

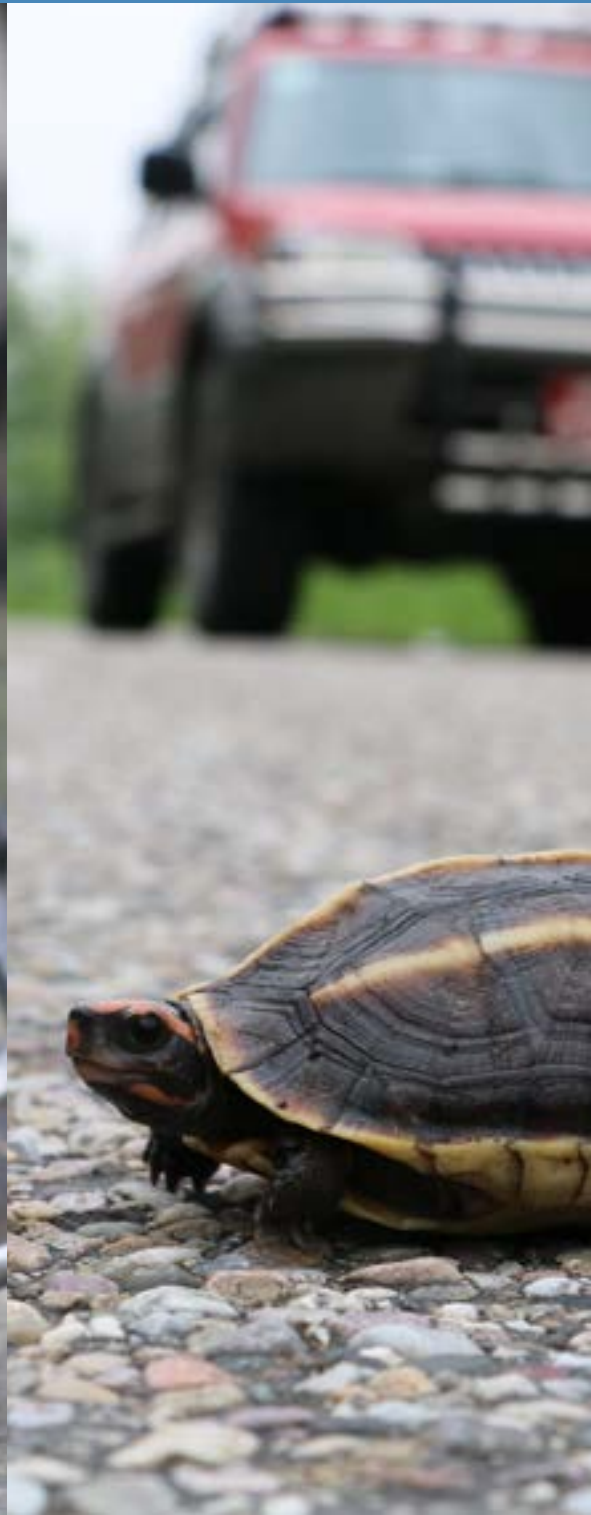


Society for  
conservation Biology  
Nepal

# LENS FOR BIODIVERSITY CONSERVATION IN NEPAL

## Status, Challenges and the Way Forward

Prakash K. Paudel • Ambika Prasad Khatiwada • Yadav Ghimirey, *Editors*



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## Status, Challenges and the Way Forward

### Editors

Prakash K. Paudal  
Ambika Prasad Katiwada  
Yadav Ghimirey



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Lens for Biodiversity Conservation in Nepal:  
Status, Challenges and Way Forward

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## THREAT TO BIODIVERSITY



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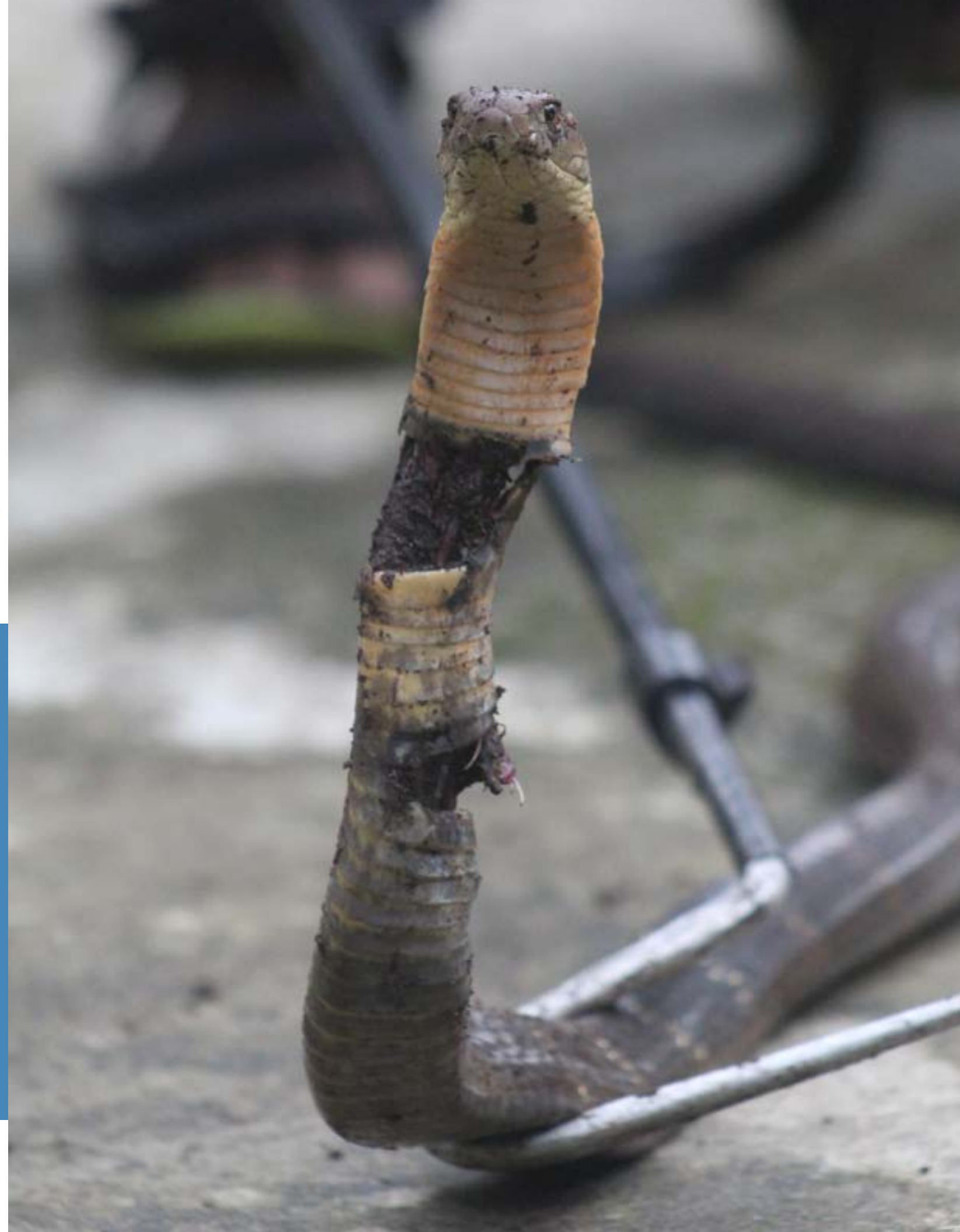
Seriously injured king cobra

RISHI BARAL

“This was my first time seeing such a seriously injured king cobra during a rescue operation in Kaski. Snakes do not prey on humans but why do humans show such cruelty? This female was guarding her nest, but people destroyed it and damaged the eggs. The pitiful condition of the snake brought tears to my eyes. Please stop harming the snakes! This snake was rescued and sent to the Panchbhaiya Rescue Center for treatment. Sadly, after one-day treatment it was found lying dead in the morning.”

Snakes often provoke fears and resentments in the general public and are frequently involved in human-wildlife conflicts (Parkin et al., 2021). Despite their significant ecological and religious roles, people are ignorant about their importance (Pandey et al., 2016). The fear of venom is so high that they are often killed when they venture into human surrounding. Such killings of snakes can contribute to their populations declines and even extirpations.

This winning photo features a king cobra which is the longest species of venomous snake in the world, capable of reaching up to 5.85 meters (Chanhome et al., 2011). The incidence of king cobra being seen/sighted in Nepal has increased considerably in the recent years, especially in Kaski district. It naturally inhabits areas up to 2000 m (Stuart et al., 2012).



## SPECIES, ECOSYSTEM AND BIODIVERSITY



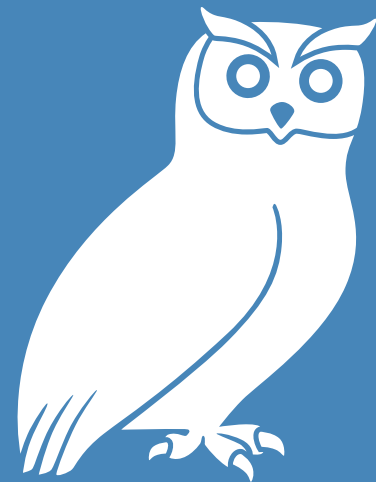
2<sup>ND</sup>

Goodbye; I am ready to fly

THC PHOTOGRAPHY

*“Owls have stolen my heart, especially this beautiful gorgeous owl. I saw this owl grow up from a little fur ball to this beautiful beast on top of a broken dried-out Bombax ceiba tree by the gates of Badreni, Sauraha. I, along with my friends, visited it every day. This was the last day we saw this owl; it flew away that night.”*





Owls are popular among farmers as natural pest controllers in agricultural ecosystems (Kross and Baldwin, 2016). They are also popular among urban birders. This majestic bird, however, is also associated with superstitions across different cultures (Enriquez and Mikkola, 1997).

Brown fish owl *Ketupa zelonensis* is found primarily in South and Southeast Asia with isolated population in Iran and Turkey (Penhalurick, 2002). It feeds on fishes, frogs, freshwater crabs, snakes and rodents (Holt et al., 2016). It primarily nests in the hollows and cavities in trees and cliffs as well as in steep banks along streams and water sources (Holt et al., 2016). It is categorized as a Least Concern by IUCN globally, but is assessed as an “Endangered” in Nepal’s national red list of threatened species (Inskipp et al., 2016).

## THREAT TO BIODIVERSITY



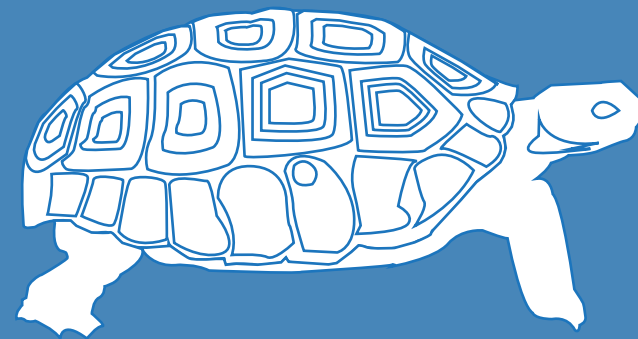
3<sup>RD</sup>

Development & conservation should go hand in hand

PRAMOD NEUPANE

“*We often see wildlife in highways and make misguided opinions about wildlife invading the highways. We often forget how infrastructures that humans have constructed over time have fragmented their habitats. For a very rich biodiverse country like ours, development should go hands on with conservation to achieve sustainable development where people live in harmony with nature. We need to realize that every species, disregard of its size, shape, and appearance etc, has an intrinsic value, and should be provisioned to live coherently in the world.*”





Linear infrastructures like roads are often perceived as signs of development, and their significance in helping a country to flourish economically cannot be denied (Steenbergen et al., 2021). However, construction of road networks without due regard to ecological aspects can have detrimental effects on wildlife and ecosystems (Quintana et al., 2022). One of the possible ways to avoid potential impacts is to carry out environmental assessments—guided by a good science— of new developments, and integrate ecological considerations in the planning and design of such developments such as wildlife-friendly infrastructures (Aryal et al., 2020).

Road is one of the major economic and social infrastructures that stimulates economic growth through increased mobility. Further, in context of Nepal, it has been the pre-requisite for the development of other infrastructure projects. Government of Nepal plans to strengthen existing highways, upgrade *hulaki sadak* to highways, and construct a new highway along Chure Mountain. Several roads are being constructed to upgrade them later as North-South Highway linking India and China through Nepal. Such linear infrastructures including irrigation projects, which with climate change, will deteriorate wildlife habitats and ecosystems in the future.



# Forward



Averting biodiversity loss has been one of the most urgent challenges in our time. The Coronavirus disease 2019 (COVID-19) pandemic gave a clear message that human is a part of nature, and protecting/restoring biodiversity requires a more stringent and comprehensive conservation strategy. The most agreed strategy, among others, is to educate people—from every walk of life—about values and importance of biodiversity. This photo book is an attempt to educate people through photos and their stories, featuring different aspects of biodiversity in Nepal.

This book is an outcome of the “Photo Conference 2021”, organized on June 05, 2021, by Nepal Chapter of Society of Conservation Biology. This virtual conference allowed thousands of people to discuss local conservation issues through photographs as a case study. We decided to give a shape of book with relevant scientific information, hoping to serve as a resource book.

The book features many of our conservation challenges we are facing: from a tortoise crossing in the highway, to human-snow leopard conflict, to indiscriminate sand mining from a river and to ruthless killing of globally endangered King Cobra. Photos speak undeniable truth and we have no choice other than providing solution to these challenges. We need to tackle head-on the issues guided by science.

Should this book contribute to the increased support of biodiversity conservation in Nepal, our time will have been well spent.

**Prakash Kumar Paudel**

President, Society for Conservation Biology Nepal,  
Nepal Chapter of Society for Conservation Biology,  
Senior Scientist at Kathmandu Institute of Applied Sciences

# About Editors

**Dr. Prakash K. Paudel** is a Conservation Biologist whose interests include conservation biology, human-wildlife interaction, conservation planning and policy. He earned a Ph.D. in the Biology of Ecosystems at the University of South Bohemia in 2012, and then worked as a Research Fellow at the Global Change Research Center of Czech Academy of Sciences, Czech Republic and as a Senior Scientist at Nepal Academy of Science and Technology, Nepal. Dr. Paudel is a founding president of Nepal Chapter of Society for Conservation Biology and is actively involving in outreach and training activities as a part of strengthening capacity of conservation professionals in Nepal. Dr. Paudel is Executive Director and Senior Scientist at Kathmandu Institute of Applied Sciences. He has led several research projects funded by international organizations. He has contributed book chapters and coauthored a widely used textbook in conservation biology. He has published several research articles in prestigious journals.

**Ambika Prasad Khatiwada** is a National Geographic Explorer, Zoological Society of London’s Evolutionarily Distinct and Globally Endangered (EDGE) fellow, IUCN pangolin specialist group steering committee thematic chair of law enforcement and combatting wildlife trafficking, IUCN-dhole working group member and coordinates wildlife crime control unit at the National Trust for Nature Conservation. Mr. Khatiwada is a member of the Man and Biosphere (MAB) committee of national commission for UNESCO nominated by the government of Nepal in 2020. He also serves as a secretary of the Society for Conservation Biology Nepal Chapter. He completed his M.Sc. degree in Forestry from Nepal in support of Russel E. Train fellowship in 2010. He has received Wildlife Conservation Network scholarship in 2020 to pursue his PhD from the University of Oviedo. He is interested in community-based conservation, human-wildlife coexistence and wildlife crime control activities. He has an extensive knowledge of wildlife conservation issues, challenges and way forward in the context of Nepalese environment.

# Acknowledgement

**Yadav Ghimirey** has carried out extensive research on wildlife research and conservation across Nepal for the last one and half decades. His major areas of interest include wild felids, small carnivores, owls, vultures and dholes. He has been serving as a member of Cat and Small Carnivores Specialist Groups at IUCN Species Survival Commission since 2015 during which he has contributed to various IUCN Red List Assessments of species like clouded leopard, common leopard, binturong, leopard cat, large Indian civet and masked palm civet. He has also served as a technical team member for national level conservation action plan for Owls and Pheasants in Nepal. He has also contributed to the two books on Owls. He has been serving as executive committee members at Friends of Nature, Nepal and the Society for Conservation Biology Nepal Chapter. Mr. Ghimirey completed his MSc in Environmental Management from Pokhara University and is currently pursuing a doctorate at the University of Florida, USA.

First and foremost, we wish to thank our participants who contributed their thought-provoking photos and inspirational stories for the first Photo Conference, 2021, organized by Society for Conservation Biology, Nepal on Jun 05, 2021. This photo book is an updated version of conference report, and was conceived to aware people about different aspects of biodiversity conservation in Nepal.

Many individuals have contributed to shaping of this book by participating in the conference, and by engaging with members of the editorial team in discussion. We particularly wish to make a special mention to the conference session chairs: Dr. Manish Raj Pandey, Dr. Puspa Raj Acharya, and Mr. Basanta Babu Shrestha for their efforts and input. We are also grateful to the conference keynote speakers – Dr. Mahendra Shrestha and Mr. Bed Khadka – for their insightful talks on conservation. We also thank Dr. Uttam Babu Shrestha, Dr. Tulshi Subedi, Mr. Sagar Giri and Ms. Shovna Upadhyay, members of our evaluation team, for their unbiased judgment.

We thank Sophiya Rijal and Aatish Chaurasiya for their extraordinary support as a conference intern. Our special thanks go to Dibya Thapa for carrying out painstaking job of book designing meticulously. We thank Shreeya Manandhar for supporting us in reviewing relevant scientific literature.

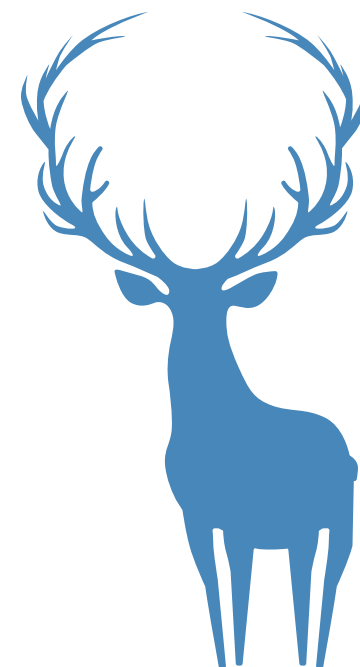
In closing, we are indebted to the Society for Conservation Biology, Washington D.C., USA for generous support in organizing the conference as a part of Chapter Activity Grant.

# Chapter 1

## Biodiversity: Species, Ecosystem and Ecosystem Services

The straightforward definition of biological diversity or biodiversity is ‘the variety of life’, and refers to variation at all levels of biological organization. According to Convention on Biological Diversity, a landmark treaty that was signed by more than 150 nations on 5th June 1992 at the United Nations Conference on Environment and Development, held in Rio de Janeiro, biodiversity is defined in Article 2 as:

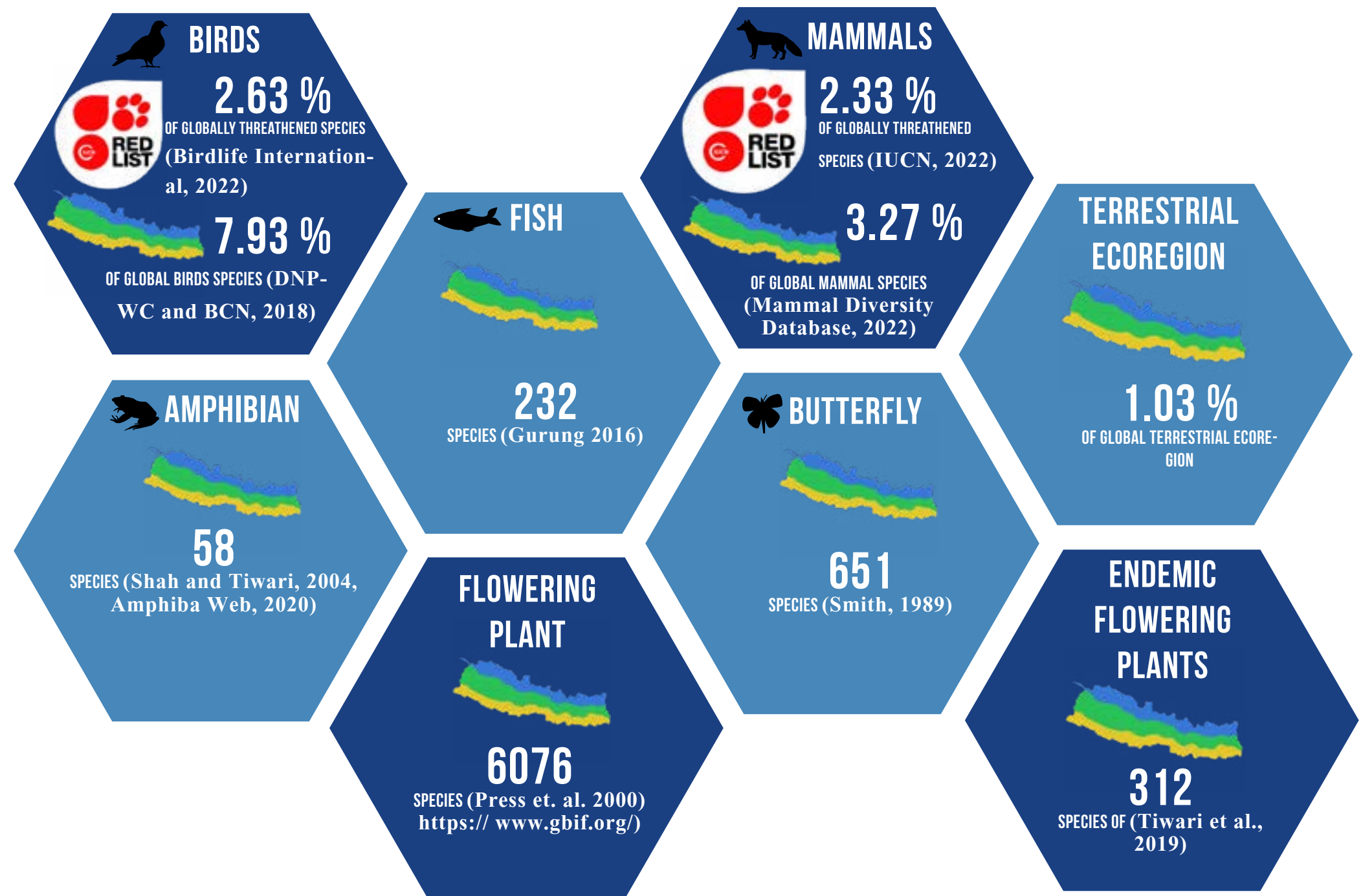
*Biological diversity’ means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.*

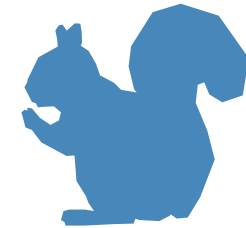


Ecosystem services are imperative to human existence and provide us the most of materials and services such as food and water, regulate our climates and protects us from extreme weathers (Kumar, 2012). It is believed that diversity of a natural or managed ecosystem supports diverse species and thus provides a higher extent of ecosystem services (Abson et al., 2014). However, anthropogenic activities impact the diversity of organisms, and thus influence the provision of ecosystem services.

The ecosystem services are not always quantifiable such as soil erosion prevention, mitigation of drought and floods, climate regulation, and water filtration, and services provided in the form of recreational, aesthetic or cultural values (Abson et al., 2014; Bronzizio et al., 2019). It is very difficult to estimate an economic value because values vary across national and local boundaries (Bagstad et al., 2013). A dense natural forest in Chure of Nepal, for example, provides services of regulating surface water flows and recharging groundwater — a main source of water for more than 14 million people inhabiting the downstream Terai plains (Bhandari et al., 2016).

Nepal has a wide array of ecosystems, mostly driven by country highest altitudinal gradient (60m -8848m) in short distance (~200 km), diverse physiography and climatic pattern.





## HONORABLE MENTIONS

Spring taste

PRATIGYA GYAWALI

“The picture here is a hoary-bellied Himalayan squirrel (*Callosciurus pygerythrus*) foraging on *Schima wallichii* fruits. The role of squirrels in an ecosystem cannot be undermined. They play an important role in sustaining and expanding plant communities and forest regeneration. Millions of trees around the world have been accidentally dispersed and planted by these species that feed on nuts, bury them and forget where they hid them. The message of this picture is therefore simple – every species plays an important role in restoring and maintaining our ecosystems.”



## SAGAR BK

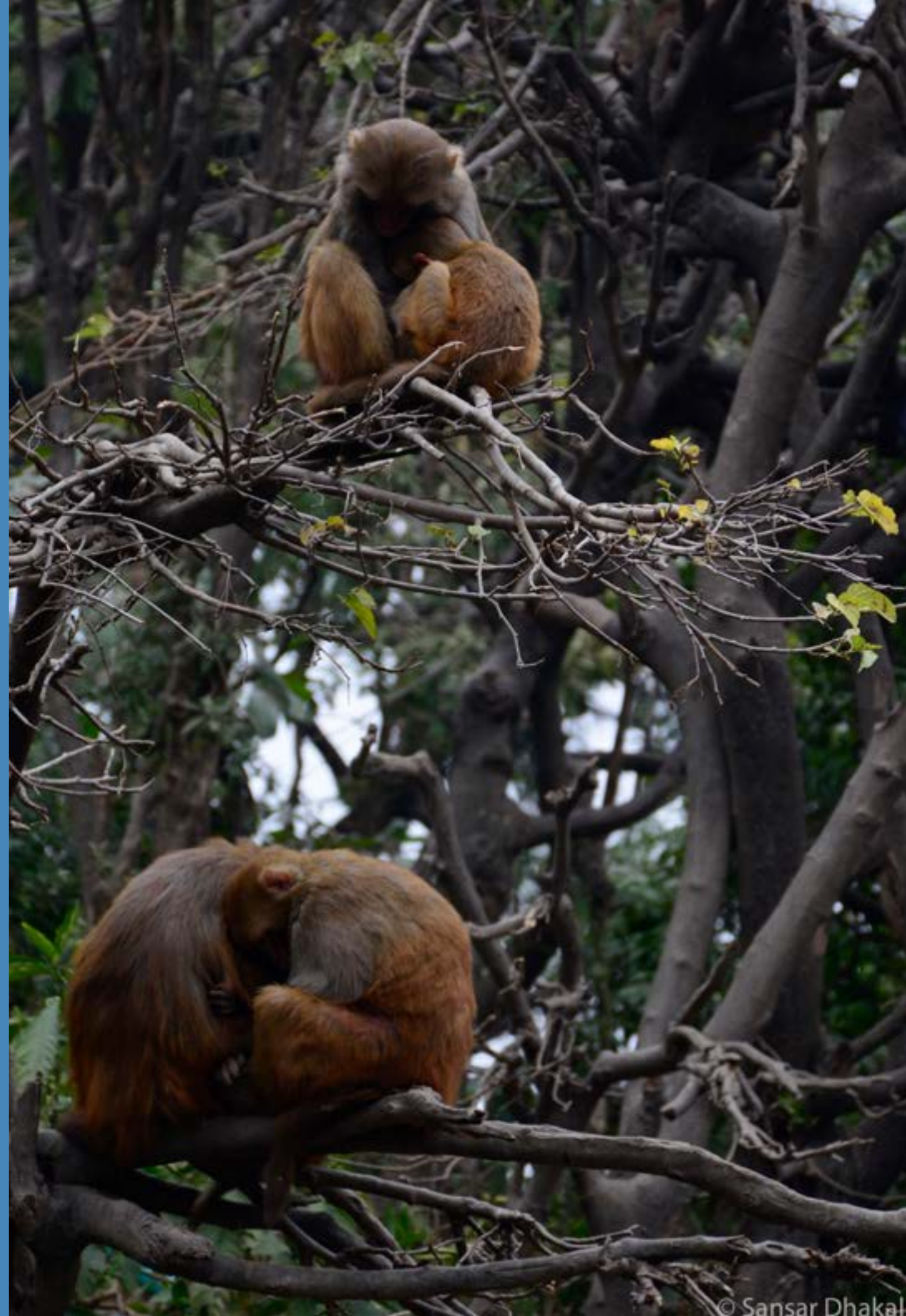
### White-rumped vulture

“ *White-rumped vulture as seen scavenging the remains of buffalo, discarded on banks of Narayani River. As an obligate scavenger and their ability to fly, vultures support important ecosystem services as nutrient recycling and removal of soil and water contaminants that largely prevent spread of bacteria and diseases borne from contaminants. As an important server of ecosystem food web, these species are pivotal for perfect balance in nature ultimately providing socio-economic benefits to and ensuring well-being of other animals and humans.* ”

## SANSAR DHAKAL

### Flocks of wild monkeys

“*This photo was taken in Swayambhunath in peak winter season. A flock of wild monkeys sit closely with one another to maintain the heat because of the freezing cold.*”





**AMRIT KUMAR POUDEL**  
Locked up in lockdown

“ Covid-19 pandemic has locked humans in their house. In the meantime, it also provided a chance to have a close look around our surroundings. This photograph is one of the moments that I captured during lockdown 2020 in Nepal. During a rainy morning of June, I heard croaking frogs and decided to observe them closely. I just crossed the road and saw individuals of bullfrogs. They were croaking and mating. I took a few shots. Then, I heard a passing-by teenager talking about its taste and nutritional value. With frequent killings for meet, to some extent, and loss of agriculture due to urbanization, they are depleting rapidly. Wishing the mating pair a success, I left the field thanking them for letting me to take their photographs.”





*F*rogs make up 56 of the 59 amphibian species reported from Nepal, with eight of them being endemic. Frogs are one of the least studied vertebrates in Nepal, with most studies focusing on species identification (Aryal et al., 2020). Amphibians are the most endangered taxonomic groups in vertebrates (Hoffman et al., 2010). The global amphibian population is declining at an alarming rate due to habitat loss, environmental pollution and climate change (Khatiwada et al., 2021). Although amphibian species descriptions have increased in recent years (Stuart et al., 2004), many amphibian species may have become extinct before they were described (Costello et al., 2013).



## SCB NEPAL CHOICE

The asymmetrical relation between spotted deer and langur

SAROJ KHADKA

“चित्तल र लडुर बादरको सम्बन्ध अति नै घनिष्ट हुन्छ। लडुरले माथी बाट पात भार्ने अनि चित्तलले त्यही पात खाने साथै कुनै पनि किसिमको शिकारि प्रजाती आउदा लडुरले आवाज निकाली चेतावनी दिने गर्दछ। जनावर बिच पनि देखिने यो अचम्मको आत्मियता।”

*S*potted deer live in a group, which range from 6 and 30 individuals (Schaller, 1967). They are major prey species of tigers and leopards, including other wild canines. As depicted in the photo, the spotted deer often graze near trees where langurs live. One of the reasons is that langurs sometimes drop fruits that the deer like to eat. At the same time, langurs warn deers of approaching predators (Anon., 2015).

**ACHYUT ACHARYA**

The communication of ants

“*I took this photo at dusk when some rainfall was expected.*”



*A*nts are common, but often go unnoticed although they play important role in ecosystem such as controlling energy flows and dominating insect populations (Holldobler and Wilson, 1990). There is very limited and incomplete information available on diversity and distribution of ants. In Nepal, there are 128 named species of ants in 48 genera and eight sub-families. Among these species, 21 species are reported from specific locations/zones. A total of nine species of ants are endemic to Nepal, whereas three are introduced ones (Subedi et al., 2020).

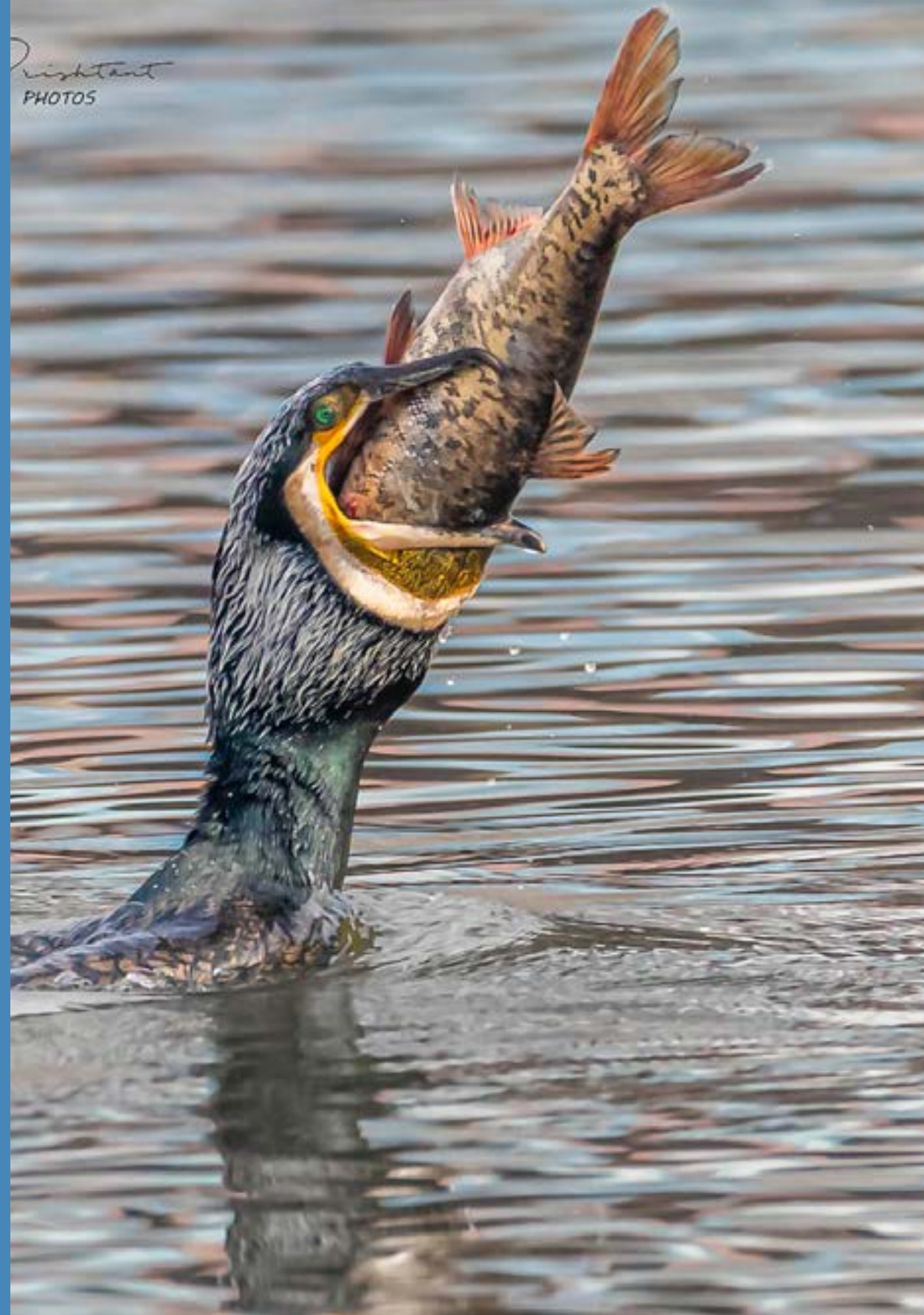


**SCB NEPAL CHOICE**  
Prey and Predator  
**SAMUNDRA GHIMEREY**

*“Every creature in this planet has its own role in maintaining the balance in this ecosystem just like the spider in the picture. It eats insects which can otherwise make surroundings unbearable if there is no way to stop their population.”*

A total of 386 species of spider are reported in Nepal, belonging to 135 genera and 34 families (Subedi et al., 2022).

Drishtant  
PHOTOS



## DRISHTANT BIDARI

### Flow of Energy

“Food chain is the most integral part of the ecosystem. In this picture we can see the flow of energy in between different levels of the ecosystem. A great Cormorant which is a common winter visiting bird all over the country is seen trying to swallow a Carp fish. This Photo was taken in Taudaha lake of Kathmandu valley. Taudaha has been one of the most human affected part of Kathmandu valley and it is not long before we may not see any birds in the lake area.”

A great cormorant common winter visitor in Nepal (Inskipp et al. 2016) and this species has been known also to breed in the hilly districts of Kalikot, Jajarkot and Rukum (GC et al. 2019). Taudaha lake of Kathmandu valley the known for a great variety of migratory and water birds and mammals, and serves as a perfect spot for birds to stop by during their migration. However more recently there have been increased physical development works which might impact the incoming species of avifauna negatively (Nepal, 2022).



## SCB NEPAL CHOICE

Biodiversity Under Pressure: Ecosystem services versus people's livelihood in the Kaligandaki valley, Nepal

BASANTA RAJ ADHIKARI

*“ This region constitutes an extremely dynamic and resilient social-ecological system where peoples have been adjusting to changing climate and biodiversity for millennia. It is utmost necessary to preserve such kinds of natural ecosystem promoting indigenous knowledge and introducing new conservation techniques. ”*



**RAM BABU PARAJULI**  
Save me!

“*A severely damaged Ranipokhari due to Gorkha earthquake waiting for renovation.*”



## SCB NEPAL CHOICE

A sleep not so long!

SANJEEV BANIYA

“*Winter is coming and the bat has to cope with the limited fat storage and reduced prey (insect) availability. The picture depicts *Rhinolophus affinis*, an intermediate horseshoe bat, undergoing deep torpor/ hibernation in one of the touristic caves, Bat cave, in Pokhara. Active for the entire summer and providing vital ecosystem services in insect pest suppression. It is time for bat to sleep in a cave to meet its microclimatic needs. We must respect his basal metabolic rate. If we wake him up and he won't serve the next summer.*”





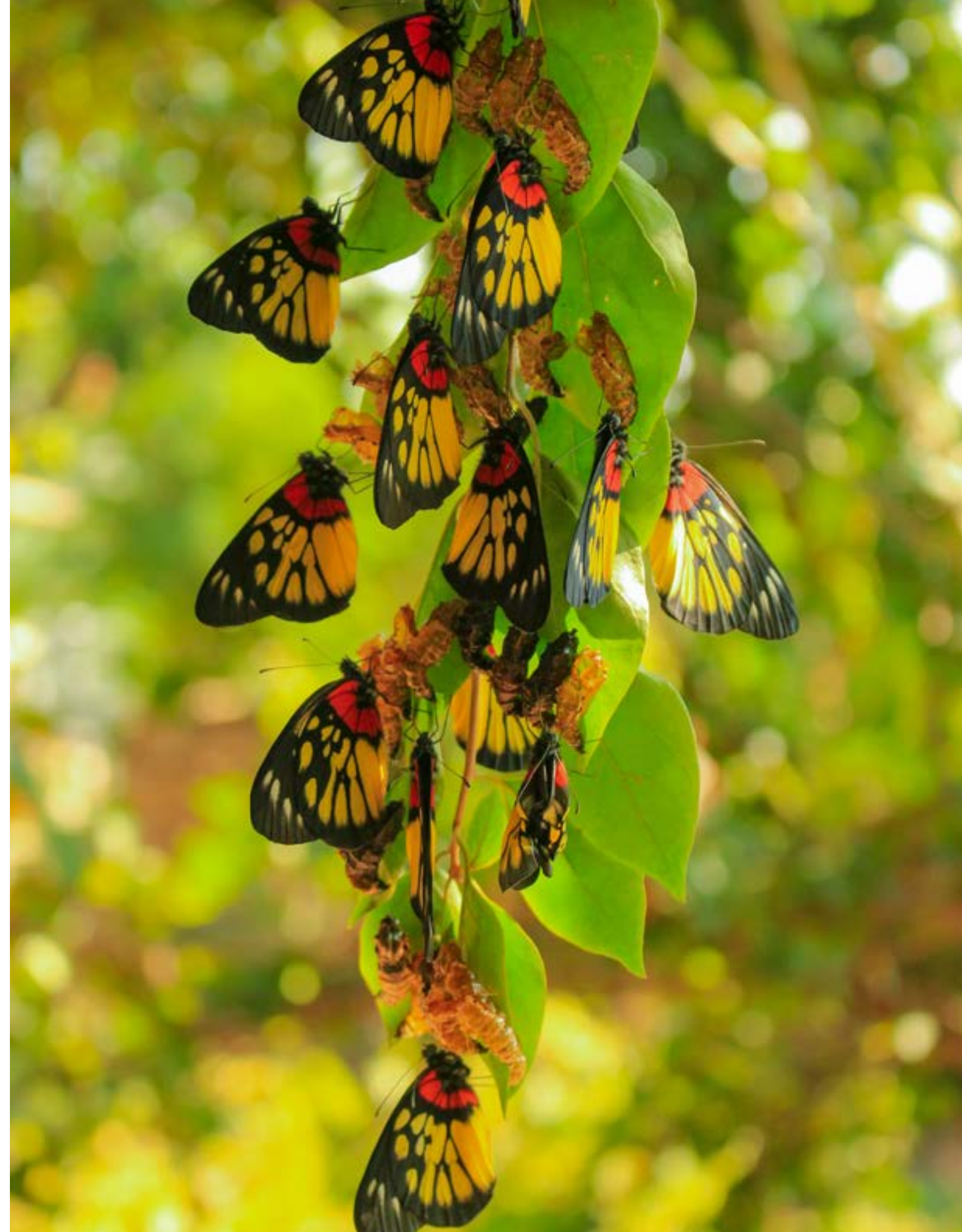


## SCB NEPAL CHOICE

पुतलीको झुण्ड

SUMAN PRAKASH PRADHAN

“मानवीय विकाश र जलवायु परिवर्तनका कारण विभिन्न जिवजन्तुहरुको विनाश बढिरहेको छ। नेपालमा पाइने ५ परिवारका ६०० प्रजातिका पुतलीहरु मध्य अधिकांश पुतलीहरु लोप हुने अवस्थामा पुगेका छन्। विभिन्न पर्यावरणीय मूल्य बोकेको पुतलीहरु वातावरणीय स्वास्थ्यको राम्रो सूचक हुन्। यस तस्वरमा कैद गरिएका पुतलीहरुको झुण्ड ने पालको रामेछाप जिल्लामा पाइएको *Delias pasithoe* प्रजातिका पुतलीहरु हुन्। यस तस्वरमा पुतलीहरुको महत्वपूर्ण चार जीवनचक्र मध्य वयस्क संग संगै लाभार्थ पुतलीहरु देख्न सकिन्छ। वातावरणीय सन्तुलन कायम राख्न महत्वपूर्ण भूमिका निर्वाह गर्ने यस प्रजातिका पुतलीहरु संरक्षण गर्न आवश्यक संगै हामी सबैको कर्तव्य हो।”



**YAM NARAYAN MAHATO**

Blue bull enjoying in farmland of Kapilbastu district

“ *This photo was taken during bird observation and monitoring around a farmland.* ”



“

”



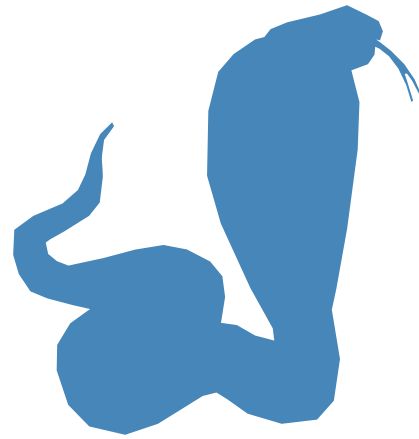
## SCB NEPAL CHOICE

The king's bite: Of life and death

SANDEEP LUITEL

“*The mighty king of the forests of Eastern Nepal, the king cobra (Ophiophagus hannah) was encountered preying on a Tawny Cat Snake (Boiga ochracea) inside a dense forest in Mai Municipality, Illam. The cat snake fought hard to escape but lost its fate to the cobra's venom at the end. This observation represents the first record of the king cobra from Illam district, apart from documentation of dietary ecology of this elusive yet, majestic snake. The world's longest venomous snake, the king cobra preys on wide range of snakes including its own kind and on other vertebrates as well.*”





*K*ing cobra is a globally threatened species and categorized as a vulnerable in the IUCN red list of threatened species (2018) and listed in Appendix II of the Convention on International Trade of Endangered Species of Flora and Fauna (CITES). It is widely distributed in Nepal—although in very low density— an altitude range of 67-2500m (Sapkota et al., 2021). It is reported from 42 districts in Nepal. It prefers area close to water sources in the edges of the forests, swamps, pristine forests, plantations, agricultural fields and open scrublands. Unlike other snakes, it prefers to build a nest with leaf litter and guards the eggs (Sapkota et al., 2021). It is the world’s longest venomous snake, reaching lengths of 5.49–5.79m. It is almost killed on sight due to perceived threat by local communities although it rarely causes harm. A well-planned conservation education is needed to protect this imperilled species.



## AMBIKA REGMI

### Himalayan monal and Himalayan tahr

“In my experience, Himalayan monal and Himalayan tahr are commonly sighted in Sagarmatha National Park. We spotted a group of Himalayan tahr as our team was returning after a regular patrolling around Namche area. Even when we moved closer, the group did not move away. They probably felt safe as there was no poaching and human disturbance in the area. Suddenly, a Himalayan monal landed close to our group – a sight that excited everyone. I was fortunate to capture them together.”

## MOHAN BIKRAM SHRESTHA

### Living with arrow in a body- A misery of globally endangered Greater Adjutant

“Hunting and trapping of animals for food, clothing and trade started since the origin of the human race. This inherited aboriginal human behavior has been fateful to some species including Greater Adjutant. Threatened by loss and declining of quality of marsh habitat and by hunting, its population is estimated at between 1200 and 1800 individuals globally. It has an extremely small population in Nepal.”





## ALINA TIWARI

### The wildlife tourism

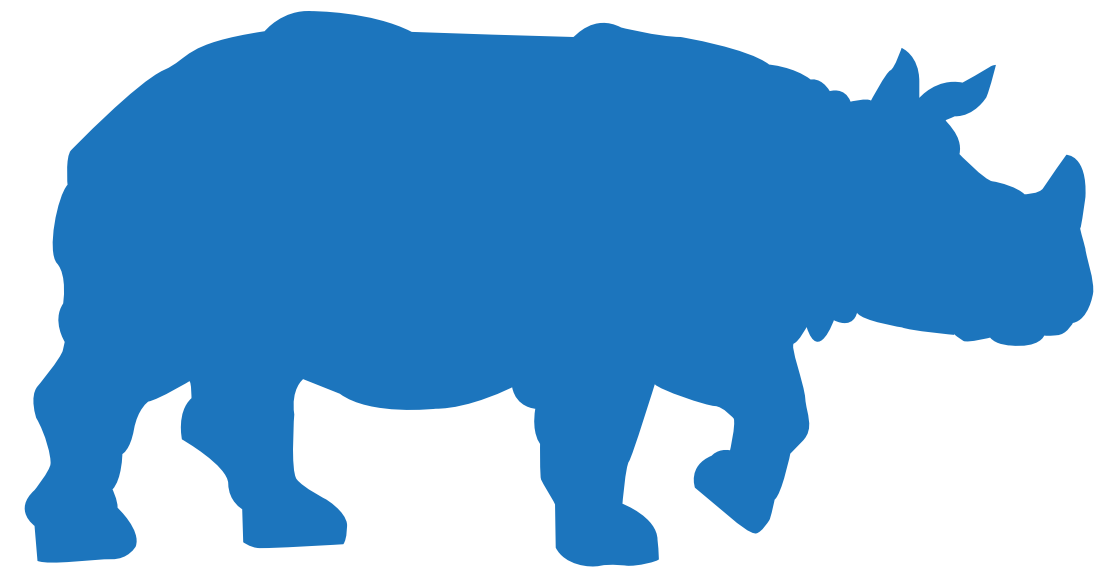
“The given pictorial illustrates the wildlife tourism in buffer zone of the Chitwan National Park. The area provides a rare opportunity to view three different wildlife: a male Indian Peafowl is staring, from the bushes, at the rhinoceros (*Rhinoceros unicornis*). The guests, sitting on the back of captive Asian elephant (*Elephas maximus*), are enjoying the view.”

One-horned rhinoceros (*Rhinoceros unicornis*) is native to Nepal and India. It is one of the five surviving species of rhinoceros in the wild, the others being: Javan rhino *Rhinoceros sondaicus*, Sumatran rhino *Dicerorhinus sumatrensis*, the black rhino *Diceros bicornis* and the white rhino *Ceratotherium simum*.

In Nepal, rhinoceros are found in isolated forests and grasslands surrounded by large human-dominated landscapes (Jnawali et al., 2011). They once occupied vast intact forests along the entire southern border with India, and into the southern-most low hills and inner valleys of the Himalayas. The prime habitats of rhinoceros in Nepal went through a rapid transformation with an influx of immigrants beginning in the 1950s and subsequent infrastructure development (DNP-

WC, 2017). The rhinoceros population in Chitwan valley plummeted from 800 to just 100 from the 1950s to the late 1960s (DNPWC, 2017). With the establishment of Chitwan National Park (CNP) in 1973, the population started to increase gradually till 2001, reaching a total of 612. The population trajectory showed a highly fluctuating trends, which are correlated with habitat loss and poaching (Baral et al., 2012; Baral and Heinen, 2005). As per the census held in 2021, there were 752 rhinoceros in Nepal distributed across the three populations: Chitwan National Park (694)/Parsa National Park (3), Bardia National Park (38) and Shuklaphanta National Park (17).

Poaching is a serious problem and continues to be a major threat due to well-organized covert trade networks and growing demand for horn used in traditional Asian medicine in rapidly growing affluence of China, Vietnam and other Asian countries (Paudel et al., 2020). However, there is a drastic reduction of rhinoceros poaching over the past decade in Nepal as a result of collective actions—priority-setting, monitoring, law enforcement and stakeholder involvement—among diverse stakeholders (Acharya et al., 2020).





## SCB NEPAL CHOICE

Yak under the shadow of Himalayan queen  
GANESH BAHADUR MAGAR

“It was captured in 2019 in Pisang, Manang on a photographic journey. Snow leopard, the top predator in the alpine ecosystem, is a vulnerable species under IUCN Red List. This photo illustrates a critical moments of leopard attack on yak, the main livestock of high mountains. Such incident might induce the human wildlife conflict, resulting a negative attitude towards this majestic species.”

The snow leopard *Panthera uncia* is Vulnerable worldwide, and found in the mountainous regions of twelve Central Asian countries (McCarthy et al., 2016). The main threats to the species are retaliatory killing in response to livestock loss, poaching, and habitat degradation as a result of development activities as well as global climate change (Khanal et al., 2020). Nepal is critical to snow leopard conservation as it connects populations in India, China, and Bhutan.





## KIRAN THAPA MAGAR

### Well on the middle of Jalad river, Dhanusha

“The well was found in the middle of Jalad River, Dhanusha when I was carrying out research in the Churia range. This was the main source of drinking water for Madhubasa village, Dhanusha. As soon as the forests along river bank were destroyed, soils were washed away by the torrential rains and subsequent floods. As the well buried, the people faced not only water scarcity, but also are at high risk of disaster (e.g., floods, soil erosion). Now an embankment has been constructed, but it is not sustainable. We need to come back to ecosystem-based solutions.”





## RUBEN RAJ GIRI

### Red panda on *Tsuga demosa*

“This red panda was recorded in Khali Patmara Rural Development Municipality of Jumla district at an altitude of 3300 m asl during field data collection for my undergraduate dissertation. This remote montane forest has a good habitat of red panda and other Himalayan wildlife species such as musk deer, pheasants, Himalayan black bear, pikas and Himalayan monal etc. Unfortunately, the area is being deteriorated rapidly. Hunting is one of the major threats and has been increasing, threatening survival of this endangered species. The conservation authorities appear to be less informed of such situation in this remote area.”

The red panda in Nepal has a sparse distribution in temperate and sub-alpine forests along Himalaya at an altitudinal range between 2000 m and 4800 m (Acharya et al., 2018). Its distribution primarily depends on the availability of the bamboo forests and water sources and most its habitats are situated outside of protected areas (Bista et al., 2019). This species is among the most poached mammals despite having no evidences of its medicinal and other values in both domestic and international markets (Paudel et al., 2020).

## SARASWATI THAPA CHHETRI

### The sarus crane

“*The Sarus crane (Grus antigone) has three disjunct populations in the Indian sub-continent, south-east Asia and northern Australia with an estimated global population of 25,000 - 37,000 individuals. It was first reported in Nepal in 1877. It is one of the 9 protected bird species of Nepal and listed as “Vulnerable” in both IUCN’s global and national red list of threatened species. It is the tallest flying bird with a standing height of 1.8 metres.*”

*A*lthough Sarus Crane (*G. antigone antigone*) was widely reported from lowland Nepal, it has been very rare in recent years (Inskipp et al., 2016). It is the world’s tallest flying bird (~1.8 metres) and the only resident breeding crane in India, Nepal, and Southeast Asia. They are likely fewer than 500 individuals in Nepal (Inskipp et al., 2016). Sarus cranes prefer wetlands, agricultural lands, and grasslands with abundant green shoots of grass and cereals, tubers and corns of marsh plants, food grains, frogs, lizards, fish, grasshoppers and insects.





**MANISH ARYAL**

## Himalayan griffon vultures

“Himalayan griffon vultures (*Gyps himalayensis*) are indigenous to the uplands of central Asia. These birds generally migrate along altitudinal gradients along their central Asian range. These huge and bulky vultures can weigh up to 12 kg with a body length of 95 to 130 cm and a wingspan of 270 to 300 cm. This photo of a group of Himalayan vultures were taken at Batase Hill of Tansen, Palpa. They come here during winter for 2 to 3 months, and go back to upper Himalayan region of Nepal during summer.”



## AASHISH KUMAR JOSHI

### Swamp deer monitoring and conservation

“Swamp deer (*Rucervus duvaucelii*) is listed as a “Vulnerable” species in the IUCN red list category and Appendix I of CITES. Shuklaphanta National Park of Nepal holds the world’s largest herd of this species. This makes the conservation of this site globally important. Yearly monitoring of the swamp deer is conducted in the park to assess their population. Radio collar is one of the most common and effective methods, allowing researchers to collect the vital data such as home range, daily movement, diet and behaviour etc.”

## RISHI BARAL

### Beautiful Sekong lake

“Beautiful Sekong lake at Thasang Rural Municipality-03, Kobang, Lower Mustang lies at an altitude of 2718 meter. This lake has a cultural value for local people and is important for local biodiversity. It is surrounded by sparse vegetation which is a habitat to important species like musk deer, red fox, cheer pheasant etc.”





The Asiatic Wild Water Buffalo *Bubalus arnee* is now found in India, Nepal, Bhutan, Myanmar, Thailand, and Cambodia. They are found in wet grasslands, swamps, and densely forested river valleys. They are no longer found in Pakistan, Bangladesh, Laos and Vietnam. Nepal's sole population thrives in the Koshi Tappu Wildlife Reserve, only wildlife reserve located on the floodplain of the Koshi river (Heinen and Paudel, 2015). They were recorded in Chitwan valley until 1960. Government of Nepal translocated 15 arnees to Chitwan National Park in 2017, hoping to have second population in Nepal. These arnas are placed in an open shade of 30 square hectares to prevent attack from large predators. Such approach is also known as 'soft release', which helps arna to adapt in new environment and attain a viable population needed for self-defence from predators when open shed is removed (Khatri et al., 2012).

## ROSHAN CHAUDHARY

### Wild arna

“This photo of Wild Arna (*Bubalus arnee*) was clicked in 2020 in Koshi Tappu Wildlife Reserve. It was the most exciting and thrilling moment for me looking at arna, not more than 50 metres ahead. Koshi Tappu Wildlife Reserve covers 176 square kilometers and lies on the floodplains of the Sapta Koshi River in south-eastern Terai region. It was established in 1976 to preserve the habitat of the only remaining populations of arna in Nepal.”

RIJAN OJHA

## Cyathea

“The photograph shows *Cyathea spinulosa*, a tree fern with scattered distribution in Central and Eastern Nepal. This photo was taken in Chuli Pokhari Area, Miklajung Rural Municipality, Morang District, Eastern Nepal. Fifty tree ferns were recorded in the area, which could be the largest number encountered in the Eastern Nepal. *Cyathea* is commonly known as tree fern and locally as *Chatare* or *Rukh Unyu* in Nepal. Five species of this genus are found in Nepal, which are distributed in the Chure range of central to eastern Nepal. All of these five species are listed in the CITES Appendix-II, but assessed as being Least Concern in IUCN’s red list of threatened species. Forest degradation and exploitation, including invasion by alien species threaten this species.”





AMRIT PAUDEL

## Regenerating forest after wildfire on Northern Baglung

“This summer Nepal witnessed one of the worst wildfire in its recorded history. According to National Disaster Risk Reduction and Management Authority more than 5,626 wildfires have been recorded in all 77 districts. Unfortunately, we do not have any data on loss of wildlife and vegetation. The massive forest fire has altered the habitats and ecosystems making it dry allowing the growth of invasive species. Such a disaster may even push endangered species on the brink of extinction. Let's hope everything will get back to normal!”





## DEU BAHADUR RANA

### An Amorous Elephant Enjoying the Mud Bath

“An elephant *Elephas maximus* is listed as a protected species in the National Parks and Wildlife Conservation Act 1973. This photo was captured in Chitwan National Park (Sukhibar Post) on 28 April 2021. The elephant was full of musth approaching the captive elephants when I met. This elephant is named “Dhurbe”. It is collared with a GPS transmitter to understand its movement that helps to mitigate the human-elephant conflict.”

Asian elephant survives in Nepal in small isolated populations, and faces threats from deforestation, habitat modification and deterioration throughout much of its range in Himalayan foothills. Human-elephant conflict (HEC) is the most critical conservation challenge which alone contributes more than one third of human fatalities and injuries by wildlife attacks in Nepal (Acharya et al., 2016). The Asiatic elephants (*Elephas maximus*), an “Endangered” species, are the largest surviving terrestrial mega-fauna of Asia. They were widely distributed through much of Sumatra, Java, and Borneo, West Asia along the Iranian coast into the Indian subcontinent, South-East Asia and into China at least as far as the Yangtze-Kiang (Baskaran et al., 2011; Lenin and Sukumar, 2011). They went extinct from much of their former geographical ranges and now survive in a few and small fragmented populations in India, Bangladesh, Bhutan, Nepal, Sri Lanka, Cambodia, China, Indonesia (Kalimantan and Sumatra), Lao PDR, Malaysia (Peninsular Malaysia and Sabah), Myanmar, Thailand, and Viet Nam (Dublin et al., 2006).

The total population of Asiatic elephants in the wild is estimated at 39,463–47,427 individuals within the 16.4 million km<sup>2</sup> area based on the review of the population in 2011 from all 13 range countries (Fernando et al., 2011). There are an additional 16000 elephants in captivity (Chapman et al., 2016). In Nepal, the estimated population of wild Asiatic elephants is between 255 and 265, and is believed to be isolated into four complexes: Jhapa-Dhanusa complex, Chitwan-Mahottari complex, Bardia-Dang complex and Kailai-Kanchanpur complex.



## PRASHANT GHIMIRE

### The lovers and the intruder

“Allopreening is common maintenance behaviour in birds. The Asian Woollyneck (*Ciconia episcopus*) in photo is seen preening its partner, sharing their parental duty. The partner is incubating the eggs. After a moment of allopreening, they exchanged their duties. The one previously incubating went away for collecting materials for their nest. This is the most vigilant duty as a large-billed crow was closely looking for a chance to attack their eggs.”

## Chapter 2

# People , Conservation and Co-existence.

We are going through the sixth-extinction event mostly caused by anthropogenic actions such as introduction of non-native species, habitat fragmentation, habitat loss and deforestation, and global climate change (Ceballos et al., 2010).

Biodiversity crisis depends on the way how we live our lives, how we procedure our commodities and how use resources (e.g., land). Ralph Waldo Emerson and Henry David Thoreau spoke first time about these aspects. John Muir introduced the concept of protected area and is believed to have influenced Theodore Roosevelt, the US president, who signed a landmark legislation establishing protected areas in the US.

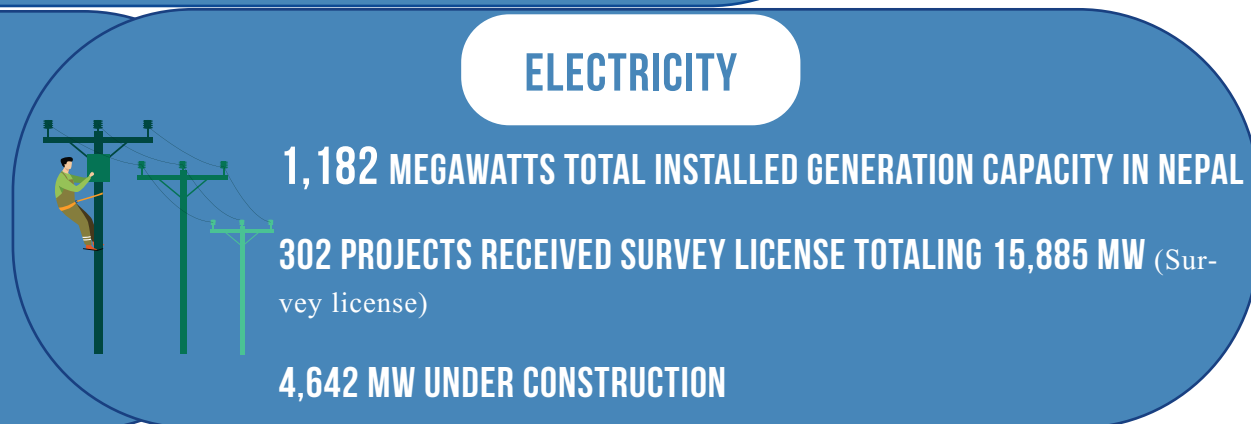
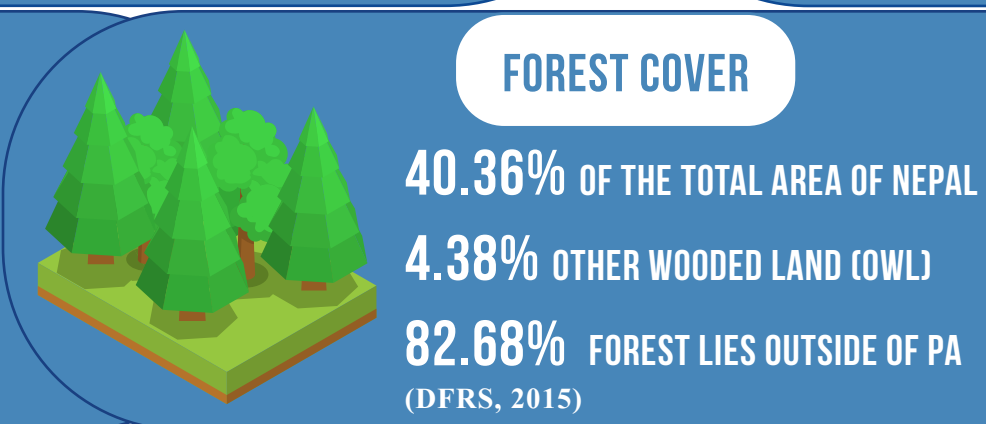
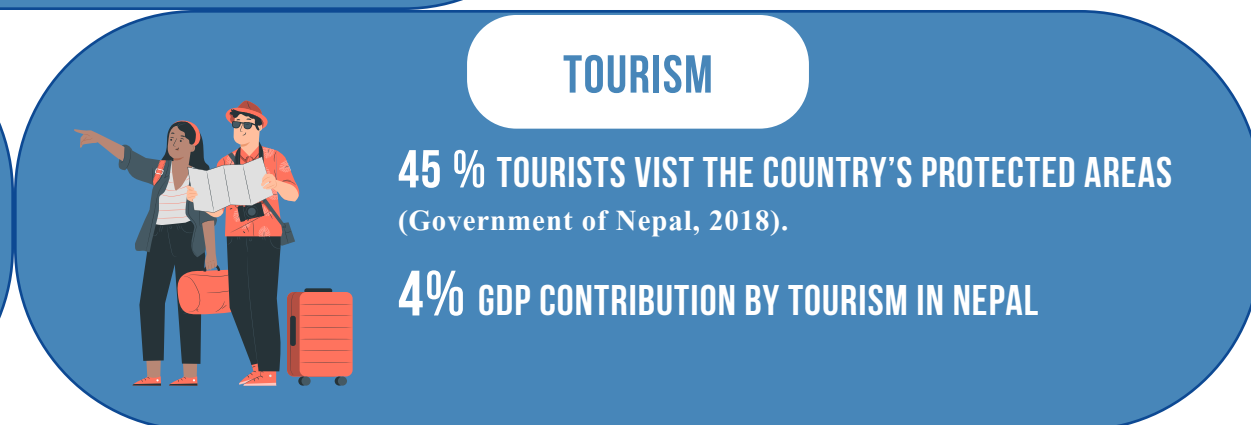


The future of this planet depends how we foster a mutually beneficial system for both nature and humans, including preservation of pristine and intact ecosystems. Biodiversity conservation therefore needs an acknowledgement of services provided by nature – both direct and indirect— and involvement of the local people in the nature conservation.

Nepal adopted a participatory and people-centered conservation model that resulted an impressive record of biodiversity conservation. Past efforts have been successful in restoring wildlife population, reducing wildlife hunting & poaching (Acharya et al., 2020), and encouraging local community in conservation (Bajracharya et al., 2006).

At present, Nepal has an extensive network of protected areas which includes twelve national parks, one wildlife reserve, one hunting reserve, six conservation areas and buffer zones in all national parks. Protected areas and buffer zones account for ca. 24% of the country’s area. Outside the protected areas, about 29% of forest land is managed under community forestry.

The country supports several the Global 200 eco-regions (Olson and Dinerstein, 1998), centers of plant diversity and endemic bird areas (Heywood and Davis, 1995; Stattersfield et al., 1998).





## HONORABLE MENTIONS

Co-existence: Agricultural land for humans and wildlife

CHIRANJEEVI KHANAL

“

*More than 65% of the population in Nepal is engaged in agriculture. These agricultural landscapes are not only the source of livelihood for people but also a habitat for many wildlife species, especially birds. Excessive and indiscriminate use of chemical fertilizers and pesticides is turning these productive lands into bare deserts. Pesticide residues in agriculture commodities cause severe health problems in humans. On the other side, birds like storks, cranes and herons lose their habitat and feeding grounds. For a healthy co-existence, humans should avoid harsh chemical on agricultural lands and emphasize on eco-friendly methods of cropping system.”*



## SANEJ SUWAL

### Community, conservation and co-existence

“This photograph is of “Hans Pokhari” (3019695.56m N, 498498.77m E, 2962m asl, April 01, 2019) that lies at Mayung Danda, in Bhojpur district. This pond is a community managed pond serving a water sources for the down stream and their livelihood. The community-based forest management around the pond has been playing a vital role in management of forest land which in return providing good habitat for different wildlife including endangered species like red panda, threatened species like pheasants, etc. making it possible for the coexistence between human and wildlife.”





## SCB NEPAL CHOICE

Three Local women and a kid collecting necessary goods from wetland area  
MILAN ARYAL

“A perfect example of co-existence between biodiversity and human-kind! Three women and a kid, as a part of their daily chores, are returning home after collecting of their daily needs like firewood, grass, etc. Jagadispur lake, one of 10 Ramsar sites of Nepal.”



### NISSAN SHARMA

भुंडीफोरगरुड

“The lesser adjutant is a large wading bird in the stork family Ciconiidae and prefers farmlands. Like other members of its genus, it has a bare neck and head. It is, however, more closely associated with wetland habitats.”





## DEU BAHADUR RANA

### Wake of critically endangered vultures entertaining their meal at the bank of Narayani River

“Vultures are natural scavengers, which provide essential ecosystem services by consuming a large mass of carcass within a very short interval. Nepal inhabits nine species of vultures where six of them are residents. The use of NSAID, diclofenac widely used for cattle treatment, lead to the catastrophic decline of vultures during the early 90s. Vultures are fitted with GPS to collect vital ecological data. This photograph was clicked on 6 May 2021 where the captive released and wild ones are enjoying their meal.”



### **BIBEK SHRESTHA**

**A herder in Dolpa returns his cattle herd from a pasture**

“*Montane agro-pastoral livelihood is inextricably tied to a multitude of ecosystem services. In winter, cattle are grazed in sub-alpine pastures closer to the settlements. As the cattle graze, herders collect the firewood, wild edibles, and medicinal plants. In spring, sheds are usually shifted to alpine pastures to optimally utilize the new grass growth after snowmelt. Cattle provide milk, meat, wool, and hide. The sale of cattle during the festival season vitalizes households’ economy. People also utilize genetic diversity in the form of mastiffs that guard the herds.*”

## PRACHAN BHUJEL

Fisherman knows the value  
of water to live their life

“Almost half of the population around the globe depends upon natural resources for making their livelihood. With more than 6000 rivers and rivulets in Nepal, fishing also supports people livelihood. The fishermen in this picture with their fishing nets practice sustainable harvesting of fishing stocks.”





*The* contribution of nature and agriculture in human civilization cannot be overstated. Farmers in Nepal have developed their own unique ways of doing agriculture, and these unique systems have been well conserved. There is no alternative to coexistence which gives no room for humans to destroy nature. The following image provides a picture of a house almost in the middle of a forest.

This house is a representative of villages in Khadadevi Rural Municipality in Ramechhap district. People here have a deep understanding of the importance of nature/biodiversity.

## SUMAN PRAKASH PRADHAN

### प्रकृतिसंगको सहकार्य

“मानव सभ्यताको विकासमा प्रकृति र कृषिले दिएको योगदान अतुलनीय छ। मानव सभ्यताको सुरुवात संगै प्राकृतिक रुपमा गरिदै आएको कृषिकार्यहरु नेपालको विभिन्न स्थानमा अभै प्रचलित छन्। प्रकृतिको योगदान लाई कदर गर्दै आफ्नो जिविको चलाउने कृषकहरुले आफ्नो वरिपरीको प्राकृतिक सम्पदाहरुको संरक्षण गर्दै आइरहेका छन्। आफ्नो जीवनयापनका लागि प्रकृति संग सह अस्तित्व बनाएर प्रकृतिको विनासलाई रोक्नु मानव जातिको पहिलो धर्म हो। यस तस्विर मा कैद भएका एकल घर र खेति योग्य जमिनहरु प्राकृतिक जंगलको बिचमा अवस्थित छन्। प्राकृतिक श्रोत विना मानव जातिको अस्तित्व नहुने भनी बुझेका रामेछाप जिल्लाको खांदादेवी गाउँपालिकाका स्थानियहरुले अधिकांश कृषिकार्यहरु यसरीनै प्रकृतिको संरक्षण संगसंगै गरिरहेका छन्।”



## SCB NEPAL CHOICE

निकुञ्ज भित्रको निषेधित क्षेत्रमा भेडा चराउदै एक भेडी गोठालो ।  
SAROJ KHADKA

“जिवनको आधा जीवन नै यहि पेशामा व्यतित गर्नभएका दाजु दिल बहादुर रो काया (पछि भेटेर नाम थाहा पाएको ) भन्नुहुन्छ: जिन्दगी सहज छैन सर, ३ महिना यस्तै भिर पाखामा आफ्नो ज्यान जोखिम राखी भेडा चरायो, कहिले भालु आएर सखाप पारिदिन्छ, कती त लडेर नै मर्छन। अहिले त भन बेचन गयो, आफ्नो मेहनतको पारिश्रमिक नि आउदैना न बिदेशिन सक्छु यो उमेरमा न अन्य कुनै काम गर्न ।”

*T*ranshumance is a herding system where the livestock are moved from place to place depending on the availability of food (Nyssen et al. 2009). The following image presents Mr. Dil Bahadur Rokaya, a shepherd, who was herding his sheep in one of the picturesque hilly pasturelands inside Rara National Park. He has spent half of his life doing this. While he is well aware of the hardship of this profession (for e. g. attack by predators to both him and his sheep), he also knows that there's very little he can do to change this. He does not even get the economic return compared to his effort.





## ADITYA PAL Hope

*“Human interactions with wildlife are defining human existence. People compete with wildlife for food and resources. This conflict has led to the extinction of numerous species and uncountable human deaths. People are creating forests and connecting patches to minimize the wildlife conflict, which will facilitate animal movement and also restore water in Chure and lowlands of Nepal. This photo was taken during massive plantation in Chure range of Dhanusha, aiming for landscape restoration to minimize human-wildlife conflict.”*



## SCB NEPAL CHOICE

The thin green line  
KARUN DEWAN

“Several research findings suggest that wildlife habitat improved in areas where local communities had a say in the management. Studies also suggests that community-managed areas, or areas managed by communities in collaboration with parks, can sometimes do better than traditional parks alone at protecting habitats and species. Under the 1996 management plan developed by the community and approved by the park livestock grazing in the buffer zone has ended. But the community now determines how to allocate other forest resources there, for fodder and firewood. The bottom-up involvement of local people had given them a sense of ownership in the community land.”

## NISCHAL SHRESTHA

### Shades of blue

*“We were gasping for air after an uphill climb from mystic land to the Gangapurna view-tower in Manang. Baby steps and short breaths. After exhausting all of my energy, I sat down in the middle of the trail and breathed in the fresh air while admiring the natural beauty. I saw a couple who had been struggling but encouraging each other up the difficult climb. Freezing the moment with the cool breeze straight from the top of Gangapurna, I managed to capture it perfectly. The tourism in Manang is attributed to the biodiversity and the landscape. Here tourism has grown, but keeping it raw and real makes it more adventuresome.”*





## SMRITEE LAMA

### Symbiosis-Human and Nature

“The 4<sup>th</sup> amendment NPWC Act, 1973 provisioned the concept of the buffer zone, which is the designated area to fulfill the needs of forest products for the local communities. The amendment also provided for the allocation of 30 to 50 percent of the park revenue to buffer zone user committees. The program, administered by locals at the community level, aims to meet local demands for fodder, firewood, and timber. The biodiversity gains of community forestry are an unintended side effect.”



# Chapter 3

## Threats to Biodiversity

The world is expected to witness an unprecedented biodiversity crisis as species are disappearing at rate that are 1000 times faster than those registered in the fossil record (De Vos et al., 2015). The drivers of biodiversity loss include habitat destruction, over-exploitation, biological invasions, climate change and pollution (Bellard et al., 2012; Brooks et al., 2002; Early et al., 2016). This is further complicated by two types of human pressure: human-wildlife conflict and illicit wildlife trade. Nepal is no exception. The most significant threats to biodiversity in Nepal are habitat loss and fragmentation, climate change, ecosystem degradation, alien species, wildlife poaching/hunting and human-wildlife conflict (Acharya et al., 2016; Bhattacharjee et al., 2017; Paudel et al., 2020, 2012).

**Forest loss and fragmentation:** The lowland flat area of Nepal, known as the Tarai, had vast intact forests along the entire southern border with India, and into the southern-most low hills and inner valleys of the Himalayas (Uddin et al., 2015). The area went through a rapid transformation with an influx of immigrants beginning in the 1950s due to malaria eradication, infrastructure development and government-sponsored resettlement programs (Chaudhary, 2000). This resulted loss of forest area by 40% (Chaudhary et al., 2016), which led to decline in large mammal populations, and faunal collapse in some areas (Heinen, 1995). Such a large-scale change, however, is not a case now (Oldekop et al., 2019), but forest encroachment/t fragmentation is a serious challenge throughout Nepal.



Fragmented forest has been conflict hotspots (Acharya et al., 2017; Thapa et al., 2017). Although government of Nepal adopted a landscape approach in biodiversity conservation with developing several conservation landscapes (MoFSC, 2015), habitat fragmentation has not been abated, mainly due to massive and unplanned road constructions in the rural areas.

**Climate change** is the foremost threat to biodiversity in Nepal. The impacts driven by climate change are yet to be fully understood in Nepal. There are ample signs that climate change may have contributed to habitat loss, modification and alternation (Pant et al., 2020). Grasslands and forests in the Mustang district, for example, have diminished by 11% and 42 %, respectively between 1979 and 2009 and tree-lines are shifted towards higher elevation (Aryal et al., 2014) . Future prediction of snow leopard distribution, based on model, suggest that there would be habitat shift and modification.

**Forest fire** during dry seasons is common in Nepal. Most of the forest fires are intentional for various purposes. Poachers and hunters induce fire to have a better sight of game animals whereas villagers set fire to scare dangerous animals and for the removal of weeds (International Forest Fire News, 2016). The uncontrolled forest fire has detrimental impacts on both wildlife and plants (e.g., saplings, timber and non-timber forest products) (Byers, 2005; Nagendra, 2003; Tachibana and Adhikari, 2009) and is considered as one of the major causes of deforestation in Nepal (Chaudhary et al., 2016).

**Invasion of alien species** (IAS) is one of the leading causes of wildlife extinction throughout the world (Clavero and Garcaberthou, 2005) with a major cause of extinction of 58% of the extinct species since 1500 AD. Almost two third of the extinct mammals, herpetofauna and birds suffered from the invasive alien species (Céline Bellard et al., 2016). There are more than 200 invasive alien species that are posing serious threats to the existence of 1372 vertebrates (C. Bellard et al., 2016). In Nepal, at least 183 vascular exotic plant species (4 pteridophytes and 179 flowering plants) are naturalized, and among these 26 are invasive angiosperm species, including 4 from the list of 100 of the world's worst invasive species (Shrestha, 2019). Some examples of high risk posed IAS of Nepal include *Eupatorium adenophorum* (Kalo banmara) in hills, *Chromolaena odorata* (Aule/ Seto banmara) in eastern and central and

midhills, *Ageratina adenophora*, *Lantana camara* in Terai and mountainous regions, *Mikania micrantha* in centre Terai and *Eichhornia crassipes* (water hyacinth) in wetlands below 1500m (Bhattarai et al., 2014).

**The illicit wildlife trade and poaching/hunting** are serious conservation challenge in Nepal. Wildlife hunting for subsistence use is common in the rural areas, but it also serves for trade. A recent study reports wildlife trade from 60 districts of Nepal, where Kathmandu district accounted 20% of seizure cases, followed by Chitwan (5%) and Sindhupalchowk (5%). Most of such trade involved leopard (12 %), followed by pangolin (9%), tiger (8%) and rhinoceros (6%) (Paudel et al., 2020).

**Illegal harvesting of NTFPs** throughout Nepal is common for a long time. The collectors, Nepalese as well as foreigners, harvest thousands of tons of plant products without having a permission from concerned authorities (Maraseni et al., 2006), resulting overharvesting of high value medicinal and aromatic herbs and plant resources. Such unsustainable harvesting practices accompanied with over grazing might have a deleterious effect on the ecosystems in future (Ojha, 2000).

**Human-wildlife conflict** (HWC) is one the most serious conservation issues in Nepal. In a predominately agrarian society like Nepal, biodiversity conservation has many socio-cultural dimensions. The subtropical lowland region of Nepal is home to some of the largest herbivores of Asia (e.g., elephants *Elephas maximus*, rhinoceros *Rhinoceros unicornis*, *Bos gaurus*, water buffaloes *Babalus arnee*, etc.) and carnivores (e.g., leopards- *Panthera Pardus*, tigers- *Panthera tigris*, etc.). This region is densely settled by humans, and HWC, therefore, is a serious conservation problem (Primack, 2012). Crop-raids by small mammals such as ungulates constitute a major form of conflict in the middle mountains, whereas livestock depredation is the primary type of conflict. Primates have been problematic wildlife in mid-hills due to massive crop damages.



## HONORABLE MENTIONS

Fire not only burn the jungle but also burn the house of animals

PRACHAN BHUJEL

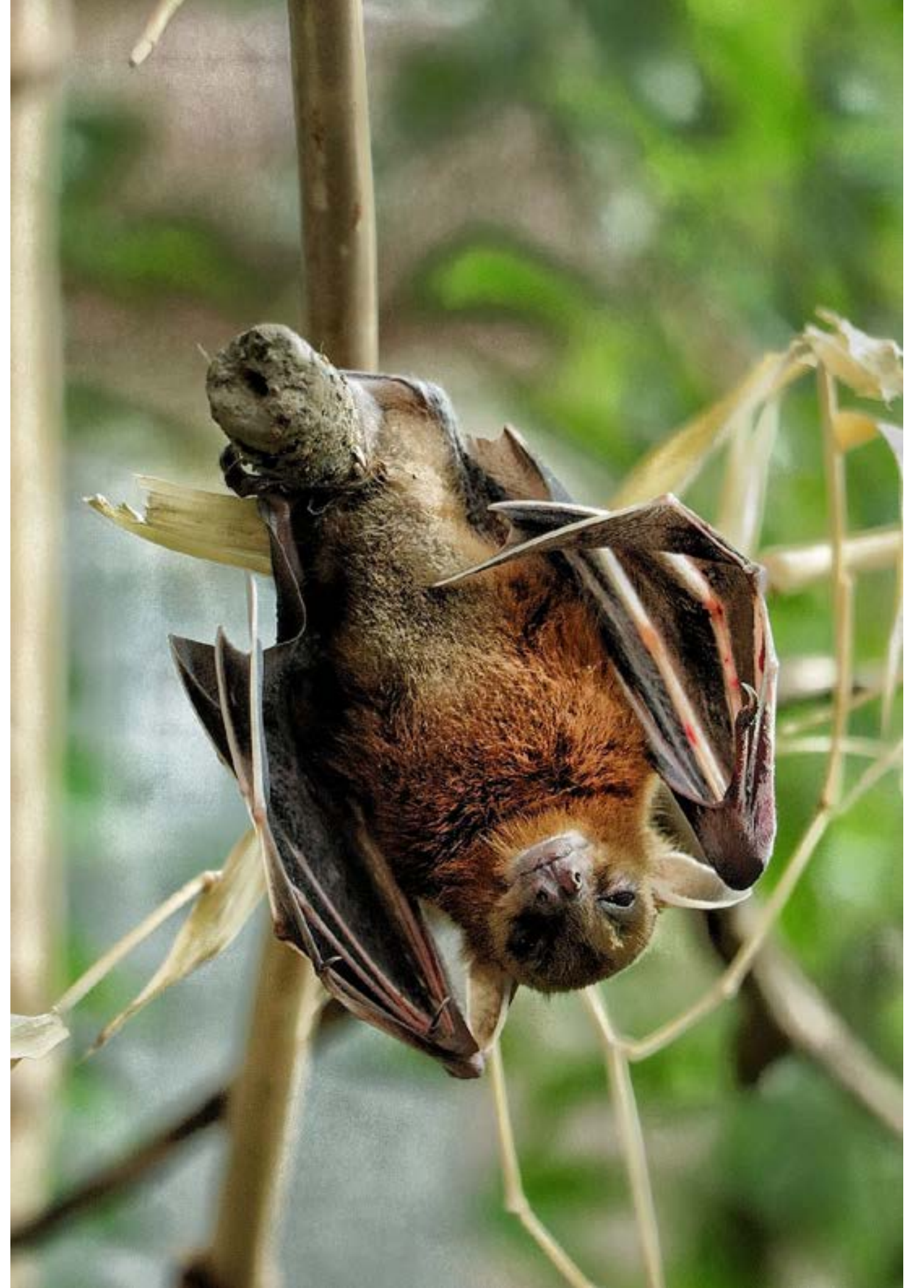
“*Forest fire after bio mass burning is one of the key drivers of forest degradation in Nepal. Most of the forest fires are human-induced and occur during the dry season. This photo was captured in Koshi Tappu Wildlife Reserve in March. According to the conservation officers the , the poachers set fire to hunt endangered species such as wild buffaloes etc.*”



**RAJ ADHIKARI**

## चपेटामा चमेरा

“बदुरा (Indian flying fox) को यस तस्बिर नेपालमा कोभिड-१९ संक्रमणको सुरुवाती दिनमा खिचिएको हो । उक्त बदुरालाई घाइते अवस्थामा देखेपछि बुभुदै जाँदा चमेरोबाट कोरोना भाइरस सर्छ भन्ने त्रासले केहि मानिसहरूले यसलाई घाइते पारिदिएको थाहा भयो । वासस्थान विनाशका कारण चपेटामा परिरहेका यस्ता जीवजन्तुको संरक्षण गर्नपर्नेमा त्यसको ठिक विपरीत यसरी हानि पुऱ्याउनु निन्दनीय कार्य हो । पृथ्वीको खाद्यचक्र, पारिस्थितिक प्रणाली, वातावरण सन्तुलन आदिमा महत्वपूर्ण भूमिका निर्वाह गर्ने चमेराले बालीनाली, वनस्पति तथा मानवका लागी हानिकारक विषालु किराहरू खाएर मानिसलाई ठूलो गुन लगाएका हुन्छन् । त्यसैले यस्ता महत्वपूर्ण प्राणी चमेराहरूको वासस्थान सुनिश्चित गरि यिनको संरक्षणमा टेवा पुऱ्याऔँ, जैविक विविधता कायम राखौँ ।”



## SACHIT SHARMA

### Save the environment

“Soil trying to consume a plastic bottle! This is almost impossible in next 50 decades. This photo gives a small but louder message that tons of plastic pollution on the earth’s environment will continue adversely affecting our land and waterways for many generations to come.”



## DRISHTANT BIDARI

### Plastics all around

“Sarus Crane is a globally threatened bird species. It is a resident in the lowlands Nepal, mostly in Lumbini and its surrounding farmlands. This photo was taken on the way to Lumbini. We can see a family of Sarus Crane- two adults and two juveniles- foraging in an area completely surrounded by plastics.”

## BIBEK SHRESTHA

Intensive fishing, invasive species threaten native fish in a shrinking lake.



*Bhagaraiya lake, a shallow wetland in Bardia harbors dozens of native fish species. Manifold pressures such as encroachment, land-use change in its catchment, diversion of water for irrigation, agricultural run-off leading to sediment and nutrient loading have impacted the lake and its biodiversity – a shrinking and drying lake is undergoing succession into marsh and grassland. Whatever remains of the lake is dominated by invasive water plants, particularly water hyacinth, altering the lake’s ecology. The lake’s rich fish diversity is further threatened by intensive fishing practices such as “helka” – numerous fishers simultaneously ‘sweeping’ across the small lake with fishing nets.*

“

”



## SCB NEPAL CHOICE

A poor monitor lizard

ASMIT SUBBA

*“During lockdown, I was stuck in my hometown like everyone else. But it provided me an opportunity to explore areas where I was born, a western part of Satashihi Dham (Jhapa). I am a field biologist and an amateur photographer. I was searching for wildlife there to photograph them. It was already too late to take a good photograph although I got one. But honestly, this opportunity was my worst moment. I encountered two hunters and a poor Bengal monitor lizard.”*







## SCB NEPAL CHOICE

The complete deforestation in the name  
of development seen in Jumla Nepal  
SAROJ KHADKA

“स्थानिय सरकारको गाउँ गाउँमा बाटो अन्तर्गतको कुनै निश्चित योजना विनानै निर्माणाधिन सडक जस्ले धेरै मात्रामा त्यहा रहेको सल्ला प्रजातिको रुखहरुको क्षति गरेको थियो । फलस्वरुप त्यो बाटोमा माथी बाट सधै जसो पहिरो आईरहने र पुर्ण रुपमा संचालन हुन सकेको छैन । जैविक विविधता नै नस्ट हुने यसप्रकार को कार्यहरु रोक्न एकदम आवश्यक देखिन्छ । तस्बिर मा देखिएको दृश्यमा ट्याक्टरले त्यही नजिकै वन क्षेत्र बाट उत्खनन गरेको ढुडा भारिरहेको ।”



## SCB NEPAL CHOICE

Human throwing their safety away? Hard to reflect upon?

NISHAN BARAL

“It was a fine winter morning when I was birding down the Chobar gorge towards the Sirkali temple. I had enough of cattle egret photos so I was not paying much attention towards on them, but was rather observing their activities. This particular egret standing on helmet and looking for prey caught my attention. What would I take away from it? Smell of Bagmati failed to suffocate me. Or is it just me that is used to the wickedness of Bagmati? Or most of the people who contribute to this wickedness? Or are they just trying to turn their eyes blind to this misery? Did the man/woman who threw away this helmet because its useless to provide safety forget that he/she actually was throwing his/her safety away? Well... literally or figuratively... it's very hard to reflect upon.”





## SCB NEPAL CHOICE

Dark side of Phewa lake

ROHIT GIRI

“Plastic pollution is entirely avoidable— IF we choose to avoid it. But I see it’s growing in Pokhara, and it adds up fast, shows up everywhere! Please, let’s do our parts to stop this. We are the first generation to know we’re destroying the world, and we could be the last that can do anything about it. Despite all efforts done, landfills grow at incredible pace and overwhelmingly comes from products that we use for a few minutes, discard into the environment, and then last a lifetime. It’s up to us to change the current flow of plastic pollution through advocacy for better products and switching to reusable containers in our everyday life.”





**SCB NEPAL CHOICE**  
Shivapuri on Fire  
**MAHESH SINGH MADAI**

## BINAYA GHIMIRE

### Where to wander? Nowhere to go

“In this photo, a Rosey Pipit can be seen wandering around and searching for food along the riverbanks of the Bagmati river. A river that has deep significance in the Hindu religion but polluted by human exploitation over the years can not serve both in a long run. A pile of trash and plastic wastes on the bank of this river creates disturbance to wildlife and biodiversity depending upon it.”



## SACHIN KUMAR SINGH

### Mother's love

“We often forget the minor details in the bigger picture. Where one sees two wild animals, I see the chains barricading a mother's love.”



## SUMAN PRAKASH PRADHAN

### दिगो बन्न नसकेको विकास

“विगत केहि दशकबाट विकास योजनामा ठुलो फड्को मारिरहेको नेपालको अधिकांश विकास कार्यहरु दिगो बन्न सकिरहेका छैनन्। संचार, बिजुली, र सडक विकासले तिब्रता पाए पनि, प्राकृतिक श्रोतको विनाशलाई अवमूल्यांकन गर्दा, वार्षिक ठुलो मात्रामा प्राकृतिक तथा मानव जन्य प्रकोपहरुको सामना गरिराख्नु पर्ने स्थिति रहेको छ। यस तस्विरमा कैद भएका निर्माणाधीन मध्यपहाडी सडक र त्यसले सुनकोशी नदी तथा वरपरका प्राकृतिक श्रोत र पहाडको भौगोरिक अवस्थालाई परेको प्रतक्ष्य प्रभाव देख्न सकिन्छ। नेपालमा दिगो विकासको अबधार ाणाहरु आएको भयता पनि, राम्रो कार्यान्वयन हुन नसकेको कारण प्राकृतिक श्रो तहरु धेरै मात्रामा विनाश भैरहेका छन्।”



## SAMUNDRA GHIMEIREY Destruction

“This place in the picture is bank of Manohara River in Bhaktapur. People used to cultivate vegetable here but now huge area has been plotted for real estate business. More and more concrete house started to construct here. This type of work in various region is also the reason why we have to import vegetable from India.”

## RAMESH RAJBANSHI

Golden monitor lizard (*Varanus flavescens*)  
hunted and locked with tail and leg

“Golden monitor lizard is protected species under national park and wildlife conservation act of Nepal. It is found specially in the plains of terai during the monsoon, feeds on crabs, snails, insects etc. Despite of protected status, people are not aware of its status and its role in the ecosystem. The reptile is hunted by the different indigenous people for the bushmeat, skin and medicinal purpose. Therefore, the species is under threat to extinction. Photo was clicked in the lockdown 2020.”



## DEU BAHADUR RANA

Wildlife photographer  
approached near to click  
Rhinoceros

“ *This photograph was clicked on 27 April 2021 in Chitwan National Park where the photographer is too close to Greater One-horned Rhino Rhinoceros unicorns, one of the globally endangered species. Rhino inhabits grassland and water holes and is under threat due to habitat loss, poaching, and illegal trafficking.* ”







**SCB NEPAL CHOICE**  
King cobra and the curious onlookers  
**ROHIT GIRI**

“*Abstraction allows the photographer to immerse themselves in composition, colours, and textures, and to do so at the expense of a subject’s wider surroundings. Nature provides an abundance of imagery within easy reach to all that can be captured in this way. Nature in this context refers to the natural world, but excluding man and man’s creations and impacts.*”



**KARUN DEWAN**

## Redefining the Human-Wildlife Ecotone

*“Over-fishing is one of the most significant drivers of declines in aquatic wildlife populations when fishing is faster than stocks can replenish, and too close to habitat that belong to aquatic wildlife such as gharial and mugger. Over fishing can impact entire freshwater ecosystems. It can change the size of fish remaining, as well as how they reproduce and the speed at which they mature. When too many fish are taken out it creates an imbalance that can erode the food web and lead to a loss of other important freshwater life, including vulnerable species like gharial, dolphin and otters.”*



## SCB NEPAL CHOICE

Sand and boulders extraction from the river.

MILAN ARYAL

“*Banganga river, a home to several aquatic biodiversity, harbours numerous insects, birds, fishes and other aquatic species. However, unregulated sand and boulder mining have been aggravating the biodiversity loss. This unpleasant act has seemingly hampered the habitat of those vulnerable species.*”





## DINESH GIRI

### Human needs peaceful environment as a tranquilizer

“Human needs peaceful environment as a tranquilizer. Thus, they drag themselves very close to nature. This may be the reason that lower region of forest is being destroyed massively to make luxurious commercial apartments and colonies these days. Many hectares of such lands are being destructed in rapid way. Along with the trees, lives of tiny to big living beings dependent on forest ecosystem will be completely damaged. Thus, its utmost necessity to stop these actions and protect biodiversity.”

## HARI BASNET

### Sad story of cheer pheasant in western Nepal

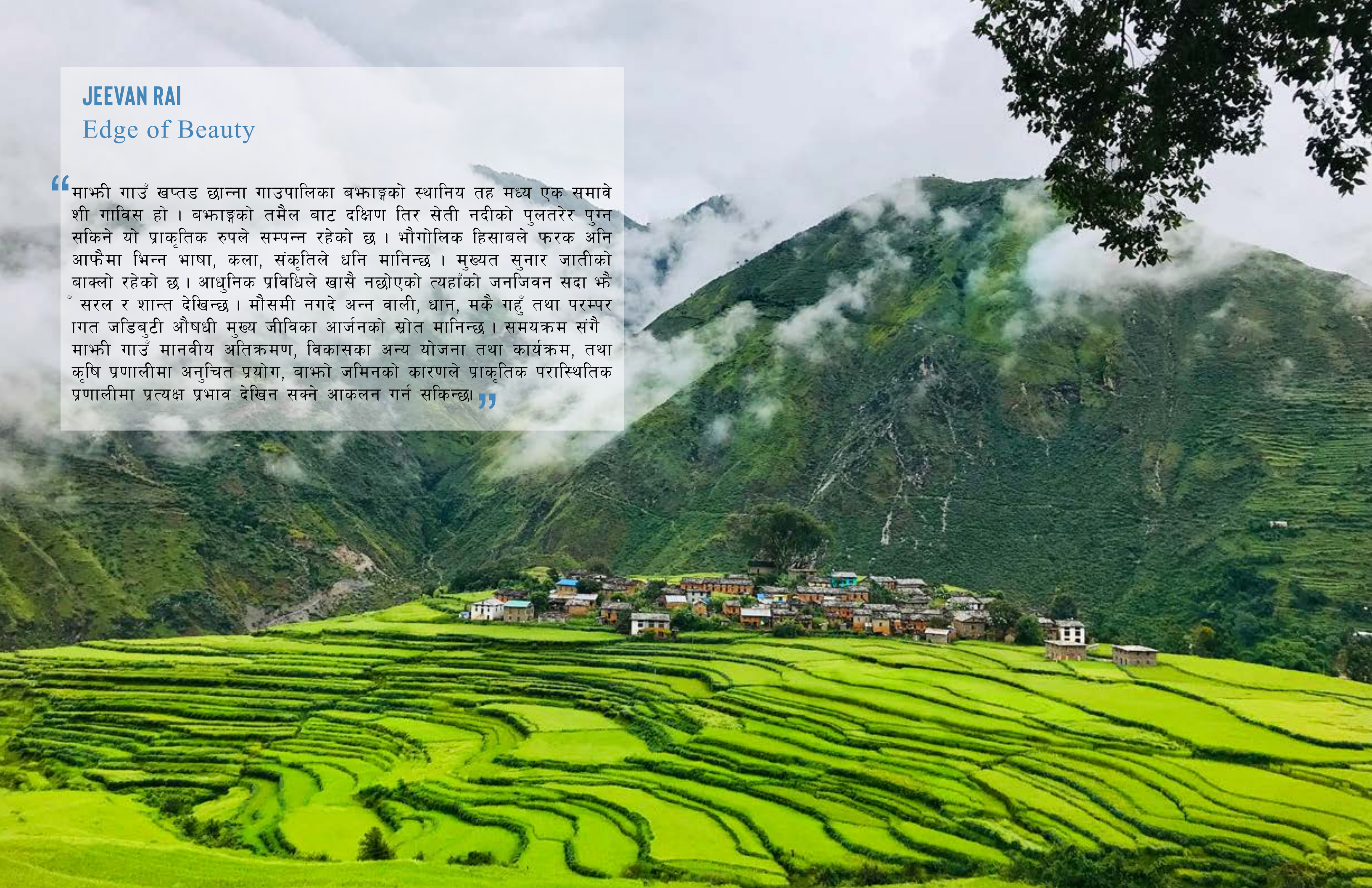
“In Western Nepal, domesticating the Cheer Pheasant and using it in lure/bait is common practice. It was the emotional experiences for me to witness a captive cheer. Sadly, the pheasant was leased by a private school, where this threatened bird is being used for bait other wild cheer with an intention of killings is a common sight for students. Such activities unknowingly darken the future of conservation. Such remote villages of Bajura are urgent needs of conservation campaign to enrich with the positive aspects of conservation.”



**JEEVAN RAI**

## Edge of Beauty

“माभी गाउँ खप्तड छान्ना गाउँपालिका बझाङ्गको स्थानिय तह मध्य एक समावे शी गाविस हो । बझाङ्गको तमैल बाट दक्षिण तिर सेती नदीको पुलतरेर पुग्न सकिने यो प्राकृतिक रुपले सम्पन्न रहेको छ । भौगोलिक हिसाबले फरक अनि आफैमा भिन्न भाषा, कला, संकृतिले धनि मानिन्छ । मुख्यत सुनार जातीको बाक्लो रहेको छ । आधुनिक प्रविधिले खासै नछोएको त्यहाँको जनजिवन सदा भैँ सरल र शान्त देखिन्छ । मौसमी नगदे अन्न वाली, धान, मकै गहुँ तथा परम्पर ागत जडिबुटी औषधी मुख्य जीविका आर्जनको स्रोत मानिन्छ । समयक्रम संगै माभी गाउँ मानवीय अतिक्रमण, विकासका अन्य योजना तथा कार्यक्रम, तथा कृषि प्रणालीमा अनुचित प्रयोग, बाभो जमिनको कारणले प्राकृतिक परास्थितिक प्रणालीमा प्रत्यक्ष प्रभाव देखिन सक्ने आकलन गर्न सकिन्छ।”





**SCB NEPAL CHOICE**  
Caged wilderness  
**ADITYA PAL**

“Birds are one of the most fascinating animals; they fly, they sing, and some can even speak human words. Which is the reason birds being popular pets and parakeets are the most common. Purchasing a bird contributes to abusive and illegal smuggling. This photo was taken during local fair in Dhanusha, Nepal. Sellers mostly take the juvenile birds from the nest or use some type of trap to capture these birds. While many people might like the idea of having a bird to keep them company but unfortunately, buying a bird to keep as a pet is morally unethical cruel and illegal.”

## SURENDRA ACHARAYA

### Forest Fire – A growing problem to biodiversity conservation

“*Forest fire is one of the major problems of Nepal and creates barrier to biodiversity conservation and management. This year saw an unprecedented records of forest fire as compared to past years. Many of the wild fauna like animals, birds, reptiles as well as floral (plants) species were directly impacted from forest fire. It is the root cause for degrading and destroying the natural habitat of wild species.*”





## RAMKRISHNA GAUTAM

### Battle against world worst species

“This photo was clicked in Jalthal forest in Jhapa district. It is a biodiversity rich, moist broadleaved forest in the southern lowland of Eastern Nepal. Forest has been vastly invaded by *Mikania micrantha*, popularly called Mile-a-Minute weed, locally, Pyangri Lahara. Due to its vigorous growth and vegetation smothering habit, it caused serious economic loss and threats to biodiversity. Jalthal forest harbors natural population of *Cycas pectinata*, IUCN red listed species. Picture shows *Cycas pectinata* is heavily covered and smothered by invasive *Mikania micrantha* and local people are removing it, hoping to conserve *Cycas pectinata*. ”



## SMRITEE LAMA

### How a small plastic bottle can ruin a photograph; and most probably our world

“Around the world, humans produce an estimated 1.3 billion tons of plastic waste per year, a number is set to increase to 2.2 billion by 2025. Plastic waste is choking our planet – polluting the air, water, and soil, which both people and wildlife need to survive. This crisis is spreading to every corner of the globe, and Nepal’s protected areas are no exception. Though Chitwan National Park has been declared as a plastic free zone since January 2019, tourist visiting this national park often notice such distraction while enjoying the sightings of wildlife and landscape. Some of visitors are responsible for such situation. We all have our responsibilities! ”





## SCB NEPAL CHOICE

Hanging carcass of Himalayan Goral  
KIRAN THAPA MAGAR

“This photo depicts a hanging carcass of Himalayan Goral in snares in Api Nampa Conservation Area, far western Nepal. This photo provides several precedents of threats to biodiversity. Even protected areas are not safe haven for wildlife, and a better surveillance and conservation is needed here. Poachers set hundreds of nylon snares to trap endangered species, many of such are never get checked by poachers. Such an indiscriminate and rampant killing must stop not only in protected area, but also outside.”



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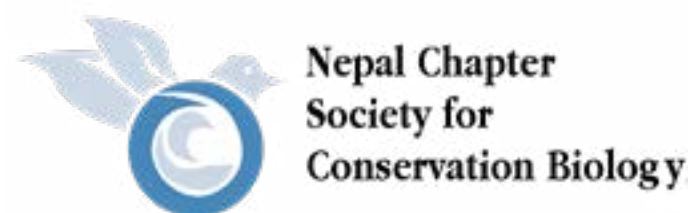
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# About SCB Nepal

Society for Conservation Biology Nepal (SCB Nepal) is a non-profit professional organization dedicated to promoting biological diversity in Nepal. It serves as a national chapter of Society for Conservation Biology (Nepal Chapter of Society for Conservation Biology). Society for Conservation Biology is a premier international organization of professionals and students who dedicate their work to advancing the science and practice of conserving Earth's biological diversity. Its network spans through membership and has a local chapter and specialized section.

SCB Nepal aims to serve as a network of conservation professionals to support knowledge-based conservation of biological diversity in Nepal through training and advocacy, while actively engaging SCB regional/local programs.

Furthermore, SCB Nepal members enjoy unparalleled opportunities to further their professional or organizational goals, connect with leaders in the conservation community, and engage in impactful efforts and activities.





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