


The Himalayan Naturalist

A Friends of Nature publication



Human-Assamese macaque conflict in MIBNP
buffer zone

Recent discoveries:

Asiatic golden cat and Red panda in TMJ
Brown fish owl breeding record in Nepal
Chinese pangolin's new distribution record in
Bhutan

Birds of Bajhang

Deukhuri valley: a wildlife haven in Siwalik hills

Photos from the wild

Outlets for wildlife research publications are limited in Nepal. I am extremely happy to see Friends of Nature coming with biannual newsletter focusing on publishing articles related to wildlife research and conservation. I hope this newsletter will help researchers and conservationists in sharing important scientific information which is crucial for long-term wildlife conservation in Nepal.

Shant Raj Jnawali, PhD

Chief of Party, Hariyo Ban Program, Nepal

I am absolutely delighted that Friends of Nature is publishing a digital newsletter, The Himalayan Naturalist, and congratulate them on this initiative. The Himalayan Naturalist will fill an obvious need for a publication where naturalists from Nepal and elsewhere in the Himalayas can publish their findings. As the newsletter will be published online it should be readily available for everyone with an interest in natural history and wildlife conservation in the Himalayas.

Carol Inskipp

Author of 'Birds of the Indian Subcontinent', and veteran ornithologist, UK

Nepal is a country both rich in wildlife and those who wish to conserve it. There is a wealth of high-quality survey delivering primary information about the country's wildlife, and insight coming from field conservation about how to conserve it. Friends of Nature is an organisation at the forefront. Much of this information deserves to be published in a way more widely available than in ordinary project reports. The launch of The Himalayan Naturalist is thus a very welcome development, and I wish it a long life.

J. W. Duckworth

Species Advisor, IUCN SSC Asian Species Action Partnership

I would like to congratulate the entire team and wish them all the best for the future. I am optimistic that this newsletter will provide a good platform for researchers and conservationists to share and disseminate information on wildlife.

Sunil Thapa

Chairman, Friends of Nature (FON) Nepal

Editorial

Publishing a newsletter on biodiversity and conservation was always a priority for us. In 2005 we launched 'Eco-Mirror' but unfortunately it was discontinued due to lack of funds for publishing. Even now, committing extra time and raising money for a magazine on biodiversity and conservation was a big challenge. We had several lengthy discussions on the subject before we went forward and decided to start a newsletter again.

A major factor that pushed us to take this decision was availability of very few decent publishing platforms for researchers and conservationists in the Himalayan region. In many cases, this leads to lack of proper documentation, hindering the process of dissemination and sharing of valuable research process and outputs. Most materials that are available often reaches only a small specialized section of people. When dealing with sensitive issues of conservation it is often a race against time as inaction can proliferate threats to habitats and species. Thus, the value of information sharing cannot be undermined. Our long-term vision is to develop this newsletter as an open access peer-reviewed wildlife conservation journal for the whole Himalayan region. This will also help gather support from general people and other conservation stakeholders on important issues relating to conservation.

On a lighter note, deciding the name of the newsletter was surprisingly hard. Some of us thought of keeping the previous name while others thought the name would be too generic for a wildlife research and conservation focused publication. We ended up with a really long list. So, selecting the best names we conducted a poll in our Facebook page to involve our readers in the decision. We would like to thank everyone for your support and participation.

So finally, here we are with the first issue of our biannual, digital newsletter 'The Himalayan Naturalist'. The newsletter aims to incorporate both scientific and general articles on wildlife research and conservation. We hope that this newsletter would reach a wide audience and empower researchers and conservationists.

We look forward to your critical comments and suggestions which will help us improve the newsletter in coming days.

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Red panda by JEEVAN RAI

BACK COVER PHOTO

Himalayan marmots by YADAV GHIMIREY

Human-Assamese macaque conflict in Makalu-Barun National Park Buffer Zone, Nepal

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Abstract We conducted a questionnaire survey to study human-Assamese macaque conflict in the buffer zone of Makalu-Barun National Park during December 2011. Most respondents perceived that the macaque population was increasing, and the degree of conflict was high. Rice, maize, cardamom, and millet were the major crops raided by macaques, with cardamom being the most valuable. The average economic loss inflicted by the macaques from these four major crops was calculated to be USD 602 (NPR 60,199.74) per household per annum. The ongoing conflict with humans due to crop depredation has led to retaliatory killings which is a big threat to the survival of macaques in this region.

Keywords Cardamom, crop depredation, *Macaca assamensis*, Makalu-Barun National Park, public perception

Introduction

Assamese macaque *Macaca assamensis* is one of the lesser-studied primate species of Nepal (Chalise 2000a) and is categorized as 'Near Threatened' nationally and globally (Boonratana et al. 2008, Jnawali et al. 2011). These macaques are protected in Nepal under the National Parks and Wildlife Conservation Act (1973) and are listed in Appendix II of CITES. In Nepal, the species is designated as threatened due to its restricted distribution of less than 22,000 km² with an estimated area of occupancy of about 914 km², that experiences a continuing decline in area, extent and quality of habitat, and population (Molur et al. 2003). Throughout their range in Nepal, Assamese macaques are considered pest animals as they raid on crops (Chalise 2001). As such they are in constant conflict with humans in the area. Assamese macaque has also been recorded from Tamku, Sisuwa, Apsuwa, and Saldim area of Makalu-Barun National Park (MBNP) with reported incidents of crop raiding (Chalise 1999, Ghimirey 2010). This study was conducted in the buffer zone of MBNP to understand the human-macaque conflict.

Materials and methods

Study Area

MBNP lies within Sankhuwasabha district in the Eastern Himalaya biodiversity hotspot covering an area of 1,500 km² with an additional 830 km² of buffer zone. The altitude

ranges from 435 m to 8,463 m (Mt. Makalu) within a distance of 40 km. The inaccessible lower Barun valley and Saldim valley have pristine areas covered by thick, extensive forest and have been designated as a Strict Nature Reserve, the first in Nepal (Carpenter and Zomer 1996). The buffer zone is inhabited by some 32,000 people of diverse ethnic groups of rich cultural heritage; the tribes of *Rai* in majority, *Sherpa* and *Shingsawa* in minority (Chaudhary 1998).

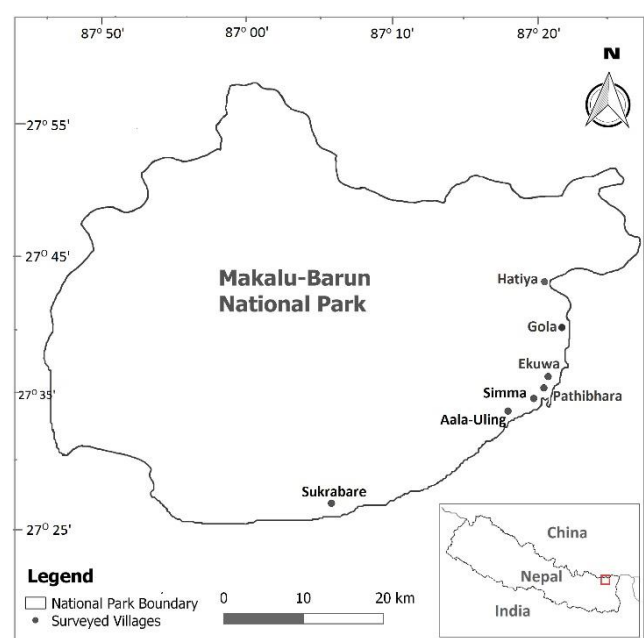


FIG. 1: Map showing seven villages in the buffer zone of Makalu-Barun National Park that were surveyed for human-Assamese macaque conflict study

Questionnaire Survey

We visited seven villages – Sukrabare, Aala-Uling, Simma, Pathibhara, Ekuwa, Gola, and Hatiya, in the buffer zone of MBNP for questionnaire survey (FIG. 1). Four villages - Sukrabare, Ekuwa, Gola, and Hatiya, were selected purposively based on previous knowledge of conflict while the other three were selected randomly. A total of 39 households were selected using systematic random sampling from 350 households. Information on crop raiding was gathered using a semi-structured questionnaire.

Details regarding the respondents' landholdings, crop loss due to macaque raiding, retaliatory killings, and their perception towards Assamese macaque conservation

were collected. These details were verified, and additional details were collected through three informal group discussions and five key informant interviews. We observed their agriculture fields as well. The economic loss was assessed based on the information gathered from the farm owners.



PHOTO 1: Researcher interviewing a local woman.

Opportunistic Observations

Assamese macaques spotted opportunistically were observed and the number of individuals and location information were recorded. Information on age and sex of macaques was not collected as it was beyond the scope of the study.

Results

Crop Raiding

In the order of the most affected to least raid-affected crops, the survey indicated that macaques raided rice (69%) and maize (59%) the most followed by cardamom (44%), millet (28%) and others (15.4%).

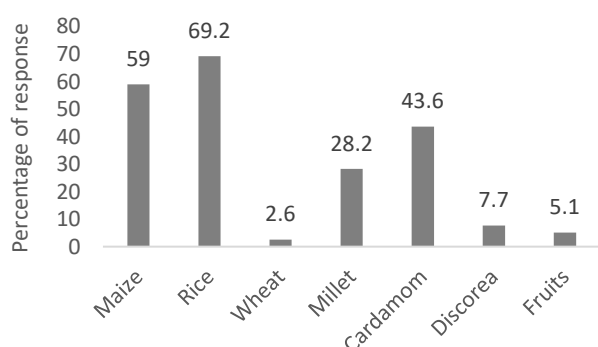


FIG. 2: Crops most affected by Assamese macaque raids in MBNP buffer zone.

The raided crops depended on the season and availability of a particular crop. The incidences of raids were common few weeks prior harvesting seasons for different seasonal crops. Rice was raided mostly in

September, maize in July, millet in November and cardamom throughout the year peaking in April.

Economic Loss

Of the 39 households interviewed, 35 reported that they incurred considerable loss due to crop damage caused by Assamese macaques. Economic loss of 39 households was equivalent to around USD 23,477.90 (equivalent to NPR 2,347,790.00; USD 1 = NPR 100) per annum with the average of USD 602 (equal to NPR 60,199.74) per household. This amount of economic loss is only from the major crops of the area - rice, maize, millet and cardamom. Being a high value major cash crop of the region, cardamom holds the major share in the economic loss.



PHOTO 2: Farmers showing cardamom field raided by Assamese macaques.

Although Assamese macaques did not consume harvestable cardamoms, they hindered production by tearing and consuming the buds of growing plants.

Conflict and Conservation needs

Every household had experienced varying degree of conflict with the macaques. People's perception of the degree of conflict situation were ranked into five classes as - high, moderate, low, none, and no idea.

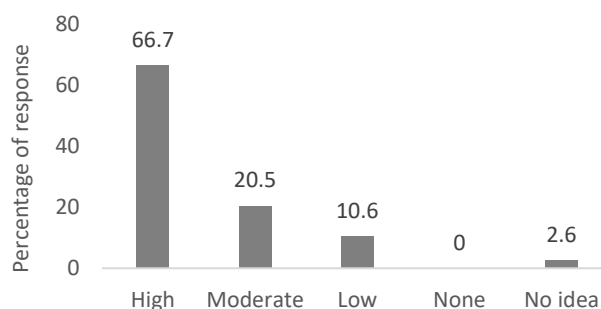


FIG. 3: Public perception of degree of conflict with Assamese macaques in MBNP buffer zone.

TABLE 1: Opportunistic encounters of Assamese macaques on four separate occasions in 2012 at the buffer zone of Makalu-Barun National Park.

Encounters	Troop Size	Location	Coordinates	Elevation (m)	Habitat	Time
I	6	Near Sukrabare	N: 27° 7.555' E: 87° 7.419'	524	<i>Schima wallichii</i> , <i>Lagerstroemia parviflora</i>	15h00
II	> 40	Near Sukrabare	N: 27° 7.505' E: 87° 7.494'	500	<i>Schima wallichii</i> , <i>Lagerstroemia parviflora</i>	15h30
III	5	Near Hatiya	N: 27° 3.229' E: 87° 1.533'	1,354	<i>Quercus glauca</i> , <i>Alnus nepalensis</i> , <i>Castanopsis tribuloides</i> , <i>Castanopsis indica</i> , <i>Lyonia ovalifolia</i>	16h00
IV	5	Near Gola	N: 27° 8.585' E: 87° 0.985'	1,058	<i>Shima wallichii</i> , <i>Castanopsis tribuloides</i>	15h00

Most (66.7%) perceived high degree of conflict, 20.5% as moderate conflict, 10.3% as normal conflict, and 2.6% could not assess their conflict. Respondents who considered the conflict as high or moderate experienced regular crop raids that results in lower return of their labour and investment, and economic loss.

Regarding attitude of people towards macaques, only 13% of the respondents said that the macaques' number was declining and that they should be conserved because they had the right to exist as one of nature's creations, and for their ecological role of seed dispersal. However, the majority, 87% of respondents didn't feel the necessity to protect the animal as they depredate valuable crops, but they agreed that the macaques can be conserved if they do not cause such damage.

Retaliatory Killing

Only 20.5% of the respondents admitted the prevalence of retaliatory killing in the study area. It could be inferred from the discussions carried out that more than 100 Assamese macaques were killed in retaliation during the past five years (between 2006 and 2011) in the study area (>50 individuals around Hatiya, >35 in Bala, and around 25 in Pathibhara).

Opportunistic Observation

We encountered four different troops of Assamese macaques on separate occasions with a total of more than 56 individuals (TABLE 1). The mean troop size was 14 individuals.

Assamese macaque mostly remained hidden within the distant forest canopy and sightings out in the open were momentary. Due to difficulty in sighting, we were only able to count the number of individuals and get a rough estimate of age distribution. The groups seemed to be dominated by young individuals with very few adults.

The largest number of individuals recorded was near Sukrabare village at the other side of the Sankhuwa River at an elevation of around 500 m. The two smallest groups had 5 individuals in each and were recorded at different locations near Hatiya and Gola.

Discussion

Crop raiding is a serious yet the most common reason of human-macaque conflict throughout the macaque distribution range (Strum 1994, Naughton-Treves 1998, Sekhar 1998, Gillingham and Lee 2003, Linkie et al. 2007, Riley 2007). Residents in the buffer zone of MBNP too are victim of this conflict. The annual economic loss per household experienced by the farmers of this area (USD 601.997 = NPR 60,199.74) from the major crops is very high. This estimated economic loss does not include direct losses to other agricultural products such as pulses, vegetables and fruits, and indirect economic losses of the farmers for their time spent in raising crops, surveillance or the cost of other crop protection strategies.

This crop raiding loss is considerably higher than economic loss per household experienced by the farmers of Langtang National Park (USD 20 = NPR 2,000) as found by Regmi and Kandel (2008). Such considerable difference in the amount could be from damages caused to cardamom farms - a major high value cash crop of the buffer zone of MBNP, which costs around NPR 1,000 per kg. Chalise (2000b) estimated crop damage due to wild animals in this area to be 496.21 kg for each household and the crop included 67.38% of cereals and 32.62% of tubers. However, all the losses cannot be attributed to Assamese macaque alone, although Chalise (2000b) considered them worse raiders than Rhesus macaques. Assamese macaques seem to mostly raid rice followed by maize, cardamom, millet and others. However, generalization of the food preference cannot be made with this data. This also

indicates that cardamom plant depredation as an emerging reason for growing human-macaque conflict in the area. Due to the fear of crop depredation, hectares of farmland, usually isolated land parcels which are far away from the settlement and surrounded by or adjoining to forests, were found to be fallow, abandoned and/or left as ranch throughout the study area.



PHOTO 3: An abandoned farmland in the study area.

According to our data most of the respondents showed negative and hostile attitude towards macaques and wild animals in general, confirming the findings of Mehta and Heinen (2001) where they found that 96% of the respondent around the buffer zone of MBNP had been facing crop depredation and 91% of the respondents wanted to eliminate pest animals. There are stories in Hatiya village about a campaign for mass killing of Assamese macaques three decades ago using paid hunters which nearly wiped out Assamese macaques from the area.



PHOTO 4: Male Assamese macaque found dead along the local trail. The cause of death was unknown.

Public perception of wildlife conservation varies greatly from one individual to another and is determined mainly by the effect of wildlife on their socioeconomic wellbeing (Kellert 1985, Nepal and Weber 1992). Assamese

macaque is one of the primary depredators of crops, causing huge economic loss to people in the buffer zone area. As the economic loss goes unrequited, the hostility towards Assamese macaques and the national park itself has been further amplified. However, compensation schemes would be a costly affair for remote Himalayan protected areas like MBNP which attracts less tourists due to its difficult terrain and limited accessibility resulting in very low income. During 2016-17, the total earning of MBNP was USD 43,000 (NPR 4.3 million) which is considerably lower compared to popular areas like Chitwan National Park which had a total earning of USD 2.01 million (NPR 201 million) during the same year (DNPWC 2017).

Since MBNP does not have the financial capacity to introduce major conservation efforts to reduce the severe human-macaque conflict at present, the possibility of using natural deterrents as implemented by farmers elsewhere could be useful. Deterrent methods particularly used for monkeys could be implemented, such as shrimp paste and dazer (Witness 2008, Amir 2015). In Uganda, crop raiding by mountain gorilla has been reduced by using tea plants as buffers where farmers also received economic benefit from these deterrents (Mowbray 2016). However it is also important that proper studies be undertaken to assess actual reasons for the Assamese macaque to venture towards human settlements including habitat assessment studies to find if National Park (and Buffer Zone) has enough food available to sustain the Assamese macaques throughout the year.

Acknowledgements

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Biosketch

YADAV GHIMIREY has been involved in research and conservation of small felids in Nepal since 2008. He is interested in interspecific interaction among felids, particularly between clouded leopards and leopards.

RAJU ACHARYA has been involved in wildlife conservation for over two decades. His main interest lies in ethno-zoology.

BAL MUKUNDA POKHREL has been working as a consultant in environmental management and Environmental Impact Assessment.

Important Wildlife Areas

Deukhuri valley: a wildlife haven in the Shiwalik hills, Nepal

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The prioritization of research and conservation inside and outside the Protected Areas (PAs) in Nepal is generally biased. This is highly concerning as many areas outside PAs are rich in biodiversity and act as important habitats and ecological corridors, but they have been receiving minimal focus. Deukhuri valley, a haven for wildlife in Mid-Western Nepal is one such area which has been highly neglected in terms of research and conservation.

Deukhuri valley lies in the lower region of Dang district in mid-Western Nepal, nearly 400 km south-west from the capital Kathmandu. It is surrounded by forested hills of the Shiwalik range that connects Bardiya and Banke with Chitwan National Park via the Dovan bottleneck. The forests are connected with Banke National Park in the west and Sohelwa Wildlife Sanctuary in the south (Khanal 2015, Khanal et al. 2017).

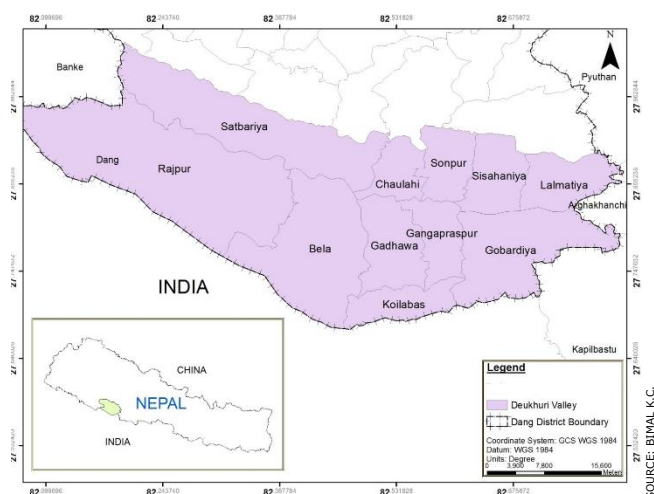


FIG. 1: Map of Deukhuri valley.

The area of the valley is 1,243 km² and the elevation ranges from 200 m to 1,000 m. The valley acts as a catchment area where small rivers like Rihar, Dolai, and Arjun river, flow downhill along the slopes and join the Rapti river which flows across the valley. The land is very fertile and has four major human settlements, i.e. one municipality (Lamahi), and three rural municipalities (Rajpur, Gadawa, and Rapti). Few small communities also reside in the surrounding hills.

In 2005, Deukhuri valley was identified as one of Nepal's Important Bird and Biodiversity Areas (IBAs) by BirdLife International (Baral and Inskipp 2005). The area has *sal* and *sisoo-khair* dominated forest, with patches of degraded forest (Khanal et al. 2017a). During the past five

years, few studies have been conducted on wild fauna in the valley using camera traps and sign surveys.



PHOTO 1: A south view of Deukhuri valley.

A study in 2015/16 identified important areas for striped hyaena *Hyaena hyaena* including den locations and breeding records. They were found to be using forest patches in northern areas of the valley, however its occupancy seemed low towards the southern areas (ibid.).

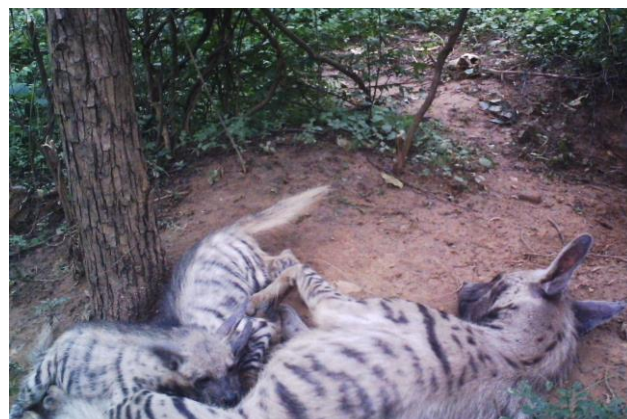


PHOTO 2: Striped hyaena, female adult feeding her cubs.

Common leopard *Panthera pardus*, one of the topmost predators, has been recorded from the area along with smaller felids like leopard cat *Prionailurus bengalensis* and jungle cat *Felis chaus*. The existence of sloth bear *Melursus ursinus* has been confirmed and golden jackal *Canis aureus* is the only canid recorded till date. Small carnivores found in the area include yellow-throated marten *Martes flavigula*, Indian grey mongoose *Herpestes edwardsii*, honey badger *Mellivora capensis*, small Indian civet *Viverricula indica*, large Indian civet *Viverra zibetha*, and common palm civet *Paradoxurus hermaphroditus*.

Asiatic elephant *Elephas maximus* has been observed in the valley, migrating from Banke National Park upto Bhaluwang. Ungulate species such as barking deer *Muntiacus muntjac*, spotted deer *Axis axis*, and wild boar *Sus scorfa* are common in the area. Globally threatened four-horned antelope *Tetracerus quadricornis* has been recently confirmed which is also the first record of this species outside PAs in Nepal (Khanal et al. 2017b).



PHOTO 3: Four-horned antelope captured in camera trap.

Primate species confirmed to occur in the area include rhesus macaque *Macaca mulatta* and Terai grey langur *Semnopithecus hector*. The forest also harbors other small mammals such as flying squirrel *Petaurista petaurista*, five-striped palm squirrel *Funambulus pennantii*, Indian hare *Lepus nigricollis*, and Indian crested porcupine *Hystrix indica*. Till date, three colonies of Indian flying fox *Pteropus giganteus* have been recorded but the status of other bat species is unknown.

Ornithological surveys carried out between October 2008 and June 2009 recorded a total of 246 bird species in the valley. Recent ornithological surveys have added to the list bringing the total number of bird species found in Deukhuri valley to around 260 species. The list includes many globally threatened species like Egyptian vulture *Neophron percnopterus*, white-rumped vulture *Gyps bengalensis*, slender-billed vulture *Gyps tenuirostris*, red-headed vulture *Sacrogyaps calvus*, greater-spotted eagle *Aquila clanga*, cinereous vulture *Aegypius monachus*, and grey-headed fish eagle *Ichthyophaga ichthyaetus* (Thakuri 2009). Interestingly though, bird species very common in other areas of Nepal like black kite *Milvus migrans*, common myna *Acridotheres tristis*, cattle egret *Bubulcus ibis*, Indian pond heron *Ardeola grayii*, house sparrow *Passer domesticus*, Eurasian tree sparrow *Passer montanus*, etc. are recorded with low frequency of observation and population in the valley (ibid.). There has been several records of direct sightings and rescue/release operations of many snake species in the area. So far, 15 species of snakes have been recorded, which includes – spectacled cobra *Naja naja*, king cobra *Ophiophagus hannah*, monocled cobra *Naja kaouthia*, common krait *Bungarus caeruleus*, banded krait *Bungarus*

fasciatus, John's sand boa *Eryx johnii*, common sand boa *Gongylophis conicus*, Burmese rock python *Python bivittatus*, Asiatic rat snake *Ptyas mucosa*, common blind snake *Rhamphotyphlops braminus*, Russell's viper *Daboia russelii*, buff-striped keelback *Amphiesma stolatum*, common wolf snake *Lycodon aulicus*, common bronzeback tree snake *Dendrelaphis tristis* and banded kukri snake *Oligodon arnensis*. Bengal monitor *Varanus bengalensis* lizard is commonly found, while golden monitor lizard *Varanus flavescens* has only been recorded a couple of times. Mugger crocodile *Crocodylus palustris* inhabits the Rapti and Rihar river valley (Khanal 2017). Gharial *Gavialis gangeticus* was also found in Rapti river upto two decades ago, but they are now believed to have gone extinct from the region. Elongated tortoise *Indotestudo elongate* can be seen in the forest but information on other tortoise species is non-existent. Very little information is available about frogs, lizards, butterflies and other invertebrates.

Poaching and habitat loss due to deforestation and encroachment are the major threats to the wildlife in the area. Forests and grasslands are being degraded by overgrazing, excessive burning, and removal of undergrowth to provide fodder for livestock. Hunting and trapping of wildlife are common in the valley, indicated by encounters with poachers and frequent sounds of gunshots in the forest.



PHOTO 4: Hiding place made of stones by hunters near a waterhole.

A significant portion of poached animals ends up at the local markets as bushmeat. Killing of snakes is higher during summer and monsoon when they are more active, triggered by fear of snakebites. Villagers also believe that snake bones are venomous. So, throwing dead snakes in the highway to be run over and smashed by vehicles is a common practice.

Deukhuri valley is a prime example of biodiversity-rich landscape in Nepal lying outside the PA system. Most of the forested areas in the valley are under the jurisdiction of the District Forest Office (DFO) but they have not been able to curb the problem of poaching and illegal trade. This is compounded by the low level of conservation awareness among people who are

dependent on these forests for their livelihood. The DFO needs to take urgent action and prioritize wildlife conservation as one of their main agendas. For this, a separate wildlife section needs to be established to focus exclusively on issues concerning wildlife conservation, wildlife crime control, awareness among locals, etc. Failure to take timely action regarding this issue will only increase the risk of the problem escalating and getting worse. It is important to address these threats properly in order to conserve the area and its legacy for years to come.

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Biosketch

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SANJEEV BANIYA is an undergraduate student in Institute of Forestry Pokhara. He is interested in bat conservation and is a member of Nepal Bat Research and Conservation Union.

Short Communication

Communities in frontline in red panda conservation, eastern Nepal

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*The national red panda *Ailurus fulgens* survey of 2016 shows that nearly 70% of the total red panda habitat in Nepal falls outside the protected areas (MoFSC 2016). Conservation interventions targeting this endangered species are minimal across most of its range which are either being managed by Community Forest User Groups (CFUGs), or directly by the District Forest Office and their field units. The primary focus of these institutions is sustainable management and utilization of forest resources rather than wildlife conservation which underpins the need of a robust conservation program to ensure co-existence of red pandas and people. Lessons learnt from Panchthar-Ilam-Taplejung (PIT) corridor in eastern Nepal can be useful in this context where local CFUGs have been implementing community-based conservation programs since 2010.*

The PIT corridor plays a vital role linking Kanchenjunga Conservation Area of Nepal with three protected areas of India, viz. Singalila National Park, Barsey Rhododendron Sanctuary, and Kanchenjunga National Park.

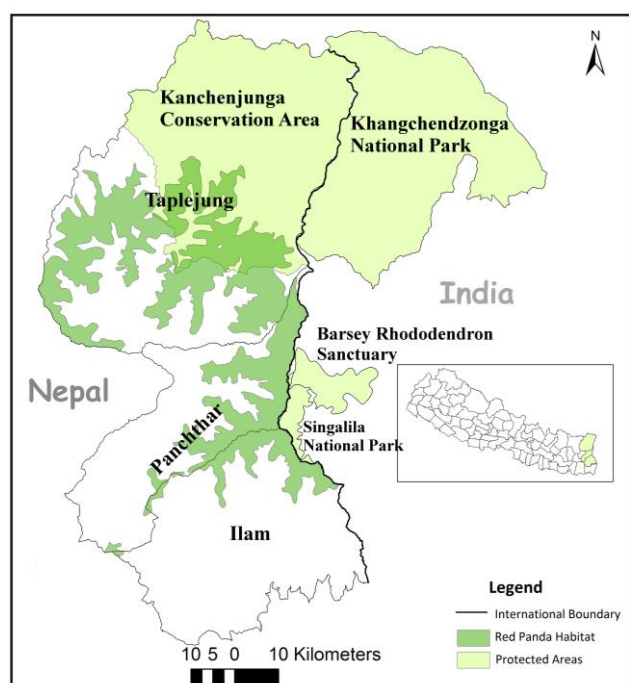


FIG. 1: Map showing red panda habitat in the PIT corridor

This area supports numerous wildlife species and is one of the few places where the charismatic red panda can be found. The corridor is crucial for red panda conservation as it supports circa 25% of Nepal's red panda

population (Williams et al. 2011). With an aim to maintain a viable population of red pandas in the PIT corridor, community-based conservation program was introduced by Red Panda Network in 2010. In this conservation model, different aspects of conservation, research, monitoring, education, awareness, capacity building, sustainable livelihoods, and habitat management are included.

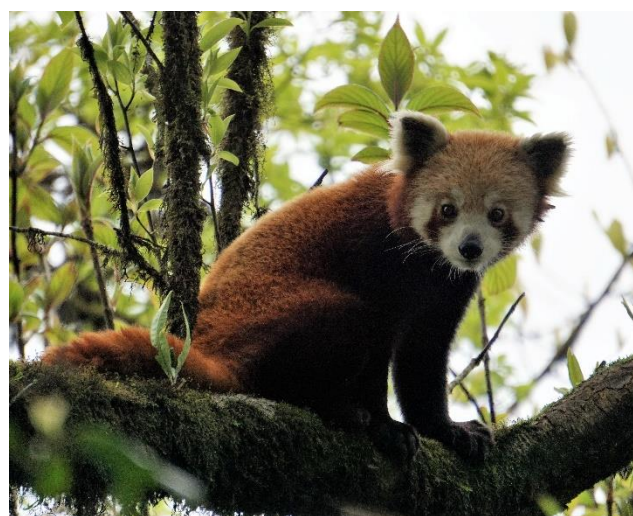


PHOTO 1: Red panda in its natural habitat in PIT corridor.

Establishment of baseline population estimates through field surveys of red pandas, and the institutionalization of community based red panda monitoring programs through community engagement have been the key approaches of this conservation model. The program commenced with an assessment of red panda distribution, and threat identification. Based on habitat suitability analysis in 2014, the PIT corridor was found to be harbouring red panda population of 125 to 218 individuals (RPN 2014). Unfortunately, the majority of habitat (76%) in this corridor falls outside the protected area system indicating the need of proactive community participation to ensure the survival of genetically viable population by maintaining ecosystem integrity at the landscape level.

Habitat loss due to degradation and fragmentation, and poaching for their colourful fur, are the main threats to the red panda population. To overcome these challenges, both long-term and short-term strategies were devised. After consultation with local CFUGs, a need-based conservation program was developed and piloted in six community forests covering a total area of 86 km² in Taplejung in 2010 (MoFSC 2016).

During consultation with community members, we observed that the people were reluctant about the idea of implementing protected area systems as they felt that this form of recognition might deprive them of their rights to harvest forest resources. After three years of continuous effort spent on consultation and outreach activities, the local people were convinced, and the community-based program was extended in the entire PIT Corridor.

At present, 49 CFUGs from the Panchthar, Ilam, and Taplejung districts are involved in this initiative. Seventy-three local forest users have been trained as citizen scientists who are involved in red panda monitoring and anti-poaching patrols throughout the year. Several red panda conservation committees, mother groups, youth groups, and herder groups have also been formed. Some of these community-based groups are augmenting their conservation efforts independently.

Community outreach programs have been effective in disseminating information on red panda ecology, importance, conservation issues and legal provisions through awareness workshops, posters, information boards, and other activities including FM radio broadcasting and annual commemoration of the International Red Panda Day (third Saturday of September). Red panda focused conservation manual has been endorsed by some local schools as part of their curriculum. Furthermore, the school outreach program has created a network of Jane Goodall Institute's Roots & Shoots groups in 29 schools spread across the PIT corridor. Sensitization and engagement of the children in conservation campaigns through networking and education system is a milestone in red panda conservation as in the long run as these youths represent the future.



PHOTO 2: RPN's Forest Guardians during a field training.

Sustainable livelihood programs have been effective as a major intervention for reducing pressure on forest resources by diversifying livelihood practices. It includes promotion of red panda based ecotourism, promoting improved cooking stoves, organic farming, and non-timber forest products especially medicinal plants

through capacity building, marketing and value addition, which has all been well accepted by local communities. As livestock herding is one of the major drivers of habitat loss and degradation, livestock herding improvement program has been introduced which includes herder's shed improvement, promoting use of tent and fuel-efficient cooking stoves, and rotational grazing.



PHOTO 3: School children celebrating International Red Panda day 2017 in Panchthar.

Red panda habitat management actions are critical components of this program. It incorporates habitat enrichment through the restoration of degraded water sources, and regulations on livestock grazing and forest resource harvesting emphasizing on bamboo, other diet species, and shelter tree species. Sustainability of this initiative has been ensured through the endorsement of red panda focused conservation measures in the Operation Plans of the relevant CFUGs. Because of these efforts and continuous engagement and dedication of local people, one can spot this cuddly creature within three to four tracking days in the wild. This community-based conservation approach for red panda conservation in eastern Nepal is the first of its kind in the entire red panda range countries. It has ample scope to be replicated in other range areas with nominal conservation provisions, not only limiting to red pandas but also other flagship species.

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Biosketch

DAMBER BISTA is the conservation manager at Red Panda Network. He is interested in ecological aspects and human dimension of red panda conservation in Nepalese Himalaya.

Distribution Update

New distribution record of the Critically Endangered Chinese pangolin *Manis pentadactyla* in Bhutan

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The Chinese pangolin *Manis pentadactyla* is one of the eight species of pangolins and is classified as Critically Endangered on the IUCN Red List of Threatened Species. Its population is rapidly declining due to high levels of poaching for meat and scales across its range (Challender et al. 2014). It is a highly susceptible due to its low reproductive rate (usually one litter per year, one cub per litter), food specialization, very poor defense mechanism and strict requirement for habitat (Wu et al. 2004a)

This species is distributed in the southern foothills of Bhutan, China, Hong Kong, India, Laos, Myanmar, Nepal, Taiwan, Thailand and Vietnam (IUCN SSC Pangolin Specialist Group, 2018). In Bhutan, it is mostly found in Samtse, Sarpang and Samdrup Jongkhar districts (Dorji 2017).

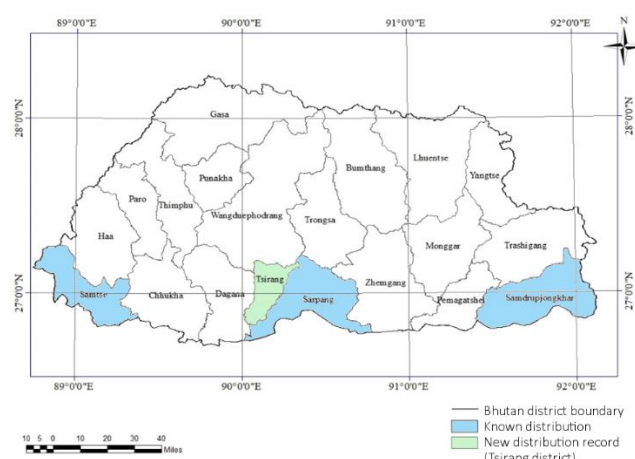


FIG. 1: Map showing districts with new and known distribution areas of Chinese pangolin in Bhutan.

Chinese pangolin mostly prefers broad-leaved forest due to higher presence of termites, its principle diet (Wu et al. 2004b). Primary forest was found to support more pangolins probably due to the availability of large numbers of old hollow trees fit for sleeping and as den (Newton et al. 2008). Besides primary and secondary forest, pangolins have been recorded to occur in oil palm and rubber plantation and near human settlement (Gurung and Singh 1996, Azhar et al. 2013, Katuwal et al. 2015). In Nepal, forest patches and agriculture land in close proximity to human dominated landscape were found to be preferred habitat (Katuwal et al. 2015, Thapa et al. 2014). In Bhutan, pangolins are mostly found in cardamom cultivation area in winter for feeding (Wangchuk 2010) and the maximum numbers of burrows

were observed in such cultivation areas in Samtse district (Dorji 2017).

On 4 April 2018, a local resident of Tsirang reported a sighting of a strange injured animal. Upon receiving the information, a team of forestry staff from Tsirang Forest Division rushed to the site where they found a female Chinese pangolin (PHOTO 1) in a defensive rolled position.



PHOTO 1: Chinese pangolin after its release in Tsirang district.

The pangolin was brought to the Interim Wildlife Rescue Centre of Tsirang Forest Division for treatment and rehabilitation. Weighing 6.1 kg, the female Chinese Pangolin was kept in the wildlife center for 73 hours for treatment and then released back to a safe natural habitat. This is the first report of Chinese Pangolin in Tsirang District, Bhutan. This sighting confirms the distribution of the Chinese pangolin in Southern Central Bhutan (FIG. 1).

Further detailed studies are highly recommended to understand the extent of its distribution, threats and mitigation measures to prevent a further decline in its population.

Acknowledgements

We are thankful to the Director, Department of Forest and Park Services and Ugyen Wangchuk Institute for Conservation and Educational Research, Bhutan for the permission to write a paper on the new distribution record of Chinese Pangolin. We would like to thank Mr. Tek Bdr. Sunwar, Mr. Shacha Dorji, and Mr. Paras Mani Kuikel for their assistance during the rescue operation. And we would like to thank all the staffs of Tsirang Forest Division for their support.

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Biosketch

KINLEY is currently working as head of Wildlife and Nature Conservation Section in Tsirang Forest Division. He studies ecology of threatened species, human wildlife conflict and the impact of climate change on wildlife and its habitat.

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Short Communication

Status of blackbuck in Nepal: an update

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Blackbuck Antelope cervicapra is an antelope species locally known as Krishnasar. Once widely distributed in the Terai region, its population crashed drastically during late 1950s and early 1960s due to habitat loss and poaching (DNPWC 2016). It was considered extinct in Nepal in early 1970s, but in 1975 after nine individuals were recorded in Bardia, the government began providing high security to the species.

Blackbuck is categorized as Critically Endangered in Nepal but as Least Concern globally (Jnawali et al. 2011, IUCN SSC ASG 2017). Hunting and commercial poaching, retaliatory killing, degradation of grassland and pasture, foot and mouth disease, inbreeding depression, and predation are the main threats to the species in Nepal (DNPWC 2016).

To preserve its natural population and avoid disease transmission from domesticated ungulates, the Government of Nepal declared an area of 172 hectares in Khairapur, Bardia as the Blackbuck Conservation Area (BCA) in 2009 to preserve the last remaining wild population of the species. As a result of continuous conservation efforts, their population increased gradually to reach 300 individuals in 2013. However, due to the unusually high flooding of Babai river in 2015 the population declined to 248 (ibid.).

Reintroduction of the species to Suklaphanta National Park (SNP) has been planned to ensure another viable wild population in the country. This area was a natural blackbuck habitat till 1960s. Between 2012 and 2015, 42 blackbuck individuals have been translocated to a predator-proof enclosed area of 51 hectares in Hirapur Phanta, within the SNP. The translocation was recommended by several feasibility studies (Khanal et al. 2002). Among the 42 translocated individuals, 28 were brought from Nepalgunj Mini Zoo and Central Zoo, Lalitpur in 2012, and 14 individuals were later brought in July 2015 from BCA to restock the declining population. Between 2012 and 2015, there were 44 births and 47 deaths within the enclosure (DNPWC 2016).

A release to the open space in the national park has been planned once the population reaches at least 100 individuals. Reintroductions of the blackbuck have been attempted twice before, in 1977 and 1987, however the efforts were not successful primarily due to predation and habitat unsuitability (Pradhan et al. 2001). While it is vital to establish a second wild population in the country, it is also important to learn from past experiences of failed reintroductions and use it to devise proper strategy to make the present effort successful.

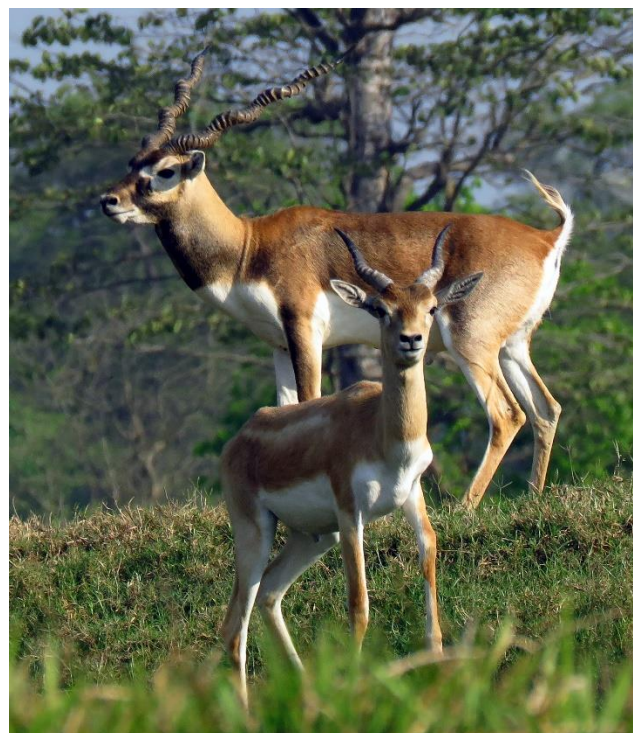


PHOTO 1: A pair of blackbuck in Suklaphanta National Park.

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Biosketch

BIDHAN ADHIKARY is working as a Research Officer in FON Nepal. He is interested in studying wildlife behaviour and habitat ecology.

Distribution Update

First breeding record of brown fish owl in Jajarkot district, western Nepal

GOVINDA BAHADUR SINGH

District Livestock Service Office, Jajarkot district, Nepal

My profession as an animal health technician involves visiting far-off villages often on foot to provide basic veterinary services. Long walks can be tiresome, so I have developed an interest in birding to make these long treks exciting and meaningful.

On 16 March 2018, I was on my usual trek to Sakla village of Barkote Rural Municipality, Jajarkot district. It was 11 am in the morning when I reached Lokane river which is situated at an elevation of 1,402 m. I noticed two Egyptian vultures *Neophron percnopterus* flying overhead. During my last visit I had seen a vulture nest in a nearby cliff.

Feeling excited that these vultures might be using it, I ran to a vantage point to observe the nest. The nesting materials (small branches and twigs) which were previously there were gone, and it looked abandoned. I was about to conclude that it was indeed the case when suddenly something inside the nest moved. I peered closer and noticed that there were some birds, but they were definitely not vultures! Without wasting any time, I focused my binoculars at the nest to find an owl with two chicks. I was unable to identify the species. I took some photographs. They were later identified as brown fish owl *Ketupa zeylonensis* by Raju Acharya, a veteran owl conservationist.



PHOTO 1: Brown fish owl *Ketupa zeylonensis* with chicks.

Brown fish owls are known to prefer wetland and riverine habitats (Inskipp et al 2016). Literature records show that they have been documented in Nepal at elevations up to 1,750 m (GC et al. 2017) however the species was recently sighted at Mallas village of Parbat district at 1,900 m which is the highest elevational record

for the species in Nepal (Som GC per. comm). This observation is the first record of the species in Jajarkot district and the first confirmed breeding record of brown fish owls at such high elevation in Nepal.

The nearest human settlement is at a 30 minutes walking distance from this location. There are bushes and small agricultural fields alongside the Lokane khola at the base of the cliff. The area is ideal for brown fish owls, with plenty of food which includes fish, frogs, crabs, snakes, and rodents. Discussion with some local people in Sakla village revealed that the cliff used to be occupied by Egyptian vultures. But they were not sure as to when the owls started using the area.

Hunting and trade of owls is high in western Nepal, so I feel relieved that this area is far from human settlement and off the main travel route. However, it is important to initiate some form of conservation awareness activities in the area to protect and strengthen the future of this species.

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Biosketch

GOVINDA BAHADUR SINGH is working as an Animal Health Technician in Jajarkot district. He is interested in birds and wildlife issues and exploration.

Distribution Update

Asiatic golden cat and red panda in Tinjure-Milke-Jaljale area

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Recent camera trapping effort during November 2017 in Tinjure-Milke-Jaljale (TMJ) area in Eastern Nepal led to the discovery of two rare species, Asiatic golden cat and red panda. There was no previous documentation of the presence of these species in the TMJ region.

Asiatic golden cat

Asiatic golden cat *Catopuma temminckii* is one of the eight species of small cats found in Nepal. It is an extremely rare felid species for Nepal and has been photographed only once before in 2009 at Makalu-Barun National Park. A single image of a grey morph of this species was photographed in TMJ during the survey (PHOTO 1).

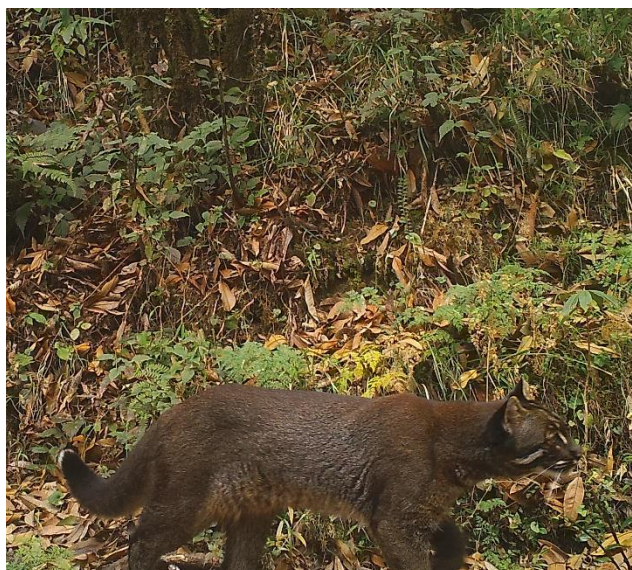


PHOTO 1: Asiatic golden cat, grey morph camera trapped in TMJ area.

Red Panda

Red panda *Ailurus fulgens*, a charismatic small carnivore species, is highly endangered both in Nepal and world.

They are found in Nepal from mid-hills to sub-alpine region. The species was recorded from three different sites in TMJ area (PHOTO 2).

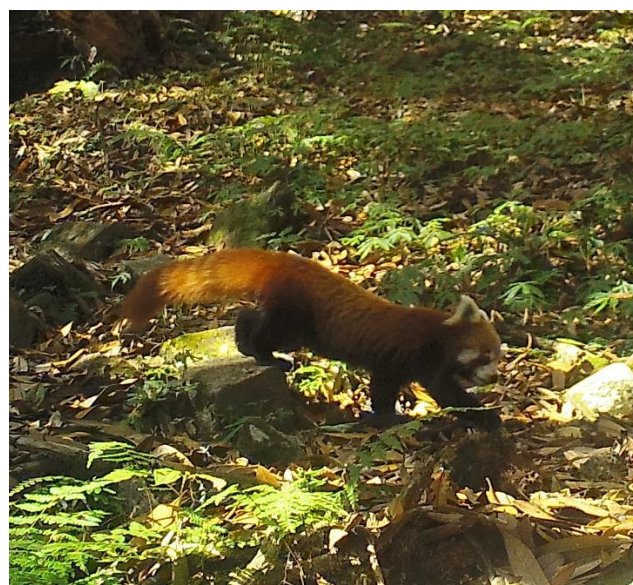


PHOTO 2: Red Panda camera trapped in TMJ area.

Biosketch

JEEVAN RAI is working with canid species and has a special interest on dholes. He is interested in monitoring the recolonization of dholes in the midhills of Nepal

KAUSHAL YADAV is involved in research and conservation of Himalayan black bears in central Nepal. He is particularly interested in the human-bear interaction.

YADAV GHIMIREY has been involved in research and conservation of small felids in Nepal since 2008. He is interested in interspecific interaction among felids, particularly between clouded leopards and leopards.

RAJU ACHARYA has been involved in wildlife conservation for over two decades. His main interest lies in ethno-zoology.

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Short Communication

A short note on birds of Bajhang district, far-western Nepal

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Nepal harbours nearly 9% of global bird diversity out of which 40 species have been assessed as globally threatened while 168 as nationally threatened species (BCN and DNPWC 2016, Inskipp et al. 2016). This diversity is remarkably high considering Nepal's area which is only 0.1% of the world's landmass. However, many regions of the country are relatively unexplored for avifaunal surveys. Bajhang district of far-Western region of Nepal is one of the less explored areas despite its high potential birding hotspots.

Bajhang district lies within 29° 29' to 30° 09' N and 80° 46' to 81° 34' E and covers an area of 3,422 km² with altitude ranging from 915 m to 7,031 m. Mountains and high hills in the district remains covered by snow for over five months every year. The variation in elevation resulting in different habitat types is one of the reasons for high biodiversity in the region.

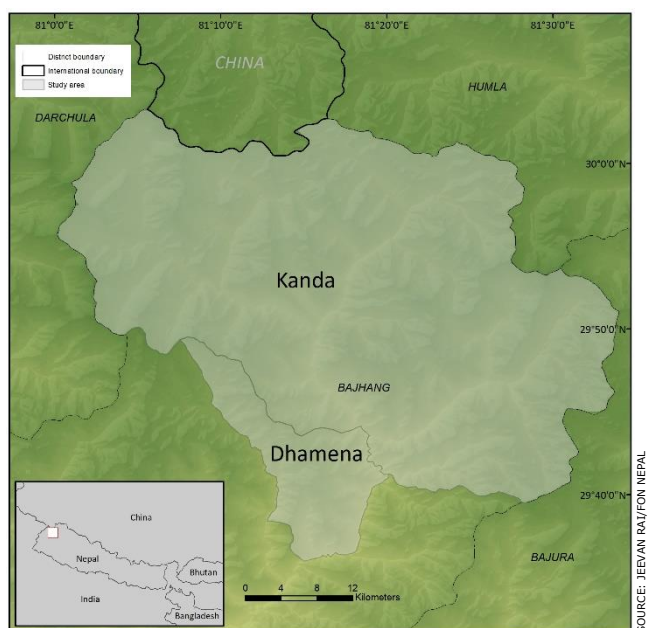


FIG. 1: Map of study area showing the surveyed sites (Kanda and Dhamena) in Bajhang district.

Forests occupy 30% of Bajhang district. Wildlife reported from Bajhang include snow leopard *Panthera uncia*, common leopard *Panthera pardus*, grey wolf *Canis lupus*, golden jackal *Canis aureus*, Asiatic wild dog *Cuon alpinus*, Himalayan black bear *Ursus thibetanus*, blue sheep *Pseudois nayaur*, Himalayan tahr *Hemitragus*

jemlahicus, wild boar *Sus scrofa*, and musk deer *Moschus* spp. (DDC 2014).

An opportunistic avifaunal survey was carried out in two former Village Development Committees namely Dhamena and Kanda in April 2014 (FIG. 1). Birds were observed near 11 settlements – Chainpur, Khara, Kanda, Laphare (Dhuli), Buko Odar, Emeldour, Majha, Dhamena, Daulichour, Bichada and Aagada. The opportunistic survey was carried out over a period of 24 days using transects.

Transect surveys were carried out following the local trails on foot. The researchers walked at an approximate speed of 2 km/hour looking for birds on either side of the trail. Binoculars and field guide were used for bird identification. Unidentified birds were photographed and identified later with experts' consultation after completion of survey.



PHOTO 1: Crested kingfisher in Bajhang district.

A total of 67 species of birds were recorded. The birds were classified under 9 orders and 27 families (ANNEX I). Birds from the order Passeriformes topped the list with 35 species.

The survey provided evidence of presence of rare and threatened bird species in the district. They include, Critically Endangered – red-headed vulture *Sarcogyps calvus*, Endangered – Egyptian vulture *Neophron percnopterus* and steppe eagle *Aquila nipalensis*, Near Threatened – Himalayan vulture *Gyps himalayensis*, and bearded vulture *Gypaetus barbatus* and nationally protected – danphe *Lophophorus impejanus* and satyr tragopan *Tragopan satyra*.



FIG. 2: Number of bird species of different orders. *GA: Galliformes, PI: Piciformes, CO: Coraciiformes, CU: Cuculiformes, PSI: Psittaciformes, ST: Strigiformes, COL: Columbiformes, CI: Ciconiiformes, PA: Passeriformes

During the survey, the main threat observed was illegal hunting for bushmeat, especially of the ground dwelling birds. Use of snares for trapping birds was very high. We also observed many cases of people keeping different species of birds including chukar partridge *Alectoris chukar*, satyr tragopan, and slaty-headed parakeet *Psittacula himalayana* as pets.



PHOTO 2: Chukar partridge kept in captivity in Chainpur.

This survey, though brief, shows the avifaunal richness of Bajhang district. With more exploration, status of birds of Bajhang district can be better understood both in terms of species richness as well as their distribution. It is also vital to come up with initiatives to conserve species that are already threatened.



PHOTO 3: Satyr tragopan kept in captivity in Chainpur.

Acknowledgements

I would like to thank Friends of Nature for the opportunity to carry out the research. My special thanks go to Lal Gurung who was an amazing team member. I would also like to thank the District Forest Office, Chainpur for the approval to carry out the research. Local people of the area were also supportive of the study for which I am grateful.

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Biosketch

RISHI BARAL is working with Annapurna Conservation Area Project and is particularly interested in participatory wildlife conservation.

ANNEX I: List of birds of Bajhang district recorded during the opportunistic survey

Count	ORDER/Family/Common Name	Scientific Name	Nepali Name
	GALLIFORMES		
	Phasianidae		
1	Chukar Partridge	<i>Alectoris chukar</i>	च्याखुरा
2	Hill Partridge	<i>Arborophila torqueola</i>	पिउरा
3	Satyr Tragopan	<i>Tragopan satyra</i>	मुनाल
4	Koklass Pheasant	<i>Pucrasia macrolopha</i>	फोक्राँस
5	Himalayan Monal	<i>Lophophorus impejanus</i>	डाँफे
6	Kalij Pheasant	<i>Lophura leucomelanos</i>	कालिज
	PICIFORMES		
	Picidae		
7	Himalayan Woodpecker	<i>Dendrocopos himalayensis</i>	हिमाली काष्ठकूट
	Megalaimidae		
8	Great Barbet	<i>Megalaima virens</i>	न्याउली
9	Blue-throated Barbet	<i>Megalaima asiatica</i>	कुथुर्के
	CORACIIFORMES		
	Dacelonidae		
10	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	सेतोकण्ठे माटीकोरे
	Cerylidae		
11	Crested Kingfisher	<i>Megaceryle lugubris</i>	ठूलो छिरबिरे माटीकोरे
	Meropidae		
12	Green Bee-eater	<i>Merops orientalis</i>	मुरलीचरा
	CUCULIFORMES		
	Cuculidae		
13	Eurasian Cuckoo	<i>Cuculus canorus</i>	कुक्कु कोइली
	PSITTACIFORMES		
	Psittacidae		
14	Slaty-headed Parakeet	<i>Psittacula himalayana</i>	मदना सुगा
	STRIGIFORMES		
	Strigidae		
15	Brown Fish Owl	<i>Ketupa zeylonensis</i>	मलाहा हुचील
16	Jungle Owlet	<i>Glaucidium radiatum</i>	डुन्डुल
	Caprimulgidae		
17	Grey Nightjar	<i>Caprimulgus indicus</i>	फुस्रो चैतेचरा
	COLUMBIFORMES		
	Columbidae		
18	Common Pigeon	<i>Columba livia</i>	मलेवा
19	Snow Pigeon	<i>Columba leuconota</i>	हिमाली मलेवा
20	Speckled Wood Pigeon	<i>Columba hodgsonii</i>	छिरबिरे वनपरेवा
21	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	तामे दुकुर
22	Spotted Dove	<i>Streptopelia chinensis</i>	कुर्ले दुकुर
	CICONIIFORMES		
	Scolopacidae		
23	Common Snipe	<i>Gallinago gallinago</i>	पानी चाहा

Count	ORDER/Family/Common Name	Scientific Name	Nepali Name
	Accipitridae		
24	Black Kite	<i>Milvus migrans</i>	कालो चील
25	Bearded Vulture	<i>Gypaetus barbatus</i>	हाडफोर
26	Egyptian Vulture * EN	<i>Neophron percnopterus</i>	सेतो गिद्ध
27	Himalayan Vulture	<i>Gyps himalayensis</i>	हिमाली गिद्ध
28	Red-headed Vulture * CR	<i>Sarcogyps calvus</i>	सुन गिद्ध
29	Crested Serpent Eagle	<i>Spilornis cheela</i>	काकाकुल
30	Hen Harrier	<i>Circus cyaneus</i>	चल्लाचोर भुईँचील
31	Steppe Eagle	<i>Aquila nipalensis</i>	गोमायु महाचील
	Falconidae		
32	Common Kestrel	<i>Falco tinnunculus</i>	बौडाइ
	PASSERIFORMES		
	Laniidae		
33	Long-tailed Shrike	<i>Lanius schach</i>	भद्राई
	Corvidae		
34	Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>	सुनठूँडे लामपुच्छे
35	Grey Treepie	<i>Dendrocitta formosae</i>	पहाडी कोकले
36	Alpine Chough	<i>Pyrrhocorax graculus</i>	टेमु
37	House Crow	<i>Corvus splendens</i>	घर काग
38	Large-billed Crow	<i>Corvus macrorhynchos</i>	कालो काग
39	Long-tailed Minivet	<i>Pericrocotus ethologus</i>	लामपुछे रानीचरी
40	Black Drongo	<i>Dicrurus macrocercus</i>	कालो चिबे
	Muscicapidae		
41	Blue Whistling Thrush	<i>Myophonus caeruleus</i>	कल्लौडे
42	Verditer Flycatcher	<i>Eumyias thalassinus</i>	नीलतुथो अर्जुनक
43	Rufous-bellied Niltava	<i>Niltava sundara</i>	सुन्दर नीलतभा
44	Blue-throated Blue Flycatcher	<i>Cyornis rubeculoides</i>	नीलकण्ठे अर्जुनक
45	Oriental Magpie Robin	<i>Copsychus saularis</i>	धोबिनी चरा
46	Grandala	<i>Grandala coelicolor</i>	हिमाली ग्राण्डला
47	Common Myna	<i>Acridotheres tristis</i>	डाङ्ग्रे रुपी
	Sittidae		
48	Kashmir Nuthatch	<i>Sitta cashmirensis</i>	काश्मीरी मट्टा
49	White-tailed Nuthatch	<i>Sitta himalayensis</i>	पहाडी मट्टा
	Paridae		
50	Great Tit	<i>Parus major</i>	चिचिल्कोटे
51	Black-lored Tit	<i>Parus xanthogenys</i>	पाण्डु चिचिल्कोटे
	Aegithalidae		
52	White-throated Tit	<i>Aegithalos niveogularis</i>	सेतोकण्ठे राजचिचिल्कोटे
	Hirundinidae		
53	Barn Swallow	<i>Hirundo rustica</i>	घर गौथली
	Pycnonotidae		
54	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	जुल्फे जुरेली
55	Red-vented Bulbul	<i>Pycnonotus cafer</i>	जुरेली
	Cisticolidae		
56	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	फुस्रोछाती घाँसेफिस्टो
	Sylviidae		
57	Common Tailorbird	<i>Orthotomus sutorius</i>	पातसिउने फिस्टो

Count	ORDER/Family/Common Name	Scientific Name	Nepali Name
58	Lemon-rumped Warbler	<i>Phylloscopus chloronotus</i>	पीतकटी फिस्टो
59	White-throated Laughingthrush	<i>Garrulax albogularis</i>	सोइरने तोरीगाँडा
60	Jungle Babbler	<i>Turdoides striatus</i>	बगाले भ्याकुर
61	Bar-throated Siva	<i>Siva strigula</i>	शिव मिल्ला
	Nectariniidae		
62	Black-throated Sunbird	<i>Aethopyga saturata</i>	कालीकण्ट बुङ्गेचरा
	Passeridae		
63	House Sparrow	<i>Passer domesticus</i>	घर भँगेरा
64	Eurasian Tree Sparrow	<i>Passer montanus</i>	रुख भँगेरा
65	Grey Wagtail	<i>Motacilla cinerea</i>	फुस्रो टिकटिके
66	Upland Pipit	<i>Anthus sylvanus</i>	पहाडी चुइयाँ
	Fringillidae		
67	Common Rosefinch	<i>Carpodacus erythrinus</i>	अमोंगा तितु

Short Communication

Bats and people in context of Nepal

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Technavio, a leading global market research company, recently reported that the global tequila market is expected to exceed USD 9 billion by 2019, growing at a compound annual growth rate of over 3% during the forecast period, 2015–2019 (Maida 2016). *Agave tequilana* plant is the source of commercial tequila and is by large pollinated by bats.

In terms of contribution to the global economy, bats play an important role by providing ecosystem services such as pollination, seed dispersal and pest regulation. Bats pollinate and disperse the seeds of economically important plants such as bananas, mangoes, guavas, cashews, almonds, dates, figs, tequila, hardwood timbers, and several medicinal plants. Bats pollinate 528 species of angiosperms (plants) globally (Kunz et al. 2011). The valuation of pollination and seed dispersal activity are very high, for example, the annual harvest of Durians (*Durio* spp.) pollinated by bats, is estimated at approximately USD 112 million (Morton and Murphy 1995). A faecal analysis showed that bats diet consists June beetles (*Elateridae*), click beetles (*Elateridae*), leafhoppers (*Cicadelidae*), planthoppers (*Delphacidae* family), spotted cucumber beetle *Diabrotica undecimpunctata*, Asiatic oak weevil *Cyrtopistomus castaneus*, and the green stinking bug *Acrosternum hilare* (Kunz et al. 2011). In the Midwestern United States, a colony of 150 big brown bats *Eptesicus fuscus* annually devours approximately 600,000 cucumber beetles, 194,000 June beetles, 158,000 leafhoppers, and 335,000 stinkbugs (Whitaker 1995), and potentially prevents the production of 33,000,000 cucumber beetle (corn rootworms) larvae (Krysan 1986). These arthropods globally destroy approximately 25–50% of crops (Pimentel et al. 1978, 1991 cited in Kunz et al. 2011).

Due to lack of scientific research in Nepal, we have limited knowledge of the ecosystem services provided by bats and other direct and indirect benefits to humans. However, a study targeting bats' diet in Pokhara, Nepal found that a total of eight families of plants were identified as species pollinated and five families of plants' seed were dispersed by bats (Sharma 2016). Other studies such as Giri (2009), and Dahal and Thapa (2010) also found proof of seed dispersal by bats in several species including Dumri or Cluster Fig Tree *Ficus racemosa*, Khasreto *Ficus hispida*, Rudrakshya *Eleaocarpus sphaericus*, Coffee *Coffea arabica* and Teju *Picrasama javanica*. Similarly, the author and his team have observed bats pollinating trees such as banana *Musa* spp., papaya *Carica papaya*, mango *Mangifera* spp., litchi *Litchi chinensis*, Indian gooseberry

Phyllanthus emblica, jackfruit *Artocarpus heterophyllus*, palm *Areca* spp., peepal *Ficus religiosa*, burflower tree *Neolamarckia cadambia*, eucalyptus *Eucalyptus* spp., and neem *Azadirachta indica*.

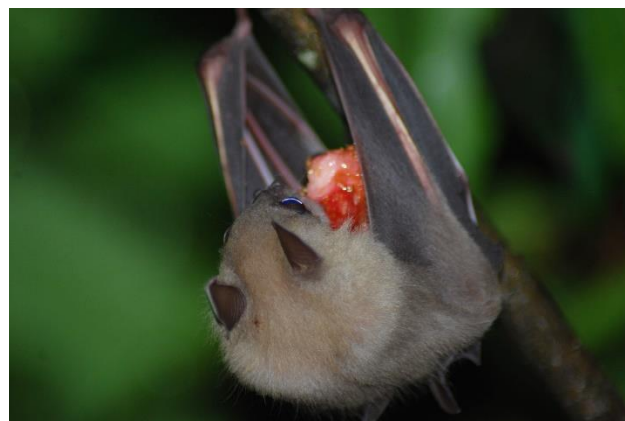


PHOTO 1: *Cynopterus sphinx* feeding on fruit of cluster fig tree.

Further, a total of nine insect orders – Coleoptera, Diptera, Hemiptera, Homoptera, Hymenoptera, Lepidoptera, Orthoptera, Trichoptera, and Thysanoptera, representing 25 families were identified in the droppings of bats from Mahendra cave and Nagarjuna cave (Pokhrel and Budha 2014). This points to the important role bats play as a biological control of agricultural pests, helping agriculture dependent communities.

Another example is the Chiuri *Diploknema butyracea* tree usually given as dowry from bride's parents, an important culture of the Chepang community in Makwanpur and Chitwan districts, Nepal. They extract butter from the fruit of these trees for livelihood. Although bat species such as Leschenault's Rousette *Rousettus leschenaultii* and Dawn Bat *Eonycteris spelaeae* are believed to pollinate and disperse the seeds of Chiuri, people hunt these bats for bushmeat during the flowering and fruiting season (Dahal et al. 2011).

Bat guanos, having high nitrogen content, is considered as good organic fertilizer by the farmers. In the past, farmers used to collect bat guanos from the caves to use as fertilizer. The trend has now decreased due to the availability of chemical fertilizers. A team, including the author, experimented the efficacy of bat guanos as fertilizer by collecting it from an old and abandoned house in Bahundangi, Jhapa district where a colony of false vampire bat *Megaderma lyra* was roosting, and applying in a tea plantation. The bat guanos proved to be an efficient

organic fertilizer, indicated by the improvement in growth of the plantation.

Most communities throughout the globe have negative attitude towards bats and perceive them as a symbol of ghosts, witches, bad omen, and vampires. In many parts of Nepal, people have negative attitude towards bats that has resulted in a decrease in bat population. For example – some communities believe bats harm their livestock by damaging their horns, some Newar communities in Kathmandu valley and others kill bats for flesh or oil as a cure of ear bugs, baldness, paralytic, asthma, arthritis, tuberculosis, alimentary, and renal diseases as well as cattle babesiosis, etc. (Tuladhar-Douglas 2008, Acharya et al. 2010). In contrast, some eastern cultures take bats positively. For example, during the middle and late Qing dynasty (1644–1911) China, bats were symbols of good fortune, long life, health, wealth, virtue, and serenity of mind (Allen 1962; Tupinier 1989). This tradition still persists but the values are diminishing in the wake of rapid modernization of Chinese society (Nabhan et al. 2010).



PHOTO 2: *Rousettus leschenaultii* killed by local people in Chitwan for bushmeat.

Although bat-watching has not flourished much as a potential eco-tourism supporting activity in Nepal, there are examples, in many countries and in Nepal of bats contributing to generate significant amount of money through eco-tourism. Congress Avenue Bridge located in the heart of downtown Austin, Texas hosts the largest urban bat colony in the world, estimated at 1.5 million bats, that attract around 140,000 people and earn about 10 million dollars revenue each year from bat watching¹. Thousands of domestic as well as international visitors visit *Chamere Gupha* (translated as bat cave), in Pokhara, every year which has potential to contribute significantly to eco-tourism.

People have benefited from the contribution of bats in agriculture, medicine and ecotourism since the time immemorial without recognizing their contribution.

In Nepal, economic valuation of the ecosystem services of bats needs to be studied to determine the level of human-bat relationship. It is important to make the general people aware about the importance of bats to provide real impetus for bat conservation in the long run.

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- Biosketch**
- SANJAN THAPA is the Director of SMCRF. He is interested in the study and conservation of mammals including bats, rodents, lagomorphs, musk deer, small carnivores and otters.

¹ <https://tpwd.texas.gov/huntwild/wild/species/bats/bat-watching-sites/congress-avenue-bridge.phtml>. 26 April 2018

Short Communication

Vulture Safe Zone: a landscape level approach to save the threatened vultures in Nepal

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Vultures were very common a couple of decades ago across its range in the Indian subcontinent. Now they are in grave danger of extinction in the region. Research and monitoring of vulture species in lowland areas of Nepal has revealed a decline of 91% for white-rumped vulture *Gyps bengalensis* and 96% for slender-billed vulture *Gyps tenuirostris* between 1995 and 2011 (Chaudhary et al. 2012). Due to similar declines in South Asian region in 1990s, four out of nine species of vultures found in Nepal, white-rumped vulture, long-billed vulture *Gyps indicus*, slender-billed vulture and red-headed vulture *Sarcogyps calvus* have been listed under the highest threat category of IUCN Red List as Critically Endangered (Paudel et al. 2016). The cause behind such steep decline has been attributed to the veterinary drug diclofenac which is widely used to treat livestock in Asia. Vultures are highly susceptible to diclofenac which causes kidney failure. They are exposed to it when they feed on carcasses of livestock that have been treated with this drug.

In order to stop the decline of vultures in Nepal, both in-situ and ex-situ conservation of these birds has been practiced. The Government of Nepal banned the production and use of veterinary diclofenac in 2006. In 2009 the Vulture Conservation Action Plan for Nepal (2009-13) was prepared. At present the revised Vulture Conservation Action Plan for Nepal (2015-19) is being implemented.

Nepal initiated a pioneer idea in the world of working with local communities to establish a Vulture Safe Zone (VSZ) in 2009 in Gaidatal Village Development Committee (VDC), Rupandehi district. A VSZ is an area surrounding one or more wild vulture nesting colonies, large enough to encompass the mean foraging range (>30,000 km²) 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.

The effort to create a scientifically validated VSZ is currently underway. Bird Conservation Nepal (BCN) in collaboration with government institutions and different conservation organizations, works with communities within potential VSZs to bring an end to diclofenac and other threats to vultures prior to declaring the area as VSZ. Such areas are known as provisional VSZs (pVSZs). In doing

so, BCN engages government agencies, non-government organizations and community groups to further disseminate vulture conservation messages and take actions to protect vultures. Vulture team from BCN regularly communicates with the community, monitors vulture populations and the prevalence of diclofenac, and investigates additional threats to vultures.

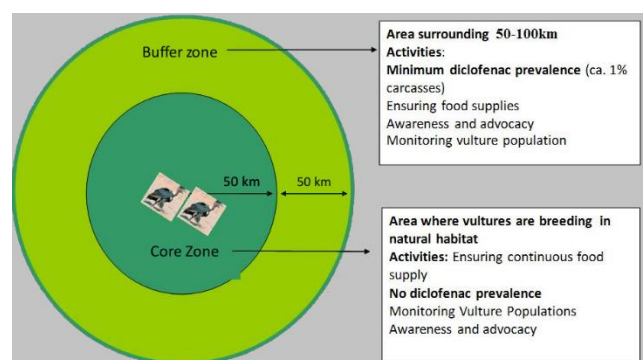


FIG. 1: Vulture Safe Zone concept

At present there are three pVSZs in Nepal centered around Pithauli (Nawalparasi), Bijauri (Dang) and Khutiya (Kailali) VSFS (FIG. 1). Approximately 30 nesting colonies of vultures (largely white-rumped vulture, and other resident breeders) are protected within these pVSZs.

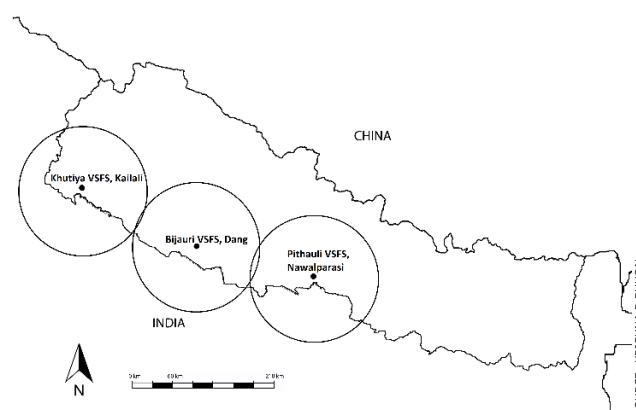
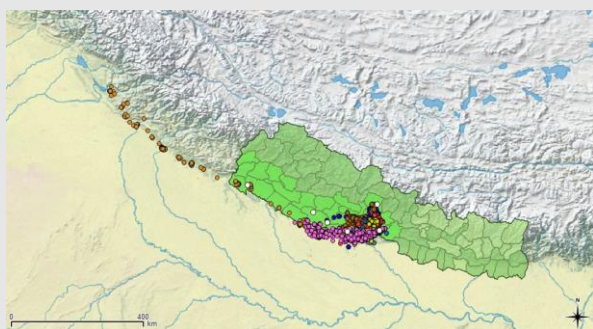


FIG. 2: Map showing the three provisional Vulture Safe Zones (pVSZs), indicated by the circular regions.

Within these three pVSZs, six community-run Vulture Safe Feeding Sites (VSFSs), popularly called Jatayu restaurants have been established. VSFS take in old and ailing cattle from local farmers and care for these animals

To validate VSZ, telemetry tagging on captive and wild vultures has begun in Nepal. Seventeen free-ranging white-rumped vultures were fitted with satellite transmitters in Pithauli, Nawalparasi district, Nepal and released, which are now providing valuable data on their movements and favourite locations.



On average, the tagged vultures flew over ~ 24000 sq.km area of ~15 districts of Nepal. One vulture was an exception, it visited Himachal Pradesh in India in January travelling through western Nepal and Uttarakhand and returned to the release site in February. It has started its journey again following the previous route to Himachal Pradesh and has gone further west to Jammu and Kashmir close to Pakistan's border, ~ 1100 km far from its release site.

DFZ districts: 61/75
Area Coverage: 123,898 sq.km.
November 2017

CHINA

INDIA

0 km 50 km 100 km 250 km

■ Diclofenac Free Districts

FIG. 3: 61 out of 75 districts of Nepal have been declared as Diclofenac Free District

Continuous conservation actions in Nepal have been successful in lowering the misuse of diclofenac in Nepal. Surveys have shown that the population of white-rumped vulture has remained stable in the last couple of years (BCN 2017). Following this lead, pVSZs are now being implemented in Bangladesh, India, and Pakistan. However, diclofenac and other potentially harmful NSAIDs (Nimesulide, Aceclofenac and Ketoprofen) are still being used in many districts including DFZs. Besides diclofenac and other veterinary drugs there are other threats to vultures in Nepal such as accidental poisoning, human persecution, electrocution, localised shortage of food due to alternative disposal mechanisms of carcasses, etc. These reasons collectively prevent vulture populations from returning to pre-decline numbers. VSZ is an innovative way to ensure that these threats are minimised, and favourable conditions been maintained for vulture population to flourish.

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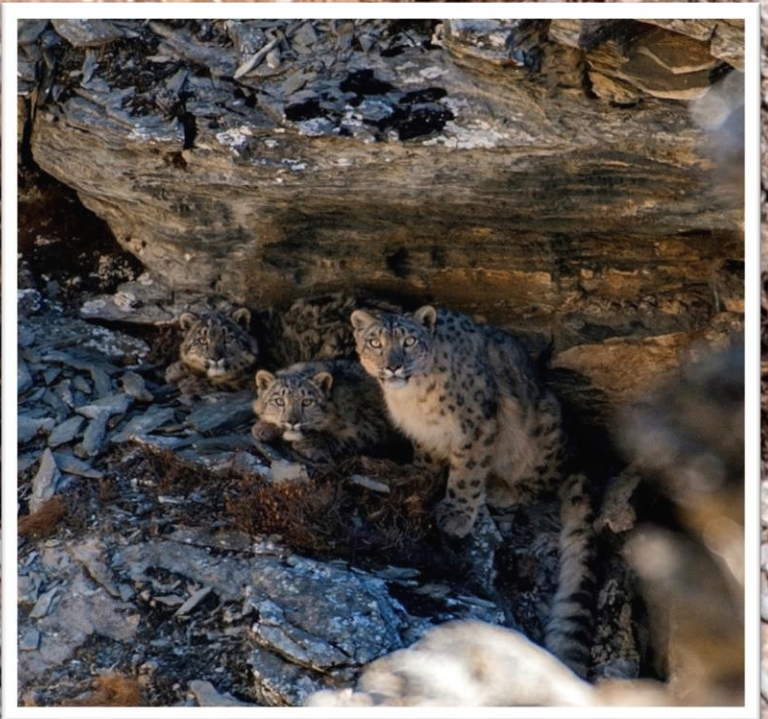
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Biosketch

KRISHNA PRASAD BHUSAL has been engaged in vulture research and conservation in Nepal for a decade and is currently managing the Vulture Conservation Program in Bird Conservation Nepal as Program Officer.

PHOTOS FROM THE WILD

Photographs by TASHI R. GHALE



Snow leopard *Panthera uncia* is a highly elusive cat species found in the Himalayas. The chance of sighting this majestic creature in its natural habitat is very rare. These photos were taken in Manang during January 2018. The lower-right photo shows a mother snow leopard with her two cubs.

Himalayan blue sheep *Pseudois nayaur* is an ungulate species found in the Himalayas. They graze and live in the grassy slopes and are considered as the main prey of snow leopard in Nepal.

The background photo of the herd was taken in Manang district during October 2017. The lower-left photo was taken during February 2018.



TASHI R. GHALE

Biosketch

TASHI R. GHALE is a photographer, entrepreneur, and conservationist from Manang district of Nepal. Since 2016, he has been monitoring snow leopards as a citizen scientist for Global Primate Network (GPN) Nepal and Snow Leopard Conservancy (SLC). He received the Abraham Conservation Award 2016 in recognition of his outstanding contribution to conservation of nature in Nepal from WWF-Nepal. He was successful in obtaining the first camera trap image of Pallas's cat in Nepal.



Field notes

The other side of camera trap survey

KAUSHAL YADAV^{1*} and JEEVAN RAI¹

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It is always an exhilarating experience to start fieldwork amidst the woods, in the lap of nature. However, the excitement this time was much more than usual. Three months ago, we had installed automated camera traps in the contiguous jungles of Bhujung and Sikles, within the Annapurna Conservation Area to collect wildlife data. We wanted to capture clouded leopard and Himalayan black bear in our camera traps to understand how they were using the area. And now the camera traps were ready for retrieval and reveal three months' worth of wildlife activities. To say that we were excited would be an understatement! We were eager to begin our journey into every nook of the jungle, back to our cameras to check the images captured over more than 74 days and nights.



PHOTO 1: Installing a camera trap in the forest to monitor wildlife activities.

Early in the morning of 31 March 2017, four of us started our journey from Kathmandu. At Besisahar, Raju *dai*² and three supporting staff from Sikles joined us, completing our team. The plan was to start collecting cameras from Bhujung and gradually move to Sikles, following the opposite route of our previous trip. To reach Bhujung, we took a Mahindra Bolero jeep, which is the popular and practical way of travelling in the cranky mountain roads. We felt our body sway and dance in perfect harmony with every bump and jerk. With every roll of the tyre, we focused our mind on the rolling curves of hills rising from the banks of Marsyangdi river upto the crest of Mt. Manaslu. Upon reaching Ghalegaun, the cool breeze

reminded us of what we had been missing in the dusty capital city Kathmandu.



PHOTO 2: On the way to Bhujung from Besisahar.

The next stop would be Bhujung, our destination for the day. It was evening when we arrived at the bus park. From here we would have to walk a short distance to the village. Far off in the hills, we could literally see the area where we had placed the last camera trap. For a while I visualized a majestic clouded leopard getting photographed by that camera trap and got excited. Carrying our bags, we descended downhill along the stone steps leading to the cobblestone footpath of Bhujung.



PHOTO 3: A view of Bhujung village.

Bhujung is the biggest Gurung village in Nepal. The village is situated in a slope surrounded by densely forested arc of green hills with Mt. Lamjung on the backdrop. Adding to the beauty, is a long and flat stretch

² *Dai* is Nepali term for elder brother

of crop fields sloping from the lap of a hill to the banks of Madme river. Bhujung itself is a fascinating village with crowded traditional houses connected by a complex network of footpaths. It is like a maze where travellers can easily lose their way without a guide or meticulous instruction leading to their destination.

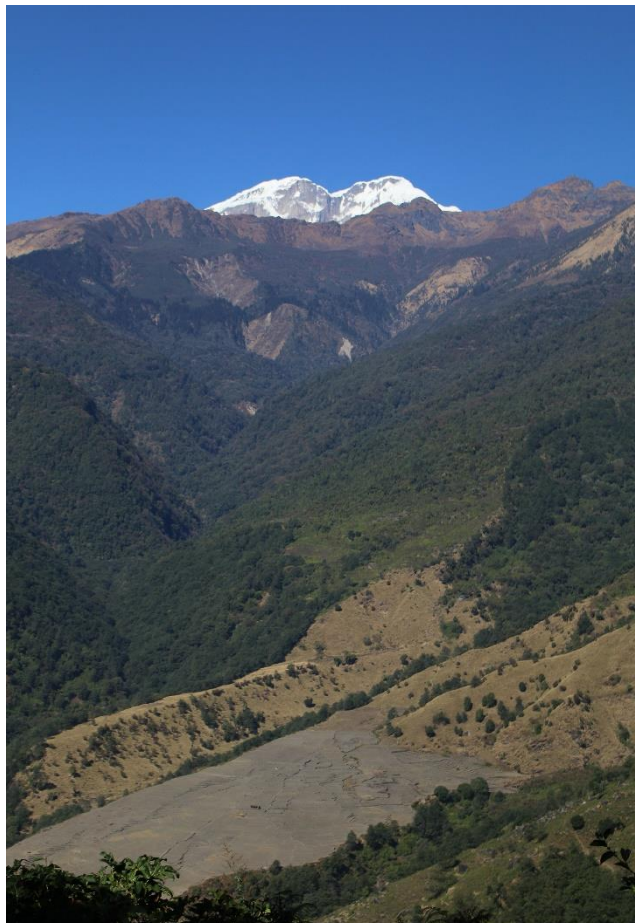


PHOTO 4: A view from Bhujung village; fields, lush green hills and Mt. Lamjung in the backdrop.

At our homestay, we were welcomed by the staffs of Annapurna Conservation Area Project's unit conservation office of Bhujung, and the homestay owner. Hospitality of Gurung community can surely amaze any newcomers to the village. After exchanging pleasantries, we made ourselves at home. We settled at the frontage of our homestay and started talking about our previous visit to Bhujung, back when we had stayed briefly after installing the camera traps. Far off we could see the trails to follow for our upcoming journey. Spicy hot tea and the cold evening were complementing our talks on wildlife and the people of the area. Lively conversations on lifestyle of the community and how they integrate nature in their day-to-day activities engaged us all. After dinner we started to make plan for our journey. We decided to retrieve two of the installed camera traps and move to our first camp the next day. Everyone made guesses about species that might

have been captured by the cameras. Common leopard and yellow-throated marten were the most common guesses based on our past field experiences. And of course, the barking deer! The night passed quickly.

We woke early and packed our bags. Before heading out, we briefly discussed our planned activities for the day and trip logistics. We had decided that two of our teammates would move ahead to reach the campsite earlier while the rest of us would retrieve the camera traps and join them. It was almost nine in the morning when we took the first step towards the magnificent jungle of the Bhujung-Sikles landscape. Moving just 300 meters ahead, we spotted a pair of barking deer. We felt happy and took it as a good omen for things to come. Moving ahead the omen was further ennobled by the sight of two beautiful birds - long-tailed broadbill and a spangled drongo. As we moved along the trail, we observed scats and faint pugmarks. We had installed camera traps further ahead on the same route so there was a good chance that this creature would be captured on one of them.

It was past midday when we crossed Madme river with great effort and took quick steps up the hill to reach the first camera station. The area around the camera station was exposed. The bushes around the tree where we had placed our camera trap unit had been burnt away. Moving closer, our anticipation and excitement shattered away as we could not find our camera.

We stood there for couple of minutes, dazed, unable to believe our eyes, with sinking hope of finding our camera trap lying somewhere around; we were all under the canopy of deep silence. Filled by melancholy, we silently moved ahead and reached the second camera station. The next few moments were beyond dejection as we could not find the other camera trap as well. The pole that we used to fix the unit had been tossed down the rock crevasse. Excitement turned to apathy as we were struck by the realization of what had happened. Heavy rain poured down as we ascended towards our camp with five heavy hearts. We still remember the words Yadav *dai* said later for fun as we went to our tents to retire for the night, "Did those cameras by any chance capture a species new for Nepal"?

Biosketch

KAUSHAL YADAV is involved in research and conservation of Himalayan black bears in central Nepal. He is particularly interested in the human-bear interaction.

JEEVAN RAI is working with canid species and has a special interest on dholes. He is interested in monitoring the recolonization of dholes in the midhills of Nepal.

Conservation Bulletin

Goals and impacts of the International Festival of Owls in Houston, Minnesota, USA

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The International Festival of Owls began in 2003 simply as a hatch-day party for Alice the Great Horned Owl, a permanently injured Great Horned Owl that worked as an educational ambassador at the Houston Nature Center. The Houston Nature Center serves as the trailhead for the Root River Trail, a regionally popular paved 96 km recreational trail used heavily by bicyclists. It has twin goals of environmental education and tourism, so the Festival seemed like a good way to bring the goals together into one event.



PHOTO 1: Karla and Alice with the crowd.

Houston, Minnesota is in a rural location, with about 13 people/km² and only 979 in the city itself. The first Festival included educational programs with live owls and crafts, and 300 people attended. As more activities were added to the Festival in successive years, we soon had people flying in to attend from as far as 3,000 km away. It was then that we realized that there was no other event like it in North America, and people would travel for the opportunity to see live owls and learn more about them.

In 2006 we added the World Owl Hall of Fame awards to bring public recognition to people and owls doing outstanding things to make the world a better place for owls. The nominations are judged by a panel of five owl experts from four different countries, and the winners often come to the Festival to receive their awards. At this stage we added "International" to the name, since some people assumed it was just a small, local event.

As the Festival has grown, other groups have been asked to participate. The Boy Scouts help people build owl nest boxes (and keep the profit), the Lutheran Church

hosts a pancake breakfast where the pancakes look like owl faces (and the church keeps the profit), a local garden club hosts a Meet and Greet for the Hall of Fame award winners and our members with owl-themed hors d'oeuvres.

The Festival eventually added an international owl art competition for children, which had nearly 700 entries from 27 countries in 2018, an owl photography contest with nearly 100 entries, a kids' owl calling contest, face painting, vendors selling owl-themed goods, a raffle, a selfie station, bus trips to see owls, a banquet, pellet dissection, and more crafts for children.



PHOTO 2: Hooting contest 2008.

As the Festival grew, we realized that there was no all-owl educational facility in the United States, only general raptor centres. So we started the International Owl Center, a non-profit facility where people can come to learn about owls year-round. The Owl Center opened in 2015 and took over the Festival from the Houston Nature Center.

The Festival is held at the first weekend in March each year because it is the time when Great Horned Owls hatch in the area. It is a good time for local businesses because there is very little, if any, tourism in that time of year. There are also very few other events going on that time of year because the weather can be unpredictable: it can vary from blizzards to sunny and 15°C.

The Festival is successful in this format because people in North America generally like owls and love the opportunity to see a live owl up close as they are very difficult to find in the wild. Birds are heavily regulated in the United States, and special training, permits, and facility

inspections are required to use owls in educational programs. They are not allowed to be kept as pets, so we don't have to be concerned that people who see the live owl programs will go out and get an owl as a pet (as is possible in some countries).

The Festival itself has several goals:

1. Teach people about owls and how humans affect them.
2. Inspire people to care about owls enough to take action in their lives to help owls.
3. Raise money for the International Owl Center (formerly the Houston Nature Center).
4. Bring tourists to Houston to benefit the local economy.



PHOTO 3: Houston with Brownies.

The Festival has some unintended beneficial outcomes. World Owl Hall of Fame award winners come from different countries from around the world, and usually 2-3 are able to attend each year (range 1-5.) The Festival allows these people to share research, educational methods, and other ideas with each other while getting ideas from the Festival itself.



PHOTO 4: Gina with Barn Owl.

For example, Jonathan Haw from South Africa and Lisa Owens Viani from the USA both work to lessen the use

of rodenticides. They now have met in person and plan to collaborate in some educational efforts.

Sometimes the Hall of Fame awards themselves have given award winners leverage. For instance, Tracy Eccles in South Africa used the publicity of the World Owl Hall of Fame award for Pot Plant Owl, a Spotted Eagle Owl that nested on her balcony and was live-streamed to the world, to stop the destruction of a wetland. Tracy used the publicity from the award to show city officials that the world was watching, since the wetland was where Pot Plant Owl's family hunted. The development was finally denied.

After his visit to the Festival in 2011, Raju Acharya started a sister festival in Nepal to educate people about owls. The Nepal Owl Festival shares some similarities with the International Festival of Owls, but is adjusted to work with the Nepalese culture. Marco Mastroilli started the Festival de Gufi (festival of owls) in Italy after discovering our event online. Jonathan Haw from South Africa and Suruchi and Satish Pande, a couple from India would like to start a similar festival in their respective countries.



PHOTO 5: International Festival of Owls, Houston Minnesota.

People in North America and Europe generally only harm owls inadvertently. Education about owls is encouraging people to change small behaviours to avoid harming owls, with a cumulative positive impact on the environment. But education about owls in parts of Asia and Africa is much more critical due to the cultural attitudes and illegal trade. I feel the most important outcome of the International Festival of Owls is passionate individuals spreading the concept of owl festival to countries in these areas.

Biosketch

KARLA BLOEM is the Executive Director of the International Owl Center. She has been conducting owl education programs for 20 years and studying Great Horned Owl vocalizations for 14 years. She began the International Festival of Owls in 2003.

Conservation Bulletin

Celebrating World Wildlife Day 2018 in the lake city Pokhara

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On 20 December 2013, the General Assembly of the United Nations proclaimed 3rd March as "UN World Wildlife Day". This day is an important global conservation event to celebrate the presence of these magnificent beings and the wilderness they thrive in, and raise awareness to protect them and their habitat. This year's World Wildlife Day was celebrated under the theme "Big cats: predators under threat".

Big Cat is a typical term usually given to the large sized members of the Panthera genus, i.e. tiger, lion, jaguar, leopard, and snow leopard. However, the term has been used to include cheetah, puma, clouded leopard, and Sunda clouded leopard as of late. They are among the most widely recognized and threatened animals across the globe. Among them, tiger, common leopard, snow leopard, and clouded leopard are found in Nepal. Sitting at the top of the food chain, they balance the ecosystem and the flow of energy critical to the existence of varied life forms. However, these charismatic species are highly threatened due to anthropogenic interferences like habitat destruction, poaching, retaliatory killing, etc.

This year the undergraduates of Institute of Forestry (IOF), Pokhara took the opportunity of the World Wildlife Day to raise awareness for big cats' conservation in the lake city through a three-day event. This event was celebrated from 2nd to 4th of March 2018 with different conservation education related activities.



PHOTO 1: Conservation rally in Pokhara to celebrate the World Wildlife Day 2018.

The first day of the event was inaugurated with an essay competition on the wildlife day theme. More than 50 students of IOF enthusiastically participated. The second

day, 3rd March, was marked with a conservation rally and flash mob by approximately hundred students in Baidam Lakeside which is a popular tourist hotspot of Pokhara. The main objective of this activity was to convey wildlife conservation message to the public. An interaction program with the audience followed the flash mob performance to gather feedbacks and suggestions. On the final day, a talk program was held at National Trust for Nature Conservation (NTNC) - Annapurna Conservation Area Project (ACAP) office where experts shared their views, experience, and challenges of big cat conservation.



PHOTO 2: Participants in IOF Pokhara.

Our activities were widely appreciated, and we feel that this event was successful in sending a strong message to the general people on the importance of protecting wildlife. The interest and dedication of the participating students brings hope for a better future of biodiversity conservation in Nepal. These aspiring conservationists have the passion, they just need proper guidance, and a push in the right direction as they start their own adventures.

The event was a collaboration of Alumni Association for Conservation and Development, Union for Nature Conservation, Himalayan Scholars Group, and CliMates Nepal which are the leading green organizations of IOF Pokhara. The major supporters of the program were NTNC-ACAP, Friends of Nature (FON), Third Pole Conservancy, Snow Leopard Conservancy (SLC), Department of National Parks and Wildlife Conservation (DNPWC) Annapurna Conservation Area Liaison Office, and Bakeland Biscuits.

Biosketch

APSANA KAFLE and KIRAN GURUNG are undergraduate students of Institute of Forestry Pokhara, Nepal.

Conservation Bulletin

Nature hiking and outdoor learning to cultivate young minds: Green School Project in Salyantar, Dhading district

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Imagine a moment where young students are hiking in a forest with a binocular, notebook, and pen, observing the perching birds and searching for their descriptions in field guides, making comparisons, discussing, and taking notes. Amazing, isn't it? It is fascinating to observe young enthusiastic students learning from nature. The Green School Project (GSP), a joint initiative of Welthungerhilfe (WHH) and Friends of Nature (FON) Nepal, currently implemented in four schools in Salyantar, a rural region of Dhading district is trying to achieve this in reality.

After the pilot project in Korak area of Chitwan, the second phase of Green School Project (GSP) started in 2016 in Salyantar, Dhading as a new concept for Nepal, inspired by Green School in Bali, Indonesia. GSP is a concept that aims to equip school children with environmental know-how and help reduce the ecological footprint of schools. It is a must in rural areas like Salyantar where schools have limited resources and students are rarely exposed to extracurricular activities and outdoor learning. The project uses resources inside and outside the school to sensitize students and teachers on environmental sustainability, with active involvement of the community. The main goal of the project is to seek green leaders and equip the future custodians with the requisite knowledge of the total environment, both natural and social, the problems associated with it and the necessary skills for solving them. GSP primarily works with eco-clubs which are formed in the schools with technical assistance of GS team, Eco-committees, School Management Committee (SMC), and Parent Teachers' Association (PTA).

GSP organizes nature hikes for school children during leisure time and public holidays to nearby forests and other areas. The students and teachers are oriented about the chosen theme of outdoor learning and groups are formed. The groups are guided by GSP team and encouraged to find as many information they could from their surrounding area.

Bird watching is a popular conservation education activity of the GSP. So far, we have organised four bird watching hikes. Students and teachers were thrilled to understand the basics of bird watching, differentiating between various species of birds, handling of equipment and field guides.



PHOTO 1: Young children of Salyantar enjoying bird watching.

Ganga Pariyar, a class nine student, while peering through binocular to see a red-billed blue magpie, shared her experience and exclaimed, "Oh, the bird is so close!", during a hike to Phatikhamba area of Salyantar. This was her first experience of seeing and handling a binocular.

During these hikes, participants are encouraged to closely observe the birds, compare and differentiate sizes, colours, and patterns, types of beaks, colour of feet, or any remarkable and distinct signs, their nomenclature, etc. which stirs their enthusiasm and interest.

During a bird watching hike, Mr. Ram Prasad Itani, a teacher of Salyantar Secondary School and advisory board member of Salyantar Eco-club, was enthusiastically inspiring and guiding the students to move a little faster towards the jungle, so they could spot many bird species and observe them. However, we didn't see many birds during the trip. Mr. Itani later shared that the hiking experience was an eye-opener for him as he noticed that the population of birds has drastically decreased compared to his early days. He pledged to tell other people in the community and make them aware of this

Bird watching not only teaches us to recognize avifauna but also enhances participants' knowledge about habitats, behaviour, and the importance of birds. Regular birding activities can help monitor the diversity and population of birds in the area. GSP has plans to conduct butterfly hiking, other biodiversity-themed hikes and conservation awareness activities in the future. Such

activities help students develop a positive attitude towards wildlife and nature conservation.



PHOTO 2: The bird watching team.

Schools can and should play a vital role in enthusing children to understand and appreciate nature by devising extracurricular activities such as nature hikes, flora and fauna identification, interaction with field

biologists and experts, field trips, and nature-based competitions. We have observed multiple benefits of these activities which include improved self-esteem and self-reliance, enhanced motivation of students, improved outdoor skills and communication skills, improved health of students, low drop-out rate, and waste reduction around schools and in villages.

Young children are the future custodians, thus helping them develop a bond with their natural environment at an early age is pivotal in long term nature and biodiversity conservation. GSP is an important and innovative way of achieving this goal. Guiding these school children and teaching them about the importance of conservation will help them become proactive advocates for biodiversity conservation in the future.

Biosketch

BIKASH GHIMIRE is a forestry graduate. He is working as the Project Officer in the Green School Project.

PRARTHANA NEUPANE is an Environmental Science graduate and is working as Field Motivator in the Green School Project.



Friends of Nature

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Friends of Nature is a youth led non-governmental, non-profit making, non-political organization working in the field of environment and biodiversity conservation in Nepal.

What we do

We conduct research on wildlife and biodiversity, assess conservation issues and help develop and implement innovative solutions.

How we work

We work in partnership with governmental organizations, non-governmental organizations and communities. We also provide technical assistance to communities to help solve their problems.

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These include short notes about record of species from new locations previously thought to be unoccupied. Provide verifiable evidence (such as photographs, DNA results) and locations (maps would be great) of the record. The article should not cross 700 words and require citation.

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Opinions on articles published as well as on issues critical for conservation are welcome. These should be limited to 1,000 words. Citation is optional though reference is encouraged.

Hotspots

These include description and importance of areas which are important in terms of wildlife diversity they possess. These should not be more than 1500 words. Citation is optional though reference is encouraged.

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Interesting incidents, memorable observations and similar field experiences can be submitted under field notes. The upper word limit is 1,000 and doesn't require citation.

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Articles on conservation activities on local or regional level, issues in conservation, and similar theme can be submitted under conservation bulletin. Word limit is 700 and doesn't require citation.

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