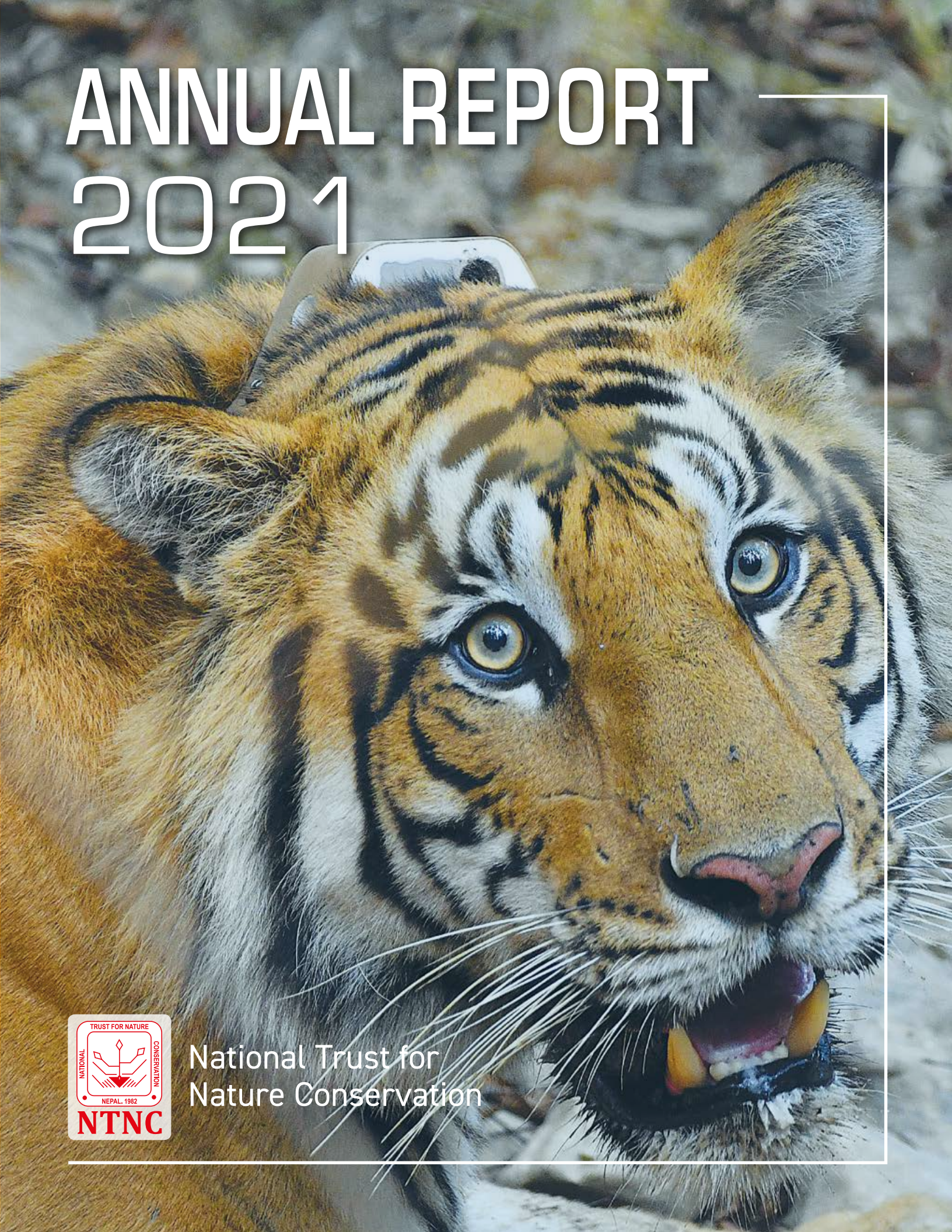
ANNUAL REPORT 2021



National Trust for
Nature Conservation

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Photo credits:
ACAP, BCC, BCP, Central Zoo, MCAP, SCP, GCAP, KCC
Cover photo: Radio collaring of tiger in Parsa National Park, Photo by: Dr. Neil Carter, University of Michigan
Back cover photo: Bhujung village, Annapurna Conservation Area, Photo by: Nicolas Cegalerba & Joanna Szwemberg/NTNC

NTNC

ANNUAL REPORT

2021

FOREWORD

With activities largely affected by Covid-19, this year was another challenging year for conservation overall. Tourists and visitor numbers were at lowest points in recent history—overall more than 97 percent down compared to pre-covid times across NTNC-managed conservation areas. As a consequence NTNC's revenue streams and its capacity to invest in conservation and in protected-area communities had to suffer tremendously. Our own resilience was to be tested.

However despite the difficult times, we remained steadfast to ensure that the many decades of valuable work put in to nature conservation was not reversed. This was not easy, with depleting organizational resources on one hand, and with increased pressure on Nepal's protected area management, arising from Covid-19's social and economic repercussions on people's lives.

Much of our regular programmes had to be downsized so that priorities could meet some of the more pressing issues of the day. On the ground we worked hard to ensure that protection measures for many threatened species and their natural habitats were not compromised in anyway. This was backed by prioritizing wildlife research and monitoring capacities, forest patrolling and wildlife crime control initiatives, and human-wildlife coexistence-building measures. Together with this we continued to incentivize green growth and strengthen community resiliency, lobby with policy makers for wildlife- friendly futures, and build on collaborations and partnerships for nature and sustainability, both inside and outside Nepal.

We signed the accreditation master agreement with the Green Climate Fund which opens up NTNC's access to critical funding to improve Nepal's capacity to respond to climate vulnerabilities and build future resilience and support systems. The nation's first wildlife hospital dedicated to wildlife health, disease diagnosis and treatment was brought to operation. In response to the closure of the Central Zoo for a major part of the year, we started the Adopt-an-Animal campaign to develop public-to-personal accountability for zoo animals. Across our working areas we continued to invest in the effectiveness of community-based institutions. On the ground NTNC-led research innovations and findings keep delivering science-backed resources for the nation's scientific community, conservation managers and policymakers.

What has been very clear from our experience of the Covid-19 pandemic is that future partnerships and collaborative actions for nature are going to increasingly matter. To counter challenges that transcend borders and disciplines there is a need to develop greater consensus of the linkages between the health of humans, wildlife, natural environments and economies. Understanding the complexity of this sensitive interface between all life forms and their ecosystems will call for better acknowledging of the problem, leadership and collective resolve. And with climate-related exigencies becoming more and more explicit by the day, the way future societies and peoples mobilize, produce, consume, and create value will demand increased capacities and investments for green growth and clean technologies, while putting in place better disaster risk management and preparedness systems. For this to happen climate vulnerable nations like Nepal, with its own development aspirations, will need much more support from the industrialized world.

NTNC remains steadfast in its commitment of protecting and promoting the natural heritage of the world. We continue to be driven by conservation science and community values on the ground and remain a trusted partner of the Government of Nepal. Together with our national and international partners our actions for biodiversity, planet and people, continue to bring significant contributions to achieving the targets set out in the nation's 15th Plan and accelerating the achievement of the SDGs.

The present report is reflective of our collective efforts to promote and better integrate science, nature and people. I would like thank all those who work in one way or another for a healthy planet. Special appreciation goes out to the Trust's entire staff family, NTNC's Governing Board of Trustees, our partners in government, particularly the Ministry of Forests and Environment, the Department of National Parks and Wildlife Conservation, the Department of Forests and Soil Conservation, security personnel from the Nepal Army and Nepal Police, our conservation partners and donors at home and abroad, including the many protected area communities and people who make daily efforts to mainstream nature conservation for Nepal's prosperity. Together I hope our impact grows.

Sharad Chandra Adhikary
Member Secretary

ACRONYMS

ACA/P	Annapurna Conservation Area/Project
AEPC	Alternative Energy Promotion Center
APF	Armed Police Force
APU	Anti-poaching Unit
BaNP	Banke National Park
BCA	Blackbuck Conservation Area
BCC	Biodiversity Conservation Center
BCF	Barandabhar Corridor Forest
BCN	Bird Conservation Nepal
BCP	Bardia Conservation Program
BNP	Bardia National Park
BZ	Buffer Zone
BZCF	Buffer Zone Community Forest
BZCFUG	Buffer Zone Community Forest User Group
BZMC	Buffer Zone Management Committee
BZUC	Buffer Zone Users Committee
CAMC	Conservation Area Management Committee
CAMOP	Conservation Area Management Operation Plan
CAPA	Community Adaptation Plan of Action
CBAPU	Community Based Anti-poaching Unit
CDV	Canine Distemper Virus
CE	Conservation Education
CF	Community Forest
CFOP	Community Forest Operational Plan
CFUG	Community Forest Users Group
CGI	Corrugated Galvanized Iron
CHAL	Chitwan-Annapurna Landscape
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNP	Chitwan National Park
DAE	Direct Access Entity
DAO	District Administration Office
DCC	District Coordination Committee
DFO	Division Forest Office
DNA	Deoxyribonucleic Acid
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forests and Soil Conservation
DWS	Drinking Water System
EBC	Elephant Breeding Center
EEHV	Elephant Endotheliotropic Herpes Virus
EIA	Environmental Impact Assessment
EMMP	Environmental Monitoring and Management Plan
FMD	Foot and Mouth Disease
FMSC	Forest Management Subcommittee
FoZ	Friends of Zoo
FY	Fiscal Year
GBC	Gharial Breeding Center
GBV	Gender Based Violence
GCA/P	Gaurishankar Conservation Area/Project
GESI	Gender and Social Inclusion
GFC	Green Force Club
GoN	Government of Nepal
GPS	Global Positioning System
HDPE	High Density Polyethylene
HH	Household
HMsC	Homestay Management Subcommittee
HTC	Himalayan Tiger Foundation
HWC	Human Wildlife Conflict
I/NGO	International/Non-Government Organization
ICDP	Integrated Conservation and Development Program
IDA	International Development Assistance
IEE	Initial Environmental Examination
IGA	Income Generation Activities
IUCN	International Union for Conservation of Nature
IWT	Illegal Wildlife Trade
KCC	Koshi Conservation Center
KrCA	Krishnasar Conservation Area
KTWR	Koshi Tappu Wildlife Reserve
LHW	Livestock Health Worker

M/ICS	Metallic/Improved Cooking Stove
MCA/P	Manaslu Conservation Area/Project
MITFE	Ministry of Industry, Tourism, Forest and Environment
MoFE	Ministry of Forests and Enviornment
MSFP	Multi-stakeholder Forestry Program
NA	Nepal Army
NTB	Nepal Tourism Board
NTFP	Non- Timber Forest Product
NTNC	National Trust for Nature Conservation
OPD	Outpatient Department
PA	Protected Area
PCR	Polymerase Chain Reaction
PNP	Parsa National Park
PV	Photovoltaic
PVC	Poly Vinyl Chloride
RM	Rural Municipality
RRT	Rapid Response Team
SAWEN	South Asia Wildlife Enforcement Network
SCP	Shukaphanta Conservation Program
SDW	Safe Drinking Water
ShNP	Shuklaphanta National Park
SLC	Snow Leopard Conservancy
SLCSC	Snow Leopard Conservation Subcommittee
SMART	Spatial Monitoring and Reporting Tool
TAAN	Trekking Agencies' Association of Nepal
TAL	Terai Arc Landscape
TAR	Tibetan Autonomous Region
TMSC	Tourism Management Subcommittee
TX2	Tiger Doubling Goal by 2022
UC	Users Committee
UCO	Unit Conservation Office
USAID	United States Agency of International Development
USFWS	United States Fish and Wildlife Service
VCBC	Vulture Conservation and Breeding Center
WWF	World Wildlife Fund for Nature
ZSL	Zoological Society of London

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ABOUT NTNC PROJECTS

MOUNTAINS

ANNAPURNA CONSERVATION AREA PROJECT (ACAP)

Launched in 1986, the Annapurna Conservation Area Project (ACAP) is the largest undertaking of NTNC. ACA is also the first 'Conservation Area' and largest 'Protected Area' in Nepal covering an area of 7,629 sq. km. It covers 5 districts and includes 15 rural municipalities. Together with its remarkable biodiversity, with 1,352 plants, 128 mammals, 518 birds, 40 reptiles and 23 amphibians species, it is also home to some of the most well-known mountains in Nepal where diverse cultures and peoples reside. This makes it an area of high eco-system sensitivity and the country's top trekking destination. It is here where NTNC pioneered the ICDP model which integrates biodiversity conservation and sustainable development through maximizing community engagement, ownership and opportunity.

MANASLU CONSERVATION AREA PROJECT (MCAP)

Manaslu Conservation Area (MCA), declared on December 28, 1998 is the second conservation area to come under NTNC management. MCA encompasses an area of 1,663 sq. km. of Tsumnubri Rural Municipality, with all its seven wards except Sirdibas adjoining the Tibetan Autonomous Region of China. Located in the northern part of the Gorkha District, the area is made up of two major mountain valleys—Tsum in the east and Nubri in the west. Ecologically, MCA is home to a diverse range of rare flora and fauna, also serving as a healthy habitat for the snow leopard and its prey. Socio-culturally people are of Tibetan origin who follow Buddhism, observing a profound sense of wildlife compassion, notably in Tsum valley. With far-flung communities living in pristine wilderness, NTNC has replicated the successful ICDP model of ACA in MCA.

GAURISHANKAR CONSERVATION AREA PROJECT (GCAP)

Gaurishankar Conservation Area (GCA), declared on January 11, 2010 is the third conservation area under NTNC management. GCA covers an area of 2,179 sq. km. encompassing two municipalities and eight rural municipalities in three districts, namely, Sindhupalchok, Dolakha and Ramechhap. The area serves as a biological corridor connecting two crucial protected areas of the country, Sagarmatha National Park and Langtang National Park. Together with its interesting faunal diversity, the area is home to 695 types of floral species and 16 major vegetation types. The region is rich in water resources and is the catchment of Khimti, Bhotekoshi, Sunkoshi, and Tamakoshi rivers that are major water sources for large hydropower projects in the country. To sustainably manage the richly resourced area NTNC has replicated the success of its ICDP model in GCA also.

KATHMANDU VALLEY

CENTRAL ZOO

The Central Zoo, located in Jawalakhel, Lalitpur is the oldest zoo in Nepal, its origination dating back to 1932 as a private collection of late Rana Prime Minister Juddha Shumser JBR. After it came under the Government of Nepal in 1956, its management was eventually entrusted to NTNC in 1995. Covering an area of 6 ha, today, the zoo houses more than 1100 animals of 112 different species of mammals, birds, reptiles and fish. The zoo is a centre for recreation, conservation education and wildlife research. Already more than 100,000 students from more than 300 schools inside Kathmandu Valley are a part of our Friends of Zoo (FoZ) membership-based conservation education programme. Today the zoo has also become a focal point for rescue, rehabilitation and treatment of wild animals from in and round Kathmandu Valley, and it continues to promote animal welfare, conservation learning and environmental activism among all sections of the society.

TERAI

BIODIVERSITY CONSERVATION CENTRE (BCC)

Biodiversity Conservation Center (BCC), formerly known as Nepal Conservation Research and Training Center (NCRTC), was established in 1989 to conduct biological research and monitoring in the lowland (Terai) protected areas of Nepal. BCC is among the largest and oldest undertaking of NTNC, and over time, it has been at the forefront of Nepal's milestone achievements in conservation—increase in threatened and endangered wildlife species such as Royal Bengal tiger, Greater one-horned rhinoceros, Asian elephant; restoration of wildlife habitats and key biological corridors; and significant increase in participation of local communities in conservation. Although the centre's services extend across Nepal, it's support presently concentrates on providing technical proficiency to Chitwan National Park, Parsa National park and Koshi Tappu Wildlife Reserve for wildlife management activities like wildlife translocation, survey of flagship species, ecological research within and outside the park, among others.

BARDIA CONSERVATION PROGRAMME (BCP)

NTNC started engaging in Bardia National Park in 1986 to monitor the first batch of translocated rhinoceros from Chitwan National Park. Subsequently, Bardia Conservation Programme (BCP) was launched in 1994 as a regular project of NTNC focusing on biodiversity research and sustainable community development in the western lowlands. Its role particularly in wildlife research and monitoring, habitat and corridor restoration, and capacitating local institutions have been key for the increase of endangered wildlife species. Today the Barida-Banke complex is seen to have the highest density of the Royal Bengal tiger among Nepal's protected areas today. BCP works mainly in three protected areas: Bardia National Park and its buffer zone, Banke National Park and its buffer zone, and Blackbuck Conservation Area (BCA); including biological corridors of Khata, Karnali, and Kamdi, and adjoining community forests.

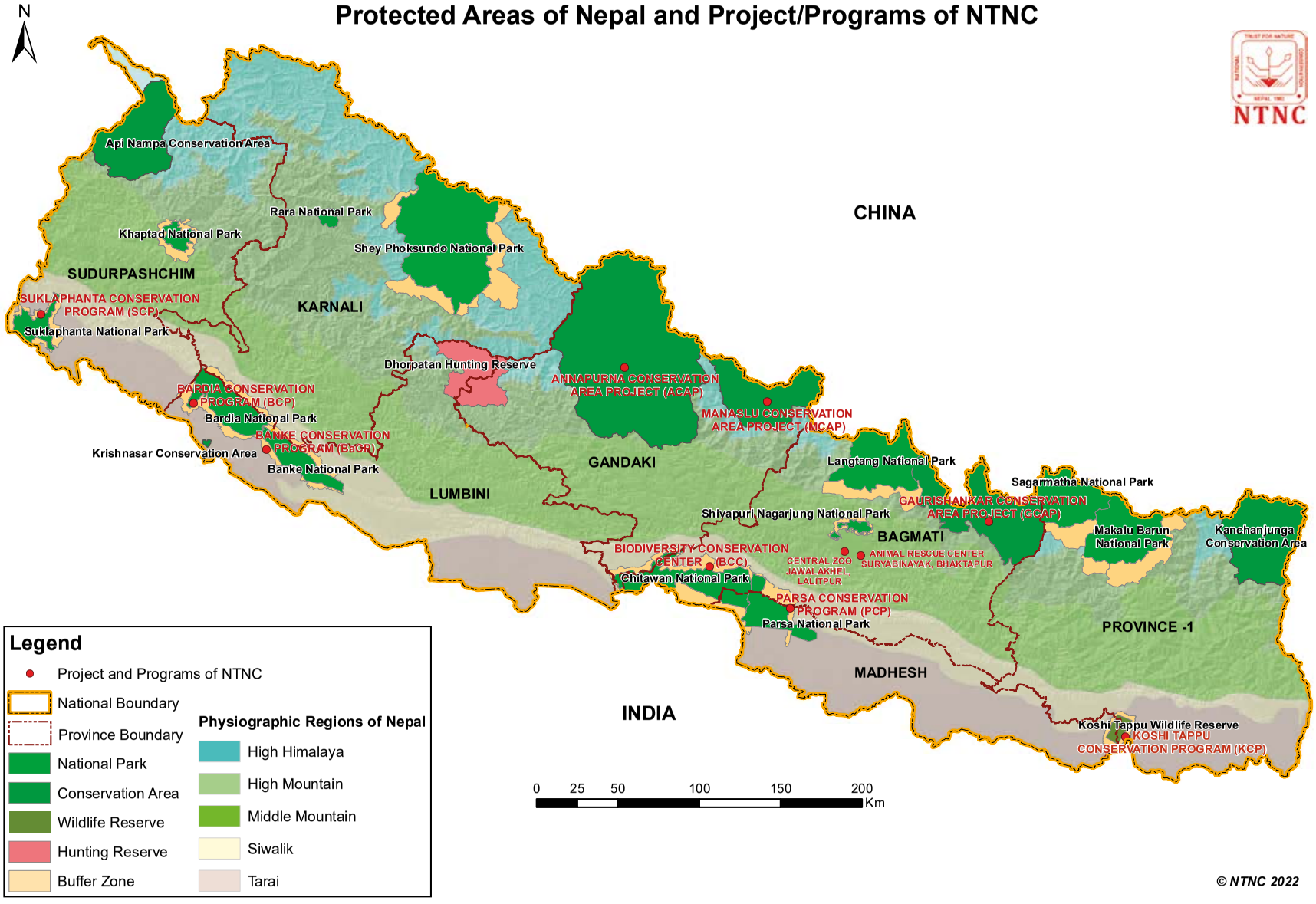
SHUKLAPHANTA CONSERVATION PROGRAMME (SCP)

NTNC started its conservation in the Shuklaphanta National Park (ShNP) in 1999, mainly focusing on biodiversity conservation along with research and monitoring. SCP's main objective is to safeguard endangered wildlife species and their habitats in and around ShNP, and to improve the livelihood of marginalized communities around the park premises. The park is known to have the biggest patch of continuous grassland in Nepal and holds the largest herd of swamp deer in Asia. Serving as a remarkable space for rhinos, tigers, leopards, and other prey species, together with the unique indigenous cultures, ShNP represents the glory of far western Nepal. SCP's programmes are focused in Shuklaphanta National Park (ShNP) and its buffer zone along with the Laljhadi and Branhadev Corridors.

KOSHI CONSERVATION CENTER (KCC)

Koshi Conservation Center (KCC) is NTNC's eight and most recent project under operation. It was set up as independent project officially from September 2021. Prior to that, the Trust's Koshi-related operations were managed from its Biodiversity Conservation Center (NTNC-BCC) office in Sauraha, Chitwan. A dedicated project focusing on Koshi Tappu region now ensures NTNC's physical presence across all the protected areas in the Terai region of Nepal, extending much necessary conservation support into eastern Nepal, where human-elephant conflict are the severest in the country. The project is meant to support the Department of National Parks and Wildlife Conservation (DNPWC) and local communities enhance the conservation value of Koshi Tappu Wildlife Reserve (KTWR)—a 175 square kilometre protected area situated in the Saptakoshi River plain of south-eastern Nepal that serves as a prime habitat for diverse wildlife and wetland ecosystems.

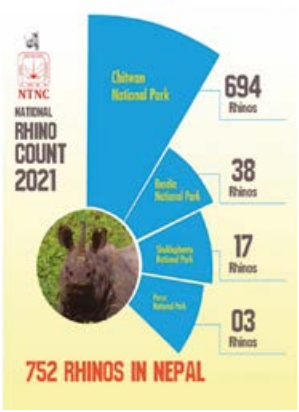
Protected Areas of Nepal and Project/Programs of NTNC



NEWSLINE

NATIONAL RHINO COUNT

The National Rhino Count 2021 has updated Nepal's latest one-horned rhinoceros population to 752 individuals. Out of these 694 are in Chitwan, 38 in Bardia, 17 in Shuklaphanta, and 3 in Parsa National Parks and their surrounding areas. This marks an increase of 107 rhinos compared to the pervious census in 2015 that had counted 645 rhinos in total (605 in CNP, 29 in BNP, 8 in ShNP, and 3 in PNP).



The greater one-horned rhinoceros is listed as a protected animal by National Parks and Wildlife Conservation Act (1973) and is also listed in CITES Appendix-I since 1975. The Department of National Parks and Wildlife Conservation and the Department of Forests in partnership with conservation organizations and local communities conduct rhino count every 4 to 5 years to find out the population status and evaluate the effectiveness of management interventions. NTNC has been supporting the Government of Nepal in its rhino counting initiative right since it was started in 1994. With no more than 3500 one-horned rhinos estimated in the wild, Chitwan National Park holds the second largest one-horned rhino population in the world after Kaziranga National Park in Assam, India.

OTHER SPECIES COUNT

- **Wild water buffalo *(Bubalus arnee)*:** Counted 498 individuals in 2021 compared to 441 individuals according to the previous data of 2018. Wild water buffalo are listed as an endangered species globally and nationally. In Nepal the last remaining population of the species is found only in Koshi-Tappu Wildlife Reserve in the eastern part of Nepal.
- **Gaur (*Bos gaurus*):** Counted 388 individuals in 2021, a 16 percent increase compared to 2015. Gaur are the largest existing wild cattle in the world and is a globally vulnerable species. In Nepal, gaurs are limited to the forests of Chitwan-Parsa complex.
- **Swamp deer *(Cervus duvaucelii)*:** Counted 2280 individuals in Shuklaphanta National Park, compared to 2272 in 2020. ShNP is home to the largest population of swamp deer in Nepal.

On the ground 57 elephants were used throughout the counting operation, using direct capture method, with a total of 350 personnel being deployed daily—250 persons every day for 23 days in Chitwan-Parsa, 60 persons for 12 days in Bardia, and 40 persons for seven days in Shuklaphanta.

The census was carried out in March-April and was led by the Department of National Parks and Wildlife Conservation in partnership with the Department of Forests and Soil Conservation, Nepal Army, buffer zone user committees, community forest user groups, division forest offices, local-level institutions and user groups, and tourism stakeholders, with financial and technical support from NTNC, WWF Nepal, and ZSL Nepal. The U.S. Fish and Wildlife Service also partially supported the count in collaboration with NTNC.

FIRST OF ITS KIND WILDLIFE HOSPITAL IN THE COUNTRY OPEN

To ensure specialized veterinarian services for Nepal's wildlife, a dedicated wildlife hospital has been established this fiscal year in the eastern sector of Chitwan National Park in the joint collaboration of DNPWC and NTNC. Built at a budget of little over NPR 30.90 million, the Government of Nepal and NTNC have provided primary funding, together with Denver Zoo (Kaite Adamson Conservation Fund), WWF Nepal and Wildlife Veterinarians International. The hospital will serve as a center for injured, diseased and orphaned wildlife while also acting as knowledge hub for understanding wildlife diseases and enhancing research capacity. Already a team of dedicated veterinary personnel and wildlife technicians have been provisioned and a wildlife hospital management operations procedures prepared.

Comprising of a two-storey building, the hospital has eight rooms with OPD facility, lab, operation theatre, administration, dispensary, staff room and a meeting room. It is equipped with a portable X-ray machine, ultrasound machine, automated haematology analyser for blood testing, automated biochemistry analyser machine, lab-based microscopes among other equipment. The operation theatre is equipped with multiparameter patient monitoring system and gaseous anaesthesia, services that are necessary for effectively diagnosing and treating wildlife.

The hospital has already started receiving wild animals that are injured, orphaned or diseased from all over the country. To-date it has provided services to several disabled species including: tiger, leopard, jungle cat, rhino, spotted deer, barking deer and various bird species. Currently there is one old and injured tiger, one blind leopard, two orphaned rhino calves, two orphaned barking deer fawns, and two confiscated spotted deer fawns that are being cared for at the facility. Animals that are deemed fit after care and treatment are released back into the wild. A holding facility with a capacity for two, focusing on tigers and leopards, is presently under construction in the immediate vicinity of the hospital.

SATELLITE COLLARING OF TIGERS AND SNOW LEOPARDS

We radio collared two tigers in Parsa and Bardia to monitor and understand behavioral response of tigers towards linear infrastructure. Vehicle wildlife collision has become a leading cause of unnatural wildlife deaths in Nepal today with tigers whose home range are next to highways facing increased threats. The study is being conducted under the leadership of DNPWC and in collaboration with IUCN Nepal and University of Michigan. Given the rapid expansion of linear infrastructure projects underway in the Terai, there is an urgent need to address the impact of highways on tiger habitat and connectivity, while identifying potential mitigation measures. Analysis of movement and activities of the tigers will yield crucial data on how it responds towards highway and traffic movement. This will be important to convince policy makers to adopt wildlife-friendly structures while developing and implementing any linear infrastructure projects that cut through prime wildlife habitats.

Likewise two snow leopard male individuals were fitted with GPS satellite collar in Shey Phoksundo National Park's Saldang area, at an altitude of about 3925 meters. The exercise was carried out through the collaboration of NTNC and WWF Nepal, with support from DNPWC. Information collected from the satellite collar will provide insights to the behavior of the rare and elusive snow leopard: its habitat use, hunting behavior, social behavior, response to human disturbances and its adaptation strategies in harsh and sensitive terrains. Based on the data collected the study will help devise new long-term conservation approaches, strategies and actions necessary for survival of the apex predators of the high mountains.

OCCUPANCY SURVEY OF TIGERS AND THEIR PREY BASE OUTSIDE PROTECTED AREAS

The two major tiger populations of Nepal are found in Chitwan-Parsa complex and Banke-Bardia complex comprising of 93% of the country's population. However, these two populations have very low connectivity due to degraded habitats and extreme human disturbances in the forest areas between them. Despite the degraded and fragmented habitats, establishing biological corridors can help enhance connectivity between the two complexes. During the Presidential Chure Survey conducted in 2019, we discovered presence of two individual tigers outside protected areas, in the forests of Palpa and Rupandehi.

PRIME MINISTER IN THE GLOBAL TIGER DAY CELEBRATIONS AT NTNC

The Global Tiger Day 2021 national-level celebrations was held at the NTNC central office, with the Rt. Hon'ble Prime Minister Sher Bahadur Deuba taking part as chief guest. Prime Minister Deuba is also patron of NTNC, as well as chair of the National Tiger Conservation Committee, the main organizer of the event. Other notable attendees included cabinet ministers, senior political leaders, and the ambassadors of India and Russia. Together with discussing the science and day-to-day initiatives being taken on the ground to ensure that tigers survive and thrive for future generations, the event speakers also revisited Nepal's tiger journey to St. Petersburg, Russia, in 2010, where all 13 tiger-range countries of the world had made a historic commitment to double their tiger population (TX2) by 2022. Tiger conservation advances and experiences from India and Russia were also shared and the power of collective will, commitment, and strong leadership was attributed to Nepal's gains made in tiger conservation. Keeping with the TX2 target, Nepal is among the first of tiger-range countries on the way to doubling its tiger population, from 121 tigers in 2010, to 235 in 2018. At the event closing, NTNC Chairperson Dr. Krishna Prasad Oli handed over a token of appreciation to the Rt. Hon'ble Prime Minister for his leadership and commitment made for tigers.

Currently NTNC has been implementing project activities in the area through funding from USFWS. Among the activities in the project, the first stage occupancy survey of the area has been completed. The survey is based on the encounter and observation of signs of wildlife species, invasive species and human disturbances. The survey covered the area from Lother in the east to Banke in the west. The study area was divided into 35 grids of 15*15 km^2 that was also used in the occupancy survey during the National Tiger Survey 2018 for consistency of the results. The team also collected scat samples primarily for DNA analysis to confirm the origin of the tigers in the area. The DNA samples are currently being processed in the molecular lab at NTNC-BCC.

PROBLEM TIGER MANAGEMENT

13 problem tigers had to be brought under control during this fiscal year by our rescue teams in Chitwan and Bardia. Rescue operations were made mostly in response to conflict incidents with humans. In total 16 persons lost their lives from tiger attacks. During the same period, across the country, NTNC technicians made a total of 471 wildlife rescue operations. Wildlife rescue missions are specialized operations that are highly pressure-charged and sensitive. They require careful preparation, coordination and mobilization of large teams, often for long hours, and their execution entails being swift and professional, with the capacity to make off-the-cuff decisions.

Monitoring of problematic tigers, including problem elephants, continues by deploying camera traps and satellite radio collars that help protected area authorities and rescue teams track problem animal movement and behavior better, anticipate potential conflict sites, take emergency actions, minimize encounters and strengthen future human-wildlife coexistence measures.

ADOPT-AN-ANIMAL CAMPAIGN LAUNCHED AT CENTRAL

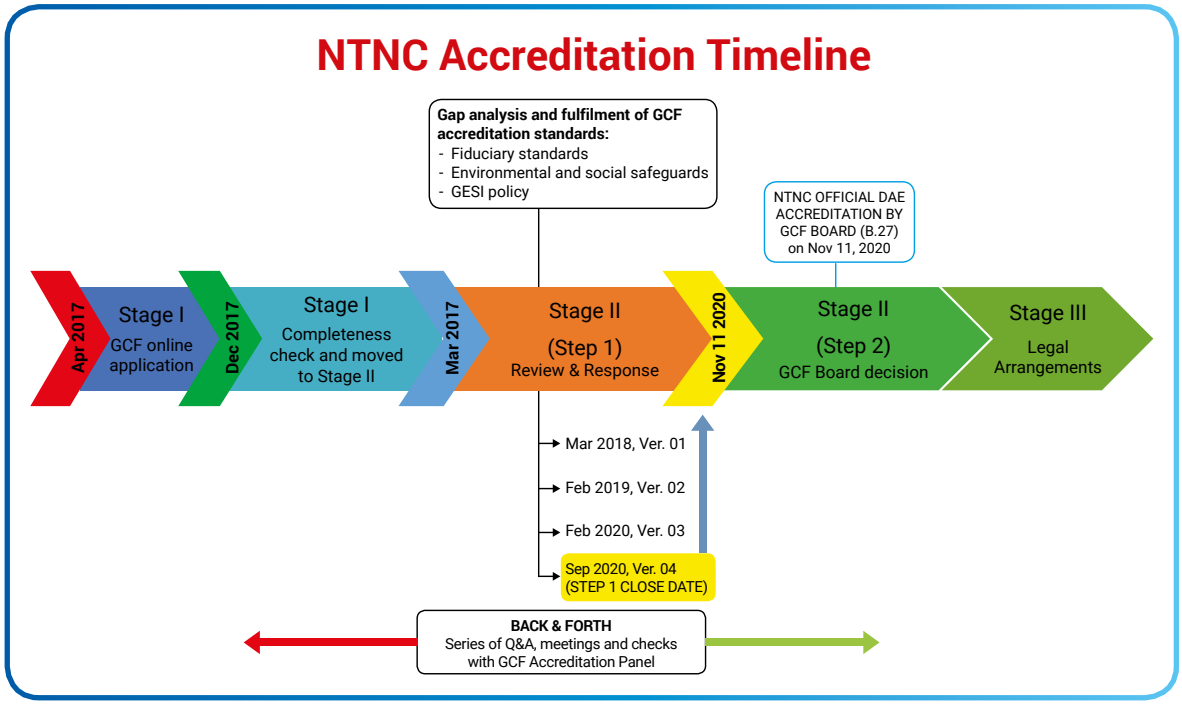
This year marked 25 years since NTNC was first charged with the responsibility to manage the Central Zoo, the oldest and only national-level zoo of Nepal. Ever since the zoo's management was handed over to NTNC in December 1995 the six hectare zoo facility has established itself as a self-sustaining go-to centre for wildlife education and environmental collaboration, especially among the urban youth. Its role in imparting ex situ conservation values, wildlife rescue and treatment, animal welfare, conservation education and recreational learning, along with scientific research continues to remain paramount.

Beginning with the highest office of the government, the Adopt-an-Animal campaign has been launched to celebrate 25 years of the Central Zoo under NTNC management. The campaign aims to create an opportunity for interested individuals, groups or organizations to promote a circle of responsibility, inclusiveness and agency towards building a personal relationship with wildlife. The campaign's timing is also important from the perspective of COVID-19's financial impact on the zoo management, given that it was completely closed to visitors for nine full months last year. By adopting an animal of your choice, you are pledging support to meeting its diet and health needs, enclosure management and enrichment facilities, and other zookeeping and specialized services for one year. You can adopt an animal of your choice directly from our website.

Keeping with the silver jubilee celebrations, this year we launched the 'Adopt-an-Animal' campaign targeting animals at the Central Zoo. At the launching programme organized on 03 March, former Prime Minister K.P. Sharma Oli and his wife adopted the first animal of the campaign, a one-horned rhinoceros. Joining the prime minster were seven other adoptees, among whom were the then sitting Minister for Forests and Environment Mr. Prem Bahadur Ale, who adopted an Asian elephant, and a ten-year old student Vivan Singh Basnet, who adopted a love bird. Given the campaign's wide reception both from inside and outside Nepal, in the future NTNC plans to extend its campaign to include animals outside the zoo's collection, especially focusing on rescued or diseased animals from across Nepal who need special support and care.

GREEN CLIMATE FUND ACCREDITATION MASTER AGREEMENT SIGNED

On 04 June 2021, NTNC and the Green Climate Fund signed the Accreditation Master Agreement, which going forward will officially authorize NTNC to access and mobilize financial resources directly from the GCF, the largest global fund dedicated to tackling climate change. The agreement was signed by Mr. Sharad Chandra Adhikari, Member Secretary of NTNC and Mr. Pa Ousman Jarju, Director, Division of Country Programming of GCF. The agreement is a major milestone since it opens NTNC's entry into the active stage of realizing low-emission and carbon-resilient programmes and projects necessary to combat climate change and its increasing impacts, particularly on the most vulnerable sectors of Nepal. Together with the Ministry of Finance, which is the GCF National Designated Authority, NTNC is currently in the process of preparation of the adaptation-focused project: 'Building climate resilience of forest-dependent communities through enhanced livelihood opportunities and local capacity in Karnali Province, Nepal'.



AGREEMENT WITH ZSL ON PROJECT 'TIGERS IN NEPAL: PREPARING FOR THE IMPACTS OF CLIMATE CHANGE'

NTNC Member Secretary Mr. Sharad Chandra Adhikary and ZSL Nepal Country Representative Dr. Hem Sagar Baral officially signed an agreement to implement the livelihood component of the IUCN funded project titled 'Tigers in Nepal: Preparing for the Impacts of Climate Change'. The agreement aims at strengthening tiger conservation initiatives across the western Terai landscape of Nepal. ZSL Nepal will provide the fund, with NTNC undertaking the role of project implementation. The project will primarily focus on human-wildlife conflict mitigation measures in the northern buffer zones of Shuklaphanta National Park and in Banke National Park to help reduce threats to tigers while providing opportunities for the buffer zone forest-dependent communities to build economic resilience in the context of changing climate. The duration for the implementation of the project is six months, with a total budget of around NPR 6.4 million.

MoU SIGNED WITH KATHMANDU METROPOLITAN CITY FOR URBAN ECOSYSTEM AND BIODIVERSITY STUDY AND PLAN PREPARATION

NTNC and Kathmandu Metropolitan City (KMC) have signed a memorandum of understanding to study the current status of ecosystem and biodiversity in Kathmandu city. The signing was held at a function in Rastriya Sabha Griha (city hall) between KMC Chief Administrative Officer Mr. Rajeshwor Gyawali and NTNC

Member Secretary Mr. Sharad Chandra Adhikari. Present at the signing were also the Mayor of KMC, Mr. Bidya Sundar Shakya, Deputy Mayor Ms. Hari Prabha Khadgi and Vice Chairperson of City Planning Commission Mr. Saroj Basnet. The MoU stipulates for the preparation of necessary policy, strategy and action plans for KMC to strengthen its efforts in improving ecosystem and biodiversity more systematically and scientifically. The task will require NTNC to undertake research and prepare a detailed plan for the conservation and improvement of urban forests and green spaces within Kathmandu city, including equipping KMC with scientific measures for its planned public park and green development projects. With Kathmandu Valley's growing urbanization, this will be necessary to enhance KMC's institutional capacity and vision for building green spaces and sustainable cities, linking urban ecosystems and biodiversity with urban communities, developing environmental-friendly public parks and gardens, forests and green belts along river banks.

SPECIES CONSERVATION

Stabilising wildlife populations by focusing on conservation of key species is a widely practiced approach. Management intervention also requires narrowing focus in protecting species that are in rapid decline and danger of extinction such as pangolins, vultures, and gharials, among others. Species focused conservation aims to prevent extinction of wildlife species and help stabilise their populations. However, issues that negate the wellbeing of wildlife are dynamic and are triggered by both natural and anthropogenic factors. Habitat degradation, human-wildlife conflict, illegal wildlife trade and climate change are the major threats to species conservation at present and requires a great deal of effort. Species conservation demands technical and financial capability to address these challenges. NTNC's long experience in species conservation continues to contribute to the Government of Nepal's (GoN) conservation efforts while also engaging with the wider social dimensions and generating critical scientific knowledge. Below, we present some important highlights from this year.

SPECIES MONITORING AND TRANSLOCATION

NTNC is a key institution in Nepal that provides expertise in wildlife conservation. With more than 30 years of experience, our focus on species research, captive breeding and translocation continues to be vital for protected areas (PAs) to achieving their conservation goals and enhancing the overall national capacity for biodiversity conservation in Nepal. NTNC's capacity for species conservation continues to grow, as our achievements become milestones of conservation success. Increasing the population of tigers and rhinos, repopulating the gharials and vultures in the wild, and conserving the endangered blackbucks are some of the recent successes from the joint efforts between the Government of Nepal, conservation partners and communities. However, challenges to their conservation continues to persist. NTNC's focus remains in developing local stewardship for wildlife conservation, creating technical capacities and using evidence-based science for conservation at the species level. Monitoring of focal species and management of translocated species continued to be undertaken throughout the year. Annual surveys on the status of gharials, rhinos, *Arna* and Blackbuck were made jointly with the park staff, CBAPU members, security personnel and local stakeholders. Some of the important interventions in this area included:

National Rhino Count

The greater one-horned rhinoceros (*Rhinoceros unicornis*) is one of Nepal's iconic and vulnerable species. Chitwan, Bardia and Sukhlaphanta National Parks are the prime habitat for these rhinos. Nepal counts its rhino population every 4-5 years where NTNC is one of the key partners and field level executers of this undertaking.

The counting method used (direct capture) is laborious and intensive, but accurate. Potential rhino habitats (grasslands, wetlands, floodplains, Sal forest) in each of the rhino-bearing protected area is divided into several blocks. This time 57 elephants were used throughout the counting operation, with a total of 350 personnel being deployed daily—250 persons every day for 23 days in Chitwan-Parsa, 60 persons for 12 days in Bardia, and 40 persons for seven days in Shuklaphanta. As part of the counting, survey teams and enumerators sit on elephant backs that move in parallel from one block to another sweeping all potential rhino habitats. During this, rhino are sighted from a distance of 50-100 meters, after which they are carefully observed and identified by sex, age, physical features, health condition, and the surrounding habitat conditions. The particular rhino being identified is then allowed to pass through and kept behind the line of enumerators before recording all the observed data in standard format, which is then analyzed and compared every evening. This avoids the possibility of double count that can result in population over-estimation.

Table: Rhino Population in Chitwan, Parsa, Bardia and Sukhlaphanta National Parks (2021)

SN	Location	Male	Female	Unknown	Adult	Sub-adult	Calf	Pop	Compared to 2015
1	Parsa NP	1	1	1	2	0	1	3	=
2	Chitwan NP	128	174	392	474	95	125	694	+89
3	Bardia NP	14	19	5	31	1	6	38	+8
4	Suklaphanta NP	3	4	10	12	1	4	17	+9
							Total	**752**	**+106**

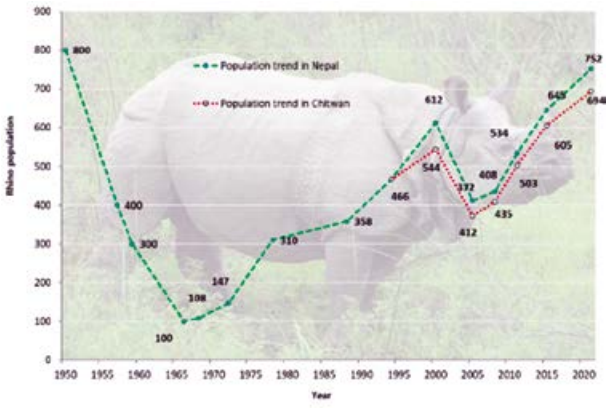
In 2021 Nepal's rhino population counted in Chitwan-Parsa complex, Bardia National Park and Sukhlaphanta National Park was 752. Compared to 2015 this number has increased by 106 individuals. Details of the population is provided in the table:

The greater one-horned rhinoceros is listed as a protected animal by National Parks and Wildlife Conservation Act (1973) and is also listed in CITES Appendix-I since 1975. The Department of National Parks and Wildlife Conservation (DNPWC) and the Department of Forests in partnership with NTNC, WWF Nepal, ZSL Nepal and local communities conduct rhino counts every 4 to 5 years to find out the population status and evaluate the effectiveness of management interventions. With no more than 3500 one-horned rhinos estimated in the wild, Chitwan National Park holds the second largest one-horned rhino population in the world after Kaziranga National Park in Assam, India.

ID-based rhino monitoring

To regularly monitor status of rhino populations and enhance conservation measures, IDs are prepared for individual rhinos based on their distinguishing features such as horn shape, ear notches, body mark, age class, skin folding, etc. Rhino IDs have been prepared and tracked regularly across their natural habitats in Nepal, in, Chitwan, Parsa, Bardia and Shuklaphanta. Besides poaching-related threats and risks of flooding, growing abundance of invasive alien plant species along the flood plains, that are primary rhino habitats, is a cause of increasing concern.

ID-based rhino monitoring is done year round. For convenience, the monitoring area is divided into different blocks. It is conducted using elephants in which field teams systematically sweep the whole study area at regular intervals while documenting necessary data. Each team member is equipped with digital cameras, GPS receiver and datasheet specifically designed for the monitoring method. This year we identified:



- In Chitwan National Park's eastern sector (from Pratappur to Dumariya post and Barandabhar forest, extending into Parsa National), we identified 84 individual rhinos.
- In Bardia National Park's Karnali flood plain area and Babai valley, 38 rhino IDs prepared.
- In Shuklaphanta National Park IDs are prepared for 17 rhinos. Major habitats of rhino in ShNP include the floodplain of Chaudhar and Mahakali Rivers, grasslands, and water holes in Sal forest.

To ensure that individual rhino ID profiles are more robust and accurate going forward we are planning to create genetic-based ID profiles. A total of 20 dung samples of identified rhinos have been collected this year from the eastern sector of Chitwan National Park. PCR test has been conducted on the samples and the DNA extracts are being safely stored at the NTNC-BCC operated molecular lab. Hereafter genetic sequencing of the DNA extracts for individual genetic ID will be done.

To keep track of rhino mortality rates and determine their cause of death, this year post mortem for 31 rhinos were conducted in Chitwan—most of which were found to be caused by natural events like old age, infighting, injury, accident and disease.

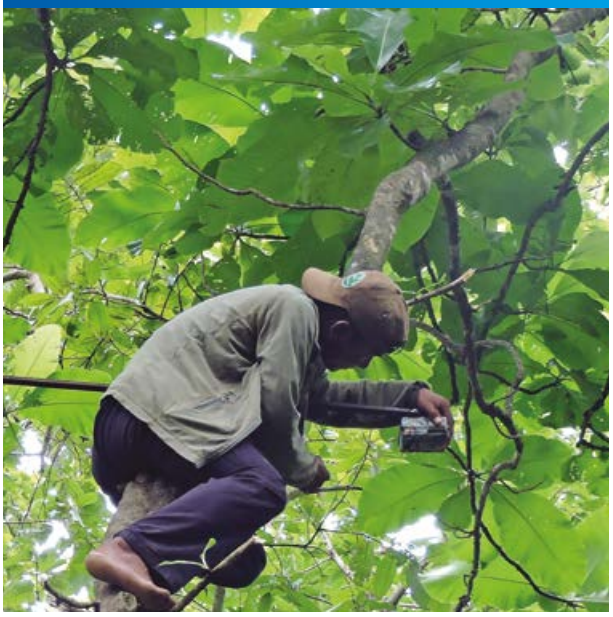
Tiger and prey base survey

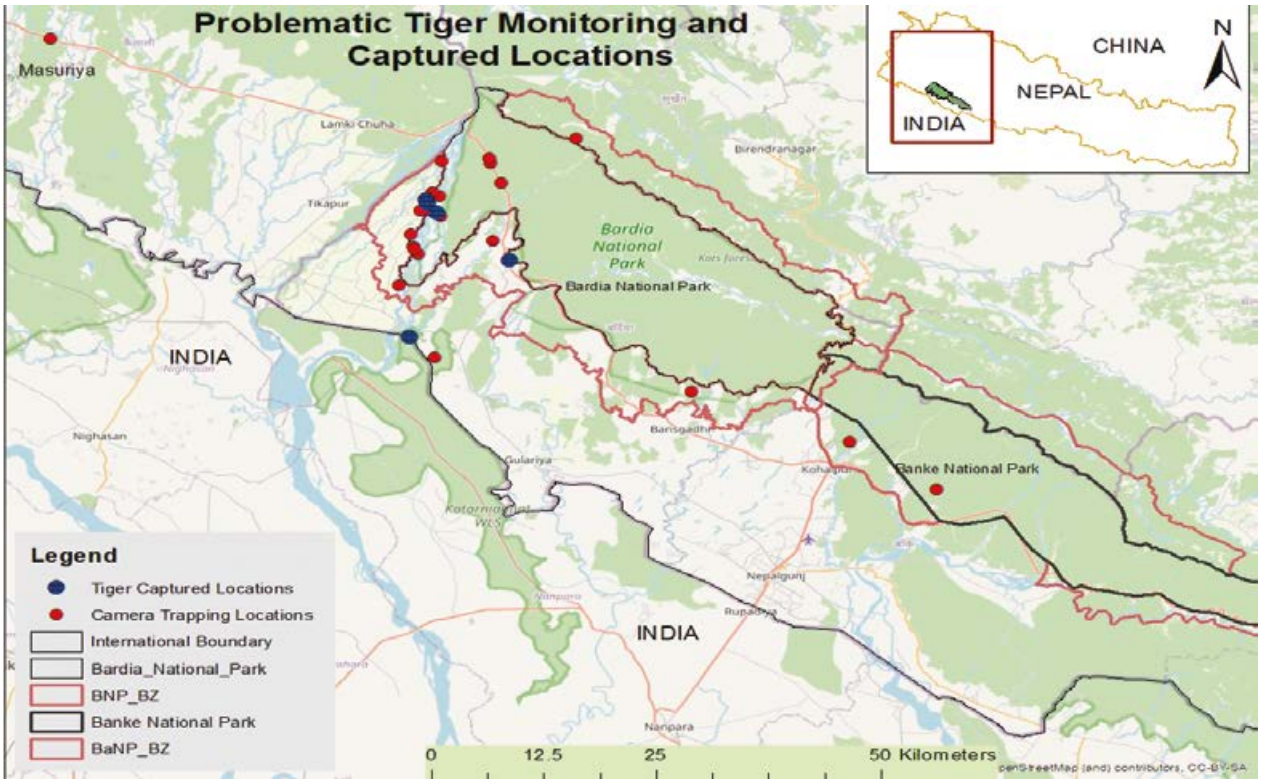
To study the present status and distribution of tiger and their prey base:

- **In Bardia-Banke complex,** camera traps were deployed in 305 locations (262 in Bardia NP and 143 in Banke NP) from 30 December 2020 to 31 June 2021. Tigers were captured from 151 and 44 locations of BNP and BaNP. Tiger population in Bardia-Banke complex according to the national tiger survey in 2018 is 108.
- **In Banke NP tiger prey base survey 2021** was completed following transect line method. A total of 86 transects were surveyed, covering 132.5 km. Prey species (n=89) recorded were Barking Deer (*Muntiacus vaginalis*), Sambar Deer (*Rucervus duvauceli*), Spotted Deer (*Axis axis*), Four-horned Antelope (*Tetracerus quadricornis*), Terai Gray Langur (*Semnopithecus hector*), Rhesus Macaque (*Macaca mulatta*), and Wild Boar (*Sus scrofa*). The combine prey density is 26.90 per km^2 (SE 1.137) in Banke National Park (P=0.88) which is higher than the prey density (11.055 per Km^2) reported previously.
- **In Shuklaphanta NP,** a total of 88 camera trap pairs were installed for tiger survey. For prey density, 80 transects of ~2km length were surveyed. Tiger population in ShNP according is currently 16.

Vertical camera trapping

Besides ground-level camera traps used for tiger and prey base monitoring, we have also deployed 50 automated cameras since June 2019 in Bardia National Park. Here camera traps are set up vertically on trees at a standard height of 7 m from the ground. This is a long-term research programme being conducted to assess prey density and seasonal variation on distribution of prey species in the Karnali floodplain.





Satellite collaring of endangered cats

The use of GPS satellite collar for wildlife monitoring enables protected area managers with necessary tools to further understand different aspects of animal's behavior: habitat use, hunting behavior, social behavior, response to human disturbances, and so on. Based on the satellite information collected we are able to develop effective policies and approaches for its long term survival and management. Besides understanding its behavioral aspects and home range, information from collaring also helps in supporting human-wildlife conflict mitigation measures, as well as informing policy makers to develop wildlife-friendly infrastructure in sensitive areas.

› Royal Bengal Tigers collared in Chitwan-Parsa and Bardia

NTNC, under the leadership of DNPWC and in collaboration with conservation partners and academic institutions conducted a study on the behavioral response of tigers in Chitwan-Parsa complex and Bardia National Park. One male tiger in Parsa and one female in Bardia was fitted with satellite collars in early 2021, with six more planned to be fitted with similar collars in the near future. Based on observation of tiger movements from the satellite telemetry of the female tiger radio collared in Bardia, it was found that this female tiger has used about 5.11 km^2 area of Karnali flood plain during the four-month period. Analysis of movement and activities of the tigers are expected to yield crucial data on increasing highway traffic and linear infrastructure impacts on tiger habitats, their movement and connectivity, changing behaviors and responses.

› Snow Leopards collared in Shey Phoksundo

Similarly, two male snow leopards were fitted with satellite collars in the Saldang area of Shey Phoksundo National Park, at an altitude of about 3925 meters above sea level. Both individuals were adults which is a favorable age group for such studies. The collars are very light in weight to minimize any hindrance in the animal's day to day activity. The initiative is expected to provide valuable information about an animal, whose behavior is still very less understood even to this day.

Snow leopard monitoring in Manang district

Snow leopard survey was conducted this year covering all potential habitats of Manang district. In total 101 cameras were installed in the field for a minimum of 45 days. Camera traps pairs were placed in each grid maintaining a distance of at least 1 km. Sites were selected based on intensive snow leopard sign survey following cliff trails, ridgelines and naturally created corridors, searching for snow leopard activity sites like

movement trails, relic sites (territorial marking sites) and fresh kill sites. Post field operation, camera trap images were screened for snow leopard identification and review, whose process continues. The study was conducted in partnership between NTNC and the Mountain Spirit.

WILD WATER BUFFALO CONSERVATION

National wild water buffalo count

Wild water buffaloes (*Bubalus arnee*) are limited to a pocket population in Koshi-Tappu Wildlife Reserve in the eastern part of Nepal. The floodplains and wide open grasslands of the reserve has been the last stand for the species in Nepal. However, the reserve is in constant pressure from the local communities of the surrounding areas as they forage for various forest products. The main concern is the sheer number of feral cattle that are inside the reserve, increasing risks from infectious disease and contaminating the gene pool of wild buffaloes. In order to monitor this last remaining population of the species, direct head count method is conducted every four years.

The study yielded a total national population of wild water buffaloes to be 498 individuals compared to 441 individuals according to the previous data of 2018. The buffalo population has increased by 12.9% in the last three years.

Wild water buffalo management

About half a century ago, Chitwan was home to a viable population of Wild water buffaloes (*Arna* in Nepali). In an effort to bring back their population in Chitwan and to establish a second population in the country (after Koshi Tappu Wildlife Reserve), 15 individuals were translocated to CNP. Among the 15 individuals, ten females and two males were brought from KTWR while one male and two females were transported from the Central Zoo. This was done to ensure variation in the gene pool.

The translocated animals are kept in an enclosure of 20 hectare built near Padampur in the core area of the Park. The enclosure was constructed with financial support from USAID-Hariyo Ban Program. The purpose of the enclosure is to provide protection against predators like tigers and leopards in order to develop a viable population of the buffaloes before releasing them into the wild. The perimeter of the entire enclosure is reinforced with solar powered electric fence. NTNC-BCC regularly monitors the enclosure while ensuring the well-being of the buffaloes. Grassland and wetlands in the enclosure are periodically managed to secure food and water. During the dry season when grass growth is limited, the animals are fed with supplements. The health of the animals is also closely monitored with NTNC veterinarians on standby for quick intervention.

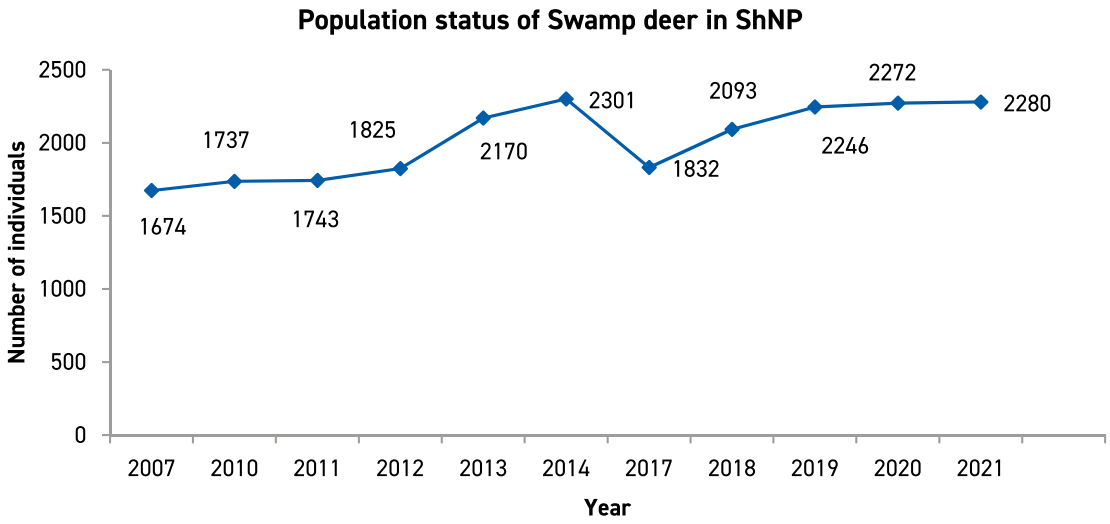
Swamp deer count

NTNC provided technical and ground support to Shuklaphanta National Park for its annual swamp deer count. A total of 2280 individuals were recorded this yea. ShNP is home to the largest population of swamp deer in Nepal, which makes it an area of particular interest for wildlife researchers and tourists alike. Its population is favored by the largest grassland patch in Nepal's Terai along with other productive habitats such as riverine forests. Annual monitoring of swamp deer in ShNP indicates a stable and healthy population over the years.

Gaur count

Gaur (*Bos gaurus*) is the largest existing wild cattle in the world. It is a globally vulnerable species with declining population due to habitat loss and illegal hunting. In Nepal, gaurs are limited to the forests of Chitwan-Parsa complex. It has a high conservation priority because of its limited distribution and the threats they face.

This year the potential seasonal habitat of gaur in Chitwan-Parsa complex was divided into 14 blocks



based on its previous distribution records, discussion with wildlife experts involved in previous count and information collected from daily patrol operations by the park authorities. Gaur population count is mostly conducted from elephant back and monitoring of potential habitats (grasslands and sal forests along the foothills of Chure). Survey teams record group size, sex, age group, time, location, habitat type and activities during observation. As we use the direct head count method there is a high probability of underestimation of their actual population. A total of 388 individuals were counted during the survey.

Gaur population in CNP has increased by 16% compared to the data from the previous count of 2015. Although the species are sexually dimorphic, sub-adult individuals are tricky to identify. They usually prefer habitats with tall grass and thick vegetation and are extremely shy of humans, making it difficult to confirm the sex of most of the individuals observed during the survey. The highest concentration of gaurs was observed in the block between Jarneli and Tamor Taal. Out of 14 survey blocks gaurs were recorded only in 11 blocks.

Management of reintroduced blackbuck

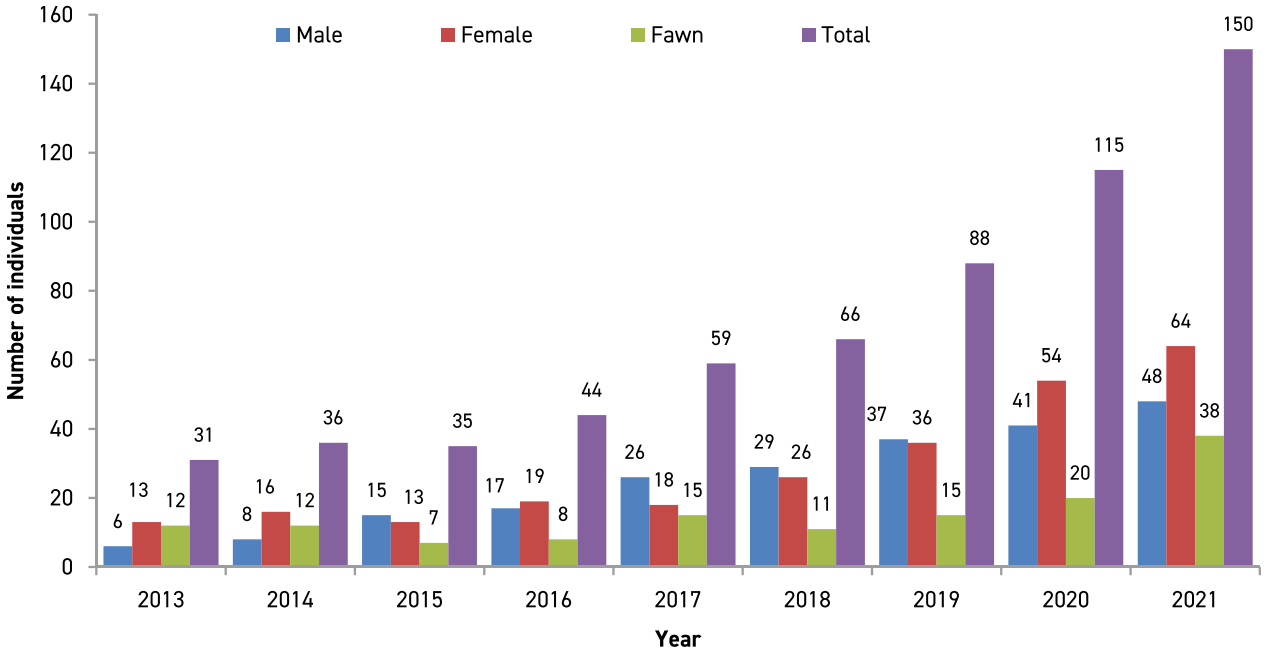
Blackbuck (*Antelope cervicapra*) reintroduction programme in Hirapurphanta of ShNP was initiated in 2012. Since then NTNC-SCP has been actively supporting ShNP in the management of reintroduced

animals. Established with a population of 42 translocated captive animals in the period of 2012 to 2015, the current population of blackbuck has reached 150-plus. The birth of third-generation fawns suggest that the species is well adjusted and successfully breeding, an indication of successful translocation. Currently, the site covers an area of 58.8 ha and the overall management was guided by the site-specific conservation action plan (2016-2020) for blackbuck.

Habitat management inside the enclosure and proper veterinary care for the animals were provided year round. This also included feed supplements along with vitamins and minerals provided regularly. To provide additional forage to the population, leguminous lentils, oat grass, maize, etc. were cultivated inside the enclosure. NTNC has maintained nearly 4500 m access road around the enclosure. Regular maintenance of the fence and removal of unwanted plant species inside the enclosure were other priority activities conducted throughout the year.

Table. Source population of blackbuck being managed in ShNP

Source	Year	Adult male	S-A male	Adult female	S-A female	Yearling	Total
Nepalgunj Mini Zoo	2012	2	4	12	4	1	22
Central Zoo, Jawalakhel	2012	3		2		1	6
Khairapur, Bardia	2015						14
Total							**42**



Fishing cat survey

Fishing cat (*Prionailurus viverrinus*) survey was conducted in the core area of Suklaphanta National Park (ShNP) to assess its distribution patterns and population attributes. Global population of fishing cats are declining and is currently listed in the vulnerable (Vu) category of the IUCN Red List. ShNP is a well-known habitat of the fishing cat. However, detailed status of this species is not yet well assessed. Thus, a systematic study was conducted dividing the core area of the park into 1km^2 grid cells. A set of camera traps were placed in 31 grid cells. Data analysis of the survey is under process and will be reported in the next cycle.

Gharial monitoring

NTNC-BCC conducted Gharial (*Gavialis gangeticus*) monitoring in the Narayani and Rapti rivers of Chitwan which estimated the present Gharial population between 187-214 individuals (101-117 in Rapti and 86-97 in Narayani). The population shows to be declining compared to the results from the last fiscal year, at 224-230 individuals. Efforts to conserve these critically endangered species through the reintroduction programme of the Gharial Conservation and Breeding Center (GCBC) have been successful in Chitwan since the first batch of 50 gharials bred in GCBC was released in the Narayani River in 1981. However, growing threats from river pollution, over fishing, harmful fishing practices, poaching and disturbances in river systems have affected their survival rates. Similar initiatives to restore the Gharial population in the Babai and Karnali rivers of Bardia National Park started with 50 gharials released in the early 1990s continues to be supported by NTNC. The team at NTNC-BCP formed a total of 11 Gharial Guard Groups (3G) with six members in each group in 2017. Patrolling and monitoring of the river system with involvement of 3G members have become instrumental to get information like gharials entangled in fishing nets or determining other causes of death in their respective river segment. The 3G member-based monitoring has supported park systems to discourage illegal activities in river systems and have become an effective means for information gathering, surveillance

and monitoring of freshwater ecosystems. This year 3G members actively monitored gharials and aquatic animals from November to March. They monitored twice a month for six months (n=132 times). The peak monsoon and dry season (May- June) are not monitored since gharials are not very active during these periods. Last year, monitoring in Chepang to Parewaodar segment of the Babai river, recorded 16 Gharials. Data from 1976 to last year show that the population trend of the gharials in the Babai river is irregular with positive spikes in some years but has declined overall. Anthropogenic factors such as contamination of river, overfishing, encroachment, collection of sand and stone have been responsible for the population decline of the Gharial crocodiles. To enhance gharial protection and response, this year we also organized trainings and workshops on:

- **Gharial rescue, release and husbandry training**
  Focusing on techniques related to gharial captive rearing and health, safe capture, handling and release, monitoring and rescue, enclosure design and maintenance, crocodile ecology and population biology, a three-day gharial and mugger capture, handling and release training was conducted by NTNC-BCC at the Gharial Conservation and Breeding Centre (GCBC) in Kasara among 28 participants, mostly GCBC staff and game scouts personnel.
- **River ecosystem management workshop**
  Workshop on river ecosystem management to facilitate knowledge and experience sharing was organized among local leaders of Rapti, Ratnanagar and Gaidakot municipalities, together with for 41 park staff, buffer zone user committee members, nature guides, and conservation professionals. With better insight on existing threats and challenges concerning gharial and river ecosystem management, the participating mayors and deputy-mayors have committed full support from their respective municipalities for strengthening local actions for gharial conservation.

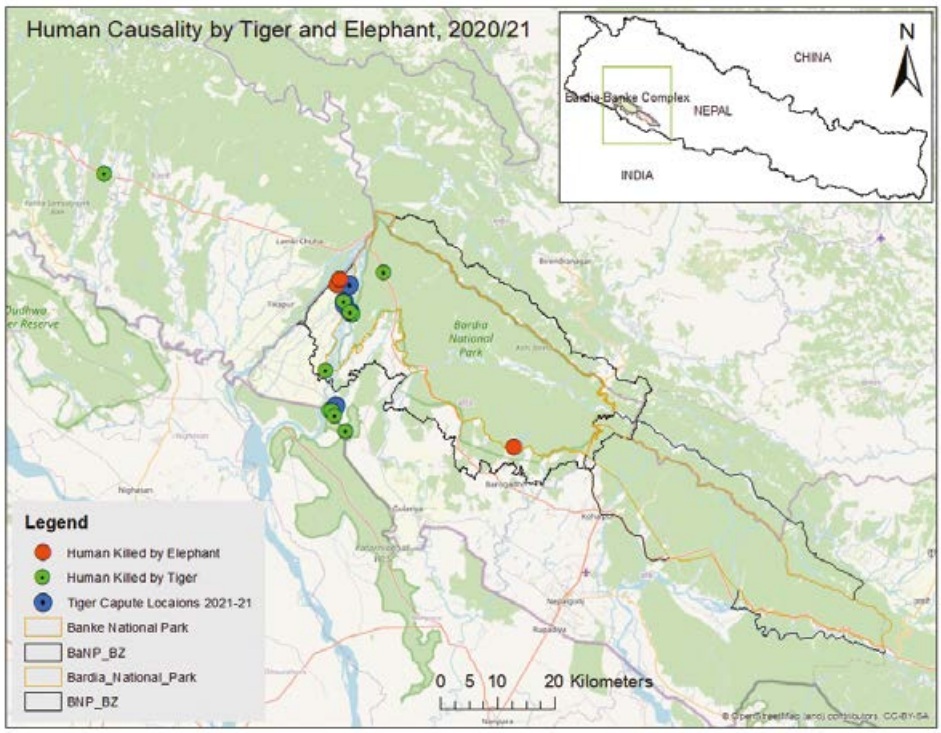
Elephant health camp in Chitwan

In collaboration with CNP authorities and support from partner organizations—Elephant Care International, Golden Triangle Asian Elephant Foundation, Work for Wildlife International and Elephant Health Care and Welfare Emergency Lifeline Fund—we successfully completed a comprehensive health camp for the domestic elephants of Parsa-Chitwan Complex. A total of 132 domestic elephants (56 government owned, 5 NTNC owned and 71 privately owned) were reached. Health services provided included routine health checkups and physical examinations with immediate treatment of wounds or lesions. All the elephants were administered de-worming medications together with essential vitamin and mineral supplements. Furthermore, all the elephants' toe nails were trimmed and cleaned. During the camp, blood samples were collected from all the elephants. Hematological tests are being conducted to detect any abnormalities. The samples will also provide a baseline value of elephant blood components (RBC, WBC, Hemoglobin, Platelets, etc.) which will be helpful to determine abnormalities in future health checkups. Besides this, NTNC has been providing technical support for annual elephant health checkups to both government and privately owned elephants.

HUMAN-WILDLIFE CONFLICT (HWC) MANAGEMENT

Nepal's success in wildlife conservation has naturally given rise to coping challenges among rural communities. Communities living near protected areas and forest edges are the most affected by human wildlife conflict (HWC) that include crop raiding, property damage, human injury and death. Analyses of government data from the last five years shows that the number of cases related to human death and injury are more or less stable (on the higher side) indicating that the level of risk has not declined. However, cases of crop damage, livestock and property loss is still on the rise across the country. Wild elephants, rhinos, common leopard, tigers, wolves, snow leopards, bears and wild boars are the major problem causing animals. During this reporting period:

- **NTNC-BCC** provided relief fund to six households of wildlife victim family whose family members lost their lives from wildlife attacks. A total of 110 students affected by human-wildlife conflict in Chitwan National Park's buffer zone area were provided with scholarship funding aimed at supporting their education and relieving financial burden of wildlife-affected families.
- **In Bardia,** in 2020-21, human lives lost due to wildlife attacks included, thirteen individual lives from tiger, and five from elephants. Out of these NTNC provided immediate cash relief of NRs. 50,000 each to eight families to support their livelihood. During the same period, 283 famers lost their agricultural production, 193 farmers lost their livestock, 23 houses were damaged, and several injured. These numbers indicate that managing conflicts and minimizing life risks will be central to developing better human-wildlife coexistence measures in the future. Through our Bardia office, we continue to provide a monthly nominal livelihood stipend of NRs.1500 to 31 wildlife victims (24 single women and 7 injured persons).
- **In GCAP** region, altogether 59 HWC cases were recorded where 87 livestock were killed and four humans (3 Male, 1 female) suffered serious injuries from Himalayan black bear (*Ursus thibetanus*). Goats were the highest livestock killed by common leopards (*Panthera pardus*) from household sheds, where the practice of using open traditional corrals is common. Relief fund was provided and/or processed for 59 affected families based on Wildlife Damage Relief Fund Guideline 2069 of the Government of Nepal.
- **In ACAP** region reported 491 livestock (goat, yak, sheep, cow, ox, horse) depredation by common



leopard, snow leopard and Himalayan wolf in the region and two people were injured by Himalayan black bear where more than a million Nepalese rupees was supported as a relief fund to the affected families.

Wild animal death and injury caused by people's retaliatory actions are also frequent that undermines wildlife conservation efforts. HWC management activities are implemented in all the field projects of NTNC. The management activities include predator proof corral construction, game proof fencing, relief fund distribution, scholarship, monthly stipend to affected families, research and community based programmes. More often the conflicts are caused by lack of awareness and low socio-economic standing. Along with these activities, NTNC supports in rescue operation of problematic conflict-causing animals throughout the nation.

Animal rescue and rehabilitation

Growing human-wildlife interface brought about by rapid urban sprawl and development activities that blur nature's boundaries necessitate actions to avoid risks to both public and wildlife. In recent years, there is a growing trend of humans encountering wild animals even within their settlements. In this context, NTNC's expertise in wild animal rescue and rehabilitation has become increasingly valuable. A typical wild animal rescue case could involve wild animals caught in traps/snares and in near death situation or, getting lost in the city areas can induce trauma and shock among the animals. Rescue measures always call for urgent response to avoid animal loss and public harm. NTNC's wildlife rescue teams are constantly dedicating their time delivering rescue missions across the country. Cases of minor rescues involving non-dangerous species reported by the public, count into the hundreds, apart from the animals confiscated by the law enforcement agents, which are managed in our Central Zoo facility. In a remarkable effort this year, 283 animals were rescued at the Central Zoo, 94 recorded operations of rescue, rehabilitation and postmortem were done by BCC, 6 by BCP, 13 by SCP, 18 by ACAP and 7 by GCAP. Human encounters with carnivores such as leopards and tigers often results in human casualties and it is where our rescue efforts become vital. The rescue and rehabilitation operation included for tigers, leopards, rhinos, elephants, birds and other species.

NTNC technicians made a total of 471 wildlife rescue operations across the country. Together with other large mammals, elephants and rhinos, 13 conflict-causing tigers had to be rescued in Chitwan and Bardia this year alone. Monitoring of problematic tigers continues by deploying camera traps in conflict areas that inform protected area authorities and rescue teams take emergency actions and minimize future encounters.

Game-proof fencing

Along with protecting communities and agricultural lands, game-proof fences are critical to motivate local communities develop a sense of mutual trust and long term value for wildlife conservation and to minimize retaliatory killings.

- **In Bardia National Park's** Asaregaudi buffer zone user committee, 3735 m fence has been constructed to prevent movement of tiger and its prey species towards the village and agricultural fields. This will protect 60 ha of agricultural land belonging to 200 households.
- **In the northern buffer zone of Banke National Park**, a total of 610m long and 2.5m height game proof fence was constructed this yea rto stop wildlife movements inside the farmland and community area. This will protect 10 ha productive agricultural land belonging to 65 households. With the current support, game-proof fencing coverage in Ryang village is now 2307 m.
- **In ShNP-BZ** 2500m of fencing was installed (Bedkot UC: 1500 m; Sundevi UC: 1000 m). These fences aim to prevent movement of tiger and its prey base species towards the village and agricultural fields. Approximately 1300 households with a population of 7000 will benefit and 860 ha farmland will be protected by this activity.

Electric fence maintenance in Bardia

NTNC supported the maintenance of 10 km of electric fence this year in the border of Betahani and Chitkaiya village—an area that records entry and movement of large numbers of elephants. This is part of the section of the 74-km electric fence installed in the southern border of Bardia National Park since 2008 to prevent the movement of rhino and elephant into the village from the park and forest corridors. Electric fence installations demand intensive care and providing regular repair and technical support to buffer zone user committees (BZUC), who are assigned responsibility for looking after their fence sections. This year new energizer machine sets were installed each for Patabhar BZUC, Bindra BZUC and Geruwa BZUC, along with replacing of old batteries and inverter of Geruwa, Asaregaudi, Shivapur and Neulapur BZUCs.

Besides electric fence installations, to ensure that wild elephants are deterred from entering community settlements, there are eight Rapid Response Teams (RRTs) working actively in Bardia along the Khata and Karnali forest corridors that connects Bardia National Park with Katerniyaghat Wildlife Sanctuary of India. A total of 136 high focus torchlights were provided to the RRTs this year to assist with night time patrolling and driving elephant movement away from settlement areas. Plus monitoring of ten problematic elephants in Bardia is presently being undertaken by creating individual profiles for identification.

Power fence repair in Prok

The successful installation of 3500 metres of electric fence in Prok village of MCAP region in 2014 has been of great relief for farmers who had to previously lose their crop to wild animals, especially from Himalayan Black Bear and Musk deer. According to our survey, the electric fence has reduced conflict incidents by 94%, consequently leading to increased harvests of major local crops like maize, potato and barley. This year we replaced 60 wooden poles with six-foot iron poles, installed new heavy coated gabion wire to improve current flow, and replaced the battery unit. Previously 800 wooden poles have already been replaced. The electric fence installation, operation and servicing, continues to be an important intervention by NTNC-MCAP toward strengthening human-wildlife coexistence measures in the long run.

Predator proof corrals

A total of 142 HWC affected buffer zone households were supported with predator-proof corrals in the northern buffer zone of ShNP *viz.* Sundevi, Bedkot, and

Trishakti BZUCs. Before this, consultation meetings were held with the concerned communities to identify the sites receiving the worst cases of human-carnivore conflict. Thereafter vulnerable households were selected giving due considerations on the comparative socio-economic well-being of the households, forest dependency, caste, ethnicities, and distance from the core area of the park. A significant proportion of the selected households were headed by women. Across our working areas we support and encourage communities to construct predator-proof corral houses for minimizing livestock depredation from predators, especially from leopard.

CONSERVATION BREEDING

Vulture Conservation and Breeding Center

VCBC was established in Kasara, CNP in 2008 through a joint collaboration of DNPWC and different conservation partners (NTNC, ZSL, BCN and RSPB). It aims to ensure the long term survival of critically endangered oriental white-rumped vultures (*Gyps bengalensis*) through captive breeding. Being one of the nine species of vultures found in the country, the species was in a crisis in early-2000. More than 95% of its population was decimated by a drug named diclofenac that is used for treatment of livestock. Once the livestock died and was disposed, it would be fed upon by the vultures. Unfortunately, the drug proved to be highly toxic for this species causing kidney failure leading to decimation of entire populations.

NTNC-BCC is responsible for the feeding, health care, post-release preparation and transferring of vultures to the soft release aviary at Pithauli. Currently, there are 31 vultures at the center. Last year, 19 vultures were released and 13 were transferred to the aviary at Pithauli for soft release.

Elephant Breeding Center

EBC was established in 1986 at Khorsor for the captive breeding of domestic Asian elephants. The elephants are regularly used for patrolling, wildlife monitoring and research activities in the Terai protected areas. Elephants born at the center are trained after a certain age before being mobilized to assist with wildlife

monitoring and research operations. They are cared for by the elephant herders and a team of veterinarians from CNP and NTNC-BCC.

The center currently holds 18 elephants (10 adult females, 4 young males and 3 young females) and is also popular among tourists. It is one of the best location to observe the social behaviors and interactions among elephants. With the abundance of breeding female, the center is also a prime attraction for wild bull elephants for mating, which makes it even more popular among elephant enthusiasts. Tourism revenue collections help in sustaining the center. During the reporting period 46,434 individuals visited the center of which 889 were foreign visitors.

Gharial Breeding Center

During 1978, the alarming rate of decline in the population of gharial led to the establishment of GBC in the headquarters of Chitwan National Park at Kasara. The severe decline in their population was attributed mainly to habitat destruction caused by massive sand extractions. Gharials prefer freshly deposited sand banks for nesting while such sand banks are also highly favored for infrastructure construction. Thus, the main objective of the center is to breed gharials in captivity, raise them until they are strong enough to survive in the wild and release them in the major river systems of Nepal in order to support their wild population. Every year, sub-adult gharials from the breeding center are released in the natural river systems, mainly: Rapti and Narayani in Chitwan and Babai in Bardia. At present, there are 595 gharials of different age groups at the center.

GBC attracts sufficient number of tourists every year. With gharials ranging in the age from hatchlings to massive breeding adults, the center provides a fascinating opportunity for tourists as well as researchers. Revenue collected from tourism supports the park in the management of the center and furthering conservation efforts. During this reporting period 14669 individuals visited the center of which 425 were foreign visitors.

WILDLIFE CRIME CONTROL

Globally, wildlife crime has become a major conservation challenge leading to severe decline in population of species targeted by poachers and wildlife criminals. Despite these threats, Nepal has witnessed the recovery

From ex-poachers to future wildlife protectors: Supporting Chepang communities make the transition

The Chepang community is among the most marginalized indigenous people in Nepal. Due to their historical isolation and way of life, these communities face subsistence-level challenges and are deprived access to good education, job opportunities and health care. However, being traditionally nomadic and renowned for their hunting skills and intricate understanding of forest systems, they have become target frontline recruits among illegal wildlife traders, especially for rhino and tiger poaching. As a result many from Chepang households have family members who are convicted for various wildlife crimes. Even after serving their sentence, the stigma around ex-convicts can often continue to deprive them of future opportunities, thus forcing them to resort back to criminal activity.

Focusing on converting such ex-poachers to future wildlife protectors, with the support from Kinderhilfe Nepal eV and German Nepal Friendship Association, we organized an interaction workshop for 102 convicted poachers and their family members at the NTNC-BCC premises. It was found that most individuals had resorted to criminal activity mainly due to their socio-economic compulsions, or due to lack of awareness regarding legal provisions against wildlife crime, including lack of knowledge about the ecological value of target species. The workshop was able to build sensitization around these issues, build trust and commitment for their non-involvement in criminal activities going forward, and develop better understanding on how conservation stakeholders can respond with alternative income generation activities and awareness initiatives to incentivize ex-poachers to contribute toward wildlife conservation in the future.

Responding to the hardships faced by the Chepang community during the second Covid-19 lockdown, we supplied food ration stocks, like rice, cooking oil, salt, soybean, etc. to 85 Chepang households.

of tigers and rhinos through rigorous anti-poaching campaigns over the years. Decline in poaching incidences in PAs is the result of improved capacity of law enforcement agents and active engagement of local communities.

However, Nepal is also commonly used as a transit for trafficking illegal wildlife products, especially in the border areas and transport hubs. Global illegal wildlife trade encompasses dynamic processes where new wildlife products enter the black-market, criminals exploit weak law enforcement, while demands keep rising in the black market. Nepal is also not an exception to illegal trade as it houses valued wildlife such as tigers, rhinos, elephants, pangolins, musk deer, snow leopard and common leopards. This makes it even more important for us to continue putting our efforts in wildlife crime control. It has been even more challenging with the onset of the COVID-19 pandemic. People living under marginal socio-economic status without jobs were forced to depend on natural resources including forest and wildlife products. Realizing this, NTNC has established a dedicated wildlife crime control unit to effectively work on crime control related activities.

Community-based anti-poaching

Community-based anti-poaching units (CBAPU) are community groups capacitated to engage in anti-poaching activities. CBAPUs are frontline agents supporting protected areas (PAs) in anti-poaching activities as well as ensuring widened surveillance across parks and buffer zones areas.

In BNP alone, there are 104 CBAPUs with over 2400 active members. This year, BCP supported numerous CBAPU operations in BNP and BaNP that included 2 river patrolling, 5 long-distance bicycle patrolling and several foot patrolling in collaboration with park game scouts and Nepal army. In CNP, NTNC has established an endowment fund of NPR 10 million the interest from which is used to fund anti-poaching activities. In continuing our effort to strengthen anti-poaching capacity in CNP, regular support was provided to park authorities and CBAPUs in patrolling activities during the COVID period as well. Together with this, NTNC field offices support government authorities to organize district level and central level Wildlife Crime Control Bureau (WCCB) meetings. In this reporting period, BCP has supported to organize one district and one central level WCCB meeting.

In Banke and Bardia, to strengthen the institutional capacity of CBAPU sub-committees, a total of 14 stakeholder workshops and trainings focusing on information collection were provided to 588 youths (322 M, 216 F).

In Shuklaphanata, more than 200 youths are directly engaged in the CBAPU network providing anti-poaching support to park authorities and building conservation awareness around local settlements. SCP is regularly engaged with this network to further strengthen youth involvement in conservation. In this reporting period SCP organized eight interaction meetings with 143 CBAPU members and 144 CBAPU members were involved in 45 joint patrols. The CBAPU members are also involved in organizing cleanup campaigns and sports events to encourage other youths in wildlife crime control.

Across NTNC-managed conservation areas, in Annapurna, Manaslu and Gaurishankar, we carried out 35 different forest and pasture land patrolling operations focusing on controlling poaching, wildlife crime and other illegal activities. In the process we destroyed more than 200 traps, including assessing the samples of suspicious dead animals. Besides patrolling, to control crime, NTNC operates dedicated check posts that monitor for movement of people and goods. In different locations we mobilize security personnel and regularly organize information and knowledge sharing forums and trainings to ensure that measures against illegal wildlife trade and illegal transportation of forest products and resources are actively in place.

Training on Wildlife Crime Database-Management Inforamation System (WCD-MIS)

Three days of training focusing on wildlife crime database management for strengthening information intelligence, gathering and exchange was conducted this year in Bardia. Training participants included 25 wildlife law enforcement officials from western Nepal, covering Bardia National Park, Banke National Park, Krishnashar Conservation Area, divisional forest offices of Bardia, Banke, Surkhet, Dang, Rupendehi and Kapilvastu, Rara National Park, Khaptad National Park and Shuklaphanta National Park. The main objective was to familiarize wildlife law enforcement agencies about the web-based application system and to demonstrate its practicality and merit. As a single reliable domain, WCD-MIS will enable swift information collection and collaboration among wildlife enforcement agencies and help to identify illegal trade routes and species, and devise counter strategies and actions better.

Training on legal prosecution

A week-long wildlife crime investigation and procedure training was organized in Bardia for 31 park and division forest officials focusing on legal procedures. Participants included officials from DNPWC, Bardia National Park, Banke National Park, Shuklaphanta National Park, Krishnashar Conservation Area, SAWAN office and divisional forest offices of Bardia, Banke, Dang, Kapilvastu, Rolpa, Palpa, Rupendehi and Gulmi.

The training sessions were mainly focused on wildlife crime control, investigation of wildlife related crimes, prosecution of wildlife issues and legal document preparation processes. The training will lead to enhanced capacities on crime investigations and institutionalization of the legal procedures by PA and DFO officials of western Nepal.

Illegal wildlife trade security-level coordination and capacity building

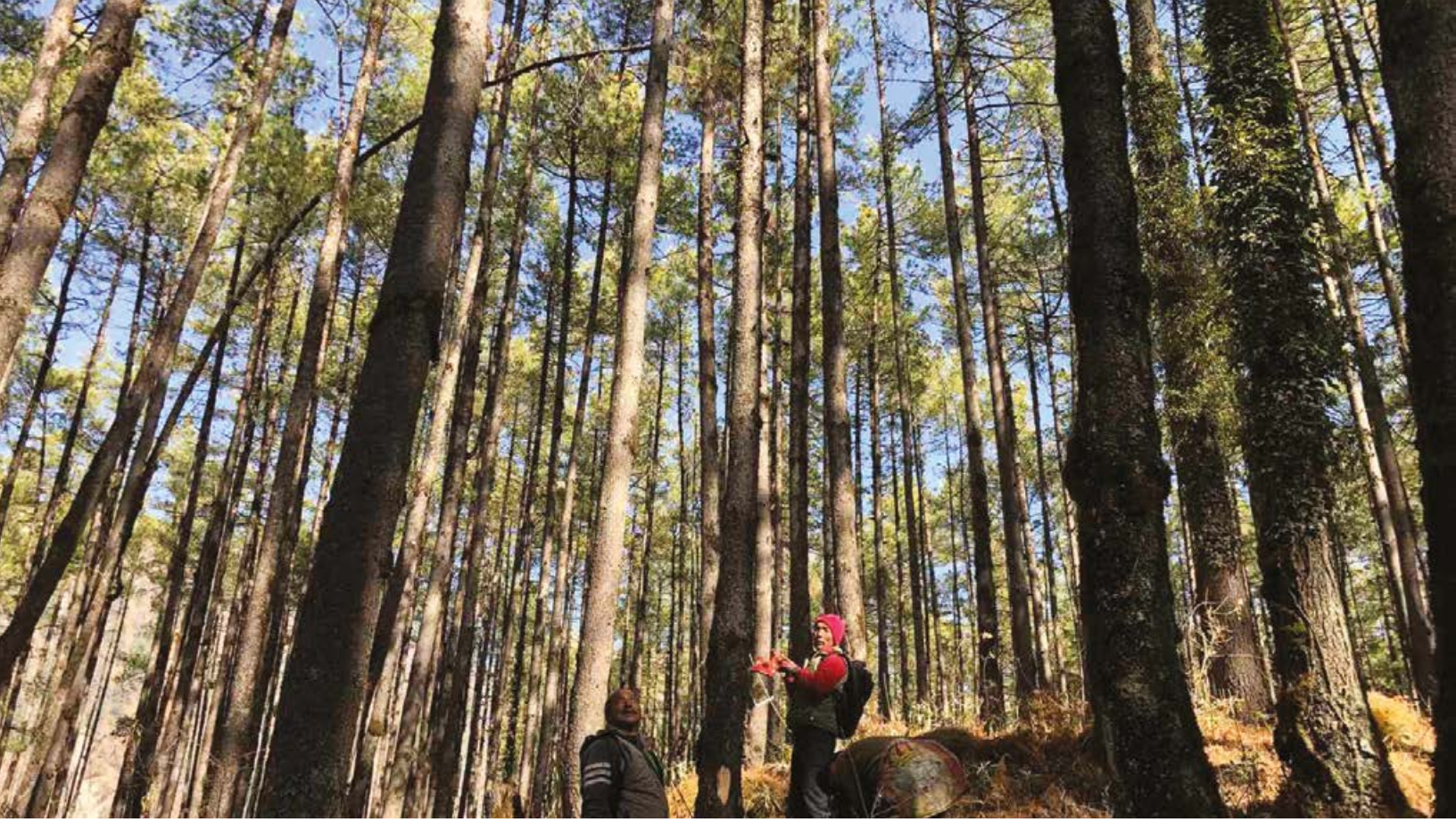
NTNC's support to the government in the identification of animal parts and confirmation of species involved in illegal activities has been critical. During this fiscal year, a total of 34 wild animals were identified related to poaching (12), trading (3) and highway accident (19). Out of these, 26 were from BNP, 6 were from BaNP, and one each from DFO Bardia and DFO Surkhet.

In Upper Mustang, which is an area that shares borders with China and is a potential illegal wildlife trade transit route, this year we organized a wildlife crime control knowledge sharing workshop for security personnel from Bajradal Batallion, Armed Police Force and Area Police Post. At the workshop participants exchanged experiences and insights about practices and procedures being followed for wildlife identification, collection methodologies, pugmark profiling, scat and carrion/carcass transportation for post-mortem from the field level to concerned laboratories, among other control mechanism and strategies to counter illegal wildlife trade.

In Shuklaphanta National Park we supported 89 frontline park staff and Nepal Army personnel to conduct six long-range patrols for 38 days; plus providing refresher training on patrolling to 56 more.

PROTECTED AREAS AND ECOSYSTEMS MANAGEMENT

Establishment of PAs such as national parks, wildlife reserves and conservation areas represent one of the most important ways of conserving biological diversity worldwide. Beyond biodiversity benefits and ecosystem services that PAs provide, they can also create investment and employment opportunities for people. As such, PAs are crucial towards attaining the objectives of the Convention on Biological Diversity and meeting the 2010 biodiversity target, in addition to the Sustainable Development Goals. Considering its growing importance globally, Nepal has established a fairly extensive network of PAs that cover 23.39% of its total land area which is equivalent to 34,419 km^2. This includes 12 national parks, one wildlife reserve, six conservation areas, one hunting reserve and 13 buffer zones. NTNC manages three conservation areas – ACA, MCA and GCA – with the goal to conserve and preserve cultural and natural heritage. The ICDP (Integrated Conservation and Development Project) model was implemented in these PAs to address the threats to the mountain ecosystems by taking biodiversity conservation and local development alongside. NTNC pioneered the conservation area concept thereby bringing paradigm shift in conservation philosophy of the country. NTNC also supports the government in managing five national parks (CNP, PNP, BNP, BaNP and ShNP) and one wildlife reserve (KTWR) through its projects – BCC, BCP and SCP. Major NTNC interventions in these PAs are towards strengthening PA management, wildlife research and monitoring, restoration of degraded areas, enhancing natural habitats, sustainable forest management, threat reduction and community-based conservation



SUSTAINABLE FOREST MANAGEMENT

NTNC's sustainable forest management initiatives keep a core focus in capacitating local communities to generate livelihood-based forest resources and enhance forest coverage. Here we support local communities to plant tree varieties that keep forest ecosystems healthy and help restore degraded and barren lands, protect local environments, and enhance carbon sequestration capacities, which directly benefit local livelihoods. Initiatives cover promotion of timber, cash crop, fruit, agro-farming opportunities, fodder production for livestock, among others.

NTNC-operated project nurseries along with support provided to local-level nurseries serve as seedling sources and technical demonstration for local farmers. Seedling varieties grown in our nurseries are mostly native high-yielding multipurpose tree species with dual benefits of maintaining forest integrity and benefitting forest users. Together with this, a strong focus is kept on increasing local capacities and roles in the management, regeneration and sustainable use of forest resources following site-based operation plans. Plantations are managed by local user groups who are regularly capacitated in silviculture techniques, agro-forestry practices, managing risk of forest fires, deforestation prevention and disaster protection techniques. This year:

AFFORESTATION

45,500+ seedlings of more 50 species were planted across NTNC working areas this year with a priority of minimizing forest use pressure, while expanding greenery and plantation coverage.

- In ACAP region, a total of 54,255 seedlings of 41 species were grown in ten project-based nurseries. Out of these, as per demand from local communities, 20,970 seedlings were distributed for plantation in community and private lands covering an area of 13.11 hectares.
- In MCAP region, 5063 tree saplings of seven species, mostly *salla* (*Pinus wallichiana*) and *utis* (*Aanus nepalensis*), were distributed this year to 65 local community members. In addition to this, focusing on local livelihoods, we distributed 100 seedlings of buddha chitra to 42 farmers. Plus as a pilot experiment this year 50 kiwi, 50 black grape, and six dragon fruit seedlings were made available to 41 farmers.
- In GCAP region, 2793 tree seedlings of nine varieties were planted in various areas with a focus on landslide slope protection. Complimenting this, a two-day sustainable forest management training was organized in Fistedhunga conservation forest in Bigu Rural Municipality-4, where forest management

demonstrations on thinning, pruning, singling, weeding were done in about 50 ha of forest.

- NTNC-BCP produced some 11,000 seedlings of 26 species from its nursery. Out of this 8,855 seedlings were distributed, resulting in the restoration of over seven hectares of degraded community forest area and private lands.
- NTNC-SCP distributed from its project nursery >8000 seedlings belonging to 11 plant species to local communities and schools in Shuklaphanta. Common species included guava (*Psidium gujava*), citrus (*Citrus sp.*), Indian gooseberry (*Emblica officinalis*), ipil ipil (*Leucena leucocephala*), gulmohar (*Delonix regia*), and jackfruit (*Artocarpus heterophyllus*).
- As part of the Hariyo Ban Program's "Greening trans-Himalayan cold desert environment" initiative, we supported the irrigation system of Madharingma plantation in Ghami of Upper Mustang by constructing 15 concrete joints with 100 m long pipes.
- NTNC-BCP supported the organizing of meetings of the executive committees of 20 buffer zone community forest user groups (BZCFUGs). These BZCFUGs have an active role in the day-to-day mobilization of their users for habitat restoration, wildlife conservation, and forest monitoring tasks. Major agendas were focused on building good governance and institutional responsiveness, including facilitating discussions on operation plan renewal, public audit of expenditure, encroachment control, extraction of forest resources, grazing and fire control, electric fence maintenance, tourism promotion, human-elephant conflict minimization and user mobilization.

FOREST FIRE AWARENESS & MONITORING & READINESS

Forest fires are a common occurrence every year, especially during the dry winter season. They pose huge threats to wildlife and natural habitats, many a time also risking human lives. Manmade fires caused due to deliberate burning by grazers, poachers, hunters, and NTFP collectors, including due to human negligence, account for the majority of forest fires caused in Nepal. Together with coordinating timely and effective response measures, preventing incidents such as these require regularly reaching out to vulnerable communities, sensitizing them through targeted campaigns and creating necessary safeguard and monitoring mechanisms. Our focus is on strengthening community capacity to prevent, control and manage forest fires by providing constant trainings, constructing fire lines, generating awareness and creating disaster handling capacities at the local level. This year:

- NTNC controlled over 2100 ha. of forest fire affected areas during this year alone, with over 1000 ha. of wildfires controlled in different parts of Manang region between January and February of 2021. Together with control measures undertaken with local communities and security personnel, NTNC-ACAP organized two emergency forest fire awareness camps at Thanchok and Tilche villages, targeting community preparedness and response around some of the hardest hit areas.
- In GCAP region, forest fire monitoring and control activities were carried out for a total of 20 days across various fire-prone sites. NTNC-GCAP along with police and locals had to control a large forest fire in Chitredevithan community forest caused by a discarded cigarette of a staff working in the area's local hydropower company.

HABITAT MANAGEMENT

Habitat destruction and habitat degradation are among the major challenges for wildlife conservation today. They have been exacerbated by human-induced pressures from population growth, infrastructure expansion, agriculture expansion and encroachment,

including other non-human factors caused by climate change, natural disasters, and invasive species spread. NTNC's habitat management interventions focus on improving the quality and extent of critical habitats of endangered and threatened species vital for their survival, foraging, reproduction and movement. These include restoration and improvement of grasslands and wetlands, reforestation and afforestation, land stabilization, watershed conservation and wildlife corridor and connectivity initiatives. Over the years we have been able to develop local stewardship for management and restoration of large tracts of degraded lands into improve habitats and enhance connectivity and ecosystem services for keystone species like tigers, rhinos, elephants and snow leopards.

Grassland management research in Karnali floodplain

In order to ensure the sustainability of growing tiger and prey base population, grassland management will require innovations in ways so that the overall productivity is increased and year-round forage-to-prey species is accounted for. Formed principally from the process of annual inundation, the limited available short and palatable grassland patches in the Karnali floodplain are prone to rapid succession from tall and relatively non-palatable patches, together with the spread of undesirable species. To address this crucial management need, NTNC-BCP has been conducting an experimental research to get insights into the need for managing grassland quality and availability.

A total of three grassland patches in Karnali floodplain covering an area of 70.88 ha. is under investigation – 23.63 ha. of control plots and 47.25 ha. treatment plots. The action research includes vegetation assessment, physical and chemical composition induced by treatment, and utilization pattern by herbivores (mainly by chital, hog deer, swamp deer) following treatment. Impact of seasonal fire on grassland and utilization pattern by herbivores is also being investigated. The study, now in its fourth year, is also part of the PhD research of NTNC's Mr. Shyam Kumar Thapa, being done under the supervision of Professor Herbert Prins of Wageningen University.

Preliminary findings *show that deer (esp. spotted deer, hog deer and swamp deer) in the Karnali floodplain prefer to graze in larger open areas to avoid predation risk (anti-predation behavior), and also that in comparison, deer prefer frequently mown plots. Cutting facilitates the growth of new sprouts high in nutritional value, an indication that frequent mowing is required to meet the nutritional requirement of deer during the dry period (Feb-May), since it is during these months that deer give birth, and when nurturing their young ones demand high nutrition especially for lactating female. These preliminary findings need to be verified with data from the laboratory. Presently, grass samples from the experiment plots are in the lab for chemical analysis. The research suggests that the natural grazing lawns that are interspersed within patches of tall grasses are found to be more beneficial to the grazing herbivores, offering higher quality forage in terms of leaf-stem ratio, bulk density, nutrient concentration and digestibility. The research recommends that in places where mega and large body-mass herbivores are in low density, availability of larger patches of grazing lawns can make significant difference on the population dynamics of the prey-base of tigers.*

Grassland management in Chitwan

Due to changes in the dynamics of the Rapti river system, exacerbated by climate change, short grasslands along the southern bank of the river are in the process of succession by less palatable vegetation and riverine forest. Most of the northern bank of the river is already intensely modified by humans for irrigation and flood control. This has resulted in degradation of habitat especially for the vulnerable Greater one-horned rhinos who prefer habitats with abundant grasslands and wetlands. Good news however is that NTNC-led

interventions is yielding positive results as rhinos and other herbivores, like spotted deer, hog deer, gaur, are seen frequently grazing and spending time on these opened up patches of grasslands.

- Focusing on restoring rhino habitats in the eastern sector of Chitwan National Park, NTNC-BCC managed 30 hectares of grassland area in Icherni, Bankatta and Jayamangala area. Here the adoption of tractor technology equipped with grass-cutting rotors has helped save considerable time and resources compared to manual labor.
- 35 hectares of grassland was regularly maintained in and around the wild water buffalo enclosure in Padampur area.
- Encouraged by the technology used, NTNC-BCC continues to be approached by many other community forests. This year we supported in an additional 20 hectares of grassland management in Belsar community forest.

Wetland management and restoration in Chitwan and Parsa

Iconic species like tigers and rhinos need abundant amount of water sources (rivers, wetlands, waterholes) for sustaining their population. However climate change's increasing stress on water resources has become a major cause of concern today, both for human and wildlife. The situation has been exasperated by changes in hydrological processes, disrupting natural frequency and intensity of rainfalls, in turn affecting critical wildlife habitats. Frequent flooding leading to siltation and prolonged droughts threaten to further deplete remaining water sources. On the other hand water sources are in constant threat from rapid growth of invasive alien species like water hyacinth. To manage these threats, this year:

- NTNC-BCC supported Devithan community forest for restoration and management of Dumri ghol in Kuchkuche forest. The water body was infested by water hyacinth, deteriorating the water quality. With removal of the invasive weed, Dumri ghol is now used by good number of wildlife species for their water requirements, evident by their signs and sightings in the area.
- To support the increasing tiger population in Chitwan's adjoining Parsa National Park, we also created a new waterhole in the Bhata-Gaduwa area, which is meant to serve as buffer water source for the local wildlife, especially during the dry seasons.

FRESHWATER ECOSYSTEM CONSERVATION

Fresh water ecosystems are abound in a water-rich country like Nepal, which makes them increasing vulnerable to human stresses and exploitation. An example is the growing threats of the critically

endangered gharial found in the rivers around Chitwan and Bardia National Park which are a reliable indicator of fresh water ecosystem health. To ensure these critical ecosystems are conserved, NTNC regularly carries out fresh monitoring exercises from which information collected becomes instrumental to determine existing or unforeseen threats, like pollution-related threats or gharial numbers entangled in illegal fishing nets, thereby helping devise appropriate response measures. This year we conducted:

- 132 freshwater ecosystem monitoring exercises focusing on rivers around Chitwan National Park
- Three-day gharial and mugger capture, handling and release training for 28 professionals at the Gharial Conservation and Breeding Centre (GCBC) in Kasara
- Workshop on river ecosystem management among the mayors and deputy-mayors of Rapti, Ratnanagar and Gaidakot municipalities, together with 41 park staff, buffer zone user committee members, nature guides, and conservation professionals

ADDITIONAL PROTECTED AREA SERVICES

As protected area managers who work hand-in-hand with local communities, NTNC works very closely in the day to day functioning of local-level institutional and in their capacity-building. This year, we continued to support a total of 85 conservation management area committees (CAMC), who are the primary local level institutions set up for undertaking conservation, are currently in operation across all the three conservation areas that NTNC manages. In addition to CAMCs, hundreds of specific community-based management sub-committees simultaneously operate, from forest resources to species-level subcommittees, NTFPs to waste management, to women's groups subcommittees.

- Focusing on supporting young mothers who are work-loaded, NTNC-ACAP supported the operation of five day care centers in Sikles, Bhujung and Ghandruk directly, looking after 99 children in total this year.
- Institutional capacity assessment of natural resource management groups within Manaslu Conservation Area was carried out this year for CAMCs of Samagaun, Lho, Bihi, Prok, Chumchet and Chhekampar.
- This year we organized a policy-focused orientation programme on existing forest, environment and wildlife conservation laws and regulations for over 450 representatives from 24 CAMCs and forest management subcommittees (FMSCs) of lower Mustang.
- To determine the permissible volume for timber harvesting for local forest users, forest inventory and monitoring was undertaken in 16 separate forests areas of lower Mustang together with 80 FMSC members.

Our support to such community-level institutions include providing regular office administrative and technical support, ensuring their legal and regulatory compliance, strengthening good governance and accountability standards, and supporting with coordination, organizational planning and review, meetings and workshops, among others. Besides these, NTNC also ensures due diligence of legal regulations, entry-exit of people and resources into and out of conservation areas. Protected area services also cover, mobilizing forest guards, maintaining informant networks, carrying out regular surveillance and patrolling functions, forest inventory monitoring activities, coordinating emergency rescue and response operations, as well as ensuring environmental compliance of infrastructure projects, like hydropower monitoring.

CONSERVATION ECONOMY

Linkages between natural resource conservation, poverty reduction and green economic development in Nepal is big. The state of Nepal's protected areas, made up of national parks, conservation areas, and wildlife and hunting reserves, not only have far reaching environmental and ecological implications, but also generate wide socio-economic value for its inhabitants. Over half of the tourists coming to Nepal visit its protected areas (PAs), making it a major source of income for PA-communities, while contributing significantly to the country's foreign currency earnings. To synergize economic opportunities of protected areas NTNC continues to focus on developing nature-based tourism potential of PAs and building sustainable value chain linkages around tourism in a way that diversifies and builds inclusiveness, innovation and industry standards.

Along with tourism, we support local communities with small and critical infrastructure related to irrigation, drinking water, improved connectivity, sanitation, and health facilities. Livelihood support programmes focus on ensuring food security through providing farming support for seeds and related technical capacities, promoting improved animal rearing practices, supporting cash crop farming capacities in cardamom, tea, coffee, vegetable and fruit farming, promotion of local entrepreneurship and green-based skills, creating market linkages for local products, sustainable harvesting of non-timber forest products, among other income-generating programmes. However due to Covid-19, protected area economies continued to be hit hard this year also.

PROTECTED AREA TOURISM

Nepal's tourism industry in 2021 sank to its lowest in four and a half decades with total number of foreign visitors in 2021 totaling 150,962. Tourism accounts for around 8 percent of Nepal's gross domestic product in normal times. However because of Covid-19, according to WTTC, the contribution of Nepal's tourism sector to the overall GDP nearly halved to 3.6 percent in 2020, from 6.7 percent in 2019. The industry saw 207,000 job losses in 2020. Prior to covid, in 2019, overall Nepal had a record of 1.19 million visitors generating 1.04 million jobs.

Overall tourism activity continued to remain at a standstill as a consequence of Covid-19. Only 5,155 tourists visited all of the three conservation areas managed by NTNC this fiscal year 2020-21. The Annapurna Conservation Area, which is ranked among the top ten destinations for trekking in the world by Lonely Planet, received only 4,931 visitors this fiscal year, with over 97 percent reduction, compared to tourism activity prior to covid when it was hosting more than 180,000 international tourists. As a consequence large communities invested in tourism and its linked enterprises were severely impacted. NTNC's own investment capacity in biodiversity conservation and community development was severely affected as a consequence. However support for this important yet critically challenged sector covered:

- Three tourist entry permit counters (in Kathmandu, Pokhara and Besisahar) and 14 tourist information centers and checkposts along important trail routes (13 in ACAP, one in MCAP and one in GCAP), were kept in operation to facilitate visitor activity and transit in and out of the conservation areas.
- 15 signage and information boards installed across six locations in GCAP region to enable trekkers' movement, safety and awareness. In ACAP region signposting of trekking trails were completed in Ghandruk area and from Besisahar to Manang.
- Homestay promotion activities included 30 sets of homestay materials distributed in GCAP region, in Dolakha and Sindupalchowk, plus 50 chairs for a local community building managed by homestay operators. GCAP is presently supporting 82 homestay operators for reviving tourism.
- A souvenir shop focusing on visitors coming to GCAP region has now been established in Singati to promote and incentivize traditional and local products and wares of the region.
- Organized community collaboration for tourism destination promotion with the Film Journalist

Association of Kaski through two-day cinema talk and exploration programme in Ghandruk.

- Month-long nature guide training was organized for 41 youths from Nawalparasi in collaboration with Gundrahi-Dhakahi community forest user group. The training consisted of seven days classroom-based sessions, provided by NTNC-BCC, with the remaining time for practical sessions. Trainings such as these preparing future nature guide professionals have been provided to 1500 youths to-date.
- Eco-tourism promotion workshop focusing on private sector engagement in Banke National Park was organized among journalists, tourism entrepreneurs, and community leaders drawing insights into existing tourism products and prospects, and for exploring future collaborative opportunities.
- Learning and exposure trips were organized for local communities of Shuklaphanta National Park buffer zone to the ACAP region focusing on nature-based tourism and destination promotion, product and service delivery, and human resource capacity and cultural attributes of the host destination and its tourism stakeholders. This is necessary especially given the massive yet untapped tourism potential of ShNP to make economic headways for uplifting its communities.

COMMUNITY INFRASTRUCTRE

Being protected area managers requires NTNC to respond to infrastructure needs of local communities, especially where they aren't being met sufficiently. Our interventions mostly cover critical, small and sustainable infrastructure, like village trails and access roads, small-scale bridges, small-scale irrigation, drinking water supply, sanitation among others, which help build village and community services, enhance safety and convenience, and have minimal impact on nature conservation. Overall we aim to improve community resilience and alleviate poverty, while provisioning facilities for community growth. This year infrastructure support was kept at a minimum due to Covid-19 limitations. Some of the interventions made were:

- A community crematorium (14 sq ft basal area with 10 ft height) focusing on the Sherpa community in Bigu of GCAP region was constructed along with a 20 m drywall with 1 m height.
- 12 incinerators were constructed in different locations of Alampu of Bigu Rural Municipality to support management of household solid waste and disposal
- Adding landslide safety features of the motorable road in Dhakrebote constructed by Bigu rural municipality, NTNC-GCAP supported the construction of a 47 m masonry wall and drainage, both above and below the settlement areas.
- Three improved water mills were installed in Philim, Chhekampar and Gap by MCAP to help enable productivity and efficiency among locals otherwise using traditional mills to grind grain into flour.

GREEN ENTERPRISES PROMOTION

The kind of natural and cultural capital available to protected area communities for setting and scaling up green enterprises in Nepal are numerous. As storehouses of rare natural products and traditional knowledge, protected areas have a competitive advantage for developing high-value niche products. Tea, coffee, cardamom, honey, medicinal and aromatic plants, high-value vegetables and fruits, along with locally made nature-based products found in the protected areas we manage and support are already making a difference in the lives of many families, especially the poor and marginalized. More of this will be needed in the future to integrate local community participation with inclusive green development opportunities and sustainability measures. To do this NTNC works to promote rural entrepreneurship, enhance their market accessibility and competitiveness, introduce product and quality standardization approaches, and create support systems necessary for scaling up enterprise activity. Much of the planned activities had to be downsized this year due to Covid-19. Still some of the areas of support included:

- **Tea farming** support in Bhujung, Pasgaun, and Ghalegaun villages by NTNC-ACAP this year resulted in 120 kg of tea produced, along with two driers constructed, benefitting 353 households.

- **Focusing on the honey enterprise potential of MCAP region,** 30 farmers were provided with trainings on beekeeping along with supply of two improved beehives, tools and equipment. Presently two carpenters have been trained to meet the improved beehive demand from local honey farmers, presently numbering 45, all of whom have recorded improved earnings.
- **To support apple cultivation production,** we supported 71 famers of five villages in lower Mustang with agriculture tools such as secateurs and pruning saws
- **Focusing on women's traditional skills,** considering the increasing demand for handmade mountain wool products, we supported 30 women in Mustang with knitting and weaving tools to scale production and income generation capacities.
- **Targeting female youths,** in Bardia National Park buffer zone, a nine month long sewing and tailoring training was provided to the 24 females in Thakurbaba-9, Bardiya. Knowledge and skills learned training will initiate tailoring centers in different settlements of the buffer zone area. Subsequently this is also expected to reciprocate favor from other village girls to come forward and support the park's anti-poaching campaign in the future.
- **Carpet weaving training** for one month was organized for fifteen women of families that are still dependent on the Barandabhar forest. These women are also part of the wool spinning group in in Padampur-2, Chitwan. Due to Covid-19, this year, trainings were conducted door-to-door. In the following year the wool spinning and carpet weaving team will continue to be supported from NTNC's internal fund, including support from the local municipality, for enterprise development and post-covid recovery.
- ***Dhaka* weaving training** for 15 days was provided to fourteen women from socio-economically challenged households in Chitwan National Park buffer zone. After the training five dhaka weaving machines were provided to the trainee groups. Dhaka is a popular indigenous Nepali garment that has huge demand both inside and outside Nepal.
- **Hi-tech NTFP nursery** in Chankhu of GCAP region that was established focusing on production and

propagation of high-quality seedlings of important medicinal plant species satuwa (*Paris polyphylla*) was upgraded last year with two beds for producing timur (*Zanthoxylum armatum*). This year sowing of timur seeds, equipment upgrade, nursery management and technical monitoring tasks were ensured for what is anticipated to create new opportunities for local farmers.

› **Commercial vegetable farming** in Shuklaphanta NP buffer zone offers tremendous potential for enhancing rural livelihoods. Its proximity to nearby urban areas like Jhalari, Mahendranagar, Attariya and Dhangadhi, means added market advantage. To make most of this, and as a means of reducing forest dependency and mitigating conflict, NTNC-SCP has supported in the formation and operation of three commercial vegetable farming groups, comprising of 69 families, mostly representing marginalized communities and human-wildlife conflict prone households. Regular support include supplying equipment, materials, and accessories, in addition to capacity and entrepreneurship development initiatives. Farmer's incomes, initially making good gains, were largely affected by the second wave of covid. However important interventions made were:

- Developed an organic vegetable farming module (in Nepali) to enable application of best farming practices
- Provided training packages for 52 local farmers (48 females) on commercial vegetable farming
- 33 farmers (30 females) received one-day site-level refreshment training on vegetable farming
- 25 vegetable farmers (22 females) received one-day training package on cooperative management
- Made necessary arrangement for regular seed, equipment and other material supplies
- Provided support measures for cash mobilization among farming groups

SUSTAINABLE LIVELIHOODS PROMOTION

NTNC targets developing livelihood-bases for local communities that are sustainable, build resilience, and diversify income opportunities for protected area communities. As a community-focused conservation institution, improving local livelihoods standards and responding to their economic aspirations are of utmost priority for us. Through the promotion of nature-based livelihoods we help reduce forest dependency and excessive pressure on natural resources, uplift household standards and local economies, while ensuring meaningful community incentives for conservation participation. Livelihood support this year included:

› **4200 vegetable seedlings and 1000 packets of seeds of more than 23 varieties** were made available to over 900 local farmers and conservation farmers in ACAP region, along with supporting for necessary agri tools.

- **1536 packets of nineteen varieties of vegetable seeds** were made available to 263 local farmers of Siridibas, Bihi, Chhekampar, Prok, Chumchet, Lho and Samagaun in MCAP region. Given the remoteness of these areas we purchase seeds from the market and put them in small packets, which are then distributed from the Philim office at a nominal rate of Rs. 5 per packet.
- **Motorcycle repair and maintenance training** for one month was provided to the 10 local youths of three user committees in Shuklaphanta National Park buffer zone. These youths are currently employed with various local motorcycle workshops and are helping support the livelihoods of their families.

Alterative income generation support for local communities through commercial goat and vegetable farming...

The Hattidamar Ghuiyabari User Committee of Banke National Park buffer zone has 16 farming groups with 410 households. Following series of meetings and consultations, this year, farming groups agreed to introduce improved commercial goat breeds (boer buck). The initiative will lead towards improved livestock management capacities and increased income from milk and meat production, reduce pressure on Chure forest by promoting stall feeding, replace less productive goats with commercial breeds, demonstrate community benefits of predator-proof corrals for minimizing livestock depredation from tiger/leopard attacks, and about early identification and treatment capacities for common diseases. All these so that farmers receive the right support towards transitioning from existing subsistence-based farming practices to sustainable economic models. To ensure this:

- **Goat management trainings** were organized for 29 farmers from 13 groups. Boer breed bucks were made available to one farmer each from the 13 groups, which in turn would enable other group members with improved breeding access for their goats.
- **Interactions were organized with 47 farmer group members** of Ryang and Ghuiyabari covering discussions on tunnel house for vegetable farming, mechanized farming technologies, improved variety of goats, veterinary medication, compensation application-related support for losses caused by wild animals, and settlement-wise knowledge-level support programmes.
- **Revolving funds** of NRs. 20,000 each were set up for two farmer groups representing vulnerable communties (Babai Pipal Takura Bakhara Palan Krisak Samuha and Trisana Mahila Krisak Samuha) aimed at supporting group members with small capital mobilization and business startup capacities.
- **Veterinary medicines** were supplied to all the 13 farmer groups, who already own in excess of 2500 goats.
- **Power tillers** were distributed to four farmer groups directly benefitting 98 farmers.
- **To secure youth engagement in wildlife conservation** through income generation opportunities, goat farming support for livelihood enhancement was extended to six active PAPU members in Dalla and an additional 9 CBAPU members of Bardia National Park buffer zone.

Likewise in Shuklaphanta National Park buffer zone, today 109 members from four farming groups own a total of 664 goats (both local and improved). Already a single household engaged in goat farming make on average NPR 7373 half-yearly, an indication of its commercial prospect for diversifying rural income

opportunities. Most households have only recently begun commercial goat farming, and it is expected that the income will significantly increase over the coming years. To enable commercial farming in ShNP:

- 33 Boer crossbred goats (of which 18 were she goats) were provided as seed goats to local farmer groups
- A goat farming module was prepared (in Nepali language) and provided to group members to guide the adoption of improved commercial goat farming practices.
- 51 goat farmers, of which were 32 females, were provided a training package on animal husbandry. An additional 25 goat farmers benefitted from a one-day refresher training.
- 55 farmers received veterinary-related support services, with 371 goats receiving the Ivermectin vaccine, an antiparasitic drug.
- Goat farmers were availed with cash mobilization support facilities for scaling operations and market competency.

As a testimony of women entrepreneurship, 31-year old Ms. Jhuma Devi Rokaya from Chathari village of Bedkot User Committee in ShNP buffer zone has today become a local role model, especially among woman. She is an active member of the Kalika goat farming group, consisting of 25 members and who are closely supported by NTNC-SCP. Jhuma comes from a joint family of 12 members. Prior to taking up commercial goat farming she was making a living off basic agriculture and animal husbandry on the family's 26 ropanis (3.27 acres) of land. Income from this was hard pressed. By creating support avenues for her and her group members, through technical capacity development and training packages, model predator-proof corral construction, grass seeds for stall feeding, improved variety of seed goats, and regular goat vaccination and livestock health programmes, she and her husband are now able to diversify their family income. Today she owns 15 goats and the couple plan to add more goats and make this their mainstay profession. She says: "With increase in my income from 15-20 thousand NPR per year to 40,000 NPR, and together with the annual income of my husband, I can now provide better education and facilities to my children. Very soon, we plan to invest NPR 100,000 more to build a new corral."

- **Focusing on uplifting livelihoods of the Chepang community,** a socio-economically marginalized indigenous community in Chitwan, we supported three Chepang households of Rapti Municipality with higher quality breed of male goats. This is anticipated to kick-start goat farming opportunities for them, lead to increased household incomes and reduce their reliance on forest resources in the future.
- **NTNC-ACAP's livestock health workers** provided treatment services this year to 12,013 livestock in total—3,873 treated for various diseases, 700 castrated, and 7,440 parasite-control treatments done.

NON-TIMBER FOREST PRODUCT PROMOTION

Protected areas hold vast reserves of high value non-timber forest products (NTFP). Because of the pristine natural environment they are nurtured under they are also generally of superior quality in comparison and are better protected from the market forces of unsustainable extraction and overconsumption. In ACA region alone there are more than 100 species of NTFP. For their sustainable management and utilization ACA has prepared and approved the NTFP management plan.

Total NTFP revenue generated in ACAP and GCAP region this year was NRs. 1.3 million. Majority of this revenue amount was from Yarsagumba collection (41 kg collected this fiscal year). In GCAP region, 30 NTFPs species were harvested and traded this year. Out of them, the most traded NTFP was slate stone, followed by Sunpati, Argeli, Patre Stone, and Dhupi.

Yarsagumba (*Ophiocordyceps sinensis*), also known as Caterpillar fungus and Himalayan gold, is a popular high value NTFP found in most high mountain pasturelands. Its health-enhancing properties makes it even more expensive than gold, pound-to-pound. However to ensure that these rare and valuable resources are not overused, our unit offices coordinate and support sustainable implementation measures management practices among stakeholders. For instance:

- **District level Yarsagumba** sustainable harvesting and management meeting was organized by ACAP-Manang at district headquarters in Chame. Among 32 stakeholder participants included the rural municipality chairman, chief district officer, district coordination committee vice-chairperson, the deputy superintendent of police and other security officials, CAMC representatives, among others. Such meetings are held annually for security reasons as well as to ensure proper implementation of harvesting norms and regulations among the season's collectors vying for the highly valuable yet sensitive fungus. In the meeting NTFP collection and extraction processes, legal compliances, and royalty payable to the government are shared, along with discussion of decisions from the previous years' meeting. The meeting concluded with 12 decisions for regularization of sustainable Yarsagumba collection and extraction. This year due to Covid-19, the meeting decided to only allow collection by local inhabitants.

GENERAL HEALTH

NTNC continues to make general health services available to remote communities who don't have easy and affordable access, as well as sufficient knowhow about required health interventions. Services provided include making available health checkups, medicines and advice. Alternatively these facilities also serve visiting tourists in the area. Presently our health interventions are focused in Manang and Mustang in the high mountains, and in Bardia in the Terai plains. This year NTNC-ACAP-operated health clinics, centres and mobile health camps provided treatment to 7645 individuals in total.

In Manang and Lomanthang we provided treatment to 3,495 patients (2,103 females including 6 foreigners, and 1,392 males including 8 foreigners). More than 40 diseases were diagnosed in total, common among which were: acute mountain sickness (AMS), acute respiratory infection (ARI), fever, joint pain, abdomen pain, edema, cough, diarrhea, dermatitis, gastritis, eye infections, headache, hypertension, sinusitis, wound infection, , urinary tract infection, besides general checkup, family planning, tuberculosis examination and treatment, lab test facilities. Due to Covid-19 restrictions, ACAP-Manang only conducted one mobile health camp, in Khangshar, where 56 patients were treated. In Bardia a total of 4094 locals (2480 females and 1614 males) received healthcare facilities this year.

HERITAGE CONSERVATION

Protected area in Nepal are storehouses of both rich natural and cultural heritage. Along with nature conservation, we work closely with local communities and stakeholders and provide support so that rare and ancient, yet often overlooked, assets of a certain place or people can be promoted and preserved for future generations. This includes repair and maintenance of important community sites and cultural artefacts that promote a sense of identity, harmonizing social values, beliefs and associations. Heritage conservation work this year, included:

- A monastery construction was completed, focusing on the 90 Magar community households in Shyankhu of Bigu Rural Municipality in GCAP region.
- Temple maintenance was completed in Bigu of GCAP region, consisting of a 16.5 m dry wall construction (1 m height with 0.56 m breadth).
- Tharu Cultural Museum management support along with repair and maintenance activities were made by NTNC-BCP. The museum is a sought after attraction in Bardia National Park offering visitors the opportunity to learn about the socio-cultural attributes of the indigenous Tharu community. This year the museum received 22,523 visitors, a 55% reduction in comparison to the previous year.

CLIMATE CHANGE

NTNC's efforts are primarily directed towards climate change adaptation and to reduce carbon emission through mitigation-level approaches. Given the high vulnerability of rural communities to climate change, NTNC focuses on building adaptation capacities of vulnerable communities, and reduce the risk and impact of climate change induced landslides and floods, while also promoting climate-proofing measures for rural infrastructure. NTNC has afforested wide span of degraded land since last three decades thereby directly contributing to reducing greenhouse gas concentrations in the atmosphere. More than 3,500 ha of degraded lands have been restored through plantation in ACA alone. Similarly, NTNC is promoting clean energy technologies such as hydropower, biogas, solar energy and improved cooking stove which directly reduce pressure in forests. Declaration of Kumroj village in Chitwan as the first model biogas village of Nepal is one of such examples. Furthermore, it has supported local communities to prepare and implement local adaptation plan of action (LAPA) and climate change induced disaster preparedness plans. Our emphasis will be on ecosystem-based adaptation to manage ecosystems for ecosystem resilience and enhance human capacities to address climate impacts and future uncertainties.

NTNC AND GREEN CLIMATE FUND SIGN ACCREDITATION MASTER AGREEMENT

Following NTNC's accreditation last year as a Direct Access Entity (DAE) to the Green Climate Fund (GCF), this year in June 2021, NTNC and the GCF signed the Accreditation Master Agreement (AMA). Going forward AMA signing will now officially authorize NTNC to access and mobilize financial resources directly from the GCF.

The agreement is a major milestone since it opens NTNC's entry into the active stage of realizing low-emission and carbon-resilient programmes and projects necessary to combat climate change and its increasing impacts, particularly on the most vulnerable sectors of Nepal.

As part of the Country Program Pipeline listed by the Ministry of Finance, which is the GCF National Designated Authority, NTNC is currently in the process of preparation of the adaptation-focused project: "Building climate resilience of forest-dependent communities through enhanced livelihood opportunities and local capacity in Karnali Province, Nepal". Together with the Ministry of Finance, preparations are also currently underway to pursue concept notes for at least five projects, and at least two full funding proposals by the end of 2023.

Last year, on August 19 2020, the 26th meeting of the GCF Board had approved the project: "Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal" in which NTNC as an implementing partner was to co-finance the project together with the Ministry of Forests and Environment and IUCN Nepal. However this could not go through as targeted due to Covid-19 and is expected to commence by 2022.

GCF is the largest global fund dedicated to tackling climate change and has a mandate to serve the historic Paris Agreement. It was created as an operating entity of the United Nations Framework Convention on Climate Change (UNFCCC) with the mandate to support developing countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions and climate-resilient pathways. Under this NTNC's climate ambitions are to: (i) build resilient communities, (ii) safeguard flora, fauna and ecosystems from climate impacts, and (iii) promote green growth opportunities.

NTNC's accreditation to the GCF authorizes it to develop individual projects up to USD 10 million for accessing future climate finance directly from the GCF under the 'micro size' category. Under this NTNC will undertake climate actions that focus on climate change mitigation and adaptation targeting vulnerable rural communities to build climate resilience and local capacities, while promoting socio-economic opportunities necessary to cope and combat climate-induced risks. Provision for obtaining climate financing through international mechanism is made under Point 8.12 in ***Nepal's National Climate Change Policy 2019.***

ENHANCING GREEN COVERAGE

Over 45,000 seedlings of more 50 species were planted across NTNC working areas this year with a priority of minimizing forest use pressure, while expanding greenery and plantation coverage. To promote forest sustainability, irons flag stand poles were made available to 45 Buddhist households of five villages. These will serve as effective alternatives for traditionally used wooden flag poles that are changed at least two times a year. Overall they will help expand and protect forests and ensure that socio-cultural and environmental values flourish together.

CLEAN & ALTERNATIVE ENERGY

Reliance on firewood for cooking and heating tend to be much higher in mountain communities. This is mainly due to its remoteness and extreme conditions faced. This can tend to put excess pressure on the already limited forest resources and sensitive ecosystems. To reduce household dependence on firewood overall NTNC promotes clean and efficient energy alternatives.

> In ACAP region alone, 51 micro-hydro plants are in operation supplying over 2200 households electricity to power community homes and lives.

This year we supported 18 households in Manang to install and repair back boiler and solar water heaters. Besides promotion of clean energy sources, NTNC supports with installation of household-efficient devices, like improved cooking stoves and biogas options, across protected area communities. Together with offsetting carbon, such clean and efficient energy alternatives lead to improved community health outcomes.

Hydropower generation for environmental sustainability

Potential for hydropower as a renewable and clean energy source in Nepal are many. Despite its merits, large capacity hydropower generation involves big infrastructure interventions and can often undermine the integrity of natural landscapes and ecosystems. In NTNC-managed conservation areas alone there are over hundred hydropower projects in operation, or in the process of operation. As protected area managers, NTNC continues to assess and inform hydropower-to-environment as well as hydropower-to-economy relations. Post project operation, we regularly monitor and ensure that hydropower operators understand and comply with protected area regulations and prescribed environmental standards.

DISASTER RISK REDUCTION

Soil, water and forest resources have come under increasing pressure in recent decades. Together with population and infrastructure expansion, climate and hydrology related factors have multiplied their influences on these systems. As a result severity and frequency of natural disasters and risks on lives and property have evidently increased. Besides risk from natural disasters, deteriorating soil quality and changing weather and precipitation patterns have especially hit agriculture

and remote communities hard. NTNC's disaster management efforts are targeted to protect disaster-prone communities, strengthen local livelihoods, and safeguard critical rural infrastructure.

- To ensure community measures for landslide and flood control this year we installed a total 339 gabion boxes in 12 villages of Mustang.
- In GCAP region we prepared a climate change sensitization training manual to enable capacity of communities to respond against climate change impacts.
- To extend rescue services for stranded visitors in the Ghalekharka Sikles Eco Trekking Route sector we supported the All Nepal Tourism Trade Union (ANTTU), Kaski.
- For ensuring forest fire control capacities at the community level, fire fighter equipment was supplied to Manang. Supplies included backpack fire extinguishers, sprayers, swatters, rakes, and other safety gears.
- We made available funding relief for individual victims of natural disasters.

Focusing on building community resilience through improved food security measures in MCAP region:

- 796 corn shellers were provided to each of the households of Lho, Prok, Bharjam and Phlim so as to introduce technology and labor-saving measures in traditional community tasks and roles.
- As part of the implementation of local adaptation plan of action (LAPA), in MCAP region 15 units of greenhouse for vegetable farming along with the 10 variety of seeds were provided to farmers of Chhekampar.

WASTE MANAGEMENT AND POLLUTION CONTROL

The kind of consumption and waste management practices in place have direct consequences on the local environment and its conservation outcomes. Today with wider connectivity and host destination facilities, rural spaces have become increasingly prone to waste and pollution. NTNC works with the local communities in solid management initiatives, especially in community settlements, tourist destinations and along trekking routes. To reduce plastic bottles, we have initiated the operation of 29 safe drinking water stations in ACAP region. Overall we support communities to develop into eco-destinations.

This year we supported solid waste management of Tsarang and Lomanthang villages in Upper Mustang in joint collaboration by ACAP-Lomanthang, Lomanthang Rural Municipality and local tourism operators. The task involves household waste collection and transportation by a tractor into a landfill site twice a week. Facilities such as these are particularly important for remote mountain destinations like Lomanthang which, feature fragile environments and age-old heritage structures, are popular tourist destinations, and where sustainable waste management means devising locally-driven solutions.

RESEARCH & KNOWLEDGE

Scientific research has been one of the biggest strengths of NTNC along with our ability to disseminate evidence-based knowledge to policy makers and global scientific community. NTNC's long experience on the ground has attracted large numbers of scientists and partners from both home and abroad, working as a useful platform for collaboration in science and innovation. NTNC's scientific work has led to the recording of new species and knowledge for Nepal and the global conservation community. Every year, NTNC has been making significant contributions to academia through publishing quality scientific papers in peer reviewed journals that not only deal with wildlife per se but also deal with subjects related to habitat and ecosystem management, human-wildlife co-existence, tourism and culture, people and economy. Importantly, NTNC supports the GoN's efforts in the national tiger count and rhino count among many other scientific initiatives as a key scientific partner. With keystone species recovering, there is still a lot to be understood about lesser known species and diversify our research focus. Navigating through the complexity of nature and species, it is imperative for us to strengthen our research capacity in wildlife genetics, health and disease that guide our conservation actions. This year, our research highlights are as follows.

PEER-REVIEWED RESEARCH ARTICLES PUBLISHED BY NTNC RESEARCHERS

NTNC researchers authored/co-authored 13 peer-reviewed articles in the year 2020-21. Following are the list of research articles. Details of which can also be found on the NTNC website.

- Bhattarai S, Lamichhane BR, & Subedi N (2020). Tail Bifurcation in a Yellow-bellied House Gecko, *Hemidactylus flaviviridis* Ruppel 1835, in Chitwan Nepal. *ICRF Reptiles & Amphibians Conservation and Natural History*, 27(1): 48 - 49.
- Fitzmaurice A, Poudel P, Offord-Woolley S, Macdonald D, Thapa S, Lamichhane BR, Baral, A. & Yadav BP (2021). Complex consequences of conservation success: Emerging human-tiger conflicts in Nepal. *CatNews*, 72, 23-27
- Kandel SR, Lamichhane BR, & Subedi N (2020). Leopard (*Panthera pardus*) density and diet in a forest corridor of Terai: implications for conservation and conflict management. *Wildlife Research*. Online early, 1–8.
- Karki B, Lamichhane BR, Sadaula A, Khadka BB & Bhusal KP (2020). Hematological Study of Captive White-Rumped Vultures (*Gyps bengalensis*) to Assess Their Health Status. *Journal of Avian Medicine and Surgery*, 34(4), 343-347.
- Khadka BB & Lamichhane BR (2020). Evidence of bhellar (*Trewia nudiflora*) seed dispersal by chital (*Axis axis*) in Chitwan National Park, Nepal. *Nepalese Journal of Zoology*, 4 (1), 56-60. https://doi.org/10.3126/njz.v4i1.30674
- Lamichhane BR, Lamichhane S, Regmi R, Dhungana M, Thapa S, Prasai A., Gurung A, Poudel RP & Subedi N (2021). Leopard (*Panthera pardus*) occupancy in the Chure range of Nepal. *Ecology and Evolution* (In press).
- Mishra R, Gautam B, Shah SK, Subedi N, Pokheral CP & Lamichhane BR (2020). Opportunistic records of jungle cat (*Felis chaus* Schreber 1777) and their activity pattern in Koshi Tappu Wildlife Reserve, Nepal. *Nepalese Journal of Zoology*,4 (1), 50-55. https://doi.org/10.3126/njz.v4i1.30673
- Poudel S, Devkota BP, Lamichhane BR, Bhattarai S, Dahal P & Lamichhane A (2020). Usage of Man-Made Underpass by Wildlife: A Case Study of Narayanghat-Muglin Road Section. *Forestry: Journal of Institute of Forestry, Nepal*, 17, 184-195.
- Ram A, Mondol S, Subedi N, Lamichhane BR, Baral HS, Laxminarayanan N, Amin R & Pandav B (2021). Patterns and determinants of Elephant attacks on humans in Nepal. *Ecology and Evolution* (In Press).
- Shrestha B, Shrestha S, Shrestha A, & Khadka UR (2020). Ramsar sites in Nepal: Conservation, present scenario, biodiversity value and threats. *Journal of Wetlands Ecology*, *15*.
- Subedi N, Lamichhane BR, Dahal YN, Kandel RC, Karki Thapa M, Regmi R & Shrestha B (2021. Tigers in Himalayan foothills: Possible linkage between two Tiger population clusters in Terai Arc Landscape, Nepal. *Journal of Animal Diversity*, *3*(2) in press.
- Thapa K, Malla S, Subba SA, Thapa GJ, Lamichhane BR, Subedi N, Dhakal M, Acharya KP, Thapa MK, Neupane P, Poudel S. (2021). On the tiger trails: Leopard occupancy decline and leopard interaction with tigers in the forested habitat across the Terai Arc Landscape of Nepal. *Global Ecology and Conservation*, 25:e01412.
- Upadhyaya SK, Musters CJM, Lamichhane BR, De Snoo GR, Dhakal M & De Iongh HH (2020). Determining the risk of predator attacks around protected areas: the case of Bardia National Park, Nepal. *Oryx*, *54*(5), pp.670-677.

STRENGTHENING MOLECULAR RESEARCH IN NEPAL

A first of its kind molecular laboratory focusing on wildlife is being managed by NTNC-BCC in Sauraha, CNP. The lab has gradually developed from a storage facility for biological samples into a national-level wildlife research centre. The facility is currently capable of processing DNA samples, detecting various wildlife diseases, and undertaking wildlife disease surveillance and monitoring. Some of the research currently underway include assessing the genetic diversity of wild elephants in the Chitwan-Parsa complex and eastern Terai, assessing the genetic diversity of rhinos in CNP, stress monitoring of elephants in CNP, monitoring of

Canine Distemper Virus in wildlife, and monitoring for Foot and Mouth Disease in livestock. The laboratory also serves as the focal facility in the country for the diagnosis and treatment of Elephant Endotheliotropic Herpes Virus (EEHV). This year lab research covered areas pertaining to:

Genetic diversity of focal species:

- **Asian Elephants:** Population estimation of Asian Elephants from DNA based individual profiling in Chitwan-Parsa Complex, Koshi Tappu Wildlife Reserve, Bardia National Park, Shuklaphanta National Park and Banke National Park were done by extraction of DNA from fecal sample collected. In total 350 fecal samples were collected from the aforementioned protected areas of the Terai for genetic profiling.
- **Greater One-horned Rhino:** DNA was extracted from 106 samples of rhino dungs collected during the rhino count in the eastern sector of Chitwan National Park. The DNA extracts are being carefully preserved in the molecular of lab and will be further processed to determine the number of individual rhinos in the study area. This will involve genetic sequencing using relevant microsatellite primers. The number of individual rhinos obtained by the study will then be compared with the recorded population of rhinos in the study area during the national rhino count of 2021.
- **Tiger Genetics:** DNA materials were extracted from 30 tiger samples collected in and around Chitwan National Park. These samples are currently being safely stored at the laboratory and will be vital to assist future tiger research and determine their conservation needs over long time spaces.

Molecular lab's role in diseases diagnosis:

- **Elephant Endotheliotropic Virus (EEHV):** The NTNC-managed laboratory also serves as the reference lab in Nepal for EEHV diseases. The virus causes a fatal hemorrhagic disease when transmitted to young calves, killing up to 80% of affected individuals. It is not just prevalent in captive elephants, but is endogenous to, and possibly present, in most of the population of wild Asian elephants. Diagnosis is done by extraction of DNA followed by PCR using specific EEHP primers. This year, samples were received from the young calves at the Elephant breeding center and we were actively involved in cases of diagnosis and treatment.
- **Canine Distemper Virus (CDV):** Common leopards are notoriously renowned for preying on stray dogs and other canid species who are the primary source of CDV. It is the reason why we have started collecting samples of each leopard from rescue and post-mortem. A total of 16 samples of leopards from different parts of the country have been tested so far, with a single sample testing positive for

CDV. Although it continues to be the first recorded case of CDV discovered in leopards in Nepal to-date, collecting samples for diagnosis will continue to inform future zoonotic disease prevalence and interfaces, especially since leopards have a tendency to prey on livestock more often.

- **Foot and Mouth Disease (FMD):** In order to determine the risk of FMD infections from domestic livestock to the wild herbivores, NTNC continues to frequently collect blood samples from livestock owned by local communities. Currently we are focusing especially on households living in the periphery of Chitwan National Park, who tend to leave their livestock to graze inside the park area, thereby increasing the risk of contact and disease transmission.

Lab role in standardizing the range values of normal hematological components in Asian elephants

Hematological test in both the medical and veterinary sciences serve as a critical screening procedure for assessment of general health as well as diagnosis and treatment of a disease. Despite its importance, Nepal lacks the baseline data to determine the normal range values of different hematological components (hemoglobin, red blood cells, white blood cells, etc.), even for its biggest mammal like Asian elephants.

To close in on this, NTNC regularly performs routine health checkups in domestic elephants all over the country. Recently we successfully completed elephant health camp where we were able to collect blood samples of 110 individual elephants. Samples were collected from the auricular vein early morning and were subject to hematological test within the next two hours using Automated Hematology Analyzer. By doing this we aim to establish a normal value or a normal range of value for different hematological component of Asian elephants. The test will enable timely detection of elephant abnormality, thereby helping to avoid any severe damage in its health condition.

WILDLIFE FORENSICS

NTNC's molecular laboratory also provides critical information on illegally confiscated items related to wildlife trade. Samples from all over the country are referred to the lab mainly for identification of species involved in illicit trade. Hair, skin, bone, hoof and meat samples seized by authorities are processed to verify if the sample came from a protected wildlife species or not. Other times, samples that are suspected to be

from wildlife hunted for bush meat arrive at the center to be established as permissible meat for consumption. This year a total of seven samples from three different species (spotted dear, wild boar, and common monitor lizard) were received by the lab from Chitwan and Parsa National Park. After careful analysis the results were provided to the parties involved.

DEVELOPING A NEW GENERATION OF WILDLIFE TECHNICIANS IN NEPAL

Currently NTNC is training five local youths to become future wildlife technicians in Chtiwan. The initiative is being funded by WWF Nepal. With over four decades of experience in wildlife research, rescue, handling and management, NTNC has been a go-to organization for developing some of country's best field-level technicians. Their contributions on the ground continue to be a vital resource for strengthening the conservation sciences, both at academic and policy levels. Continuing to harbor this unique asset and knowhow requires NTNC to regularly prepare and train new cohorts of technicians to take the place of old and retired ones. The five new trainees have already been involved in various wildlife rescue operations all over the country, as well as in carrying out field work for wildlife surveys, using, camera trap survey, line transect survey, occupancy survey, etc. Appropriately capacitated to identify target floral and faunal species, the trainees have also taken part in a number of national surveys, including: President Chure Survey, National Rhino Count, National Gharial Count, and National Gaur Count.

BIODIVERSITY SURVEY FOR TANAHUN HYDROPOWER PROJECT

The Tanahun hydropower project, a national priority project of the Government of Nepal, is situated on prime habitat and refugia for various wildlife species of Chitwan-Annapurna Landscape (CHAL). Keeping with the existing CHAL strategy and action plan for 2016 to 2025 we conducted a biodiversity survey of the area with objective of assessing and documenting the presence and richness of various faunal species in the project area. Camera trap method was used for the survey with cameras placed onsite for 15 consecutive

nights. The project area was divided into 43 grid squares, each measuring 1km x 1km. Cameras were set up in 36 grids as the remaining grids had high human disturbance, risking camera and data security. Sherman traps were placed to survey small mammals; birds were surveyed using transect lines of 500m length along with photographs; butterflies were also recorded on the same transect using swift nets; survey of herpeto-fauna was conducted diurnally. The survey recorded:

- **11 species of mammals,** including 7 carnivore and 4 herbivore species. Among these, the widely distributed species was the Large Indian civet (*Viverra zibetha*) recorded in 13 grids while the Golden jackal (*Canis aureus*) was recorded only in a single grid.
- **139 species of birds,** out of which most abundant was the Plain martin (*Riparia paludicola*). The only endemic bird of Nepal, the spiny babbler (*Turdoides nipalensis*) was also recorded.
- **124 species of butterflies** recorded.
- **Amphibians** recorded included only 8 species of reptiles and 3 species, since the season was not favorable for herpeto-fauna.

UNIVERSITY-LEVEL RESEARCH SUPPORT

This year, we supported a total of 15 university-level students to undertake academic research on a wide range areas relating to biodiversity conservation and the wildlife sciences. Research areas were aligned with priority areas as identified by existing species and habitat management strategies and plans. In Bardia alone we supported a total of five PhD researchers this year.

Study of *Sitana fusca* in Madhesh Pradesh

Scientific knowledge of the *Sitana fusca* or dark fan-throated lizard, an endemic species of Nepal found in Bardibas area of Madhesh Province, is very limited. With increasing threats caused by habitat destruction, fragmentation and modification brought about by expansion of rural areas, it has become increasingly important to study and understand the ecological status of this species that is categorized by IUCN as being 'Data Deficient'. This year NTNC initiated the field study of the rare lizard using the Visual Encounter Survey Protocol—a method that is able to determine species occurrence, population information and data collection for natural history and habitat. We recorded the endemic species from five districts of Madhesh Province, in Mahottari, Sarlahi, Rautahat, Bara and Parsa. In the process we also recorded 60 species of other herpetofauna, 268 species of birds and 108 species of butterflies from the study area.

Mid-winter waterfowl survey

Waterbird presence is a reliable indicator of healthy wetland ecosystems. Threats to waterbirds come from locally made snares and the use of poison, especially around the wetland habitat, including drying of wetland and waterholes in more recent times, which is a serious concern. To assess the status of winter migratory birds, and determine site-specific issues concerning the survival of migratory birds each year NTNC and together with others carries out the waterbird census. This year:

- In Shuklaphanta National Park, we recorded a total of 4085 birds belonging to 68 genera in the mid-winter waterfowl conducted in January 2021. The census was jointly conducted by ShNP, NTNC-SCP, Himalayan Nature, among other stakeholders and was focused around Rani Tal, Tara Tal, Banda Tal, Belauri, Beldandi farmland, Kalikich Tal, Ghumna Tal, Mahakali River, Sikari Tal, and Radhapur area. During the 2020 census, 2672 ducks representing 14 families, 1512 other waterbird species representing 42 families, and 523 other birds representing 30 families were recorded.
- 124 mid-winter waterfowl species were recorded as part of 2021 census con ducted across various water systems of Bardia National Park. Water systems surveyed included the Karnali, Geruwa and Babai rivers, plus two wetlands lakes, Satkaluwa and Bardiya Taal.

CONSERVATION EDUCATION & OUTREACH

Education extension and outreach have far reaching impacts for creating conservation awareness in communities and individuals. It is in our individual actions that our collective outcome depends, which continues to affect the society and environment. A good conservation initiative is able to educate, inspire and move individuals to be responsible citizens by acquainting with environmentally-friendly attitudes. From this viewpoint, NTNC's conservation education and outreach programmes are targeted namely at three groups: First are the youths, comprising mostly school students, who we perceive as primary guardians of nature; second are the local communities who live in and around PAs, whose daily decisions and actions directly affect nature; and then there is the larger society, whose support and increased responsibility we continually seek. All this we believe is necessary for advancing the roles of individuals, communities and the larger society to do more for nature.

Conservation education and outreach initiatives focusing on schools and local communities, conservation stakeholders and authorities continue to have a vital role for the overall success of the work we do. As protected area managers guided in principal by community-based conservation values, we believe that awareness and attitudes among host communities will have tremendous influence for the future of conservation. This year due to the prevailing covid restrictions many of our planned initiatives had to be downsized. However our involvement and collaboration with students and youths, conservation area and buffer zone area communities remain solid as we continue to promote local sensibilities and responsibilities toward nature.

SCHOOL-FOCUSED ENGAGEMENTS

- Over 84 schools benefitted from NTNC's conservation education and extension programme that is focused on teaching and practicing conservation knowledge in mountain protected areas. More than 5000 students directly benefited from classes and books purposed for this. Compared to other years, due to the prevailing covid situation, school activity remained disturbed for a major part of the year, also affecting our impact.
- Special education sessions on human-tiger coexistence were taken out among 1086 students from eight schools in Bardia this year to develop youth awareness and interest for tigers and their behaviors. This was especially important from the perspective of informing perceptions of communities about the rising human-tiger conflicts cases in Bardia this year.
- Education stipends were provided to a total of over 130 students from marginal communities and groups, women and girls, and wildlife affected families
- New Green Force Clubs (GFC) were established in two schools of Sindupalchok district of GCAP region this year. GFCs are student-formed clubs who activate youth involvement and actions for promoting nature and environment in their respective schools and communities. Their initiatives range from plantation to waste management, educating local households to expressing activism through art and performance. In ACAP region alone there are 54 active GFCs presently.

Special conservation days dedicated to nature and ecosystems have always been a great way for us to engage with the larger community, especially youths. Overall this year NTNC celebrated over ten special day events dedicated to nature and the people who champion it. These included organizing mass awareness events aimed at rallying commitment and action for the future conservation of wildlife and environments, mountains and wetlands and forests, including recognizing the role of women, tourism, etc. on protected area systems. Due to Covid-19, however, many calendar celebrations that were scheduled for the year had to be either cancelled, downscaled or conducted virtually.

COMMUNIY AWARENESS & OUTREACH

- A one-week tour to the Annapurna Conservation Area focusing on nature-based tourism practices and models was organized for 37 buffer zone community stakeholders from Bardia and Banke National Parks
- Broadcasts: Radio programmes brining stories about wildlife and habitats, conservation and communities were aired from six stations in Bardia and Gaurishankar. One television programme on 'tiger conservation awareness' focusing on growing human-tiger conflict cases outside protected areas was aired from Kohalpur NTV.
- Community-focused publications for raising awareness about wildlife conservation issues included: Over 10,000 posters, and 5000 copies of different books and newsletter editorials published and distributed; 23 hoarding boards alerting about conservation-friendly behaviors and actions installed.
- 10 sets of training manuals covering different subjects and themes from climate change sensitization to gender equality and social inclusion, illegal wildlife trade control to tourism management, was prepared for GCAP region.
- An interaction event was organized with 31 local journalists in Bardia focusing on collection and dissemination of stories of interest about biodiversity

conservation, human-wildlife conflict management and anti-poaching operations.

- Community-based interaction and awareness programmes on human-wildlife conflict mitigation practices and building coexisting strategies were organized in the buffer zone and corridor areas of Bardia NP. 17 persons had lost their life in western Nepal from tigers and wild elephants in this fiscal year alone.
- An awareness workshop on wildlife trade control was organized for 41 community members from Laduk in GCAP region, together with police personnel and staff of Bigu Rural Municipality. During this, participants were sensitized about issues and challenges from illegal wildlife poaching and trade along with mechanisms in place for cross-border wildlife trade prevention.
- A coordination workshop was organized between park and buffer zone user committee authorities and local government and provincial government members to enable discussion about issues and potential solutions on park encroachment, poaching and human-wildlife conflict in the buffer zone of Bardia National Park.

CHANGE AGENT MOBILIZATION IN SHUKLAPHANTA NATIONAL PARK

This year NTNC-SCP mobilized one local women change agent, Ms Meena Chaudhary, to lead awareness campaigns around Shovatal user committee, Dhakka, in the buffer zone of Shuklaphanta NP. Meena is also the chairperson of Shovatal UC. The campaign's key interest was at empowering women's roles in local institutions. Initiatives included several workshops focusing on meaningful women participation and leadership in community forest management and local cooperative institutions. Workshop participants, besides women, included park rangers and buffer zone management committee officials. Later the initiative was also instrumental for carrying out mass awareness generation activities at the height of Covid-19 pandemic.

CENTRAL ZOO

Home to more than 1000 animals of 110 species, the Central Zoo is the oldest zoo in Nepal and is being managed by NTNC since 1995. With more than 1 million visitors annually, the Central Zoo has a leading role for ex situ conservation in the country, also enabling conservation education and learning critical for urban populations. Already more than 100,000 students from more than 500 schools inside Kathmandu Valley are a part of our Friends of Zoo (FoZ) membership-based conservation education programme.

Today, the Central Zoo has become a focal point for rescue, rehabilitation and treatment of wild animals from across Nepal. Given the zoo's long history and experience, its responsibilities have taken on other important dimensions for conservation, especially related to leading national capacities in wildlife welfare and safety, rescue and treatment, wildlife research, and urban environment. NTNC is committed to develop the Central Zoo as a center of excellence for conservation education and wildlife research while continuing to develop our expertise in wildlife rescue and rehabilitation and animal management. We are committed to helping animals by bringing science education to life and catalyzing experiences that foster relationships and values between humans, animals and nature.

Central Zoo celebrated its 25th Anniversary under NTNC management this year. Over the years the Central Zoo has become a self-sustaining initiative. Its annual budget, outside of the Covid-19 period, is about NPR 150 million, from NPR 6 million when it was first handed over to NTNC. It is a leader of ex-situ conservation values in Nepal and has membership in international networks such as the Zoological Information Management System, Member of Species 360, International Zoo Educators, South Asian Zoo Association, and South Asian Zoo Association Regional Cooperation. All this will be a crucial capacity for Nepal's future ex situ conservation embarking, especially for the many disparate zoo's existing or being planned at the provincial level.

ZOO MAJOR HIGHLIGHTS

Reopening of Central Zoo

Nine months after almost being entirely closed off to visitors due to the Covid-19 restrictions in 2020, the Central Zoo reopened in December 2020 to again be closed in April 2021 for another three months. In its history it was the first time the zoo remained shut for this long. Once permitted to reopen the premises by the Government of Nepal, we did so keeping topmost priority for the safety of our visitors, zoo animals and staff. Mandatory masking, using sanitizer and foot dip, thermal checkup, prohibition on using picnic sheds, children park, touching bars, spitting and physical distancing measures were put in place. Covid information boards and support staffs were also kept to guide visitors. To avoid physical crowding at our ticket counters, we launched the zoo online ticketing system encouraging the public to book directly from home.

A Standard Operating Procedures (SOP) to facilitate the safe reopening of the zoo has been developed for covid safety. Due to the Covid-19 restrictions the zoo was closed off to visitors entirely, or with very limited visitor access allowed, for almost the full fiscal year. Zoo reopening protocols included limiting the number of daily visitors, maintaining strict biosecurity measures, enforcing personal hygiene, maintaining physical distancing and following other necessary safety rules and regulations keeping in mind the safety of zoo visitors, animals and staff.

Silver Jubilee year of NTNC-Central Zoo

29 December 2020 marked 25 years since NTNC was first handed over the responsibility to manage the Central Zoo in Jawalakhel. As the oldest and only national-level zoo in the country, the Central

Zoo continues to lead the way in promoting ex- situ conservation values, wildlife rescue and treatment, animal welfare, conservation education and recreational learning, along with scientific research. Ever since the zoo's management was handed over to NTNC in December 1995 the six hectare zoo facility has established itself as a self-sustaining go-to centre for promoting wildlife conservation and environmental collaboration, especially among the urban youth. Due to the prevailing Covid-19 restrictions, only a small celebration event was observed to mark the milestone, which was accompanied by a zoo-focused discussion between NTNC's member secretary, zoo staff and friends of zoo (FOZ) members on new ways to enhance the zoo's impact on public lives, an elephant feeding programme, prize distribution event and zoo tour with visitors, journalists, FOZ members and coordinators.

Under NTNC's management the Central Zoo has become a fully self-sustaining initiative today. Its annual budget—not taking the covid period—is around NPR 150 million, from NPR 6 million when it was first handed over to NTNC. Together with its valuable experience and impact on wildlife and people's lives, the Central Zoo has membership in international networks such as the Member of Species 360, International Zoo Educators Association, and South Asian Zoo Association Regional Cooperation. All of this being a crucial capacity for Nepal's future ex situ conservation embarking, especially for the many new zoo initiatives being envisioned at the provincial level.

Adopt-an-Animal campaign launched

Keeping with the silver jubilee celebrations, this year we launched the 'Adopt-an-Animal' campaign targeting animals at the Central Zoo. At the launching programme organized on 03 March, former Prime Minister K.P. Sharma Oli and his wife adopted the first animal of the campaign, a one-horned rhinoceros. Joining the prime minster were seven other adoptees, among whom were the then sitting Minister for Forests and Environment Mr. Prem Bahadur Ale, who adopted an Asian elephant, and a ten-year old student Vivan Singh Basnet, who adopted a love bird. Given the campaign's wide reception across ages and occupations, both from inside and outside Nepal, in the future NTNC plans to extend its campaign to include animals beyond the zoo's collection, especially focusing on orphaned, rescued or diseased animals from across Nepal who need special support and care.

Beginning with the highest office of the government, the Adopt-an-Animal campaign has been launched to celebrate 25 years of the Central Zoo under NTNC management. The campaign aims to create an opportunity for interested individuals, groups or organizations to promote a circle of responsibility, inclusiveness and agency towards building a personal relationship with wildlife. The campaign's timing is also important from the perspective of Covid-19's financial impact on the zoo management, given that it was completely shut for most part of the year. By adopting an animal of your choice, you are pledging support to meeting its diet and health needs, enclosure management and enrichment facilities, and other zoo-keeping and specialized services for one year. You can adopt an animal of your choice directly from the NTNC website.

E-Ticketing System launched at Central Zoo

We also launched the zoo e-ticketing system this World Wildlife Day through the then-Prime Minister KP Sharma Oli. This means going forward visitors can conveniently purchase their tickets online. In turn this will also help prevent physical crowding of zoo counters in the face of Covid-19. The technology has been built in collaboration with E-Sewa and Laxmi Bank. More than one million visitors are anticipated to annually benefits from this new facility.

Rare albino Barking deer at Central Zoo

A rare albino male Barking deer fawn that was rescued is currently being cared for at the Central Zoo. The deer was weak and emaciated and needed proper nutrition when it was handed over to the zoo for treatment. After experimenting with different varieties of food the fawn took a liking to small grass, carrot along with milk. The deer has been named Himal by his keeper and has adapted well to the zoo environment. Deworming is done and the fawn is being kept in the quarantine area of Central Zoo for further observation and care. Albinism is a condition causing white coloration of skin, hair, feather and scales in mammals, birds, reptiles, amphibians, fish and even invertebrates due to congenital absence of any pigmentation from reduced amount of melanin.

Donations received

On an average yearly expenses for managing the Central Zoo amount in excess of NRs 150 million, the bulk of which include costs related to meeting daily dietary requirements of animals and ensuring their proper care, nourishment and health needs. Under normal circumstances the zoo's management expenses are mostly funded through visitor entry fees. This was not possible with the zoo being closed to the public for the majority of this fiscal year. Besides funds received from the launching of the zoo Adopt-an-Animal campaign, that is anticipated to generate public funding for zoo animals, this year we received donations from:

- **Cash donation of NRs 1 million from Lalitpur Metropolitan City** was received this year to support the zoo's daily operation costs that was severely affected by the Covid-19 closedowns. Mayor of Lalitpur Mr. Chiribabu Maharjan handed over a cheque to the Central Zoo expressing the need for additional measures to support the zoo and promoting local resource collaboration measures for looking after its animals. The received amount will be spent on animal-feed and diet-related expenses.
- **Portable X-Ray machine** was purchased this year with the financial support received from Nepalmed e.V., Germany. Central Zoo expresses special thanks to Dr. Arne Drews and his team for the support aimed at strengthening the diagnostic facility of Central Zoo hospital.

Proper diagnosis is a fundamental capacity for the good recovery of animals undergoing treatment, including for orphaned or rescued animals in nursery and quarantine, who are required to be regularly observed, screened and tested.

ANIMAL MANAGEMENT

Animal feeding

Central Zoo's animal feeding programme is most popular among Friends of Zoo (FOZ) members. Due to the Covid-19 restrictions this year physical presence of students at the zoo was not possible. Most programmes had to be conducted virtually via Zoom. A total of 820 FOZ members from 15 schools participated in virtual animal feeding programmes this year. Here online experiences were organized around a virtual tour of the animal feeding responsibilities at he zoo with recorded videos of stepwise procedure from animal kitchen preparation to animal serving. The programme's main objective is to create student awareness about feeding behaviors of animals and to demonstrate the complex and interesting process of food preparation at the zoo, which in many ways is relatable to our own dietary regimes.

To understand the virtual programme's effectiveness, a pre- and post-survey questionnaire marking student's knowledge before and after animal feeding class and virtual tour was conducted among 452 students from 15 schools. Students got 91% correct answers in the post-survey as compared to 43% in the pre-survey, with difficulty level of questions being evaluated at 63% in the pre-survey, compared to 9% in the post-survey.

Dana aahara

Provision for varieties of feedstuff (*Dana aahara*) continued to be made for the entire zoo collection of 1008 animals of 112 species following modern zoo husbandry guideline, their natural feeding habit and nutritional requirements. Animal nutrition at the zoo prioritizes taking care of both physical and mental wellbeing of captive animals. Agreement were signed with various food supply contractors, from food grains, meat and fish, fruits, vegetables and fodder. Besides animal dietary arrangements, to ensure proper sanitary and storage is practiced, we focus on disinfecting against germs, bacteria and pesticide regularly.

Animal health and treatment

Administering treatment for various infectious and non-infectious diseases, along with undertaking preventive measures for external and internal parasites, is a routine responsibility at the Central Zoo. Disease diagnosis and treatment are regularly carried out and different viral, bacterial, parasitic and fungal infections are treated appropriately. Annually, deworming is done twice, and when required treatment is provided for signs and symptoms of worm infestation. Animals in captivity as well as in their natural environment commonly suppress their signs and symptoms to be safe from other animals in the same group or from predators, which can lead to cases of sudden death. Treatment is based on the proper diagnosis of the disease and a major consideration is the history of the animal. Necropsy is the major diagnostic tool and disease surveillance method used.

This year animals like Sloth bear, Common palm civet, Blue bull, Royal Bengal tiger, Greater one-horned rhinoceros, Wild water buffalo, Himalayan black bear, and Barking deer, among others were diagnosed and treated along with different bird species treated for their signs and symptoms and lesions found in necropsy. There were case of Golden Pheasant which had Ranikhet disease (New Castle disease) which was confirmed by PCR test in Central Veterinary Hospital after which preventive measures and medication were carried out appropriately and the vet team was able to reduce the mortality and improve the health condition of the bird flock.

Risk of diseases in animals can be reduced by regular monitoring for health status of animals, following proper isolation and quarantine protocols, using preventive measures that should be applied for the welfare of animals in captivity, putting in place high biosecurity measures, carrying out routine animal health inspection and using different multivitamins, minerals and other medicines as preventive and supplemental measures.

> Despite of medical interventions, this year the zoo lost an important species, the Ring tailed lemur. Given the species' importance, which is listed as endangered in the IUCN red list, diagnosis and treatment was done in consultation with the vet from ZSL-London Zoo. However it could not be saved due to severe infection.

Nursery and quarantine management

At the zoo, animals requiring special attention and regular observation are kept separately in the nursery area. Every year these include a good number of animals that are suspected of infectious diseases who risk transmission to entire groups or flocks. Quarantined animals also include the hundreds of rescued and orphaned animals that are brought to the Central Zoo. Here along with providing special care, proper diagnostic procedures through lab tests is done and necessary provisions for treatment of the animal is made if necessary. An X-ray machine has been added this year to improve the zoo's diagnostic capacity:

> One male Common leopard which was severely ill and which was not able to stand on its own was rescued from Danchi, Kathmandu. The animal was brought to the Central Zoo from where regular observation and treatment has led to recovery of the leopard's health, appetite and natural behavior. Many more rescued as well as resident animals that were kept in the nursery and quarantine facility, have been successfully treated and released after rehabilitation.

Enrichment activities

Animals in captivity facing stress and showing stereotypic behaviors require regular enrichment interventions to that promote their natural experiences. Enrichment activities are done to influence animal physical, mental, and social wellbeing, which often results in the overall health of the animal and may therefore be considered an integral component of a preventative veterinary medicine programme. Different enrichment activities providing the environmental stimuli necessary for optimal psychological and physiological wellbeing of the animals at the Central Zoo was made throughout the year.

Enrichments included hanging branches with leaves, use of substrates in ungulates, pumpkin stuffed with meat treat for Royal Bengal tiger, different ropes, toys, balls, swing and substrates for primates, hidden foods for bear, branches and substrates for birds, among many more. Tyres were hung in bear enclosure to encourage physical activity and food enrichment initiatives were made to reduce the stereotypic behavior in Himalayan black bear, and many other enrichments that target to replicate natural environments, like contra freeloading exercises, where animals have to work for their food, were made.

Enclosure construction

At the Central Zoo, enclosure renovation, repair and construction is a routine and priority undertaking. Ensuring animal-friendly structures, features and facilities that improve animal physiological and mental health is a priority for us. This year four new enclosures were constructed in Section-1 at the Central Zoo for Sambar deer, Four-horned antelope, Blue bull and Wild boar. All the new enclosures are equipped with enrichments like food tray and water tray, greenery and forage, including additional enrichments for animal activity preferences and stimulation techniques. Enclosure work for the eagerly anticipated Chimpanzee exhibition has also been initiated.

Cage repair and renovation

Regular use of enclosures and its surrounding by animals requires us to undertake regular renovation and changes. This year, repair and renovation works included walls and sheds improved for the Wild water buffalo and Rhino enclosures. Minor repair work was also done in enclosures of bear, tortoise and python.

Animal collection

During this fiscal year, different animals were brought to the Central Zoo to add to its animal collection from different parts of the country. Four Himalayan monal (Danfe) were collected from Jumla, Dolpa and ACAP region. One male Blackbuck was collected from Nepalgunj. Divisional forest offices of different districts helped in the animal collection, like Blue Bull from Sindhuli, Barking deer from Kavre and one Blue bull collected from Shuklaphanta National Park.

ANIMAL RESCUE AND REHABILITATION

This year the Central Zoo rescued a total of 283 animals, including, 52 mammals, 204 birds, 25 reptiles and amphibians, and two fish. Rescue operations are carried out in close coordination with DNPWC, District Forest Office and Nepal Police. Animals rescued receive detailed clinical examination under the supervision of the vet team and are kept in quarantine for few days at the animal hospital of Central Zoo. Those that become healthy and free from disease are reintroduced back in the wild. Severely injured and orphaned animals, or infant and old age individuals with reduced ability to hunt or forage for food, and who are unable to fend for themselves in the wild are kept under intensive care at the Central Zoo for further treatment and care.

Wildlife rescue and rehabilitation is today a major undertaking at the Central Zoo. Increasing urbanization, especially around Kathmandu Valley, has led to rising incidents and overlap between humans and wildlife, in turn leading to increased conflict and casualty events.

Species	Total individuals rescued
Mammals	*52*
Birds	*204*
Reptiles	*25*
Fish	*2*
Total	***283***

CONSERVATION BREEDING

Captive breeding of animals at the Central Zoo is a reliable indicator of healthy animals. It is also an important aspect to be considered for ensuring demographic and genetic backup to wild populations that back reintroduction of particular species in the wild when needed. Besides, they are also necessary for ensuring that target species populations are sustained within the zoo itself. For the purpose of conservation breeding we had purchased an egg incubator last year. This year there were successful hatchings of Ring-necked pheasant and Golden pheasant. Each year research projects focusing on breeding of different endangered animals are carried out. However this could not be carried out this year due to Covid-19.

CONSERVATION EDUCATION

NTNC-Central Zoo has implemented its Conservation Education Programme for more than two decades now. The programme's flagship Friends of the Zoo (FOZ) network began in April 1997 with 2000 members, among whom 1500 were students. Its principal aim today continues to focus on developing public awareness about nature conservation issues and encourage environmental collaboration and engagement, especially focusing on urban youths.

With an average 6000 active members registered annually, over the years the FOZ network has connected over 100,000 students from more than 300 schools in Kathmandu Valley. Our education programme promotes outdoor education and learning in natural settings, environment advocacy and activism through art, poetry, and performance. Over the years this kind of hands-on engagement and live interaction with nature has received wide support from students, teachers and principals, including parents and guardians.

This year due to the Covid-19 restrictions on the Central Zoo, for the major part of the year physical and outdoor activities at the zoo had to be downsized to a large extent. Instead online classes and activities were adapted.

EVENTS & CELEBRATIONS

Due to the covid restrictions, annual celebrations of important days at the zoo, which are usually observed with high physical involvement and energy, had to be

replaced with online celebrations, or they had to be downsized. However we were still able to reach out to a sizable number of students, teachers, parents, and nature advocates. This year we celebrated six major events at the zoo, covering:

- **Global Tiger Day:** A webinar session on "Tiger and its Conservation in Nepal" for FOZ members was organized. Tiger expert and programme manager of Central Zoo Dr. Chiranjibi Prasad Pokheral presented facts about tigers, their importance on ecosystem, their conservation status, global threats, and Nepal's ongoing success to double its tiger population by 2022. This was followed by a lively interactive session between students and an expert panel focusing on the theme "Caring for tigers for a healthy environment".
- **World Rhino Day:** Celebrated through a webinar with FOZ members on "Rhino and its Conservation". Dr. Babu Ram Lamichanne from the NTNC-Biodiversity Conservation Center in Sauraha, Chitwan shared about traits of the rare pachyderms, their conservation initiatives and wide ecosystem linkages; followed by Q&A.
- **International Red Panda Day:** Organized a webinar on "Red Panda and its Conservation" for FOZ members. Red panda expert Dr. Hari Sharma, Professor of Central Department of Zoology presented about the unique reddish-brown furry solitary animal of the zoo and detailed about the species existence being threatened by poaching, habitat destruction and fragmentation and inbreeding.
- **World Environment Day:** We organized a literature festival and knowledge sharing session among 250-plus FOZ members virtually focusing on awareness-building about the current environmental crisis and potential for youth-led solutions. Despite the pandemic, this year we initiated the "Plant a Tree" campaign in collaboration with FOZ members calling on all youths to plant at least one tree to support this year's WED theme for "Ecosystem Restoration".
- **International Biodiversity Day:** Virtual celebration among 99 FOZ members conducted through knowledge sessions focusing on concepts about nature-based solutions for reversing biodiversity loss and mainstreaming ecosystem restoration and biodiversity recovery initiatives.
- **World Wetlands Day:** Observed by organizing action poem competitions among FOZ students based on event theme "Wetlands and Water". Here passionate expressions about the inherent value of wetland habitats for biodiversity conservation, human wellbeing, and economy were presented. In total seven prizes recognitions awarded for best poem submissions.

On-demand classes for FOZ members

As per demand and needs of FOZ member schools, this year we organized a series of webinar sessions reaching out to 957 FOZ members from 23 different schools in total. These included special sessions for FOZ members of St. Mary's school on the topic "Ecosystem Restoration" by the Central Zoo's conservation education and information officer Ms. Lina Chalise. Other major

webinar series topics included: Animals of Zoo, Birds of Zoo, Elephant of the Zoo, Mammals of the Zoo, Solid Waste Management, Sharing the planet, and Ecosystem Restoration by Central Zoo educator Ms. Renuka Bhandari.

Adopt-an-Animal campaign knowledge sharing among FOZ members

NTNC successfully launched its 'Adopt-an-Animal' campaign this year to mark 25 years of the Central Zoo under NTNC management. The programme was launched by the then-Prime Minister of Nepal K.P. Sharma Oli together with his spouse Ms. Radhika Shakya on the occasion of World Wildlife Day 2021 where they also made the first animal adoption pledge for a one-horned rhinoceros.

To promote awareness and knowledge about the adoption campaign among FOZ members, we conducted multiple virtual knowledge sessions covering a total of 437 students from across FOZ schools. FOZ members are already playing an important part in the campaign's advocacy which is helping to widen public interest about the conservation and social merits of the campaign's cause to promote a sense of guardianship and animal-human bonding.

Night guided tour

A total of 576 FOZ members from 17 different schools participated in this year's night guided programme that is aimed at discovering the secret life of nocturnal animals. Here we provide participants special opportunities to interact and understand about animal behaviors from up-close. The tour is one of the zoo's most popular programmes, causing much excitement and intrigue among children, and is privileged only for FOZ members.

FOZ coordinators meeting

FOZ coordinator interaction meeting was organized among 27 FOZ coordinators, who are educators responsible for leading the FOZ programme implementation, engagement and networking across FOZ schools. The main agenda of the meet was to discuss and provide feedback on the zoo's annual educational programme. With the end of the current tenure of FOZ coordinator committee a new FOZ teachers committee has been reformed for the next two years. Members of the newly formed committee are Damodar Dahal as Chairman, Khagendra Nepal as Secretary, Pradeep Maharjan as Treasurer and Singh Raj Thapa and Rita Adhikari as members, and Devi Ghimire, Indra Raj Bhattarai and Bhakti Ghimire as advisors. NTNC-Central Zoo would like to congratulate the new committee and wish them all the luck for their tenure and extend our sincere thanks to the outgoing committee for their continuous support in smooth conduction of the education programme.

Climate change awareness-building

Focusing on building awareness about Nepal's high vulnerability to climate change, knowledge sessions for FOZ members on climate change adaptation and resilience building was undertaken this year. Discussions on existing vulnerabilities, causes exasperating these vulnerabilities, and the need for building resilience among its people, where about 80 percent of its population live in rural areas and 70 percent depend on rain-fed agriculture, were highlighted. Impacts on the lives and livelihoods of millions as a consequence of projected climate-induced disasters and underlying risk to food security and water security systems were demonstrated. Together with this, the power of nature-based solutions and community-led solutions, role of biodiversity and forests, and green development initiatives were highlighted.

Home garden plantation project

This was launched to encourage students to understand first-hand the power of nature, the process of germination, the process of life initiation, and the

importance of greens in our life. As part of the project, students were tasked to plant seedlings at home and to record its growth. Most students shared a growing sense of fulfillment and responsibility from the plants they tended to. Teachers have commended student's investment in the project and have noted its positive impact on them. The initiative is also supporting the Central Zoo's "plant a tree" campaign launched on World Environment Day this year where FOZ members are encouraged to plant and look after at least one tree.

GENERAL MANAGEMENT

Central Zoo's general management requires it to cover wide priorities that ensure the six-hectare facility operates smoothly every day and is sufficiently provisioned as required. This involves responding to the zoo's overall infrastructure and facility needs, provisioning for the zoo's safety and utility requirements, and maintaining and upgrading its spaces, facilities and features. Besides regular general management tasks, interventions made this year were on:

Greenery enhancement

The Central Zoo which is located in the heart of the capital is also famously dubbed as a green park. The facility takes particular reputation in the variety of flowers and plant life grown here, which is then tended to and maintained with great care. This year a greenhouse for growing flowers and herbs, which can later be replanted in the zoo premises, has been constructed.

Infrastructure repair and maintenance

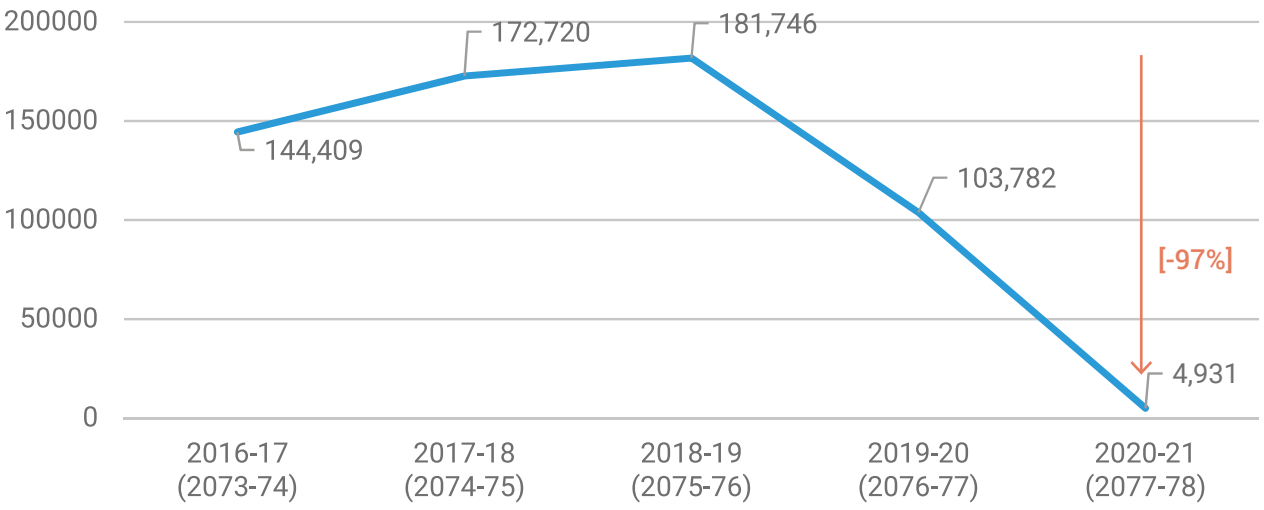
- Meeting hall repair, painting and furnishing work done
- Historical drainage system at the zoo dating back to the Rana period reconstructed
- Pavement around zoo premises repaired
- Shed constructed for zoo electric transmission unit
- Staff facility constructed

Visitor facilities

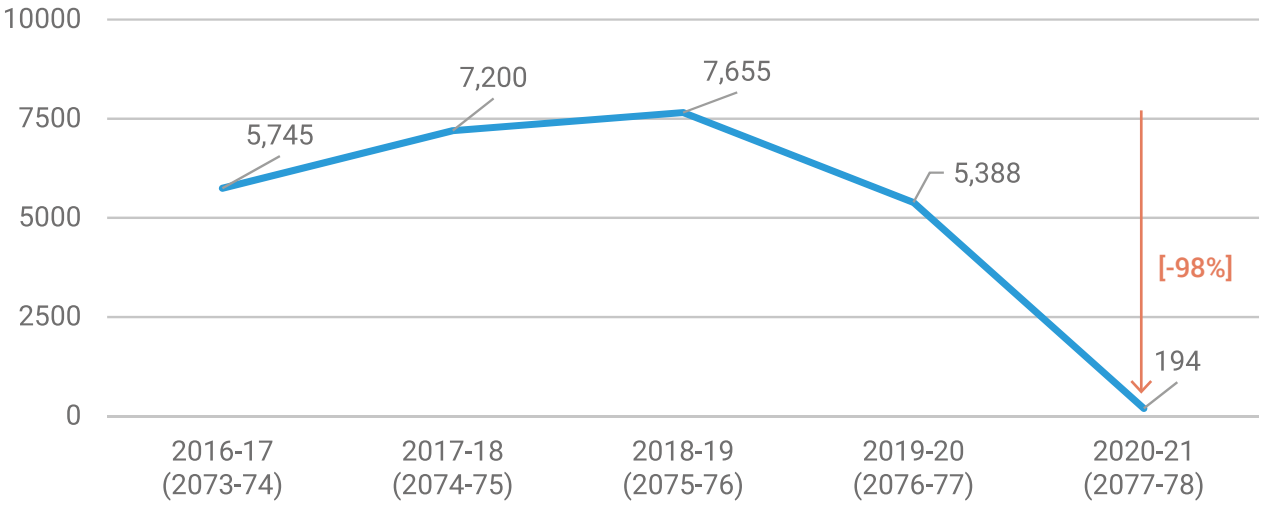
- Children's park inside the zoo upgraded this year, with new items added for more entertainment and activity.
- Boating facility that was kept on halt for a long time due to covid was kickstarted again for zoo visitors.
- A new zoo cafeteria came to operation from this year. However due to the Covid-19 restrictions, it had to remain closed for the major part of the year.

TOURIST/VISITOR DATA

Annapurna Conservation Area

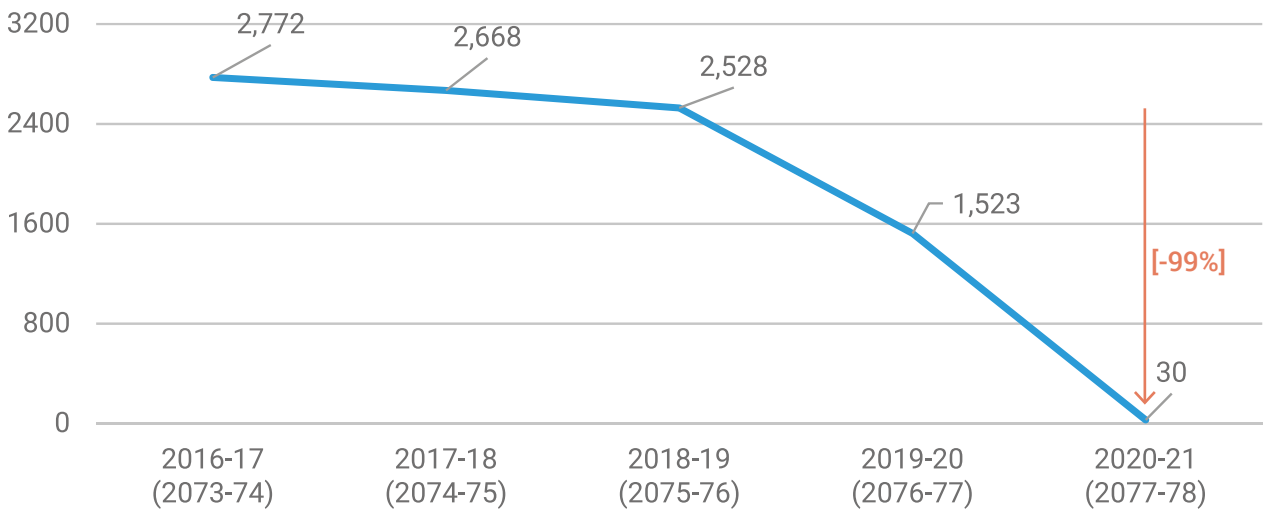


Manaslu Conservation Area

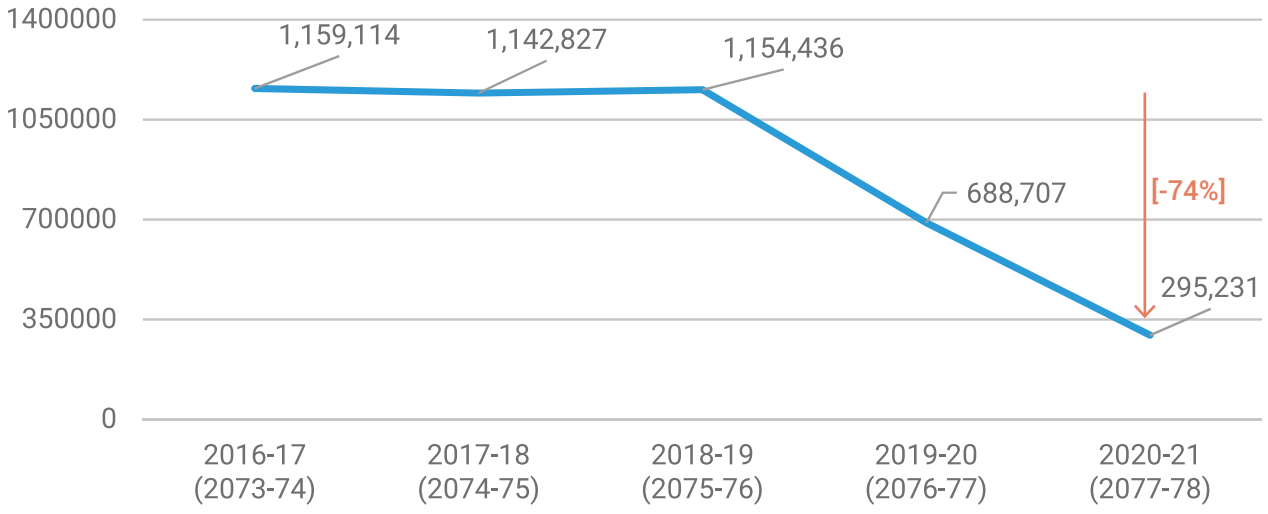


** Tourists data does not include Nepali tourists*
** Pre-covid year is taken as 2018-19*

Gaurishankar Conservation Area



Central Zoo



FINANCIAL STATEMENTS 2020-21 (2077-78)

For details visit link :
https://ntnc.org.np/sites/default/files/doc_page/Audited%20Financial%20Report%202020-21.pdf

महालेखापरीक्षकको कार्यालय
Office of the Auditor General
बबरमहल, काठमाण्डौं, नेपाल
Babar Mahal, Kathmandu, Nepal

Ref. No.- 62/2021/22

Date: 22nd June, 2022

AUDIT REPORT

To,
National Trust for Nature Conservation (NTNC)
Khumaltar, Lalitpur.

Report on the Financial Statements

We have audited the accompanying Financial Statements of the National Trust for Nature Conservation (NTNC) which comprise the consolidated Statement of Financial Position as on 15th July 2021 (31 Ashadh, 2078 B.S), Consolidated Statement of Comprehensive Income and Cash Flow for the year then ended and a summary of accounting policies and other explanatory notes.

Management's Responsibility for Financial Statements

Management is responsible for the preparation and fair presentation of Financial Statement in accordance with Generally Accepted Accounting Principles (GAAP).This responsibility includes :designing, implementing and maintaining internal control relevant to preparation and fair presentation of financial statement that are free from material misstatement, whether due to fraud and error, selecting and applying appropriate accounting policies and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express opinion on these financial statements based on our audit. We conducted audit in accordance with Fundamental Principles of public sector auditing issued by The International Organisation of Supreme Audit Institutions (INTOSAI), Government auditing standards and directives and guidelines issued by the Office of Auditor General Nepal (OAGN). Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud and error. In making those risk assessment, the auditor consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the accompanying financial statements present fairly in all material respects, the financial position of the National Trust for Nature Conservation (NTNC) as at 15th July 2021 (31 Ashadh, 2078 B.S), and its financial performance for the year then ended In accordance with Generally Accepted Accounting Principles (GAAP) used by the Trust.

Bamdev Sharma Adhikari
Deputy Auditor General

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"जनहितका लागि जवाफदेहिता, पारदर्शिता र निष्ठा प्रवर्धनमा विश्वसनीय लेखापरीक्षण संस्था"

NATIONAL TRUST FOR NATURE CONSERVATION

Khumaltar, Lalitpur, Nepal

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

As at Ashad 31, 2078 (15 July, 2021)

Amount in NPR

Particulars	Current Year Ashadh 31, 2078 (July 15, 2021)		Previous Year Ashad 31, 2077 (July 15,2020)	
Assets :				
Non Current (Fixed Assets)		**379,246,258.94**		**394,873,279.34**
Investments		**819,551,000.00**		**971,618,000.00**
General Investment	280,409,000.00		372,592,000.00	
Employee Benefit Fund Investment	509,142,000.00		559,026,000.00	
Human Wildlife Conflict Management Fund	30,000,000.00		40,000,000.00	
Current Assets:		**174,254,483.26**		**237,844,312.92**
Cash and Bank Balances	145,991,685.61		188,897,605.23	
Advances	4,345,521.91		5,252,619.16	
Accounts Receivable	23,917,275.74		43,694,088.53	
TOTAL		1,373,051,742.20		1,604,335,592.26

Fund and Liabilities				
Endowment Fund		**68,930,000.00**		**68,930,000.00**
Employee Benefit Fund Payable		**480,901,567.37**		**556,064,578.78**
Staff Welfare Fund	17,048,871.35		15,771,049.84	
Provision for Gratuity	377,348,064.53		445,658,259.71	
Provision for Annual and Sick Leave	86,504,631.49		94,635,269.23	
Capital Assets Fund		**337,200,989.39**		**346,205,137.76**
Exchange Equalization Reserve		**261,525,938.04**		**267,659,852.46**
Restricted Fund Balance				
Projects		**(40,782,333.25)**		**61,914,147.85**
Opening Balance upto last year	61,914,147.85		173,477,248.66	
Add : Current year balance	(102,696,481.10)		(111,563,100.81)	
Others (Restricted Fund)		**77,047,467.28**		**121,471,561.97**
Opening Balance upto last year	121,471,561.97		131,762,472.51	
Add : Current year balance	(44,424,094.69)		(10,290,910.54)	
Human Wildlife Conflict Management Fund		**36,092,390.36**		**51,430,495.99**
Opening Balance upto last year	51,430,495.99		63,794,485.27	
Add : Current year balance	(15,338,105.63)		(12,363,989.28)	
Accumulated Surplus:		**53,820,116.80**		**48,683,664.49**
Surplus upto Last Year	48,683,664.49		104,557,902.66	
Less: Deficit adjusted in current year	-		-	
Add: Current Year Surplus/(Deficit)	5,136,452.31		(55,874,238.17)	
Current Liabilities		**98,315,606.21**		**81,976,152.96**
Current Liabilities	97,527,810.88		81,887,420.68	
Non Current Liabilities (Long term liabilities)	787,795.33		88,732.28	
TOTAL		1,373,051,742.20		1,604,335,592.26

BIDUR PRASAD POKHAREL
HEAD OF FINANCE

SHARAD CHANDRA ADHIKARY
MEMBER SECRETARY

BAMDEV SHARMA ADHIKARI
DEPUTY AUDITOR GENERAL

NATIONAL TRUST FOR NATURE CONSERVATION
Khumaltar, Lalitpur, Nepal

CONSOLIDATED INCOME AND EXPENDITURE
For The Period 01 Shrawan 2077 to 31 Ashad 2078 (16 July 2020 to 15 July 2021)

Amount in NPR

Particulars	Current Year for the year ended Ashadh 31, 2078 (July 15, 2021)	Previous Year for the year ended Ashad 31, 2077 (July 15, 2020)
INCOME :		
External Sources		
Received During the Year (Restricted)	166,421,139.67	158,491,023.34
NTNC- Human Wildlife Conflict Management Fund	18,681,115.25	10,927,173.16
Internal Sources	154,069,568.81	514,684,889.49
Total Income	**339,171,823.73**	**684,103,085.99**
EXPENDITURES :		
Project Expenditures (Restricted)	161,570,885.54	160,101,813.16
NTNC- Human Wildlife Conflict Management Fund	18,681,115.25	10,927,173.16
Sub Total	**180,252,000.79**	**171,028,986.32**
General Management (Internal)		
Personnel Related Cost	101,716,023.60	234,621,271.10
General Management (Administrative and Support)	51,337,178.22	125,434,004.13
Project Cost and Support	98,576,395.78	322,066,953.24
Sub Total	**251,629,597.60**	**682,122,228.47**
Total Expenditure	**431,881,598.39**	**853,151,214.79**
Total Internal Fund Surplus / (Deficit) Transferred to Balance Sheet	**(97,560,028.79)**	**(167,437,338.98)**
Surplus (Deficit) of Restricted Projects (ACAP & C Zoo)	**(102,696,481.10)**	**(111,563,100.81)**
Internal Fund Surplus / (Deficit) Transferred to Balance Sheet	**5,136,452.31**	**(55,874,238.17)**

BIDUR PRASAD POKHAREL
HEAD OF FINANCE

SHARAD CHANDRA ADHIKARY
MEMBER SECRETARY

BAMDEV SHARMA ADHIKARI
DEPUTY AUDITOR GENERAL

NATIONAL TRUST FOR NATURE CONSERVATION

Khumaltar, Lalitpur, Nepal

CONSOLIDATED STATEMENT OF CASH FLOW

For The Period 01 Shrawan 2077 to 31 Ashad 2078 (16 July 2020 to 15 July 2021)

Amount in NPR

Particulars	Current Year As at end of Ashadh 31, 2078 (July 15, 2021)	Previous Year As at end of Ashad 31, 2077 (July 15, 2020)
A. Cash Flows from Operating Activities		
Surplus/ (Deficit)		
Surplus/ (Deficit) adjusted in current year	**(97,560,028.79)**	**(167,437,338.98)**
Adjustment for:		
Add :		
Depreciation of Fixed Assets	6,582,954.27	8,126,345.95
Disposal of Capital Assets (Write off)	-	-
Less :		
Income from Investment	(50,149,134.66)	(62,915,230.39)
Other Income	(41,246,440.33)	(45,595,679.20)
Operating Surplus before Working Capital Changes	**(182,372,649.51)**	**(267,821,902.62)**
Adjustment for Working Capital Changes:		
Advances	907,097.25	7,403,053.93
Accounts Receivable	19,776,812.79	(656,433.36)
Accounts Payable	(58,823,558.16)	128,910,004.68
Net Cash from Operating Activities (A)	**(220,512,297.63)**	**(132,165,277.37)**
B. Cash Flows from Investing Activities:		
Less :		
(Additions)/ Disposal of Fixed Assets	15,553,956.86	13,348,575.41
Depreciation of Fixed Assets	(6,509,890.73)	(8,030,919.04)
Decrease/(Increase) in Investment	160,572,000.00	(84,889,500.00)
Add :	-	-
Interest received from Investment	50,149,134.66	62,915,230.39
Other Income	41,246,440.33	45,595,679.20
Net Cash used in Investing Activities (B)	**261,011,641.12**	**28,939,065.96**
C. Cash Flows from Financing Activities:		
Restricted Fund Balance	(59,762,200.32)	(22,654,899.82)
Capital Assets Fund (Donation in kind on capital)	(9,004,148.37)	(9,669,883.38)
Exchange Equalization Reserve	(6,133,914.42)	41,246,743.21
Net Cash used in Financing Activities (C)	**(83,405,263.11)**	**8,921,960.01**
D. Net Increase/(Decrease) in Cash and Cash Equivalents (D=A+B+C)	**(42,905,919.62)**	**(94,304,251.40)**
E. Cash and Cash Equivalents at beginning of period	**188,897,605.23**	**283,201,856.63**
F. Cash and Cash Equivalents at end of period (F=D+E)	**145,991,685.61**	**188,897,605.23**
Cash comprises of Bank and Cash Balances		
Cash in Hand	543,888.41	1,132,722.40
Cash at Bank	145,173,037.20	187,490,122.83
Gold and Silver Coins	274,760.00	274,760.00
TOTAL	**145,991,685.61**	**188,897,605.23**

BIDUR PRASAD POKHAREL
HEAD OF FINANCE

SHARAD CHANDRA ADHIKARY
MEMBER SECRETARY

BAMDEV SHARMA ADHIKARI
DEPUTY AUDITOR GENERAL

NATIONAL TRUST FOR NATURE CONSERVATION

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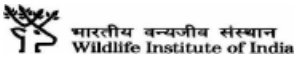


Special appreciation goes out to all protected area community members and local leaders in the Annapurna, Manaslu and Gaurishankar Conservation Areas, buffer zone communities in Chitwan, Parsa, Banke, Bardia and Shuklaphanta National Parks, in Koshi Tappu Wildlife Reserve, whose day-on-day roles in conservation behind the scenes remains invaluable.

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