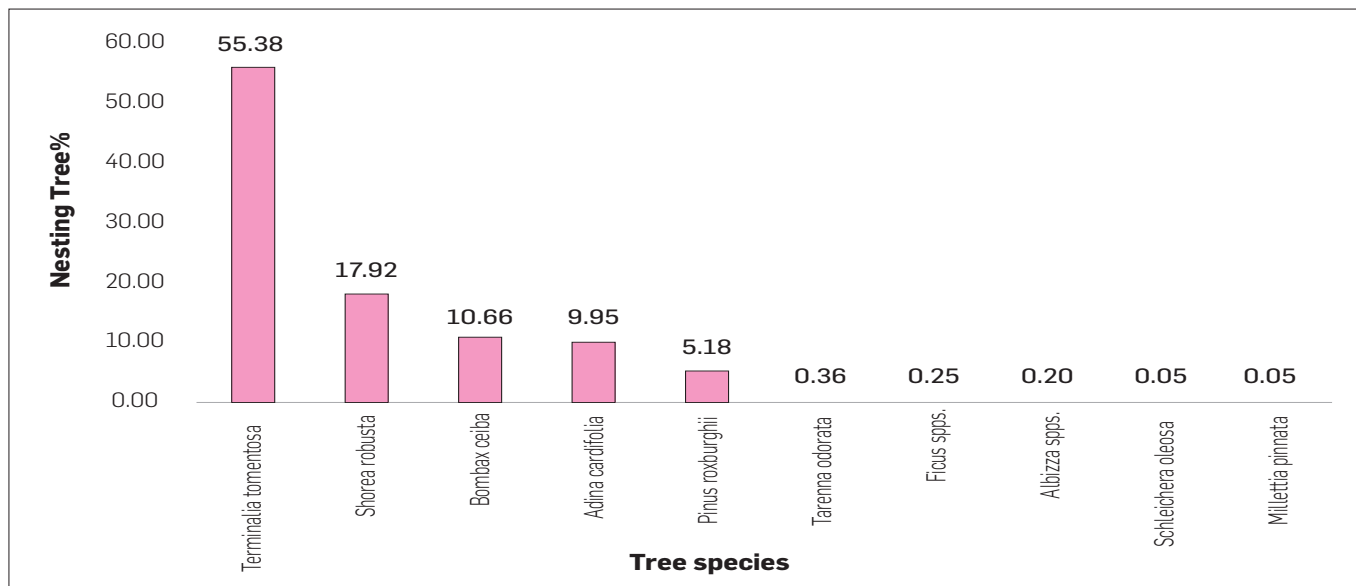


Figure 5: White-rumped Vulture nesting tree species in Nepal

## Discussion and Conclusion

The absolute number of active nests of White-rumped Vulture was found increasing in the recent years that highly substantiate with the partial recovery of White-rumped vulture population in Nepal since 2013 (Galligan et al., 2019). The result also showed that the breeding success was also increasing with the fluctuation. This suggests that vulture populations may now be benefiting substantially by the integrated Vulture Safe Zone work (Bhusal K.P., 2018), in addition to the national ban on veterinary diclofenac. Availability of sufficient food with preferable nesting site could account in continuous increase in the number of vulture population.

The distribution of nesting colony and their breeding has found inverse relationship with the human activities. Infrastructure development activities have been grounded throughout the country. During the survey it is also observed that encroachment, road construction, tree cutting, mine excavation, river exploitation and other developmental activities in and around the vulture-nesting colonies, which has direct impact of long-term vulture survival. The nesting is disappeared from the many areas and at the same time located from new sites. It can be inferred that the White-rumped Vulture pushed to leave the historic nesting sites mainly by the human activities.

Through the study it can be suggested that the planned and the scientific management of the infrastructure development could lead a crucial role in long-drawn-out the vulture nesting colony. Conservation awareness, people's participation, sturdy rules and regulations, monitoring and in depth study on ecology, habitation, distribution of such critically endangered species in future has high nascent horizon on mitigating the conservation indulgence.

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# Participatory Vulture Conservation Approaches and Achievements in Nepal

Bhupal Nepali\*, Ishwari Prasad Chaudhary, Hiru Lal Dangaura, Deu Bahadur Rana and Ankit Bilash Joshi

## Introduction

Nepal's vulture population suffered more than 90% decline as a result of diclofenac poisoning (Chaudhary et al., 2012). The loss of vultures resulted in the loss of the ecosystem service they provided; the efficient and safe disposal of carcasses. Vultures out-compete other scavengers, but their numbers are becoming so low that they have been replaced by less efficient and less safe scavengers such as dogs and rats. This has greatly increased the risk of disease, particularly rabies, and increased

the chances of contamination of water from decaying carcasses. Bird Conservation Nepal partnering with communities, vet professionals, other conservation organisations and government agencies has been continuously working to halt and reverse these vulture declines. Participatory vulture recovery program initiated formally from 2002 which involves advocacy, education, monitoring, research, captive breeding, supplementary feeding and site protection to help implement Nepal's Vulture Conservation Action Plan. The big challenge was removing

Diclofenac from the veterinary system. There was ignorance of the issue and how to solve it in government, civil society and private sector and the challenge of the geographical scale of the problem and how to work across huge areas. There was also an urgent need for an integrated and collaborative national scale plan to address the crisis.

The Government of Nepal banned the production, marketing and use of veterinary diclofenac in 2006. Also prepared and implemented the Vulture Conservation



Vultures feeding carcass © Ankit Bilash Joshi

Action Plan for Nepal (2009-13); and its revise version Vulture Conservation Action Plan for Nepal (2015-19), which is being implemented now (DNPWC, 2015).

## Vulture Safe Zone

The eventual recovery of vultures in Asia will be enhanced if it is possible to protect and retain small but key remaining vulture populations in the wild through creating Vulture Safe Zones (VSZs) where there is a very low risk of poisoning in the areas surrounding remaining breeding colonies (Bhusal et al., 2019). Nepal initiated the pioneering idea of working with local communities to establish Vulture Safe Zones (VSZ) in 2009. A VSZ is an area surrounding one or more wild vulture nesting colonies, large enough to encompass the mean foraging range (>30,000 km<sup>2</sup>) completely free from diclofenac use. This VSZ concept originally emerged from some brilliant conservation efforts to create diclofenac-free areas using a district by district, province by province approach across the country (Bhusal et al., 2019). Through engagement with government officials, veterinarians, pharmacists, communities, media and conservation bodies across the border in India where the vultures are likely to roam these safe areas were established.

Bird Conservation Nepal (BCN) in collaboration with government institution and different conservation organizations work with entire communities within the provisional Vulture Save Zone to

bring an end to diclofenac and other threats to vultures. In doing so, BCN engage government agencies, non-government organizations and community groups to further disseminate vulture conservation messages and take actions to protect vultures. Vulture Team regularly communicates with the community; monitor vulture populations status and survey the prevalence of diclofenac; and investigate additional threats to vultures. Approximately 30 nesting colonies of vultures (largely White-rumped Vulture, but all other resident breeders) are protected within the provisional VSZs (pVSZ).

## Vulture Safe Feeding Site

Established the world's first community managed Vulture Safe Feeding Site (Vulture Restaurant) in 2006 and similar efforts have been replicated already in 6 other sites in Nepal and also in Pakistan, Bangladesh and India. These Vulture Restaurants collect old and unproductive cows from the nearby villages and keep them for at least seven days to ensure they are Diclofenac-free and fed to vultures after their natural death. This conservation effort is not only linked with biodiversity conservation, but livelihoods are also sustained. The communities around Vulture Restaurants developed the clear and strategic plan to conserve vultures and other wildlife by implementing sustainable living practices in the village communities.

The vision was that these areas become model sustainable conservation and eco-tourism zones; a prime example of how people can not only exist but develop and thrive while conserving and protecting the environment that sustains them. VSFSs provide nature enthusiasts a rare opportunity to see significant numbers of multiple threatened species, the thrilling spectacle of vultures feeding, and vulture conservation messages. These communities are further supported with income generating activities. Within Vulture Safe Feeding Sites (VSFS) we worked with communities, supporting them with income generating activities, such as setting up bee, fish and chicken farms, purchasing pumps for irrigating cropland and attracting tourists to visit the sites. These VSFS are important for Globally Threatened vultures as well as for the culture of local indigenous people which is an attraction to local and international tourism resulting in an attractive ecotourism package. The VSFS are also used as a center to disseminate conservation messages about vultures and other biodiversity to wider communities, journalist, private sector, scientists and students.

## Diclofenac Free District Declaration

Main component of VSZ is to make the area free from diclofenac use on cattle treatment. This was initiated in 2009 from the VDC (Village Development

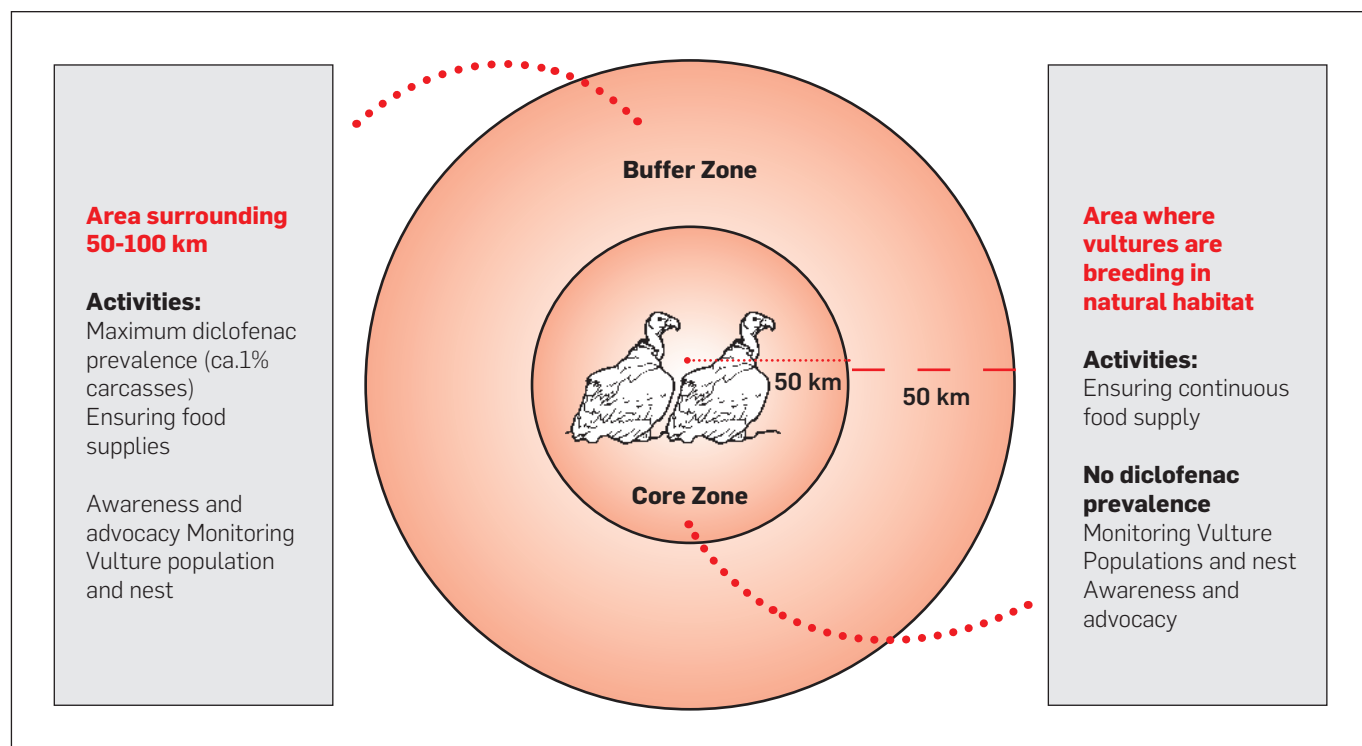
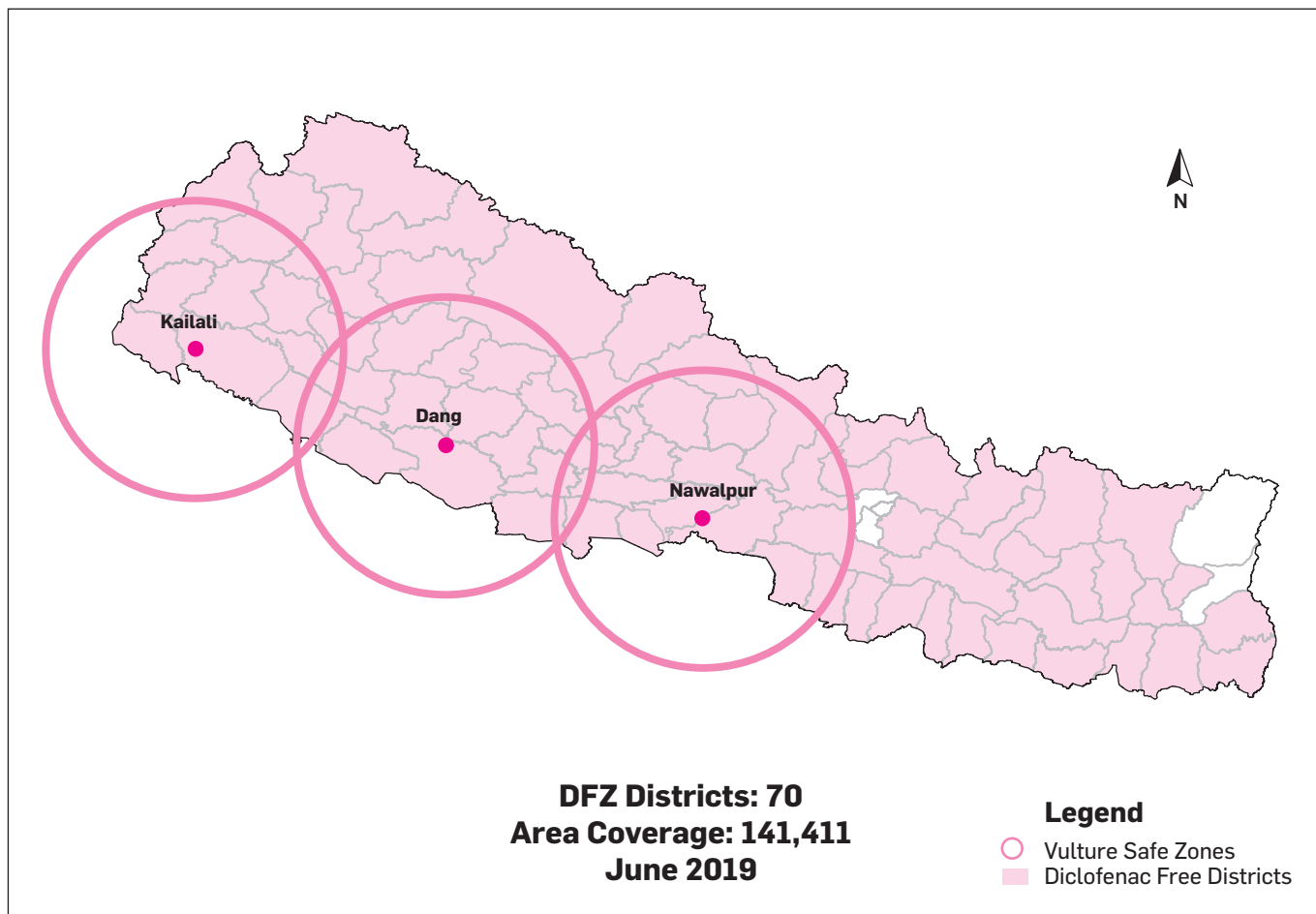


Figure 1: Vulture Safe Zone components





**Figure 2: Map Showing Diclofenac Free Districts and Vulture Safe Zone**

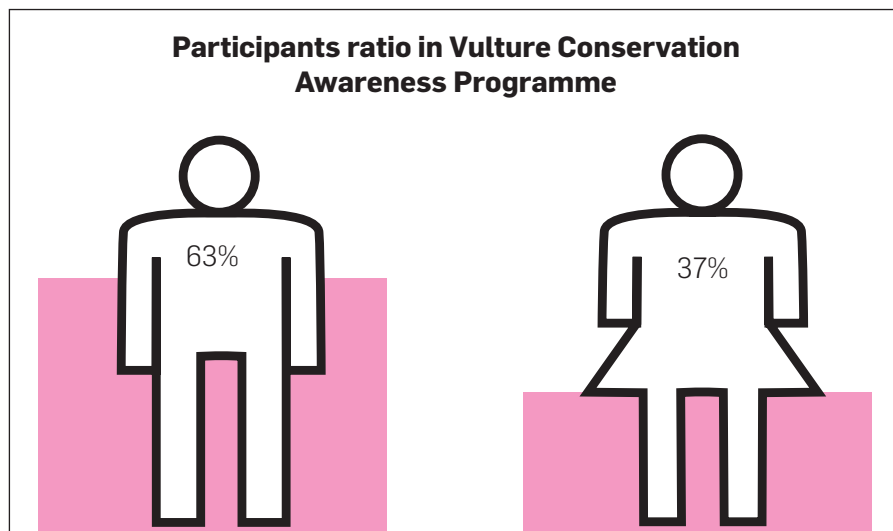
Committee) level in the area of Vulture Safe Feeding Site, Gaidatal, Rupandehi. As a district level, Dang district was declared as first Diclofenac Free District in 2010 and extend it to other district gradually. The declaration of DFZ is government certified and inline with Vulture Conservation Action Plan for Nepal. The impact was validated through monitoring presence of harmful drugs in pharmacies/veterinary practices and carcass dumps. Diclofenac Free Districts and Vulture Safe Zones have since been declared in 70 districts out of 77 districts which is more than 90% of Nepal's area. These are verified through declaration certificates and monitoring reports.

### Stakeholders Advocacy and Community Awareness

Bird Conservation Nepal partnering with the local community based organization (CBO) in the vulture range districts. Now, more than 22 such CBO partners and about 150 volunteers are joining together for vulture conservation and have linked by loose forum called Nepal Vulture Conservation Movement Network. They

are mainstreaming vulture conservation activities on their own organizational operation plan, community forests action plan as well advocate with local government to do the same. Besides this, Bird Conservation Nepal explore the awareness on the vulture population status, inhabitation threat and strengthen people with different income generating activities that ultimately leads to the

conservation of threatened vulture throughout the country. The programs are important for Globally threatened vultures as well as the culture of local indigenous people which helps in promoting the local and international tourism resulting an attractive ecotourism package. Advocacy and sensitization programme were conducted in participation with local community, governmental officials,



**Figure 3: Infographic of the participants in formal vulture conservation awareness program**



Figure 4: Graph showing vulture conservation awareness and advocacy events in Nepal.

veterinary and other concerned conservation agencies. In the formal awareness and advocacy program the participants are mainly dominated by male. The participants overview based on the sex is displayed in the figure below (Figure 3).

Here is presented the awareness and advocacy activities from 2008 to 2018 (Figure 4).

This participatory conservation approach brings the success to create VSZ. Continuous participatory vulture conservation actions in Nepal have been successful in lowering the misuse of diclofenac. Similarly, surveys show that the populations of White-rumped Vulture and Slender-billed Vulture have partial recover on their population in Nepal (Galligan et al., 2019). The captive rear and breed White-rumped Vulture release in the area of pVSZ, first of its kind in world (Bhusal et al., 2018). The telemetry and on-ground tracking of release and wild vultures can confirm the absence of diclofenac in vulture food and thereby validate the Nepal's Vulture Safe Zone as the world's first.

All authors affiliated to Bird Conservation Nepal

\*corresponding email: - [bhupal@birdlifeneal.org](mailto:bhupal@birdlifeneal.org)



Dissemination of vulture conservation message through song and dance © Ishwari Chaudhary

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# Ecotourism in Vulture Safe Feeding Site of Kawasoti, Nawalparasi and Gaidatal, Rupandehi

Bijeta Thapa\*

## Abstract

Vulture Safe Feeding Site is one of the innovative and successful practice for vulture and bird conservation as a whole. Established in 2006, VSFS in Nawalparasi is the first among others in Nepal. It is also the first community managed vulture restaurant in the world. The vulture restaurant in Rupandehi was established in 2008. The study was carried out to understand the attitude of local people toward VSFS and to explore the possibilities of ecotourism in the area. Seventy households were selected from each site for HH interviews along with Key Informant Interview, VSFS staff interviews and Focal Group Discussion. The study found local people positive attitude toward ecotourism in VSFS. The study also found the fact that, homestay practice got more success if single community carry it instead of diverse ones. VSFS Kawasoti, Nawalparasi boosting the ecotourism promotion integrating VSFS with grassland management, wetland management and conservation of other wildlife and scenic beauty. VSFS Gaidatal, Rupandehi had great potential for ecotourism presence of Gaidahawa lake, wildlife habitat and the way to Lumbini is just 15km away from there but need to promote it widely.



Visitors in VSFS, Kawasoti, Nawalparasi © BCN



## Introduction

Vultures are carnivores and natural scavenger. They have crucial role in ecosystem for maintaining healthy, hygienic and balanced environment by consuming carcasses. They have been identified as providers of ecosystem services (Şekercioğlu *et al.*, 2004). Usually, they bear long and bare neck to prevent feather from becoming dirty while feeding. They don't feed their young ones by carrying food instead they regurgitate food from their crops. Vulture stomach acid is exceptionally corrosive, allowing them to safely digest putrid carcasses infected with Botulinum toxin, hog cholera, and anthrax bacteria that would be lethal to other scavengers. Recycling carcasses from livestock and wildlife, scavengers maintain energy flows higher in food webs (Wilson & Wolkovich, 2011).

Veterinary drug, diclofenac is the major cause of vulture decline in South Asia (Shultz *et al.*, 2004). Along with the ban of Diclofenac, there were several plans and programs launched for the vulture conservation, promotion of safer drug Meloxicam, in-situ and ex-situ conservation-practice, community managed Vulture Safe Feeding Site (VSFS) etc. Vulture Safe Feeding Site, popularly called Jatayu (vulture) restaurant a place where vultures are fed supplementary

and safe food (Paudel, 2012). Vulture Restaurants have been established in the world to conserve vulture population with providing supplementary foods in safe feeding place (Monadjem *et al.*, 2004), which also help to improve the socio-economic condition of adjacent communities through income generating activities with the initiation of ecotourism (BCN, 2010).

## Methods

### Study Area

The study was carried out in the area of VSFSs of Kawasoti Nawalparasi and Gaidatal, Rupandehi. VSFS, Kawasoti, Nawalparasi is Nepal's first VSFS as well as first community-managed Vulture Restaurant in the world established in 2006. This lies in Kawasoti municipality, the buffer zone of Chitwan National Park. VSFS of Nawalparasi promoting ideal eco-tourism practice for the rest VSFSs of Nepal. The VSFS, Gaidatal, Rupandehi lies close to Gaidahwa Lake in Rupandehi district and is in the Lumbini Farmland IBA and just 15 km north of Lumbini, the birth place of Lord Buddha. It is located inside Gaidatal Community Forest in Gaidatal Rural Municipality. This site carries the high probabilities for eco-tourism as one can have panoramic view of Gaidahawa Lake (Key Biodiversity Area) nearby, with



picnic spot, farmland bird, jungle walk and bird watching. Gaidahawa Tal is a small rain-fed oxbow lake of 23.5 hectare area famous for winter migratory birds.

The methods included both the collection of primary information from the field and secondary information from various literatures. House Hold (HH) questionnaire survey conducted in the study sites

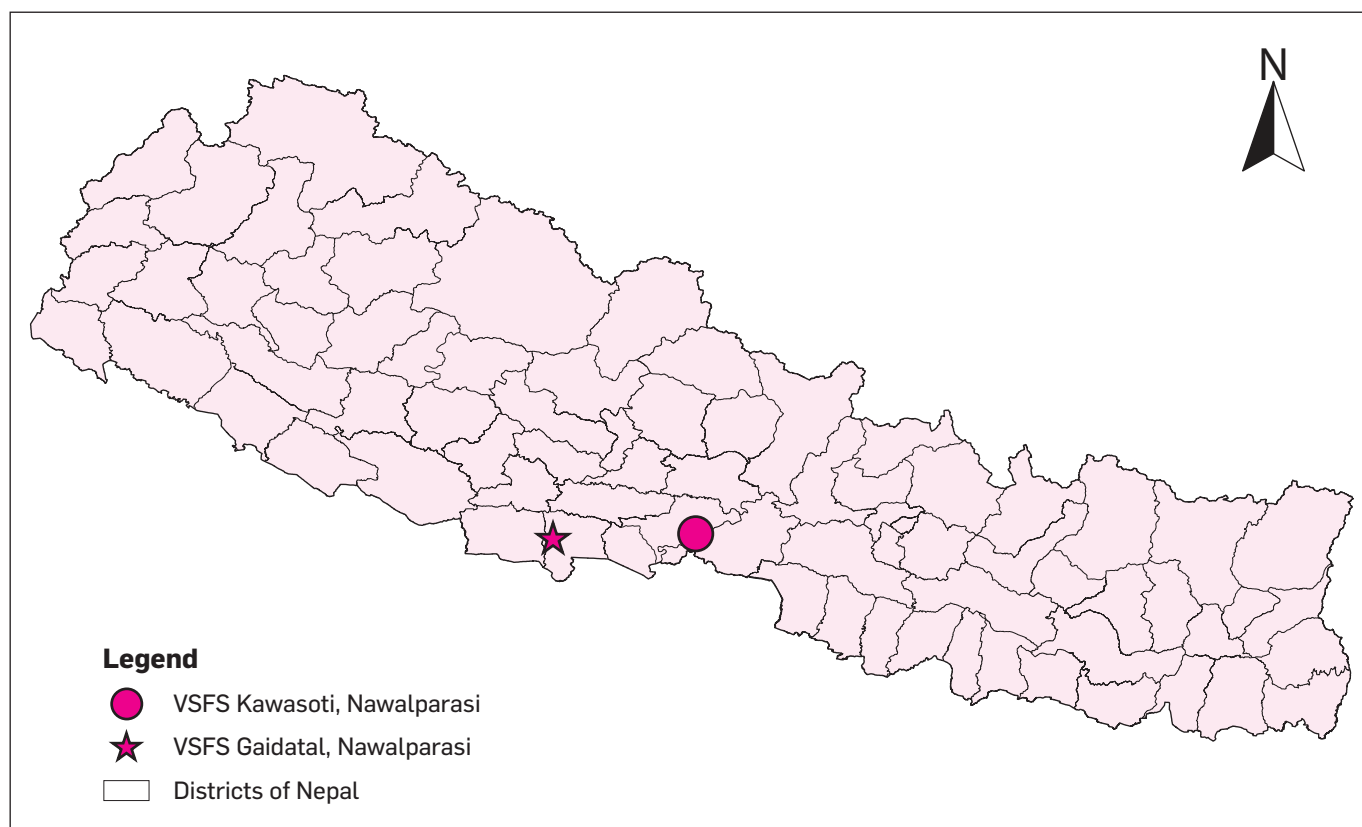


Figure 1: Map showing the study area

(Bishnupura, Rupandehi and Pithauli, Nawalparasi) to assess their knowledge on vulture conservation, eco-tourism, cultural and historical assets. Seventy HHs from each site were randomly selected for the survey. Two PRA tools: KII and FGD were used.

## Result

Most of the respondents from both site felt the increment of vulture population (figure 2). 80% respondents from Rupandehi and 58.7% from Nawalparasi believed that, VSFS was the main reason for the vulture population increment. 11.4% respondents from Rupandehi and 13% from Nawalparasi believed public awareness was responsible for it. In Rupandehi, 5.7% respondents presumed habitat restoration for it whereas, 2.9% respondents did not know the actual cause. In Nawalparasi, 17.4% respondents believed as habitat restoration, 8.7% respondents as food supply and only 2.2% respondents said that removal of diclofenac increasing vulture population.

Almost all respondents from both sites believed vulture as beneficial for society because they consume carcasses, stop spread of diseases, keep environment clean whereas and for employment generation (figure 3).

Likert scale is kind of rating scale to measure attitude/ level of awareness. Here, three potential choices/point scales are used to measure respondents' opinion on these five different statements with respect to the less respondent frequency (70 HHs from each district).

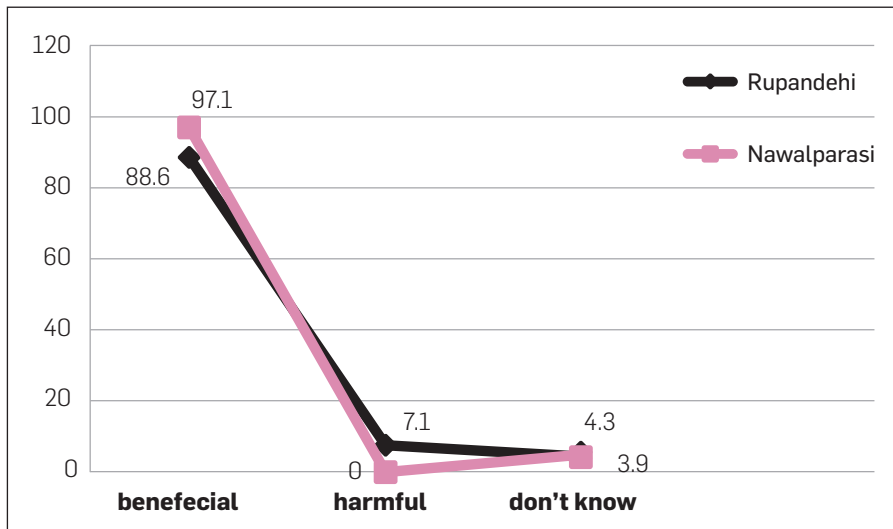


Figure 3: Respondents' view on vulture importance for society

More than half of respondents found rearing their own livestock. Community living nearby contributes for VSFS on their own ways like: helping VSFS by providing their livestock, promoting site, not disturbing vulture, contribution for road construction, providing hay. According to the respondents, VSFS is adventurous at their place due to these: Livelihood training, old cattle management, Boring water irrigation, Pond construction for fish farming, Public awareness, Promotion of site/tourist flow and homestay practice. Similarly, there are some problems they facing due to VSFS are: Foul smell, dog fear, cattles don't feed the plants where vulture defecates, biased training. Vulture Safe Feeding sites are the major attraction of tourists in both sites (figure 4).

Available tourist attraction according on both sites according to the respondent

These are the prevailing practices for eco-tourism found on survey (figure 5). 40.7% of Rupandehi and 32.9% of Nawalparasi respondents found vulture conservation as the most popular existing practices and promoting ecotourism confessed by 33.3% of Rupandehi and 12.8% of Nawalparasi respondents.

However, majority of respondents 95.7% of Rupandehi and 68.6% of Nawalparasi not benefited enough to change their economic status by ecotourism. But 4.3% of Rupandehi and 31.4% of Nawalparasi have significant impact on changing the economic status by ecotourism.

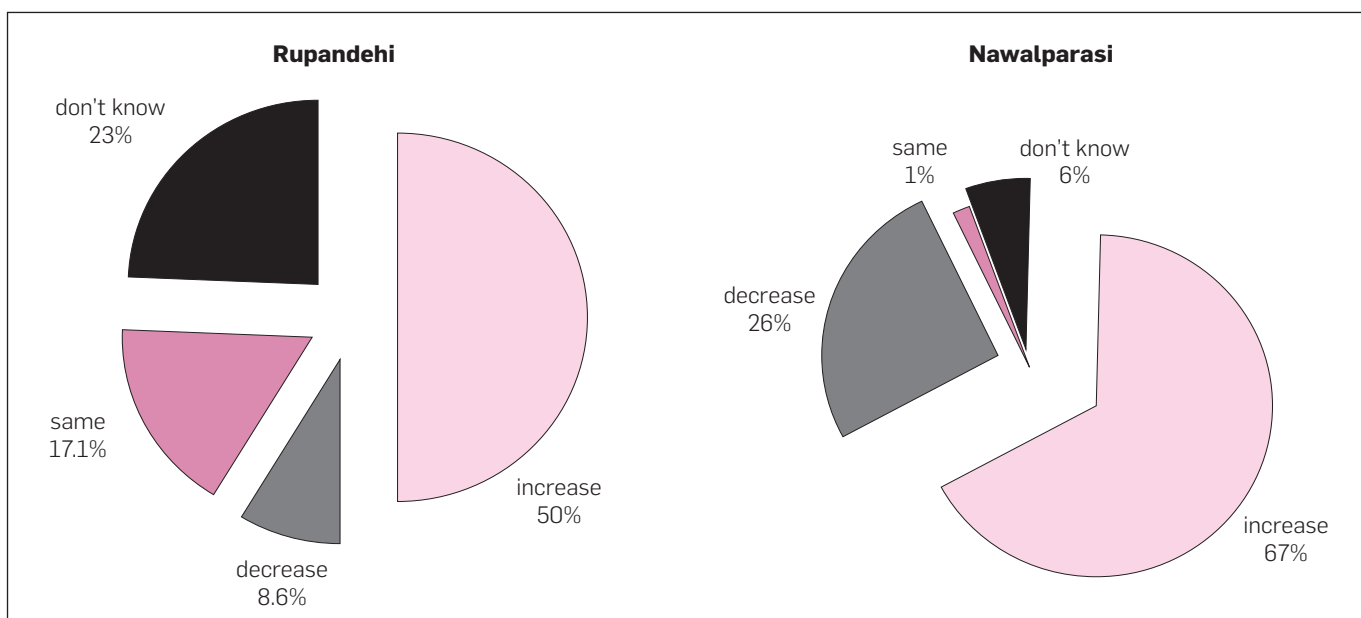


Figure 2: Respondents' perception on vulture status

Table -1: Level of awareness (Rupandehi)

S.N	Statements	Disagree	Neutral	Agree
1	Use of chemical medicine for livestock treatment killed the vulture	1.4	14.3	84.3
2	Habitat loss and forest fire have role to reduce the vulture population.	2.9	10	87.1
3	Conservation awareness to local people will help vulture conservation.	0	100	0
4	Does your life affect due to vulture decline?	1.4	20	78.6
5	Do we need to conserve vulture?	1.4	1.4	97.2

Table- 2: Level of awareness (Nawalparasi)

S.N	Statements	Disagree	Neutral	Agree
1	Use of chemical medicine for livestock treatment killed the vulture	0	2.9	97.1
2	Habitat loss and forest fire have role to reduce the vulture population.	4.3	8.6	87.1
3	Conservation awareness to local people will help vulture conservation.	0	100	0
4	Does your life affect due to vulture decline?	2.9	14.3	82.9
5	Do we need to conserve vulture?	1.4	1.4	97.2

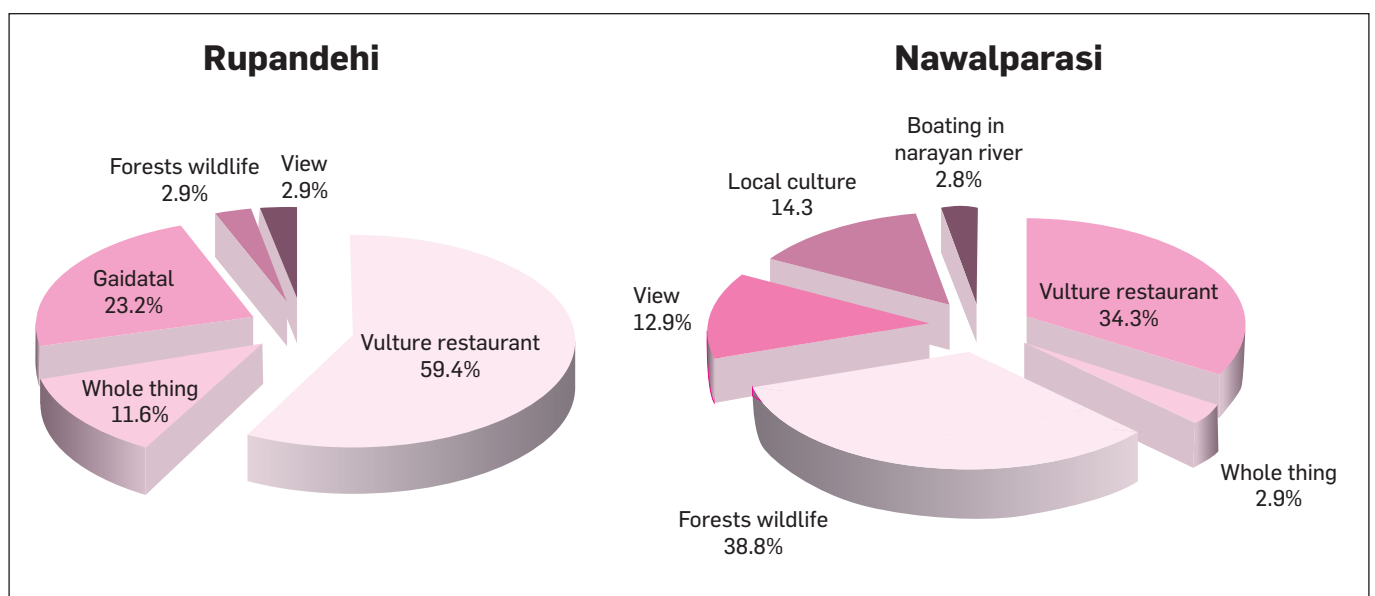


Figure 4: Available tourist attractions according to the respondent

## Discussion and Conclusion

Respondents from both sites were confident that their community has the potential to attract tourist. Apart from VSFS, respondents voted for the local natural assets local culture and other recreational site boost for ecotourism from both sites. However, all agreed to promote by wider publicity and lobbying with concern stakeholder.

Study found the fact that homestay practice gets more success when single community carries this instead of diverse.

In Pithauli, Nawalparasi, once homestay program was tried but this trial was not success as expected due to the diverse community.

Gaidatal, Rupandehi, therefore holds strong quality for launching homestay program with majority of one ethnic group, Magar. Culture exchange may occur as a result of the modification of the ecological niche occupied by a society. Changes to the habitat of a society induced changes which may involve cultural adaptation and change. Beside this fact, Gaidatal area is famous for Blue Bull (Nilgai) and globally threatened Sarus Crane, Lesser Adjutant. Gaidatal is key biodiversity area where

recoded about 106 species of birds and significantly hold the winter migratory birds (Bhusal., K.P 2019). Gaidatal can further developed as birding destination which is lies in the Lumbini Farmland Important Bird and Biodiversity Area of Nepal. VSFSs are the crucial part of border landscape of Vulture Safe Zone where the naturally breeding colonies of vulture occur (Bhusal, K.P., 2018). So, it might be interesting to observed vulture nesting too.

Only VSFS alone could not boost the ecotourism in the site, it should be integrated with other potential components then making the whole tourism product package. In both sites, local ethnic culture,



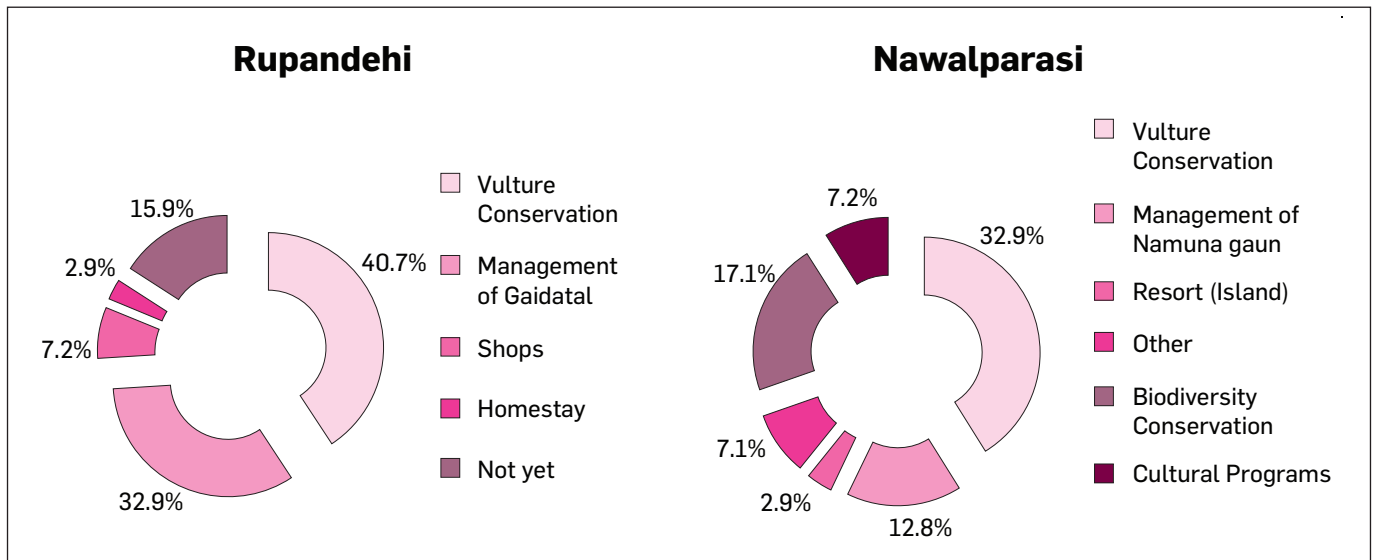


Figure 5: Attraction for tourism in the sites

blue bull, globally threatened birds, farmland and grassland biodiversity etc might be key component. There is possibility to see the eight species of vulture out of nine in VSFS Kawasoti, along with large charismatic mammals Tiger and Rhino. Similarly, can observe the seven species of vultures in Gaidatal VSFS and other birds.

## Acknowledge

This study was funded by Bird Conservation Nepal (BCN) and Royal Society for the Protection of Birds (RSPB), UK. I am equally thankful to my research supervisor Mr. Khadananda Paudel, Senior Research officer, Biodiversity Conservancy Nepal, Mr. Krishna Prasad Bhusal, Vulture Conservation Program Officer, BCN, Mr. Bhupendra Sharma, former coordinator of Science department, SchEMS, Mr. Kewal Chaudhary, Community mobilize, Nawalparasi, VSFS staffs of both Rupandehi and Nawalparasi, Mr. Mukesh Rai, Mr. Arun Rai, Ms. Ganga Rana Magar, Ms. Sahra Mishra, Mr. Padam Budha, Mr. Ishwor Barakoti for their valuable suggestion, field visit assistance and technical support.

\*School of Environmental Science and Management (SchEMS), e-mail:-bijetathapa13@gmail.com

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# What are the threats to vultures other than NSAIDs in Nepal

Ishwari Prasad Chaudhary\*, Hiru Lal Dangaura, Deu Bahadur Rana, Ankit Bilash Joshi and Krishna Prasad Bhusal

## Introduction

Vultures play an important role in natural and anthropogenic systems by disposing of carcasses (Moleon et al. 2014). This is especially important in South Asian countries, like Nepal, where large numbers of cattle are kept for milk and as draught animals but not for meat resulting in a large number of carcasses that require disposal (Markandya et al. 2008). The road transects surveys in the lowlands of Nepal between 1995 and 2011 showed 91% and 96% declines in populations of White-rumped Vulture *Gyps bengalensis* and Slender-billed Vultures *Gyps tenuirostris*, respectively (Chaudhary et al. 2012). Vultures are highly sensitive to the non-steroidal anti-inflammatory drug (NSAID) diclofenac (Oaks et al. 2004), which was commonly used to treat the domestic ungulates in South Asia during the 1990s and early 2000s.

In 2006, the Governments of Nepal, India and Pakistan banned the manufacture, sale and use of diclofenac for veterinary purposes. Bird Conservation Nepal partnering with communities, vet professionals, conservation organizations and government agencies initiated an integrated vulture conservation approach which involves removing of diclofenac from veterinary use, promotion of meloxicam, advocacy, awareness, monitoring, research, captive breeding, safe feeding site and habitat protection. In this article we analyzed the additional threats to vulture other than NSAIDs in Nepal in the latest years.

## Method

The database of dead and injured vultures in Nepal was started to maintain since 2010 with the help of media news, social media, local people communication and direct observation. Possible incident site

was visited either to inspect the cause of death or rescue any of the injured birds. In some cases, samples were taken for laboratory test to know the cause of death. Mostly sample test and tracing of NSAIDs was done in Central Forensic Laboratory, Khumaltar, Kathmandu. A strong coordination was established with

community people and local government authority such as forest office, veterinary office and police office in the case of rescue of injured birds and proper management of dead vulture corpses. The most of the incidents had been recorded from the western Nepal as expected the density of vulture is high in the area.



Postmortem examination of dead vultures © Ishwari Chaudhary



## Result

In total 205 individual dead vultures of the eight species were recorded from February 2010 to June 2019 from all over the country. Rescued the 84 individuals and of which 42 individuals were released back to nature after recovery during the same time period. The maximum number of death record was of the Himalayan Griffon followed by the White-rumped Vulture. This is possibly due to their presence in large number and their gregarious feeding nature correlate with cause like poisoning. The proportion of death vulture (species-wise) is shown below (Figure 1).

The injured and ill vultures largely of Himalayan Griffon and White-rumped Vulture were rescued and their treatment and proper care was followed. We could only able to save the half of rescued Himalayan Griffon and one third of White-rumped Vulture. It was because of unavailability of experts and wildlife hospital/rehabilitation center in Nepal. Generally, local people rescue the sick and injured vultures and send to the forest office or vulture safe feeding site. Vulture safe feeding site provides the better shelter of these vultures where they can get regular safe food and can assimilate with other vultures after released back.

The major cause of vulture death in Nepal is carcass poisoning. It is the case of deliberately poisoning of carcass by farmers when the carnivores kill their livestock. Targeting to tiger, leopard, jackal or other cats people use the poison

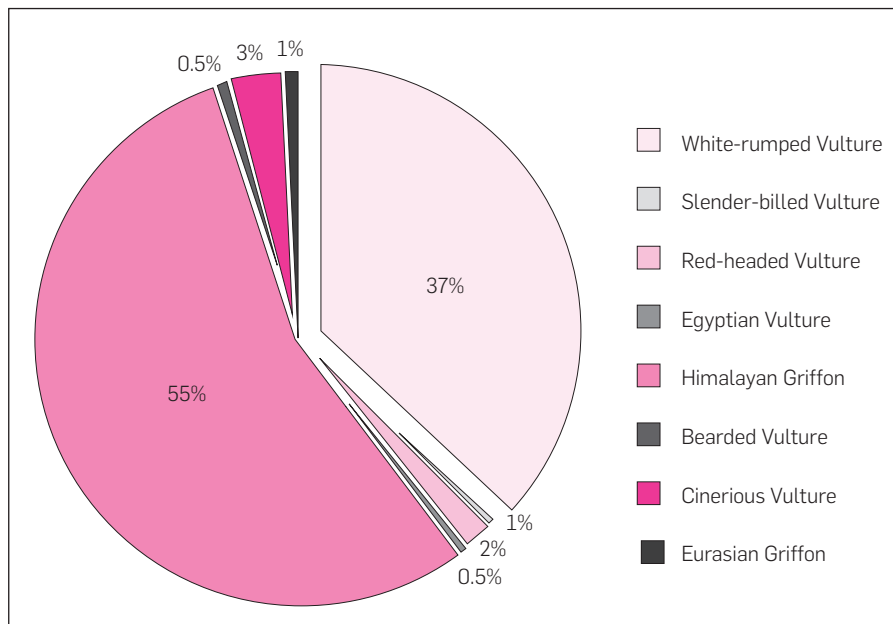


Figure 1: Proportion of dead vulture species.

on the remains of the consumed carcass but unfortunately vultures feed that remains and get affected. Some cases in Nawalparasi, poultry owner killed the jackal by poisoning the chickens to get the rid from that but also killed the vultures which consumed that jackal carcass. The poisoning was more severely spotted in Nawalparasi, Dang, Kanchanpur, Kaski and Jajarkot district of western Nepal. The second most threats to vulture is electrocution. The vultures either get the electric shock or collision with the power line and tower. As a large bird; vultures got the electric shock mostly in the power line and more of these incidents are observed

in winter season. It is because of the poor visibility during migration of vulture into the new area. Mostly, Himalayan Griffon are affected by the electrocution but also noticed for other species too. Besides vulture other large raptors such as Steppe Eagle and storks also having the accident with the electricity structure. Other causes are human persecution, such as killing of the vultures during the carcass feeding, cutting down the nesting trees, catching the chicks from nests etc. Nest falling is another cause especially observed in White-rumped Vulture which is mostly due to natural cause like strong wind. Very few cases of sick vulture were recorded in the field and that led to their death which could not diagnosed. In many cases we observed the death vultures in field but the actual cause remained unknown.

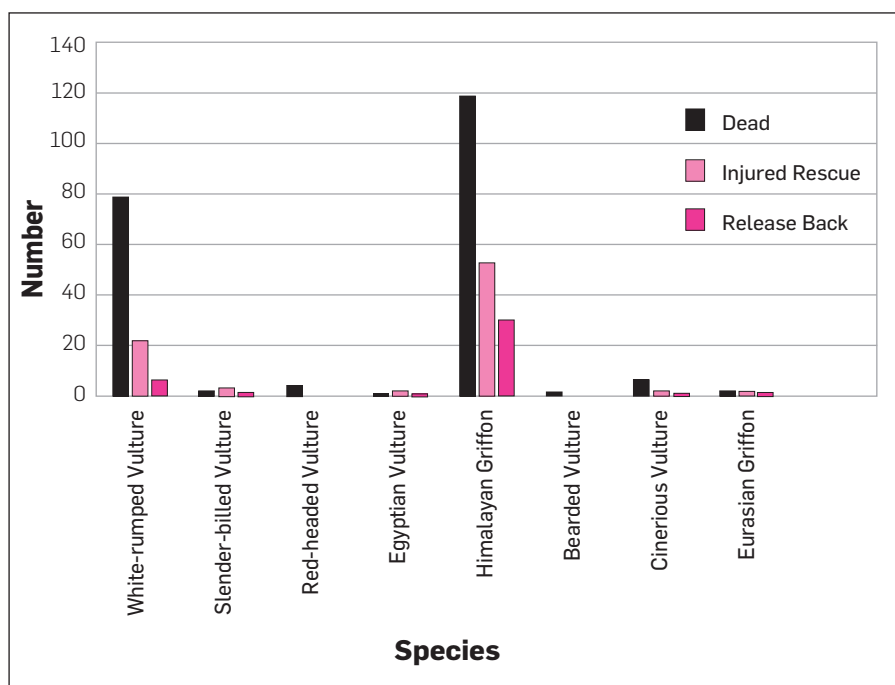


Figure 2: The number of dead, rescued and released vulture species in Nepal





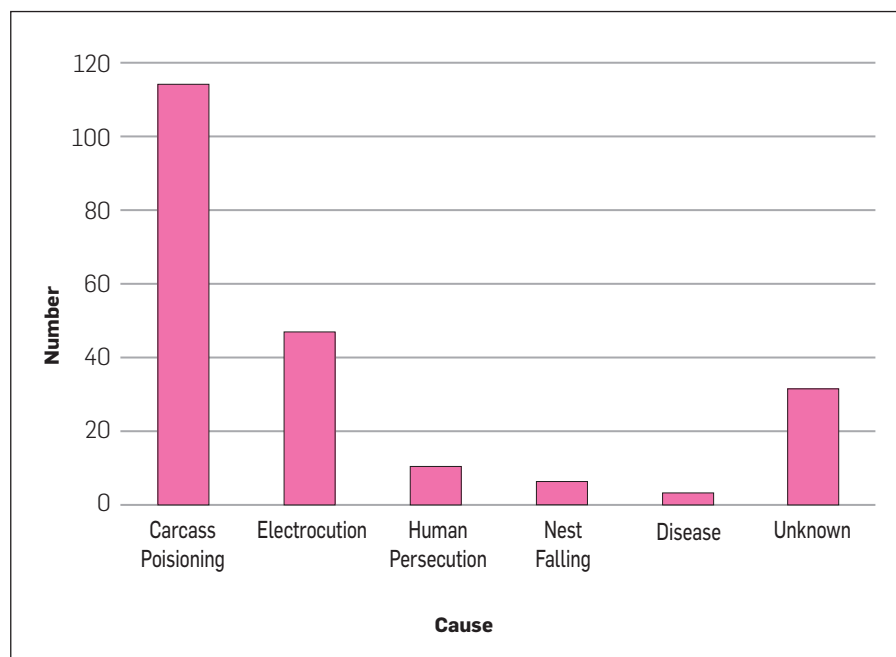


Figure 3: Cause of vulture death in Nepal.

## Discussion and Conclusion

The diclofenac free district declaration program was initiated from 2010 and the use of diclofenac in veterinary is

significantly reduced in the consequent years in Nepal (Galligan et. al. 2019). There is no more record of visceral gout on the dead vultures in the recent years. Besides diclofenac, there are other threats to vultures in Nepal such as accidental poisoning, electrocution, human

persecution, localized shortage of food (Bhusal K. P., 2018). This study also shows that the remaining small population of vulture in Nepal is threatened by the secondary poisoning and electrocution mainly. These reasons may collectively prevent vulture populations from returning to the pre-decline numbers.

The eventual recovery of vultures in Nepal will be enhanced if it is possible to protect and retain small but key remaining vulture populations in the wild through creating Vulture Safe Zones. Although veterinary use of diclofenac is very rare in Nepal other painkiller livestock treated drugs Nimesulide, Aceclofenac and Ketoprofen are already known to be toxic to vultures. To ensure the recovery of critically endangered vultures in Nepal, all vulture-toxic drugs available for veterinary use need to be banned or removed from the environment. Besides these other undergoing threats causing problem to small populations of vultures in Nepal such as carcass poisoning, electrocution, human persecution, nest falling etc. should be consider for the long term conservation of viable population of vultures in Nepal.

All authors affiliated to Bird Conservation Nepal

\*for the author correspondence e-mail: - [ishwari@birdlifenepal.org](mailto:ishwari@birdlifenepal.org)

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Dead Slender-billed Vulture © Ganga Shah



# Monitoring of Indian Vulture *Gyps indicus* spotted after seven years at Vulture Safe Feeding Site, Kawasoti, Nawalparasi, Nepal

Krishna Prasad Bhusal\*, Ankit Bilash Joshi, Deu Bahadur Rana, Ishwari Prasad Chaudhary, Kewal Prasad Chaudhary and Dhan Bahadur Chaudhary

## Introduction

Vultures are the important component of ecosystem who feed on the dead carrion of animals. Vultures also play a crucial role with its cultural importance consuming human corpses practiced in high altitudinal rituals called sky-burial in India, Nepal and Tibet (Bhusal *et al.*, 2014). Thus they are known as the robust and scruffy scavengers of the nature. Nepal is a home of nine old world vultures i.e.

White-rumped Vulture (WRV); Slender-billed Vulture (SBV); Himalayan Griffon (HG); Red-headed Vulture (RHV); Eurasian Griffon (EG); Egyptian vulture (EV); Indian Vulture (IV); Bearded Vulture (BV) and Cinereous Vulture (CV) whereas six of them are the resident of Nepal. Among them International Union for Conservation of Nature (IUCN) have categorized four species i.e. WRV, SBV, IV, RHV as Critically Endangered; EV as Endangered likewise BR, CV and HG are listed as

Near Threatened (IUCN 2015). Indian Vulture has been reported as the vagrant species for Nepal. There was much more confusion on identification of two vultures *Gyps tenuirostris* and *Gyps indicus* until Rasmussen *et al* (2001). Anecdotal evidence has recognized the *Gyps indicus* are different species that from the *Gyps tenuirostris* (Johnson *et al.*, 2006). The conservation status of other *Gyps* vultures in southern Asia is also of immediate concern, given the lack of knowledge



Indian Vulture and Slender-billed Vulture at Nawalparasi, Nepal © Krishna Bhusal



regarding status of their populations and the continuing existence of taxonomic uncertainties. We assess phylogenetic relationships for all recognized species and the majority of subspecies within the genus *Gyps*. The continuing veterinary use of diclofenac is an unknown but potential risk to related species with similar feeding habits to *Gyps bengalensis*. Therefore, an accurate assessment of the phylogenetic relationships among *Gyps* vultures should aid in their conservation by clarifying taxonomic uncertainties, and enabling inference of their respective relatedness to susceptible *G. bengalensis*. Results: Phylogenetic results using mitochondrial *cytB*, *ND2* and control region sequence data indicate a recent and rapid diversification within the genus *Gyps*. All recognized species formed monophyletic groups with high statistical support, with the exception of the Eurasian Vulture, for which specimens identified as subspecies *G. fulvus fulvescens* appear closely related to the Himalayan Vulture (*G. himalayensis*).

The pioneer vulture safe feeding site; popularly called Jatayu Restaurant is located at Pithauli, Nawalparasi (27.667° N; 84.283° E) at the buffer zone of Chitwan National Parks. This is a world's first community managed vulture safe feeding site established in 2006 and releases the first ever captive rear and bred White-rumped Vulture since 2017 in the site. Since long years earlier it was believed that presence of only *Gyps teuirostris* in Nepal. Later, at the end month of 2011 during the monitoring of vulture feeding found that two different vultures i.e. SBV and IV nearby tree of feeding site which was the first documented record on presence of Indian vulture in Nepalese land (Subedi & Candido, 2013). According to the Rasmussen *et al* (2005) the distribution of Indian vulture was suggested throughout the Pakistan and India, across the Gangetic Plain along the base of Himalayas of India to the south of Nepal and Assam valley-southward to the Ganges delta. Furthermore, it has been recorded to the east and south of Vietnam and Malaysia. The species is believed that to be disappeared from most of the south east Asia (Subedi & Candido, 2013).

## Methods and materials

Since the release of captive vulture in to wild regular monitoring of release vulture behavior and their assimilation with wild vultures have been monitoring in the site. At the same time the release team monitoring the captive vulture in release aviary which are aiming to release to wild soon and their interaction as well adaptation with wild vulture also monitoring on daily basis.



Indian Vulture attending carcass © Ankit Bilash Joshi

After the first spotted of Indian Vulture in the site we observed the all behaviors of that individual as focal animal sampling. During the observation and monitoring the presence of other different species and interaction was also recorded. Monitoring of the individual vultures was carried out based on the designed monitoring sheet which is being used for regular monitoring of vulture in release site. Instrument used during monitoring was telescope, WPG 8.5\*42 binocular and camera (Nikon 83x, optical zoom 16.0 Megapixel).

## Result and Discussion

As a part of regular monitoring of vulture at release site; on 25 January 2019, team was observing the captive vulture activity inside the release aviary and wild

vultures outside the release aviary. At the same time of observation we spotted the one vulture seems close to Slender-billed Vulture perching on *Bombax ceiba* tree at south-west of feeding location. Initially consulted among the team, tried to identify through the field book but were still on confusion. On the second day; 26 January 2019, the day was regular feeding to vultures and monitoring their feeding behavior and assimilation of captive release and wild vultures. On that day we could succeed to sight that individual closely while attend the feeding. Finally, that bird was confirmed as Indian Vulture.

Indian Vulture stays in and around the feeding site about three month from 25 January to 21 April 2019. During this time period we recorded 20 observations either feeding with the other vulture flock or

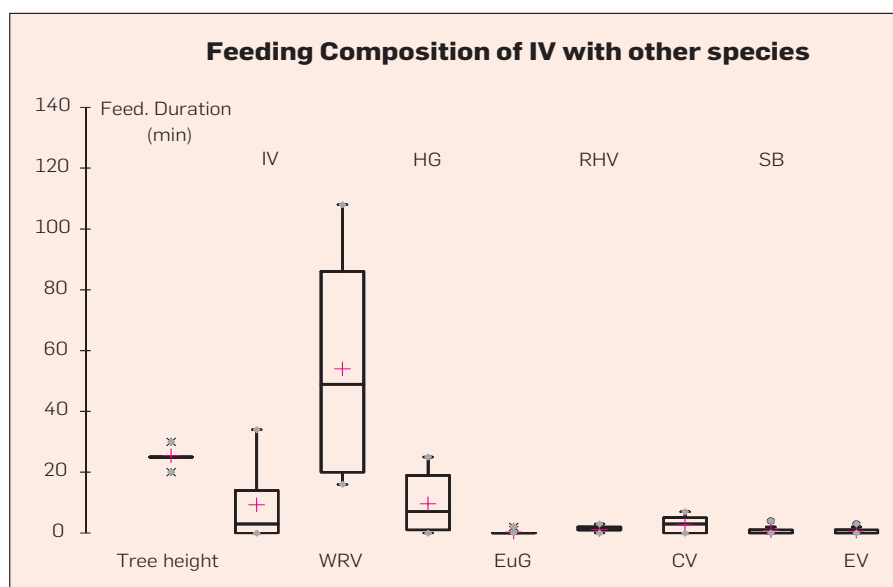


Figure: Feeding composition of different species of Vulture at VSFS, Nawalparasi





Figure: Breeding location and observed location of Indian Vulture

roosting on the tree. Its average roosting height is about 25 meters from ground level and usually with flock of other gyps vulture in Bombax tree. Observed the very normal activity of sunning, preening, bathing etc and was well mixed up with other species

even in the new site. It attends the carcass on every feeding while it was surrounding there. Its maximum time spend on feeding is 34 minutes and it depends on the flock size of other vultures. Less the number of other vultures can get more food in short

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time. White-rumped Vulture dominated during the feeding second is Himalayan Griffon and then Indian Vulture by time. It is possibly the first observation of eight species out of nine species of vultures in south Asia feeding together. During the time period we observed the maximum number of each species in single feeding as White-rumped Vulture-108, Slender-billed Vulture-4, Indian Vulture-1, Red-headed Vulture-2, Egyptian Vulture-3, Himalayan Griffon-20, Eurasian Griffon-2 and Cinereous Vulture-5.

However, the Indian Vulture is vagrant to Nepal thus this species might have sighted earlier in the other part of country. But, this is the second confirmed evidence that the presence of Indian Vulture in Nepal history. This gives the confirmed evidence to the researcher and conservationist that the vulture feeding center benefitting such critically endangered vulture species. The distribution and its actual presence in different parts of Nepal is still unknown.

We reviewed the available documents regarding the Indian Vulture breeding locations in India and the nearest breeding location is Bandhavgarh Tiger Reserve, Madhyapardesh, India which is about 570km far from the observed location Pithauli, Nawalparasi, Nepal.

All authors affiliated to Bird Conservation Nepal

\*for author correspondence, e-mail:  
krishna@birdlifeneal.org

## प्रतिबन्धित डाइक्लोफेनेक औषधि सम्बन्धी कानुनी प्रावधान

नेपाल सरकार, औषधि व्यवस्था विभागले डाइक्लोफेनेक औषधिलाई वि.स. २०६३ जेष्ठ २३ गते देखि पशु उपचारका लागि उत्पादन, प्रयोग र विक्री वितरणमा प्रतिबन्ध लगाएको छ । औषधी ऐन २०३५ बमोजिम पशु उपचारका लागि डाइक्लोफेनेक उत्पादन, प्रयोग, विक्री वितरण आयात, निर्यात र भण्डारण गरेको पाइएमा ३ वर्ष कैद वा रु. २५,००० जरिवाना वा दुवै सजाय हुनसक्ने कानुनी प्रावधान छ ।

# My Journey with Vulture

\*Gobinda Bahadur Singh

I was born in a small village called Laligaun of Humla district in 2026 BS. My family migrated from our old place Laligaun to my current hometown "Barekot" in 2040 BS.

While I was a small kid I remember nests of vulture on the nearby cliffs from our pasture land. They produced chicks to fledge during the month of May/June. My father used to say he would get those vulture egg to console us. But it was next to impossible to go there. He instructed us to greet them gently as we see because they are believed to be gods' means of transportation. He reminded us that it was sin to throw stone while they are feeding and if anybody did so, they would suffer from leprosy. Back in the days, the old men suffering from leprosy were kept in caves far from the settlement. We were not even allowed to look at them. Therefore, hitting the vulture while they are feeding was out of the question.

People used to kill birds at that time by using local equipment. We could see lots of Cheer Pheasant and hear their call while taking our cattle to the field for grazing. We believed that the sound they made during dusks and dawn was of demons and they only dwelled where demons resided. But this tale might help somehow to conserve them. During the winter birds such as Partridge, Chukar, Snow Pigeon were trapped and hunted by spreading fried grains on freshly wiped snow. I was fortunate enough to visit my home town after 37 years and my elders shared that neither they see those birds nor it snows like it used to anymore. The massive deforestation and newly build infrastructures have changed the face of my town. During the bird watching I noticed the place isn't anything like it used to be for birds back in the days. I was depressed but then I heard a call. I was informed that vultures are still hatching chicks.

While I just reached to Simikot from Nepalganj; my eyes strike with the circling vultures. I inspected through my binoculars



*White-rumped Vulture on flight © BCN*

and recorded 8 Himalaya Griffon and 2 Egyptian Vultures. I travelled to Karpanath by jeep the very next day. As I surveyed Vangchu, Bokchegainda, Karanga, I saw a nest of Bearded Vulture and 3 nests of Himalaya Griffon in the forest of Peush. I carried out my search for Egyptian Vulture as I returned from Simkot after three days. I spent a sleepless night as I had seen a pair of Egyptian Vultures behind airport during the dusk. After waking up at 4 am, I had to climb down a steep hill from ladna. It was a very dense forest and under protection of Nepal Army. I ran for my life and climbed the tree when I was chased by a trained dog of Army. They stopped after hearing siren from the army quarter on 5 am. I could finally hear the call of Cheer Pheasant at the height of 3080 m. returned only after clicking some snaps of their nest.

I recorded 2 Himalayan Griffon on cliff slope, 16 Bearded Vulture on flight at Mudhke Chula, 1 in Narka and 2 in Sarimi village of Dolpa. 2 Himalayan Griffon were sighted at Guthi-1, Jumla. Flock of 22 Himalayan Griffon flying and 2 Bearded Vultures were recorded at Guthichaur. 3

nests, 20 in flight of Himalayan Griffon, 2 Bearded Vulture and its one nest was recorded at Patarashi-7. 4 calls of Cheer Pheasant were also recorded at Bethani Jungle. Likewise, 4 vultures on flight, a dead griffon and 2 pair of Himalayan Monal were sighted at height of (3970 ft) were recorded at Jagadulla-4 Dolpa.

Besides, I am continuously engaged on the monitoring of four species of vultures and their nests in Jajarkot district since last five years. Till the date I have rescued six sick and injured vultures and release four after recovery by treatment. Also rescued 26 injured different species of birds and 11 Deers in the district. I observed 26 dead Himalayan Griffon by carcass poisoning incidents in the district which is one of the major threats for vulture in the district. Besides it, stealing eggs from the nest, throwing stone at feeding flock of vultures and lack of awareness on importance of vultures are threats in the district. Hunting is major threats for other birds especially pheasants and deers.

*\*Life member Bird Conservation Nepal,  
Veterinary Officer  
Barekot Rural Municipality, Jajarkot*





## Bird Conservation Nepal

### नेपाल पक्षी संरक्षण संघ



नेपाल पक्षी संरक्षण संघ चरा र चराको वासस्थानको संरक्षणमा काम गर्ने अग्रणी गैर सरकारी संस्था हो। सन् १९८२ मा स्थापित यस संस्थाको जनसाधारणमा चराहरूका बारेमा ज्ञान अभिवृद्धि गर्ने, चराहरूको विविधता तथा जीवनचक्रबारे अनुसन्धान गर्ने, चराहरूलाई पर्ने प्रमुख खतरा पत्ता लगाउने, तिनीहरूको वासस्थान संरक्षण गर्ने र विभिन्न समुदायको जीविकोपार्जनमा पनि टेवा दिने मूल सिद्धान्त रहेको छ। यस संस्थाले विगतका वर्षहरूमा जैविक विविधता संरक्षणका साथै नेपालका ३७ पक्षी संरक्षणका लागि आवश्यक पर्ने अन्तर्राष्ट्रिय स्तरको महत्वपूर्ण चरा तथा जैविक विविधता क्षेत्रहरू (IBAs) घोषणा गरी कार्यक्रम गर्दै आइरहेको छ।

नेपाल पक्षी संरक्षण संघ यसका संस्थापक, संरक्षकहरू, कार्यसमिति सदस्यहरू, अध्यक्ष, आजीवन सदस्यहरू, संघका शुभचिन्तकहरू तथा क्रियाशील समर्थकहरू रहेका संस्था हो।

यो संघ अन्तर्राष्ट्रिय संस्था बर्डलाइफ इन्टरनेशनलका १२२ सदस्य देशहरू मध्येमा यस संस्था पनि साझेदार संस्था हो र हाल यसले एसियाकै सक्रियतापन्न गिद्ध (जटायू) संरक्षणमा देशभरी विभिन्न कार्यक्रमहरू कार्यान्वयन गरिरहेको छ।

#### नेपाल पक्षी संरक्षण संघ

पोष्ट बक्स १२४६५, काठमाण्डौ, नेपाल  
फोन ४४१७८०५, ४४२०२१३, फ्याक्स ४४१३८८४  
इमेल [bcn@birdlifenepl.org](mailto:bcn@birdlifenepl.org)  
वेबसाइट [www.birdlifenepl.org](http://www.birdlifenepl.org)



#### गिद्ध संरक्षण कार्यक्रम



Nepal Vulture Conservation  
Movement Network



- नेचर गाइड एसोसिएशन, महेन्द्रनगर, कञ्चनपुर
- अर्थ, धनगढी, कैलाली
- समैजी सामुदायिक वन उपभोक्ता समूह, खुटिया, कैलाली
- गिद्ध शुद्ध आहार केन्द्र, खुटिया, कैलाली
- बर्दिया नेचर कन्जरभेसन क्लब, ठाकुरद्वारा, बर्दिया
- वातावरण तथा ग्रामीण विकास केन्द्र (इन्डुरेक), कोहलपुर, बाँके
- वातावरणीय दिगो विकास तथा अनुसन्धान केन्द्र, हेमन्तपुर, दाङ
- नर्ति सामुदायिक वन समन्वय समिति, लमही, दाङ
- कालिका सामुदायिक वन उपभोक्ता समूह, लालमटिया, दाङ
- नेपाल पारा भेटेरीनरी एण्ड लाइभस्टक एसोसिएशन, जिल्ला समिति, कपिलवस्तु
- राजापानी सामुदायिक वन उपभोक्ता समूह, कपिलवस्तु
- ग्रीन यूथ नेपाल, लुम्बिनी
- सुखौरा हरियाली र मिलन सामुदायिक वन उपभोक्ता समूह, रुपन्देही
- जटायू रेष्टुरेण्ट व्यवस्थापन समिति, गैँडाताल, रुपन्देही
- गैँडाताल सामुदायिक वन उपभोक्ता समूह, गैँडाताल, रुपन्देही
- खहरेखोला सामुदायिक वन उपभोक्ता समूह, अर्घाखाँची
- गर्ताखोला सामुदायिक वन उपभोक्ता समूह, अर्घाखाँची

- अँधेरी छरछरे सामुदायिक वन उपभोक्ता समूह, दमकडा, पाल्पा
- विश्वज्योति विकास प्रतिष्ठान मञ्च, भुताहा, नवलपरासी
- जटायू रेष्टुरेण्ट व्यवस्थापन समिति, कावासोती, नवलपरासी
- बर्ड एजुकेशन सोसाइटी, सौराहा, चितवन
- गिद्ध संरक्षण तथा व्यवस्थापन समिति, घाचोक, कास्की
- पास नेपाल, खलङ्गा, सल्यान
- पोखरा पक्षी समाज, कास्की
- रेसुङ्गा संरक्षण समिति, गुल्मी
- बारेकोट पर्यावरण तथा विकास अभियान, जाजरकोट

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