

# IMPORTANT BIRD AND BIODIVERSITY AREAS IN NEPAL

KEY SITES FOR CONSERVATION





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## FOREWORD

I am delighted that Department of National Parks and Wildlife Conservation, Department of Forests and Soil Conservation and Bird Conservation Nepal, are bringing out an update of the 2005 publication, 'Important Bird Areas in Nepal'. This comprehensive update reflects the collective commitment to avian conservation in Nepal. The nation's diverse landscape, rich biodiversity, and remarkable array of bird species are highlighted, with the initial groundwork laid in 2005 edition. The inclusion of 42 Important Bird and Biodiversity Areas, compared to the previous 27, signifies the evolving understanding of our avian biodiversity. The meticulous work and partnership showcased in this endeavour exemplify the synergy required for effective conservation measure. This updated 'Important Bird and Biodiversity Areas in Nepal' now has a focus on all of Nepal's biological diversity.

The revelation that Nepal's total bird species has reached 892 underscores the richness of our ecosystems, emphasizing the need for ongoing vigilance and concerted efforts in preserving these species and their habitats. This publication not only serves as a valuable reference for researchers, conservationists, and policymakers but also as an educational tool to foster public awareness. The Ministry of Forests and Environment remains steadfast in its commitment to support initiatives promoting sustainable environmental practices and the conservation of our natural heritage.

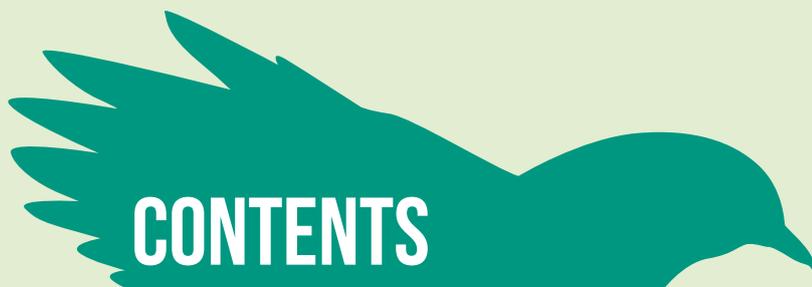
Initially most of the studies were made by foreigners, but for some time these studies have largely been undertaken by a fast-growing number of Nepalis. Unfortunately, assessments of the state of our nation's birds in recent years have revealed a worrying decline in many species. This is likely to be matched by falling populations of other fauna in Nepal.

The Important Bird and Biodiversity Areas (IBA) programme seeks to identify priority sites, why they are important and their current conservation status. The IBAs are chosen based on objective, global standards and criteria. IBAs are therefore sites of international as well as national importance. This updated IBA inventory will provide guidance to decision makers to focus the limited resources that are available on these vital sites for conservation. It is hoped this publication will be useful to birdwatchers and naturalists throughout Nepal to study further the amazingly diverse wildlife of our country leading to a better understanding of their populations and distribution of wildlife.

I extend my sincere appreciation to the Department of National Parks and Wildlife Conservation, the Department of Forests and Soil Conservation and Bird Conservation Nepal along with all stakeholders involved. May this updated edition serve as a catalyst for further research, conservation initiatives, and policies that contribute to the lasting protection of our avian companions and the ecosystems they inhabit. Finally, I would like to congratulate all those involved in this timely reassessment of Important Bird and Biodiversity Areas in Nepal.

**Deepak Kumar Kharal, PhD**  
**Secretary**

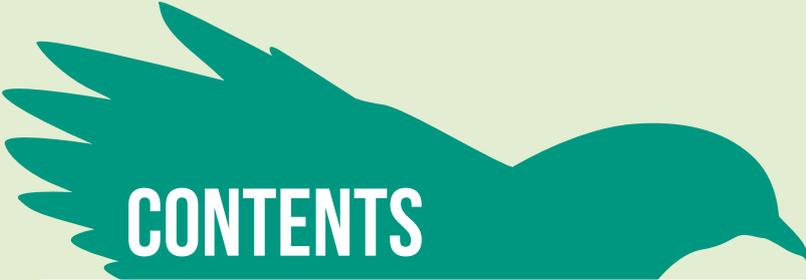
Ministry of Forests and Environment



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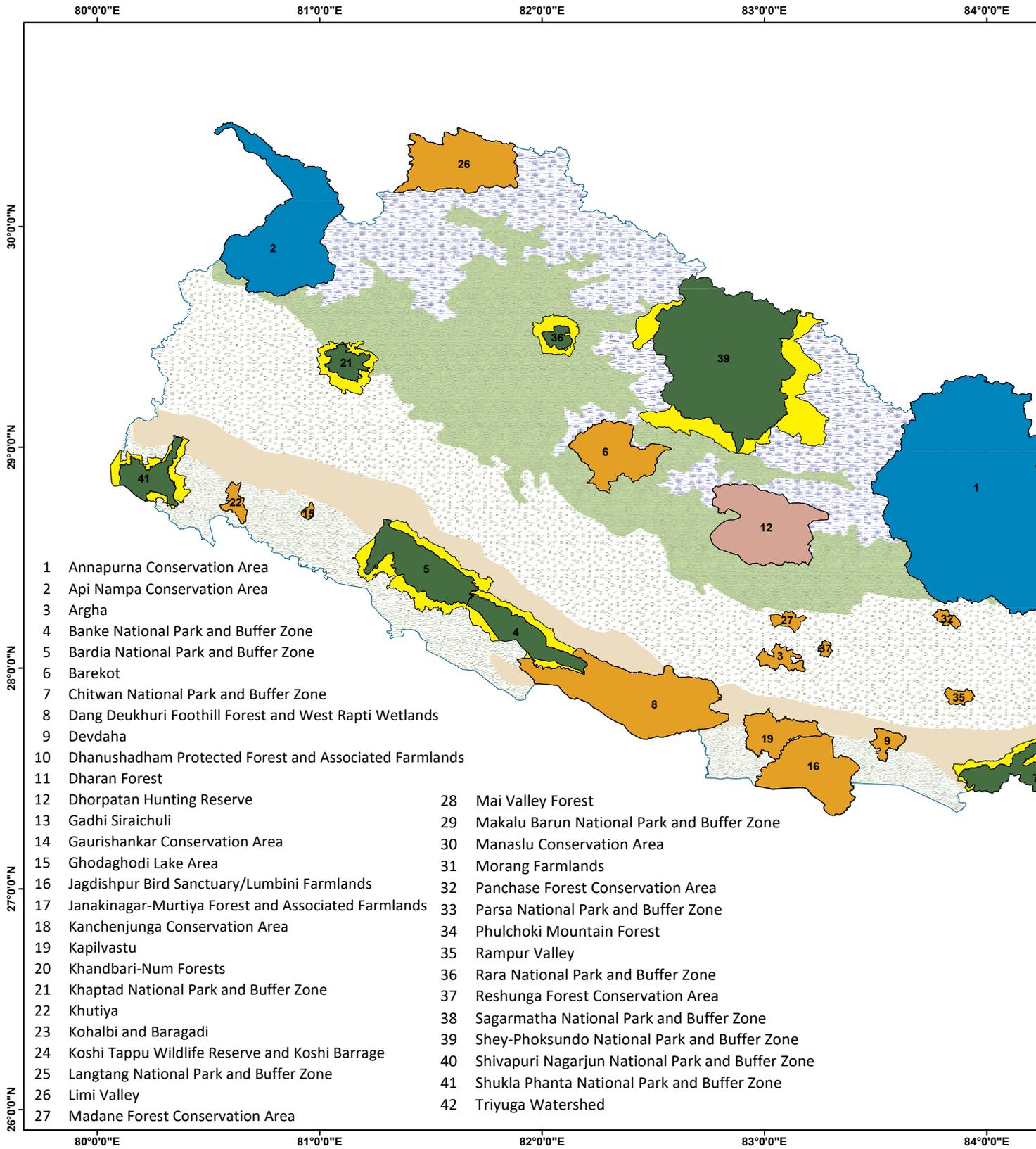
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Special thanks go to all the photographers for the use of their photographs.



85°0'0"E

86°0'0"E

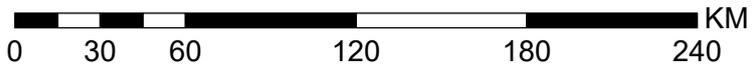
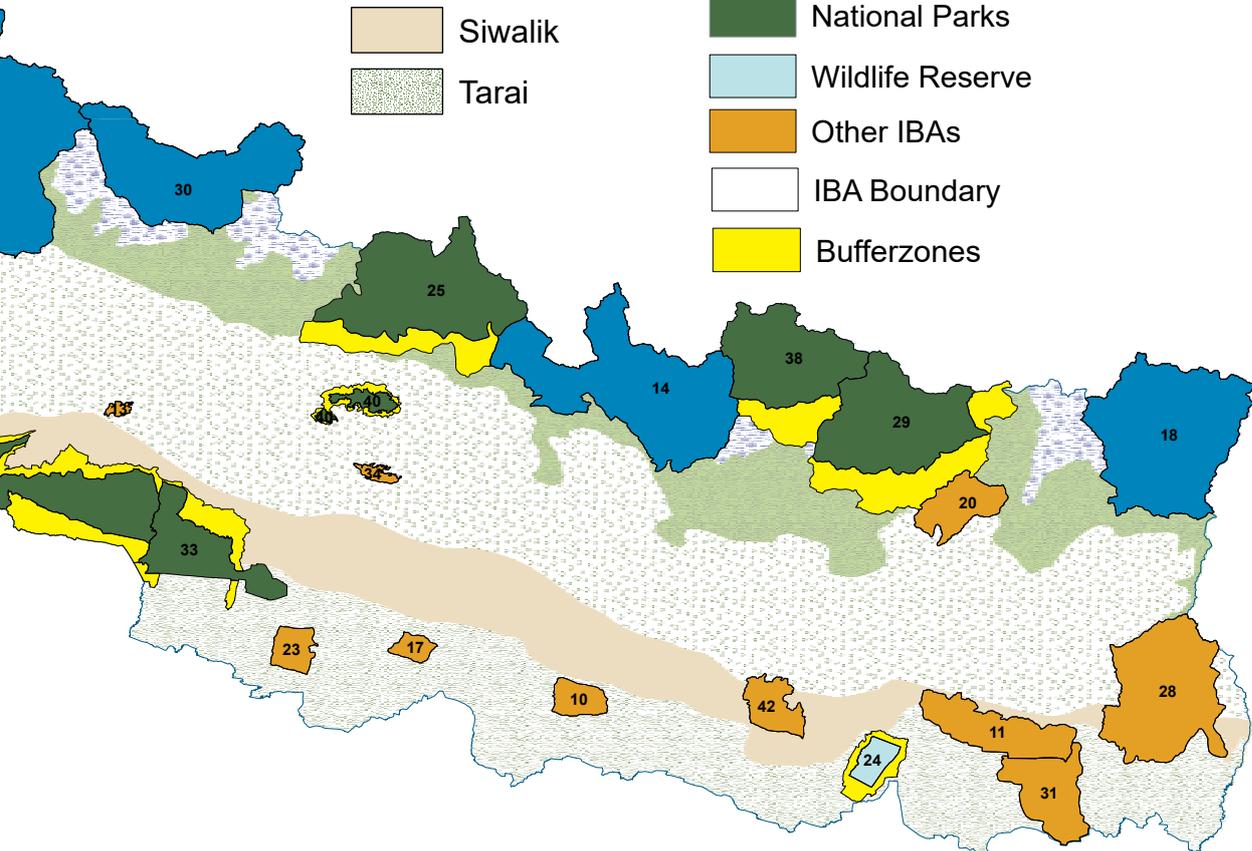
87°0'0"E

88°0'0"E



### Legend

- |  |                 |  |                    |
|--|-----------------|--|--------------------|
|  | High Mountain   |  | Nepal              |
|  | Hill            |  | Conservation Areas |
|  | Middle Mountain |  | Hunting Reserve    |
|  | Siwalik         |  | National Parks     |
|  | Tarai           |  | Wildlife Reserve   |
|  |                 |  | Other IBAs         |
|  |                 |  | IBA Boundary       |
|  |                 |  | Bufferzones        |



85°0'0"E

86°0'0"E

87°0'0"E

88°0'0"E

30°0'0"N

29°0'0"N

28°0'0"N

27°0'0"N

26°0'0"N

Data Source: National Geoportal & DNPWC

# SUMMARY

## The importance of Nepal for birds

Nepal's bird life is one of the richest in Asia considering the small size of the country. A total of 894 species has been recorded so far, including nearly 600 breeding species and 42 globally threatened species.

## A remarkable diversity of habitats

Nepal has a remarkable diversity of habitats ranging from bare rock and scrub in the alpine zone to tropical rainforests in the lowlands. As well as having a wide range of forest types, the country has internationally important wetlands and grasslands. Nepal possesses the high number of six biomes (as defined by BirdLife International's Important Bird and Biodiversity, IBA, Programme), only two less than India. These are the Eurasian high montane, Sino-Himalayan temperate forest, Sino-Himalayan subtropical forest, Indochinese tropical moist forest, Indo-Malayan tropical dry zone and Indo-Gangetic Plains biomes.

## Threats to Nepal's birds and their habitats

Nepal's forests are being cleared and degraded to provide vital subsistence needs such as fuel, animal fodder and other basic materials such as for building. Logging, both legal and illegal, poses additional threats to forests.

Wetlands face threats from drainage, diversion, abstraction, siltation, pollution from industrial and pesticide pollutants, over-enrichment from agricultural run-off, poisons used to kill fish, overfishing, heavy grazing and grass cutting.

Cultivation has significantly reduced the once extensive grasslands. Surviving grasslands are threatened by inappropriate grassland management, including intensive annual cutting and burning that alter species composition, and also by ploughing, as well as over-grazing by domestic livestock, fodder collection and human disturbance.

The main threats within most or all habitat types are over-exploitation including hunting and trapping

and over-fishing, also invasive alien species, chemical poisoning, and climate change. The chief cause of declines in Gyps vultures has been shown to be the non-steroidal anti-inflammatory drug (NSAID) diclofenac.

## What is the IBA programme?

The IBA programme is a worldwide initiative by BirdLife International aimed at identifying, documenting and working towards the conservation and sustainable development of a network of critical sites for the world's birds and other biodiversity, termed Important Bird and Biodiversity Areas or IBAs. Bird Conservation Nepal is leading this initiative in Nepal, aided by the Royal Society for the Protection of Birds (RSPB), UK and BirdLife International.

## What is the KBA programme?

Key Biodiversity Areas (KBAs) are sites contributing significantly to the global persistence of biodiversity. The Global Standard for the identification of Key Biodiversity Areas was adopted by the IUCN in April 2016 and launched at the IUCN World Conservation Congress in September of the same year. The Standard builds on the more than 30 years of experience identifying IBAs and other sites of international importance, and expands it to all wildlife, plants and ecosystems (BirdLife International 2018).

## Relationship between KBAs and IBAs

IBAs form the largest subset of KBAs, identified using birds as qualifying species. It is expected that many IBAs will also qualify as KBAs for other species groups, as well as for ecosystems of concern, under the KBA Standard. The BirdLife Partnership's experience spanning several decades regarding the identification, conservation and safeguard of IBAs will be invaluable for the development of the KBA Programme. BirdLife will continue managing data on KBAs through the development of the World Database of Key Biodiversity Areas and will publish the global list of KBAs through the KBA Website (BirdLife International 2018).

## Objectives of the IBA programme in Nepal

This book identifies and describes a set of key sites for the conservation of Nepal's birds and biodiversity and has the following objectives:

- To contribute to the development of the National Biodiversity Strategy and the implementation of the National Biodiversity Strategy Implementation Plan.
- To assist Nepal to meet its obligations under the Convention on Biological Diversity and other international agreements touching on biodiversity conservation.
- To inform decision-makers and technical advisers at local, national and international levels of the existence and vital importance of these sites, so that appropriate steps can be taken for their conservation.
- To identify clear priorities for conservation action, and encourage Government, national and international non-governmental organisations and international agencies to address these.
- To identify research needs and gaps in knowledge that should be addressed by the scientific community.
- To provide relevant and useful material for training and education.
- To provide information that can be used by birdwatchers and can contribute to the growth of bird and wildlife ecotourism in Nepal.

A total of 42 IBAs has been identified in Nepal, covering nearly 28 per cent of Nepal's land area. In addition, five Potential IBAs have been included. Four IBAs identified in the first assessment of Nepal's IBAs are no longer considered to qualify because they have lost much of their value for biodiversity (Nawalparasi), absorbed into a new, larger IBA (Urlabari, now part of Morang), and also the Tamur Valley which is now categorized as a Potential IBA with a recommendation for further survey work. One Potential IBA (Bagmati valley) identified in the first assessment of Nepal's IBAs was since been surveyed and no longer considered to qualify as an IBA.

Twenty-nine IBAs qualify as they support globally threatened bird species, 28 IBAs because they have a significant proportion of characteristic biome-restricted species, 17 support restricted-range species and four qualify as IBAs under the congregations criterion. **In June 2023 Lesser Adjutant *Leptoptilos javanicus* was downlisted from globally Vulnerable to globally near-threatened when this IBA report was with the designers.**

Three IBAs are the most important for globally threatened species: Shukla Phanta National Park, Koshi Tappu Wildlife Reserve and Koshi Barrage and Chitwan National Park and Buffer Zone. Two IBAs are the most important for restricted-range species: Annapurna Conservation Area (for West and Central Himalaya EBA species) and Makalu Barun National Park and Buffer Zone (for East and Central Himalaya EBA species). Annapurna and Makalu Barun are also the most important for biome-restricted species.

Nepal's IBAs are most important for restricted-range species from the Central Himalaya Endemic Bird Area (EBA). There are also five IBAs which support significant populations of restricted-range species from the Western Himalayan EBA and two important for species from the Eastern Himalaya EBA.

Nepal IBAs are particularly important for the conservation of the biodiversity of the Sino-Himalayan temperate forest and Eurasian high montane (Alpine and Tibetan) biomes.

The largest number of IBAs (16) of Nepal's IBAs lies at relatively low altitude (i.e. mean altitude 78-1000m) including three of the four most important IBAs: Shukla Phanta National Park, Chitwan National Park and Koshi Tappu Wildlife Reserve and Koshi Barrage when numbers of globally threatened species are considered.

Thirty-three IBAs (89%) contain examples of forest ecosystems. There are lowland grasslands in four IBAs (11%) including an outstanding example of this

threatened habitat in Shukla Phanta National Park. Half of the IBAs contain freshwater ecosystems, with the largest concentrations of waterbirds occurring at Jagdishpur Reservoir which now has a greater number of waterbirds than the Sunsari district wetlands (Koshi Tappu Wildlife Reserve and Koshi Barrage and Chimdi Lake, a Potential IBA) combined. Many of the freshwater ecosystems are at high altitudes.

A total of 20 IBAs (54%) is wholly within protected areas, one is partially protected and 17 (46%) are unprotected. However, IBAs that are protected are mainly large and, in terms of area, cover over 80% of Nepal's IBA network.

A 2011 BCN and BirdLife International assessment of the condition of all 27 IBAs identified in the first assessment found that only three (11% of the total) were in a near-favourable state and 24 IBAs were either in an unfavourable or very unfavourable state.

### **Recommended actions for Nepal's IBAs**

Long term efforts are vital to tackle the underlying causes of the problems facing IBAs and the species they support.

Complete coverage of all IBAs through the recognition of new protected areas and the expansion of existing protected areas is an urgent step for the Government of Nepal. Certain habitats are not represented or are very poorly represented in the current protected areas system, and new reserves need to be established to protect remaining areas of subtropical forests and Middle Mountain ecosystems: Gadhi-Siraichuli, Phulchoki Mountain Forest, Khandbari-Num and Mai Valley forests.

Protection, management and conservation of IBAs should be included in the Nepal Biodiversity Strategy and the follow-up implementation plan for Nepal.

The list of legally protected birds in Nepal (only nine species) was drawn up over 40 years ago and urgently needs updating and expanding.

Long term conservation of most IBAs will only be possible through community stewardship and involvement. Conservation also needs to harness many livelihood programmes to encourage appropriate management of areas both within and outside the protected areas network.

Efforts should be made to extend the successful new models of protected area management that have been developed in the Annapurna, Kanchenjunga and Manaslu Conservation Areas and involve the direct participation of communities.

Expansion of the community forestry model to other habitats such as wetlands and grasslands is needed to ensure the local people benefit economically from these habitats. This should help to conserve many IBAs.

Some protected IBAs require urgent management interventions, for example to address the problems caused by eutrophication and alien invasive species in Koshi Tappu and Chitwan.

Effective cross-sectoral co-ordination for biodiversity conservation in and around protected areas; training Department of National Parks and Wildlife Conservation (DNPWC) staff and strengthening the DNPWC's staff capacity to conserve and manage biodiversity and the capacity of CFUGs, LFUGs, local institutions and local groups for conservation-friendly management of their forests and wetlands is recommended (as included in the National Biodiversity Strategy).

The numbers of tourist visitors to Nepal are generally increasing although there was a drop in 2015 in the months following the earthquake and in 2020 resulting from the covid pandemic.

### *Forest-related issues*

The provision of more resources to park and forestry field staff should help improve their monitoring of forest exploitation.

There is enormous potential for improved management and enrichment planting in existing low density and depleted forests.

Communities throughout Nepal have demonstrated that they can effectively protect and sustainably use forests under their care. The community forestry programmes should therefore be extended and strengthened.

Effective control of NTFP and MAP harvesting would reduce pressure on forests; reduce hunting pressure which annually result from the influx of huge numbers of people to harvest these products, as well as reduce disturbance to birds and other wildlife.

Involvement of biodiversity experts in community-managed forests is needed to avoid some forest management practices that have negative impacts on biodiversity, such as the removal of all dead trees and the collecting of all leaf litter from the forest floor.

The provision of technical knowledge in sustainable harvesting of forest resources may help some communities.

Community forestry development programme directive 2065 has ensured 50% mandatory inclusion of women, poor, dalit, adhibasi and janajati in community forestry user groups. But this should be implemented effectively. A national biodiversity inventory and implementation of a management plan for religious forests and sacred groves would be valuable.

Including a conservation awareness programme for tourists in the forthcoming integrated management tourism plan should be helpful. Tourists need to be informed about the extensive environmental damage caused by over-exploitation of forests to meet their demands for heating and hot showers and how they can help.

### *Wetland related issues*

The effective implementation of Nepal's 2012 National Wetland Policy is urgently needed.

Three Ramsar sites, Ghodaghodi Tal and Jagdishpur Reservoir (both IBAs) and Beeshazari Tal (part of Chitwan National Park and Buffer Zone IBA) are highly threatened and urgently need protected status and the implementation of conservation measures.

The participation of user groups and community-based organisations in collaborative management of wetland resources are key to achieving sustainable resource use.

Reducing pollution of wetlands is very important, especially in the rivers of Chitwan National Park. Pollution of the Narayani River (the worst affected), could be drastically reduced by the installation of sewage treatment plants for Bharatpur and Narayanghat towns. Achieving the National Biodiversity Strategy target of reducing eutrophication and encroachment of ten wetlands is strongly recommended.

Strict enforcement of Nepal's pesticide regulations should greatly reduce the threat from pesticides to people, wildlife and the environment.

An effective mechanism to control sand and gravel mining of rivers is urgently needed.

The use of Integrated Pest Management and Effective Microorganisms technology can provide effective, safe and environmentally friendly alternatives to synthetic pesticides and fertilisers. Promoting and encouraging their use through the running of more training camps for farmers should result in the reduction of diffuse pollution from pesticides and fertilisers from agricultural land.

Raising awareness in wetland conservation, particularly among communities living close to wetlands is vital to ensure their better management and to reduce hunting and disturbance.

### Grassland-related issues

Guidelines for managing lowland grasslands for birds as well as mammals urgently need to be prepared and implemented.

Active habitat management is vital for maintaining grassland habitats. Management should aim to maintain areas of intact grassland on a rotational basis that are not cut or burnt, whilst allowing areas to be harvested by local people who depend on grasses for building, thatching and for cattle fodder.

Grassland management should seek to maintain the existing diversity of grassland assemblages in protected areas. The physical structure of grasslands, together with a complex mosaic of various grass species are important for maintaining bird diversity.

Areas of short grassland dominated by *Imperata cylindrica* that have become rare in recent years should be maintained. Saplings should be removed from such areas. There is an urgent need to reduce grazing pressure from domestic livestock, which is currently causing overgrazing on some grasslands in protected areas, e.g. Shukla Phanta National Park.

The maintenance of monsoonal flooding regimes is vital for the persistence of Nepal's riverine grasslands.

The alteration of flooding regimes by dam projects and irrigation projects would have catastrophic consequences for these grasslands and such schemes that could impact on important grasslands should be vigorously opposed.

Ploughing of grasslands has been found to be counter-productive and should be avoided.

Population of some common predatory mammals such as Golden Jackals and mongooses should be controlled to minimise predation of threatened ground-nesting species such as Swamp Francolin and Bengal Florican.

The construction of watch towers in the middle of grasslands should be avoided to reduce anthropogenic disturbance.

The restoration of lowland grasslands, also creation of new grasslands, and long-term maintenance of all lowland grasslands by appropriate conservation measures are recommended.

The creation and maintenance of grassland corridors is vital to maintain sustainable bird populations in the long term.

Alternatives to grass harvesting should be promoted in communities currently dependent on grassland resources.

An experimental approach to community managed grassland working along similar lines to community forestry is recommended. Communities would be encouraged to sustainably manage grasslands whilst at the same time fulfilling their needs for cattle fodder and thatch grasses.

### Conservation awareness

Policy makers, aid agencies and other INGOs/NGOs should be informed of the IBA network and its relevance to the implementation of national and international land use policies and agreements.

A massive radio/TV and print media campaign to promote awareness of IBAs is needed. Local level awareness campaigns are recommended. Conservation awareness work would be useful at all IBAs but would be of particular value at: Api Nampa, Argha, Banke, Berekot, Koshi, Dang, Devdaha, Kapilvastu, Khandbari-Num, Khutiya, Limi, Reshunga, Rampur valley and Triyuga watershed. While carrying out any conservation and awareness work at IBAs, it is better if national organisations work with local community-based organisations.

### *Climate change*

Detailed breeding surveys of a wide range of species would be very useful to determine if there is a link between breeding success and climate change as this is still not proven for Himalayan birds.

More long-term monitoring is needed in order to determine mitigation measures that will be necessary to combat the impacts of climate change on birds, which will be vital if we are to conserve Nepal's avifauna in the long term.

### *Invasive alien plants*

Urgent action is needed to try and control the spread of invasive alien plant species, especially *Mikania micrantha* and Water Hyacinth *Eichhornia crassipes*.

### *Research and information management*

Systematic surveys need to be carried out in all the little known and poorly surveyed IBAs and also in the Potential IBAs, designed to fill the most important gaps in information.

The IBA monitoring mechanisms that have been put in place need to be continued to record any changes in their value for birds and other biodiversity and in site management.





# INTRODUCTION

## Why the need for this book?

Nepal is exceptionally rich in biological diversity for a country of its size. The fauna comprises: 212 mammal species (Baral and Shah 2008, Jnwali *et al.* 2011), 892 bird species (BCN and DNPWC 2022), 143 reptile species (Schleich and Kastle 2002), 57 amphibian species (ICIMOD and MOEST 2007), 232 fish species (Rajbanshi 2013), 170 mollusk species (Budha 2012), 651 butterfly species (ICIMOD and MOEST 2007), 386 spider species (ICIMOD and MOEST 2007), 3,958 macro-moth species (Haruta 2006), 61 rotifer species (Surana *et al.* 2005), 59 species of other crustaceans (Tiwari and Chhetry 2009), 5,052 known species of insects (excluding butterflies and macro-moths) (Thapa 1997), and 168 species of platyhelminthes (Gupta 1997), making a total of 11,861 species of fauna (MoFSC 2014). Plant species comprise: 6,973 angiosperm species (UNEP-WCMC 2004), 41 gymnosperm species (Bista 2006), 534 pteridophytes (DPR 2000), 1,150 bryophyte species (Pradhan and Joshi 2009), 465 lichen species (Sharma 1995), 1,822 fungi species (Adhikari 2000) and 1,001 algae species (Prasad 2013) making a total of 13,067 plant species, 3.2 % of known plant species in the world (MoFSC 2014). The country occupies about 0.1% of the global area, but harbors 3.2 % and 1.1 % of the world's known flora and fauna, respectively. This includes 5.2 % of the world's known mammals, 8 % birds, 5.1 percent gymnosperms, and 8.2 % bryophytes.

This rich biodiversity can be partly attributed to the country's diverse topography and altitudinal variation. A wide array of habitats has been created in a small area from the riverine grasslands of the lowlands and the subtropical broadleaved forests in the lower hills to the alpine pastures of the higher Himalaya and the cold deserts of the trans-Himalayan region. The other reason for Nepal's high biodiversity is its location in the region of overlap between the Palearctic and Oriental (Indo-Malayan) realms. The biology of the vast majority of recorded organisms is little known. Undoubtedly, many species have not even been named yet by science.

Their value to Nepal's human population, as sources of food, medicine, genes or vital parts of ecological systems, has barely been studied.

What is clear however is that Nepal's biodiversity is under serious threat. The principal reasons are an expanding and poor population that remains reliant on natural resources and hence continues to put severe pressure on the environment. In 2021, a population of 29.2 million people was recorded, a growth of 10.2% since 2011 (CBS 2022). The results of the Third Nepal Living Standards Survey (2010-11) suggest a substantial decline in poverty. The Global Hunger Index decreased from 20.3 in 2012 to 19.0 in 2020, and is considered moderate on a global scale (Alliance 2015). (y). Despite these factors Nepal was ranked 143 out of 187 in the 2021/22 Human Development Index (UNDP 2022) and Gross National Income per capita was just US\$1,372 per year in 2021 Impoverished people are often forced to use resources unsustainably and thus natural habitats continue to be cleared and converted, land is degraded and water highly polluted; ecosystems are damaged and their functions impaired. The array of problems created by climate change, including the reduction in size of glaciers, increased summer water flows leading to the precarious build up of water in glacial lakes, and droughts in the lowlands, exacerbate the array of poverty-induced problems. The 2015 earthquakes have seriously damaged or destroyed homes, property and infrastructure and significantly impacted the environment in between a third and half of the country, including in the Kathmandu Valley. An estimated 2.8 million people have been displaced by the earthquakes. As forest areas have been the prime targets for resettlement and rehabilitation of the victims of natural disasters such as landslides and floods in the past, a well-thought out resettlement programme will be needed.

Without concerted and carefully focused action, it is likely that Nepal's diversity of life will be seriously diminished. The wider consequences of this can only be guessed at. The resources to support action

are scarce, however. We need to know where our biodiversity is and what state it is in, which sites and habitats are the most important, which are the most threatened, and which therefore require the most urgent attention. Measures of importance for species and sites are thus means of describing priorities, which need to be taken account of by those in positions of influence. *Important Bird and Biodiversity Areas (IBAs) in Nepal* is a key contribution to the baseline information for a conservation strategy for Nepal. It is also a showcase of the natural wealth of the country and a basis for those that wish to safeguard these great places for future generations.

Nepal already has an extensive system of protected areas covering 23.39 % of the country's land area, one of the highest in Asia (Figure 1). Should this

not be sufficient to conserve our biodiversity? Unfortunately, it is not. Many protected areas face serious conservation problems despite their status. In addition, most of Nepal's protected areas were selected primarily to conserve populations of large, charismatic mammal species, especially across the lowland *terai*. Others have been designated largely for landscape reasons and a large proportion protects the high Himalayas and hence conserves large areas above the treeline that are of relatively low importance for biodiversity. Inskipp (1989) and Hunter and Yonzon (1993) pointed out that there were few protected areas between 500m and 3500m highlighting omissions of important forest habitats from the protected area network and this remained the case in 2015. Currently, Nepal has declared ten Forest Conservation Area comprising an area of 1517.42 km<sup>2</sup>.

**Figure 1. Distribution of Protected Areas in Nepal**



## Using birds to assess conservation priorities

IBAs in Nepal is a contribution to identifying Nepal's biodiversity conservation priorities. The IBA process uses birds to select key sites for conservation. IBAs are sites of global importance for biodiversity conservation that are chosen using internationally agreed criteria that are quantitative and scientifically defensible. IBAs are selected because of their significance for globally threatened bird species, restricted-range bird species or assemblages of bird species restricted to a biome (or major regional ecological community), or because they hold globally significant congregations of birds.

Birds are an important focus for conservation attention in their own right. They play major roles in the functioning of many ecosystems, particularly through pollination and seed dispersal. Birds are an important source of revenue through birdwatching tourism – which is a growing activity in Nepal. Birds also have great significance in the Nepalese culture. The white swan represents the Goddess Saraswati, the Garuda or eagle represents the God Vishnu, the peacock represents Kumar (the son of God Shiva). Birds provide an excellent means to create awareness of nature and the environment amongst young people. As well as their intrinsic importance, birds as a group have many features that make the IBA process a useful short cut to setting biodiversity conservation priorities:

- birds are widespread and they occur in every habitat in Nepal,
- birds are diverse, yet there are not so many species that identification becomes a major problem,
- birds are taxonomically well-known
- birds are relatively large and conspicuous, and many are active by day and therefore more easily studied and surveyed than most other faunal groups,
- birds have wide popular appeal, so many people have collected useful information on their distribution and status.

As a result, we have more information about birds in Nepal than about any other group of organisms. The exception is the large mammals of the lowlands that have been the traditional focus of ecological research and conservation efforts in Nepal. However, large mammals may not be a very good assessment of biodiversity of an area because they represent only a small subset of the species present in an area and have either been exterminated or had their ranges reduced by people who are in direct conflict with them. By contrast, it has been shown that using birds can be a highly efficient way to identify a set of national conservation priorities (Howard *et al.* 1998).

Although the distribution of threatened or endemic birds may not be entirely congruent with the distribution of, say, similarly important plants or butterflies, the set of sites that contains bird species of concern will effectively conserve other taxa as well. Of course, birds are not perfect indicators for biodiversity in general. Some sites with, for example, endemic plants, rare amphibians, fish or unusual invertebrates will no doubt not be included within the IBA network. Conversely, a few sites are important only for their rare birds, and not for other wildlife. The need to collect information on a range of little-known organisms to establish 'Key Biodiversity Areas' (Eken *et al.* 2004) remains pressing. However, taking steps to protect or sustainably manage Nepal's IBAs should, at the least, greatly improve the conservation status of national biodiversity.

The first research and compilation of Nepal's IBAs was made in 2004, when 27 Important Bird Areas were identified (Baral and Inskipp 2005). Since then BCN and the GoN has worked to safeguard IBAs by establishing monitoring at all IBAs, in order to have up-to-date information on the condition of the sites, the pressures on them, and to put actions in place (including through community involvement) to protect the IBAs. A 2011 assessment of the condition of all 27 IBAs found that only three (11 % of the total)

were in a near-favourable state and 24 IBAs were either in an unfavourable or very unfavourable state (BirdLife International 2015b).

Since the first review of IBAs was published, BCN has also promoted appropriate protection of IBAs and potential IBAs, Reshunga Forest, for example. Suitable management for birds in protected IBAs has been advocated, especially in lowland grasslands in order to support the diversity of threatened birds dependent on this habitat. The importance and value of ecosystem services at IBAs have been assessed, as well as the promotion of biodiversity conservation and delivery of ecosystem services together at several IBAs - Rara and Shivapuri Nagarjun National Parks, Koshi Tappu Wildlife Reserve and Phulchoki Mountain Forest (BCN and DNPWC 2012). The impacts of climate change on likely changes in bird distributions have been assessed, and an adaptation strategy developed for the best management of IBAs (BCN and DNPWC 2011).

The present compilation of the country's IBAs is now extended to cover all biodiversity and IBAs refer to Important Bird and Biodiversity Areas. During the past 11 years there has been an enormous expansion in research and survey work of Nepal's fauna and flora. Increased knowledge has resulted in the identification of 15 new IBAs including all the recently designated protected areas as well as five important vulture breeding sites, a new Lesser Adjutant *Leptoptilos javanicus* breeding site and the upgrading of two previously listed Potential IBAs. Unfortunately, two former IBAs (Nawalparasi and Urlabari grove) no longer qualify as IBAs. The former Tamur Valley IBA is now in a very unfavourable state and is listed as a Potential IBA with a recommendation for survey work to determine whether it could still qualify as an IBA.

Bird nomenclature in this book largely follows BirdLife International.





# BACKGROUND TO NEPAL

## Geology and Geography

Nepal lies in the heart of Asia flanked by the world's two most populous countries, India in the south and China to the north. The country covers an area of 147,516km<sup>2</sup> and is nearly 800km long from east to west and 130km wide. Nepal lies in the central Himalayas with a remarkable altitudinal range from 63m to 8848m a.s.l., the height of Sagarmatha. Nepal has a diverse landscape and vegetation from the tropical lowlands, subtropical and temperate middle hills to the alpine highlands.

## Climate

Nepal has great extremes of climate. The lowlands are tropical with average maximum temperatures reaching 23° to 33°C between October and March, and 37°C between April and early June at Meghauri near Chitwan. In sharp contrast, an arctic climate prevails in the high peaks where average maximum temperatures in Namche Bazaar in Khumbu (Everest region) vary from 6 to 8°C from October to March and 11 to 15°C between April and June. The Kathmandu Valley has a pleasant and mild climate with a summer maximum of about 30°C and mean winter temperature of about 10°C.

Nepal's climate is highly influenced by the monsoon rains, most of which fall between June and September. The moist air flowing north and west from the Bay of Bengal falls as rain on the southern slopes of the Himalaya. The districts north of the range - Mustang, Manang and Dolpo (often known as the trans-Himalayan region) lie in the rain shadow and have very low precipitation. Western Nepal is much drier than the east as the monsoon rains reach there later and the monsoon lasts for a shorter period. However, there are pockets of high rainfall in the west caused by the topography, notably the area south of Annapurna, which is the wettest in the country.

In the mountains, altitude and exposure to the sun and rain are the most influential climatic factors. Rainfall depends on altitude as well as latitude.

The amount of rainfall increases with altitude to a maximum and then decreases again. Southern slopes are considerably warmer and sunnier than those facing north, resulting in quite different and much drier vegetation.

## People and Population

The 2021 census put Nepal's population at 29,192,80,504 with an average annual growth rate of 0.93 % (CBS 2022). The country has one of the richest and most diverse ethnic cultures when compared to the rest of the world. Hindus and Buddhists have lived in harmony for centuries. Nepal has long been a centre illustrating how the two religions intermingle and how people practising both religions live harmoniously. While most Hindus live in the lowland and middle hills, a predominantly Buddhist culture prevails above 2000m. Many Sherpas live above 4000m and in summer venture as high as 5500m.

## Economy

Nepal is among the least developed countries in the world, with about one-quarter of its population living below the poverty line. Nepal is heavily dependent on remittances, which amount to as much as 30% of GDP. Agriculture is the mainstay of the economy, providing a livelihood for almost two-thirds of the population but accounting for less than a third of GDP. Industrial activity mainly involves the processing of agricultural products, including pulses, jute, sugarcane, tobacco, and grain (CIA 2023).

Nepal has considerable scope for exploiting its potential in hydropower, with an estimated 42,000 MW of commercially feasible capacity. Nepal has signed trade and investment agreements with India, China, and other countries, but political uncertainty and a difficult business climate have hampered foreign investment. The United States and Nepal signed a \$500 million Millennium Challenge Corporation Compact in September 2017 which will expand Nepal's electricity infrastructure and help maintain transportation infrastructure (CIA 2023). Massive earthquakes struck Nepal in early 2015,

which damaged or destroyed infrastructure and homes and set back economic development. Although political gridlock and lack of capacity have hindered post-earthquake recovery, government-led reconstruction efforts have progressively picked up

speed, although many hard hit areas still have seen little assistance. Additional challenges to Nepal's growth include its landlocked geographic location, inconsistent electricity supply, and underdeveloped transportation infrastructure (CIA 2023).

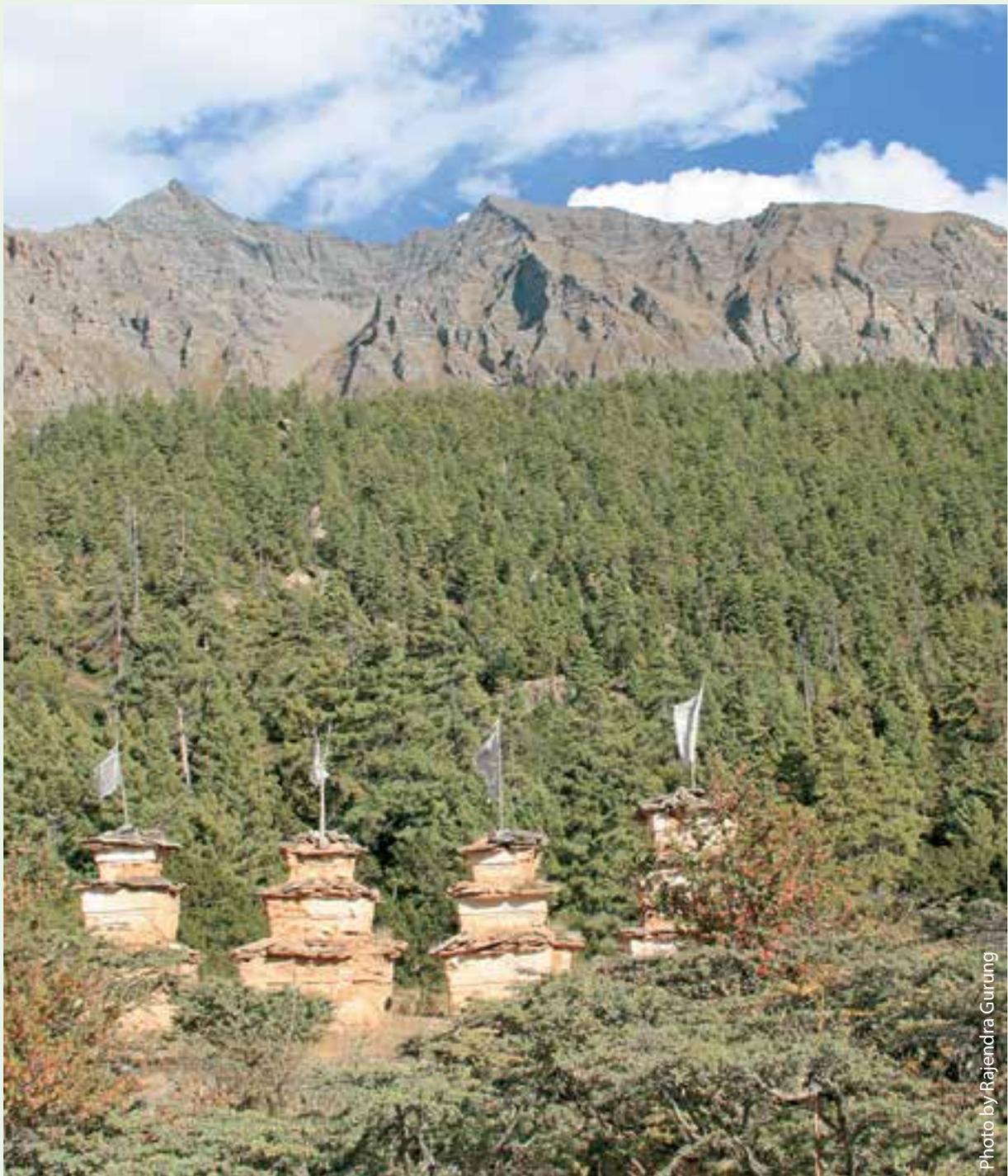


Photo by Rajendra Gurung

# NEPAL'S BIRDS AND THEIR HABITATS

## Introduction

Nepal's bird life is one of the richest in Asia considering the small size of the country. 894 species have been recorded up to December 2023 comprising 892 species (BCN and DNPWC 2022) and two additional species. Lesser Grey Shrike *Lanius minor* was photographed by Dev Raj Joshi at Shukla Phanta National Park on 13 May 2023 (Tulsi Subedi, Chair Nepal Bird Record Committee *in litt.* to H. S. Baral and C. Inskipp, 21 May 2023) and Firethroat *Calliope pectardens* was photographed by Suchit Basnet and Badri Chaudary on 4 August 2023). Nearly 600 species breed within the country. Spiny Babbler *Acanthoptila nipalensis* is the only bird species

endemic to Nepal. Although it has been recorded very close to the Indian border and possibly occurs there, so far it has only been recorded from Nepal. Nepal Cupwing *Pnoepyga immaculata* recently described for science, was previously thought to be endemic (Martens and Eck 1991), but has now been found in India in Uttarakhand (e.g. Robson 1999, 2002) and singing in the breeding season in Himachal Pradesh (Robson 2000). Nepal is most unlikely to hold more than a very few endemic bird species because of the country's ecological similarity with Bhutan, India and the Tibetan plateau. Nepal holds remarkable habitat diversity considering its small size. This is a result of its altitudinal range and also because Nepal is a meeting place of biomes that occur in Europe, China, India and South-East Asia. Consequently, Nepal is important for the conservation of some biomes and their characteristic species.

## Habitats

### Montane habitats

Alpine habitats are found between the tree line (3800m in the east and 4200m in the west) and the region of permanent snow. Alpine scrub, including rhododendron and juniper, grows up to as high as 4870m in places. Alpine breeding species include Bearded Vulture *Gypaetus barbatus*, Himalayan Griffon *Gyps himalayensis*, Grandala *Grandala coelicolor*, and the globally threatened Wood Snipe *Gallinago nemoricola*.

North and northwest of Dhaulagiri and Annapurna the country is almost treeless with a climate and flora of Tibetan character. The dominant vegetation is of shrubs, especially Caragana, grasses and alpine flora. Characteristic species of the Tibetan areas include Tibetan Sandgrouse *Syrrhaptes tibetanus*, White-browed Tit Warbler *Leptopoecile sophiae* and Ground Tit *Pseudopodoces humilis*, which probably breed.

### Forests

Until about 1990, Nepal was experiencing forest losses. However, in recent years, Nepal's forest cover has gradually increased according to Nepal's



National Landcover Monitoring Scheme and in 2019 covered 44.74% of the country (Aryal 2022), This increase was confirmed by the Global Forest Assessment, which stated that Nepal's forest cover increased by an average of 0.31% per year between 1990 and 2000 and by 0.19% per year between 2000 and 2010, although no further increase was found between 2010 and 2020 (FAO 2020). The main causes are the creation of community forests and the spread of forest due to agricultural abandonment resulting from out-migration (Inskipp and Baral 2019). Until about 1990 Nepal was experiencing forest losses.

Forests are very diverse, comprising tropical, subtropical, temperate, subalpine and alpine types. Nepal's forest birds total 454 species (not counting vagrants), over half the species recorded in the country. The large majority of these forest species are breeding birds. These habitats are especially important for Nepal's restricted-range species. With the exception of the Black-breasted Parrotbill *Paradoxornis flavirostris*, which is extirpated from the country, all of Nepal's restricted-range birds are forest species (see Appendix 4).

Subalpine forest lies between 3000m and 4200m in the west, and 3000m to 3800m in the east. This includes some of the least disturbed forest in Nepal,

especially that of fir *Abies spectabilis* which usually forms a continuous belt between 3000m and 3500m on the southern slopes of the main ranges in central Nepal. Birch *Betula utilis* forest is found between 3300m and the tree-line and both fir and birch usually have a Rhododendron spp. understorey. On very wet sites, Rhododendron spp. forest often replaces other forest types and forms shrubberies at higher altitudes. In drier areas Juniper *Juniperus* spp. forest occurs both as a tree and a small shrub.

Upper temperate forest lies between 2700m and 3100m in the west and centre, and from 2400m to 2800m in the east. It is much less disturbed than forests lower down. Oak and mixed broadleaved forests grow in the centre and east. Rhododendrons are most widespread in high-rainfall areas where they are dominant in many areas. They are also common in forests of fir *Abies*, hemlock *Tsuga* and birch *Betula*. Blue Pine is most common and widespread in the upper temperate zone. In moisture areas it is mixed with other conifers, such as spruce *Picea smithiana* and *Abies pindrow*, which sometimes also form pure stands. In drier regions it is associated with juniper *Juniperus indica*. Bamboo flourishes in very high rainfall areas and in a few places, such as the Modi Khola valley, south of Annapurna, it forms pure dense stands.



Photo by Ankit Bilash Joshi

Lower temperate forest lies between approximately 2000m and 2700m in the west and 1700m and 2400m in the east. Moist broadleaved lower temperate forest grows in central and eastern Nepal and mainly comprises species of oaks *Quercus* with laurels Lauraceae. Dry broadleaved lower temperate forest occurs in the west and on drier slopes in the centre. Most remaining forest is degraded. Blue Pine *Pinus wallichiana* forest has a large altitudinal range, from 1800m to 4000 m. It is widespread in the west and on dry slopes in the centre and east.

These three forest types lie within the Sino-Himalayan temperate forests and are of particular global importance. They support good breeding populations of the globally threatened Cheer Pheasant *Catreus wallichii* and restricted-range species White-throated Tit *Aegithalos niveogularis*, Kashmir Nuthatch *Sitta cashmirensis*, Hoary-throated Barwing *Sibia nipalensis* and Nepal Cupwing, *Pnoepyga immaculata* as well as Wood Snipe *Gallinago nemoricola* in winter.

Subtropical forest lies in the Sino-Himalayan subtropical forest biome. The altitude ranges between approximately 1000m and 2000m in the west and 1000m and 1700m in the east. Schima-Castanopsis is a moist, broadleaved forest that once covered much of subtropical central and eastern Nepal, but now only small patches remain in most places. Riverine forest grows along watercourses within Schima-Castanopsis. Alder *Alnus nepalensis* also grows along streams, landslide areas and often colonises abandoned cultivation. Chir Pine *Pinus roxburghii* forest is widespread in the west, but in the centre and east is confined to drier situations. These forests are typically open, with little or no understorey because of frequent fires. They support the globally threatened Red-headed Vulture *Sarcogyps calvus*, and restricted-range Yellow-vented Warbler *Phylloscopus cantator* and White-naped Yuhina *Yuhina bakeri*, which all probably breed.

Tropical forest lies in the Indochinese tropical moist forest biome and the Indo-Malayan tropical dry zone biome. The altitude ranges between approximately 75m and 1000 m. Tropical forest includes Sal *Shorea*

*robusta*, which is by far the most extensive forest in this climatic zone, and tropical evergreen forest, which is now reduced and restricted to small fragmented patches in damp, shady sites in the centre and east, often within Sal forest.

### Grasslands

Nepal's grasslands lie within the Indo-Gangetic plain biome. They are important for some mammals, notably the nominate race of Barasingha *Rucervus duvaucelii*; Shukla Phanta supports the largest known population of this subspecies in the world (Schaaf 1978). The globally threatened Greater One-horned Rhino *Rhinoceros unicornis*, Tiger *Panthera tigris*, Wild Water Buffalo *Bubales arnee* and Sloth Bear *Melursus ursinus* frequently utilize grasslands; other species include other deer and small mammals (e.g. Bell 1987, Bell and Oliver 1992). Plant studies have been made by Peet (1997) and Peet *et al.* (1999a). However, the major thrust to highlight the biodiversity value of grasslands has been provided by avifaunal work done in Nepal and India (e.g. Inskipp and Inskipp 1983, Baral 2001). World Wide Fund for Nature's (WWF's) Ecoregions 200 profile identified Nepal's grasslands as a habitat of international significance (WWF International undated). Grasslands lying in the middle hills and highlands are of low interest from the ornithological point of view (e.g. survey at Khaptad National Park Inskipp 1992), especially as they are often overgrazed.

Only small areas of lowland grasslands remain and these lie almost entirely within protected areas. The botanical diversity of Nepal's lowland grasslands has been described in Peet (1997). Peet *et al.* (1999a) identified nine grassland assemblages. These hold important breeding populations of the globally threatened Swamp Francolin *Ortygornis gularis*, Bengal Florican *Houbaropsis bengalensis*, Finn's Weaver *Ploceus megarhynchus*, Slender-billed Babbler *Argya longirostris* and Bristled Grassbird *Schoenicola striatus*, and wintering White-throated Bushchat *Saxicola insignis*. Lowland grasslands are especially valuable for globally threatened birds; ten species (25% of the total) are dependent on this habitat type (see Appendix 3). Chitwan National Park, Koshi Tappu Wildlife

Reserve and Shukla Phanta National Park support internationally important populations of globally threatened grassland species (Baral and Upadhyay 2006, Baral and Inskipp 2009). Grassland birds have been studied by Conservation organizations like Bird Conservation Nepal and researchers: Baral (1998a,b), Dahal (2000), Tamang and Baral (2000), Timilsina *et al.* (2000), and Baral (2001).

### Wetlands

Inland water accounts for just 2.8 % of Nepal's land surface (FAO 2010), but have very high ecological significance, as they harbour many threatened species of flora and fauna and serve as resting places for many migratory and globally threatened birds (MoFSC 2014). Freshwater wetlands are described in Bhandari (1998), Bhujju *et al.* (2007), Kafle and Savillo (2009), and WWF Nepal Programme (2011) – the latter covers high altitude wetlands.

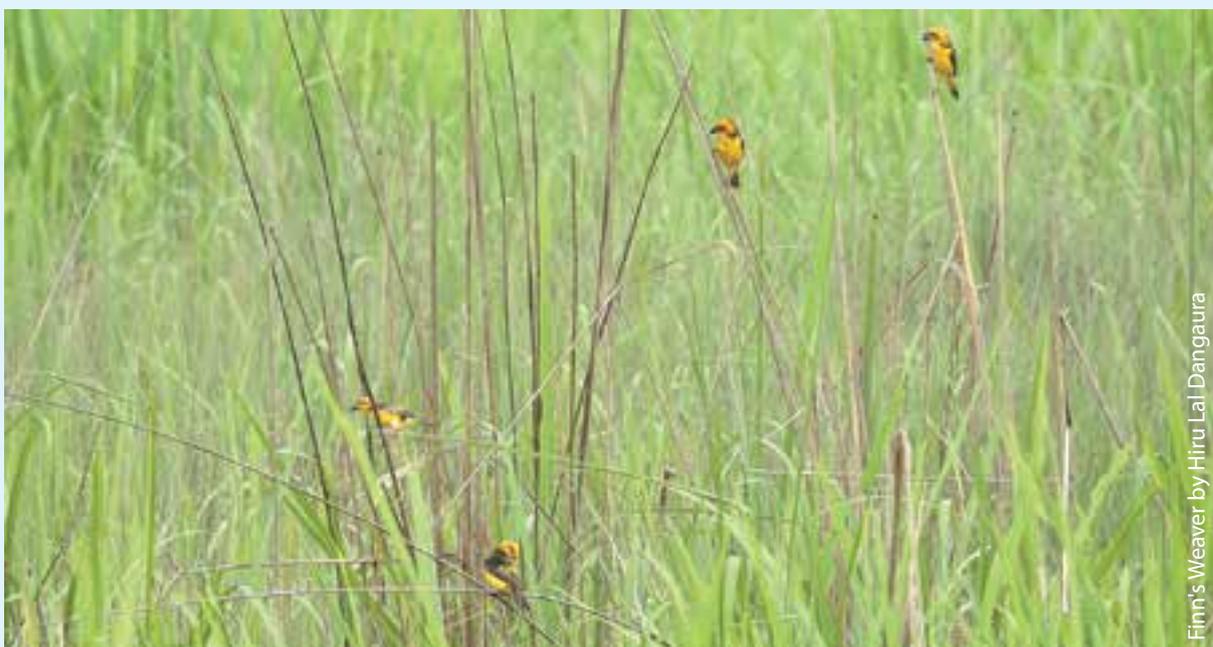
Large lakes include Rara Lake (2990m) in the northwest Himalayas; Phewa Tal (915m) and nearby lakes near Pokhara, Phoksundo Lake (3610 m) in the western Himalayas; Badhaiya lake, Ghodaghodi lake, and also Jagdishpur reservoir in the western terai, and Barju (Chimdi) lake in the eastern terai. In

addition, small lakes are scattered at all altitudes and in all Nepal's biomes throughout the country. These act as staging posts for migrating wetland birds, while those in the lowlands and foothills also support resident and wintering species.

There are also many rivers and streams, which are generally fast flowing. Small ponds and marshes are numerous and are situated in cultivation and around habitation. Rivers and streams support a good variety of breeding species including kingfishers, forktails, dippers, wagtails, redstarts and Blue Whistling Thrush *Myophonus caeruleus*. Nepal's wetlands are particularly important for threatened species. Nearly a third (32.5 %) of the country's globally threatened birds (13 species) regularly inhabit wetlands (see Appendix 3).

### Agricultural land

Only a small number of species inhabit agricultural land compared to natural habitats of forests, wetlands and grasslands that it replaced. Most of them are widespread and common in Nepal. Exceptions are the globally threatened Sarus Crane *Grus antigone*, Lesser Adjutant *Leptoptilos javanicus*, White-rumped Vulture *Gyps bengalensis* and Slender-billed Vulture *G. tenuirostris*.



Finns' Weaver by Hiru Lal Dangaura

# IMPORTANT BIRD AND BIODIVERSITY AREAS IN NEPAL

## Aims of the IBA Programme

BirdLife International's Important Bird and Biodiversity Areas (IBA) Programme has a long history (Donald *et al.* 2019). The first IBA directories were published in Europe in the 1980s and regional IBA directories have been published for the Middle East (1994), Africa (2001), Asia (2004), the Americas (2010) and the Pacific (2010). In addition, many BirdLife Partner organisations have published national IBA directories, including the original directory of Important Bird Areas in Nepal which BCN published in 2005 (Baral and Inskipp 2005).

The IBA Programme aims to identify, document and conserve a network of globally important sites for the conservation of birds and their habitats. It uses standard, internationally agreed criteria, applied through national and local level consultations involving NGOs, experts and government agencies. Since birds are excellent indicators of overall biodiversity, IBAs will be important for other fauna and flora. The distribution of birds is comparatively well-known, such that important sites can be quickly and comprehensively identified compared with the identification of sites for other wildlife.

This agenda is not just important for biodiversity conservation. IBAs also provide vital ecosystem services, such as the provision of fresh water and forest products, and prevention of floods and other environmental disasters, and as such their conservation contributes to the broader agenda of environmental management, sustainable development, and poverty eradication.

This directory of Important Bird and Biodiversity Areas in Nepal identifies and describes a set of key sites for the conservation of Nepal's birds and biodiversity. Specifically, it has the following long-term objectives:

- To contribute to the development of a National Biodiversity Strategy for Nepal and for the implementation of a National Biodiversity Strategy Action Plan.

- To assist Nepal to meet its obligations under the Convention on Biological Diversity and other international agreements touching on biodiversity conservation.
- To inform decision-makers and technical advisers at local, national and international levels of the existence and vital importance of these sites, so that appropriate steps can be taken for their conservation.
- To identify clear priorities for conservation action, and encourage the Government of Nepal (GoN), national and international NGOs and international agencies to address these.
- To identify research needs and gaps in knowledge that should be addressed by the scientific community.
- To provide relevant and useful material for training and education.
- To provide information that can be used by birdwatchers and can contribute to the growth of bird and wildlife ecotourism in Nepal.

## The IBA Criteria

The IBA criteria are designed to identify sites that are of global significance for the conservation of birds and other biodiversity, based upon the best available data on species numbers in the sites and the extent and condition of their habitats. It is important to note that the aim of identifying IBAs is to secure viable populations of the qualifying species at each site. At the same time, IBAs may also form a network where the survival of qualifying species' populations at one site may depend on maintaining the conservation status of other sites (e.g. for migratory birds within a flyway).

The IBA criteria include the following four categories, which are described in more detail in Table 1 and in the section below:

- A1: Sites with significant populations of globally threatened species
- A2: Sites with significant populations of at least two restricted-range species

- A3: Sites with significant breeding assemblages of bioregion-restricted bird species
- A4: Globally significant concentrations of congregatory species.

### A1: Globally Threatened Species

Criterion A1 Globally Threatened Species: the site is known or thought regularly to hold significant numbers of a Globally Threatened species.

Sites are identified under this criterion for Critically Endangered, Endangered and Vulnerable species on the IUCN Red List, as assessed by BirdLife International, in its role as the Red List Authority for birds; the current categories for all species can be viewed at [www.birdlife.org/datazone/species](http://www.birdlife.org/datazone/species). For the identification of new IBAs under this criterion, the latest up-date of the Red List categories should

be used. IBAs previously identified for species that have subsequently been downlisted to a lower threat category will have to be reassessed to ensure they still meet other IBA criteria.

Limited use has been made of population thresholds under criterion A1 in the past, but it is now recommended that to meet this criterion, a site should support:

- at least 15 individuals (the equivalent of 5 Pairs) of a CR or EN species with a global population of >1,500 individuals, or
- at least 1 individual of CR or EN species with a Global population of 1,500 individuals or fewer, or
- 30 individuals (10 pairs/ Reproductive Units) of a species classified as Vulnerable.

**Table 1: Summary of the global IBA Categories and Criteria.**

IBA Categories and Criteria	Description
A1: Globally Threatened Species Criterion: the site is known or thought regularly to hold significant numbers of a Globally Threatened species	The site qualifies if it is known, estimated or thought to hold populations of one or more species categorized on the IUCN Red List as globally threatened (Critically Endangered, Endangered and Vulnerable). The list of globally threatened species is maintained and updated annually for IUCN by BirdLife International ( <a href="http://www.birdlife.org/datazone/species">www.birdlife.org/datazone/species</a> ).
A2: Restricted Range Species Criterion: the site is known or thought to hold a significant population of at least two range-restricted species.	Restricted-range bird species are those having a global range size less than or equal to 50,000 km <sup>2</sup> . Under "Significant population", it is recommended that site-level populations of at least two restricted-range species should be equal to or exceed 1% of their global populations.
A3: Bioregion-restricted assemblages Criterion: the site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome-realm	Bioregion-restricted assemblages are groups of species with largely shared distributions which occur (and breed) mostly or entirely within a particular bioregion (or biome). Bioregions are defined in relation to the WWF classification of biome-realms. Many biome-realms hold large numbers of species restricted to them, and networks of sites must be chosen to adequately represent these species. Under "significant component" it is recommended to use 30% of the number of bioregion-restricted species within a biome-realm within a country.
A4: Congregations Criterion: the site is known or thought to hold congregations of ≥1% of the global population of one or more species on a regular or predictable basis.	Congregatory species are those that gather together in large numbers at a particular site at a particular time in their life cycle for feeding, breeding, resting or migratory movements. Sites can qualify whether thresholds are exceeded simultaneously or cumulatively, within a limited period. In this way, the criterion covers situations where a rapid turnover of birds takes place (including, for example, for migratory land birds).

The words “regular” and “significant” in the criterion definition are intended to exclude instances of vagrancy, marginal occurrence and historical records. “Regular” includes seasonal presence of a species at a site, e.g. migratory species or sites which meet habitat requirements for qualifying species on a cyclical basis, for example when climatic conditions are favorable, when seasonal flooding occurs or there are changes in food sources.

The globally threatened species that occur in Nepal are given in Appendix 3. Note that Lesser Adjutant *Leptoptilos javanicus* will be downlisted from Vulnerable to Near Threatened when the next IUCN Red List update is released in November 2023.

## A2: Restricted Range Species

Criterion A2 Restricted Range Species: the site is known or thought to hold a significant population of at least two range-restricted species.

Restricted-range species are defined as having a historic global range of 50,000 km<sup>2</sup> or less, thus not including species with current distribution of less than this area due to habitat loss or other pressures. This criterion requires the co-occurrence of two restricted-range species with significant populations within the IBA, with “significant” equating to or exceeding 1% of the global population. Formerly, this criterion was based upon Endemic Bird Areas (EBAs) ([datazone.birdlife.org/eba](http://datazone.birdlife.org/eba)), defined as areas which encompass the overlapping breeding ranges of two or more restricted-range species, such that the complete ranges of at least two of these species are entirely included within the boundary of the EBA.

The restricted-range species that occur in Nepal are confined to the following four EBAs, and are listed in Appendix 4:

The Western Himalayas EBA extends along the Himalayas from western Nepal (west of the Kali Gandaki valley) through northern India and northern Pakistan and then southwest along the mountains in

the border region between Pakistan and Afghanistan. The restricted-range birds breed in temperate forest and some of them range into adjacent montane grassland and subalpine forest. Six of the 11 species breeding in this EBA occur in Nepal: Cheer Pheasant *Catreus wallichii*, White-throated Tit *Aegithalos niveogularis* and Kashmir Nuthatch *Sitta cashmirensis* which all breed, Tytler’s Leaf Warbler *Phylloscopus tytleri* and Kashmir Flycatcher *Ficedula subrubra* which are passage migrants, and Spectacled Finch *Callacanthus burtoni* which a very uncommon, local and erratic winter visitor.

The Central Himalayas EBA lies almost entirely within Nepal and extends from the extreme west of the country to the extreme east. The key habitats are moist temperate forest, and dense secondary forest and scrub, which support three restricted-range breeding species: Nepal Cupwing *Pnoepyga immaculata*, Hoary-throated Barwing *Actinodura nipalensis* (also found in the eastern Himalayas) and Spiny Babbler *Turdoides nipalensis*. All three species are locally fairly common residents or altitudinal migrants.

The Eastern Himalayas EBA follows the Himalayan range from eastern Nepal and Bhutan, through northeast India, to northeast and western Myanmar and southwest China. The key habitats are wet subtropical and temperate forests, and moist subalpine forest. Six of the 22 restricted-range species in this EBA possibly breed in Nepal: Rufous-throated Wren Babbler *Spelaornis caudatus*, Blackish-breasted Babbler *Stachyris humei*, Hoary-throated Barwing *Actinodura nipalensis*, White-naped Yuhina *Yuhina bakeri*, Yellow-vented Warbler *Phylloscopus cantator* and Broad-billed Warbler *Tickellia hodgsoni*.

The Assam Plains EBA comprises the plains and foothills of the Brahmaputra watershed in the north-east of the Indian subcontinent and includes extreme eastern Nepal. Black-breasted Parrotbill *Paradoxornis flavirostris* was collected in Nepal in the 19th century but is now extirpated.

### **A3: Bioregion-restricted assemblages**

Criterion A3 Bioregion-restricted assemblages: the site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one bioregion (or biome).

This category applies to groups of bird species with largely shared distributions whose global breeding distributions are mostly or wholly confined within a particular bioregion (or biome). For the definition of a bioregion, BirdLife follows the WWF classification of biome-realms, which is the only global system available which uniformly defines bioregions (biomes) worldwide. BirdLife International (2004) included a classification of the bioregions (biomes) in the Asia region based upon the available global, regional and national biome classifications, and the distributions and habitats of the region's bird species. This identified 15 bioregions (biomes) in Asia, which correspond closely to the relevant WWF biome-realms, including a remarkable total of six bioregions (biomes) that are found in Nepal (Table 2). The BirdLife International (2004) classification of bioregions (biomes) and lists of bioregion-restricted species are used here as no more recent analysis is yet available for the Asia region.

A network of IBAs has been selected throughout the geographical extent of each of the bioregions (biomes) in Nepal, with the aim of representing all species and their habitats in the areas spanned by the bioregions (biome). Wherever possible, a few large sites with relatively intact natural habitats were selected in each bioregion (biomes), but not too large to be impractical for conservation. Account was taken of the existing protected areas network in Nepal when selecting IBAs and defining their boundaries, as these areas often include the extensive areas of relatively undisturbed habitats that are suitable for listing under this criterion. The "significant component" term in the category definition is intended to avoid selecting sites solely on the presence of one or a few bioregion-restricted

species that are common, widespread and adaptable within the bioregions (biomes) and, therefore, occur at other chosen sites. When making site selections under each bioregion (biome), a guideline threshold of 30% of the national complement should be used to decide whether a site holds the 'significant component' of bioregion-restricted species that the criterion requires.

### **A4: Congregations**

Criterion A4 Congregations: the site is known or thought to hold congregations of  $\geq 1\%$  of the global population of one or more species on a regular or predictable basis.

Congregatory species are those that gather in large numbers at a particular site at a particular time in their life cycle for feeding, breeding, resting or migratory movements. Such species tend to have specialized ecological requirements due to their dependency on a relatively small proportion of their total range. Their congregatory behaviour makes them inherently vulnerable at the population level. A high proportion of congregatory species are waterbirds and seabirds but the criterion also allows for identifying IBAs for terrestrial species which occur in high concentrations at specific sites.

The original version of this criterion was based upon the criteria used to identify Ramsar sites under the Ramsar Convention on Wetlands, with separate sub-criteria on the biogeographic populations of congregatory waterbird and seabird species, and a threshold of 20,000 of one or more waterbirds species. These sub-criteria have now been removed from the IBA criteria and replaced by the single threshold of 1% of the global populations of one or more congregatory species, which aligns the IBA criteria closely to the recently developed KBA criteria. The 1% of global population thresholds of congregatory species are calculated by the BirdLife Secretariat based on global population estimates documented by BirdLife in its assessments for the IUCN Red List. In the case of Nepal, the only two

**Table 2: The bioregions (biomes) of Nepal**

Biome	Biome Name	Distribution of Biome	Species in Nepal	IBAs in Nepal
Biome-5	Eurasian high montane (Alpine and Tibetan)	Nepal, Bhutan, China, India, Mongolia, Myanmar, Pakistan, Russia,	42	12
Biome-7	Sino-Himalayan temperate forest	Nepal, Bangladesh, Bhutan, China, India, Laos, Mongolia, Myanmar, Pakistan, Russia, Thailand, Vietnam	114	14
Biome-8	Sino-Himalayan subtropical forest	Nepal, Bangladesh, Bhutan, Cambodia, China, India, Laos, Myanmar, Pakistan, Philippines, Thailand, Vietnam	61	10
Biome-9	Indochinese tropical moist forest	Nepal, Bangladesh, Bhutan, Cambodia, China, India, Laos, Myanmar, Thailand, Vietnam	11	0
Biome-11	Indo-Malayan tropical dry zone	Nepal, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam	44	8
Biome-12	Indo-Gangetic Plains	Nepal, Bangladesh, Bhutan, Cambodia, China, India, Laos, Myanmar, Pakistan, Thailand, Vietnam	13	4

congregatory species that meets the A4 criterion are the globally threatened Lesser Adjutant *Leptoptilos javanicus* and Sarus Crane *Grus antigone*. The global population of Lesser Adjutant is estimated at 5,500-10,000 mature individuals (roughly equating to 8,000-15,000 individuals), leading to a 1% of global population estimate of 80 mature individuals (or 120 individuals). The global population of Sarus Crane is estimated at 13,000-15,000 mature individuals (roughly equating to 19,000-21,800 individuals), leading to a 1% of global population estimate of 140 mature individuals (or 200 individuals). Note that there are several wetland IBAs in Nepal that support congregatory waterbirds, but none of the waterbird species is known to exceed 1% of global population thresholds at these sites; it is possible that some of these sites might qualify under A4 in the future as wetland management improves and more detailed waterbird count data becomes available.

### The KBA Programme and Criteria

In September 2016, a consortium of global conservation organisations including BirdLife International launched the Key Biodiversity Areas (KBA) Partnership ([www.keybiodiversityareas.org](http://www.keybiodiversityareas.org)). KBAs are the most important places in the world for species from all faunal and floral groups and their habitats, and the KBA Programme supports the identification, mapping, monitoring and conservation of these most critical sites for nature. The criteria used to identify KBAs overlap substantially with the global IBA criteria and are detailed in the Global Standard for the Identification of Key Biodiversity Areas and Guidelines for using a global standard for the identification of Key Biodiversity Areas; at present all IBAs are treated as KBAs, although in the future the IBAs will need to be assessed against the KBA criteria to confirm their status as KBAs. As a KBA Partner, BirdLife is committed to the identification,

documentation and promotion of KBAs identified under the KBA standard, and BirdLife Partners undertaking a review of existing IBAs are encouraged to apply the KBA criteria alongside the IBA criteria.

### Defining the Boundaries of an IBA

An IBA is defined so that, as far as possible, it:

1. is different in character or habitat or ornithological importance from the surrounding area;
2. exists as an actual or potential protected area, with or without buffer zones, or is an area which can be managed in some way for nature conservation;
3. is, alone or with other sites, a self-sufficient area which provides all the requirements of the birds, when present, for which it is important.

Where extensive areas of continuous habitat occur which are important for birds, it may not be possible to identify sites that are different in character from the surrounding area. In these cases, practical considerations of how best the site may be conserved should be the most important consideration. Simple, conspicuous features such as roads, rivers, railway lines, etc. may be used to delimit site boundaries while features such as watersheds and hilltops may help in places where there are no obvious changes in habitat (transitions of vegetation or soil). It is also important to consider any boundaries of land ownership.

There are no rules on how large or small IBAs should be - what is sensible from the biological point of view has

to be balanced with what is practical for conservation. There is also no clear-cut answer about how to treat cases where a number of small sites neighbour each other - whether these are best considered as several separate IBAs or one large one (which may have areas which are not important for birds) will depend upon what is most practical for conservation.

### The IBA Process in Nepal

The IBA programme in Nepal is coordinated by Bird Conservation Nepal, the BirdLife International Partner for Nepal with support from the BirdLife Asia Secretariat and the Royal Society for the Protection of Birds, UK. The process of data gathering is as important as the production of the inventory itself. It offers the opportunity to involve the wider conservation and wildlife community in the documentation process and in so doing, creates ownership of individual sites by people local to them. In short, the IBA process works towards the creation of a network of Local Conservation Groups and is a vital first step to the sustainable conservation of all IBAs in Nepal.

Survey and monitoring work will be required at all IBAs including protected areas to help support future conservation and management. IBAs that are not formally protected should be given high priority by the GoN to ensure their protection. All IBAs will need large-scale community participation and stewardship to ensure their long-term conservation. This is especially vital in the case of complex IBAs such as at the Jagishpur Reservoir and Farmlands of Lumbini IBA where only people's participation will ensure survival of the threatened birds.

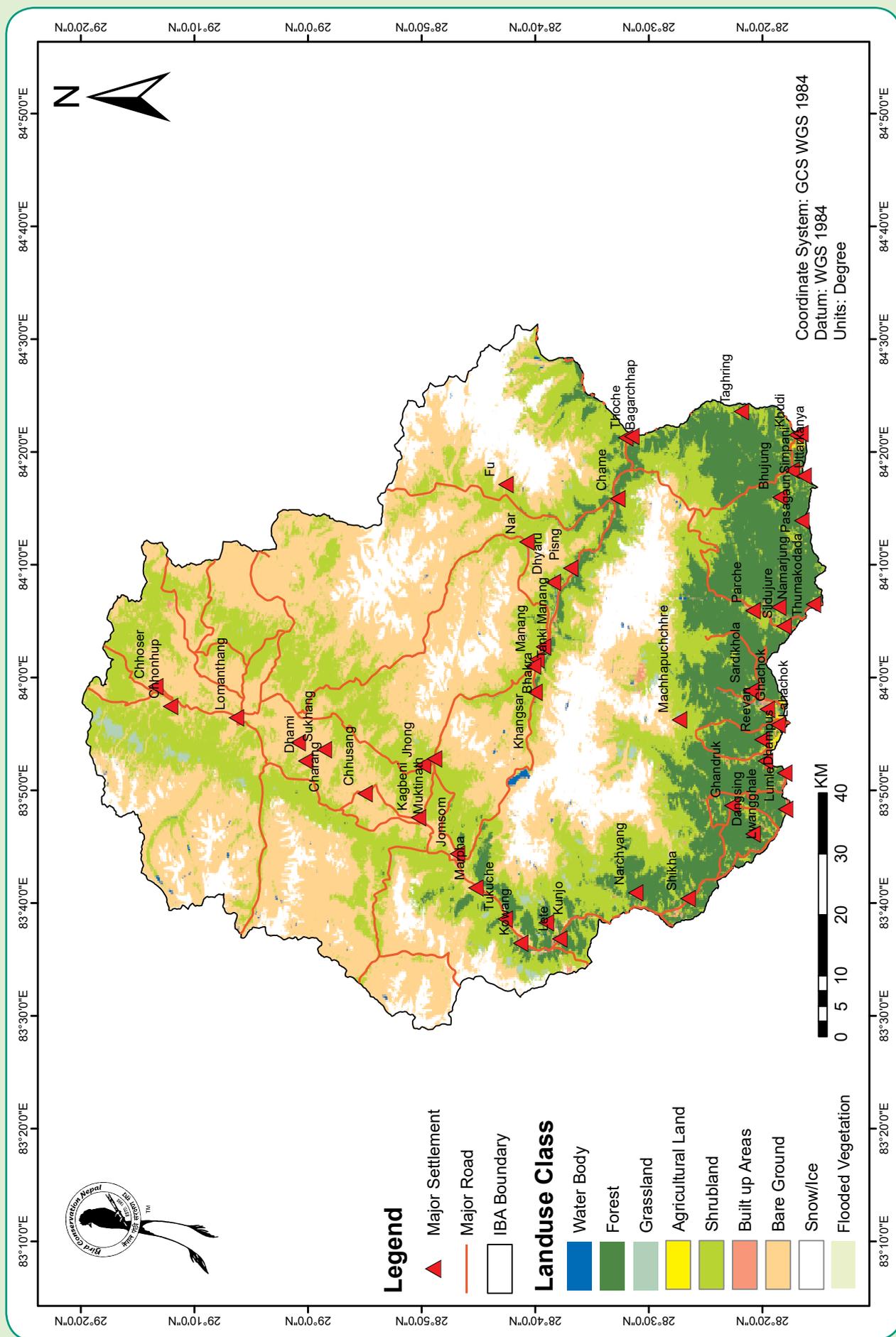




# SITE ACCOUNTS

## The IBA Directory

# ANNAPURNA CONSERVATION AREA (ACA) SITE MAP



# 1

# ANNAPURNA CONSERVATION AREA

## Site description

Annapurna Conservation Area (ACA) was set up in 1986 by the National Trust for Nature Conservation (NTNC). It was the first of Nepal's Conservation Areas and is the country's largest protected area. ACA lies in west-central Nepal around the Annapurna massifs. It includes one of the most impressive mountain cirques in the world, popularly known as the Annapurna Circuit which is surrounded by seven peaks over 7000 m. Annapurna I (8091 m), one of the world's highest mountains, lies within the ACA and Dhaulagiri (8167 m) lies to the west of the area (NTNC 2015a).

ACA is rich in cultural diversity and home to over 100,000 residents of different cultural and linguistic groups (NTNC 2023).

At the lowest levels of ACA (about 1000 m) there are subtropical forests of broadleaved *Schima wallichii*, *Castanopsis indica*, and on dry slopes forests of Chir Pine *Pinus roxburghii*; alder *Alnus nepalensis* mainly occurs along rivers and streams. Higher up, these forests are replaced by temperate forests of mixed broadleaves, including the oaks *Quercus lamellosa*, *Q. lanata* and *Q. semecarpifolia* with rhododendron species. In the wettest places, such as in the upper Modi Khola valley, grow bamboo jungles of *Arundinaria* species. Above these grow coniferous forests, mainly of fir *Abies spectabilis*, Blue Pine *Pinus wallichiana* and hemlock *Tsuga dumosa*. Higher up there are subalpine forests of birch *Betula utilis*, blue pine and juniper species. Finally, rhododendron and juniper scrub grow in the alpine zone. The area to the north of the Himalayas is semi-desert and small, scattered bushes of *Caragana* species and juniper replace the forests (NTNC 2015a).

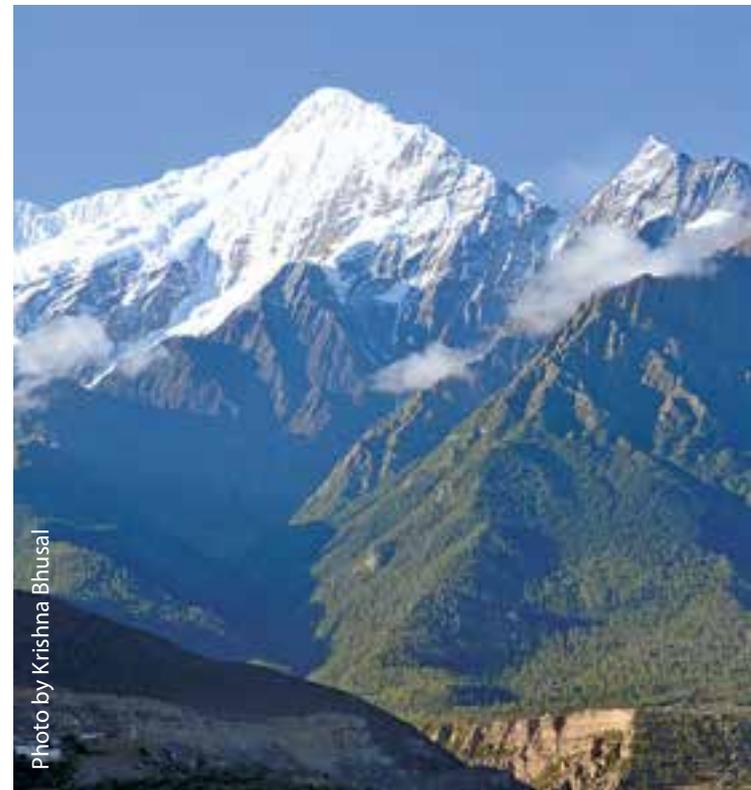
**Status:** Protected

**Altitude:** 790-8091m

**Area:** 762,900ha

**Geographical coordinates:** 28°32'N/84°00'E, Kaski, Lamjung, Manang, Myagdi and Mustang Districts of Gandaki Province

**Categories:** A1 (globally threatened species); A2 (restricted range species, Western and Central Himalayas EBAs); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species)



## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Uncommon and local resident on steep slopes with scrub and secondary growth
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common passage migrant, also winter visitor
Restricted-range species (Confirmed)	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Uncommon and local resident on steep slopes with scrub and secondary growth
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Locally common and widespread altitudinal migrant; in tall herbage near forest edges or in open forest near running water
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Frequent altitudinal migrant in dense scrub
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident and altitudinal migrant in mossy broadleaved forest

Biogeographically, the Himalayas can be divided into eastern and western sections. The dividing line between the east and west is the Kali Gandaki Valley that runs north/south through the Conservation Area (NTNC 2015a).

Since the late 1970s Pipar has been the site of a partnership between the World Pheasant Association and the villagers of Machhapuchure VDC, who live closest to Pipar, because of the importance of the area for pheasants.

The large number of 504 bird species was listed for ACA by Baral (2018) well over half the species recorded in Nepal. Since then, two additional species have been recorded (Rishi Baral *in litt.* to C. Inskipp, 6 January 2023), making a total of 506 bird species for ACA. Species typical of both the eastern and western Himalayas occur, as the Area is situated across the biogeographic divide in the mountain chain. Birds in ACA have been well-recorded.

ACA supports significant populations of the globally threatened Cheer Pheasant and Steppe Eagle and so qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded in ACA are: Common Pochard *Aythya ferina*, Wood Snipe *Gallinago nemoricola*, Pallas's Fish Eagle *Haliaeetus*

*leucoryphus*, Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Red-headed Vulture *Sarcogyps monachus*, Indian Spotted Eagle *Clanga hastata*, Greater Spotted Eagle *Clanga clanga*, Tawny Eagle *Aquila rapax*, Eastern Imperial Eagle *Aquila heliaca*, and Saker Falcon *Falco cherrug*. Further fieldwork may show ACA supports significant populations of some of these species.

ACA also has significant populations of one restricted-range species from the Western Himalayas (EBA 128): Cheer Pheasant and three species from the Central Himalayas (EBA 129) Spiny Babbler, Nepal Cupwing and Hoary-throated Barwing that are resident. ACA therefore qualifies as an IBA based on the restricted-range criterion. Further fieldwork may show ACA also supports significant populations of the restricted-range White-throated Tit *Aegithalos niveogularis* (rare visitor) and Spectacled Finch *Callacanthis burtoni* (local and erratic winter visitor from the Western Himalayas (EBA 128).

ACA is one of the most important of Nepal's IBAs for biome-restricted species and for three biomes. Large areas of temperate forests and associated bamboo jungles occur and are known to support a significant proportion of characteristic species of the Sino-Himalayan temperate forest biome. There are huge alpine and trans-Himalayan semi-desert areas



Photo by Jyotendra Jyu Thakuri

that support a significant proportion of characteristic species of the Eurasian high montane biome. Subtropical forests are also extensive and support a significant number of characteristic species of the Sino-Himalayan subtropical forest biome (see Appendices 2,7). ACA therefore also qualifies as an IBA based on the biome-restricted criterion.

The ACA is the country's only protected area that supports all of Nepal's six Himalayan pheasant species. Pipar and the nearby area of Santel are of national importance for pheasants, supporting five species including a good population of the near-threatened Satyr Tragopan *Tragopan satyra*, and are also notably rich in other forest bird species (Poudyal *et al.* 2009).

Eleven near-threatened species have been recorded including significant numbers of the following residents: Satyr Tragopan (uncommon resident and altitudinal migrant), Mountain Hawk-eagle *Nisaetus nipalensis*, Bearded Vulture *Gypaetus barbatus* (frequent resident and altitudinal migrant),

and Himalayan Griffon *Gyps himalayensis* (fairly common resident and altitudinal migrant). Other near-threatened species recorded are: Ferruginous Duck *Aythya nyroca* (rare passage migrant), Asian Woollyneck *Ciconia episcopus* (rare visitor), Yellow-rumped Honeyguide *Indicator xanthonotus* (rare resident and altitudinal migrant), Northern Lapwing *Vanellus vanellus* (passage migrant), River Lapwing *Vanellus duvaucelii* (rare possibly resident), Cinereous Vulture *Aegypius monachus* (rare winter visitor), and Pallid Harrier *Circus macrourus* (rare passage migrant).

The Kali Gandaki valley is a migration corridor for birds moving south to winter in India. About 40 migrating bird species have been recorded, including thousands of Demoiselle Cranes *Grus virgo* (Inskipp and Inskipp 1991). In addition, large numbers of birds of prey have been observed at Thoolakharka which lies just south of the southern edge of ACA. The raptors leave the Tibetan plateau and northern Asia and head south to unknown wintering grounds (maybe the Middle-East or even Africa) following the Himalayan range of Nepal and India. In total 81 days of migration study



Demoiselle Crane by Hiru Lal Dangaure

were conducted in 2012 and 85 days in 2013 and 2014. Approximately 10,000 to 14,000 individuals including 37 migrating raptor species, the majority of which were Steppe Eagles *Aquila nipalensis*, and also the globally threatened Pallas's Fish Eagle, Eastern Imperial Eagle and Greater Spotted Eagle; Egyptian Vulture, White-rumped Vulture, Himalayan Griffon and Cinereous Vulture, and Saker Falcon were recorded (Subedi 2015). In 1989 and a few later years systematic counts were also made at nearby Khare (Kande) e.g. de Roder (1989).

### Other wildlife

NTNC (2023) listed a total of 105 mammal species for ACA. Two additional species have been recently recorded: Steppe Pole Cat *Mustela eversmannii* and Pallas's Cat *Otocolobus manul* (Paras Singh in litt. to C. Inskipp, 1 June 2015), making a total of 107 species for ACA. A large number of globally threatened mammals occur including Asiatic Wild Dog *Cuon alpinus*, Red Panda *Ailurus fulgens*, Himalayan Black Bear *Ursus thibetanus*, Smooth-coated Otter *Lutrogale perspicillata*, Clouded Leopard *Neofelis nebulosa*, Snow Leopard *Panthera uncia*, Himalayan Musk Deer *Moschus chrysogaster*, Wild Yak *Bos grunniens* and Chiru *Pantholops hodgsonii*. Near-threatened mammals

include Himalayan Serow *Capricornis thar*, Himalayan Tahr *Hemitragus jemlahicus*, Argali *Ovis ammon* and Common Otter *Lutra lutra* (NTNC 2023). A total of 40 reptile species has been found, some as far north as the upper Mustang valley. Twenty-three amphibians have been recorded; all frogs and toads, and these are more or less restricted to the southern slopes. The high number of 1,226 species of flowering plants have also been recorded (NTNC 2023).

### Conservation issues and management

By 1989 many of ACA's 40,000 inhabitants were subsistence farmers and the problems of population growth, overgrazing, fuelwood demands and intensive agriculture had resulted in severe environmental degradation (Gurung 1991).

Large numbers of people, many from outside ACA illegally harvest Non-Timber Forest Products (NTFPs) such as yarsagumba *Ophiocordyceps sinensis*, each year resulting in poaching, especially of pheasants and some mammal species, as well as fuelwood collecting which is aggravating forest degradation. Yarsagumba and other NTFP collection causes especially high disturbance because it is coincident with the breeding season of many bird species, as



well as highland mammals giving birth (Paras Singh in litt. to C. Inskipp, 1 June 2015).

Illegal local hunting pressures can be high, for instance snaring of Cheer Pheasant *Catreus wallichii* in the Kali Gandaki valley was observed in 2009 (Subedi 2013) and pheasant poaching, including for Satyr Tragopan *Tragopan satyra*, was found to be increasing in the Pipar area in 2008 and 2009 (Poudyal 2008, Subedi 2010). Every year people are apprehended for hunting pheasants, Northern Red Muntjac *Muntiacus vaginalis* and Himalayan Musk Deer *Moschus chrysogaster*. The international wildlife trade is fuelling the trapping of Himalayan Musk Deer and Snow Leopard *Panthera uncia* (Paras Singh in litt. to C. Inskipp 2 June 2015). Small scale hunting for migrating Demoiselle Cranes by local people occurs annually in Mustang (Acharya 2007).

Most households lose the valuable services of some active members who are forced by poverty to undergo migration to seek work overseas. These households then rely on income from remittances.

In the 1980s ACA's environmental threats were further exacerbated by thousands of trekkers annually (Gurung 1991). The natural and cultural features of ACA have made it the most popular trekking destination in the country, drawing more than 60

percent of the country's total trekkers. Tourism, over the years, has been firmly established as one of the most important and competitive sectors of the local economy. There are over 1,000 lodges, teashops and hundreds of other subsidiary services to cater to the thousands of trekkers, pilgrims and their support staff (NTNC 2015a).

The soaring number of visitors, whose fuel wood consumption is twice that of the local people, has exerted immense pressure on forest resources already stressed from the growing local population. Similarly, litter, particularly the wastes produced by trekkers and hoteliers, is another major concern. It is estimated that an average trekking group of 15 people generates about 15 kgs of non-biodegradable and non-burnable garbage in 10 days trek, producing tons of garbage in mountain regions annually (NTNC 2015a).

Although the carrying capacity of tourism in ACA is unknown, tourist numbers are increasing every year causing the spread of land encroachment for hotel building (Paras Singh in litt. to C. Inskipp, 2 June 2015).

In response to these negative impacts of trekking tourism on the Area's ecology and also on local culture, the Annapurna Conservation Area Project (ACAP) was set up in 1986 by NTNC with strong support from the WWF Nepal Programme.



Another major threat is the current construction of more than 20 hydropower projects within ACA. These activities may result in huge loss of biodiversity through road development, excavation and power house construction. In addition, development of the road network in recent years may have caused habitat destruction (Paras Singh in litt. to C. Inskipp, 2 June 2015).

A 2011 assessment of the condition of the ACA IBA found it to be in a very unfavourable state (BirdLife International 2015b).

The current objectives of ACAP are to:

- Conserve the natural resources of ACA for the benefit of present and future generations.
- Bring sustainable social and economic development to the local people.
- Develop tourism in such a way that it will have minimum negative impact on the natural, socio-cultural and economic environments (NTNC 2015a).

ACAP's goal is to achieve a sustained balance between nature conservation and socio-economic improvement in the Annapurna Conservation Area (NTNC 2015a).

The multifaceted problems of ACA have been addressed through an integrated, community-based conservation and development approach, an

experimental model which has been in the vanguard of promoting the concepts of "Conservation Area" through an "Integrated Conservation and Development Programme" approach in the country and abroad. ACAP was first tested as a pilot programme in the Ghandruk Village Development Committee (VDC) in 1986. After being notified in the Gazette as a "Conservation Area" in 1992, ACAP's programme covered the entire area (NTNC 2015a).

ACA was the first protected area which refrained from using army assistance to protect the dwindling natural resource base on which the region depends. Instead, it invests whatever financial resources available for community development and social capital building in the region. NTNC receives no regular funding support from the government for the operation of Annapurna Conservation Area Project (ACAP), but has been granted the right to collect entry fees from visiting trekkers. One hundred percent of the revenue is ploughed back to implement conservation and development activities in ACA. Additional funds are raised from national and international donors. (NTNC 2015a).

In order to manage ACA more effectively, it has been divided into seven unit conservation offices - Jomsom, Manang and Lo-Manthang in the trans-Himalayan region and Bhujung, Sikles, Ghandruk, and Lwang on the southern flank of the Annapurna range. The focus of Jomsom, Manang and Ghandruk, which are among the most popular trekking destinations,



Blood Pheasant by Mannshanta Ghimire

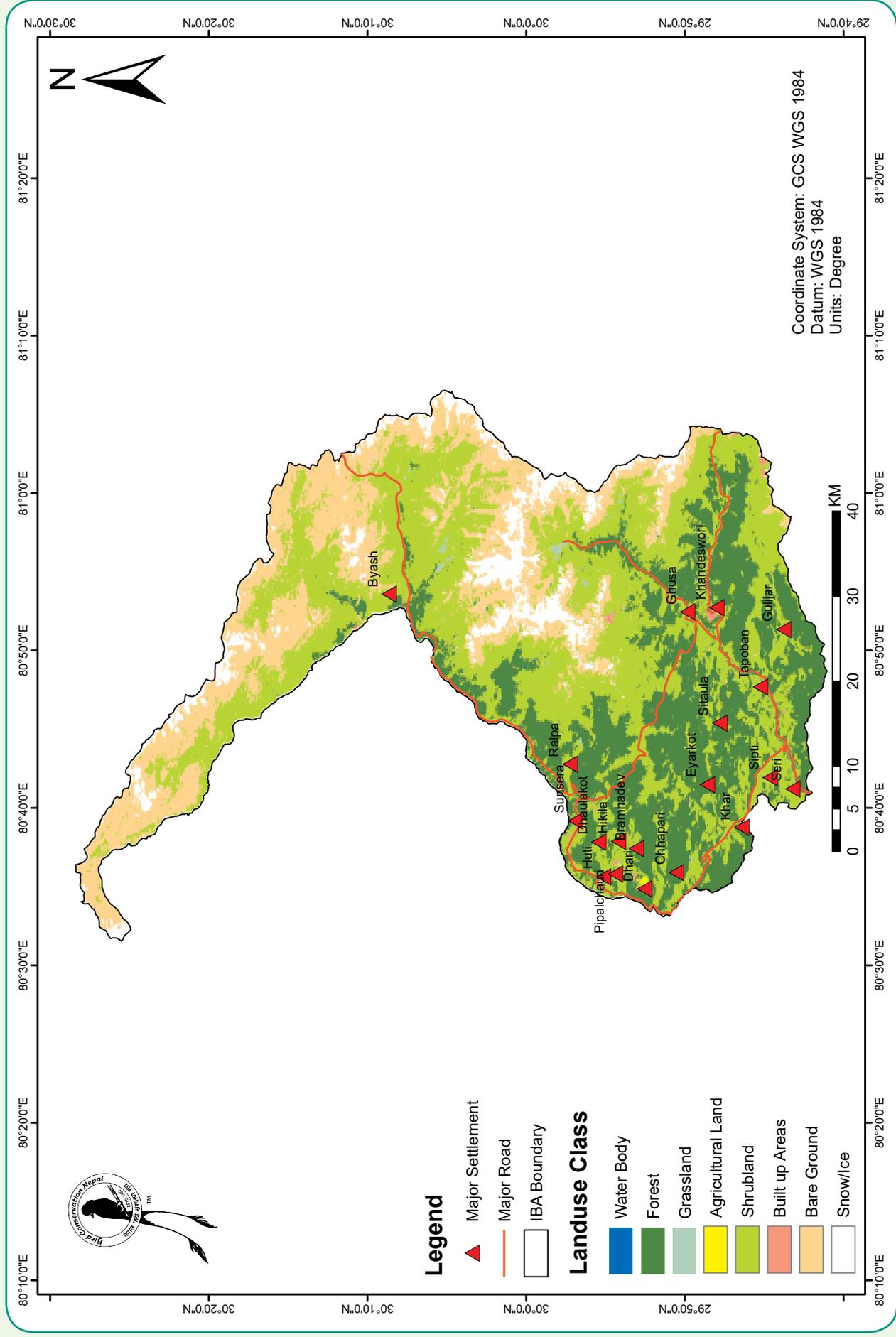
is on integrated tourism management and other development activities that benefit the local communities and the environment. The programme priorities for Bhujung, Sikles and Lwang are poverty alleviation and integrated agriculture development and agro-forestry. The focus in upper Mustang, which came under the jurisdiction of ACA in 1992, has been on managing controlled tourism on a sustainable basis, and promoting heritage conservation which is the major tourist attraction. The Conservation Education and Extension Programme is being implemented in the entire region of ACA and forms the backbone of all its endeavors (NTNC 2015a).

In January 2015 the GoN extended the mandate to NTNC for the management of the Annapurna Conservation Area for another five years. In this five year period, the handover process to the community will be completed. (NTNC 2015b). The NTNC is required to:

- draft and implement within one year the Conservation Area Management Regulation (CAMR);
- manage ACA in such a way that the capacity of the community will be enhanced;
- from May 2016 for one year collaborate with 20 Conservation Area Management Committees (CAMCs) (of 20 VDCs) for the management of natural resources in ACA;
- from May 2017 for one year collaborate with 20 CAMCs for the management of natural resources based on the new CAMR, and
- from May 2018 for one year, collaborate with the remaining seven CAMCs for the management of natural resources based on the new CAMR, and eventually ACA should be handed over to the local community.

ACA lies in the area covered by Chitwan-Annapurna Landscape (CHAL), see p.262.

# API NAMPA CONSERVATION AREA SITE MAP



# 2 API NAMPA CONSERVATION AREA

## Site description

Api Nampa Conservation Area (ANCA) was declared in July 2010. It lies in the north-west corner of the country bordering with China and India. ANCA is delineated by the Bajhang district border in the east; the Mahakali River (also the Indian border) in the west; the Tibetan Autonomous Region of China border in the north, and the Lasku and Naugad Kholas in the south (DNPWC 2015a).

ANCA is representative of Western Himalayan ecosystems, especially temperate forests. The vegetation comprises: subtropical forests (hill Sal forest *Shorea robusta*), temperate forests (fir *Abies spp.*, hemlock *Tsuga spp.*, oak *Quercus spp.*, juniper *Juniperus spp.*), subalpine forest (pine *Pinus spp.*, oak *Quercus spp.*, rhododendron *Rhododendron spp.*), and alpine scrub (juniper *Juniperus spp.*, rhododendron *Rhododendron spp.*) and grassland (DNPWC 2015a).

The land cover of ANCA is: forest (33%), alpine meadow (22.96%), snow/glacier (19.73%), scrubland (9.38%), agriculture (8.48%), hillside grassland (5.80%), barren area (0.39%), water bodies (0.14%) and built-up areas (0.04%) (DNPWC 2015a).

**Status:** Protected

**Altitude:** 518-7132m

**Area:** 190,300ha

**Geographical coordinates:** 29°30' to 30°15' N and 80°22' to 81°09' E Darchula District, Susurpashchim Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Western Himalayas EBA); A3(Sino-Himalayan temperate forest biome species; Eurasian high montane biome species).

Nearly 60,000 persons are living in ANCA (Nurendra Aryal, Chief Warden, ANCA in litt. to C. Inskipp, 16 January 2023).

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Locally fairly common resident on steep slopes with scrub and secondary growth
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Uncommon winter visitor and probably passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Locally fairly common resident on steep slopes with scrub and secondary growth
Kashmir Nuthatch <i>Sitta cashmirensis</i>	Western Himalayas	Common, probably resident in deciduous and deciduous/ coniferous forest



ANCA is under-recorded for birds. An ornithological survey along two major river valleys in ANCA, the Chameliya and Mahakali, was carried out from 15-21 December 2011 and from 26 March to 6 April 2012 (Thakuri and Prajapati 2012). A total of 241 bird species was recorded in these surveys. Hill Blue Flycatcher *Cyornis banyumas*, which is listed in Thakuri and Prajapati (2012), has been excluded because the species is no longer on the Nepal list, until good evidence has been found that it occurs in Nepal (Grimmett *et al.* 2016, Inskipp *et al.* 2016). Tytler's Leaf Warbler *Phylloscopus tytleri* has also been excluded as this is a December record. There are no winter records for this species anywhere in the Himalayas. All previous winter records are from Maharashtra southwards (Grimmett *et al.* 2011), so good evidence would be needed to accept a winter record.

Another bird survey was carried out from 12-25 December 2016 and the ANCA checklist was then updated (Chaudhary and Poudyal 2017). The following eight species recorded in Thakuri and Prajapati (2012) were not included in the updated checklist as their occurrence seems unlikely and verification is needed: Griffon Vulture *Gyps fulvus*, Rusty-fronted Barwing *Actinodura egertoni*, Green-crowned Warbler *Phylloscopus burkii*, Dark-rumped Rosefinch *Carpodacus edwardsii*, Grey-sided Laughingthrush *Pterorhinus caerulatus*, Crimson browed Finch *Carpodacus subhimachalus*, Scaly Laughingthrush *Trochalopteron subunicolor* and

Scarlet Finch *Carpodacus sipahi*. Currently the bird checklist comprises 247 species.

Survey results show that the ANCA supports significant populations of the globally threatened Cheer Pheasant and Steppe Eagle and so qualifies as an IBA under the globally threatened species criterion. Three other globally threatened species have been recorded: Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis*, and Red-headed Vulture *Sarcogyps calvus*. More fieldwork may show that ANCA holds significant populations of one or more of these species.

The survey results showed that ANCA holds significant populations of the restricted-range Cheer Pheasant, and Kashmir Nuthatch from the Western Himalayas (EBA 128). ANCA therefore qualifies as an IBA based on the restricted-range criterion. Further fieldwork may show that ANCA also supports significant populations of the restricted-range White-throated Tit *Aegithalos niveogularis* (rare possibly a winter visitor) from the Western Himalayas (EBA 128).

A significant proportion of characteristic species of the Sino-Himalayan temperate forest biome has been recorded so Api Nampa also qualifies as an IBA based on the biome-restricted assemblage criterion. With more fieldwork ANCA may be found to also support a significant proportion of characteristic species of the Eurasian high montane biome (see Appendices 2,7).



Five near-threatened species have been recorded: Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis* (common residents); Satyr Tragopan *Tragopan satyra* and Mountain Hawk-eagle *Nisaetus nipalensis* (uncommon residents), and Cinereous Vulture *Aegypius monachus* (rare winter visitor).

### Other wildlife

A total of 43 mammal species and 69 fish species have been recorded in ANCA (Nurendra Aryal *in litt.* to C. Inskipp, 16 January 2023). The globally threatened Himalayan Black Bear *Ursus thibetanus*, Red Panda *Ailurus fulgens*, Snow Leopard *Panthera uncia* and Himalayan Musk Deer *Moschus chrysogaster* and near-threatened Himalayan Tahr *Hemitragus jemlahicus* and Himalayan Goral *Naemorhedus goral* occur in ANCA. Other mammals include Blue Sheep *Pseudois nayaur*, Grey Langur *Semnopithecus entellus*, Golden Jackal *Canis aureus* and Grey Wolf *Canis lupus* (DNPWC 2015a). ANCA is also rich in fish diversity. Common species recorded are: Asla *Schizothorax spp.*, Mahseer *Tor spp.*, *Garra* and *Labeo spp.*, *Pseudoechinus spp.*, *Glypothorax spp.*, *Barilius spp.* and *Puntius spp.* (Zomer and Oli 2011).

### Conservation issues and management

#### Conservation Model

At present, the livelihood of the people living within the boundary of ANCA depends mainly on

agriculture and on collection of non-timber forest products/medicinal and aromatic plants (NTFP/ MAPs). For the conservation of wild animals and their habitats and the socio-economic development of the local people, it seems appropriate to give the authority, responsibility and accountability of the management of this conservation areas to the community (council). If the ANCA Office remains as a facilitator, catalyst and regulator, conservation and development work will be effective.

#### NTFPs and MAPs collection and management

The livelihood of the local communities living within ANCA is dependent on the collection and selling of MAPs and NTFPs. Similarly, the pressure of the residents of neighboring districts to collect high-value herbs/NTFPs also falls in this area. For the sustainable management of herb and non-timber forest production, it seems necessary to diversify the sources of livelihood for the local people and widen their means of income generation.

#### Wildlife conservation

Studies have shown that Tinker Naka within ANCA has been identified as the illegal extraction point of wild animals. Because wild animals damage livestock and crops, it is difficult for the local people to develop co-existence with wildlife. In terms of law enforcement, it does not seem to be effective because there is no dedicated security mechanism for ANCA.

It seems necessary to make the local community more responsible and accountable for wildlife conservation and develop a sense of ownership of wildlife. It is necessary to make access to all places of ANCA. It seems necessary to develop a system that works in coordination with the agencies concerned with conservation, local administration and local government.

### *Marketing and development of tourism*

Although there is a high potential for tourism in this area, which has wild animals, ancient culture and attractive Himalayan terrain, the tourist activity is very low. It seems necessary to promote and market tourism in ANCA. There are ample possibilities to promote home stay for tourist facilities ANCA.

### *Conservation education and public awareness*

The educational level of the people in Darchula district is poor. Although some efforts have been made through the school education programme on why and for whom environmental conservation is needed, it has not been possible to adequately cover all areas. There is a need to conduct conservation education and awareness programmes widely to cover environmental conservation, as well as conservation of wildlife and their habitats, as well as the unique culture of this area.

### *Research and development*

Although there was some study and research during the establishment of ANCA, it has not been possible to continue with this. It seems that the results obtained by studying and researching the biological diversity of ANCA, as well as local art and culture should be applied to the development of ANCA.

### *Institution capacity development*

Among the protected areas of Nepal, ANCA is one of the most recently established. In order to achieve institutional development, training should be conducted to increase the capacity of the employees working in ANCA. Similarly, since the ANCA consumer committees have an important stake in the management of ANCA, increasing the capacity of the committees/groups is also important for conservation. (Source: Nurendra Aryal, Chief Conservation Officer, Api Nampa Conservation Area *in litt.* to C. Inskipp, 17 January 2023.)

There are 94 community forests covering 15,064 ha which benefit 51,839 persons. Agriculture is the major occupation (32.6 % of population), followed by livestock rearing (8 %). There is a long tradition of seasonal migration to India for waged labour (DNPWC 2015a).

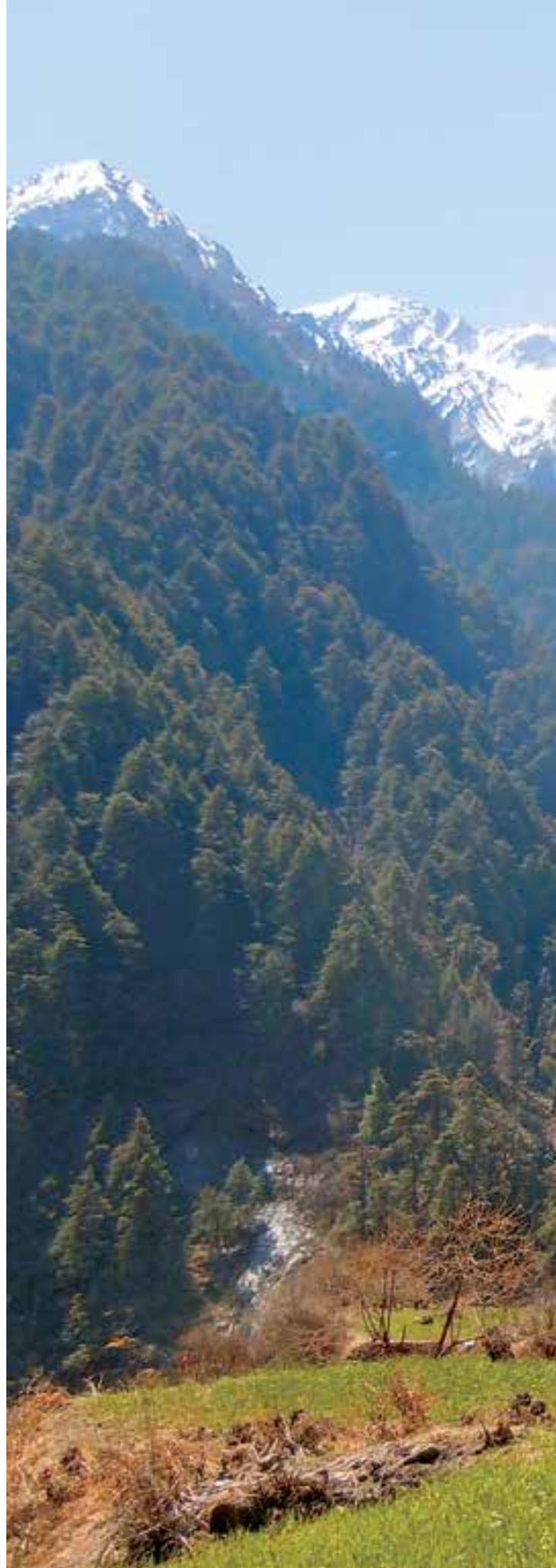
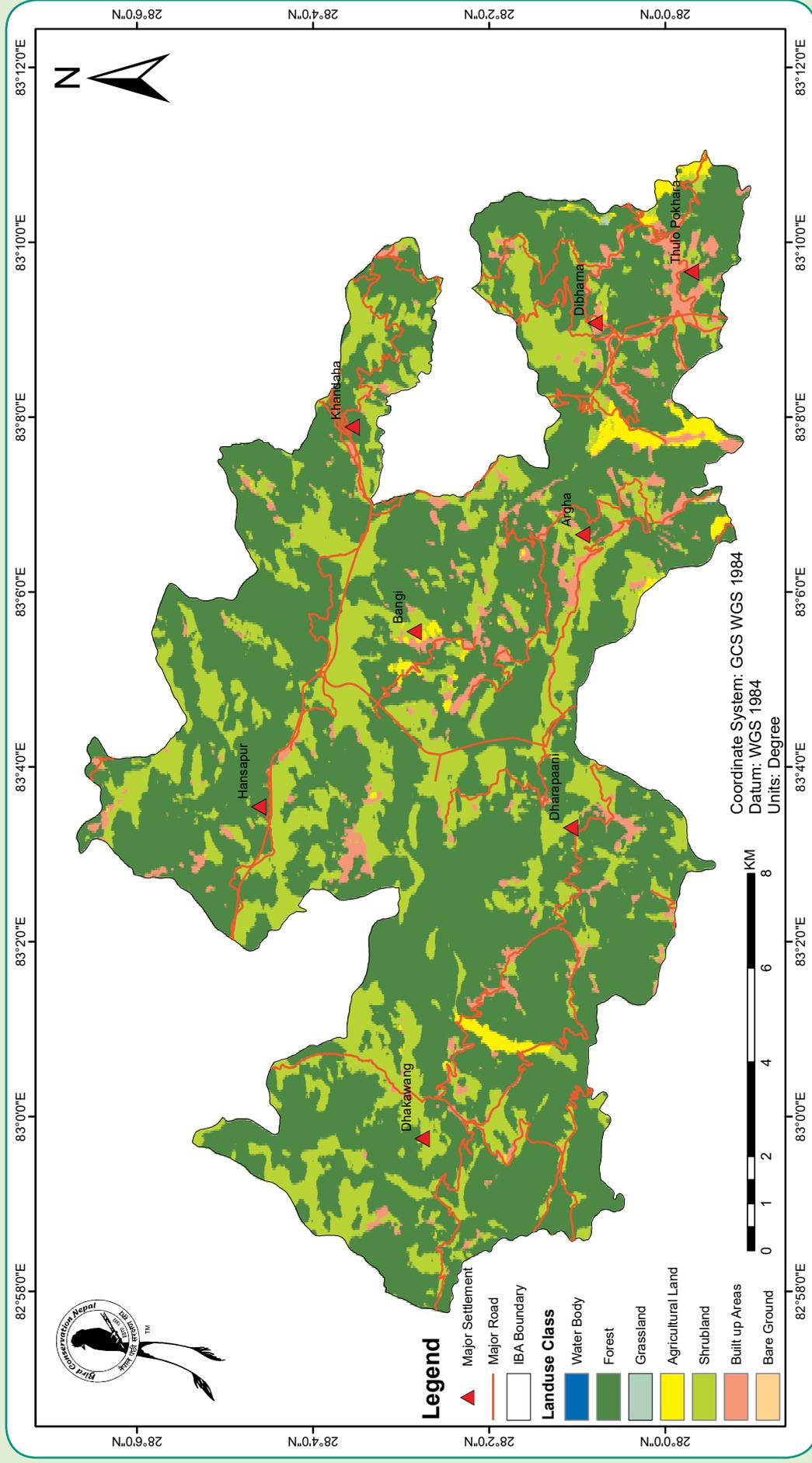




Photo by Jyotendra Jyu Thakuri

# ARGHA CONSERVATION AREA SITE MAP



# 3 ARGHA

## Site description

Argha IBA has been designated because of its important White-rumped Vulture and Egyptian Vulture nesting sites which are located in Sandikharka Municipality and Dharapani, Dhakabang, Bangi, Hanspur, Khanadaha VDCs of Arghakhanchi district, and presence of the globally threatened Red-headed Vulture.

The forest area is mostly covered with pine trees *Pinus roxburghii* and the same tree species have been used by White-rumped Vulture *Gyps bengalensis* for nesting (BCN unpublished data).

**Status:** Unprotected

**Altitude:** 1100-2515m

**Area:** 15,592ha

**Geographical coordinates:** 28°1.2'N, 83°7.2'E, Arghakhanchi District, Lumbini Province

**Categories:** A1 (globally threatened species), A2 (restricted-range species Western Himalayas EBA?)

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Nesting, 4 photographed at 1872m Ghorlasi, Sandhikharka Municipality, December 2020
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Nesting colonies (23 active nests in 2021)
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Common, one active nest in 2020 that failed
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Nesting colonies (2 active nests in 2021)
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Regular winter visitor
Restricted Range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	See above

## Vulture nest status in different years (BCN data)

Species	Number of active nests											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
White-rumped Vulture <i>Gyps bengalensis</i>	13	21	15	17	17	14	15	20	18	22	22	23
Egyptian Vulture <i>Neophron percnopterus</i>	3	3		6	7	5	5	6	2	3	2	2
Red-headed Vulture <i>Sarcogyps calvus</i>	0	0	0	0	0	0	0	0	0	0	1	0

Argha IBA supports significant populations of White-rumped, Red-headed and Egyptian Vultures, Cheer Pheasant and Steppe Eagle and therefore qualifies as an IBA under the globally threatened species criterion (A1) (BCN data). The globally threatened Slender-billed Vulture *Gyps tenuirostris* is a rare visitor (Bhusal *et al.* 2020).

Argha is known to support one restricted-range species, Cheer Pheasant from the Western Himalayas (EBA 128). It would qualify under the restricted-range criterion (A2) if further fieldwork shows that other restricted-range species have significant populations in the IBA.

Active nests of two near-threatened vultures have been recorded (BCN data): Himalayan Griffon *Gyps himalayensis*: 34 in 2014/15, 45 in 2018, 45 in 2019, 47 in 2020, and 49 in 2021 (BCN data). Bearded Vulture *Gypaetus barbatus*: 1 in 2014/15, 2 in 2018, 2 in 2019, 2 in 2020 and 2 in 2021. Other near-threatened species are Cinereous Vulture *Aegypius monachus* which is a regular winter visitor (Bhusal *et al.* 2020) and Asian Woollyneck *Ciconia episcopus* which is a rare visitor, with one breeding pair from 2010-15.

A total of 239 bird species was recorded during a 2020 survey. However, more studies are required

to explore the seasonal variability, the distribution pattern of bird species, habitat suitability of the species and other wildlife, as well as plants (Bhusal *et al.* 2020).

### Conservation issues and management

The White-rumped Vulture nesting colonies were formerly in community forests (CF): Gartakhola CF, Khaharekhola CF, Garlam CF, and Dibharna CF but are no longer found in the first three community forests. However, a new nesting site has been found at Chhatradev CF.

Tree-felling, disturbance during the breeding season, illicit use of diclofenac and other harmful NSAIDs, resin extraction, forest fire, poisoning, and limited vulture conservation awareness threaten the nesting vultures or their habitat (BCN). During a 2020 survey, development activities such as road construction and hunting of pheasants were found to be major threats. Raising community awareness and stakeholder advocacy are recommended to conserve the threatened species and their habitat (Bhusal *et al.* 2020).

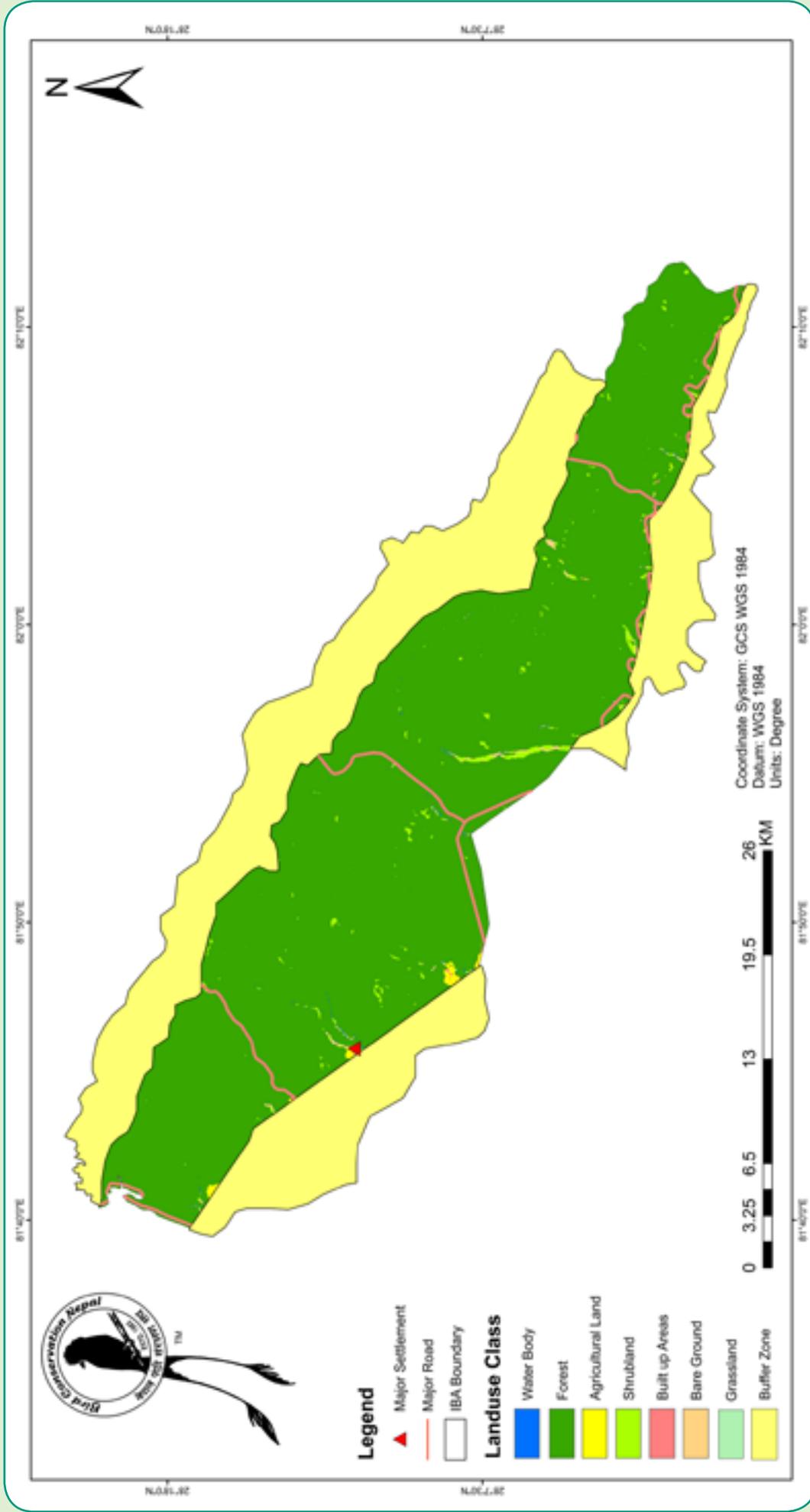
BCN has been working for research and conservation of vultures in this area.





White-rumped Vulture by Krishna Prasad Bhusal

# BANKE NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



# 4

# BANKE NATIONAL PARK AND BUFFER ZONE

## Site description

Banke National Park and Buffer Zone (BaNPBZ) were declared in 12th July 2010. BaNPBZ is contiguous with Bardiya National Park on its western border and its northern section is also connected with Bardiya NP's Buffer Zone so creating a large protected area complex. The core area of the park (61.5 %) entirely falls in Banke district and the Buffer Zone (38.5 %) falls in Banke district in the south and west, and Dang and Salyan districts in the north. The park was created to conserve biodiversity, especially Tiger *Panthera tigris* and to help achieve Nepal's goal to increase this species' population. In the south and south-east the park is contiguous via national forests and community managed forests with Suhelwa Wildlife Sanctuary in India and so is part of a transboundary landscape (DNPWC 2015b).

BaNPBZ contains an array of eight ecosystem types: Sal *Shorea robusta* forest, deciduous riverine forest, savannahs and grasslands, mixed hardwood forest, flood plain community, Bhabar and foothills of the Churia range. 90 % of the forests are composed of Sal *Shorea robusta*, Karam *Adina cordifolia*, Khair *Acacia catechu* and Sissoo *Dalbergia sissoo* (DNPWC 2015b).

A population of 35,712 persons resides in the Buffer Zone; 90 % of their economy depends on agriculture and the remaining 10 % on trade and labour (DNPWC 2015b).

**Status:** Protected

**Altitude:** 153-1247m

**Area:** 55,000ha NP; 34,300ha BZ

**Geographical coordinates:** 27°58'-28°21'N, 81°39'- 82°12'E Banke and Dang Districts, Lumbini Province and, Salyan District, Karnali Province

**Categories:** A1 (globally threatened species); A3 (Indo-Malayan dry tropical forest biome species)



Spotted Deer by Amogha Manandhar

## Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Uncommon resident in open country
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Uncommon resident in open country
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	Vulnerable	Uncommon resident in forest
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Uncommon winter visitor and passage migrant



A total of 236 bird species has been recorded in BaNPBZ (BCN, NTNC and DNPWC 2016) during two bird surveys in February 2012 (Baral *et al.* 2012) and in April and May 2016 (Chaudhary 2016). However, BaNPBZ is still under-recorded for birds.

The national park has significant populations of four globally threatened species White-rumped Vulture, Egyptian Vulture, Great Slaty Woodpecker and Steppe Eagle and therefore qualifies as an IBA based on the globally threatened species criterion. Other globally threatened species recorded are: Great Hornbill *Buceros bicornis* (rare resident) and White-throated Bushchat *Saxicola insignis* (rare passage migrant). Further fieldwork may show that BaNPBZ supports significant populations of these species.

BaNPBZ has extensive areas of the Indo-Malayalan tropical dry zone biome and supports a significant number of species characteristic of this biome (see Appendix 2, 7). The park is therefore considered to be an IBA based on the biome-restricted criterion.

Four near-threatened species have been recorded: Asian Woollyneck *Ciconia episcopus* (uncommon), Alexandrine Parakeet *Palaeornis eupatria* (common) and River Lapwing *Vanellus duvaucelii* (uncommon) which are resident, and Himalayan Griffon *Gyps himalayensis* (uncommon winter visitor).

### Other wildlife

The park supports 34 mammal species including the globally threatened Tiger *Panthera tigris*, Asian Elephant *Elephas maximus*, and Four-horned Antelope *Tetracerus quadricornis*; also 24 species of reptiles, seven of amphibians and 58 of fish (DNPWC 2015b). This park is one of the best places to see the Four-horned Antelope in Nepal.

### Conservation issues and management

The main threats in BaNPBZ are similar to those of other lowland PAs, however pressure from the people is quite significant as BaNPBZ is recently established, and it will take time for people to understand the value of having a protected area near their village. Tree felling for firewood, construction and furniture purposes are regulated on the basis of the operational plan of the buffer zone community forest. Fodder collection in the buffer zone community forest is commonly practiced by the local community. Domestic livestock grazing in the fringe and edge of the park are common problems (BaNP 2018). There is no river passing through the park although there are more than 45 ephemeral streams. Therefore, there are insignificant areas having a flood plain which would enable the natural creation of productive grassland in an early succession stage. The small stream bank areas have converted into woodlands through natural succession.

Another issue is the short north-south span of habitat for wildlife, which is not able to contain wild animals inside the core area and drives wildlife to move to the southern forest, crossing the East-West highway, where animals are often hit by vehicles (BaNP 2018). The Sikta canal which passes through the national park buffer zone is deep which has vertical sides and holds water most of the year. The canal has already caused serious problems to mammals that climb down to drink, but are unable to climb out of the canal.

Other conservation issues include boulder and sand mining which is regulated in the park buffer zone according to the park's management plan. Boulder and sand mining is strictly prohibited in the park area and this activity has now stopped. Poaching

is another management problem. The security arrangement of the park has been strengthened with the establishment of security posts at 16 locations in the park to stop poaching. The use of the Spatial Monitoring and Reporting Tool (SMART) for daily patrolling is effective in controlling poaching of animals. Cameras have also been deployed in strategic locations in the park areas to monitor illegal movement of people inside the core areas. The poaching of species and illegal logging of trees inside the park area are now rare and decreasing. Conservation efforts along with stringent law enforcement enable the development of the park core area as a safe site for animals. However, animals from the core area stray out in search of water and are sometimes killed in road accidents. In parts of the fringe area or at the edge of the park, domestic livestock grazing is still practiced, although the cattle population is decreasing. Stray dogs are sometimes found roaming in the buffer zone forest area. They have been seen at the edge of the park but rarely in the core area, although stray dogs have not been seen hunting wild animal in the area. Lack of solid waste management is another problem. Solid waste generated from municipal and rural municipal areas are disposed in the specially defined areas outside the park buffer zone. However, solid waste generated along the East West highway passing along the park edge from passengers travelling by bus, car or other vehicle has become a problem to manage timely and appropriately. Forest fire occurs every year in the park. Mostly human induced fires are caused by herders in the northern part of the park where local people graze their cattle at the park edge. Sometimes fire starts in the southern part, near the East-West highway where burning materials such as cigarettes are carelessly thrown by passengers, passers-by or fodder collectors in community forests. Now, the park has sets of firefighting equipment in the head quarters and sector offices and a good fire line network. Wildfire has been well controlled and managed and disastrous situations have been avoided (BaNP, 2021).

The park's objectives are:

- To protect and conserve biological diversity of the park with special focus on nationally protected and globally threatened wildlife species.

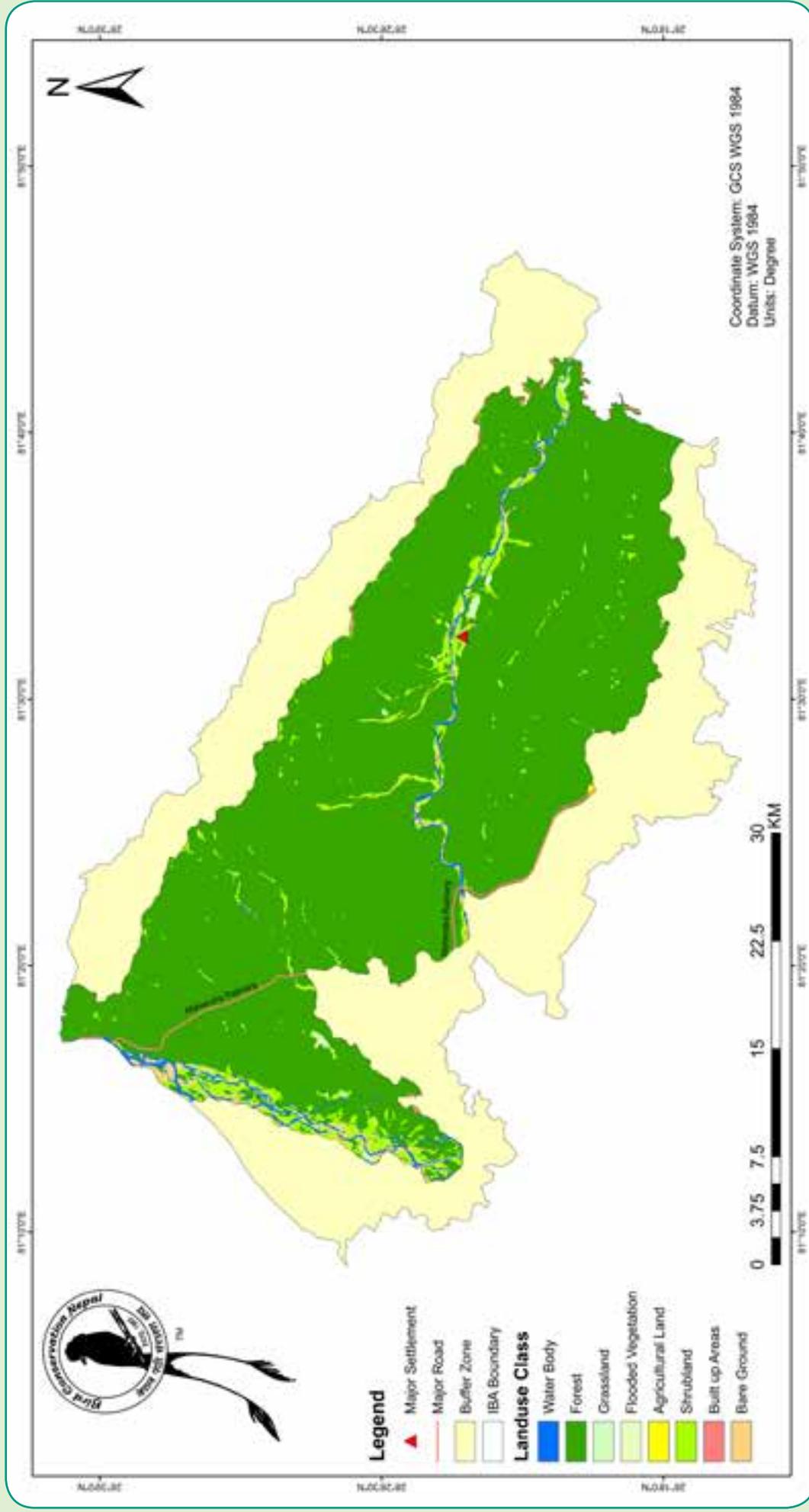
- To manage wildlife habitat to maintain ecological functions and processes of the Terai and Churia region.
- To improve community livelihoods through nature-based tourism promotion and other large scale on-farm and off-farm green enterprises.
- To strengthen institutional capacity to carry out management activities through research, capacity building and cooperation among stakeholders.

To kindle the conservation spirit in the hearts of people, BaNPBZ has focused on participatory resource management in one Municipality and five Rural Municipalities in Lumbini Province (Banke and Dang districts) and Karnali Province (Salyan district). The Park protects parts of Churia range which is very fragile as any disturbance to the area can bring disastrous landslides and very destructive flashfloods (DNPWC 2021).

Since 2016 the Zoological Society of London (ZSL) has been assisting the BaNP in building guard posts and wooden bridges in the park, and by improving the park's patrol road. ZSL has also been working with communities to reduce human-wildlife conflict including fence-building and supporting predator-proof corrals, promoting livelihoods especially by investing in home-stay tourism, and building watch towers as part of the IUCN-KfW funded project for integrated tiger habitat conservation.

Since 2010 the National Trust for Nature Conservation has been assisting in BaNPBZ in community mobilization particularly in the formation of Buffer Zone User Groups (BZUGs), Buffer Zone User Committees (BZUCs) and the Buffer Zone Management Committee (BZMC) and community based anti-poaching units of youths. The Trust has also been working with communities to reduce human wildlife conflicts, including fence building, unpalatable cropping, predator proof corral building, awareness raising about animal behaviour. In addition, the Trust has been assisting BaNP in periodic surveys and monitoring of species. The park and buffer zone has also been supported by the Terai Arc Landscape (TAL) programme as the park ecosystem is an important part of the Nepal Government's Terai Arc Landscape (TAL).

# BARDIYA NATIONAL PARK AND BUFFER ZONE SITE MAP



## 5

## BARDIYA NATIONAL PARK AND BUFFER ZONE

## Site description

Bardiya National Park is situated in southwest Nepal, 396 km west of Kathmandu. It is Nepal's largest national park in the lowlands. Much of the park is in the *bhabar* zone and consists of a broad alluvial plain that slopes gently away from the foothills of the Himalayan Churia Range in the northeast to India in the southwest. The Babai and Geruwa are two large rivers that flow into the park, the latter being a branch of the Karnali River. About 70% of the park is covered by Sal *Shorea robusta* forest; there are also riverine forests of Khair *Acacia catechu* and Sissoo *Dalbergia sissoo* in the lowlands and *Terminalia-Anogeissus* deciduous forest and Chir Pine *Pinus roxburghii* forest in the hills. The other main habitats of the park are grassland and savannah. The Buffer Zone, which consists of forests and private lands, was declared in 1997 (DNPWC 2015c).

## Birds

Globally threatened species	Threat status	Status and habitat
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	Vulnerable	Occasionally recorded resident in forests
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Occasionally recorded resident in open country,
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Fairly common, possibly resident in open country near human habitation
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Occasionally recorded, possibly resident in open country near human habitation
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Occasionally recorded resident in open country and well-wooded hills
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Occasionally recorded, resident
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Occasionally recorded passage migrant and winter visitor
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Fairly common resident
Great Hornbill <i>Buceros bicornis</i>	Vulnerable	Occasionally recorded resident in forests
Bristled Grassbird <i>Schoenicola striatus</i>	Vulnerable	Occasionally recorded summer visitor to grasslands
Yellow-breasted Bunting <i>Emberiza aureola</i>	Critically Endangered	Occasionally recorded winter visitor in grasslands, current status uncertain

**Status:** Protected

**Altitude:** 152-1441m

**Area:** 96,800ha NP, 32,700ha BZ

**Geographical coordinates:** 28°28'N 81°28'E, Bardiya District, Lumbini Province and Surkhet District, Karnali

**Categories:** A1 (globally threatened species); A3 (Indo-Malayan tropical dry zone biome species, Indo-Gangetic plain biome species)

There were no tourists visiting Bardiya in 1982, but visitor numbers reached 5,760 in year 2012, a much smaller number than Chitwan National Park (Ghimire 2013).



A total of 513 bird species was listed in Bardiya National Park and Buffer Zone IBA (BNPBZ) by BCN and DNPWC (2019a). In 2022, the survey undertaken by Ram Shahi and team added ten species making the total 523.

BNPBZ supports significant populations of eleven globally threatened species: Great Slaty Woodpecker, Egyptian Vulture, White-rumped Vulture, Slender-billed Vulture, Red-headed Vulture, Indian Spotted Eagle, Steppe Eagle, Lesser Adjutant, Great Hornbill, Bristled Grassbird and Yellow-breasted Bunting so fulfilling the globally threatened criterion for an IBA.

Other globally threatened species recorded in BNPBZ are Sarus Crane *Grus antigone* (rare resident); Bengal Florican *Houbaropsis bengalensis* (very rare, possibly resident); Lesser Florican *Sypheotides indica* (extremely rare, no recent records); Wood Snipe *Gallinago nemoricola* (very rare winter visitor); Black-bellied Tern *Sterna acuticauda* (very rare visitor); River Tern *Sterna aurantia* (rare visitor); Indian Skimmer *Rynchops albicollis* (very rare visitor); Pallas's Fish Eagle *Haliaeetus leucoryphus* (rare winter visitor and passage migrant); Greater Spotted Eagle *Clanga clanga* (rare winter visitor and passage migrant), and Tawny Eagle *Aquila rapax* (very rare visitor). Eastern Imperial Eagle *Aquila heliaca*, Saker Falcon *Falco cherrug*, and White-throated Bushchat *Saxicola insignis* are vagrants, and Grey-crowned Prinia *Prinia cinereocapilla* is a rare resident or visitor. Further fieldwork may show these species have significant populations in BNPBZ.

BNPBZ has large dry tropical areas and supports a significant proportion of species characteristic of the Indo-Malayan tropical dry zone biome. It also supports a significant proportion of species characteristic of the Indo-Gangetic plains biome (see

Appendices 2,7). Therefore, BNPBZ fulfils the biome-restricted assemblage criterion for an IBA.

One restricted-range species has been rarely recorded, Spiny Babbler *Acanthoptila nipalensis*; however, it can be easily overlooked outside the breeding season, and it is possible that BNPBZ holds significant populations.

Near-threatened species recorded are: Ferruginous Duck *Aythya nyroca* (occasionally recorded passage migrant and winter visitor); Painted Stork *Mycteria leucocephala* (rare summer visitor and passage migrant); Black-necked Stork *Ephippiorhynchus asiaticus* (rare resident); Asian Woollyneck *Ciconia episcopus* (common resident and summer visitor); Oriental Darter *Anhinga melanogaster* (common resident); Great Stone-plover *Esacus recurvirostris* (rare resident and visitor); Northern Lapwing *Vanellus vanellus* (rare winter visitor); River Lapwing *Vanellus duvaucelii* (fairly common resident); Eurasian Curlew *Numenius arquata* (rare winter visitor); Bearded Vulture *Gypaetus barbatus* (vagrant); Himalayan Griffon *Gyps himalayensis* (fairly common winter visitor); Cinereous Vulture *Aegypius monachus* (occasionally recorded winter visitor); Lesser Fish Eagle *Ichthyophaga humilis* (very rare, former resident); Grey-headed Fish Eagle *Ichthyophaga ichhyaetus* (occasionally recorded resident); Mountain Hawk-eagle *Nisaetus nipalensis* (occasionally recorded resident); Rufous-bellied Eagle *Lophotriocheis kieneri* (rare resident); Laggar Falcon *Falco jugger* (very rare winter visitor); Ashy-headed Green-pigeon *Treron phayeri*, Red-breasted Parakeet *Psittacula alexandri* (fairly common resident); Alexandrine Parakeet *Palaeornis eupatria* (common resident), and Indian Grass-babbler *Graminicola bengalensis* (rare, probably resident).

### Other wildlife

More than 61 mammal species 52 herpetofauna species, and 121 fish species (BNP 2022) have been recorded in the national park. Globally threatened species of wildlife include the Ganges River Dolphin *Platanista gangetica*, Asiatic Wild Dog *Cuon alpinus*, Tiger *Panthera tigris*, Asian Elephant *Elephas maximus*, Smooth-coated Otter *Lutrogale perspicillata*, Barasingha *Rucervus duvaucelii*, Gharial *Gavialis gangeticus* and Muggger Crocodile *Crocodylus palustris*. Indian Rhinoceros *Rhinoceros unicornis* were translocated from Chitwan National Park to Bardiya

National Park from 1986-2002 (DNPWC 2015c) and most recently in 2016.

### Conservation issues and management

A 2011 assessment of the condition of BNPBZ IBA found it to be in a very unfavourable state (BirdLife International 2015b).

The East-West highway, the main link road across Nepal's terai runs through the park. Despite any benefits this routing of the East-West highway has brought, the major road must surely threaten the integrity of the park.

The proposed Bheri river diversion to the Babai river will very likely have some ecological as well as social impact.

Disturbance on grassland (phantas) resulting from tourism has posed serious threats to the globally threatened Bengal Florican *Houbaropsis bengalensis* (Rai 1996) which has declined significantly in the park since 1982 and is now very rare (Inskipp and Inskipp 1983, Poudyal *et al.* 2008a,b).

The park and local communities jointly manage the Buffer Zone. Together they initiate community development activities and manage natural resources in the Buffer Zone (DNPWC 2015c).

Bardiya has problems of co-existence with local communities, which are similar to those in other lowland protected areas in Nepal. There are widespread and frequent illegal incursions in search of fodder, fuelwood and other natural products such as plants used for food or medicinal purposes.

There have been a number of conservation management initiatives in BNPBZ.

The Norwegian Ornithological Society in conjunction with BCN implemented a three year project from January 2015 to December 2017 in three IBAs including BNPBZ. The project was funded by the Norwegian Agency for Development Cooperation. The main project goal was to achieve sustainable livelihoods for rural communities and conservation of biodiversity at each IBA through enhanced action, increased awareness, effective partnerships, and regional and international networking. The project's



Bengal Tiger by Sagar Giri

three interrelated objectives were:

1. To ensure that empowerment of Local Conservation Groups (LCGs) such as, Community-based Organisations (CBOs), Community Forests Users' Groups (CFUGs), Buffer Zone Councils (BZCs) and indigenous communities for biodiversity conservation and sustainable development is benefiting nature conservation.
2. To mainstream biodiversity and ecosystem services protection at IBAs in Community Forest Plan and Protected Area Plan.
3. To support the scaling up of the sustainable climate-resilient livelihoods like bird-watching tourism, and promotion of Non-timber Forest Product (NTFP) and green enterprises for maximum benefit to the community.

Activities carried out by the project in BNPBZ included:

1. Detailed bird surveys in April 2014 by the Bardiya Conservation Club on behalf of BCN and compilation of a comprehensive bird checklist for BNPBZ.
2. Tharu community women were supported by the project on training and marketing of modern handicrafts prepared from "munj".
3. Training in Tharu traditional handicrafts weaving (Gounri) with modern designs and skills training for Tharu women was also organised (BCN 2014).

BNPBZ was included in the WWF Nepal's Western Terai Landscape Complex Project (WTLCP) which ran from 2006-12 and was aided by the United Nations Development Programme (UNDP) and Global Environment Facility (GEF). The overall objective of WTLCP was to ensure the conservation and sustainable use of globally significant biodiversity in the area. The project's immediate objective was to establish effective and efficient integrated landscape planning and management systems for

the conservation and sustainable use of the WTLC (UNDP 2012).

BNPBZ lies within the Nepal Government's Terai Arc Landscape (TAL).

NTNC launched the Bardiya Conservation Programme (BCP) in 1994 focusing on biodiversity research and sustainable community development. BCP has been promoting biodiversity conservation in and around the park by strengthening the capacity of local institutions responsible for natural resource management. It also promotes sustainable agriculture and forestry, animal husbandry and livestock management, natural forest regeneration, alternative income generation schemes and nature-based tourism. In addition, BCP has been supporting national and international students to conduct field research (NTNC 2015c).

BCP has completed a number of research projects on mammals, vegetation ecology and dynamics, and the socio-economic status of the communities in the Buffer Zone. The project has been successful in integrating conservation and development work in the southwestern Buffer Zone of the park with a focus on community forestry, alternative energy promotion, ecotourism, women development, conservation education, rural infrastructure improvement, community health services and a rural livelihood improvement programme. Activities

related to institutional strengthening of users' groups and users' committees formed to carry out various conservation and development activities are regularly undertaken (NTNC 2015c).

ZSL has been assisting the BNP in building guard posts and wooden bridges in the park, and by improving the patrol road in the park. Since 2016 ZSL has been working with communities to reduce human-wildlife conflict through fence building and supporting predator-proof corrals, promoting livelihoods especially by investing on home-stay tourism, and building watch towers as part of IUCN-KfW funded project on integrated tiger habitat conservation.

The Park record shows an increasing trend of tourist numbers starting from 212 in FY 2041-42 and it reached to 24558 in FY 2075/76 (BNP 2022)

A management plan of Bardiya National Park and its Buffer Zone for the period (2022/23-2026/27) has been produced (BNP 2022). The main objectives of the management plan is to conserve and manage biological diversity at landscape level to ensure maintenance of a viable population of key-stone and flagship species including other wildlife applying science-based measures thereby maintaining park and people amity with a focus on bird conservation.



Photo by Hiru Lal Dangaura

## Park Mangement

Objective is to maintain species diversity Issue include: Lack of integrated wetland management plan; Poaching, encroachment, illegal timber harvesting, and collection of fodder and fuel wood; Existing water holes and wetlands in the core area are degrading and drying out primarily due to siltation, weed invasion and prolonged drought. Forest fire, habitat degradation mainly due to drying up of wetlands, shrinkage of grassland by woody perennials and invasion by Invasive Alien Species (IAS).

Reccomendation Include: Prepare site management plan of Karnali flood plain and Babai valley. Relocate settlement from encroached area to outside of the PA to discourage fragmentation and increase grassland habitat; Development of a fire management action plan/ strategy for BNP; Undertake spatial mapping and update information of grassland.

## Buffer Zone Management

Objective is to promote participatory biodiversity conservation by empowering BZ communities while decreasing the risks of climate vulnerabilities and improving livelihood of local people.

**Issue include:** Limited forest resources to meet daily requirements for fodder, fuel wood and other forest products; Dependency of people on forest resources (nigro, grass, firewood, timber) leading high pressure in the forest due to poverty and lack of alternative livelihood options; Human-wildlife conflict arising from the increased wildlife population in the Park; The benefits from tourism has yet to be observed to trickle up to the poor and back warded communities; High demand of river resources including sand boulder and gravel to meet the requirement of growing population; Management Plan of Bardiya National Park and its Buffer Zone: high demand of river resources for the development of large infrastructures in BZ; and; The BZ programme has yet to contribute towards livelihood improvement of poor, women, dalits, disadvantaged and socially excluded people.

**Reccomended Action Include:** Support to renew their CFOP; Organize BZCFs management trainings; Manage grasslands in the BZ so as to provide additional habitat for wildlife meeting local needs; Support local community to operate private nurseries,

planting trees along the roadside, river banks, public and private land. Support for Biogas and improved cooking stove installation; high value agriculture crops (not preferred by wildlife) farming training; leadership training to Chairs and Vice Chairs of BZUG and BZUC; Learning Visit and Educational Tour.

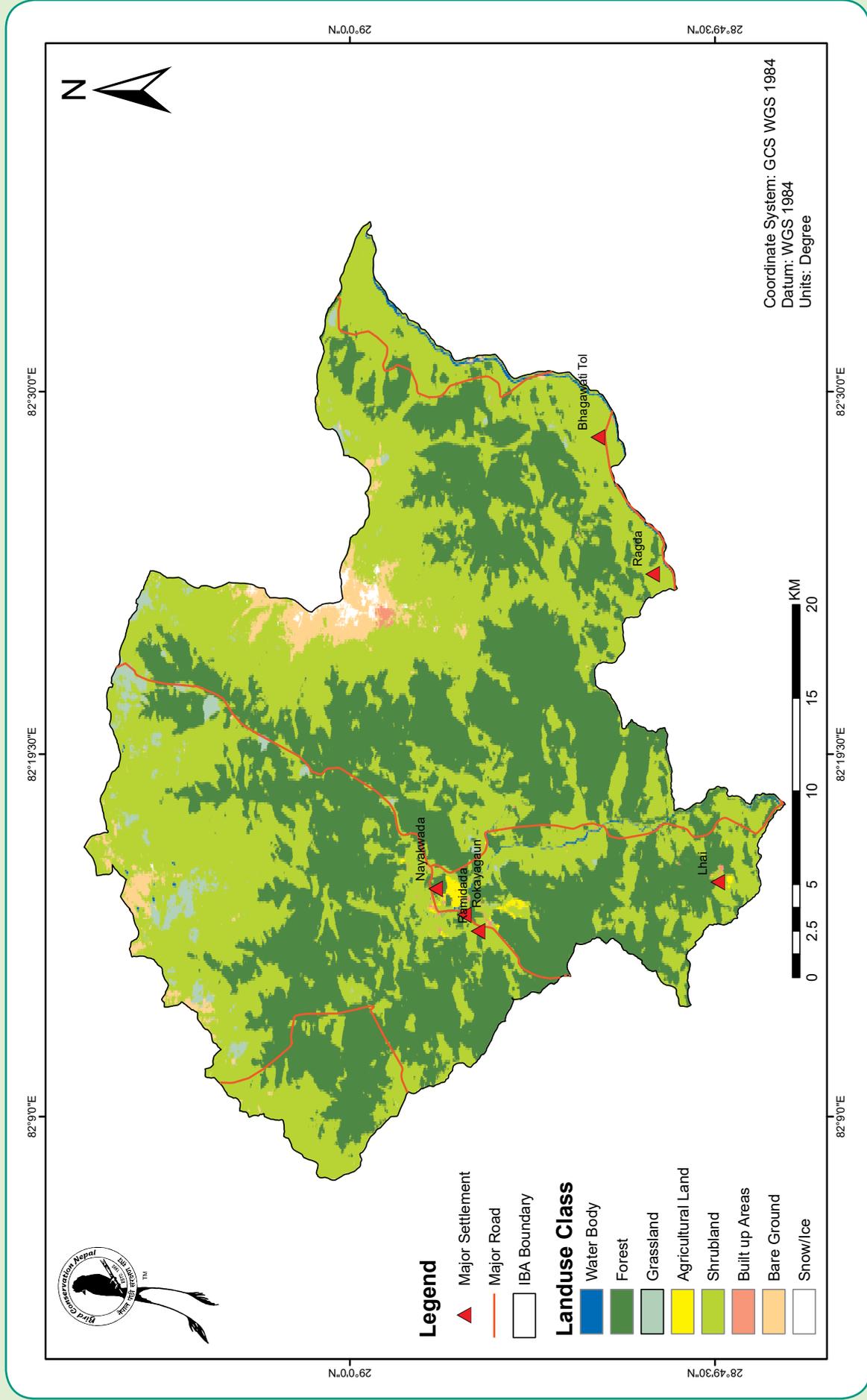
## Tourism Management

Objective is to regulate and promote sustainable eco-tourism that maintains ecological integrity and contribute to local economy without having negative impacts in the socio-cultural life of local community.

**Issue Include:** Poorly planned tourism infrastructures; High tourism pressure in Thakurdwara area posing tremendous pressure in wildlife and its habitat; Visitors' negligence to manage litters; Lack of gender friendly toilet facilities in the core areas; Lack of clear tourism policy and dedicated institutional setup to deal with the ever increasing number of tourists in the Park; poor or no mechanism to share benefits derived from tourism among poor and disadvantaged groups; Unaware of the potential of BNP area as a vast ecotourism site for recreation and economic prosperity; and Lack of investment by other institutions such as tourism sectors and Local Government.

**Recommended Action Include:** Pilot electronic ticketing as an entry permit at Thakurdwara; Upgrade Visitor Information Center (VIC) of Thakurdwara to multipurpose VIC (documentary showing hall, souvenir shops, restaurant and rest-rooms; Support to develop community cultural museum at Janaknagar; Support to develop tourism in BNP by placing promotional advertisement in national media; Organize Clean-up campaign to manage waste in the highway; Conduct trainings for local homestay operators about business planning, hospitality, security of visitors belongings; Place signage and signboards at strategic places of the Park to show direction to the visitors as well as disseminating information to the visitors; Undertake survey to identify appropriate camp sites in Babai valley and other places of Park (tented camp) and BZ (physical structure) that have minimum impact to wildlife; Organize meeting with travel operators to initiate direct luxury bus service to Thakurdwara from Kathmandu, Pokhara, Chitwan and Mahendranagar; Organize learning visits for local tourism entrepreneurs to other PAs mainly CNP and Sagarmatha National Park (SNP).

# BAREKOT AREA SITE MAP



6

## BAREKOT

## Site description

Barekot IBA has been designated because of its important vulture nesting sites and presence of the globally threatened Cheer Pheasant. In 2014/15 the species were present in Sakla, Lanha, Nayakwada, Bhagwati, Ragda, Rami danda and Rokaya Gaun VDCs of Jajarkot district.

The habitat is mountain forest which ranges from subtropical to alpine. Chiuri *Aesandra butyracea* is the dominant tree species in the area. Pine tree *Pinus roxburghii* was used for nesting by Red-headed Vulture *Sarcogyps calvus* (BCN unpublished data).

**Status:** Unprotected

**Altitude:** 1400-5200m

**Area:** 82,922ha

**Geographical coordinates:** 28°49.68'N, 82°17.82'E  
Jajarkot District, Karnali Province

**Categories:** A1 (globally threatened species);  
A2 (restricted-range species, Western Himalayas EBA?)



Red-headed Vulture by Ankit Bilash Joshi

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Nesting, sighted frequently
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	One active nest in <i>Pinus roxburghii</i> tree
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Two active nests in 2020 and 2021
Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Nesting, sighted frequently

### Vulture Nest status in different years

Species	Number of active nests								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Red-headed Vulture <i>Sarcogyps calvus</i>	1	1	1	0	0	1	1	1	1
Egyptian Vulture <i>Neophron percnopterus</i>	1	1	0	1	2	1	1	2	2

Barekot supports significant populations of three globally threatened species (Cheer Pheasant and Red-headed and Egyptian Vultures) and therefore qualifies as an IBA based on the globally threatened criterion (A1).

Barekot is known to support one restricted-range species, Cheer Pheasant from the Western Himalayas

(EBA 128). It would qualify under the restricted-range criterion (A2) if further fieldwork shows that other restricted-range species have significant populations in the IBA. (BCN unpublished data).

#### Active nests of two near-threatened vultures

Himalayan Griffon *Gyps himalayensis* 30 in 2018, 25 in 2019 and 14 in 2021 Bearded Vulture *Gypaetus barbatus* 3 in 2018, 2 in 2019 and 2 in 2021 and is common in the IBA. The near-threatened Asian Woollyneck *Ciconia episcopus* has been recorded frequently at the site. Data provided by Govinda Singh.

A bird survey was carried out in 2015 when 146 species were recorded. A pair of Cheer Pheasant was noticed twice, and its call recorded at Aireni CF, Shakla-1, Laikham (N-28.85682° E-082.30071° at 2135m). Other globally threatened species: Red-headed Vulture and Egyptian Vulture were recorded frequently at the site and the near-threatened Satyr Tragopan *Tragopan satyra* was also recorded (Bhusal and Paudel 2015).

#### Conservation issues and management

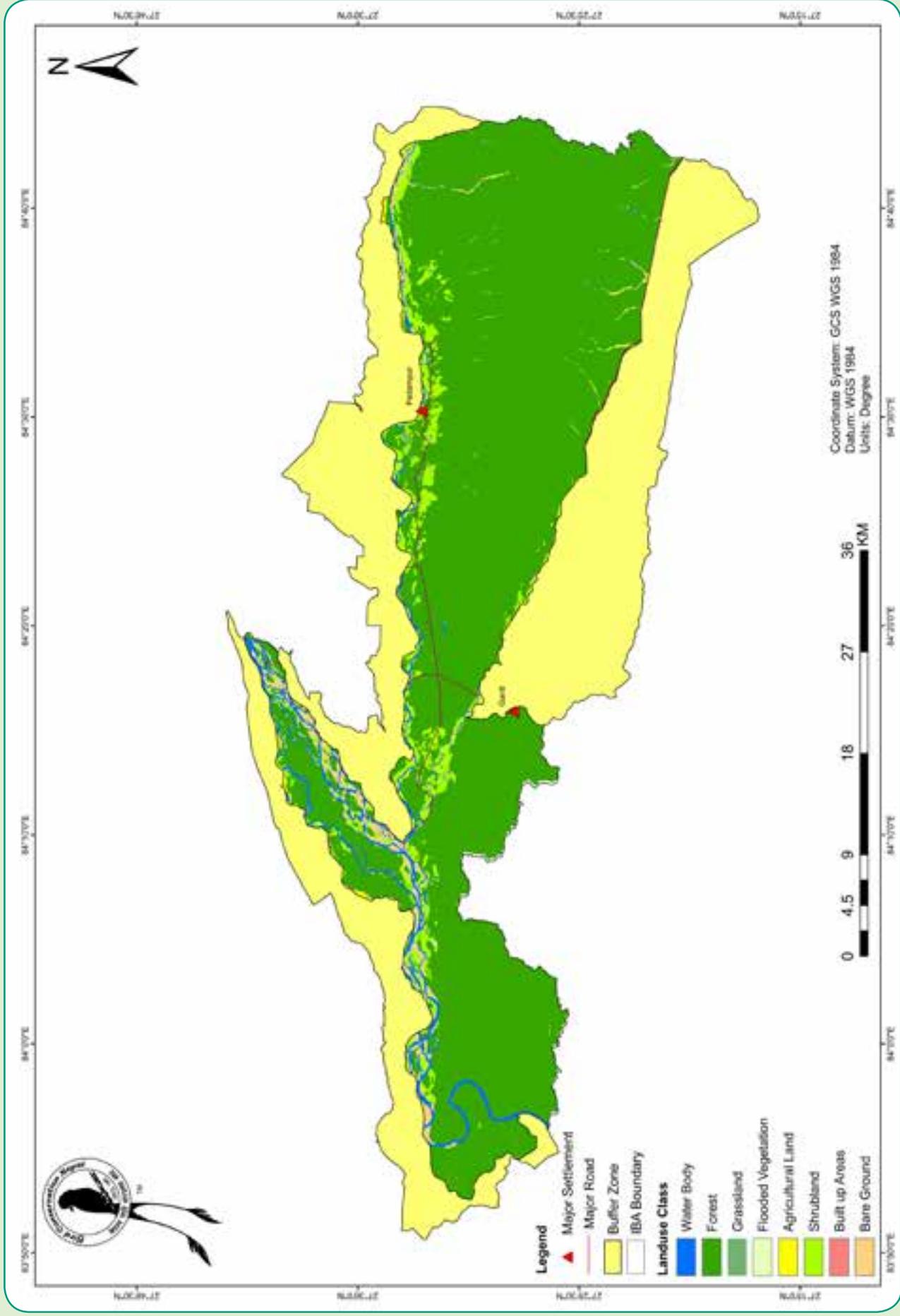
Major threats are tree-felling, electrocution, poisoning, forest fire, hunting and limited conservation awareness (BCN unpublished data).





Photo by Harihar Singh Rathour

# CHITWAN NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



### Site description

Chitwan was gazetted as the country's first national park in 1973, recognising its unique ecosystems of international significance. UNESCO declared the park a World Heritage Site in 1984. The Buffer Zone (BZ), an area surrounding the park consisting of forests and private lands including cultivated lands was declared in 1996. Chitwan is an inner *doon* valley in the central *terai* of Nepal, between the Siwalik hills in the south and the Mahabharat hills to the north and is the last remaining relatively undisturbed Churia valley in Nepal. In the east it is bordered by Parsa National Park. There are numerous small patches of grasslands varying in width from a few metres to 1500 m lying alongside the park's rivers, which represent one of the last surviving outstanding grasslands of the Indo-Gangetic Plains. Approximately 70% of the park is covered by *Sal Shorea robusta* forest; other lowland forest is riverine *Acacia catechu/Dalbergia sissoo* and a very small area is tropical evergreen forest. In the hills there is Chir Pine *Pinus roxburghii* and *Terminalia-Agoneissus* deciduous hill forest (DNPWC 2015d, Kathmandu Forestry College 2013). The wetlands comprise the three major rivers of the park, the Narayani, Rapti and Reu, and their floodplains, several small lakes and pools and riverine forests (DNPWC 2015d, Kathmandu Forestry College 2013).

Chitwan National Park (CNPBZ) IBA includes Barandabhar Forest and wetlands which lie adjacent to the national park. Barandabhar Forest is a narrow strip (1.8-7 km long) joining the national park with the foothills of the Mahabharat Range. The area south of the East-West Highway is part of Chitwan NP's Buffer Zone. It includes a man-made wetland, Beeshazar and associated lakes (also known as Bishazari Tal). Beeshazar and associated lakes were declared a Ramsar site in August 2003. Situated between the Mahabharat mountain range to the north and the Siwalik range to the south, this forested wetland provides excellent habitat as a waterhole and corridor for numerous endangered wildlife species (Bhujju *et al.* 2007). The area north of the highway is a Protected Forest (10,400ha) and includes several wetlands

**Status:** Protected

**Altitude:** 100-815m

**Area:** 95263 ha NP, 72937 ha BZ 10,400ha (Protected Forest)

**Geographical coordinates:** 27°34'N and 83°88'E, Chitwan, Parsa District, Madhesh Province; Nawalparasi District, Lumbini Province and Makwanpur District, Bagmati Province.

**Categories:** A1 (globally threatened species); A3 (Indo-Malayan tropical dry zone biome species, Indo-Gangetic Plain biome species); A4 (congregations)

(Kathmandu Forestry College 2013). Barandabhar Forest and wetlands qualify as an IBA independently. The Lamichaur area of forests and grasslands (LFG) in the Buffer Zone (BZ) also qualifies as an IBA in its own right. LFG lies west of the main channel of Narayani river that forms the western boundary of CNP in Nawalparasi district. This area is largely used for agriculture and almost all of the southern part is intensively farmed. Natural and semi-natural forests remain towards the north, along the northern section of the East West highway. These forests are managed by local communities, as four Buffer Zone community forests (BZCF): Shanti Kunja BZCF, Namuna BZCF, Krisnasar BZCF and Gundrhi Dhakaha BZCF. An area of grassland has recently been created. LFG includes the Pithouli and Kawasoti Vulture Safe Feeding Site. The forest is mainly dominated by mixed riverine trees, such as Simal *Bombax ceiba*, Khair *Acacia catechu*, Vellor *Trewia nudiflora* and Sissoo *Dalbergia sissoo*.

Chitwan National Park (CNP) is one of the prime tourist destinations in Nepal. The number of tourists visiting the park has increased overall from 836 in 1974-75 to 146,662 tourists in 2010-11 (DNPWC 2012a).

## Birds

Globally threatened species	Threat status	Status and habitat
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	Vulnerable	Rare resident in forests
Bengal Florican <i>Houbaropsis bengalensis</i>	Critically Endangered	Uncommon resident in grasslands
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Rare breeding resident
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common winter visitor and passage migrant
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Frequent, breeding resident in grasslands and marshes. In 2020, 12 nests in 8 colonies, 12 chicks fledged in Chitwan NP and Nawalpur in BZ (Katuwal <i>et al.</i> under review).
Great Hornbill <i>Buceros bicornis</i>	Vulnerable	Uncommon resident in forests
Grey-crowned Prinia <i>Prinia cinereocapilla</i>	Vulnerable	Fairly common resident in grasslands
Bristled Grassbird <i>Schoenicola striatus</i>	Vulnerable	Fairly common summer visitor to grasslands
Slender-billed Babbler <i>Argya longirostris</i>	Vulnerable	Locally fairly common resident in grasslands
Yellow-breasted Bunting <i>Emberiza aureola</i>	Critically Endangered	Uncommon passage migrant and winter visitor

### Vulture Nest status in Lamichaur area of forests and grasslands

Species	Number of active nests													
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
White-rumped Vulture <i>Gyps bengalensis</i>	66	45	36	22	17	22	30	34	30	38	52	64	72	95
Egyptian Vulture <i>Neophron percnopterus</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Slender-billed Vulture <i>Gyps tenuirostris</i>								1			1	1	1	

Chitwan National Park and Buffer Zone (CNPBZ) is one of the best studied protected areas in the Indian subcontinent and its avifauna are well documented (DNPWC 2012a). The high total of 540 bird species was listed for the national park by Baral and Upadhyay (2006) and the total had increased to 588 species by November 2022 (Ramesh Chaudhary, Bird Education Society in *litt.* to C. Inskipp, 7 November 2022). At least seven additional species have been recorded in the Buffer Zone making a total of 595 species for CNBZ, by far the highest total for any of Nepal's protected areas and IBAs.

A total of 71% (30 out of 42) of Nepal's globally threatened bird species has been recorded in CNPBZ including ten species with significant populations: Great Slaty Woodpecker, Bengal Florican, Indian Spotted Eagle, Steppe Eagle, Lesser Adjutant, Great Hornbill, Grey-crowned Prinia, Bristled Grassbird, Slender-billed Babbler and Yellow-breasted Bunting. CNPBZ therefore qualifies as an IBA based on the globally threatened species criterion. Five of the globally threatened species with significant populations are grassland specialists (see Table).

Other globally threatened species recorded are rare or vagrants: Swamp Francolin *Ortygornis gularis*, Common Pochard *Aythya ferina*, Sarus Crane *Grus antigone*, Lesser Florican *Sypheotides indicus*, Wood Snipe *Gallinago nemoricola*, River Tern *Sterna aurantia*, Black-bellied Tern *Sterna acuticauda*, Indian Skimmer *Rynchops albigollis*, Pallas's Fish-eagle *Haliaeetus leucoryphus*, Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Indian Vulture *Gyps indicus*, Red-headed Vulture *Sarcogyps calvus*, Greater Spotted Eagle *Clanga clanga*, Tawny Eagle *Aquila rapax*, Eastern Imperial Eagle *Aquila heliaca*, Asian Woollyneck *Ciconia episcopus*, Greater Adjutant *Leptoptilos dubius*; Kashmir Flycatcher *Ficedula subrubra*, White-throated Bushchat *Saxicola insignis* and Jerdon's Babbler *Chrysomma altirostre*. Further fieldwork may find that CNPBZ supports significant populations of some of these species.

Only two restricted-range species have been recorded: Nepal Cupwing *Pnoepyga immaculata* from the Central Himalayas, (EBA 129) and Kashmir Flycatcher from the Western Himalayas (EBA 128). Both species are vagrants or very rare visitors.

CNPBZ is the only Nepalese locality where Slender-billed Babbler has been recorded and it may support a larger population than any other area in the Indian subcontinent. CNPBZ and adjoining areas of Parsa National Park are the only Nepal sites where Grey-crowned Prinia is common and may hold the largest population in the species' range (Baral 2002). Indian Spotted Eagle *Clanga hastata* has bred in the park fairly recently, one of its very few known breeding localities in Nepal.

The park has large areas of grasslands as well as dry tropical areas. These habitats are known to support significant proportions of species characteristic of the Indo-Gangetic Plains biome and of species characteristic of the Indo-Malayan tropical dry zone biome (see Appendices 2,7). The CNPBZ therefore also qualifies as an IBA based on the biome-restricted assemblage criterion for two biomes. The park supports a higher number of species characteristic of the Indochinese tropical moist forest biome than any other Nepal IBA (nine species, 19% of biome total); although this is not considered a significant proportion (see Appendices 2,7).

Lesser Adjutant breeds in Chitwan National Park and in the Buffer Zone. In 2009 a total of 47 nests (with four vacant nests) was found at six colonies in the park and one colony in the park's buffer zone in Nawalparasi District (Poudyal and Nepal 2010). The 2009 population estimate in and around Chitwan National Park was 188-268 birds (comprising birds of all ages) (Poudyal and Nepal 2010). In 2009, CNPBZ therefore qualified as an IBA based on the congregations criterion (A4). However, in 2020 there were only 12 nests in eight colonies and CNBZ may no longer qualify as an IBA based on the congregations criterion.

The Beeshazar Ramsar site could qualify independently as an IBA based on the globally threatened and biome-restricted assemblage criteria. A total of about 290 bird species has been recorded, including significant populations of the globally threatened Lesser Adjutant. A significant proportion of species characteristic of the Indo-Malayan tropical dry zone biome has been recorded (see Appendices 2,7). Surveys have shown that, although it is small, the Beeshazar Ramsar site is an extremely important forest corridor, providing a migration route for the passage of birds and other wildlife (Dahal 2002).

LFG is well recorded and the bird list totals the high number of 372 species (Chaudhary 2015). It could also qualify independently as an IBA based on the globally threatened and biome-restricted range criteria. LFG supports significant populations of the large number of eight globally threatened species: Egyptian Vulture, White-rumped Vulture, Slender-billed Vulture, Indian Vulture, Red-headed Vulture, Indian Spotted Eagle, Lesser Adjutant (one nest in 2014/15), and Bristled Grassbird (Chaudhary 2015). A significant proportion of characteristic species of the Indo-Malayan tropical dry zone has been recorded, (see Appendices 2,7) (Chaudhary 2015).

The area of grassland has been created in the hope that the Critically Endangered Bengal Florican will breed there. A few birds have been recorded in the last few years including a female in April 2015 (DB Chaudhary).

A total of 79% (27 out of 34) of Nepal's near-threatened species has been recorded in Chitwan NPBZ IBA including significant populations of Asian Woollyneck *Ciconia episcopus* (fairly common

resident); Rufous-bellied Eagle *Lophotriorchis kieneri* (rare visitor); Mountain Hawk-eagle *Nisaetus nipalensis* (frequent resident); Alexandrine Parakeet *Palaeornis eupatria* (common resident); Red-breasted Parakeet *P. alexandri* (fairly common resident), Blossom-headed Parakeet *P. roseata* (uncommon winter visitor) and Ashy-headed Green-pigeon *Treron phayrei* (fairly common resident) in forest habitats; Indian Grass-babbler *Graminicola bengalensis* (fairly common resident) in grasslands and River Lapwing *Vanellus duvaucelii* (fairly common resident), Oriental Darter *Anhinga melanogaster* (frequent resident) and Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* (locally fairly common breeding resident) in wetlands and Himalayan Griffon *Gyps himalayensis* (frequent winter visitor) in open country. The other near-threatened species recorded are: Falcated Duck *Anas falcata* (very rare winter visitor); Ferruginous Duck *Aythya nyroca* (rare winter visitor and passage migrant); Northern Lapwing *Vanellus vanellus* (rare winter visitor); Eurasian Curlew *Numenius arquata* (very rare visitor); Great Thick-knee *Esacus recurvirostris* (rare visitor); Lesser Fish Eagle *Ichthyophaga humilis* (very rare resident); Cinereous Vulture *Aegypius monachus* and Pallid Harrier *Circus macrourus* (rare winter visitors); Red-necked Falcon *Falco chicquera* (rare visitor); Laggar Falcon *Falco jugger* (rare winter visitor); Black-headed Ibis *Threskiornis melanocephalus* (rare visitor); Painted Stork *Mycteria leucocephala* (very rare summer visitor); Black-necked Stork *Ephippiorhynchus asiaticus* (very rare visitor), and Spot-billed Pelican *Pelecanus philippensis* (vagrant).

### Other wildlife

The high totals of 68 species of mammals, 49 of amphibians and reptiles and 120 species of fishes have been recorded in the park. The park provides critical habitat for significant populations of several globally threatened species, mainly Tiger *Panthera tigris*, Gharial *Gavialis gangeticus* and the second largest world population of Indian Rhinoceros *Rhinoceros unicornis*. Other globally threatened species that occur include Gaur *Bos gaurus*, Asian Elephant *Elephas maximus*, Asiatic Wild Dog *Cuon alpinus*, Sloth Bear *Melursus ursinus*, Chinese Pangolin *Manis pentadactyla*, Ganges River Dolphin *Platanista gangetica*, Smooth-coated Otter *Lutrogale perspicillata*, Burmese Python *Python vittatus*, and Mugger Crocodile *Crocodylus palustris* (DNPWC 2012, 2015d).

In Barandabhar Forest and wetlands species recorded include 26 of mammals, 18 of herpetofauna, and 25 of fish. These include the globally threatened Tiger *Panthera tigris*, Indian Rhinoceros *Rhinoceros unicornis*, Asian Elephant *Elephas maximus*, Gharial *Gavialis gangeticus* and Mugger Crocodile *Crocodylus palustris* (DNPWC 2014a).

Near-threatened species in the park and Buffer Zone include Himalayan Serow *Capricornis thar* and Striped Hyaena *Hyaena hyaena* (DNPWC 2012, 2015d).

## Conservation issues and management

A 2011 assessment of the condition of the CNPBZ IBA found it to be an unfavourable state (BirdLife International 2015b).

A management plan for the period 2013-2017 has been prepared. The objectives of the management plan, problems in achieving these objectives and management plans aimed at solving these problems with a focus on bird conservation (DNPWC 2012a).

### Objective 1

To protect and conserve biodiversity with special focus on nationally protected and globally threatened wildlife species

#### Issues include:

- Inadequacy of infrastructure and limited budget for park protection and maintenance, and
- Inadequate trans-boundary cooperation with India.
- 

#### Recommended actions include:

- Strengthening the park protection system through good network of strategically located park security posts, improved basic facilities at security posts, and effective and reliable communication and transportation facilities.
- General protection of wildlife and its habitat including from encroachment, grazing and illegal collection of forest products, and safeguarding waterholes and saltlicks from poisoning.

### Objective 2

To manage terrestrial and aquatic wildlife habitat to maintain ecological functions and processes

### Issues include:

- Encroachment of grasslands by woody vegetation, weed and invasive species;
- Siltation and weed invasion in wetlands e.g. *Eichhornia crassipes*;
- Traditional resource dependency of people living around park;
- Low level of awareness and poverty of the people living in catchment area;
- Lack of effective controlling measures to address alien and invasive species;
- Pollution in rivers from point and non-point sources; and
- Use of chemical fertilizers and pesticides in catchment and poisoning in streams and rivers for fishing (DNPWC 2012a).

Overfishing, sand, gravel and stone mining from riverbeds and human disturbance are other major threats to river birds. All the major Chitwan rivers – the Narayani, Rapti and Reu are now polluted. The Narayani is the worst affected and is also suffering from pollution from untreated effluent from the towns of Bharatpur and Narayanghat. None of the large rivers flow through the park but form part of the park boundary where human disturbance is the greatest (BCN and DNPWC 2011).

Figures available over a ten-year period from 1989 to 1999 for three wetlands in the park revealed a decline in many wetland dependent species (Baral 1999). The Annual Waterbird Census results on the

West Rapti and Narayani rivers in the park confirm these data and also that numbers continue to decline (Hem Sagar Baral in *litt.* to C. Inskipp, May 2015). A comparison of waterbird counts on the Narayani River in 1982, 1996 and 2010 (Halliday 1982, Dhakal 1996, Khadka 2010) indicate that a number of species have declined significantly including Great Cormorant *Phalacrocorax carbo*, Ruddy Shelduck *Tadorna ferruginea*, Common Sandpiper *Actitis hypoleucos*, Common Greenshank *Tringa nebularia*, Green Sandpiper *T. ochropus*, Common Redshank *T. totanus*, Little Pratincole *Glareola lactea* and Black-bellied Tern *Sterna acuticauda*.

An invasive alien plant, *Mikania micrantha*, is having devastating effects in all terrestrial habitats in the park, covering trees, shrubs and the forest floor and grasslands making it difficult for terrestrial birds to feed (Baral 2002a).

### Recommended actions include:

- Survey, classification and mapping of grasslands;
- Increasing grassland coverage area from 12% to 15% in the next five years;
- Inventory of grassland species regularly to monitor their dynamism;
- Woody vegetation removal to create new grasslands or improve the quality of grasslands that has been invaded by woody species.
- 500 ha of grassland creation or improvement by woody species removal in next five years;



- 1300 ha of grassland maintained by cutting and/or controlled burning in next five years;
- Carried out in planned way by dividing grasslands into different blocks and burning only selected blocks;
- Wetlands inventory to determine existing condition, habitat potentiality and threats, and wildlife presence;
- Regular cleaning and weeding of wetlands that are being encroached by alien invasive species and/or degraded by siltation, and
- Removal and control of two main problematic invasive species (*Mikania micrantha* in the wetter areas and *Chromolaena* in the drier areas) in an area of 1000 ha in five years (DNPWC 2012a).

### Objective 3

To regulate and promote sustainable eco-tourism maintaining wilderness and cultural heritage.

#### Background

The tourist entry fee constitutes a major source of revenue collected by the park. Six lodges that were formerly situated within the park have now been closed to reduce disturbance, although appropriate sites will be explored for tented camps providing high-cost wilderness experience in the park's core. Sauraha is the tourist hub of CNP and also the BZ where there are more than 70 hotels and lodges and a number of restaurants and souvenir shops. The number of vehicles that can enter the park from Sauraha is controlled and visitors can enjoy boating on the Rapti from Sauraha and Kasara.

**Issues include:** concentrated and unregulated tourism activities in CNP; tourism infrastructure not planned leading to wildlife and habitat disturbance; outer periphery of CNP intensively used creating tremendous pressure on wildlife and habitats; limited conservation awareness programme for local community and visitors; negligible benefit generated by host community from tourism; and inadequate interpretation facilities.

**Recommended actions include:** defining routes for jungle drive, elephant safari, nature walk in CNPBZ; developing a code of conduct to regulate tourism activities in CNPBZ; developing view towers at several localities e.g. Sukhibhar (Bengal Florican Machan); setting up interpretation centres near Sauraha and Kasara; developing home stay tourism package in

some tribal villages; building and enhancing people's capacity to initiate tourism enterprises through training as nature guides, and in hospitality, hygiene, housekeeping, cooking, first aid, etc; initiating a conservation focused programme in BZ schools; strengthening 'Eco-club' programme in BZ schools; enhancing the capacity of nature guides in nature interpretation specifically on bird identification, and conducting conservation awareness campaign in BZ school and villages (DNPWC 2012a).

### Objective 4

To enhance public stewardship on biodiversity conservation by increasing awareness, minimizing human-wildlife conflicts and improving livelihood of people.

#### Background

The BZ receives 50% of the revenue generated by the park for conservation and socio-economic development. The above committees have to allocate 30% of this budget for conservation, 30% for community development, 20% for income generation and skill development, 10% for conservation education and 10% administration.

One of the major programmes of BZ management is to develop alternative forest resources in the BZ through community forestry. The BZ programme emphasises sustainable management and development of the forests through involving local communities as forest user groups. The other major BZ land uses are human settlements and agricultural lands.

BZ communities are highly dependent on forest resources for their livelihood. Their day-to-day requirements for fuel wood, small timber for use in agriculture, house construction or repairs and cattle grazing are fulfilled from forests in the BZ. In addition, villagers sometimes enter illegally to the park for minor forest products for their subsistence use (DNPWC 2012a).

**Issues include:** inadequate conservation awareness programme and illiteracy of the people living around the park; inadequate livelihood opportunities for local people; grazing and high dependency of people on park resources; significant increase in number of people living around the park from about 40,000 to over 0.3 million in last 30 years; and benefit of BZ programme not properly reaching targeted

community such as wildlife victims and poor and dependent communities.

**Recommended actions include:**

promotion of community based eco-tourism; improving the socio-economic status of people living around the park by providing opportunities for income-generating activities (IGAs) and skill development; conducting several conservation education programmes focusing on different groups in society e.g. school children, mother groups, social activists, and managing, using and conserving forest products and sand, stone and gravel from rivers of the BZ so as to fulfil the needs of BZ people without damaging the environment or wildlife habitats (DNPWC 2012a).

**Objective 5**

To strengthen institutional capacity through research, capacity building, coordination and collaboration.

**Issues include:** inadequate collaboration with universities and research institutions; limited budget for ecological monitoring and research; lack of management-oriented research and adaptive management, and insufficient incentives, rewards, amenities and welfare for staff motivation.

**Recommended actions include:** establishment of a research unit including two field research stations in park, and a wildlife research and training centre at Sauraha; monitoring wildlife and its habitat on regular basis: bird monitoring to focus on annual monitoring of migratory and other water birds in mid-winter and monitoring of endangered birds, including Bengal Florican, Lesser Adjutant and Great Hornbill; monitoring of ecological impacts of tourism in park; capacity building of staff in wildlife management, and research activities will include: vegetation dynamics and its impact on wildlife habitat; impact of *Mikania micrantha* on wildlife and its habitat and experimental research to control it; the impact of BZ programmes on conservation and sustainable livelihoods of local communities; economic and ecological benefits of the park, and climate change indicators and impact on biodiversity conservation along with adaptation strategies (DNPWC 2012a). A Nepal army battalion and company have been deployed for protection of the park. The battalion has its headquarters at Kasara and there are 27 posts under this battalion established throughout the park area (DNPWC 2012).



The NTNC established the Biodiversity Conservation Center (BCC) at Sauraha in January 2002. The emphasis has been on an integrated conservation and development programme with the twin objectives of applied biological research and sustainable development of local communities by providing alternative livelihood options. This has helped in minimising the conflicts between the park and the people residing in the periphery of the park. BCC has been providing technical expertise to the park e.g. in the census of flagship species and research within and outside the park. BCC has undertaken various conservation initiatives from single species conservation to landscape level biodiversity conservation and has implemented the first landscape level conservation project in Nepal. BCC has been regularly carrying out monitoring of birds (NTNC 2015d).

Since its inception, BCC has been instrumental in assisting local communities living on the park's periphery to plant and regenerate degraded forest land into green corridors. It has provided resources for local communities living within the Buffer Zone for community development activities. BCC is also supporting local communities by providing diversified economic options such as capacity building, income generation, alternative energy, and health and sanitation (NTNC 2015d).

The Vulture Conservation and Breeding Centre (VCBC), situated at Kasara, was established in 2008 and covers an area of 6,375 m<sup>2</sup>. The project is a joint undertaking of BCN, NTNC, DNPWC, RSPB, ZSL and the Darwin Initiative. There are 60 individuals of White-rumped Vulture *Gyps bengalensis* which have mainly been collected from the west. Diclofenac-free flesh is provided to the vultures. The aim is to release individuals bred from these vultures into the natural environment in future (Pradhan 2013). In February 2014, a pair of White-rumped Vultures successfully bred at the centre, the first successful captive breeding of vultures in Nepal (BCN 2014).

CNPBZ lie within the Nepal Government's Terai Arc Landscape (TAL) programme. In addition, Chitwan National Park and Buffer Zone lie in the area covered by WWF's Chitwan-Annapurna Landscape (CHAL).

The southern tip of Barandabhar forest is managed by Chitwan National Park authorities as it lies in the park's Buffer Zone. The remaining forest north of the East-West Highway is managed as a Protected Forest by the Department of Forest (DoF 2012).

A separate Ramsar site management plan has been written for Beeshazar and associated lakes Ramsar site (DNPWC 2014a). This management plan identified the following threats: low level of awareness amongst local people about ecological importance; poverty or traditional/household dependency as the majority of people have traditional occupations of firewood selling, fishing and hunting which has led to resource destruction; unsustainable use of water resources; invasion of exotic species; leaching of inorganic fertiliser which is causing eutrophication and pesticide runoff from farmlands; disturbance by visitors; development projects and industries; illegal hunting and fishing, pollution and the reservoir's weak earthen embankment. These threats have led to significant habitat loss and degradation. Finally insufficient coordination among partners and stakeholders in wetland planning impedes the conservation and sustainable use of Beeshazar wetlands. (DNPWC 2014a).

Ghimire (2009) highlighted the negative impacts of fishing on fish-dependent birds such as kingfisher species, Darter *Anhinga melanogaster* and Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*. Lesser Adjutant *Leptoptilos javanicus* has been killed by local hunters for meat. Illegal hunting and trapping of birds was found to be rampant in the area (Ghimire 2009). The principal objective of the 2014 management plan for Beeshazar and associated lakes is to facilitate the implementation of the Convention on Wetlands, Ramsar, Iran 1971 through a participatory approach involving all stakeholders to sustain the wetland's resources for the benefit of local communities on a long-term basis (DNPWC 2014a).

To achieve the principal objective, the following specific objectives were set:

- Identify relevant stakeholders and establish an effective management mechanism in the active participation of these stakeholders for sustainable conservation of Beeshazar and Associated Lakes;
- Make people aware about the understanding and potentiality of Ramsar Site "Beeshazar and associated lakes";
- Support local communities through conservation-based alternative income generating programmes such as eco-tourism activities;
- Create opportunities for recreation, education and research; and
- Ensure sustainable financial mechanisms for the conservation of Beeshazar and associated Lakes.

This Site Management Plan is expected to assure community ownership towards their natural resource management for long term conservation of Beeshazar and associated lakes (DNPWC 2014a).

The following actions were recommended in order to achieve the objectives:

- Maintain healthy wetland ecosystem in and around Beeshazar and associated lakes;
- Promote sustainable wetland-based eco-tourism;

- Raise community awareness on wetland conservation;
- Promote the use of alternative energy;
- Facilitate scientific research and monitoring;
- Enhance the livelihood opportunities of the local communities;
- Ensure the sustainable and perpetual water source;
- Take actions to control pollution of the Beeshazar Lake;
- Explore the alternative use of invasive species;
- Discourage the forest product harvest and stop poaching; and
- Study the impact of invasive species in the area (DNPWC 2014a).



Photo by Rajendra Gurung





# DANG DEUKHURI FOOTHILL FORESTS AND WEST RAPTI WETLANDS

## Site description

The Dang Deukhuri foothill forests and west Rapti wetlands IBA (DDWR) lies outside the protected area system. The principal vegetation is tropical dry forest. In the Deukhuri valley forests are dominated by *Sal Shorea robusta*. Associated species include *Emblica officinalis*, *Lagerstroemia parviflora*, *Dalbergia sisoo*, *Berberis spp.* and *Coridalis chaerophylla*. Degraded grasslands of *Typha angustifolia* and *Saccharum spontaneum* occur along the Rapti River bank. Although the exact extent of remaining forest is unknown, the area may still retain a significant portion of Churia hill forests. The DDWR is intersected by the main East West highway (Thakuri 2009a,b).

The west Rapti River flows through the length of the Deukhuri valley in the inner terai after emerging from a gorge through the Mahabharat hills at Bhalubang. There are many tributaries of the Rapti, such as the Arjun Khola, Gurung Khola, Baura Khola, Subel Khola and Budi Khola; these tributaries remain dry except during the monsoon season (Thakuri 2009a,b).

A total of 246 bird species was recorded in surveys carried out in October 2008, January, March and June 2009 (Thakuri 2009a,b), an additional nine species were recorded by Cox (2008) making a total of 256 species for this IBA. Thakuri (2009a) concluded that as the species richness curve continued to increase towards the end of the survey work, further surveys are very likely to find more species.

Bird species recorded included significant numbers of the globally threatened Egyptian Vulture, and

**Status:** Unprotected

**Altitude:** 200–900m

**Area:** 150,000ha

**Geographical coordinates:** 28°00'N 82°25'E–28°00'N 82°58'E Banke, Dang Deukhuri, Kapilvastu and Arghakhanchi Districts, Lumbini Province

**Categories:** A1 (globally threatened species); A3 (Indo-Malayan tropical dry zone biome species)

White-rumped Vulture. DDWR therefore qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species are rare or vagrants: Great Slaty Woodpecker *Mulleripicus pulverulentus*, Slender-billed Vulture *Gyps tenuirostris*, Red-headed Vulture *Sarcogyps calvus*, Greater Spotted Eagle *Clanga clanga* and Steppe Eagle *Aquila nipalensis*. Further fieldwork may find that some of these species have significant populations in DDWR.

Dang and Kapilvastu are two of four districts that appear to be key areas supporting remaining lowland vulture populations and these districts are now crucial for vulture conservation in Nepal (Chaudhary *et al.* 2011). In 2010/11, there were 50 active nests of White-rumped Vulture in this IBA, 28 nests in 2011/12, 30 in 2012/13, 26 in 2013/14 and 20

## Birds

Globally threatened species	Threat status	Status and habitat
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Frequent resident in open country
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Frequent breeding resident in open country near human habitation



active nests in 2014/15. The nests were in Goberdia, Kaptangunj, Hanspur and Lalmatiya areas in the IBA (BCN, unpublished data). Since the first IBAs of Nepal listing (Baral and Inskipp 2005), this IBA has been extended up to the Charinge Lake area where there are 17 active White-rumped Vulture nests. Mostly Saj *Terminalia tomentosa* have been used by White-rumped Vulture for nesting while Sal *Shorea robusta* and Pine *Pinus roxburghii* have also been used. Habitat surrounding the colonies was forest and farmland (BCN unpublished data).

The globally threatened Lesser Adjutant *Leptoptilos javanicus* which was included in the first assessment of this IBA (Baral and Inskipp 2005) was not recorded subsequently and was considered possibly extinct in the area (Thakuri 2009a).

DDWR has large dry tropical areas that support a significant proportion of characteristic species of the Indo-Malayan tropical dry zone biome and so DDWR IBA qualifies as an IBA based on the biome-restricted species assemblage criterion (see Appendices 2,7).

Six near-threatened species have been recorded: Himalayan Griffon *Gyps himalayensis* (fairly common

winter visitor); Alexandrine Parakeet *Palaeornis eupatria* (common resident); River Lapwing *Vanellus duvaucelii* (uncommon resident); Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* (rare resident); Asian Woollyneck *Ciconia episcopus* (uncommon resident); and Cinereous Vulture *Aegypius monachus* (rare winter visitor) (Thakuri 2009a,b).

The west Rapti River is a major wetland habitat for birds. Some of the Rapti's tributaries are important for birds during spring and summer. Jakheda Lake in Sonpur VDC is also a good habitat for birds, although it is degraded. Some grasslands along the Rapti River bank were observed to be in good condition in Chaulahi, Sonpur and Sisahania VDCs, although these grasslands were completely harvested before the winter season. Other grasslands were in a degraded condition (Thakuri 2009a,b).

### Other wildlife

Globally threatened species recorded include Four-horned Antelope *Tetracerus quadricornis* (Khanal et al. 2017a), Tiger *Panthera tigris*, Common Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus* and Asiatic elephant *Elephas maximus* (Khanal and Baniya 2018). The globally near-threatened Striped Hyena *Hyaena*



Egyptian Vulture by Ankit Bilash Joshi

*hyaena* has also been recorded (Khanal 2015, Khanal *et al.* 2017). Reptiles include the globally threatened Mugger *Crocodylus palustris* (Khanal 2017).

### **Conservation issues and management**

Thakuri (2009a,b) reported the following threats in DDWR IBA.

Forests of Dang Deukhuri were observed to be heavily exploited during the period of political insurgency in 2008/09 throughout all seasons. Ghandev, Mahadev, Durga, Santi and Saljhundi Community Forests were some highly deforested community forests. High rates of deforestation were noted in the first assessment of this IBA (Baral and Inskipp 2005) and these may still be continuing.

Evidence of illegal hunting and trapping was found. Both questionnaire and informal survey respondents indicated that hunting and trapping persist. A Brown Fish Owl *Ketupa zeylonensis* was found trapped for sale, for example. Gunshots were heard commonly at Gadhwa and Rihar. The unexpected low frequency of recording of urban birds and game birds implies that there is a serious hunting and trapping problem. Only one call of Indian Peafowl *Pavo cristatus* was heard from Budikhola Gobardiya when more were expected considering the extent of suitable habitat. Herders were found with catapults.

Although almost all of the forest was managed as community forest. Cattle grazing continued in most community forests and was associated with hunting

and trapping. Good bird diversity and populations were found in ungrazed forests of Lalmatiya and Laxmi Community Forests.

The dry Dang Deukhuri forests are susceptible to forest fire during spring. Forest fire was observed from 12 places on 7 June 2009 and was observed on all survey days.

Farmers commonly use pesticides. Some people use pesticides for fishing in the Rapti River during winter; many dead wading birds were found – possibly poisoned by pesticides.

Overfishing took place in the Rapti River in winter when the water level was low. Aquatic birds were highly disturbed by the collection of sand and stones from the riverbed.

A formal questionnaire survey and informal interviews indicated that people of Deukhuri have very little knowledge about birds and their importance, apart from vulture species.

The Department of Forest and Soil Conservation manage forests in the DDWR. A total of 108 community

forests are registered at the Division Forest Office in Deukhuri although the regulations of community forest management may not be implemented strongly enough. The IBA now lies in a diclofenac-free zone (Thakuri 2009a,b).

White-rumped Vultures are threatened by tree-felling, disturbance during the breeding season, other harmful NSAID's and limited vulture conservation awareness (BCN unpublished data).

The vulture nesting colonies lie in Lalmatiya Community Forest (CF), Kulpani CF, Ucha nimbu CF, Nava shanti CF, Charange CF, Gurangkot CF, and Sallikot Mahila CF. BCN has been working for research and conservation of vultures in this area. User groups of these CFs are involved in the conservation of the community forests and vultures (BCN).

Dang Deukhuri Forests and West Rapti Wetlands lie within the Nepal Government's Terai Arc Landscape (TAL) programme.

A 2011 assessment of the condition of DDWR IBA found that its condition was near-favourable (BirdLife International 2015).



Photo by Khadananda Paudel

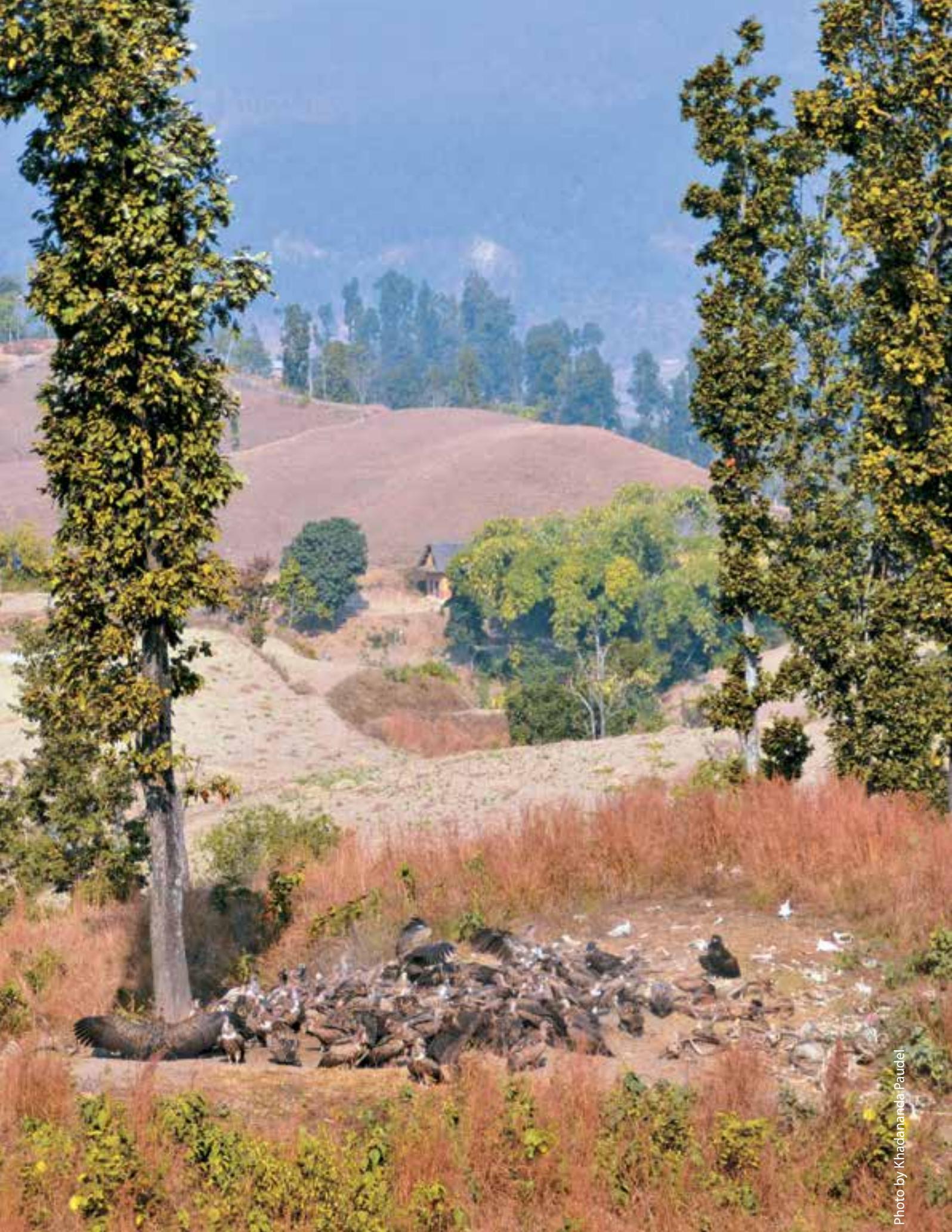
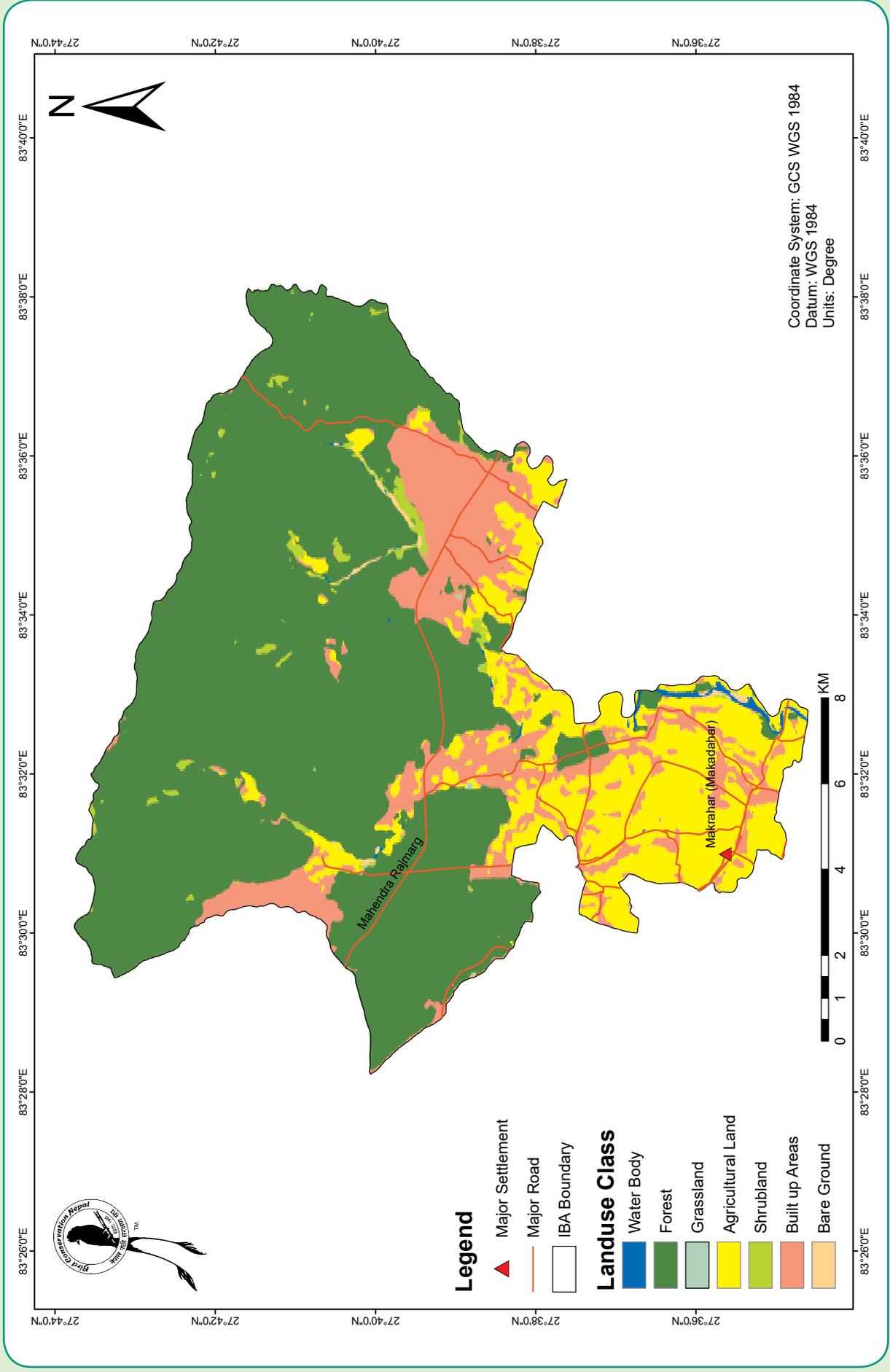


Photo by Khadananda Paudel

# DEVDAHA AREA SITE MAP



### Site description

Devdaha IBA has been designated because of its important colonies of White-rumped Vulture. It comprises Tilottama and Devdaha Municipality in Rupandehi district. The nests are mainly in Saj *Terminalia tomentosa* in a forest and farmland area where tree species chiefly comprise of this species and Sal *Shorea robusta* (BCN unpublished data). This IBA lies west of the former Nawalparasi forests IBA which now lies within Chitwan National Park and Buffer Zone IBA. It is likely that some of the nesting vultures have shifted to this locality from the former Nawalparasi forests IBA.

**Status:** Unprotected

**Altitude:** 100-250m

**Area:** 12,457ha

**Geographical coordinates:** 27°38.82'N, 83°30.9'E  
Rupandehi District, Lumbini Province

**Categories:** A1 (globally threatened species),  
A4 (congregation of a waterbird species)

### Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Nesting colonies in Saj <i>Terminalia tomentosa</i> (40 active nests in 2014/15)
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Rare breeder
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	9 nests in 2019/20; 40 nests in 2020/21

Observer coverage of Devdaha IBA has been 75% to date.

### Vulture nest status (BCN data)

Species	Number of active nests										
	2013	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
White-rumped Vulture <i>Gyps bengalensis</i>	53	47	40	45	52	46	35	34	30	25	21
Egyptian Vulture <i>Neophron percnopterus</i>	0	0	0	0	0	1	0	1	2	1	0

Devdaha supports significant populations of the globally threatened White-rumped and Egyptian Vultures, and Lesser Adjutant and therefore qualifies as an IBA based on the globally threatened criterion (A1) (BCN data).

As the number of nests in 2020 totalled 40, the number of mature individuals present can be estimated to be 80 birds. Devdaha therefore also qualifies as an IBA based on the congregatory criterion (A4) as the population is greater than 1% of the global population of a waterbird species (BCN data).

Other globally threatened species recorded are Slender-billed Vulture *Gyps tenuirostris* (rare resident) and Red-headed Vulture *Sarcogyps calvus* (rare visitor). Further fieldwork may find that Devdaha supports significant populations of these species.

Three near-threatened species have been recorded: Himalayan Griffon *Gyps himalayensis* and Cinereous Vulture *Aegypius monachus* (both winter visitors) and Asian Woollyneck *Ciconia episcopus* (uncommon resident).

### Conservation issues and management

The White-rumped Vulture nesting colonies lie in community forests (CF): Bodabare CF, Buddha Mawali CF, Milan CF, Shristi CF and Sukhaura Hariyali CF. The colonies are threatened by tree-felling, disturbance during the breeding season, other harmful NSAID's, commercial farming inside the community forests, and limited vulture conservation awareness (BCN data).

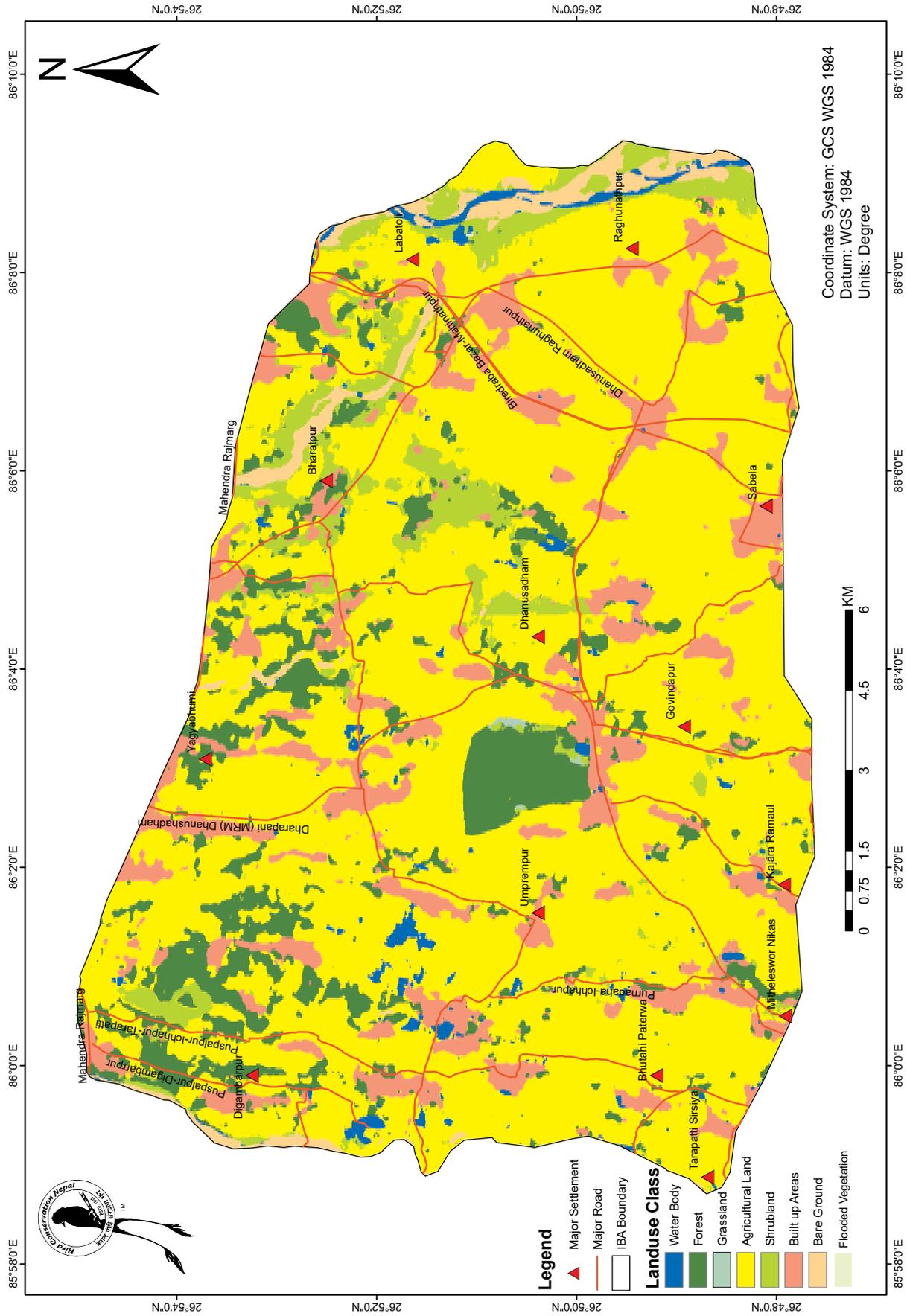
BCN has been working for research and conservation of vultures in this area. The user groups of these CFs are involved in the conservation of forest and vultures (BCN data).





Photo by Ankit Bilash Joshi

# DHANUSADHAM PROTECTED FOREST AND ASSOCIATED FARMLANDS AREA SITE MAP



### Site description

This IBA comprises Dhanusadham Protected Forest, adjacent farmlands and some areas alongside the Kamala River (DPFF). Recently the forest has been named as Dhanushadham Forest Conservation Area, according to the Forest Regulations 2022 by the Government of Nepal. The IBA covers 378 ha of forest land and 18 ha wetland area including the origination point of the Ban Ganga River (Laba and Rashila 2018). A biodiversity survey recorded 276 floral species with *Shorea robusta* the dominant species (Botanical Research Center 2020). In farmlands paddy is the dominating crop during the monsoon season (June–September), maize in summer, and wheat, and lentils during the winter (November–February), whereas sugar cane is grown throughout the year in some locations (Katuwal *et al.* 2022)

**Status:** Forest (Protected); Rest of IBA Unprotected

**Altitude:** 94–163 m

**Area:** 18023.74 ha, 378ha (Protected Forest) + Area of Farmland and Land Alongside the Kamala River

**Geographical coordinates:** 26°50'N, 86°0'E  
Dhanusa District, Madhesh Province

**A1 (globally threatened species)**

### Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	In 2020, 16 nests in 4 colonies, 29 chicks fledged (Katuwal <i>et al.</i> (Under review)
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Breeds in forest (Mithila Wildlife Trust 2022)

A total of 230 species was recorded by Mithila Wildlife Trust (2022).

DPFF supports significant populations of Lesser Adjutant and Indian Spotted Eagle and so qualifies as an IBA based on the globally threatened criterion. Other globally threatened species recorded are Yellow-breasted Bunting *Emberiza aureola*, White-rumped Vulture *Gyps bengalensis*, Steppe Eagle *Aquila nipalensis* and Greater Spotted Eagle *Clanga clanga*. Further fieldwork may show that DPFF supports significant populations of some of these species, and Lesser Adjutant might meet the congregatory species criterion (A4) if the IBA is found to regularly exceed the 1% threshold (80 mature individuals) for the global population of a waterbird.

Near-threatened species recorded are Ferruginous Duck *Aythya nyroca*, Falcated Duck *Mareca falcata*, Painted Stork *Mycteria leucocephala*, Black-necked Stork *Ephippiorhynchus asiaticus*, Oriental Darter *Anhinga melanogaster*, Black-headed Ibis *Threskiornis melanocephalus*, River Lapwing *Vanellus duvaucelii*, Himalayan Griffon *Gyps himalayensis*, Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*, and Alexandrine Parakeet *Palaeornis eupatria*.

### Other wildlife

Thirty-five mammal species have been recorded in the Protected Forest area including Blue Bull *Boselaphus tragocamelus*, Jungle Cat *Felis chaus* and Indian Crested Porcupine *Hystrix indica* (Mithila Wildlife Trust 2022). Thirty seven reptile species

including the globally threatened King Cobra *Ophiophagus hannah*, Asian Cobra *Naja naja*, Tricarinate Hill Turtle *Melanochelys tricarinata*, Indian Peacock Turtle *Nilssonina hurum* and Elongated Tortoise *Indotestudo elongata*, and three amphibians including the Indian Marbled Toad *Bufo stomaticus* were also recorded (Laba and Deshar 2018, Mithila Wildlife Trust 2022).

### Conservation issues and management

Felling of nesting trees and hunting are the major threats to birds including the Lesser Adjutant (Katuwal *et al.* under review).

The Protected Forest was designated by the Nepal Government on 25th February 2014 when it was declared an Illicit felling and Grazing Free Zone by

the Ministry of Forest and Soil Conservation (MoFSC). The Mithila Wildlife Trust (MWT) and the Division Forest Office are working for the management and conservation of Dhanushadham Protected Forest. Work includes restoring the lake and protection of the Banganga wetland. Forest resources are managed by allowing local people to extract resources that help to sustain their livelihood and also help to maintain the vegetation composition and structure. Providing plant seedlings to local people has been a priority to reduce dependency of the people on forest resources (Laba and Deshar 2018). MWT has been working here to develop this site as an eco-tourism destination since 2013. The Protected Forest holds a prominent value in the Hindu religion and large numbers of Hindu pilgrims visit this place every year (Mithila Wildlife Trust undated).

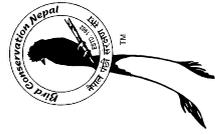
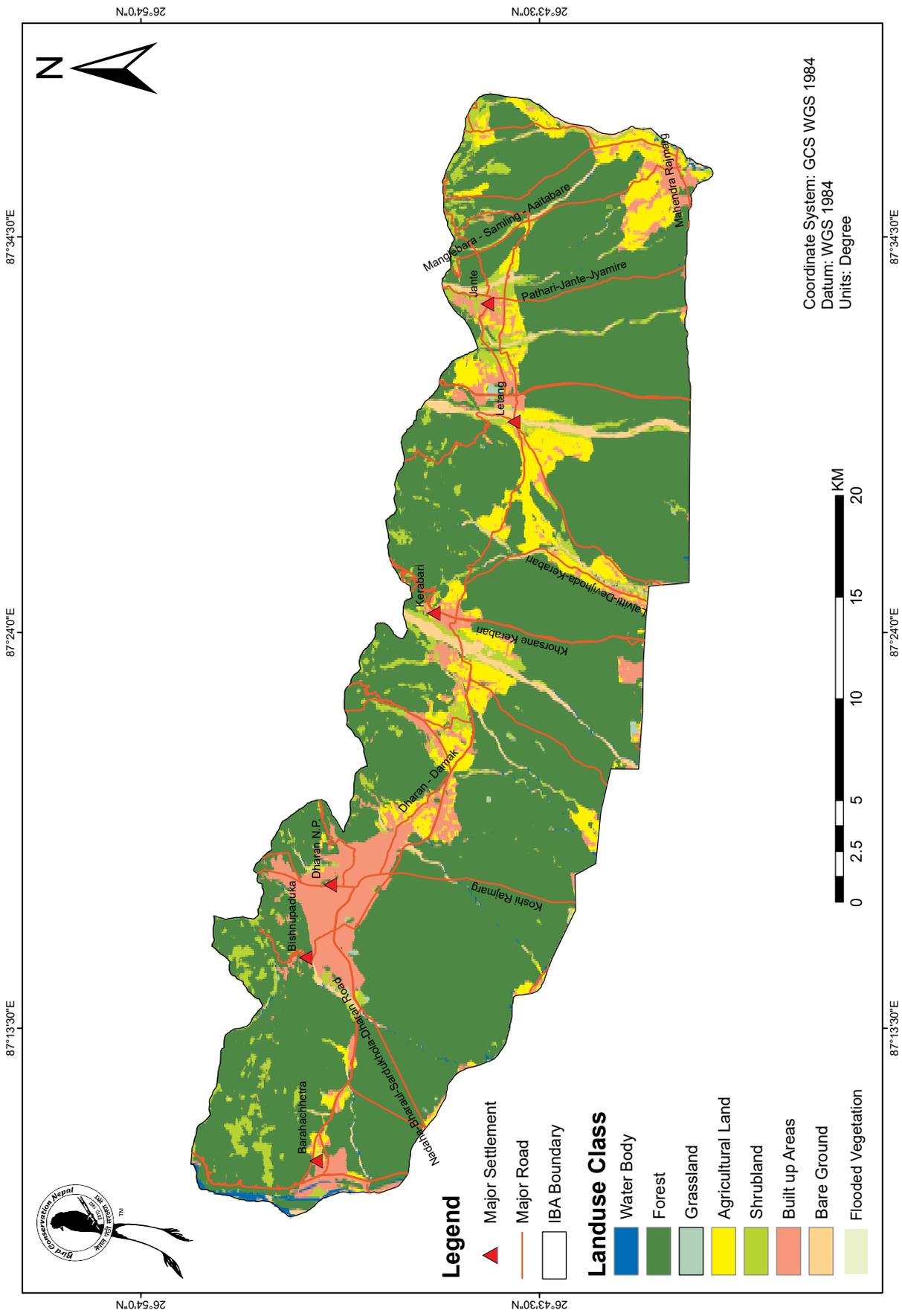


Photo by Santosh Bajagain



Lesser Adjutant Stork by Prashant Rokka

# DHARAN FORESTS AREA SITE MAP



# 11

# DHARAN FORESTS

## Site description

The Dharan Forests IBA stretches from east to west in Sunsari and Morang districts. The principal vegetation of the area comprises tropical evergreen forest which is characterised by dense vegetation with several species of trees that are rare in other lowland forest types. The forests are mainly dominated by mature Sal *Shorea robusta* with *Adina cordifolia*, *Pterygota alata*, *Phyllanthus emblica*, *Lagerstroemia parviflora*, *Aegle marmelos*, *Bombax ceiba*, *Cassia fistula* and *Terminalia alata* as co-dominant species. As a result of various anthropogenic disturbances, primarily repeated forest fires, tropical evergreen forest in Nepal has been replaced elsewhere in the country by species that are fire resistant. Apart from the lower Mai valley forests, Dharan forests are the only significant area of this forest type that is represented in the IBA network.

Birds in Dharan Forests are well recorded. A total of 340 species has been recorded (Baral *et al.* 2015, Basnet 2009, Basnet and Sapkota 2008).

DFIBA supports significant populations of four globally threatened species: Greater Spotted Eagle, Steppe Eagle, Lesser Adjutant and Yellow-breasted Bunting and so qualifies as an IBA based on the globally threatened criterion (A1). Other globally threatened species that have been recorded, but are rare in DFIBA are: Egyptian Vulture *Neophron*

**Status:** Unprotected

**Altitude:** 100-1300m

**Area:** 50,000ha

**Geographical coordinates:** 26°49'N 87°17'E

Sunsari and Morang Districts of Koshi Zone,  
Koshi Province

**Categories:** A1 (globally threatened species);  
A3 (biome restricted assemblage)  
(Indo-Malayan tropical dry zone)



Photo by Jyotendra Jyu Thakuri

## Birds

Globally threatened species	Threat status	Status and habitat
Greater Spotted Eagle <i>Clanga clanga</i>	Vulnerable	Regular passage migrant in small numbers; seen on the western forest edge, mainly in autumn and spring.
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common autumn passage migrant; uncommon on spring passage
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Fairly common breeding resident in marshes, pools and wet fields
Yellow-breasted Bunting <i>Emberiza aureola</i>	Critically Endangered	Winter visitor, regularly on the western forest edge

*percnopterus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *G. tenuirostris* and Indian Spotted Eagle *Clanga hastata*,

Lesser Adjutant breeds at Tarahara in Dharan Forests.

Year	Number of birds recorded
2010	13
2011	30
2012	75
2013	58
2014	195
2016	75
2017	73
2018	60
2019	48
2020	56
2021	44
2022	68

A total of 195 birds was recorded at Tarahara in the Asian Waterbird count in January 2014 but the number has reduced significantly since then with 68 in 2022 (H. S. Baral in litt. to C. Inskipp 20 May 2015). As 1% of the global population is 120 birds (or 80 mature individuals), the site does not currently qualify as an IBA based on the congregations criterion (A4), but it might do in the future if numbers of the species recover to former levels. Two nesting colonies were located in 2007: at Santi Community Forest, Hasposha VDC and in Singhadevi Community Forest, Dagihat VDC (Basnet 2009, Basnet and Sapkota 2008) but no later information is available from these sites.

DFIBA includes Indo-Malayan Tropical Dry Zone, Indochinese Tropical Moist Forests and Sino-Himalayan Subtropical Forest biomes. DFIBA supports significant numbers of species characteristic of the Indo-Malayan Tropical Dry Zone and therefore meets the biome-restricted assemblage criterion (A3). Only small numbers of species have been recently recorded in the other two biomes.

Three restricted-range species have been recorded: Yellow-vented Warbler *Phylloscopus cantator* and Blackish-breasted Babbler *Stachyris humei* from the Eastern Himalayas EBA and Spiny Babbler *Acanthoptila nipalensis* from the Central Himalayas EBA. Blackish-breasted Babbler (also Near-threatened) was recorded in Nepal for the first time from Dharan forests in December 1996 (Karki

and Choudhary 1997) and this remains the only confirmed Nepal record of the species. There are no recent records of Spiny Babbler from the DFIBA. Yellow-vented Warbler has been found to winter in DFIBA in small numbers. It is very rare and there are some recent records from Patnali in December 2008 (Suchit Basnet), in February 2014 (Hem Sagar Baral) and in February 2019 (Carol Inskipp, Hem Sagar Baral, Tikaram Giri and Sanjib Acharya). However, this species and Blackish-breasted Babbler may be under-recorded in DFIBA. Further surveys may show that significant breeding populations occur in this IBA, in which case DFIBA would also qualify as an IBA based on the Restricted-range criterion.

Eight near-threatened species have been recorded: Alexandrine Parakeet *Palaeornis eupatria*, which is fairly common, Red-breasted Parakeet *Psittacula alexandri*, Himalayan Vulture *Gyps himalayensis*, Grey-headed Fish-eagle *Ichthyophaga ichhyaetus*, Red-necked Falcon *Falco chicquera*, and Blackish-breasted Babbler *Stachyris humei* which are all rare and possibly visitors and Cinereous Vulture *Aegypius monachus* which is an uncommon winter visitor or passage migrant.

### Other wildlife

Mammals recorded include Spotted Deer *Axis axis*, Northern Red Muntjac *Muntiacus vaginalis*, Wild Boar *Sus scrofa*, Jungle Cat *Felis chaus*, Terai Grey Langur *Semnopithecus hector*, Indian Hare *Lepus nigricolis*, Rhesus Monkey *Macaca mulatta*, Black Giant Squirrel *Ratufa bicolor*, Crab-eating Mongoose *Urva urva* and Northern Palm Squirrel *Funambulus pennanti*. The globally threatened Asiatic Wild Elephant *Elephas maximus* regularly visits the forests (Basnet 2009, Basnet and Sapkota 2008).

### Conservation issues and management

A large part of the Dharan forests is now managed by community forest user groups; more than 75 forest user groups are benefiting from forest resources in DFIBA. Only a small portion is directly managed by Department of Forests and Soil Conservation. In recent years, there has been massive scale gravel extraction from the seasonally flooded Patnali river bed. Gravel beds help filter water and are key to the bhabar forest ecosystem; and this activity may bring undesired consequences to the entire IBA. Several development activities and also dumping of solid waste in this forest further threaten the very existence and biodiversity value of the IBA.

The Chatara Dharan road that runs east-west at the base of Siwalik hills has significantly opened the forest passage. Although effects to forests and birds are not known at this stage, further expansion may significantly alter the forest integrity. Similarly the widening of Dharan-Itahari road has further led the forests towards fragmentation.

Basnet and Sapkota (2008) and Basnet (2009) highlighted the following conservation issues.

Local people are heavily dependent on forest resources for fuelwood, fodder and timber. Forest areas of DFIBA are contiguously surrounded by village areas.

The use of vehicles inside the forest to collect timber was observed. In some places, especially in Morang district, large green trees were cut for illegal trading. Mining of stones and removal of woody debris from streams are causing disturbance and destroying the habitat of aquatic species.

According to local people they regularly hunt wild mammals such as Spotted Deer, Indian Muntjac and Wild Boar. Birds may also be hunted.

DFIBA remains largely unprotected. Forest clearance and degradation of forests through livestock grazing, and cutting of the understorey and tree branches are rampant. Tree felling and collection of several plant species are ongoing. Livestock grazing is allowed and there is uncontrolled collection of timber, firewood and other NTFP (Basnet and Sapkota 2008, Basnet 2009).

The invasive *Mikania micrantha* is covering several parts of the forest (Himalayan Nature 1999) and

continues to take over in the interior of the forests.

A 2011 assessment of the status of Nepal's IBAs concluded that the Dharan forests IBA was one of the five most threatened IBAs in the country. It was suffering from very high pressure and was in a very unfavourable state. Sal forest was being lost due to encroachment for settlements and cultivation and the development of a road (BCN and DNPWC 2012).

The forest is now bisected by the main Dharan to Itahari road and lies nearly one hour's drive from Koshi Tappu Wildlife Reserve.

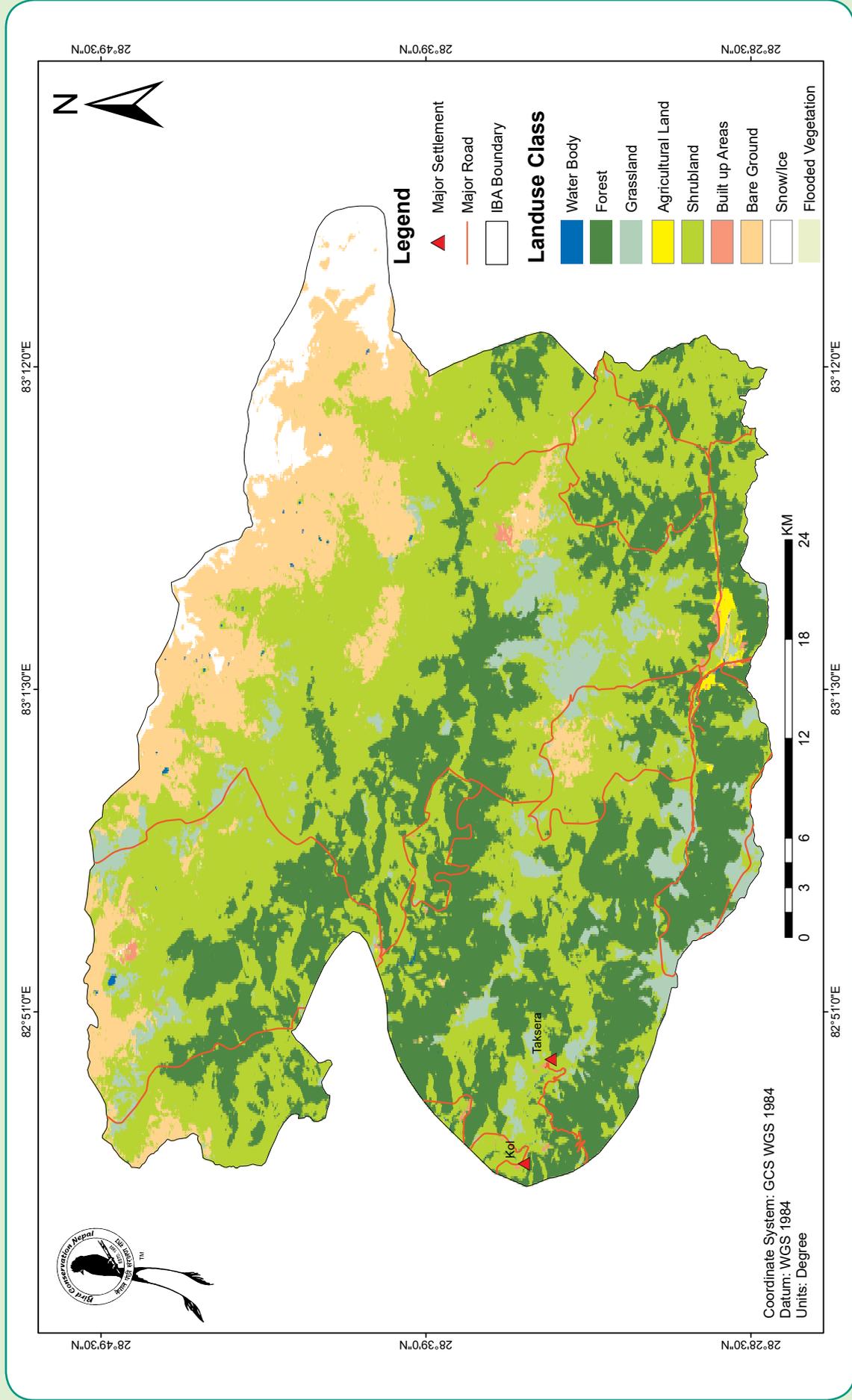
However, although now the forests are much degraded and drier compared to the writing of the first IBA account (Baral and Inskipp 2005), some part of the old growth forests in the area still remains intact and is well worth preserving.

Apart from a few conservation awareness programmes by BCN and HN, there are very few conservation projects in the area for safeguarding the site. A plan to link this forest in the proposed Koshi Tappu Wildlife Reserve expansion has not been materialized (DNPWC 2016). Koshi Bird Society, National Trust for Nature Conservation, K2K and Himalayan Nature that have permanent presence can play important role to preserve this IBA. Himalayan Nature's research station Kosi Bird Observatory has provided a significant base for visiting scholars for studying birds and wildlife but is underused. Koshi Bird Society is a locally registered NGO that has been working to raise awareness on the importance of Dharan Forests for its birds and biodiversity.



Photo by Mohan Bikram Shrestha

# DHORPATAN HUNTING RESERVE AREA SITE MAP



# 12 DHORPATAN HUNTING RESERVE

## Site description

Dhorpatan Hunting Reserve (DHR) lies in midwestern Nepal. It is the country's only hunting reserve and was primarily established to cater for the needs of sport hunting and for the conservation of representatives of temperate, subalpine and alpine ecosystems of western Nepal. Oaks *Quercus lanata* and *Q. semecarpifolia* form well developed stands at the reserve's lower elevations in moister and shaded areas. The other common tree species are fir *Abies pindrow*, birch *Betula utilis*, spruce *Picea smithiana*, juniper *Juniperus recurva*, pine *Pinus wallichiana*, hemlock *Tsuga dumosa*, rhododendron *Rhododendron spp.* and other alpine shrubs. There are extensive flat meadows above the tree line (DNPWC 2015e). A survey of Dhorpatan's wetlands listed 11 lakes all over 3000 m (Panthi *et al.* 2014).

DHR is under-recorded for bird species. A total of 197 species has been recorded (Inskipp 1989, Panthi and Thagunna 2013, Subedi 2003). In the past, DHR supported the largest known population of globally threatened Cheer Pheasant in Nepal. However, the species' has declined significantly in recent years, although the population is still significant enough to qualify the site as an IBA based on the globally threatened criterion. A 2003 survey estimated a population of 127-212 birds (Subedi 2003a,b); there had only been a marginal and statistically insignificant decline in Cheer population since the previous survey 22 years before (Lelliott 1982).

**Status:** Protected

**Altitude:** 2000-7246m

**Area:** 132,500ha

**Geographical coordinates:** 28°36'N 83°00'E, Myagdi and Baglung Districts of Gandaki Province and Rukum District of Lumbini Zone

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Central and Western Himalayas EBAs); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species)

However, results of a 2013 research study of Cheer found a decline in population density of 36.7% in the Dhorpatan valley compared to 2003. Significant population declines were observed in four localities in DHR (Basnet 2015).

Red-headed Vulture *Sarcogyps calvus* is the only other globally threatened species recorded and it is a rare visitor to DHR; however further fieldwork may show that it has significant populations there.

DHR supports significant populations of two restricted-range species: Hoary-throated Barwing

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Uncommon resident on steep slopes with scrub and secondary growth; sharp decline 2003-2013
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Uncommon resident on steep slopes with scrub and secondary growth
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident and altitudinal migrant in mossy, broadleaved forest



from the Central Himalayas (EBA 129) and Cheer Pheasant from the Western Himalayas (EBA 128). DHR therefore also qualifies as an IBA on the restricted-range criterion. The restricted-range White-throated Tit *Aegithalos niveogularis* from the Western Himalayas (EBA (128) is probably resident, though its abundance is unknown and more fieldwork may show that DHR supports a significant population.

There are large areas of temperate forests and alpine vegetation and DHR was found to support a significant proportion of the characteristic species of the Sino-Himalayan temperate forest biome and also of the Eurasian high montane biome, (see Appendices 2,7). As a result, DHR also qualifies as an IBA based on the biome-restricted assemblage criterion.

Five near-threatened species have been recorded including Himalayan Griffon *Gyps himalayensis* and Bearded Vulture *Gypaetus barbatus* (common residents); Satyr Tragopan *Tragopan satyra* (rare resident); Cinereous Vulture *Aegypius monachus* (rare winter visitor) and Pallid Harrier *Circus macrourus* (rare visitor, no recent records known).

### Other wildlife

A number of globally threatened mammals occur including Red Panda *Ailurus fulgens*, Himalayan Black Bear *Ursus thibetanus*, Himalayan Musk Deer

*Moschus chrysogaster*, and also the near-threatened Himalayan Serow *Capricornis thar*, Himalayan Tahr *Hemitragus jemlahicus*.

### Conservation issues and management

People living around Dhorpatan Hunting Reserve depend upon forests and their resources for sustenance and daily livelihood which has created a passive pressure upon forests along with avian fauna inhabiting the reserve and areas around it. The major threats for management of this reserve include poaching and trade of wildlife, unregulated overgrazing in rangelands, uncontrolled forests fires and unregulated harvesting of medicinal and aromatic plants (DHR, 2019). The specific conservation issues for avian fauna in the area include:

- Forest fires and overgrazing degrading bird habitats.
- Illegal egg collection of pheasants (Singh *et al.*, 2011) and other birds.
- Snares, traps, illegal poaching using guns (Panthi and Thagunna, 2013; Singh *et al.*, 2011).
- Degradation of potential bird habitats due to encroachment.
- Sedimentation and pollution in and around wetlands (Panthi *et al.*, 2014).
- Drying of wetlands like Rudra Taal seasonally causing depletion in feeding habitats for birds.

- Illegal firewood and timber collection inside forests causing forest habitat degradation.
- Contradiction between conservation plans for avian fauna and developmental plans of local level government (e.g construction of hydropower, electricity transmission lines, road networks and communication towers without consideration of the environmental impacts on birds).
- Use of homemade catapults for killing birds by children due to lack of awareness.
- And illegal trade of pheasants for meat.

The Dhorpatan Hunting Reserve management plan FY 2076/77-2080/81 envisions managing the

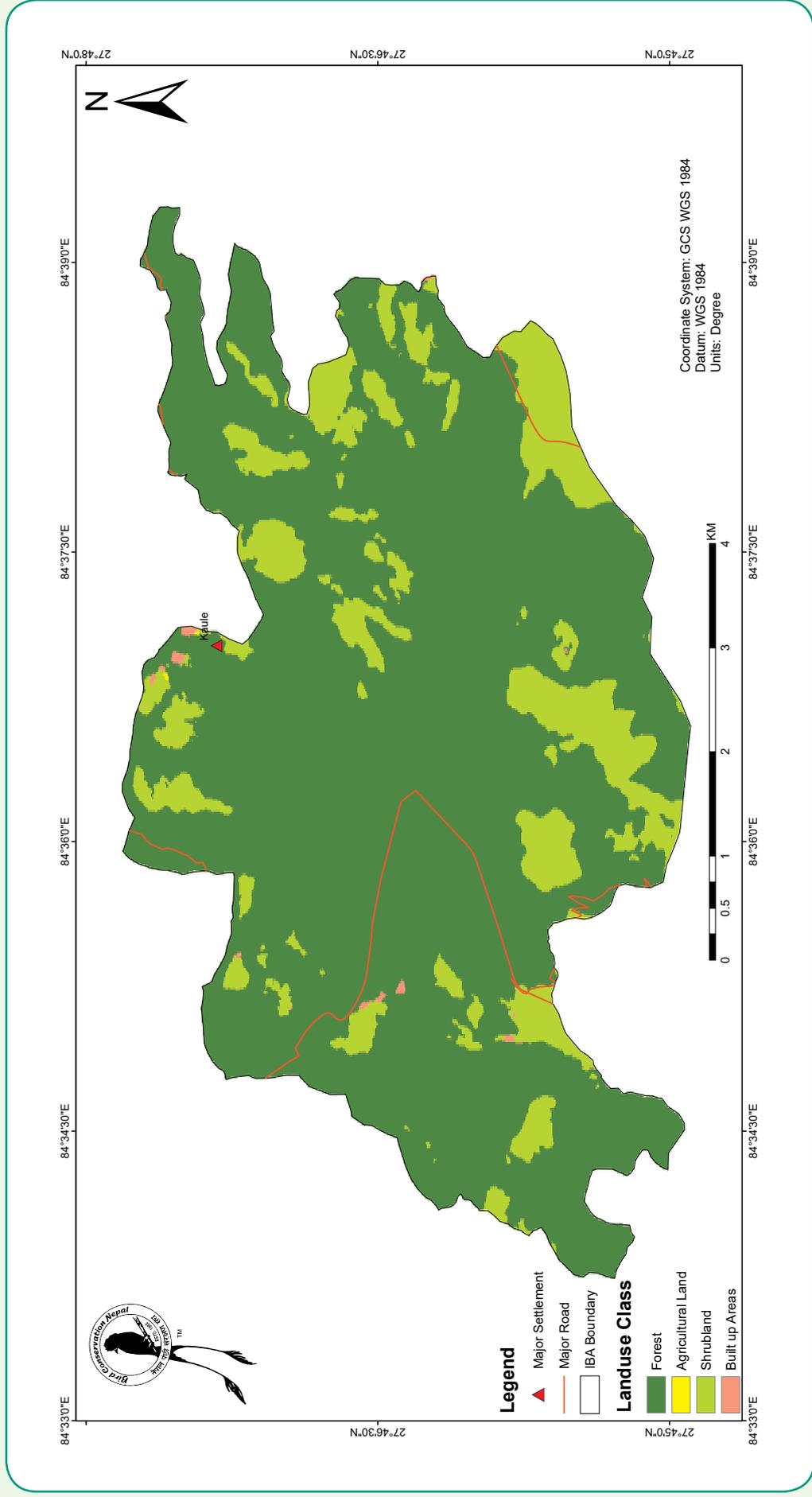
reserve and averting the above-mentioned issues through antipoaching and intelligence, wildlife health management, wetland management (restoration of wetlands), encroachment control, community engagement, fire prone zone mapping for fire management and national and international coordination for avian fauna in the reserve (DHR, 2019).

A 2011 assessment of the status of Nepal's IBAs concluded that Dhorpatan Hunting Reserve was one of the five most threatened in the country. It was suffering from high pressure, was in a very unfavourable state and there had been a low response to threats which included illegal collection of firewood and timber and crop farming (BCN and DNPWC 2012).



Photo by Hari Basnet

# GADHI-SIRAICHULI AREA SITE MAP



# 13

# GADHI-SIRAICHULI

## Site description

The Gadhi-Siraichuli IBA lies in the Chepang hills in the Mahabharat Range of central Nepal, Chitwan district. Siraichuli (1945 m) is the highest point in Chitwan district. The principal vegetation is dense subtropical mixed broadleaved forest with a well-developed understorey, and climbers and epiphytes. This comprises both the largest extent and the highest quality of this forest type now known to remain in Nepal. Some *Sal Shorea robusta* forest occurs at the lower altitudes. Parts of the area are cultivated and abandoned terraces partly overgrown with shrubs occur widely. The area is thinly populated, mainly by the Chepang tribe. The forest serves as the watershed providing drinking water for seven villages in Chitwan district. The Upardang Gadhi fortress lies within the IBA, at 1275 m. This 300 year old fortress, which features a 2 m moat and intact 7 m stone walls, served as the headquarters of Chitwan district until the 1960s (Inskipp *et al.* 2019).

A total of 320 bird species has been recorded (Inskipp *et al.* 2019, Ramesh Chaudhary and Tika Ram Giri *in litt.* to C. Inskipp 6 November 2022). However, the IBA is probably under-recorded, especially in winter, and more species are very likely to be found with more survey work.

Gadhi-Siraichuli supports significant populations of the globally threatened Greater Spotted Eagle,

**Status:** Unprotected

**Altitude:** 527-1,728 m

**Area:** 3,000ha

**Geographical coordinates:** 27°46'N 84°35' E  
Chitwan District of Bagmati Province

**Categories:** A1 (globally threatened species), A2 (restricted-range species Central Himalayas EBA)?, A3 (Sino-Himalayan subtropical forest biome species)

Steppe Eagle and Grey-crowned Prinia and so qualifies as an IBA based on the globally threatened species criterion. The globally threatened Indian Spotted Eagle *Clanga hastata* occurs and further fieldwork may find that Gadhi-Siraichuli also supports significant populations of this species.

Gadhi-Siraichuli supports a significant population of the restricted-range and endemic Spiny Babbler; the area almost certainly has a higher population of this species than any of the other Nepal IBAs. It would qualify under the restricted-range criterion (A2) if future fieldwork shows that other restricted-range species have significant populations in the IBA.

## Birds

Globally threatened species	Threat status	Status and habitat
Grey-crowned Prinia <i>Prinia cinereocapilla</i>	Vulnerable	Local resident in bushes and tall grasses on hillsides, 910 m and 1200 m, probably under-recorded.
Greater Spotted Eagle <i>Clanga clanga</i>	Vulnerable	Uncommon winter visitor
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Uncommon, Winter visitor? Regular passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Common and widespread resident on abandoned terraces with some bushes and scattered trees



The extensive subtropical broadleaved forests in this IBA support a significant proportion of the characteristic species of the Sino-Himalayan subtropical forest biome. Gadhi-Siraichuli therefore also qualifies as an IBA based on the biome-restricted criterion. This IBA is the only known locality in Nepal for Red-faced Liocichla *Liocichla phoenicea*, a species characteristic of the Sino-Himalayan subtropical forest, which was rediscovered here in May 2015 after not being recorded in Nepal since the 19th century (Baral *et al.* 2018).

Five near-threatened species have been recorded: Himalayan Griffon *Gyps himalayensis* (winter visitor and passage migrant), Mountain Hawk-eagle *Nisaetus nipalensis* (resident), Asian Woollyneck *Ciconia episcopus* (visitor), Red-breasted Parakeet *Psittacula alexandri* (resident) and Alexandrine Parakeet *Palaeornis eupatria* (resident).

### Other wildlife

Fifteen mammal species have been recorded including Common Leopard *Panthera pardus* which is very rare, Black Giant Squirrel *Ratufa bicolor* in Sal forests and Assamese Macaque *Macaca assamensis*. A total of 55 butterfly species has been recorded so far, although many more are likely to be found with more survey work.

### Conservation issues and management

The main inhabitants, the Chepang people, followed a nomadic lifestyle until late in the twentieth century. Living off the rich forests of the region as hunters and gatherers, their lives were inextricably intertwined with the local environment. A variety of external forces, including the immigration of new ethnic groups, forced the Chepang to take up a more sedentary life based upon simple agriculture. However, due to the steep terrain of their homeland, agricultural productivity is limited and the Chepang people are still dependent on gathering wild food (Bird Education Society 2004, Karmacharya 2015).

Construction of a new road through the IBA was started in May 2019 posing a serious threat to the IBA's subtropical broadleaved forests including the best habitat for birds and other wildlife. Later in 2019 the road building was stopped, partly because Gadhi villagers were very worried that the planned route of the new road would pose a high risk of erosion and landslides, which would threaten their homes, land, livelihood and disrupt their only water source. No Environmental Impact Assessment (EIA) had been carried out on the damage that this road would cause (Inskipp *et al.* 2019, Inskipp and Karmacharya 2019).



In October 2022, the provincial government promised to provide a budget to re-start this road construction. The new road would shorten the distance between Hugdi and Bharatpur by 4-5 km compared to the present route which goes around the IBA boundary, and not through the IBA. However, the proposed new road would entail climbing up and down steep slopes and would take longer than the existing road. Further, the zig-zag route that would be necessary to construct the new road would ruin some of the best forest for wildlife in the IBA and be at high risk of erosion and landslides every year (Prem Thapa and Rupendra Karmacharya, in *litt.* to C. Inskipp, 3 November 2022).

A much better alternative and a sustainable way to raise the living standard of the impoverished local communities is to promote ecotourism. This would raise incomes and help in conserving the forest for wildlife and as a resource for local communities, including their precious water sources. (Inskipp and Thapa 2022). Designating the IBA as a Bird Sanctuary and a special ecotourism zone would raise its profile amongst tourists and attract some of the visitors from nearby Chitwan National Park, one of the most popular tourist attractions.

Conservation awareness amongst local communities is low. Hence, hunting, trapping and forest encroachment are the other main threats. Although the Chepang tribe have become agrarian nowadays, they still hunt gamebirds, which are now rare in the IBA. Kalij Pheasant *Lophura leucomelanos* is especially favoured and pigeons and doves are very uncommon, despite much suitable habitat, indicating they have probably been hunted. In addition, children collect

young birds from the nest for pets (Inskipp *et al.* 2019, Karmacharya 2015).

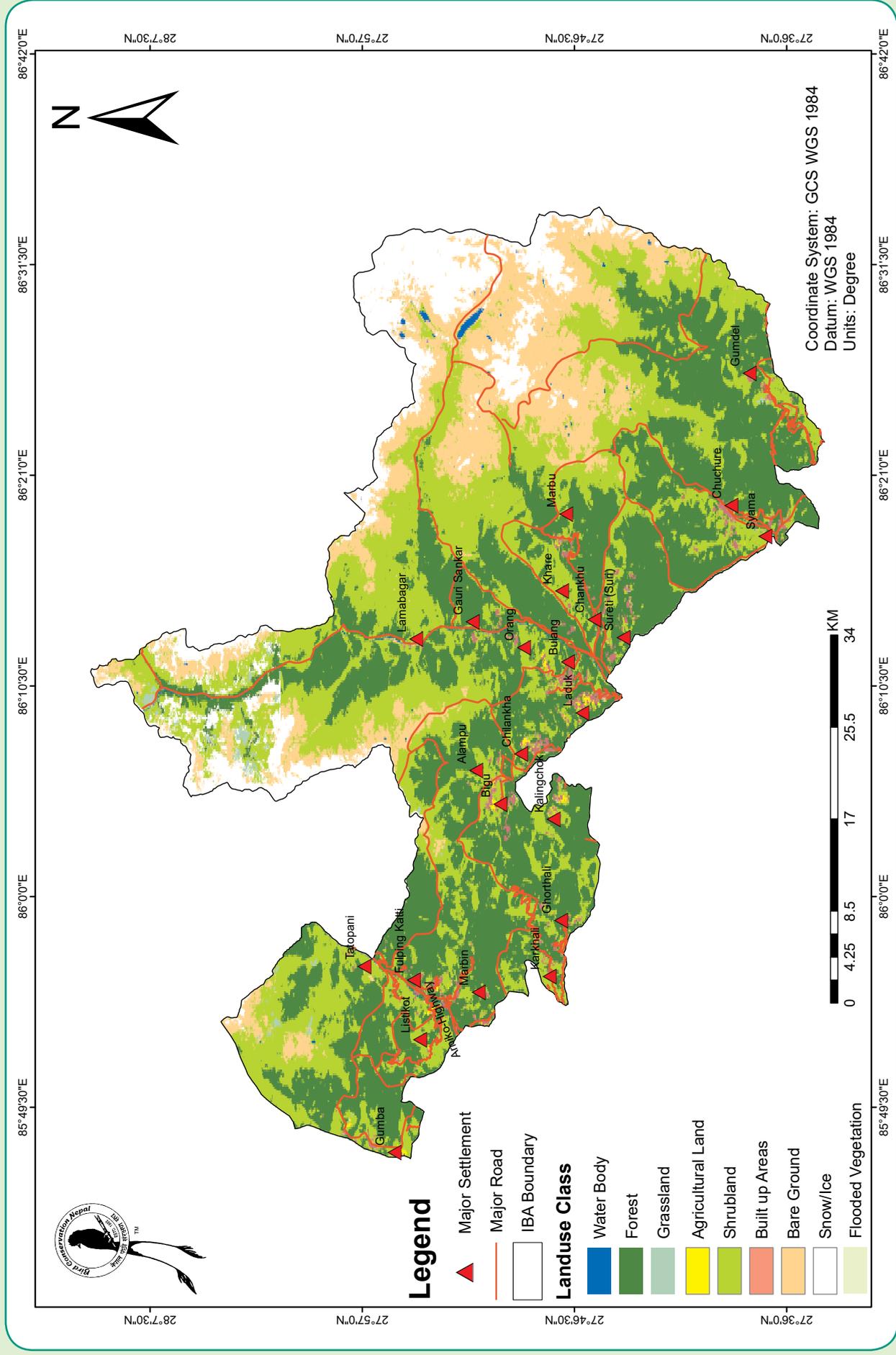
A quarry lies close to the IBA's southern boundary, very near to the main site where Grey-crowned Prinia has been recorded. The quarry increases the risk of landslides and erosion which would threaten both wildlife habitats and local peoples' livelihoods (Rupendra Karmacharya in *litt.* to Carol Inskipp, 25 February 2017).

The abandoned terraces of the Chepang form important bird habitats, especially for Spiny Babbler.

There are seven community forests (CF): Amalachuri, Janapragati and Jamuna CF on the south-east side of the IBA, Jharana CF and Sampharang CF on the south side, Batauli CF on the south-east side and Ajambari CF on the north side. A fairly new trekking trail, the Chitwan Chepang Hills Trail, has been developed between Hugdi Bazaar on the road between Mugling and Krishna Bheer, Dhading district and Shaktikhor, north of Tandi Bazaar to encourage tourism in the area (Anon. 2011).

Gadhi-Siraichuli is an important north-south link for Chitwan National Park and Buffer Zone within the highly biodiverse Terai Arc Landscape and Chitwan-Annapurna Landscape which are two landscape level initiatives identified and prioritized by the government of Nepal for conservation (WWF 2019a, b). This IBA lies directly north of the Barandabhar Corridor Protected Forest, further highlighting its value for conservation. Barandabhar connects the Chitwan National Park, through its buffer zone, to the mid-hills of which Gadhi-Siraichuli is an important part (Inskipp *et al.* 2019).

# GAURISHANKAR CONSERVATION AREA SITE MAP



## 14

## GAURISHANKAR CONSERVATION AREA

## Site description

Gaurishankar Conservation Area (GCA) lies between Sagarmatha and Langtang National Parks, thereby serving as biological corridor for these two protected areas. The Government of Nepal, through a July 2010 Nepal Gazette notice entrusted the management responsibility of GCA to NTNC for 20 years (NTNC 2015e).

The vegetation comprises 16 major types ranging from subtropical to alpine: *Pinus roxburghii* forest, *Schima-Castanopsis* forest, *Alnus* forest, *Pinus wallichiana* forest, *Pinus patula* forest, *Rhododendron* forest, *Quercus lanata* forest, lower temperate oak forest (*Quercus semecarpifolia* forest), lower temperate mixed broad leaved forest, *Abies* forest, upper temperate mixed forest (Birch-rhododendron forest), temperate mountain oak forest, east Himalayan Oak forest, *Juniperus* forest, shrubland

**Status:** Protected

**Altitude:** <1800-4500 m

**Area:** 217,900 ha

**Geographical coordinates:** 27°34'-28°10' N, 85°47'-86°35'E, Sindhupalchok, Dolakha and Ramechhap Districts, Bagmati Province

**Categories:** A2 (restricted-range species, Central Himalayas EBA); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species)

(*Rhododendron anthopogon* bushes) and moist alpine scrub (NTNC 2015e).



Photo by Rajendra Gurung

## Birds

Restricted-range species	Endemic bird area	Status and habitat
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Resident and altitudinal migrant; in tall herbage near forest edges or in open forest near running water
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Resident and altitudinal migrant in mossy broadleaved forest

This area forms the catchments for many rivers and streams such as Tamakoshi, Sunkoshi, Bhotekoshi and Khimti which are important for hydroelectricity generation. The region is also famous for glacial lakes, particularly the Tso Rolpa. With the issue of climate change becoming prominent in the national and international arena, the region carries special significance (NTNC 2015e).

Percentage of land uses in GCA are: forest 34.98%, barren land 34.78%, bushes 9.5%, cultivation 8.76%, grassland 8.61%, glaciers 2.77%, ponds/lakes/rivers 0.15% and other uses 0.58% (Government of Nepal Survey Dept data in Bajracharya *et al.* 2011).

GCA is characterised by easy access to roads, in contrast to the situation of many other of Nepal's protected areas (Bajracharya *et al.* 2011).

The 2001 census revealed a population of 56,364 persons in 22 VDCs which was projected to reach 63,937 in 2009 (NTNC 2015e).

The relatively small number of 1,491 foreigners visited Gaurishankar Conservation Area in 2012/13 (NTNC 2015e).

A total of 271 species of bird representing 36 families known to occur in GCA (GCAP, 2020). With more recording the total is likely to be more than 300 species. The list includes a significant proportion of characteristic species from both the Eurasian high montane biome and Sino-Himalayan temperate forest biome. GCA therefore qualifies as an IBA based on the biome-restricted assemblage criterion.

Two globally threatened species have been recorded in GCA: Steppe Eagle *Aquila nipalensis* (status unknown) and Eastern Imperial Eagle *Aquila heliaca* (very rare passage migrant). Further fieldwork may find that GCA supports significant populations of these species.

GCA supports two restricted-range species: Nepal Cupwing and Hoary-throated Barwing from the Central Himalayas (EBA 129), and as there are considerable areas of suitable habitat for both species, GCA qualifies as an IBA under the restricted-range criterion.

Four near-threatened species have been recorded, all probably resident: Satyr Tragopan *Tragopan satyra*, Mountain Hawk-eagle *Nisaetus nipalensis*, Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis*.

### Other wildlife

Confirmed observations of faunal diversity inside GCA totals 76 mammal species including the globally threatened Snow Leopard *Panthera uncia*, Clouded Leopard *Neofelis nebulosa*, Himalayan Black Bear *Ursus thibetanus*, Red Panda *Ailurus fulgens*, Himalayan Musk Deer *Moschus chrysogaster* and near-threatened Himalayan Serow *Capricornis thar*, Assamese Monkey *Macaca assamensis*. In addition, 16 species of fish, 10 of amphibians, eight of lizards, and 14 of snakes including the globally threatened Burmese Python *Python bivittatus* and 565 plant species have been recorded in GCA (Bajracharya *et al.* 2011).

### Conservation issues and management

NTNC has started necessary preparatory works for the establishment of the Conservation Area, including local consultations for setting up offices and finalising detailed project execution modalities in GCA (NTNC 2015e). However, during the April and May 2015 earthquakes villages including homes, schools, health posts, as well as GCA and government buildings and infrastructure were very seriously damaged or destroyed and the environment was significantly impacted. The priority was to reconstruct homes and other buildings and restore infrastructure which was a very challenging task. Governance for conservation/protection will be very difficult without proper shelter and equipment for staff.



The major problem confronted by wildlife in the area is encroachment of their habitats by people through several activities. Local villagers widely use all accessible lands for livestock grazing, collection of timber, fuel wood, fodder and NTFPs, and exploitation of other natural resources. These activities inevitably impact on the wildlife habitats, both directly and indirectly and also create food shortage and general habitat disturbances. Local communities throughout GCA are heavily dependent upon a wide variety of natural resources to support their livelihood e.g. fodder, firewood, timber, bamboo for making sleeping mats and covering house roofs, agricultural tools, household utensils, industrial raw material and medicinal herbs. Firewood is the only source of household energy in all settlements. The uncontrolled exploitation of forest resources without any regulation or management practices has been contributing towards habitat loss for many species (Bajracharya *et al.* 2011).

Although some legally established veneer manufacturing, essential oil extracting and Nepalese papermaking industries are operational in the area, no monitoring agencies check their over-use or improper

use of raw materials. In the Lamabagar area timber and poles obtained from *Abies*, and other *Pinus spp.* are not only used for their own house-building purposes but are also taken annually to Tibet for bartering. However, in comparison to plant resources surprisingly no high dependency on wild animal products was noticed in GCA (Bajracharya *et al.* 2011).

Other factors are: encroachment of wildlife habitats by extending agricultural land, creating new settlements, constructing cowsheds, wildlife hunting including for pheasants, and burning of forests/pastures to renew pastures and to create new agricultural land (Bajracharya *et al.* 2011).

When the study team for the establishment of GCA visited, the word of potential declaration of the protected area spread to local communities. Their major concern was that their traditional management system of resources, particularly the pasture land should not be disrupted as many families' livelihood depends on livestock herding. Another major concern was that since they have managed community forests well and depend on them, they should not be deprived of carrying on doing so (Bajracharya *et al.* 2011).

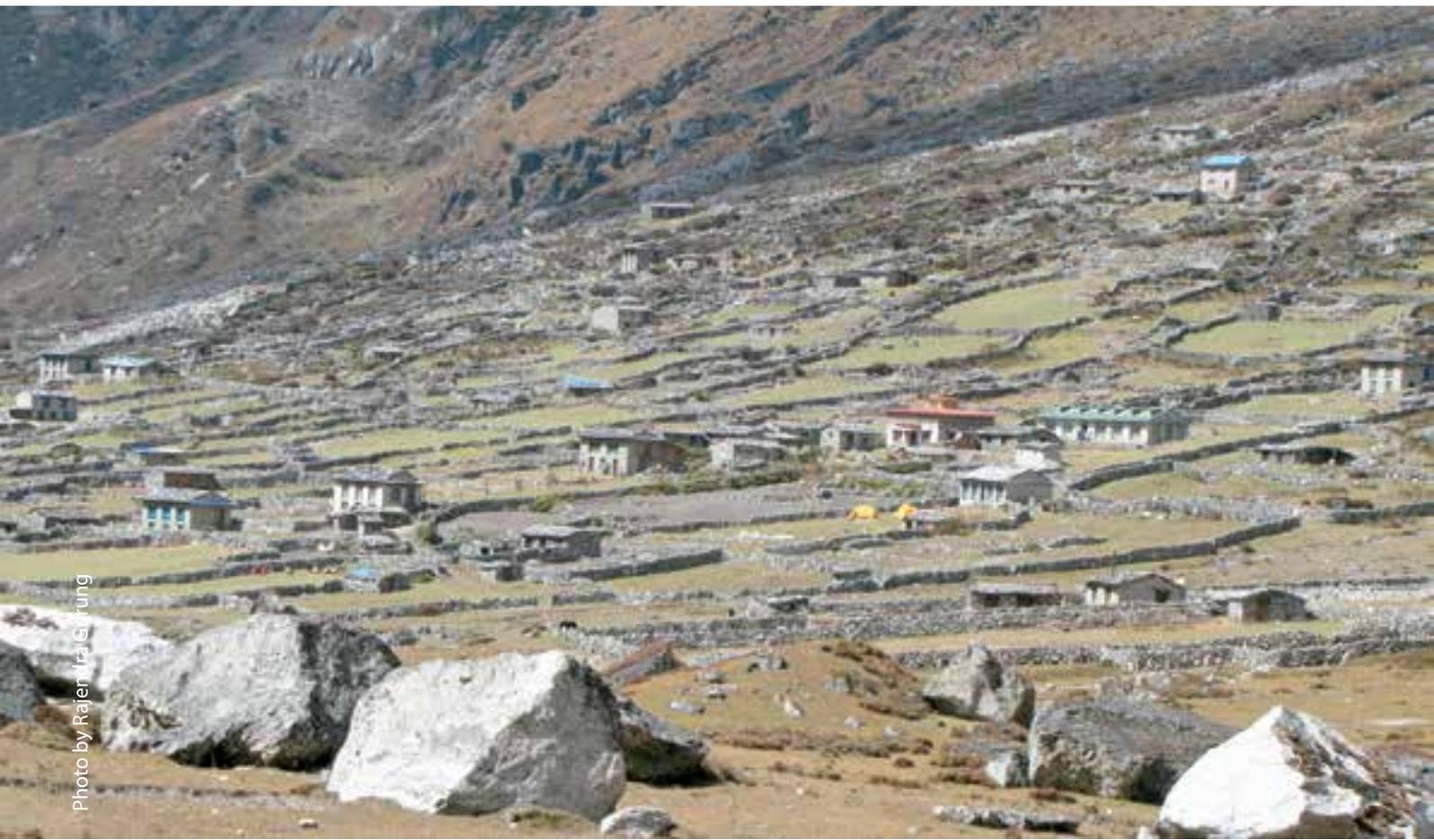


Photo by Rajendra Gurung



Musk Deer by Manjit Bista

People in all the Rural/Municipality have managed forests through community forestry. At the time of writing there were 87 handed-over community forests managed by 15,595 households. Mothers' groups were present in almost all Rural/Municipality settlements. Strengthening and empowerment of the mother groups has to be one important component of any programme addressing the issues of conservation and development. Several villages have youth clubs working in the field of environment, social development, and awareness. Cooperatives are gaining momentum in some villages. Absence of local elected bodies though common throughout Nepal, is an important feature having wider impact in social life and development of the region. Development activities have been severely curtailed because of the vacuum created by the absence of these bodies (Bajaracharya *et al.* 2011).

Although people have been diversifying their livelihood strategies, agriculture is the mainstay of the population. Traditionally, people follow mixed farming systems



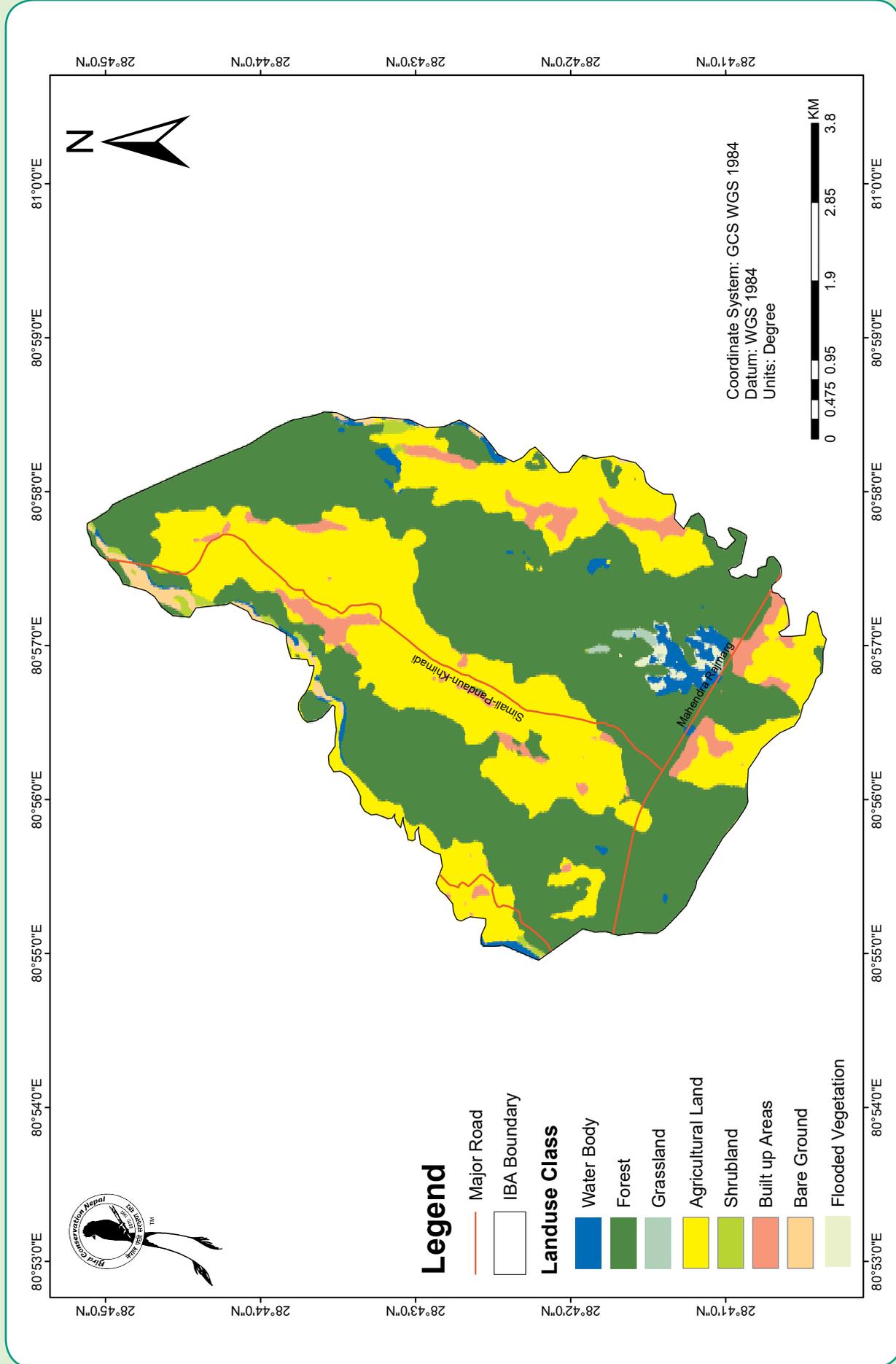
Photo by Rajendra Gurung

comprising of crop production and livestock rearing. Currently vegetable cultivation and fruit growing are largely limited to kitchen gardens, although these activities could be expanded to vegetable and fruit farming in the future. The contribution of tourism in the local economy is not very significant although GCA has immense potential for tourism development. Historically the region is renowned for mining, but today, minerals are not extracted. However, slate mining has become an important economic activity in the region. In the last five years or so, youths from almost all the settlements in the region now work in foreign countries. The area is a repository of many valuable NTFPs and people's dependence on these is significant. There are a number of natural resource-based enterprises, which in addition to providing employment opportunities bring value-added benefit to local communities. These include making rice paper, extracting essential oils and collecting and trading of herbs. Development activities like the upper Tamakoshi hydropower and road construction have also provided employment opportunities (Bajaracharya *et al.* 2011).



Hoary-throated Barwing by Dasrath Shrestha Beejuckchen

# GHODAGHODI LAKE AREA SITE MAP





# 15 GHODAGHODI LAKE AREA

## Site description

The name Ghodaghodi Lake Area (GLA) is used here to cover all the other smaller wetlands in the nearby area including the two largest lakes Ghodaghodi and Nakhrodi. It is one of the largest lake systems of terai region and includes about 19 associated lakes and ponds. GLA also now includes part of the Churia Hills, up to 1400m. GLA was designated a Ramsar site in 2003 and a Bird Sanctuary in 2022. This wetland complex is situated in the far southwestern terai and the main lake's southern tip is bordered by the East-West Highway. This area is a key link between the Churia Hills and the terai plains, and also acts as a corridor connecting Bardiya National Park with the Shukla Phanta National Park. (CSUWN and BCN 2012).

The land cover type of the area includes forest (52.2%), degraded forest (3%), grassland (1.8%), agricultural land (34.5%), highway/greenbelt (0.5%), sand/riverbed (1.6%) and lakes (6.1%). The IBA includes natural permanent or seasonal lakes with areas ranging from 2 to 138 ha, the largest being Ghodaghodi Lake followed by Nakhrod. (CSUWN and BCN 2012).

Ghodaghodi lake is surrounded by subtropical broadleaved trees such as Sal *Shorea robusta* and Saj or Asna *Terminalia alata*. Other tree species include Amala *Phyllanthus emblica*, Mitho Neem *Murraya koenigii*, Kyamun *Cleistocalyx operculata*, Bael *Aegle marmelos*, Karma *Adina cordifolia*, Kusum *Schleichera triyuga* etc. Small patches of *Phragmites karka* grow in the shallower area of the lake. In other lakes, for example Nakhrodi, Bainsha trees *Salix spp.* are abundant (CSUWN and BCN 2012). Higher up there is rocky ground and on the highest slopes there are Salla pines *Pinus roxburghii* (DR Chaudhary in litt. to C. Inskipp, 19 May 2016).

The total population of the IBA is about 57,064 people from 8,249 households of which 37.6% are wetland-dependent communities (CSUWN and BCN 2012).

**Status:** Ramsar Site, Bird Sanctuary

**Altitude:** 205-1400m

**Area:** 2726ha

**Geographical coordinates:** 28°41'N/80°56'E, Kailali District of Sudurpashchim Province

**Categories:** A1 (globally threatened species)

A total of 299 bird species was listed for the IBA for the period 1992-2018 (Bird Conservation Network and BCN 2018). GLA supports significant populations of the globally threatened Great Slaty Woodpecker. GLA therefore qualifies as an IBA based on the globally threatened criterion.

Other globally threatened species recorded are: Common Pochard *Aythya ferina*, Egyptian Vulture *Neophron percnopterus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Indian Spotted Eagle *Clanga hastata*, Lesser Adjutant *Leptoptilos javanicus*, River Tern *Sterna aurantia* and Great Hornbill *Buceros bicornis*. Further fieldwork may find that GLA supports significant populations of some of these species.

Ten near-threatened species have been recorded including Oriental Darter *Anhinga melanogaster* (fairly common resident, breeds); Asian Woollyneck *Ciconia episcopus* (uncommon resident, has bred); Alexandrine Parakeet *Palaeornis eupatria* (common resident); River Lapwing *Vanellus duvaucelii* (rare); Red-breasted Parakeet *Psittacula alexandri* (uncommon resident); Rufous-bellied Eagle *Lophotriorchis kienerii* (rare visitor); Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* (rare, has bred), and Mountain Hawk-eagle *Nisaetus nipalensis*; Ferruginous Duck *Aythya nyroca* and Falcated Duck *Anas falcata* (rare winter visitors).

## Birds

Globally threatened species	Threat status	Status and habitat
Common Pochard <i>Aythya ferina</i>	Vulnerable	Uncommon winter visitor to lake
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Rare in open country
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Former common resident, now very rare
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Former fairly common resident, now very rare
Indian Spotted Eagle <i>Aquila hastata</i>	Vulnerable	Rare visitor
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Rare on lake and in agricultural fields
Great Hornbill <i>Buceros bicornis</i>	Vulnerable	Rare breeding resident
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	Vulnerable	Regular breeding resident in small numbers.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of Cotton Pygmy Goose winter		155	188	243	290	300	289	357	329	360	374	392	289	349	394	316
Number of Cotton Pygmy Goose summer		139	180	175	252	228	175	143	153	164	172	124	193	243	310	
Number of all waterbirds	383	1,368	859	1,122	1,068	1,128	1,785	1,897	1,425	1,555	1,154	1,214	1,288	2,058	1,313	

Sources: Chaudhary (2014c); DR Chaudary in litt. to C. Inskipp, 10 January 2023  
Data source: Annual Waterbird counts, 2008-2022 (Baral 2022).

The Annual Waterbird Census carried out in January each year found totals of 383 birds in 2008 and the maximum of 2,058 birds in 2021 (Baral 2022).

Nearly 90% of Nepal's population of Cotton Pygmy Goose *Nettapus coromandelianus* occurs at GLA where it breeds. Cotton Pygmy-goose has been chosen as one of the five indicator species of good health of a wetland ecosystem by the Nepal Government (CSUWN 2011).

### Other wildlife

A total of 34 mammal species, 29 of fish, nine species of herpetofauna and 388 vascular plant species have been recorded (GoN, CSUWN undated). Fishing Cat *Prionailurus viverrinus*, Smooth-coated Otter *Lutrogale perspicillata* and Sloth Bear *Melursus ursinus* are three globally threatened mammals that have been recorded in the area (IUCN Nepal 2004). Other species recorded include Bengal Fox *Vulpes*

*bengalensis*, Leopard *Panthera pardus*, Golden Jackal *Canis aureus*, Wild Boar *Sus scrofa*, Jungle Cat *Felis chaus*, Northern Red Muntjac *Muntiacus vaginalis*, Spotted Deer *Axis axis* and Yellow-throated Marten *Martes flavigula*. A variety of reptiles including the globally threatened Red-crowned Roofed Turtle *Kachuga kachuga*, Three-striped Roof Turtle *Kachuga dhongka*, Mugger Crocodile *Crocodylus palustris* and Burmese Python *Python vittatus* are known to occur in the area (Bhuju *et al.* 2007).

### Conservation issues and management

A 2003 study by IUCN Nepal estimated the lake's annual value of biodiversity, wetland products and services, and community dependence at over US\$ 1.3 million (Anon 2003b).

A 2011 assessment of the condition of GLA IBA found it was in an unfavourable condition (BirdLife International 2015b).

The lake's close proximity to the East-West highway could be a major environmental problem to the lake and its wildlife unless the area is carefully managed. Major threats to the lake are increasing human disturbance for the collection of fuel wood and fodder, fishing, boating and loud noise caused by some religious activities; hunting of waterbirds using pesticides; drainage of the lakes for fish farming; unnecessary development at religious sites and cattle grazing (Bird Conservation Network, Kailali 2014). The forests are threatened by cutting for timber and by cattle grazing. Hunting is a serious threat to forest birds including the globally threatened Great Slaty Woodpecker (DR Chaudhary in *litt.* to C. Inskipp, 19 May 2016).

The Norwegian Ornithological Society in conjunction with BCN implemented a three-year project (from January 2015 to December 2017) in three IBAs including GLA. The project focussed on biodiversity surveys, livelihood benefits to the communities as well as local empowerment.

Ghodaghodi Lake Area was declared the country's first Bird Sanctuary on 11 March 2022 under the Forest Act of the provincial government. Recently, Ghodaghodi Municipality established the Comprehensive Ghodaghodi Lake and Tourism Development Board (CGLTDB) as its specialized institutional wing.

A Strategic Master Plan has been developed for GLA. (Comprehensive Ghodaghodi Lake and Tourism Development Board 2077). This includes:

1. Social Mobilization for GLA Conservation and Tourism Development

2. Infrastructure Development Adapting Bioengineering Techniques
3. Capacity Building and Touristic Management Improvement
4. Watersheds Management Plans
5. Wetland and Biodiversity Conservation

**This includes the following actions for bird conservation:**

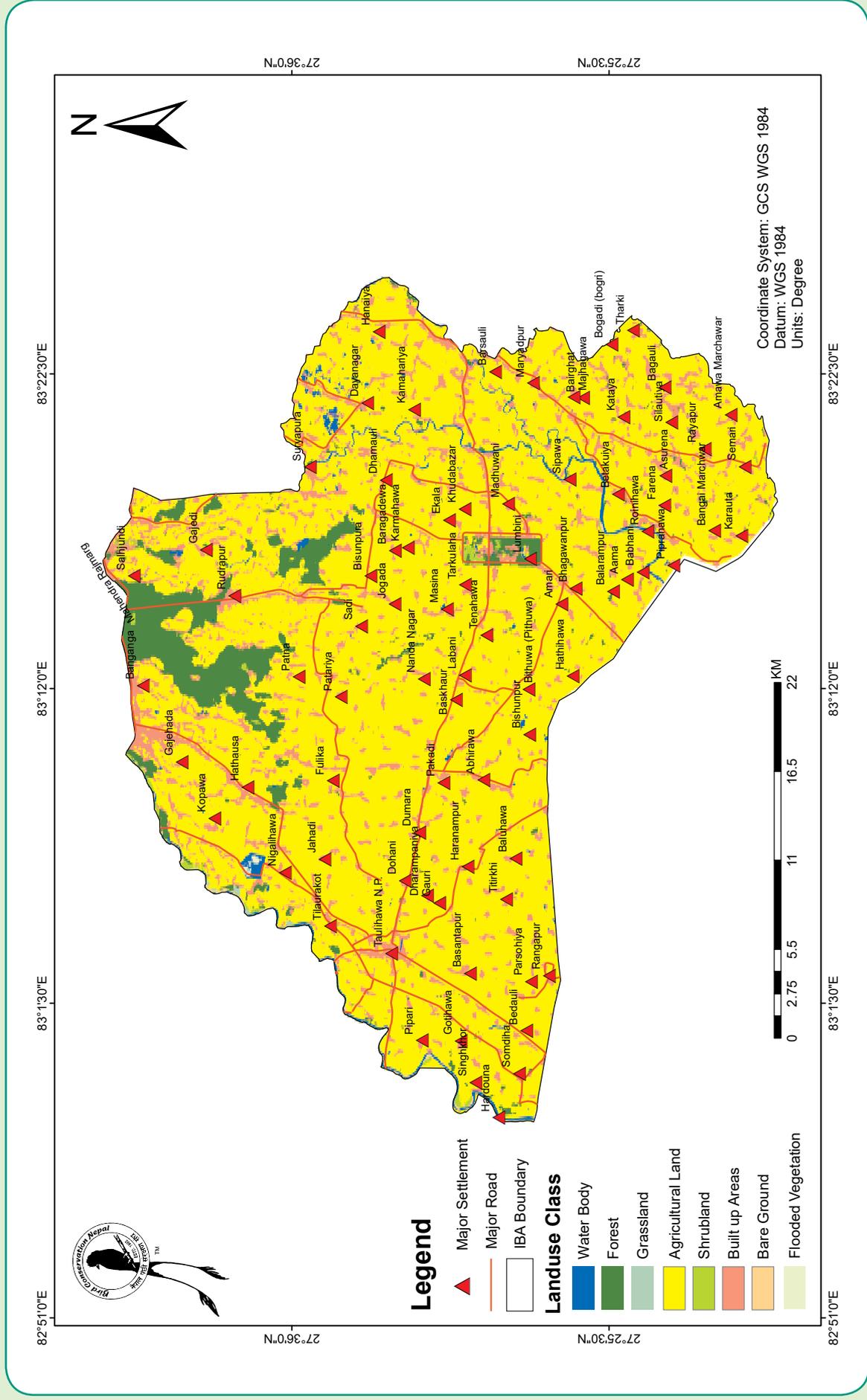
- Conserve the lake area in coordination with Bird Conservation Network and Bird Conservation Nepal. Specified forest areas will be conserved for the breeding of Great Slaty Woodpecker and Great Hornbill and parts of the lake area for breeding of species including Cotton Pygmy-goose, Indian Spot-billed Duck, Lesser Whistling-duck and Asian Woollyneck.
- Develop Ghodaghodi and Nakror Lakes as bird watching areas by declaration of a restricted access area to reduce human pressure and manage a ticket system for entry in these Lake areas.
- Conduct social awareness campaigns such as meetings, group discussion, poster and pamphlets publication for education and distribution to stop bird hunting in GLA.
- Provide management support to CFUGs in preparation of action plans and strictly implement the control of bird hunting in GLA.
- Actions for the conservation of reptiles, fishes and aquatic plants are also included.

Ghodaghodi Tal lies within the WWF Nepal's Terai Arc Landscape (TAL) area.



Photo by Hiru Lal Dangaura

# JAGDISHPUR RESERVOIR/LUMBINI FARMLANDS AREA SITE MAP



16

# JAGDISHPUR RESERVOIR/ LUMBINI FARMLANDS

## Site description

The Jagdishpur Reservoir and Farmlands of Lumbini IBAs, which were treated separately in Nepal's first IBAs assessment (Baral and Inskipp 2005), have been combined to form one IBA because the landscape in both the IBAs is similar and contiguous to each other. In the new IBA, Jagdishpur reservoir/Lumbini farmlands (JRLF), the western boundary extends to the Banganga River, Kapilvastu district. This IBA now includes several important small wetlands and farmland sites in Kapilvastu district which were not included previously. This change will ensure better management of the entire landscape which is often called a farmscape also (Baral 2018).

Lumbini is the birthplace of Lord Buddha as proven by the inscription on the Ashoka pillar and the marker stone. The archaeological remains, particularly in and around the sacred garden, provide important evidence of Lumbini as a site of pilgrimage for over two thousand years. Because of the outstanding universal value of Lumbini, this site was listed as a UNESCO World Heritage Site in 1997 in recognition of its two special universal attributes: religious and archaeological remains. The Lumbini Master Plan prepared by the world-famous architect Professor Kenzo Tange in 1978 forms the main basis of the overall plan. The conservation and development of the Lumbini Master Plan Area (LMPA) is carried out by the Lumbini Development Trust which was established through the Lumbini Development Trust Act 1985 to implement the Lumbini Development Plan. Although work to implement the Master Plan has been underway now for over 30 years, it is yet to take its final shape (Baral 2018).

JRLF (the present IBA) is characterized by the presence of a large rural area with an agricultural landscape (68%) followed by forests (21.6%). To the south of the JRLF are plains and the dry bhabar and the Churia Hills are situated to the north. A number of perennial and seasonal rivers and streams including the Telar, Tinau, Sundi, Dano, Kothi and Banganga River systems flow through the area.

**Status:** Ramsar Site

**Altitude:** 95-1219 m

**Area:** 141,592 ha Comprises 265 ha Ramsar Site, the Remainder Farmlands

**Geographical coordinates:** 27°29'-27°37'N  
83°05'-83°17'E Rupandehi and Kapilvastu Districts of Lumbini Province

**Categories:** A1 (globally threatened species); A4 (congregations) Jagdishpur

The forest, scrub, wetlands and grasslands surrounding Lumbini, Khadara Phanta (in Kapilvastu district) are especially important refuges for wildlife. The Lumbini Crane Sanctuary (265 ha), which was established in 1995, was leased from the Lumbini Development Trust by the International Crane Foundation for 50 years and Jagdishpur reservoir are the only semi-protected areas within JRLF.

JRLF also includes various wetlands, including Jagdishpur reservoir, Gaidahawa tal, Lambu Sagartal, and other sacred ponds. With a total area of 225 ha and 161.54 ha of water surface Jagdishpur reservoir is the largest manmade wetland designated as a Ramsar site with high biodiversity assemblage in 2003 (Jagdishpur Bird Sanctuary Management Plan 2079/80-2083/84). The reservoir was constructed for the purpose of irrigation in the early 1970s in Kapilvastu district. The reservoir receives water from the Banganga river, the catchment of which is the Churia hills. The river deposits immense amount of suspended silts in the mouth of the reservoir. The depth of the reservoir ranges from 2-7m. The reservoir is surrounded by cultivated land and there are two smaller lakes, Sagarhawa and Niglihawa, and they serve as a buffer habitat for bird movements (DNPWC and IUCN 2003).

## Birds

Globally threatened species	Threat status	Status and habitat
Common Pochard <i>Aythya ferina</i>	Vulnerable	Fairly common winter visitor and passage migrant
Sarus Crane <i>Grus antigone</i>	Vulnerable	Common breeding resident in open country
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Uncommon resident in open country
Indian Spotted Eagle <i>Aquila hastata</i>	Vulnerable	Rare breeding resident in open country
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Uncommon winter visitor and passage migrant
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Frequent resident

The reservoir bank is planted with *Dalbergia sissoo* and *Acacia catechu*. The aquatic vegetation is represented by extensive coverage of floating leaved species, mainly *Nelumbo nucifera*, followed by *Hygrorhiza aristata* and *Potamogetan nodosus*. *Naja minor*, *Ceratophyllum demersum* and *Hydrilla verticillate* are the most abundant submerged species. However, *Ipomea carnea ssp. fistulosa* and *Typha angustifolia* grow around the reservoir margin. In general, the vegetation is in a submerged succession stage, with patches of floating species and reed swamp formations. The dense aquatic macrophyte vegetation indicates an advancing eutrophic status and a high sedimentation rate. This could lead to a rapid succession towards a marsh meadow condition and a reduction in the life span of the reservoir in the absence of a desiltation tank (DNPWC and IUCN 2003). The reservoir is an aquatic hotspot for fish species with high economic values, and a high concentration of water birds (FONAREM 2010).

Gaidahawa Tal is one of the most important wetlands in the country and lies north of the Lumbini Master Plan area (Bhandari 1998). In recent years, the value of Sacred Ponds within the Lumbini Master Plans for wintering and resident birds has hugely increased (see Birds section).

The Lumbini farmlands support the largest population of the globally threatened Sarus Crane in Nepal. It is the main known site in the country where the species breeds regularly and supports more than 80 to 85% of its Nepal population (Katuwal 2016,

Baral 2018). A comprehensive research programme by Nepal Zoological Society and Tribhuvan University in 2023 located a total of 652 individuals in Lumbini (Sharma et al., 2023). The farmlands are also home to Lesser Adjutant (Sundar et al. 2019) and up to 40 Lesser Adjutant nests have been monitored regularly by BCN from 2019 until at least 2023 (Ankit Bilash Joshi in litt to Carol Inskipp 2023) further signifying the importance of the IBA as breeding ground for this species. As the number of Sarus Crane exceeds 1% of the global population of this waterbird species (140 individuals), and Lesser Adjutant also exceeds the 1% population threshold, Jagdishpur reservoir/ Lumbini farmlands qualifies as an IBA based on the congregations criterion.

The IBA supports significant populations of the globally threatened breeding White-rumped Vulture (Ankit Bilas Joshi in litt to Carol Inskipp 2023) and Indian Spotted Eagle. The combined JRLF IBA also supports significant populations of the globally threatened winter visitors Common Pochard and Steppe Eagle. The JRLF IBA therefore qualifies as an IBA based on the globally threatened species criterion (A1). The religious beliefs and agroforestry in Lumbini farmlands support multi-functionality of cereal-dominated cropfields in lowland Nepal (Koju et al. 2019).

Other globally threatened species that have been recorded are: Baer's Pochard *Aythya baeri* (scarce winter visitor), River Tern *Sterna aurantia* (possibly former resident, now scarce), Black-bellied Tern S.



Photo by Nishan Baral

*acuticauda* (very rare visitor, no recent records), Pallas's Fish-eagle *Haliaeetus leucoryphus* (very rare passage migrant, no recent records), Egyptian Vulture *Neophron percnopterus* (uncommon possibly resident), Slender-billed Vulture *Gyps tenuirostris* (rare resident). Indian Vulture *G. indicus* (status uncertain), Red-headed Vulture *Sarcogyps calvus* (rare visitor), Greater Spotted Eagle *Clanga clanga* (very rare winter visitor or passage migrant), Tawny Eagle *Aquila rapax* (possible past resident, now scarce visitor), Eastern Imperial Eagle *A. heliaca* (vagrant), White-throated Bushchat *Saxicola insignis* (very rare passage migrant), Bristled Grassbird *Schoenicola striatus* (rare summer visitor), and Yellow-breasted Bunting *Emberiza aureola* (very rare winter visitor).

A total of 421 species of birds has been recorded from the JRLF IBA (Baral 2018). This includes 210 species which have been recorded in Lumbini farmlands (Suwal 2003). Jagdishpur reservoir supports a total of 295 bird species with 113 winter visitor, 9 summer visitor, 12 passage migrant and 147 resident bird species (Jagdishpur Bird Sanctuary Management Plan 2079/80-2083/84). However, the large areas of tropical dry forests that were previously known to support significant populations of characteristic species of the Indo-Malayan tropical dry zone biome in the Farmlands of Lumbini IBA (Baral and Inskipp

2005) now face many threats (see Conservation issues section below) and no longer fulfill the biome-restricted assessment criterion for an IBA, even in the combined JRLF IBA.

The Annual Waterbird counts have shown a dramatic increase of bird numbers since conservation work has been carried out at Jagdishpur Reservoir over the last 10 years. Wetland bird numbers at Jagdishpur have been the highest in Nepal in recent years especially in the year 2018 where it reached a peak of 23,000 birds. This population is higher than the Sunsari district wetland (Koshi Tappu Wildlife Reserve and Koshi Barrage and Chimdi Lake (PIBA) counts combined. However, due to the developmental and recreational activities the numbers have been going down again. There is a plan for beautification and further development of the lake which is going to further damage its biodiversity significance.

Year	Number of waterbirds
2008	5467
2009	2957
2010	1039
2011	3787
2012	9150

2013	12664
2014	14291
2015	17390
2016	20243
2017	20868
2018	23452
2019	14118
2020	18076
2021	12063
2022	9837

Data source: Annual Waterbird Counts, 2008-16 (Baral 2022)  
(Waterbirds as defined by Wetlands International)

Thirteen near-threatened species have been recorded: Ferruginous Pochard *Aythya nyroca* (frequent winter visitor and passage migrant); Himalayan Griffon *Gyps himalayensis* (common winter visitor); Cinereous Vulture *Aegypius monachus* (rare winter visitor or passage migrant), Asian Woollyneck *Ciconia episcopus* and River Lapwing *Vanellus duvaucelii* (uncommon, probably resident). One pair of Black-necked Storks *Ephippiorhynchus asiaticus* with a fledged young photographed in the Lumbini wetlands in March 2016 (Rajendra Gurung in litt. to Carol Inskipp, 16 March 2016) and an immature bird was seen during Sarus Crane survey 2021 (Dheeraj Chaudhary in litt. to Hem Sagar Baral 2021). A nest has been found in the farmlands and its locality has not been disclosed because of possible pressure the birds might face due to increased visitors. Other near-threatened species recorded are: Northern Lapwing *Vanellus vanellus*, Alexandrine Parakeet *Palaeornis eupatria*, Red-necked Falcon *Falco chicquera*, Black-headed Ibis *Threskiornis melanocephalus*, Painted Stork *Mycteria leucocephala* and Darter *Anhinga melanogaster* and Falcated Duck *Anas falcata* (rare visitors) and Eurasian Curlew *Numenius arquata* (vagrant).

### Other wildlife

Globally threatened mammals include Smooth-coated Otter *Lutrogale perspicillata*, Oriental Small-clawed Otter *Aonyx cinerea*, Fishing Cat *Prionailurus viverrinus* and Four-horned Antelope *Tetracerus quadricornis* (Shah undated); also near-threatened Striped Hyaena *Hyaena hyaena*. Globally threatened herpetofauna are: Tricarinate Hill Turtle *Melanochelys tricarinata*, Elongated Tortoise *Indotestudo elongata*

and Burmese Python *Python bivittatus* (Shah undated). Jagdishpur reservoir is refugia to 32 species of mammal, 43 species of fish, 10 species of amphibians and 43 species of reptiles (Jagdishpur Bird Sanctuary Management Plan 2079/80-2083/84). According to local fishermen, Marsh Mugger *Crocodylus palustris* (globally threatened) occasionally enters the reservoir during the monsoon, but is not resident (FONAREM 2010). Other mammals include Nilgai *Boselaphus tragocamelus*, Golden Jackal *Canis aureus*, Bengal Fox *Vulpes bengalensis*, Yellow-throated Marten *Martes flavigula*, Chital *Axis axis*, Northern Red Muntjac *Muntiacus vaginalis* and Leopard *Panthera pardus*.

### Conservation issues and management issues

A 2011 assessment of Jagdishpur and Farmlands of Lumbini IBAs found that they were both in a very unfavourable state (BirdLife International 2015b). The assessment concluded that the major threats in the Lumbini farmlands are rapid urbanisation, the impact of increasing numbers of tourists and, most important, changes in agriculture such as cash crop production and increasing use of chemicals (BCN and DNPWC 2012).

The Bhairahawa-Lumbini road has helped develop an industrial corridor with various industries that are known to pollute the larger environment; e.g. cement factories, sugar mills, iron factories, paper and pulp mills (UNESCO 2013). Much of the discharges from these industries are directly affecting the air, water and land of the area. Rivers are full of industrial effluent which have impacted human health and the aquatic biodiversity of the area. Some damages done by these industries are said to be longer lasting e.g. soil pollution and impact on human health (UNESCO 2013). Some industrial developments are threatening the Lumbini World Heritage property. The expansion of the carbon emission industries are causing numerous problems, such as threatening the biodiversity, creating a health hazard to the locals and affecting archaeological vestiges (Baral 2018).

Industrial development in Rupandehi district has resulted in the extension of power lines that stretch across rural farmland and are hazards to large low-flying birds, especially cranes and storks. A cement factory, paper mill and distillery discharge effluents to the Dano River causing water pollution. The major

threats to the continued survival of Sarus Cranes in farmlands of Lumbini include habitat destruction, people hunting it for meat, egg stealing, electrocution, cattle grazing, and the use of pesticides in crops. In addition, draining of wetlands to irrigate crop-lands is also modifying or drying wetlands (Gosai *et al.*, 2016). Sarus Cranes also face threats from nest vandalising, chick stealing, and persecution (Baral and Inskipp 2005, Dikpal Karmacharya in *litt.* to C. Inskipp, 14 May 2015).

Development has increased throughout the FLA with the growth of Lumbini as a tourism destination and the construction of an international airport and more hotels. Large areas of formerly barren land are now cultivated using intensive methods, for instance the use of combine harvesters and more agricultural pesticides and fertilisers (Baral 2018). Many small ponds and wetlands in Rupandehi district that were previously part of a Community Managed Wetlands Project and were valuable for biodiversity conservation as well as income generation for local people (Inskipp 2004) are being drained for cultivation and development. Additionally, a new development plan likely to be funded by the Asian Development Bank, within the Lumbini farmscape includes targeted development in some of the sites within the Buddhist Circuit Tour and has identified Jagdishpur reservoir as one of the key areas for investment (Krishna Prasad Bhusal verbally 2023). A key concern will be managing local people's aspirations to develop the site as a recreation spot which might devalue the biological diversity of the reservoir.

The opening up of a regional airport in Bhairahawa with international connections has prompted business communities to buy up existing farmlands for development, especially large hotels and recreation areas. This and other development for example better connectivity with neighbouring India, have led to the phenomenal increase in land prices in the JRLF IBA to more than 100% from what it used to be only about 10 years ago. It is almost unavoidable that the further developments in farmlands will decrease the available habitats for farmland birds including globally threatened Lesser Adjutant and Sarus Crane (Baral 2018).

A recent study has shown the plight of farmland birds including for this IBA (Katuwal *et al.* 2022) and has urged the government and conservation organizations to initiate immediate conservation interventions for farmland birds (Katuwal *et al.* 2021). This study has made recommendations for prioritizing research, providing alternative livelihoods to the poor local hunters, and conservation of birds in farmlands and educating farmers about the birds and their ecology through community outreach programmes and school curriculum.

The Lumbini Crane Sanctuary demonstrates wetland management and conservation education with a focus on Sarus Crane conservation (Lumbini Crane Conservation Center undated).

Himalayan Nature initiated several education and awareness programme in Lumbini farmlands area including initiatives to promote eco-tourism between 2007-2012. In 2013, Himalayan Nature launched the Special Conservation Sites (SCS) programme in Kapilvastu district supported by the WWF (Baral 2014).

In 2010 WWF Nepal started the Green Lumbini Initiative in partnership with Lumbini Development Trust (LDT). The initiative is specifically dedicated towards the conservation and sustainable development of the Lumbini region and surrounding areas through the active participation of individuals, eco clubs, civil society and corporations at both national and international levels. Over the project period, initiatives will include establishing and managing a Peace Garden; promoting environmental, cultural and religious values; conserving Sarus Crane and other wildlife species and their habitats; promoting environmentally and socially responsible development; and raising conservation awareness among visitors and local people living in and around Lumbini (WWF Nepal undated).

Jagdishpur Bird Sanctuary Management Plan 2079/80-2083/84 has identified the following major issues: Open and intensive grazing, unmanaged agricultural practice, illegal hunting and killing of birds, invasion of alien plant species, siltation, weak embankment and harvesting and extraction of

plants from the reservoir. Previously commercial fish farming activities carried out by the Banganga Irrigation Water Users' Committee had adverse impacts on migratory birds and native fish in the reservoir and so in maintaining it as a Ramsar site and Important Bird Area (FONAREM 2010). Every year the reservoir was partially drained to collect fish and other resources like snails and edible plants (BCN 2010). This practice was stopped in June 2010. Another issue is the unclear provision of property rights to conduct a conservation programme in the reservoir (FONAREM 2010).

Invasive plant species including *Mikania micrantha*, *Parthenium hysterophorus*, *Ipomoea carnea ssp. fistulosa* are major threats to the lake environment. This is the most problematic species and was luxuriant along the reservoir margins blocking water flow and so causing sedimentation. In order to reduce this problem, the irrigation department has been using herbicide and will need to continue to do so to keep *Ipomoea* under control. Other threats were deposition of detritus from aquatic macrophytes and water pollution from agricultural chemicals (DNPWC and IUCN 2003). *Mikania micrantha* has spread quite widely in the Lumbini Master Plan area but is currently only in a few patches been noted in the Jagdishpur Reservoir area.

The objectives and recommendations of the Jagdishpur Bird Sanctuary Management Plan (2079/80-2083/84) are:

### Objectives

- To conserve the reservoir ecosystem in collaboration with relevant stakeholders maintaining the ecological integrity and wise use of the Ramsar site with equitable benefit sharing.

### Specific objectives are to

- conservation and wise use of the bird sanctuary ensuring equitable benefit sharing with the relevant stakeholders,
- support local communities around the bird sanctuary through tourism promotion and alternative income generating activities,
- sensitize and raise awareness local communities on the conservation and wise use of resources,

- maintain the ecological integrity of the bird sanctuary by adopting environment friendly infrastructure development, and to
- promote research studies related to wetland and bird sanctuary.

### Guiding principles

- Adopt inclusive and multistakeholder approach to management interventions.
- Integrate previous approaches and milestones as a basis of formulation.
- Promote participation, cooperation, support and partnership among stakeholders.
- Mainstream bird conservation into plans, policies and programs of other bodies.
- Implement appropriate mechanism to facilitate management intervention.
- Enhance bird related knowledge through scientific study, research and innovative findings.

### Site management

- Management of the reservoir water level, the waterlogged area around the reservoir and the embankment, and reservoir repair and maintenance.

### Tourism management

- Promotion of wetland tourism by developing a comprehensive ecotourism plan; providing a focused bird watching and embankment walk programme for visitors, and providing training for local communities in organising tourism-related activities.

### Socio-economic development

- Development of a seasonal/rotational fish harvesting mechanism for local communities; encouraging traditional fish farmers to practice commercial fish farming in a group, and providing fish farming training, and market analysis.
- Other income generating activities (IGA) for local communities e.g. basket weaving and water chestnut harvesting are recommended to maximise benefit to the local communities and garner their support in conserving the reservoir. Actions comprise: establishing a cooperative for sustaining and maximising benefits from IGA; skill enhancement, training enhancement, and a business plan preparation for IGA.

## Biodiversity conservation

- Enhancement of wetland biodiversity including migratory bird populations and fish diversity; habitat improvements for birds through maintenance of the water level and vegetation management; control over illegal fishing and hunting, and provision of a mechanism for conservation and management.
- Specific actions include: ensuring local participation in water-bird and habitat conservation; establishing a long-term intensive monitoring programme for wetland birds; capacity building of district level line agencies to emphasise the implementation of international treaties (Convention on Migratory Species, Ramsar, Convention on Biological Diversity); enhancing native plants as food resources and hiding places for waterbirds; controlling illegal fishing and hunting of birds and other wildlife through formation and strengthening of local conservation groups; providing wetland conservation and management training for local people, and establishing an awareness programme for local communities and school students (FONAREM 2010).

## BCN's Sustainable wetland management for wildlife and people at Jagdishpur Reservoir Project

In its Jagdishpur Reservoir Project from 2008-2010, BCN carried out actions recommended in the management plan with support from Danone Evian.

- site management
- reservoir management plan was prepared, validated with stakeholders and disseminated at local and district level
- tourism management
- tourism was promoted
- visitor centre has more resources and is now well-managed
- socio-economic Development
- agricultural cooperative was registered and became operational to help poor people in fisheries and handicrafts
- local fisherman, Netuwa community and local Tharu women group communities were empowered to practice sustainable and wise use of wetland resources and pursue diversified livelihoods

- the agricultural cooperative is functional
- a business plan for the institutionalisation of handicraft enterprises was prepared
- a business plan is being implemented helping the poorest in agriculture and fishermen
- biodiversity conservation
- conservation awareness programme and scientific bird survey were carried out
- wetland education was integrated within the lower secondary school curriculum
- scientific data on the reservoir biodiversity was updated (BCN 2010).

BCN has a long term interest in continued monitoring and post-project follow up in the area. The site will be regularly monitored by BCN and the Jagdishpur Lake Conservation and Tourism Promotion Centre will be supported by BCN. BCN will play a key role in coordinating with the relevant bodies to incorporate conservation of Jagdishpur Reservoir in their annual programme and allocate budget for it (BCN 2010).

IUCN also carried out a project (2015-2017) to improve livelihoods and enhance biodiversity through participatory restoration and management of the Jagdishpur Ramsar site with funding provided by the Government of Norway through the Ramsar Secretariat. Partners are the Department of Forest and Soil Conservation through the District Forest Office, Kapilvastu and the Department of National Parks and Wildlife Conservation.

The overall objective of the project is to restore and enhance wetland ecosystems and local livelihoods through the sustainable management and governance of wetland resources. The specific objectives are:

- support income generating activities for local communities, particularly women, poor, dalit and other marginalised populations, in order to reduce the pressure and potential over-exploitation of the wetland system
- strengthen the capacity of concerned government agencies as well as local communities and organisations for effective wetland management
- safeguard the ecological character of the area, so that it provides long-term value to people, and long-term habitat for endangered species, as a result of the local community's stewardship

- document the results and lessons learned, including the approach and process adopted, in order to encourage and foster effective wetland management practices across all wetlands in Nepal, and to share the results widely within and outside Nepal

### Expected outputs

- enhanced livelihoods through the promotion of eco-tourism and income generation activities
- enhanced institutional capacity of government agencies and local community organisations related to wetland management
- improved environmental management with a focus on improved water quality and health of the overall ecosystem, biodiversity, wetland and agricultural production with the active participation of local communities
- results and major learning of the project documented and shared widely within and outside of Nepal. *Source: IUCN (2015)*

However, in 2017, significant developments took place near Jagdishpur Reservoir which could lead to serious and damaging disturbance for birds and are likely to lead to a drastic reduction in their population. Road access to the lake has been much improved and picnic sites constructed around the lake. Vegetation on the

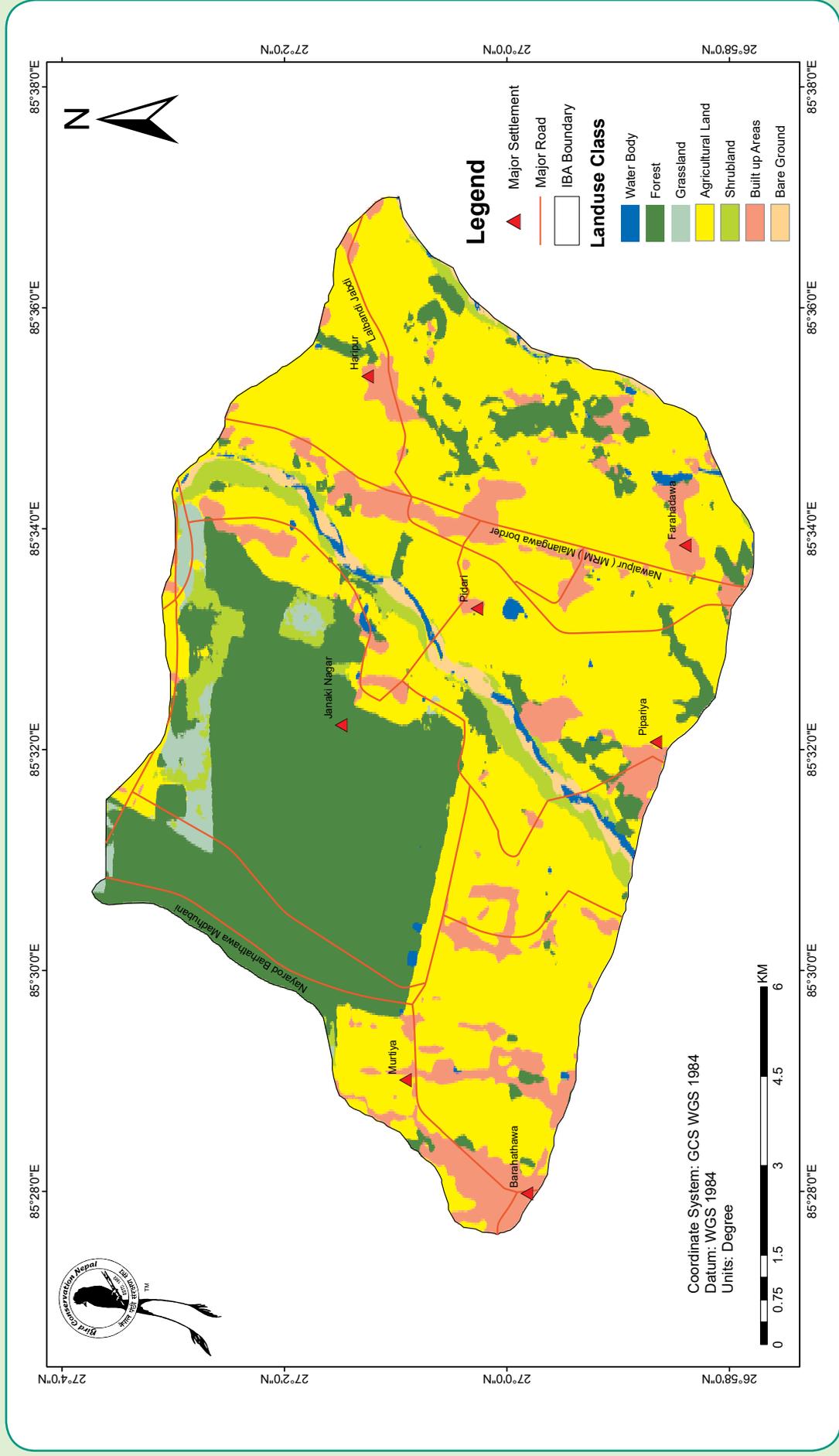
island has been removed and there are plans to build a large Buddha statue here. Boating is now taking place on the lake. Several industries have been set up by the road leading to Jagdishpur reservoir from Taulihawa. Further, the road linking the reservoir to the east-west highway is being expanded. The picnic culture with loud noises, as well as the beautification style that is currently being practiced all over Nepal may also cause deterioration of the biodiversity value of the lake. In fact, in recent years the bird numbers have declined as a result of ongoing development activities.

A 2017 proposal to build luxury hotels inside Lumbini's core area now threatens to seriously damage the Lumbini Master Plan, disturb the sanctity of Buddha's birthplace in Nepal and the value of the area for bird conservation, especially for breeding Sarus Cranes (Rai 2017). Sarus Crane is the most well known animal in the Lumbini area and a flagship species for conservation here (Baral 2018).

Jagdishpur IBA lies within the Government of Nepal's Terai Arc Landscape (TAL) programme—a priority landscape for conservation. Recently, in July 2022, the provincial government declared the Reservoir as a Bird Sanctuary aiming to conserve and manage it better. However, the positive impact of this declaration for bird conservation is yet to be seen.



# JANAKINAGAR-MURTIYAR FOREST AND ASSOCIATED FARMLANDS AREA SITE MAP



## Site description

The IBA comprises different forest types such as Janakinagar Collaborative Forest, Mukteshwar Community Forest, Bihani Community Forest etc. However, the forest is mainly known for Janakinagar-Murtiya Forest. The natural forest having an area of around 1915 hectares is surrounded by the planted forest such as *Eucalyptus spp.* The associated farmlands also provide suitable habitats for the birds. The topography is flat with the landscape composed principally of crop fields with scattered trees, including *Bombax ceiba*. Sal is the dominating vegetation in the forest. Multiple crops are grown in each field over the year, with flooded rice paddies dominating during the monsoon or rainy season (June– September), maize in summer and wheat and lentils during the winter (November–February), whereas sugarcane is grown throughout the year in some locations (Katuwal *et al.* 2020).

Janakinagar-Murtiya supports a significant population of Lesser Adjutant and qualifies as an IBA based on the globally threatened criterion. As the number of nests in 2018, 2019 and 2020 totalled 24-25 each year, the number of adults present can be estimated to be a minimum of 50 mature birds. Janakinagar-Murtiya might meet the congregatory species criterion (A4) in the future if the IBA is found to regularly exceed the 1% of global population threshold (80 mature individuals).

A total of 130 bird species have been recorded and more are likely to be found with future fieldwork (Katuwal and Rokka 2019). Other globally threatened

**Status:** Unprotected

**Altitude:** 103-125 m

**Area:** 9,600 ha

**Geographical coordinates:** 27°N 85°35'E,  
Sarlahi District, Madhesh Province

**Categories:** A1 (globally threatened species);  
A4 (congregations)

species that have been recorded are Indian Spotted Eagle *Clanga hastata*, Steppe Eagle *Aquila nipalensis* and Great Hornbill *Buceros bicornis*. Future fieldwork may show that Janakinagar also supports a significant population of these species.

Near-threatened species recorded are: Asian Woollyneck *Ciconia episcopus*, Himalayan Griffon *Gyps bengalensis*, River Lapwing *Vanellus duvaucelii* and Alexandrine Parakeet *Palaeornis eupatria*

### Other wildlife

Some mammal species found in the forest are Nilgai *Boselaphus tragocamelus*, Wild Boar *Sus scrofa*, and Chital *Axis axis*.

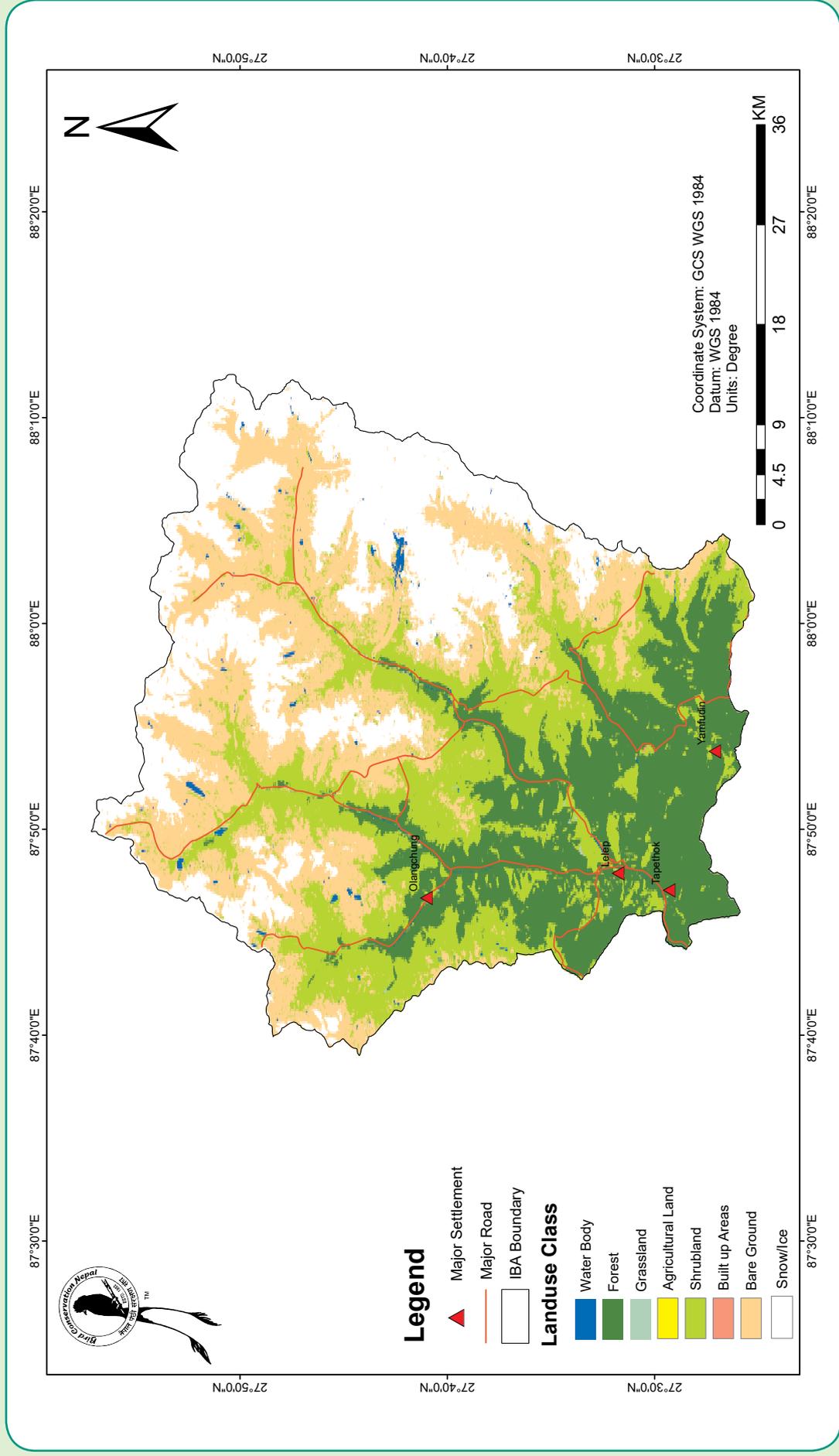
### Conservation issues and management

Cutting down of nesting trees by farmers and to a lesser extent hunting are the two main threats to Lesser Adjutant (Katuwal *et al.* 2022).

### Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	In 2018, 24 nests in 3 colonies in <i>Bombax ceiba</i> trees (Bajagain <i>et al.</i> 2019). In 2019, 25 nests in 4 colonies, 36 chicks fledged (Katuwal <i>et al.</i> 2022); in 2020, 24 nests in 4 colonies, 45 chicks fledged (Katuwal <i>et al.</i> under review).

# KANCHENJUNGA CONSERVATION AREA SITE MAP



## 18

## KANCHENJUNGA CONSERVATION AREA

## Site description

Kanchenjunga Conservation Area (KCA) lies at the extreme northeastern corner of Nepal and was designated in 1998. KCA supports many species of flora and fauna that are characteristic of the eastern Himalaya. With its unique mountain ecosystems KCA is envisioned as a tri-national peace park with the Tibetan Autonomous Region (TAR) of China to the north and Sikkim, India, in the east. Sikkim already has Khangchensonga National Park adjoining KCA whereas the extension of Qomolungma Nature Reserve in TAR to cover the land bordering KCA is in progress from the China side (DNPWC 2015f).

The Conservation Area comprises rocks and ice (64 %), forests (16.1 %), shrubland (10.1 %), grassland (9.2 %), agricultural land (0.5 %) and lake and landslide (0.1 %) (KCAP 2003 based on topo map 1978). Mount Kanchenjunga, the world's third highest mountain (8586m), lies within KCA. There are four main river valleys: the Simbua Khola and

**Status:** Protected

**Altitude:** 1200-8567m

**Area:** 203,500ha

**Geographical coordinates:** 27°42'N 88°08'E  
Taplejung District of Koshi Province

**Categories:** A1 (globally threatened species);  
A2 (restricted-range species, Central Himalayas EBA)?;  
A3 (Eurasian high montane biome species,  
Sino-Himalayan temperate forest biome species)

the Ghunsa, Kabeli and Tamur. The vegetation ranges from subtropical to alpine. Subtropical vegetation comprises moist broadleaved forests of mixed *Schima wallichii*, *Engelhardtia spicata* etc, *Schima wallichii/Castanopsis tribuloides* and



Photo by Jyotendra Jyu Thakuri

## Birds

Globally threatened species	Threat status	Status and habitat
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Frequent passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Frequent altitudinal migrant and resident

*C. tribuloides/C. hystrix*. In the temperate zone there are moist broadleaved forests of oak/laurel dominated by *Quercus glauca*, *Q. lamellosa* and *C. tribuloides* etc, *Q. lamellosa* forests, *Q. semecarpifolia* forests and mixed broadleaved/coniferous forests of *Q. semecarpifolia/Tsuga dumosa/Abies spectabilis/Betula utilis/Rhododendron arboreum* etc. The sub-alpine zone has a wide range of forest types: *Tsuga dumosa/Abies spectabilis* forest, *Abies spectabilis* forest, *Larix griffithiana* forest, *Juniperus indica* forest, Rhododendron forests and *Betula* forest. Vegetation in the alpine zone consists of scrub and meadows (Rastogi *et al.* 1997).

The area is home to a population of 5,000 persons (WWF 2007).

Few foreign tourists have visited the Area to date and only agency-organised trekking groups are allowed, for example in 2012 there were only 309 foreign tourists (Ghimire 2013).

A total of 327 bird species is listed for KCA by Inskipp *et al.* (2008) based on an April 2008 survey and a review of all known previous records (Inskipp *et al.* 2008). An additional ten species have been recorded subsequently (Baral 2011a, Brown 1995, Buckton 1996, Katuwal *et al.* 2013, Paudel 2008, Thapa and Karki 2005), making the KCA total of 337 species. There are large expanses of temperate forest and alpine zone areas. These support significant proportions of characteristic species of the Sino-Himalayan temperate forest and Eurasian high montane biomes (see Appendices 2,7). As a result, KCA qualifies as an IBA based on the biome-restricted assemblage criterion. KCA also has large areas of subtropical forest, but significant numbers of characteristic species of the Sino-Himalayan subtropical forest have not been so far recorded (see Appendices 2,7).

KCA supports a significant population of Steppe Eagle and so qualifies as an IBA based on the globally threatened criterion.

KCA may also hold a significant breeding population of the globally threatened Wood Snipe *Gallinago nemoricola* which is probably a summer visitor; a survey of the species is needed. Other globally threatened species recorded are: Eastern Imperial Eagle *Aquila heliaca*, and Saker Falcon (both vagrants), and Common Pochard *Aythya ferina* (status unknown).

KCA supports a significant population of one restricted-range species, Hoary-throated Barwing from the Central Himalayas (EBA 129), which is a frequent resident. A second restricted-range species from the Central Himalayas, Spiny Babbler *Acanthoptila nipalensis* has been rarely recorded, but may be overlooked and is probably resident. The IBA would qualify under the restricted-range criterion (A2) if further fieldwork shows that Spiny Babbler of another restricted-range species has a significant population there.

Five near-threatened species have been recorded, all probably resident: Himalayan Griffon *Gypshimalayensis* (fairly common); Bearded Vulture *Gypaetus barbatus* (frequent resident); Mountain Hawk-eagle *Nisaetus nipalensis* (frequent resident); Asian Woollyneck *Ciconia episcopus* (rare, possibly resident) and Satyr Tragopan *Tragopan satyra* (rare resident).

### Other wildlife

A total 45 species of mammals, 15 species of reptiles, 21 species of fish, 844 species of flowering plant has been recorded (KCAMC 2077). Globally threatened mammals include Himalayan Black Bear *Ursus thibetanus*, Snow Leopard *Panthera uncia*, Himalayan Musk Deer *Moschus chrysogaster* and Red Panda



Photo by Jyotendra Jyu Thakuri

*Ailurus fulgens*. Near-threatened species include Himalayan Serow *Capricornis thar*, Assam Macaque *Macaca assamensis*. KCA is a global hotspot for plant diversity: a total of 844 species of flora has been found in the area.

### Conservation issues and management

DNPWC launched the KCA Project in March 1997, with technical and financial support from the WWF Nepal Programme. The project has adopted an approach that emphasises strengthening the capacity of local communities to improve their livelihoods while at the same time maintaining the biological diversity of the area. WWF Nepal was the pioneer to support communities and the government for biodiversity conservation in KCA. In April 2003, with the aim of strengthening community management, a Kanchenjunga Conservation Area Management Council was formed with the support of WWF Nepal, comprising seven Conservation Area User Committees, 44 User Groups, 35 Mother Groups, six Community Forest User Groups and eight community-based Anti-Poaching Operation teams. These community-based institutions support

effective implementation of all planned activities (Bhandari 2014).

In 2004, the Management Council submitted the KCA Management Plan to the DNPWC for endorsement, and in August 2006, the Government handed over the management of KCA to local communities through the Kanchenjunga Conservation Area Management Council for five years (WWF 2007). In 2012, the Government extended the management of KCA by local communities for the next five years and endorsed a second management plan covering 2012-17 (Bhandari 2014).

Since KCA was established over 72,000 ha of forests have been brought under effective community management through 26 Community Forests benefiting entire 1,257 households of KCA (Bhandari 2014).

Before KCA was designated hunting pressure appeared to be rampant. Hunting is integrated into the cultural traditions and subsistence economy of Rais and Limbus and was also carried out by other

ethnic communities (Amatya 1997). After KCA was established hunting pressure was thought to have reduced and sightings of some pheasants increased, especially during the Maoist insurgency, when all guns were confiscated and people avoided entering the forests for fear of Maoist presence (Gurung 2006). However, during the April 2008 survey extremely low numbers of pheasants e.g. Satyr Tragopan *Tragopan satyra* and Himalayan Monal *Lophophorus impeyanus* and pigeons and doves were recorded considering the large area of highly suitable habitats indicating that hunting was probably still common. Youths were observed hunting and killing Black-faced Laughingthrushes *Garrulax affinis* and Chestnut-crowned Laughingthrushes *G. erythrocephalus* using catapults at Gyabla; snares were found in the Amji Khola valley and single gun shots were heard on four dates in April 2008 (Inskipp *et al.* 2008).

Government officials, researchers and development workers see shifting cultivation (slash and burn) as unproductive and a threat in natural resource management and biodiversity including bird populations. However, this is a common practice of ethnic communities in KCA. It is constrained by policies and people practicing this farming systems are projected illegal, but the practice is still found to be a major source of food security for many poor and marginalized people (Aryal *et al.* 2010). A study was made of shifting cultivation in four KCA villages. The study's findings showed that maintaining and improving shifting cultivation has many benefits for its practitioners. The study concluded that development efforts should aim to modify and improve the existing shifting cultivation system, rather than trying to convince farmers to replace it (Aryal *et al.* 2010).

As there is a traditional trading route between Tibet and Nepal, there is a threat of cross-border illegal trade on wildlife, medicinal and other forest products (KCA Management Council 2011).

Numbers of staff looking after the KCA is quite small so there is an ongoing issue with land encroachment (KCA Management Council 2011).

Climate change is a possible threat (KCA Management Council 2011).

Local people are at least partly dependent upon forests to meet fuelwood, fodder, construction and heating needs throughout the KCA. However, there are now restrictions on fuelwood and timber collection, local people voluntarily control forest fires, hundreds of solar lighting sets and over 100 back-boiler systems have been installed in village homes, and five micro-hydro schemes have been designed. As a result, overall forest conditions have slightly improved in KCA since it was designated in sharp contrast to the degradation of forest observed in the previous 20 years (Gurung 2006).

Cardamom has become an important source of supplementary income since the 1980s and is planted on land that is too steep or too wet for agriculture. *Alnus nipalensis* is planted with the cardamom and provides additional benefits of stabilising hillsides and providing fodder, fuelwood and timber for local residents. Growing cardamom contributes to local income and has reduced livestock holdings (Gurung 2006).

The major form of pollution in KCA is the rubbish produced by trekking and expedition groups (WWF Nepal Programme undated b).

A 2011 assessment of the condition of KCA IBA found it was in a very unfavourable condition (BirdLife International 2015b).

The objectives of the KCA Project are to:

- achieve forest conservation in KCA through community-based organisations;
- promote sustainable community development in order to improve livelihood opportunities while reducing pressure on local natural resources;
- enhance the capacity of local people as well as institutions through conservation education and capacity building programmes;
- provide awareness of KCA through local, national and international media coverage; and
- improve regional collaborations for landscape level conservation of the Kanchenjunga mountain ecosystem.

**Activities include:**

Forest: multipurpose community forest nursery, plantation and regeneration, efficient alternative energy technologies and community-based natural resources management

**Species:** wildlife monitoring and research

**Sustainable Community Development:** basic infrastructure improvement, sustainable eco-tourism, income generation and improved health and sanitation

**Education and Capacity Building:** education support and capacity building

**Policy and advocacy:** Coordination meetings  
Source: Sinclair (2006).

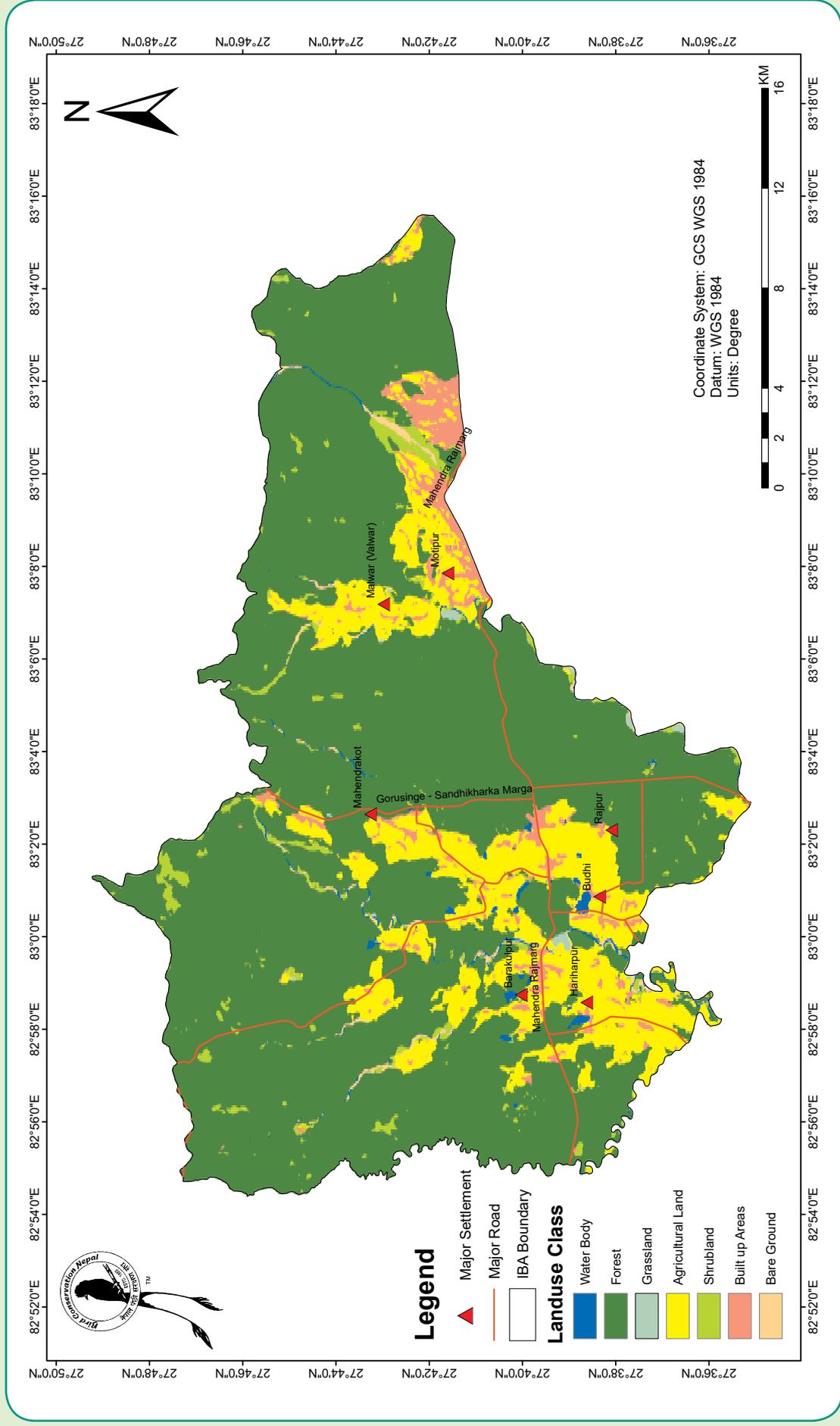
The objective of Kanchenga Management Plan (2077/78-2081/82) are:

- Habitat Management
- Promotion of eco-tourism
- Reducing human induced climate change impact and strengthening institutional and governance status.



Red Panda by Rajendra Gurung

# KAPIL VASTU AREA SITE MAP



# 19 KAPILVASTU

## Site description

Kapilvastu has been designated as an IBA because of its important White-rumped Vulture colonies and presence of Slender-billed Vulture, both globally threatened species. It comprises Banganga and Buddha Bhumi Municipality in Kapilvastu district and Rudrapur VDC in Rupandehi district (BCN unpublished data).

The forest area mainly comprises Sal *Shorea robusta* and Saj *Terminalia tomentosa* trees. In this area, mostly Saj *Terminalia tomentosa* have been used by the vultures for nesting, and Sal *Shorea robusta* has also been used. The vulture colonies are surrounded by forest and farmland (BCN unpublished data).

Kapilvastu supports significant populations of White-rumped and Slender-billed Vultures and therefore qualifies as an IBA based on the globally threatened criterion (A1) (BCN data).

Breeding success of White-rumped Vulture was monitored at some nests

**Status:** Unprotected

**Altitude:** 90-250m

**Area:** 52,639ha

**Geographical coordinates:** 27° 37.827'N  
83° 11.4744'E Kapilvastu and Rupandehi Districts of Lumbini Province

**Categories:** A1 (globally threatened species)

### Goringe forests

2018 10 nests, breeding success 90%  
2019 11 nests, breeding success 63.63%  
2021 5 nests, breeding success 60%

### Buddhabhumi Sajhedar Forest Chandrauta,

2018 4 nests, breeding success 75%  
2019 8 nests, breeding success 75%  
2021 2 nests, breeding success 100%

## Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Nesting colonies in Saj <i>Terminalia tomentosa</i> and Sal <i>Shorea robusta</i> trees
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Common

### Nest status of White-rumped Vulture (BCN data)

Species	Number of active nests												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
White-rumped Vulture <i>Gyps bengalensis</i>	25	22	46	35	125	136	100	85	14	18	16	7	21



Great Slaty Woodpecker by Rajendra Gurung



Two other globally threatened species have been recorded: Red-headed Vulture *Sarcogyps calvus* is a rare visitor and Lesser Adjutant *Leptoptilos javanicus* was a rare visitor but there were 2 nests in Madhiya Bangai, Kapilvastu in 2020/2021 (BCN data). Further fieldwork may show that Kapilvastu IBA also supports significant populations of these species.

Two near-threatened vultures have been recorded, both winter visitors: Himalayan Griffon *Gyps himalayensis* and Cinereous Vulture *Aegypius monachus*.

### Other wildlife

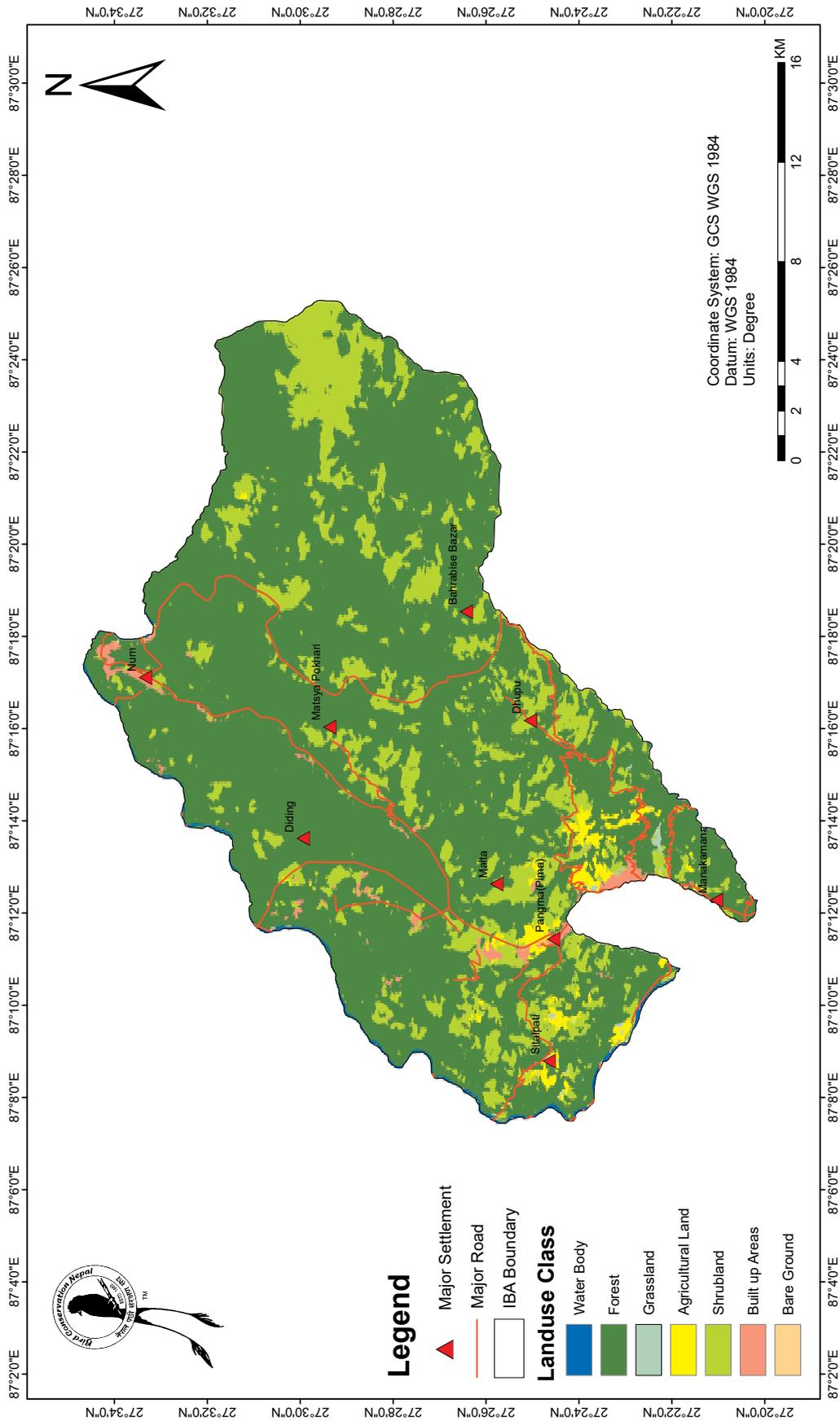
No information is available.

### Conservation issues and management

The White-rumped Vulture nesting colonies lie in community forests (CF): Lalmatiya CF, Pratibha CF, Budhha CF, Rajapani CF, and also in Government-managed forest and on private land. The colonies are threatened by tree-felling, disturbance during the breeding season, other harmful NSAID's, electrocution, and limited vulture conservation awareness (BCN unpublished data).

BCN has been working for research and conservation of vultures in this area. User groups of these CFs are involved in the conservation of forest and vultures (BCN unpublished data).

# KHANDBARI – NUM FORESTS AREA SITE MAP



# 20 KHANDBARI – NUM FORESTS

## Site description

The area lies between Phyaksinda, Khandbari and Aruna Khola-Sabha Khola in the Middle Mountains of east Nepal. The forest is unprotected and includes the east Himalayan midhill forest type. This is a moist broadleaved forest and the major tree species include *Castanopsis spp.* and *Quercus spp.* The area coverage by climatic zones is: tropical 11582 ha, subtropical 18221 ha, lower temperate 7018 ha, upper temperate 2727 ha, subalpine 943 ha and alpine 69 ha. The Land Use Classification is: needle-leaved closed forest 3071 ha, needle-leaved open forest 4484 ha, broadleaved closed forest 4762ha, broadleaved open forest 13,423 ha, shrubland 1953 ha, grassland 1625 ha, agricultural land 11, 135 ha, bare ground 30 ha, rivers 77 ha.

The Khandbari-Num forests IBA is poorly recorded for birds. Three BCN surveys (October 2014 and February and June 2015) showed the IBA is rich in bird species as a result of dramatic changes in altitude and vegetation in a small area. The high number of 265 species was recorded in the surveys (Thakuri 2015).

Two globally threatened species have been recorded: White-rumped Vulture *Gyps bengalensis* and Red-headed Vultures *Sarcogyps calvus*, but both species are rare (Thakuri 2015).

**Status:** Unprotected

**Altitude:** 270-4200m

**Area:** 40,560ha

**Geographical coordinates:** 27° 30'N 87° 18'E  
Sankhuwasabha District of Koshi Province

**Categories:** A1 (globally threatened species?);  
A2 (restricted-range species, Central and Eastern Himalayas EBAs); A3 (Sino-Himalayan subtropical forest biome species; Sino-Himalayan temperate forest biome species)

Five restricted-range species have been recorded: Nepal Cupwing, Spiny Babbler and Hoary Barwing from the Central Himalayas (EBA 129) and Yellow-vented Warbler and Rufous-throated Wren-babbler from the Eastern Himalayas (EBA 130). As large areas of suitable habitat for these species are present, Khandbari-Num qualifies as an IBA based on the restricted-range criterion (Thakuri 2015).

There are large areas of subtropical forest which support a significant proportion of characteristic

## Birds

Restricted-range species	Endemic bird area	Status and habitat
Yellow-vented Warbler <i>Phylloscopus cantator</i>	Eastern Himalayas	Recorded in June 2015
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Recorded in June 2015
Rufous-throated Wren Babbler <i>Spelaeornis caudatus</i>	Eastern Himalayas	Two recorded in June 2015
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Probably resident
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Probably resident



species of the Sino-Himalayan subtropical forest biome (see Appendices 2,7). Khandbari-Num forests therefore qualify as an IBA based on the biome-restricted assemblage criterion. Birds recorded during the survey also included many species characteristic of the Sino-Himalayan temperate forest biome, but fell short of a significant proportion of the species of this biome.

Eight near-threatened species have been recorded: Satyr Tragopan *Tragopan satyra*, River Lapwing *Vanellus duvaucelii*, Mountain Hawk-eagle *Nisaetus nipalensis* and Himalayan Griffon *Gyps himalayensis* (probably resident), Laggar Falcon *Falco jugger* (vagrant, one record in December 1979); Asian Woollyneck *Ciconia episcopus* (breeding resident), Blyth's Kingfisher *Alcedo hercules* (very rare and very local, possibly resident), and Rufous-throated Wren-babbler *Spelaornis caudatus* (rare, possibly resident).

### Other wildlife

Northern Red Muntjac *Muntiacus vaginalis*, Assamese Macaque *Macaca assamensis*, Nepal Grey Langur *Semnopithecus schistaceus*, Golden Jackal *Canis aureus* and Yellow-throated Marten *Martes flavigula* were among mammals recorded (Thakuri 2015).

### Conservation issues and management

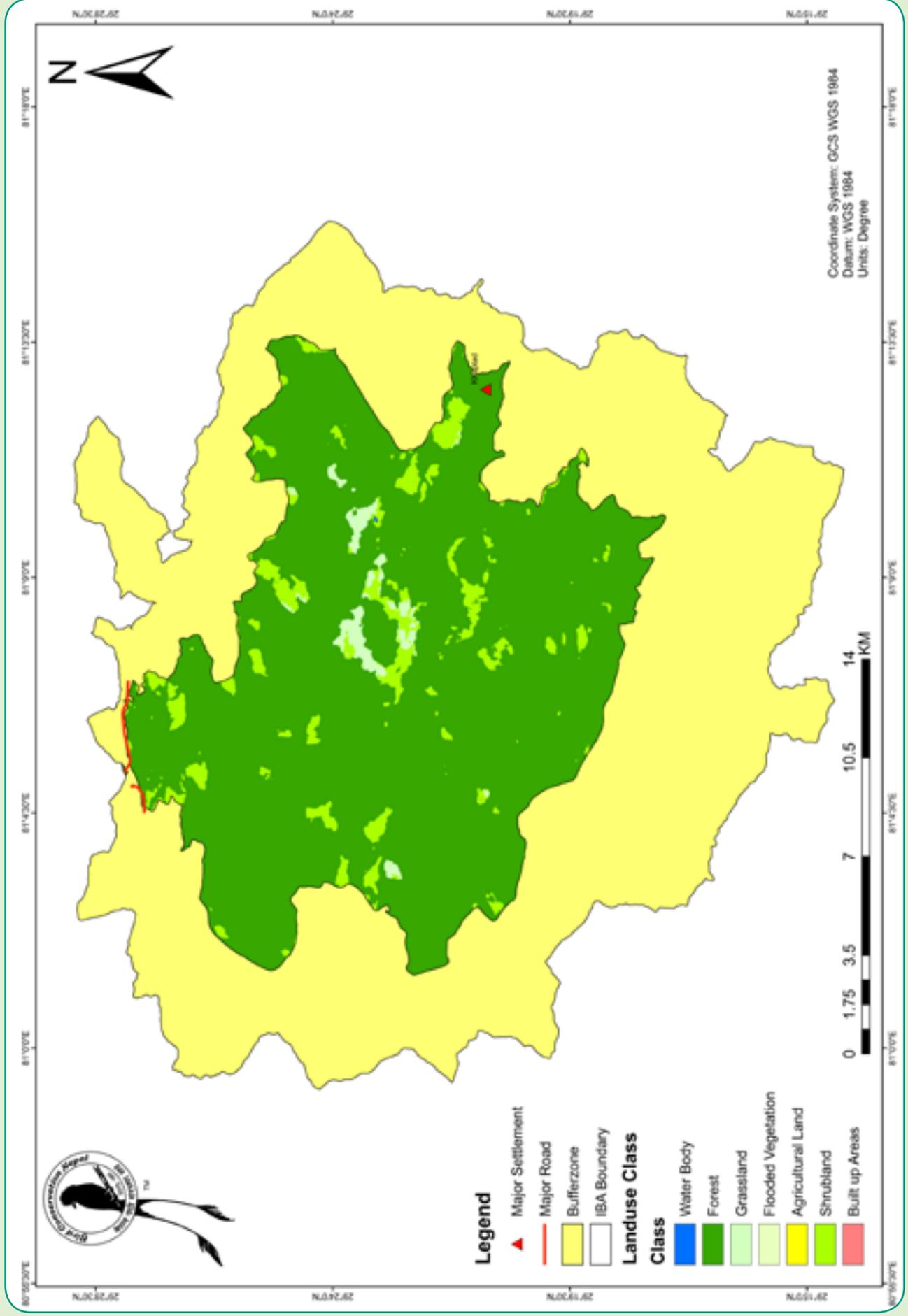
Cardamom is the main cash crop at higher elevations and many private forest patches have been cleared to make way for cardamom. Forest thinning was also observed to be carried out regularly to facilitate higher cardamom production which may have a negative impact on birds. However, the dense undergrowth of cardamom plants may provide good shelter for bush-dwelling birds, as well as providing food for birds after weeding and harvesting. Considering the huge economic benefit from cardamom farming for the local communities, a recommendation to stop this farming for conservation of birds is not possible. Research on the relationship between bird species richness and cardamom farming could provide guidelines for farming which would also benefit birds (Thakuri 2015).

Forest clearance for shifting cultivation was considered to be another threat. Some forest had been cleared for NTFP farming between Chichila and Num. Pigeons and pheasants were highly hunted and as people remained in the forest for cardamom planting, weeding and harvesting, hunting was closely associated with these activities (Thakuri 2015).



Peregrine Falcon by Drishtant Bidari

# KHAPTAD NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



21

# KHAPTAD NATIONAL PARK AND BUFFER ZONE

## Site description

Khaptad National Park was established in 1984 and lies south of the Himalayan range in the far west. The Buffer Zone was designated in 2006 and has an altitudinal range 900-2700 m. Khaptad is the only protected area representative of the western middle mountain ecological region of Nepal and has unique landscapes of 22 Patans (grasslands) that are known for lush green grass and flowering herbs that provide grazing opportunities to the people residing nearby (DNPWC 2014b).

Khaptad is an isolated massif. The top is a rolling plateau of extensive grasslands interspersed with oak/coniferous forests of *Quercus semecarpifolia*/*Abies spectabilis*/*Rhododendron barbatum*/*Tsuga dumosa*, shrubberies of *Rhododendron barbatum* and *berberis*, and boggy areas. The slopes of the massif support broadleaved forests of *Quercus lanata*, *Q. floribunda*/*Q. leucotricophora* lower down. Higher up there is a mixed forest of *Q. semecarpifolia*/*Q. floribunda*, hemlock *Tsuga dumosa*, fir *Abies pindrow*

**Status:** Protected

**Altitude:** 900-3300m

**Area:** 22,500ha NP; 21,600 ha BZ

**Geographical coordinates:** 29°22'N/81°07'E, Bajhang, Bajura Achham and Doti Districts, Sudurpashchim Province

**Categories:** A1 (globally threatened); A2 (restricted-range species, Central Himalayas EBA); A3 (Eurasian high montane and Sino-Himalayan temperate forest biome species)

and maple *Acer*, and on southern and western slopes *Q. semecarpifolia*/*Rhododendron arboreum* with some dense bamboo stands. Subtropical forest covers a small area of the park and comprises Chir Pine *Pinus roxburghii* and broadleaved forest. A small

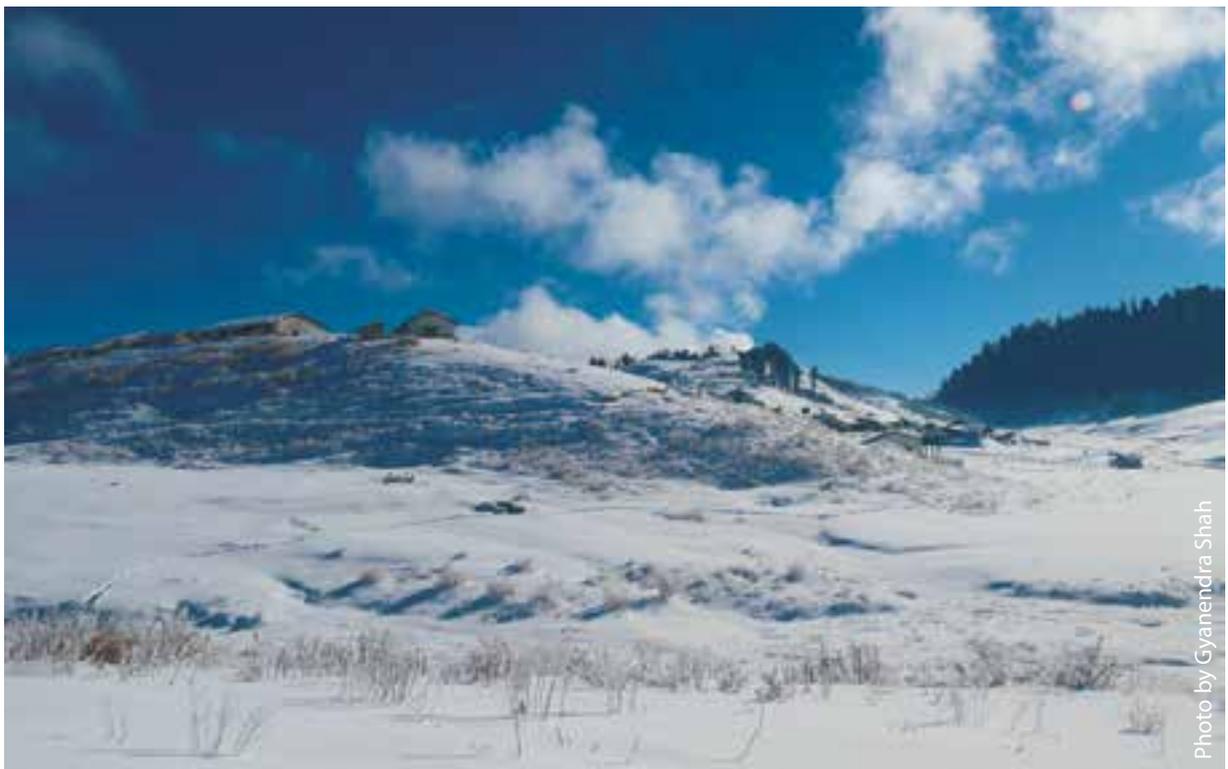


Photo by Gyanendra Shah

lake, Khaptad Daha, lies on the north-eastern slope (DNPWC 2014b).

Ecosystem services proved by Khaptad National Park and Buffer Zone (KNPBZ) include: availability of NTFPs, fuelwood and fodder, carbon storage, and storage of freshwater. The latter provides a water supply for Silgadhi bazaar and Doti district and irrigation and micro-hydro potential in Achham and Bajhang districts. In 2014, 27 micro hydropower projects of KNP watershed were in operation (DNPWC 2014b).

KNPBZ has: 63.66% forest cover, 14.67% grass and shrub cover, 20.96% under cultivation and 0.7% covered by sand (DNPWC 2014b).

The Buffer Zone (BZ) population was 33,687 persons in 2011 (DNPWC 2014b).

KNP is under-recorded for birds. A total of 289 bird species was recorded by Chaudhary (2006). Seven additional species have been found making a total of 296 species (Halliday 1993, Khadka 1996, Lama 1995). No information is available on species in the Buffer Zone.

KNPBZ supports a significant population of the globally threatened Cheer Pheasant and therefore qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded are Egyptian Vulture *Neophron percnopterus* and Red-headed Vulture *Sarcogyps calvus* which were formerly

fairly common but their current status is unknown and further fieldwork may show the KNP supports significant populations. White-rumped Vulture *Gyps bengalensis* and Common Pochard *Aythya ferina* are rare visitors.

Three restricted-range species have been recorded with significant populations in KNP: Cheer Pheasant from the Western Himalayas (EBA 128) and Spiny Babbler and Hoary-throated Barwing from the Central Himalayas (EBA 129) and so KNP qualifies as an IBA based on the restricted-range criterion. Two other species from the Western Himalayas (EBA 128) have been recorded: Tytler's Leaf Warbler *Phylloscopus tytleri* which is a rare passage migrant and Spectacled Finch *Callacanthus burtoni* which is a very rare winter visitor or passage migrant.

KNPBZ supports a significant number of species characteristic of the Eurasian high montane and Sino-Himalayan temperate forest biomes (see Appendices 2,7). Khaptad therefore qualifies as an IBA based on the biome-restricted assemblage criterion.

Seven near-threatened species have been recorded: Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis* (common visitors); Mountain Hawk-eagle *Nisaetus nipalensis* (frequent resident); Satyr Tragopan *Tragopan satyra* (former uncommon resident, current status unknown); Yellow-rumped Honeyguide *Indicator xanthonotus* (rare resident); Tytler's Leaf Warbler *Phylloscopus tytleri* (rare passage migrant), and Cinereous Vulture *Aegyptius monachus* (former rare visitor, current status unknown).

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Locally frequent resident
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Frequent passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Locally frequent resident
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Fairly common resident
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident

The lake is a useful staging post for small numbers of migrant waterfowl (Khadka 1996b). In a recent study more than 50 bird species were recorded on the lake and in the Tribeni water complex in the park (DNPWC 2014b). Considering the biological and cultural importance of this wetland and nearby Tribeni confluence, GoN has proposed this wetland for inclusion as a Ramsar site (MoFSC 2010).

### Other wildlife

A total of 23 species of mammals has been recorded including the globally threatened Himalayan Black bear *Ursus thibetanus*, Himalayan Musk Deer *Moschus chrysogaster*, Wild Dog *Cuon alpinus*, Himalayan Goral *Naemorhedus goral*, and Red Panda *Ailurus fulgens* and near-threatened Himalayan Serow *Capricornis thar*. Other mammals include Northern Red Muntjac *Muntiacus vaginalis*, Wild Boar *Sus scrofa*, Yellow-throated Marten *Martes flavigula*, Red Fox *Vulpes vulpes*, Grey Wolf *Canis lupus*, Common Leopard *Panthera pardus*, Rhesus Macaque *Macaca mulatta*, Northern Plains Gray Langur *Semnopithecus entellus*, and Jungle Cat *Felis chaus*. In addition, 23 species of reptile and six species of amphibian have been recorded (DNPWC 2014b).

### Conservation issues and management

A 2011 assessment of the condition of KNPBZ IBA found that it was in a very unfavourable state (BirdLife International 2015b).

A draft management plan has been drawn up for the period 2015-19 (DNPWC 2014b). The objectives of the draft management plan, issues in achieving these objectives and actions aimed at addressing these issues with a focus on bird conservation follow.

#### Objective 1

The park management objective is to conserve ecosystem and species diversity, and genetic resources.

##### Issues include:

- a. Overharvesting and unsustainable use of forest resources;
- b. Mixed broadleaved forests above 2500 m decreasing since 1980s;
- c. Oak trees in some areas have been heavily lopped, mainly for fodder;
- d. Forest fires are common;

- e. Invasive species are a problem in some forests and grasslands;
- f. Poaching is widespread;
- g. Siltation in Khaptad Daha and other wetland ecosystems due to overgrazing by livestock; and
- h. Climate change may cause major problems for KNPBZ; all BZ districts are highly vulnerable to drought and landslides.

##### Recommended actions include:

- i. Provide training and awareness programme for controlling forest degradation and illegal extraction of NTFPs;
- j. Provide training, awareness programme and equipment for controlling forest fires;
- k. Conduct status survey on invasive species and its impacts on forest and agro-ecosystems;
- l. Form/strengthen anti-poaching groups;
- m. Strengthen community-based anti-poaching activities;
- n. Construct check dams to reduce soil loss in major wetlands;
- o. Monitor breeding bird species including pheasants; and
- p. Assess climate change impacts on wildlife species and their habitats, and NTFPs (DNPWC 2014b).

#### Objective 2

BZ management objective is to achieve balance between biodiversity conservation and sustainable livelihoods.

**Issues include:** KNPBZ lies in remote hilly area dominated by subsistence farming; intense poverty and unemployment in and around BZ; agricultural production system does not support year round food sufficiency; most households rely on remittance due to seasonal migration; high proportion of population have no drinking water supply and sanitary facilities; very low literate population especially females; alternative energy systems not adequately promoted; primary sources of firewood, fodder, timber and NTFPs not properly managed; 66 BZ community forests, but only 16 of them handed over to communities; forest degradation and illegal trade of NTFPs threatens effective conservation; BZ institutions, eco-clubs, child clubs and women's groups and conservation awareness programmes engaging in conservation and community

development in few communities; community motivation in biodiversity conservation lacking, and lack of coordination between stakeholders.

**Recommended actions include:** organise skill enhancement training programmes such as food processing, making indigenous products, dairy production, and preparing a NTFPs operational plan; hand over remaining BZ community forests, implement BZ community forests operational plans, establish community seed bank and multi-purpose nursery and provide training on community forest management; install alternative energy sources; form, strengthen and mobilize eco-clubs, child, youth clubs, woman groups and other groups directly related to conservation; provide conservation educational materials to schools and communities and conduct community-based climate change vulnerability assessment and adaptation training (DNPWC 2014b).

### Objective 3

Tourism management objective is to enhance eco-friendly tourism in park and Buffer Zone.

**Issues include:** very few domestic and foreign tourists visit KNPBZ (average of 13 foreigners annually in the last 18 years); local communities not able to reap benefits from tourism; lodging and other visitor facilities are poor; local people have little knowledge about hospitality management and eco-friendly tourism.

**Recommended actions include:** train local communities on home stay service management/hospitality management, business operation, tea stalls, provision shops, photography, nature guide; conduct bird watching, flora exploration and other recreational activities as a tourism package; and establish two visitor information centres (DNPWC 2014b).

### Objective 4

Institutional development objective is to enhance management capacity of the park and Buffer Zone institutions.

**Issues include:** park's poor institutional mechanism; low park annual budget and revenue; number and skill of park personnel inadequate for effective park management; physical infrastructure, communication, equipment and other facilities are

inadequate; park staff have inadequate knowledge on fauna and flora survey and monitoring, habitat management, and community development; research needs not identified, and KNPBZ is among least studied in Nepal.



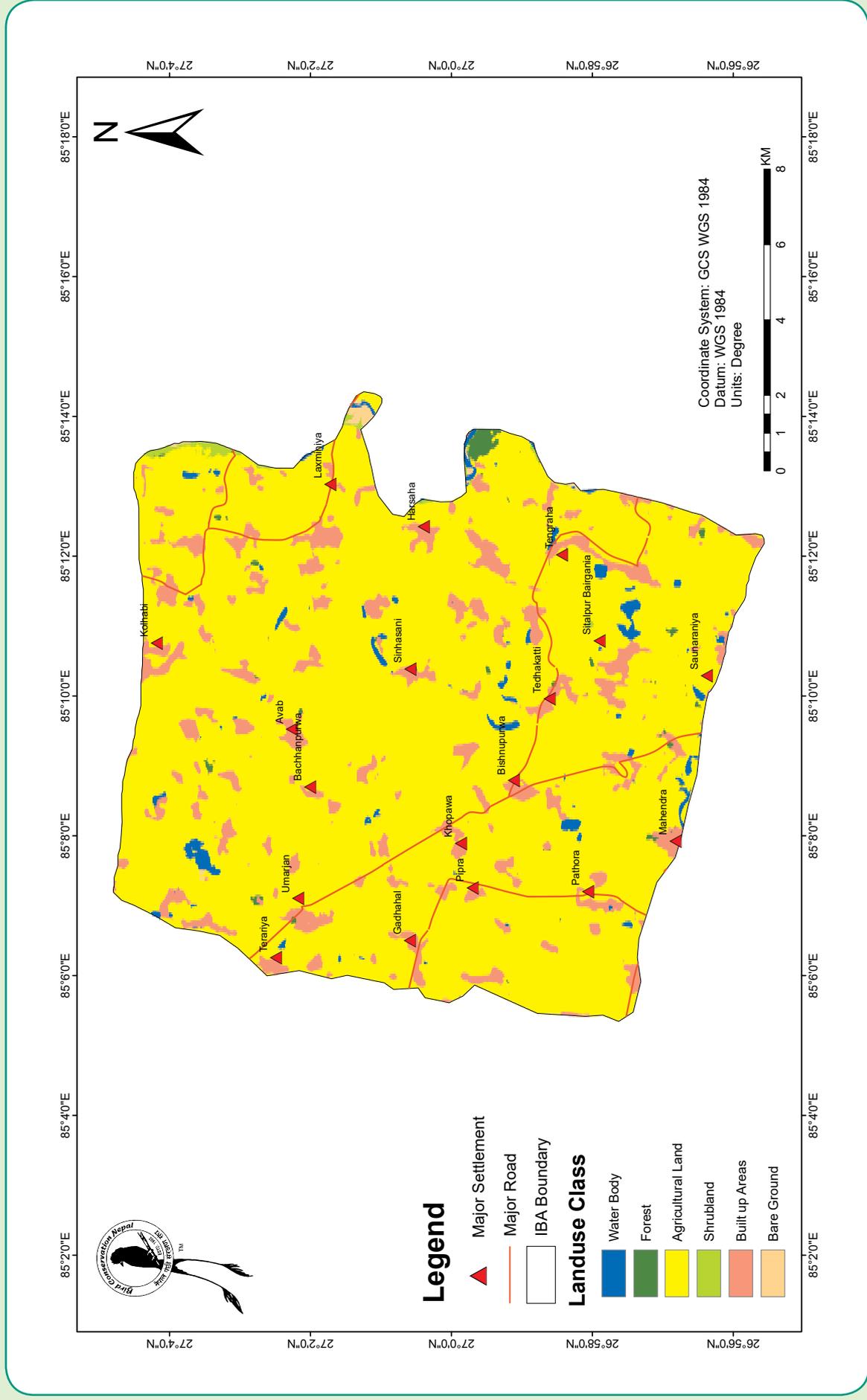
**Recommended actions include:** conduct management and other skill enhancement training for park staff; provide basic equipment for research and monitoring; organise training on procedural and other relevant law, wildlife identification, herbarium management, field-based climate change vulnerability

mapping, institutional development, fund raising and management, strategic planning, conservation related acts, rules, policies, and guidelines; equip park office and posts with communication facilities; reconstruct field posts and staff quarters, and monitor wildlife include pheasants. *Source: DNPWC (2014b).*



Collared Grosbeak by Mohan Bikram Shrestha

# KOHALBI AND BARAGADI AREA SITE MAP



# 22 KOHALBI AND BARAGADI

## Site description

Kohalbi and Baragadi IBA lies in the lowlands of Bara and Rautahat districts. However, the colonies of Lesser Adjutant were recorded mainly on the Bara side. The IBA mainly comprises farmlands and human settlements (Katuwal *et al.* 2022).

Kohalbi and Baragadi farmlands support significant populations of Lesser Adjutant and so qualifies as an IBA based on the globally threatened criterion.

As the number of nests in 2020 totalled 53, the number of adults present can be estimated to be 106 mature individuals. Kohalbi and Baragadi therefore also qualify as an IBA based on the congregatory criterion as the population is greater than 1% of the global population of a waterbird species.

## Conservation issues and management

Unknown, although Lesser Adjutant may face the same threats as in the other lowland IBAs with breeding colonies: cutting down of nesting trees and to a lesser extent, hunting.

## Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilus javanicus</i>	Vulnerable	In 2019, 30 nests in 8 colonies, 31 chicks fledged (Katuwal <i>et al.</i> 2022); in 2020, 53 nests in 14 colonies, 101 chicks fledged (Katuwal <i>et al.</i> under review)

**Status:** Unprotected

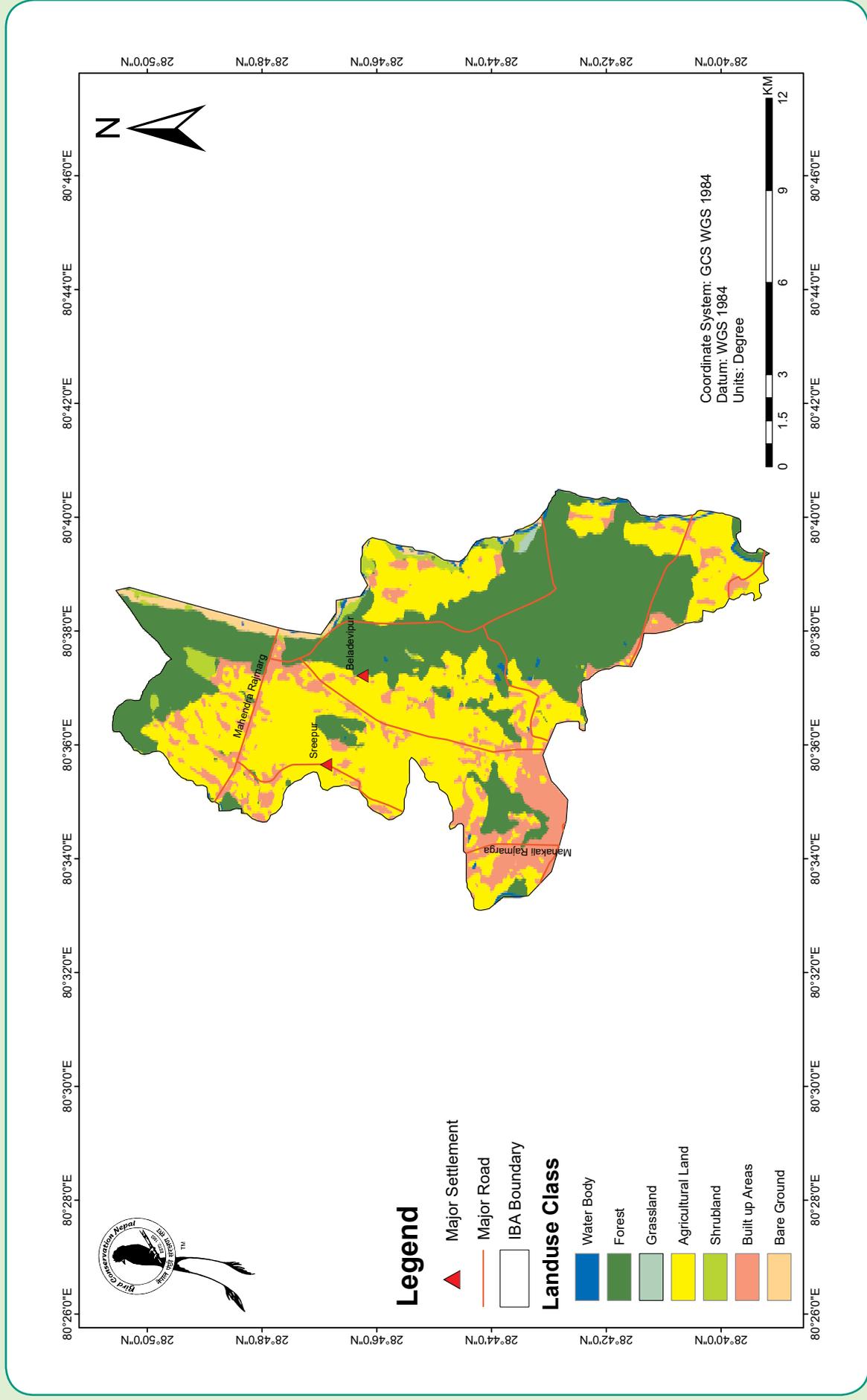
**Altitude:** 112-298 m

**Area:** 18,000 ha

**Geographical coordinates:** 27°0'N 85°10'E, Bara and Rautahat Districts, Madhesh Province

**Categories:** A1 (Globally threatened species); A4 (Congregation of a waterbird species)

# KHUTIYA AREA SITE MAP



# 23 KHUTIYA

## Site description

Khutiya has been designated as an IBA because of its important White-rumped Vulture colonies, nesting of the globally threatened Slender-billed Vulture and presence of globally threatened Red-headed and Egyptian Vultures. In this area mostly Saj *Terminalia alata* have been used by White-rumped Vultures for nesting. Sal *Shorea robusta* and Karma or Haldu *Adina cardifolia* have also been used (BCN unpublished data).

The areas surrounding the vulture colonies are farmland and forest. The forest mostly comprises Sal *Shorea robusta* and Saj *Terminalia alata* and Karma or Haldu *Adina cardifolia* trees (BCN unpublished data).

**Status:** Unprotected

**Altitude:** 100-300m

**Area:** 3,418ha

**Geographical coordinates:** 28° 48' N, 80° 38' E,  
Kailali District of Sudurpashchim Province

**Categories:** A1 (globally threatened species)

## Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Nesting colonies mainly in Saj <i>Terminalia tomentosa</i> , also in Sal <i>Shorea robusta</i> and Karma <i>Adina cardifolia</i> trees
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Has bred
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Common
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Common

Observer coverage of Khutiya IBA has been 75% to date.

## Vulture nest status (BCN data)

Species	Number of active nests												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
White-rumped Vulture <i>Gyps bengalensis</i>	50	55	67	79	74	64	59	60	40	43	37	28	16
Slender-billed Vulture <i>Gyps tenuirostris</i>	0	0	0	2	1	0	0	0	0	0	0	0	0
Egyptian Vulture <i>Neophron percnopterus</i>	0	2	1	1	1	1	1	1	1	1	0	0	0

Khutiya supports significant populations of the globally threatened White-rumped, Slender-billed, Red-headed and Egyptian Vultures (BCN data unpublished data) and so qualifies as an IBA based on the globally threatened criterion (A1).

Near-threatened species recorded are Himalayan Griffon *Gyps himalayensis* and Cinereous Vulture *Aegypius monachus* (winter visitors), and Asian Woollyneck *Ciconia episcopus* (rare visitor).

### Conservation issues and management

The White-rumped Vulture nesting colonies lie in community forests (CF): Suryodaya CF, Mechi

Mahakali CF, Shiva Shakti CF, Shankar CF, Samaiji CF and on private land. The colonies are threatened by tree-felling, disturbance during the breeding season, other harmful NSAID's and limited vulture conservation awareness.

BCN has been working for research and conservation of vultures in this area. User groups of the community forests are involved in the conservation of forest and vultures (unpublished data).

Khutiya is part of Terai Arc Landscape programme of the Government of Nepal.

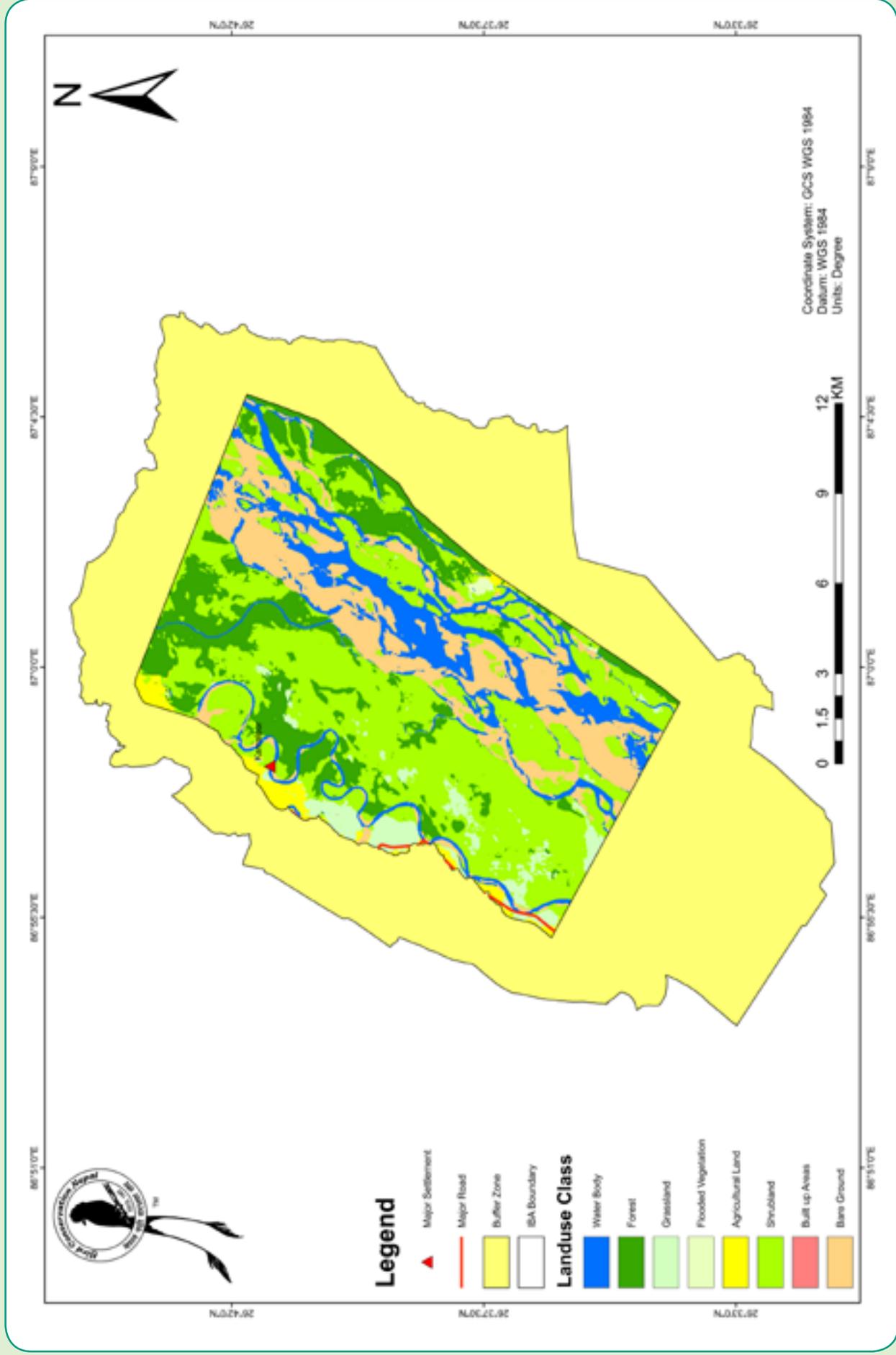


Ruddy Shelduck by Ankit Bilash Joshi



Photo by Hiru Lal Dangaura

# KOSHI TAPPU WILDLIFE RESERVE AND KOSHI BARRAGE AREA SITE MAP



### Site description

Koshi Tappu Wildlife Reserve (KTWR) was designated in 1976 and the Buffer Zone designation followed in 2004. KTWR lies in the Sapta Koshi River floodplain at the most northeasterly extension of the Gangetic Plain. The Sapta Koshi is one of the three main tributaries of the Ganges. Rapid and intense flooding of the reserve occurs annually during the rainy season. Embankments have been constructed parallel to the river to control the flooding. In 1987 KTWR and its surrounding wetlands were declared a Ramsar site, the first in Nepal, for its migratory waterfowl (DNPWC 2009).

Approximately 70% of the reserve's land area is covered in grasslands (Heinen 1993), although during high flood years a large area of grassland is destroyed and replaced by new alluvial deposits. *Typha* and *Saccharum* are major grassland types found here, although patches of *Imperata* and *Phragmites* are often seen. Medium size *phantas* interspersed with young *Acacia* trees are found in sandy islands. Riverine vegetation with *Acacia catechu*/*Dalbergia sissoo* forest dominates on the islands and edges of the reserve. Mostly young trees grow inside and on the edges of the reserve within embankments, the old mature trees being swept away by annual floods (Peet *et al.* 1999a).

South of Koshi Tappu Wildlife Reserve lies the Koshi Barrage area which is unprotected. The area is 7 km from north to south and nearly 5 km from east to west. More than 50% of the land area at the barrage is covered by water, and the remaining land area is subject to intensive agriculture. The barrage gates are regulated by the Indian Government according to a 99-year lease agreement between Nepal and India.

In the BZ there are 4 Municipalities and 2 Rural Municipalities with 215 settlements and 77,950 people who are very poor. The overall literacy rate is only 44.6% (DNPWC 2009). A more recent estimate

**Status:** Wildlife Reserve: Protected, Koshi Barrage: Unprotected

**Altitude:** 75-81m

**Area:** 17,500ha WR, Koshi Barrage 3,500ha, 17,350ha BZ

**Geographical coordinates:** Koshi Tappu 26°33' - 26°42'N 86°54' - 87°03'E and Koshi Barrage 26°36'N 87°03'E Sunsari and Udaypur Districts, Koshi Province and Saptari District, Madhesh Province

**Categories:** A1 (globally threatened species); A3 (Indo-Malayan tropical dry zone biome species, Indo-Gangetic plains biome species)



gives a figure of over 100,000 impoverished people who live around the edge of the reserve (Baral 2016).

Currently foreign tourist numbers are small ranging from 181 to 456 persons between 2008 and 2012 (Ghimire 2013).

## Birds

Globally threatened species	Threat status	Status and habitat
Swamp Francolin <i>Ortygornis gularis</i>	Vulnerable	Fairly common resident. Tall wet grassland and marshes.
Bengal Florican <i>Houbaropsis bengalensis</i>	Critically Endangered	Uncommon resident, frequent breeding summer visitor in grasslands
Black-bellied Tern <i>Sterna acuticauda</i>	Endangered	Uncommon breeder
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Frequent breeding resident in open country
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Uncommon breeder in open country
Greater Spotted Eagle <i>Clanga clanga</i>	Vulnerable	Frequent winter visitor and passage migrant
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common winter visitor and passage migrant
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Fairly common breeder . In 2020, 1 nest in 1 colony, 2 chicks fledged (Katuwal <i>et al.</i> 2022). Marshes, pools and wet fields
Bristled Grassbird <i>Schoenicola striatus</i>	Vulnerable	Fairly common breeding summer visitor to grassland

The large number of 526 bird species was listed for the KTWR and Koshi Barrage area (Baral 2016). Eight additional species have been recorded since then: Bean goose *Anser fabalis* and Sooty Tern *Onychoprion fuscatus* (Inskipp *et al.* 2020), and Eurasian Woodcock *Scolopax rusticola*, Collared Owlet *Glaucidium brodei*, Long-tailed Broadbill *Psarisomus dalhousiae*, Black-backed Forktail *Enicurus immaculatus*, Pied Thrush *Geokichla wardii* and Grey-necked Bunting *Emberiza buchanani* (Sanjib Acharya *in litt.* to C. Inskipp, 10 January 2023), making a total of 535 (Basnet and Chaudhary 2023).

The species total includes significant populations of nine globally threatened species: Swamp Francolin, Bengal Florican, White-rumped Vulture, Steppe Eagle, Greater Spotted Eagle, Lesser Adjutant and Bristled Grassbird. Grasslands support significant populations of four globally threatened species. The Koshi area is one of two Nepal sites which support breeding resident populations of Swamp Francolin. Koshi therefore qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded are: Common Pochard *Aythya ferina* (very uncommon

winter visitor and passage migrant), Baer's Pochard *Aythya baeri* (rare winter visitor and passage migrant), Long-tailed Duck *Clangula hyemalis* (vagrant), Lesser Florican *Sypheotides indica* (extremely rare visitor), Black-bellied Tern *Sterna acuticauda* (very uncommon breeder); River Tern *Sterna aurantia* (rare visitor), Indian Skimmer *Rynchops albicollis* (rare visitor), Pallas's Fish-eagle *Haliaeetus leucoryphus* (uncommon winter visitor), Egyptian Vulture *Neophron percnopterus* (uncommon visitor), Slender-billed Vulture *Gyps tenuirostris* (extremely rare), Red-headed Vulture *Sarcogyps calvus* (rare winter visitor), Tawny Eagle *Aquila rapax* (very rare passage migrant), Eastern Imperial Eagle *Aquila heliaca*, uncommon winter visitor and passage migrant); Greater Adjutant *Leptoptilos dubius* (rare visitor), Kashmir Flycatcher *Ficedula subrubra* (rare passage migrant), White-throated Bushchat *Saxicola insignis* (rare passage migrant and winter visitor), Finn's Weaver *Ploceus megarhynchus* (very rare summer visitor) and Yellow-breasted Bunting *Emberiza aureola* (very rare passage migrant and winter visitor).

Koshi supports a significant number of species characteristic of the Indo-Malayan tropical dry zone biome and of species characteristic of the



Photo by Santosh Bajajin

Indo-Gangetic plains biome (see Appendices 2,7). It therefore qualifies as an IBA based on the biome-restricted assemblage criterion.

Only two restricted-range species have been recorded and both are rare visitors: Yellow-vented Warbler *Phylloscopus cantator* and Kashmir Flycatcher *Ficedula subrubra*.

The large number of 25 of Nepal's near-threatened species (74% of the total) have been found in the Koshi area including seven species for which the Koshi area supports significant populations: Ferruginous Duck *Aythya nyroca* (frequent winter visitor); Asian Woollyneck *Ciconia episcopus* (frequent resident); Alexandrine Parakeet *Palaeornis eupatria* (frequent resident); Himalayan Griffon *Gyps himalayensis* (fairly common winter visitor); Oriental Darter *Anhinga melanogaster* (frequent resident) and Black-headed Ibis *Threskiornis melanocephalus* (frequent resident). Koshi Tappu is the only locality in Nepal for Rufous-vented Grass-babbler *Laticilla burnesii*, which is an uncommon breeding resident on islands on the Koshi River. It is represented in Nepal by the endemic subspecies *L. burnesii nepalicola* (Baral *et al.* 2007, 2008). del Hoyo and Collar (2016) recognised that the taxonomy of *L. burnesii* and the closely related

Swamp Grass-babbler *L. cinerascens* (which is found in floodplain grasslands in north-east India and is Endangered on the IUCN Red List) requires further research, and it is possible that *nepalicola* might prove to be a subspecies of *L. cinerascens*.

The other near-threatened species recorded are: Mountain Hawk-eagle *Nisaetus nipalensis* (uncommon winter visitor); Red-headed Falcon *Falco chicquera* (uncommon resident); Falcated Duck *Anas falcata* (rare winter visitor); Great Thick-knee *Esacus recurvirostris* (rare, regular visitor, possibly resident); Ashy-headed Green-pigeon *Treron phayeri* (uncommon resident); Red-breasted Parakeet *Psittacula alexandri* (uncommon visitor); Blossom-headed Parakeet *Psittacula roseata* (rare winter visitor); River Lapwing *Vanellus duvaucelii* (uncommon breeder); Northern Lapwing *Vanellus vanellus* (frequent winter visitor), Black-tailed Godwit *Limosa limosa* and Eurasian Curlew *Numenius arquata* (rare passage migrants); Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* (very rare, no recent records); Cinereous Vulture *Aegypius monachus* (rare winter visitor); Pallid Harrier *Circus macrourus* (rare winter visitor and passage migrant); Laggar Falcon *Falco jugger* (rare visitor); Painted Stork *Mycteria leucocephala* (rare summer visitor) and Black-necked



Stork *Ephippiorhynchus asiaticus* and Spot-billed Pelican *Pelecanus philippensis* (rare visitors).

Koshi was formerly by far the most important wetland staging post for migrating waders and waterfowl in Nepal (Inskipp and Inskipp 1991) and was considered one of the most important in Asia (Scott 1989). Nepal's largest heronry was once in KTWR (Baral 1993a), where as many as 25,730 nests belonging to 12 species of medium to large herons were reported in 1996 (Choudhary 1996b), however there has been a marked decline at the colony where a 2010 survey showed there were only five breeding species in the colony with Black-crowned Night Heron *Nycticorax nycticorax* having the largest number of nests totalling only 1,453 nests. The survey team also recorded hunting of adults and chicks, as well as collection of eggs (Hem Sagar Baral *in litt.* to C. Inskipp 9 May 2015).



Annual Waterbird counts show there has been a serious decline in wintering and passage migrant waterfowl since 1990 from 24,196 birds in 1994 to 7,647 birds 2022 with a minimum of 4,260 birds in 2010 (Baral 2022).

Year	Numbers of waterbirds
1981	50,000
1994	24,196
1995	20,719
1996	23,191
1997	14,228
2003	9,800
2005	6,139
2006	5,412
2007	5,174
2008	8,401
2009	5,360
2010	4,260
2011	6,815
2012	6,395
2013	4,893
2014	6,391
2015	5,584
2016	4,026
2017	8,180
2018	6,066
2019	9,288
2020	5,622
2021	7,364
2022	7,647

Data Sources 1981: Mills and Preston, (1981);1994-2022: Annual Waterbird Counts (Baral 2022)

Numbers of most waterbird species have declined dramatically, mainly since the 1980s. These include the globally threatened Black-bellied Tern, River

Tern, Indian Skimmer and Pallas's Fish Eagle and near-threatened Eurasian Curlew, *Numenius arquata*, Great Thick-knee *Esacus recurvirostris*, Spot-billed Pelican *Pelecanus philippensis* and Black-necked Stork *Ephippiorhynchus asiaticus* (for which Koshi was formerly the only Nepal breeding site). The Koshi IBA still remains an important staging post for wetland birds, but no longer qualifies as an IBA based on the congregations criterion (A4).

There has been a sharp decline in the population of many other bird species in KTWR and buffer zone in the past 40 years. Only a very few bird species (mostly very common species) have increased in number. During the 2008 monsoon flooding of Koshi, KTWR and its buffer zone lost many productive wetlands resulting in the decline of many waterbird populations (Baral 2016). Similarly, the 2017 monsoon flooding was very damaging.

### Other wildlife

A total of 40 mammal species has been found at Koshi including Nepal's last population of Asian Buffalo *Bubalus arnee*, a globally threatened species. Other globally threatened species include Ganges River Dolphin *Platanista gangetica*, Smooth-coated Otter *Lutrogale perspicillata*, Fishing Cat *Prionailurus viverrinus*, Gharial *Gavialis gangeticus* and Mugger Crocodile *Crocodylus palustris*. The Koshi River is home to 141 species of fish (KTWR 2018). Other flora and fauna include 514 species of plants, 77 of butterfly, and 52 of herpetofauna (KTWR 2018).

### Conservation issues and management

Koshi's wetland habitats are threatened by the large population of very poor, subsistence farmers and fishermen living in close proximity. Agriculture is the dominant mode of production for 87.3% of households. A large proportion of this largely impoverished community interact within and outside the protected areas of Koshi for collection and use of natural resources, recreation, ceremonies, and public rights of way etc. They are heavily dependent on the natural resources of the reserve and surrounding areas. The traditional rural farmscape is rapidly being changed accommodating less and less species of birds and other wildlife. The barrage is a permanent threat to Koshi's wildlife (Baral 2016).

Bird-human conflicts have increased since the promotion of fish ponds in the buffer zone. Although this was started with the good intention of removing fishing pressure from the reserve and improving locals' livelihoods, the results have been disappointing. The fish stocks in the Koshi river continue to decline and there has been no sign of improvement (Baral 2016).

In their 2009-13 management plan, DNPWC (2009) identified the following conservation issues facing the sustainable management of KTWRBZ). Degradation of the terrestrial habitat due to illegal grazing, seasonal fire and human encroachment are major threats. Some domestic cattle and buffaloes still graze inside KTWR, although their numbers have been much reduced. Degradation of the aquatic habitat is occurring due to over-fishing and poisoning, poaching and over-collection of resources (DNPWC 2009).

Illegal fishing, disturbance of nesting and feeding areas, poisoning that not only kills fish, but also birds that feed on fish and aquatic insects, have together resulted in deterioration and loss of suitable habits for birds and other wildlife (e.g. Anon 1992, Petersson 1998, Giri 1997, 2002).

Many fish-eating bird species, for instance Black-bellied Tern and Indian Skimmer, have undergone precipitous declines in the Koshi area during the last ten years and are probably suffering from prey shortage due to overfishing (BCN and DNPWC 2011). Hunting and trapping birds for food and for sale at the market regularly takes place (e.g. Shakya 1995, Giri 2002).

Two invasive alien plants are both widespread at Koshi and are causing major problems. Water hyacinth *Eichhornia crassipes* can rapidly cover and choke water surfaces. The climber *Mikania micrantha* can cover all terrestrial habitats (Baral 2002a).

Siltation of wetlands due to intermittent floods blocked by the Koshi Dam is not only a major problem of habitat degradation but also an impediment to migratory routes of aquatic species. In addition, use of chemical fertilisers and pesticides near wetlands are problems inherent in Koshi Tappu. There exists inadequate community cooperation for conservation



due to unequal benefits realized from conservation. Insufficient political and other local institutional support and commitment are other major concerns (DNPWC 2009).

Realising the urgent need for a long-term management plan, the DNPWC initiated a participatory planning exercise, developed a Management Strategy Framework in late 1998, and prepared a Management Plan in late 2000. The latest management plan covers the period 2018-21 (DNPWC 2018).

The DNPWC 2018-21 management plan identified ineffective conservation education and awareness initiatives as the root cause of the problem between the Reserve Authority and local community. This has demotivated people towards conservation. There was a dearth of scientific information for management, as research and monitoring activities had not been carried out regularly and adequately. Mobilisation of communities had been initiated but there was still a need to target special groups and women. The existing infrastructures, logistics and staffing in the reserve were not sufficient or/and were in poor condition for effective reserve management (DNPWC 2009).

In August 2008 the south-eastern portion of the Buffer Zone was swept away by a devastating flood in the

Koshi River and there were some human casualties. The people affected by this flood were settled in the BZ. Due to the absence of other opportunities they are fully depending on the reserve's resources for their daily requirements. This has had a significant negative impact on aquatic life and forest resources (DNPWC 2009).

Despite the gravity of the problems, the outstanding natural and cultural features of KTWRBZ provide a wide range of opportunities for the development of nature and culture-based recreation tourism. KTWR can provide perpetual benefits to the local and international community if biodiversity resources are managed and used in a sustainable manner (DNPWC 2009). An IUCN Nepal study estimated the annual value of biodiversity, wetland products and services and community dependence at the site as over US\$ 9 million (Anon 2003b).

The main objectives of the 2018-21 management plan for KTWRBZ were to:

- safeguard and restore the unique and characteristic wildlife species and habitats of the reserve
- conserve the rare, threatened, endemic and common wildlife species of the reserve
- build and strengthen the capacity of the reserve and buffer zone institutions
- improve livelihood of local communities



Photo by Jyotendra Jyu Thakuri

and enhance their ownership of reserve and buffer zone enhance climate resilience of the area with specific focus on local communities and species of significance

- develop biological corridor for wildlife movement
- develop nature based tourism with focused on avi-tourism

The United Nations Development Programme (UNDP) funded Participatory Conservation Programme carried out some environmental education programmes in the area. This programme is now completed.

In 2006, BCN, in collaboration with the Wildfowl and Wetlands Trust began a three-year project at KTWRBZ. The project identified a number of innovative and sustainable livelihood options that could deliver benefits to local people whilst preserving the ecological integrity of the wetlands. Initiatives to develop sustainable livelihoods included establishing fish ponds that provided households with a secure livelihood in aquaculture. The project also promoted alternatives to fishing such as providing training and materials to impoverished women to create handicrafts. As an alternative to collecting firewood from the reserve, BZ communities were shown how to make charcoal briquettes from invasive plants. The invasive Water Hyacinth *Eichhornia crassipes* was used to produce compost fertilizers as a cheap and safe alternative to chemical fertilizers (Mitra Pandey

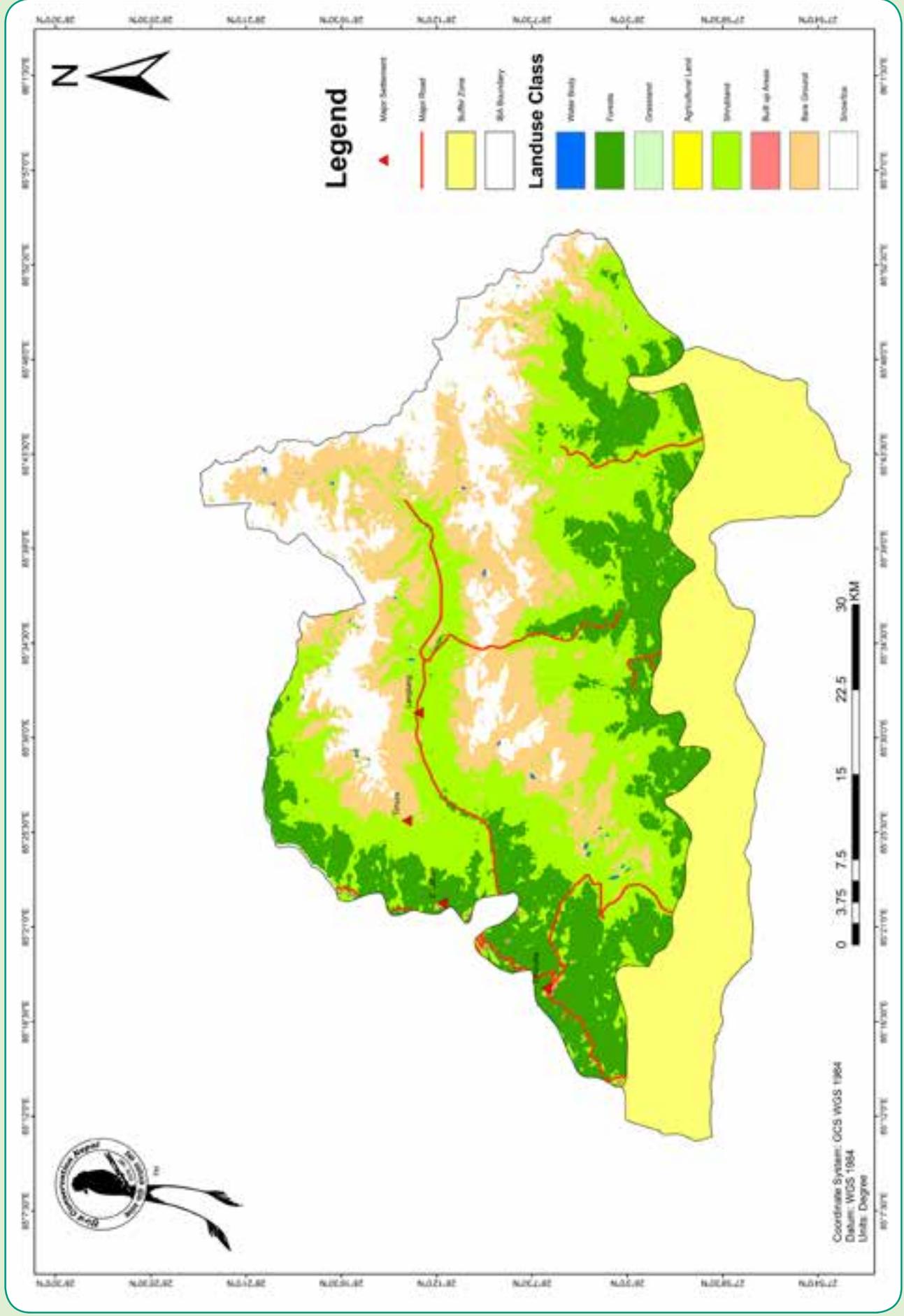
in BCN and DNPWC 2011).

An assessment of ecosystem services provided by KTWR was made in 2011. The assessment compared the value of ecosystem services delivered by the site to those delivered by comparable habitats outside the reserve. Local people benefit from fishing and harvesting grasses which may be having a negative impact on the biodiversity. Benefits from international tourism are low but significant (BCN and DNPWC 2012).

The assessment concluded that local people are highly dependent on the natural resources of the reserve and it provides many more benefits than the surrounding areas outside of the protected area which have been heavily degraded. However, improving the management of the site for important bird species will require more regulated harvesting within key areas of the reserve. Where costs for local people are significant, more initiatives may be needed which help redress the imbalance. For example, alternative livelihoods projects based on use of invasive plant species or fish farming and engagement in the tourism sector may help to reduce pressures whilst giving local people a fair share of the benefits (BCN and DNPWC 2012).

A 2011 assessment of the condition of KTWR IBA found it was in an unfavourable state (BirdLife International 2015b).

# LANGTANG NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



### Site description

Langtang National Park (LNPBZ) was designated in 1976 and lies in the central Himalayan region of Nepal; the Buffer Zone was declared in 1998. The park and Buffer Zone (LNPBZ) are representative of the mid-Himalayan ecosystem (DNPWC 2007).

LNPBZ comprises rocks and ice (60.7%), forests (29.9%), grassland (4.9%), shrubland (2.8%) and cultivation (1.7%). A wide variety of habitats exist within the park. Tropical forest of *Sal Shorea robusta* covers 0.2 % of the park and subtropical forest of *Schima wallichii/Castanopsis indica* and Chir Pine *Pinus roxburghii* covers 2 %. Higher up lower temperate forests of *Quercus lanata*, *Q. lamellosa* and *Pinus wallichiana* cover 4.8 % of the park and upper temperate forests of *Q. semecarpifolia* (often with *Tsuga dumosa*) cover 9.9%. The subalpine (21.5%) and alpine (21.5 %) zones are by far the most extensive. Subalpine forests are of *Abies spectabilis*, *Betula utilis*, *Tsuga dumosa*, *Larix* spp., *Rhododendron* spp., and *Juniperus* spp. (Green 1993). *Larix* is restricted to the subalpine area. There are pure *Rhododendron* and mixed *Quercus/Rhododendron* forests. *Tsuga* forests characterise the riparian floodplains along the river valley of the Langtang Khola. Higher up, *Abies* and *Pinus wallichiana* form large expanses of forests in places (DNPWC 2015h).

Several wetlandssuchastheRamsar-listedGosaikunda Lake add cultural and biodiversity significance to the area. LNP is connected to Qomolongma Nature Preserve of Tibetan Autonomous Republic in China, Manaslu Conservation Area through the Ganesh Himal range, and Shivapuri Nagarjun National Park through stretches of community- managed forests (Kathmandu Forestry College 2013).

LNPBZ conserves the watershed of the Melamchi, Larke, Yangri, Balephi and Trisuli rivers which provide water for the Kathmandu Valley, as well as hydropower generation (DNPWC 2007).

**Status:** Protected

**Altitude:** 1300-7245m

**Area:** 171,000ha NP; 42,000ha BZ

**Geographical coordinates:**

28°10'N/85°38'E, Rasuwa, Nuwakot and Sindhupalchok Districts, Bagmati Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Central Himalayas EBA); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species)

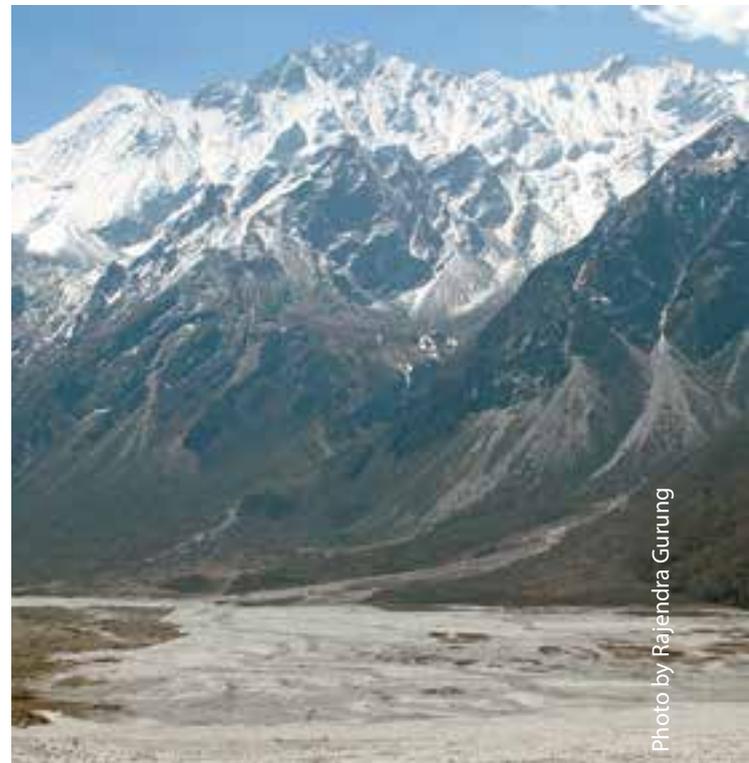


Photo by Rajendra Gurung

It was the third most popular areas for tourist trekkers in Nepal (DNPWC 2007). A total of 14,315 foreign trekkers visited the park in year 2012 (Ghimire 2013).

## Birds

Globally threatened species	Threat status	Status and habitat
Wood Snipe <i>Gallinago nemoricola</i>	Vulnerable	Uncommon altitudinal migrant, possibly resident; breeds in alpine meadows and dwarf scrub, winters in marshy areas in forest
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Uncommon, possibly resident in open country and over well-wooded hills
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common winter visitor and passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Nepal Cupwing <i>Phoebe immaculata</i>	Central Himalayas	Locally common and widespread breeding altitudinal migrant, possibly resident in tall herbage at forest edges and in open forest near running water
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident and altitudinal migrant in mossy, broadleaved forest

A total of 380 species is listed for LNPBZ in BCN and DNPWC (2019b). There have not been any studies of the species that occur in the Buffer Zone.

LNPBZ supports significant populations of Wood Snipe (Buckton and Morris 1993, Chaudhary and Khatidwada 2013, Basnet *et al.* 2021), Red-headed Vulture and wintering Steppe Eagle and so qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded are: Egyptian Vulture *Neophron percnopterus*, Greater Spotted Eagle *Clanga clanga*, Tawny Eagle *Aquila rapax*, Eastern Imperial Eagle *Aquila heliaca*, Saker Falcon *Falco cherrug* and Yellow-breasted Bunting *Emberiza aureola*, but they are rare or vagrant in LNPBZ. Further fieldwork may show that LNPBZ supports significant populations of some of these species.

LNPBZ also supports significant populations of the restricted-range Hoary-throated Barwing and Nepal Cupwing from the Central Himalayas (EBA 129). LNPBZ therefore qualifies as an IBA based on restricted-range criterion. The park has the highest known density of Nepal Cupwing in Nepal. Spectacled Finch *Callacanthus burtoni*, a restricted range species from the Western Himalayas (EBA 128), is a vagrant to LNPBZ.

There are extensive temperate forest and alpine areas in the park. These are known to support significant

proportions of the characteristic species of the Sino-Himalayan temperate forest and of the Eurasian high montane biomes (see Appendices 2,7). Langtang National Park therefore also meets the biome-restricted assemblage criterion for an IBA. The park also has extensive areas of subtropical broadleaved forest but a significant proportion of the characteristic species of the Sino-Himalayan subtropical forest biome have not been recorded to date.

Nine near-threatened species have been recorded: Mountain Hawk-eagle *Nisaetus nipalensis* and Himalayan Griffon *Gyps himalayensis* (fairly common residents); Satyr Tragopan *Tragopan satyra*; Bearded Vulture *Gypaetus barbatus* and Yellow-rumped Honeyguide *Indicator xanthonotus* (frequent residents); Cinereous Vulture *Aegypius monachus* (rare winter visitor), Black-necked Crane *Grus nigricollis* (very rare winter visitor); Pallid Harrier *Circus macrourus* (former very rare passage migrant, no known recent records) and Asian Woollyneck *Ciconia episcopus* (vagrant).

### Other wildlife

A total of 46 species of mammals has been reported (Karki and Thapa 2001) including the globally threatened Snow Leopard *Panthera uncia*, Clouded Leopard *Neofelis nebulosa*, Red Panda *Ailurus fulgens*, Himalayan Black Bear *Ursus thibetanus* and Himalayan Musk Deer *Moschus chrysogaster*, and near-threatened Himalayan Serow *Capricornis thar*, Himalayan Tahr *Hemitragus jemlahicus*, Himalayan Goral *Naemorhedus goral* and Assam Macaque



*Macaca assamensis* (DNPWC 2015h). Incomplete checklists of herpetofauna show 11 reptiles and amphibians species found in the park, 40 species of fish, 10 of spiders and 58 of butterflies. More than 1,043 plant species are found in the park, including 21 endemic species (LNP 2020). A 2005 survey collected more than 800 lichen species (DNPWC 2007).

### Conservation issues and management

The main challenges for biodiversity conservation in LNPBZ are pressure on forest resources for energy, livestock rearing and construction materials and by forest fire, poaching, concentration of tourism in pocket areas, illegal collection of NTFPs and overgrazing (BCN and DNPWC 2019b, DNPWC 2007). Forest fire is one of the most damaging impacts for the habitat of wildlife, including birds (Prasanna Bhattari, Chief Conservation Officer, LNPBZ *in litt.* to C. Inskipp, 17 January 2023).

Pheasants, Himalayan Musk Deer and Red Pandas are illegally trapped or hunted. Tourist demands have increased pressures on forests, especially those close to trails, lodges and villages (BCN and DNPWC 2019b).

Effective management of forest resources along with tourism and control of illegal hunting and trapping is highly essential for benefiting wildlife and local communities in the long run (BCN and DNPWC 2019b).

LNPBZ was one of the worst hit areas in the April 2015 Earthquake. Villages, schools, national park and other government buildings as well as infrastructure were very seriously damaged or destroyed. The priority was re-build villages and government buildings, including park buildings and restore infrastructure including trails where possible which was a very challenging task. Governance and protection of LNPBZ was very difficult without adequate shelter and equipment for staff.

LNPBZ shares similar environmental problems with Annapurna Conservation Area and Sagarmatha National Park. A BZ management committee, 21 user committees and more than 350 user groups are functioning to manage the BZ areas to reduce the biotic pressure in the park (DNPWC 2007).

A rising population of mainly subsistence farmers has impacted the environment chiefly through forest



degradation and overgrazing by their livestock. Only a third of the park's residents were estimated to understand the importance of conservation, but peoples' participation in conservation efforts was increasing. The 34 villages within the park plan and manage local conservation themselves through forest user groups and committees (Basnyat 2004).

Pheasants were illegally trapped using brush barricades similar to those employed for trapping Himalayan Musk Deer but on a much smaller scale. Gates, placed at intervals, are set with foot traps. Pheasants were poached east of Khangjima, Pangsang Kharka, near Tarkeghyang and Melamchigaon (DNPWC 2007). Around Ghopte cave in Langtang National Park local villagers reported in 1997 that the near-threatened Satyr Tragopan *Tragopan satyra* had been common up to ten years before (Cooper and Cooper 1997), but available records indicate that it is very uncommon in the area today. For example, at Chandanbari six were recorded in April 1999, and just single birds in March and May 2012 (Hathan Chaudhary). Extensive areas of suitable habitat for this pheasant remain so its decline is very likely because of illegal trapping or hunting.

Tourist demands have increased pressures on forests, especially those close to trails, lodges and villages. The spread of tourist lodges was uncontrolled in the park adding to the negative environmental impacts. Litter and water pollution also continue to be major problems. In response the DNPWC set up a Lodge Management Committee in the park. Lodge owners and park officials are the Committee members and their aim is to improve lodge management and provide guidelines for the management of lodges (Basnyat 2004).

Objectives of the DNPWC management plan (2007) were:

- To conserve the representative area of Mid Himalayan ecosystem and protect the biodiversity hotspot with all the ecological processes, functions and the gene pool;
- To conserve and maintain the viable population and gene pool of endangered flora and fauna;
- To ensure, maintain and restore regional connectivity with other important biological areas including Changcun Core Zone of Qomolangma Nature Reserve, Manaslu Conservation Area through Ganesh Himal Range



Photo by Rajendra Gurung

and Shivapuri Nagarjun National Park through community-managed forest stretches;

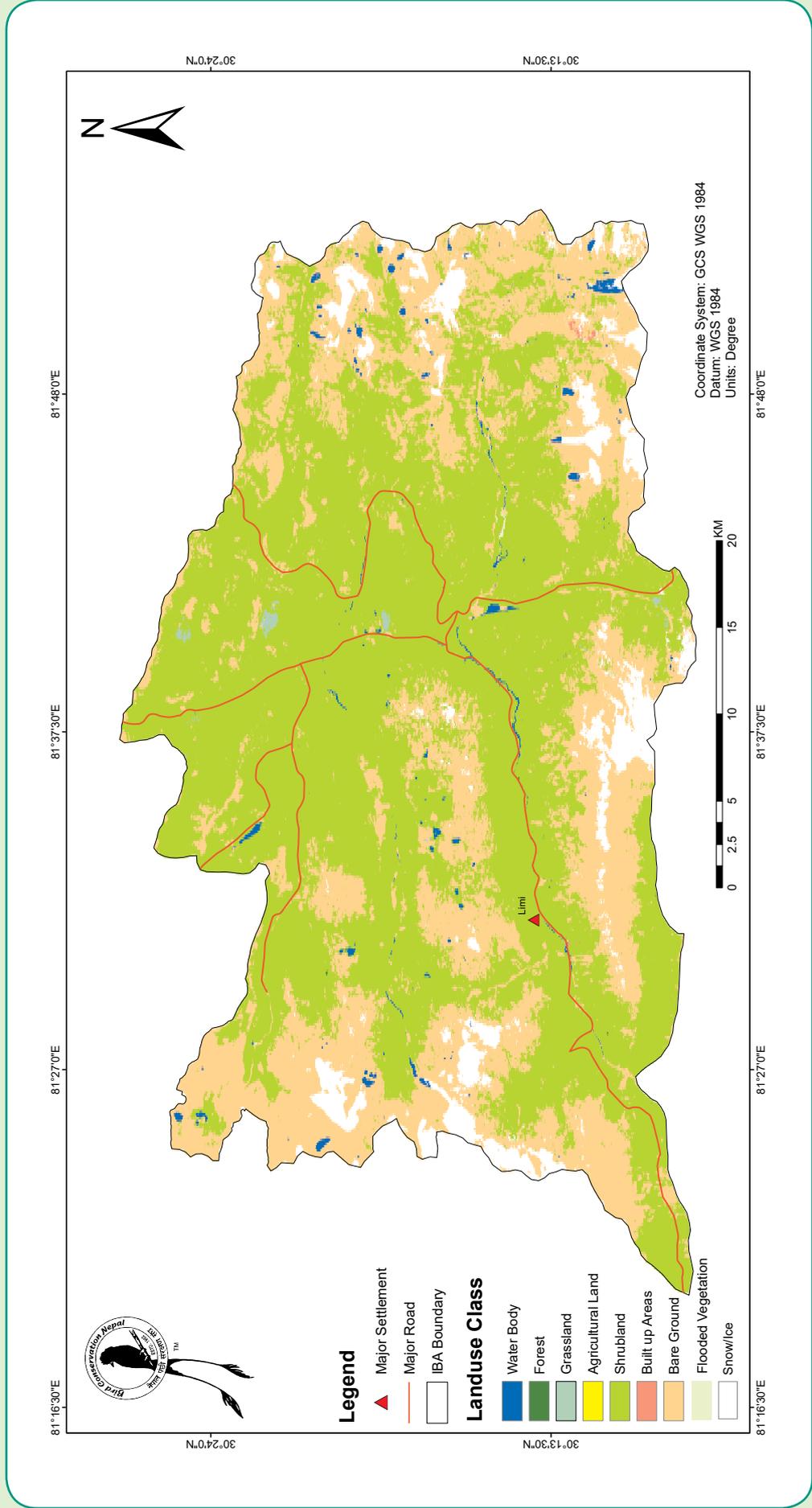
- To protect, restore and maintain catchments capability of major rivers for hydropower generation outside the protected area, drinking water supply project for Kathmandu valley and downstream irrigation projects;
- To protect and promote culture of indigenous people and provide sustainable livelihood opportunities to local communities dependent on natural resources of the park;
- To regulate and manage pilgrimage in consonance with conservation goals or objectives;
- To promote ecotourism and provide wilderness/ adventurous experience eliciting public support;
- To promote research and monitoring programme for strengthening management effectiveness of the park; and
- To improve and strengthened PA management through appropriate capacity building programmes and staff amenities.

A 2011 assessment of the state of LNPBZ IBA found it was in a very unfavourable condition (BirdLife International 2015b).



Wood Snipe by Hari Basnet

# LIMI VALLEY AREA SITE MAP





## 26 LIMI VALLEY

### Site description

Limi valley is unprotected and lies in Namkha Rural Municipality ward no 6, the northernmost corner of Humla district. It is a high, narrow mountain valley that runs north-east to south-west. The valley constitutes part of the western end of the Tibetan plateau and so is geographically connected to the Tibetan Autonomous Region of China. It remains cut off from other parts of Nepal during winter. The valley has low rainfall and the vegetation is similar to that of the Trans-Himalayan region. There are high mountain passes coupled with rugged terrain. The Limi River has several tributaries including the Sakya Khola, Geu Khola, Ning Khola and Talung Khola which all flow through wide river valleys and some have many small and medium-sized lakes (Acharya and Ghimirey 2016).

Habitat coverage of the Limi valley is: forest 207 ha, shrubland 2,053 ha, grassland 8,731 ha, barren land 93,960 ha, cultivation 247 ha, glacier edge of moraine 3,936 ha, sand 9,990 ha, rivers/streams 521 ha and ponds or lakes 444 ha (Acharya and Ghimirey 2016).

Very few people visit this place due to its remoteness. There are only 181 households in the valley; the largest settlement is Halji which comprises 81 households (Acharya and Ghimirey 2016).

### Birds

Limi valley is under-recorded for birds with a total of over 100 bird species (Ghimirey and Acharya 2013, 2016; Naresh Kusi *in litt.* to C. Inskipp 2022). The valley supports a significant number of species characteristic of the Eurasian high montane biome and therefore qualifies as an IBA based on the biome-restricted assemblage criterion (see Appendices 2,7).

Limi valley is of great national significance for birds as it is a refuge for some species that breed only within the boundaries of Tibet and some in Ladakh. Three pairs of Common Merganser *Mergus merganser* were recorded at Jhang, Nging Kharka in June 2014; this

**Status:** Unprotected

**Altitudinal range:** 3500- 5200 m

**Area:** 120,088 ha

**Geographical coordinates:** 30° 18' N and 81° 44' E (Central Coordinates of Valley), Humla District, Karnali Province

**Categories:** A3 (Eurasian high montane biome species)

species has previously only been known as a winter visitor in Nepal. Six Lesser Sand Plovers *Charadrius mongolus* including two pairs and a juvenile were seen by the Geu Khola in June 2014; this species was known only as a rare winter visitor and spring passage migrant to Nepal in the past. Two pairs and a juvenile of Common Tern *Sterna hirundo* were also recorded in June 2014; previously this species was considered a rare passage migrant to Nepal. All three species have been sighted regularly since June 2013 and breed in the Limi valley (Ghimirey and Acharya 2013; Naresh Kusi *in litt.* to C. Inskipp, 10 January 2023). One Dark-throated Thrush *Turdus ruficollis* was recorded in Namka Gumba in June 2014; this is the first summer record of this species in Nepal; previously it has only been recorded in winter. The large number of 40-50 Brown-headed Gulls *Larus brunnicephalus* were recorded in June 2014; previously this species was considered a winter visitor and passage migrant to Nepal (Acharya and Ghimirey 2016). In addition, in 2014 and 2015 a population of Tibetan Lark *Melanocorypha maxima* was recorded for the first time in Nepal (Kusi and Werhan 2016). A pair of near-threatened Black-necked Cranes *Grus nigricollis* have been seen in summer months since 2013 and possibly breed. In 2022 another pair was seen nearby in the Gyau Khola valley (Naresh Kusi *in litt.* to C. Inskipp, 10 January 2023). This species is a vagrant elsewhere in Nepal.

## Other wildlife

Mammal species include the globally threatened Wild Yak *Bos mutus*, Asiatic Wild Ass *Equus hemionus* and Snow Leopard *Panthera uncia* and near-threatened Argali *Ovis ammon* and Tibetan Gazelle *Procapra picticaudata*. Tibetan or Himalayan Wolf *Canis lupus chanco*, Red Fox *Vulpes vulpes* (Acharya and Ghimirey 2016). Other mammals recorded are Steppe Polecat *Mustela eversmanii* (Gurung *et al* 2022), and Pallas's Cat *Otocolobus manul* (Werhan *et al.* under review)

## Conservation issues and management

Limi valley is unprotected and is facing an increasing number of threats; the most prominent being human-wildlife conflict and the illegal wildlife trade (Ghimirey 2018). During his time in Limi valley nearly a quarter (23%) of the total population of Limi reported crop losses due to wildlife while Snow Leopards and Tibetan Wolves do not hesitate to take livestock when the opportunity arises (Ghimirey 2018). A newly constructed road connecting Limi Valley to China is not only destroying the already fragile landscape, but it is also catalysing illegal felling and trading of trees to China (Acharya and Ghimirey 2016).

Limi Valley deserves a formal designation as a protected area in Nepal to protect its outstanding biodiversity and unique cultural treasures (Kusi 2019). A Friends of Nature report (2016) submitted to the Ministry of Forests and Soil Conservation (MoFSC, currently Ministry of Forests and Environment (MoFE), WWF Nepal programme and National Trust for Nature Conservation (NTNC) recommended that Limi Valley should be developed into a new protected area in Nepal and that the 'Conservation Area (CA)' model can be appropriate for the area.

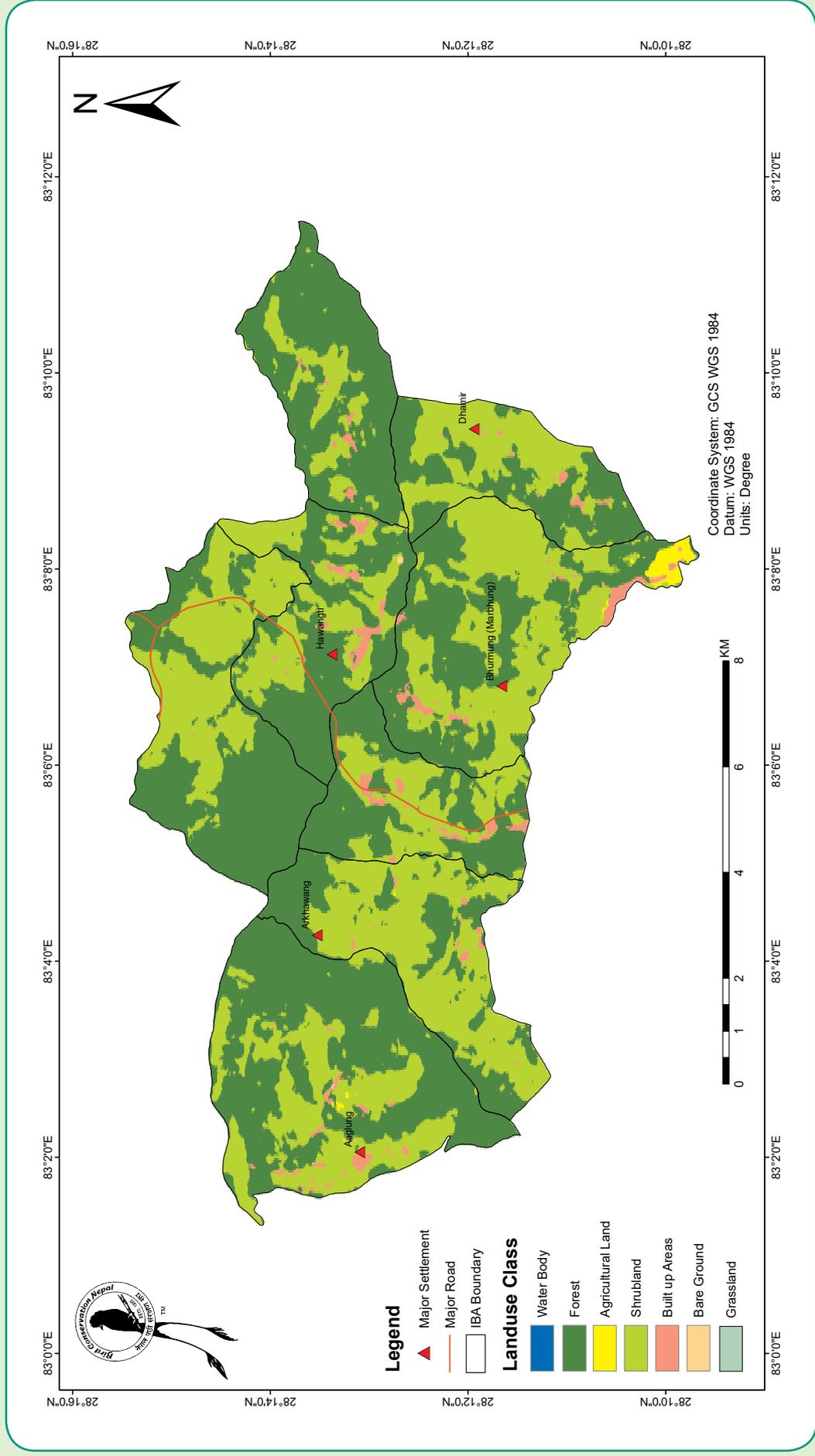
It is important to educate local people on the conservation of all wildlife, to implement livelihood-based conservation initiatives and promote wildlife tourism to make sure the indigenous people embrace conservation as part of their heritage (Acharya and Ghimirey 2016).

Many people consider that ecological (wildlife-based) and cultural tourism can act as good sources of income for the local people of Limi. This is certainly true, but care must be given that only a limited number of tourists explore the region each year with strict enforcement so that the biodiversity and culture of the area remains protected for a sustainable period. At the same time, appropriate mitigations to human-wildlife conflicts (mostly among the herders and the predators) need to be implemented to increase local support for wildlife conservation (Werhahn *et al.* 2017; Kusi *et al.* 2019). Mitigating human-wildlife conflicts will involve working directly with local people in alternative livelihood and income generation activities. Insurance programmes could be instrumental to reduce the retaliatory killing and trade, as well (Ghimirey 2018).

Construction of motorable roads in the Tibetan Plateau of Limi has certainly degraded the natural habitats. However, the existing road networks, to date, spare the secluded valleys inhabited by important fauna and flora. In this light, it is crucial to ensure that any future developmental activities do not encroach on these important habitat refuges. Above all, one thing is undeniable, participatory discussion with the local communities and the relevant experts will prove instrumental in deciding an appropriate conservation model for Limi (Kusi 2019).



# MADANE FOREST CONSERVATION AREA SITE MAP



### Site description

Madane was declared as a Protection Forest (MPF) for its biodiversity importance by the Government of Nepal on 30<sup>th</sup> March 2011 under article 23 of the forest Act 2002 (Department of Forest 2012). MPF represents the Middle Mountains ecosystems of Nepal. The forest is categorized into three types of forests: Schima-Castanopsis-Chirpine forest (45.98%), Lower Temperate Oak forest (50.64%) and Temperate Mountain Oak forest (3.38). It is located at the confluence of three district boundaries: Gulmi, Pyuthan, and Baglung.

MPF comprises 38.62% forest, 52% farmland and Settlements, and 7.75 % open space, grasslands, and wetlands. The area forms the headwaters of several rivers flowing in the three districts. The forest is dominated by *Schima wallichii*, *Castanopsis indica*, *Pinus roxburghii*, *Alnus nepalensis*, and *Shorea robusta*. This forest act as an important corridor for wildlife because it is connected to Dhorpatan Hunting Reserve in the north and Reshunga Forest Conservation Area and Thaple hill in the south.

**Status:** Protected

**Altitude:** 975-2,657m

**Area:** 13,761ha

**Geographical coordinates:** 28 °53'N/80°11'E, Gulmi District of Lumbini Province

**Categories:** A1 (globally threatened species); A2 (restricted range species, Central and Western Himalayas EBAs), A3 (Sino-Himalayan subtropical forest biome species)

A total of 264 bird species has been recorded in Madane Forest Conservation Area (BCN 2020). The forest has significant populations of two globally threatened species: Steppe Eagle and Egyptian Vulture, and therefore qualifies as an IBA based on the globally threatened species criterion.

### Birds

Globally threatened species	Threat status	Status and habitat
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Frequent winter visitor
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Frequent resident
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Rare, probably resident, possibly overlooked
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Probably resident; mossy broadleaved forest
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Possibly resident
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Rare, probably resident, possibly overlooked

The globally threatened Cheer Pheasant *Catreus wallichii* and Red-headed Vulture *Sarcogyps calvus* have also been recorded. Further fieldwork may show that Madane Forest Conservation Area also supports significant populations of these species.

Four restricted-range species: Hoary-throated Barwing, Nepal Cupwing and Spiny Babbler from the Central Himalayas (EBA129), and Cheer Pheasant from the Western Himalayas (EBA 128) have been recorded therefore also qualify as an IBA on the restricted-range criterion.

The subtropical broadleaved forests in Madane Forest Conservation Area support a significant proportion of the characteristic species of the Sino-Himalayan subtropical forest biome. MPF therefore also qualifies as an IBA based on the biome-restricted criterion.

Five near-threatened species have been recorded: Asian Woollyneck *Ciconia episcopus*, Cinereous Vulture *Aegypius monachus*, Himalayan Vulture *Gyps himalayensis*, Bearded Vulture *Gypaetus barbatus*

### Other wildlife

A total of 29 species of mammals, 12 species of butterflies, eight species of fish, seven species of amphibians, and 26 species of reptiles have been recorded in the Madane Forest Conservation Area (BCN 2020). The forest provides habitat for Himalayan Black Bear *Ursus thibetanus*, Northern Red Muntjac *Muntiacus vaginalis* and Common Leopard *Panthera pardus*. The forest is good for medicinal and aromatic plants such as *Swertia*, *Morchella*, *Cinnamomum glaucescens*, orchids, and commercially important non-timber forest products such as *Daphne* species (Kathmandu Forestry College 2013).

### Conservation issues and management

Most anthropogenic disturbances were found in the lower elevation ranges of Madane Hill. Road construction in many areas seems to be a big problem for birds. The Cheer Pheasant is likely the species most adversely impacted; the recently improved/widened road has dispersed the bird's small habitat patch near the Aurobindo Ashram area. The planning of the road from Hwagdi to Madane chaur will have negative impacts on birds due to the inevitable felling of large parts of the dense oak forest.

Uncontrolled harvesting of oak leaves and other fodder take place in the core area. Dryness on the southern slopes and extraction of drinking water in northern slopes leaves insufficient water for vegetation, birds, and other wildlife

Illegal hunting and trapping were found. Gunshots were heard and a group of hunters with guns from the Pyuthan district was encountered. Speckled Woodpigeon *Columba hodgsonii* (locally called Malewa), Kalij Pheasant *Lophura leucomelanos*, and Hill Partridge *Arborophila torqueola* are probably the most hunted birds. Due to the proximity of human settlement, farmland, and people entering the forest with low awareness, the core area with its slow-growing oak forest is susceptible to forest fire.

Together with the forests in the adjoining districts, Baglung and Pyuthan, MPF can be managed to form a corridor to Dhorpatan Hunting Reserve. A sizeable area is managed as community forests: 47 Community Forest User Groups manage nearly 1,903 ha of forest. Madane is managed with a five-year management plan that started in 2011, under a Government budget (Kathmandu Forestry College 2013). It lies in the area covered by WWF's Chitwan-Annapurna Landscape (CHAL).

BCN has been working in the area to address the threat, sustainable management, and protection of wildlife with support from Dansk Ornitologisk Forening and in coordination with Division Forest.



Photo by Nahakul Bhusal





## 28 MAI VALLEY FORESTS

### Site description

The Mai Valley forests (MVF) lie in the east and south of Kanchenjunga Conservation Area. The Mai watershed extends from the confluence with the Kankai River at 70 m in the tropical zone to the Darjeeling border at 3050 m in the subalpine zone. Ilam (population 19,427 in 2011) is the main town in the district and lies in the valley at 1210 m. Forests comprise: tropical semi-evergreen mixed broadleaved and some sal *Shorea robusta* dominated forest (180 m – 1000 m); subtropical semi-evergreen mixed broadleaved with some bamboo (1000 m – 1700 m), lower temperate mixed broadleaved with some bamboo (1700 m – 2400 m) and higher up extensive stands of upper temperate broadleaved forest, mainly of *Quercus semecarpifolia* and *Rhododendron* spp. with thick bamboo undergrowth and slopes covered with bamboo (Red Panda Network 2018). In March 2022, the tropical forests were found to be largely replaced by tea and rubber plantations. However, Sukhani forest still comprised a tropical semi-evergreen broadleaved forest with thick undergrowth and in places a closed canopy and was divided by a surfaced road. At Geruwa there was a remnant of badly degraded tropical semi-evergreen forest. Only a small area of tropical sal forest remained. Extensive tropical and subtropical semi-evergreen mixed broadleaved forests on steep slopes covered either side of the Mai valley from below Lamitar to Mai Besi and there was very little sign of cultivation. Above Ilam, there was good quality subtropical semi-evergreen, mixed broadleaved forest with bamboo in Bhaludunga Community Forest. The terraced hillside of Jamuna stretching between Mai

**Status:** Unprotected

**Altitude:** 70-3050m

**Area:** 30,000ha

**Geographical coordinates:** 26° 40'N-27° 05'N 87° 41'E-88°10'E Ilam District of Koshi Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Central and Eastern EBAs); A3 (Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species)

Besi and lower Hangetham was largely cultivated with cash crops of cardamom and Nepalese broom grass, and crops for community use, with remaining lower temperate broadleaved forest and some bamboo mainly limited to ravines (Inskipp *et al.* 2022).

Near Hangetham (2210 m) above Jamuna the original lower temperate mixed broadleaved forest was replaced by a non-native conifer forest of *Cryptomeria japonica* with almost no understorey in the 1980s (Inskipp *et al.* 2019). Hangetham forests have been managed as community forests for a number of years. However extensive areas of the lower temperate mixed broadleaved and upper temperate broadleaved forest still remained above Hangetham and cover the mountain sides (Inskipp *et al.* 2022).

## Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Breeding resident. In 2020, 5 nests in 3 colonies, 9 chicks fledged (Katuwal <i>et al.</i> 2022).
Grey-crowned Prinia <i>Prinia cinereocapilla</i>	Vulnerable	Local resident amongst tall grass and boulders on hillsides.
Restricted-range species	Endemic bird area	Status and habitat
Yellow-vented Warbler <i>Phylloscopus cantator</i>	Eastern Himalayas	Uncommon altitudinal migrant in mixed broadleaved evergreen and semi-evergreen forests.
Broad-billed Warbler <i>Tickellia hodgsoni</i>	Eastern Himalayas	Locally frequent altitudinal migrant in mixed broadleaved lower temperate forests.
Rufous-throated Wren-babbler <i>Spelaeornis caudatus</i>	Eastern Himalayas	Uncommon and local resident in lower temperate mixed broadleaved forest amongst mossy rocks and ferns.
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Local and uncommon, probably resident amongst boulders and tall herbs on riverbanks in winter and in forest.
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident and altitudinal migrant in mossy oak forest

A total of 368 species has been recorded in the Mai valley during surveys carried out in January and May 2006 (Basnet and Sapkota (2006, 2007), March 2008 (Robson *et al.* 2008), September 2010 (Baral *et al.* 2010), April and July 2014 (Chaudhary 2016), April 2015 (Bunskoek 2015), two surveys in March 2016 (Chaudhary 2016, van Riessen 2016), and surveys in January 2018 (Chaudhary and Inskipp 2018, Inskipp *et al.* 2019) and March 2022 (Inskipp *et al.* 2022).

MVF qualifies as an IBA based on the globally threatened criterion as it supports significant populations of Grey-crowned Prinia (Inskipp *et al.* 2022) and Lesser Adjutant.

Other globally threatened species recorded are: Wood Snipe *Gallinago nemoricola* (rare visitor), and the following species for which there are no recent records: White-rumped Vulture *Gyps bengalensis*, Red-headed Vulture *Sarcogyps calvus* and Great Hornbill *Buceros bicornis* (former residents). Slender-billed

Vulture *Gyps tenuirostris*, Greater Spotted Eagle *Clanga clanga* and Steppe Eagle *Aquila nipalensis* (former passage migrants).

As extensive suitable habitat occurs for Yellow-vented Warbler, Broad-billed Warbler and Rufous-throated Wren-babbler from the Eastern Himalayas (EBA 130) and for Nepal Cupwing and Hoary-throated Barwing from the Central Himalayas (EBA 129), the Mai valley qualifies as an IBA based on the restricted-range criterion. Spiny Babbler *Acanthoptila nipalensis* from the Central Himalayas (EBA 129) has been recorded but there are no recent records.

In the Mai valley during surveys carried out between 2006 and 2022, the number of species recorded met the biome-restricted assemblage criteria for the Sino-Himalayan temperate forest and Sino-Himalayan subtropical forest biomes and so the MVF also qualifies as an IBA based on the biome-restricted criterion.



Fourteen near-threatened species have been recorded: Satyr Tragopan *Tragopan satyra* (uncommon resident), Asian Woollyneck *Ciconia episcopus* (uncommon), Yellow-rumped Honeyguide *Indicator xanthonotus* (former rare resident, no recent records), Mountain Hawk-eagle *Nisaetus nipalensis*, Bearded Vulture *Gypaetus barbatus* (rare visitor), Himalayan Vulture *Gyps himalayensis* (uncommon), Alexandrine Parakeet *Palaeornis eupatria* (fairly common resident), Red-breasted Parakeet *Psittacula alexandri* (now rare resident), River Lapwing *Vanellus duvaucelii* (uncommon resident), Great Thick-knee *Burhinus recurvirostris* (very rare visitor), Cinereous Vulture *Aegypius monachus* (former rare visitor, no recent records), Pallid Harrier *Circus macrourus* (former rare passage migrant, no recent records), Rufous-throated Wren Babbler *Spelaeornis caudatus* (local, uncommon resident).

Pale-headed Woodpecker *Gecinulus grantia* which had only been known from the lower Mai valley in Nepal has

not been recorded here since the 1980s. Black-tailed Crane *Zapornia bicolor* was recorded for the first time in Nepal near Dobate in September 2010 (Baral *et al.* 2010) and there have been a few later records. The first record of Mountain Tailorbird *Phyllergates cucullatus* for Nepal came from several localities below Jaubari and Kalipokhari/Dobate in April 2015 (Bunskoek 2015) and one was heard near Hangetham in March 2022 (Inskipp *et al.* 2022). Both species are probably residents which were overlooked previously.

### Other wildlife

Mammals seen recently include the globally threatened Red Panda *Ailurus fulgens*; the upper Mai valley upper temperate broadleaved forests which have plentiful bamboo are one of the most important sites in Nepal for this species which has a population of around 40 individuals in the area (Phinju Sherpa, Red Panda Network). Other globally threatened mammals include: Himalayan Black Bear *Ursus thibetanus* (camera-trapped in March 2016,

Chaudhary 2016) and Clouded Leopard *Pardofelis nebulosa*. , According to local people, Asiatic Wild Elephant *Elephas maximus* visits the southern part of the lower Mai valley. Other mammals recorded include Leopard Cat *Prionailurus bengalensis*, Wild Boar *Sus scrofa*, Jungle Cat *Felis chaus*, Assamese Macaque *Macaca assamensis*, Rhesus Macaque *Macaca mulata*, Northern Plains Gray Langur *Semnopithecus entellus*, Nepal Gray Langur *S. schistaceus*, Indian Hare *Lepus nigricollis*, Black Giant Squirrel *Ratufa bicolor*, Orange-bellied Himalayan Squirrel *Dremomys lokriah*, Common Palm Squirrel *Funambulus palmarum*, Five-striped Palm Squirrel *F. pennanti*, Northern Red Muntjac *Muntiacus vaginalis* and Yellow-throated Marten *Martes flavigula*. (Basnet and Sapkota 2006, Chaudhary 2016, Chaudhary and Inskipp 2018, Robson *et al.* 2008).

### Conservation issues and management

In the upper Mai valley surveys carried out in September 2010 (Baral *et al.* 2010), April 2015 (Bunskoek 2015) and January 2018 (Chaudhary and Inskipp 2018, Inskipp *et al.* 2019) showed that extensive broadleaved upper temperate forests still remain. There was some evidence of grazing in forests near the small settlements here, but away from these, the forests were in excellent condition with much bamboo and other undergrowth. Here there were many large trees, mainly of *Quercus semecarpifolia* and *Rhododendron* spp. with huge trunks and branches clothed in mosses and epiphytic ferns and orchids (Chaudhary and Inskipp 2018, Inskipp *et al.* 2019).

Some of these forests lie adjacent to the large extent of upper temperate broadleaved forest in the Singhalila National Park in India, such as above Dobate and between Ingla and Jaubari. There is probably much natural migration of wildlife across the India/Nepal border (Martijn Bunskoek *in litt.* to C; Inskipp, July 2016).

Currently Mai valley forests remain unprotected. However, the Red Panda Network (RPN) a US-based NGO committed to the conservation of wild Red Pandas and their habitat, is proposing a community-based protected area, the Panchthar-Ilam-Taplejung (PIT) Red Panda Protected Forest: a protected area dedicated to Red Pandas (Red Panda Network 2018).

This Protected Forest would include the same upper temperate broadleaved forests as in the Mai Valley IBA and so will greatly benefit the conservation of birds in the Mai Valley IBA.

The PIT corridor is part of the Kangchenjunga Singhalila Complex which provides connectivity between protected areas in India and Nepal. Establishing the PIT Red Panda Protected Forest will connect the tri-national Kanchenjunga Conservation Area with India's Barsey Rhododendron Garden and Singhalila National Park, creating an uninterrupted stretch of protected land extending for 11,500 km<sup>2</sup> (1,150,000 ha) (Red Panda Network 2018).

The proposed PIT Red Panda Protected Forest will be the largest "protected forest" in Nepal and the first to be managed by a network of community forests. According to the Government of Nepal forest legislation, any community forest can declare a portion of their managed land as "protected". RPN's goal is to create the Panchthar-Ilam-Taplejung Community Forest Conservation Union, a network of all community forests bordering the proposed Panchthar-Ilam-Taplejung Red Panda Protected Forest which will cover 70,800 ha (Red Panda Network 2018).

The network currently works with 45 Community Forest User Groups (CFUGs) and 72 Forest Guardians in monitoring Red Panda habitat and increasing Red Panda awareness among local communities. Forest Guardians work within their own communities to create a Community Forest Network, which empowers local people to protect their forests. A Panchthar-Ilam-Taplejung Community Forest Conservation Union will be formed which will elect a board of about 12 members that will manage the Panchthar-Ilam-Taplejung Red Panda Protected Forest. This network will be responsible for managing all Community Forests in the region. RPN will also work with Division Forest Offices and CFUGs in integrating conservation measures into CFUG Operational Plans (Red Panda Network 2018).

In addition, RPN works with local people in adopting sustainable livestock grazing and forest resource harvesting practices. RPN has reforested degraded

areas and planted Red Panda food species (including bamboo) and has restored important water sources which are important for birds and other wildlife as well as for Red Pandas, e.g. Manetaar pond (Red Panda Network 2018).

Poverty levels are very high among the communities in the PIT area. RPN is therefore committed to long-term sustainability by working from the bottom up and conducting deliberate, incremental project development that takes into account local wants, needs, and capacity. RPN is promoting sustainable development and is providing alternative economic opportunities for local communities. The RPN's Forest Guardian programme, along with ecotourism, anti-poaching network, alternative energy production, organic farming, and medicinal plant cultivation programmes enhance local livelihoods (Red Panda Network).

In contrast the lower Mai forests (tropical, subtropical and some lower temperate) are in a much poorer condition than forests higher up. They have suffered from severe fragmentation and degradation through over-exploitation for fuelwood, fodder and bamboo and overgrazing by livestock in the 1980s and 1990s. Illegal logging was also taking place (Inskipp 1989a, Halliday and McKnight 1990, 1993). The forest areas were not being effectively managed although some forests had been handed back to local people as community forests (Baral and Inskipp 2005).

In the 1980s and 1990s Mai valley forests suffered from severe fragmentation and degradation through over-exploitation for fuelwood, fodder and bamboo and overgrazing by livestock. Illegal logging was also taking place (Halliday and McKnight 1990; 1993).

A 2008 survey of Mai valley forests found that the forests were facing the same threats as in the 1980s and 1990s and it was often difficult to locate large tracts of intact forest (Robson *et al.* 2008). However, deforestation may not be continuing in the subtropical and temperate zones. In contrast to the 2008 findings, the 2022 survey observed large areas of high-quality forest

with mature trees and dense undergrowth in the subtropical and lower temperate zones still remained (Inskipp *et al.* 2022).

Robson *et al.* (2008) stated that their survey did not cover some of the higher parts of the Mai valley. During an April 2015 bird survey, Martijn Bunskoek reported there was good quality forest in the upper Mai valley on the slopes of Singhalila Ridge, near the border with India in the upper temperate and subalpine zones (Martijn Bunskoek in Inskipp *et al.* 2016). This finding was confirmed by H. Chaudhary and C. Inskipp in their January 2018 upper Mai valley survey (Inskipp *et al.* 2019).

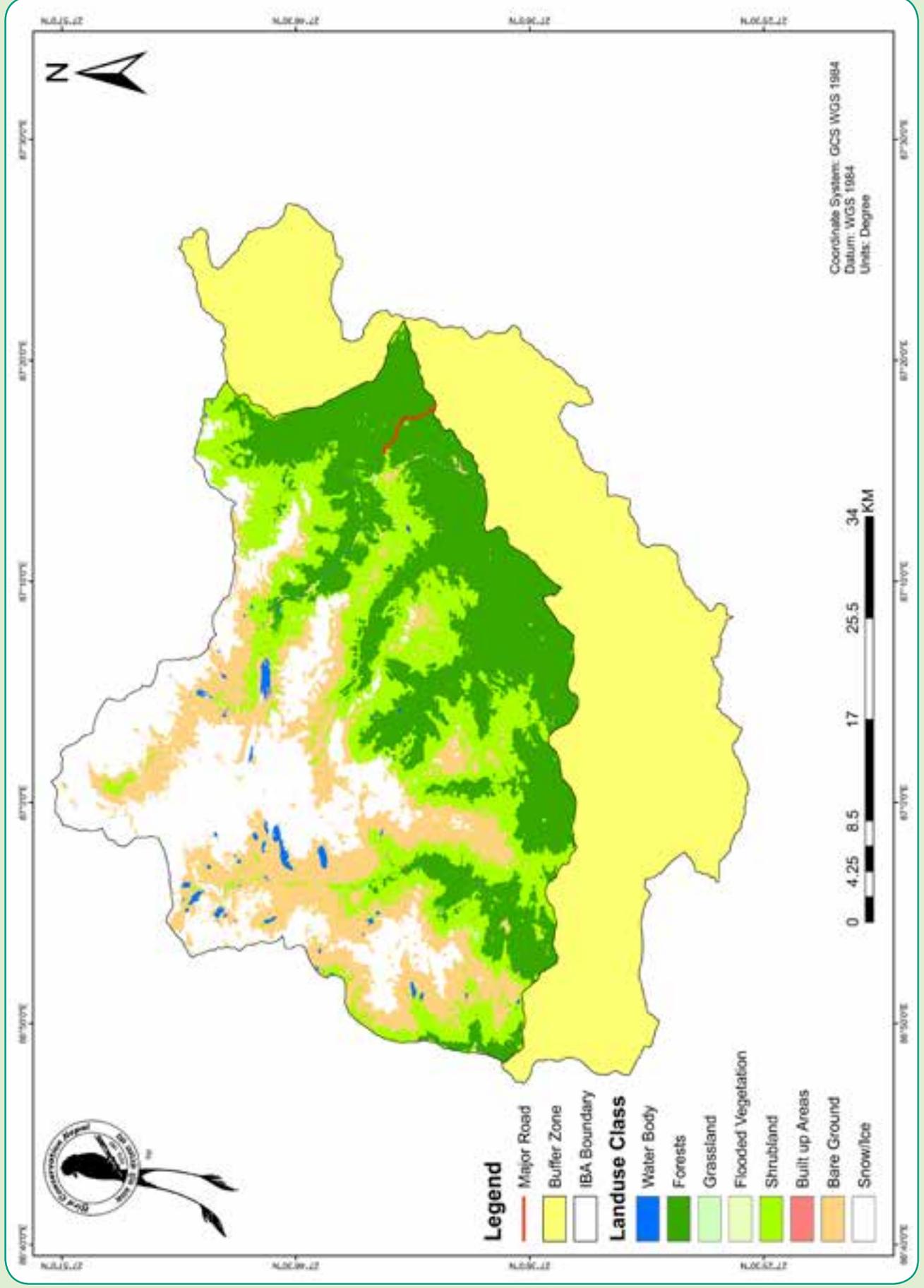
In March 2022, Sukhani forest comprised a substantial area of intact forest in the tropical zone. However, this now isolated forest is seriously threatened by conversion to tea and rubber plantations, as has happened to Geruwa forest (Inskipp *et al.* 2022).

Hunting is probably a significant threat to birds in the MVF. Relatively few individuals and species of Galliformes and Columbiformes, which are favoured birds for trapping and eating, were recorded during our survey, compared to other bird species. Gunshots were heard on 4 March from Hangetham forests. Feathers adjacent to the remains of a recent fire indicate that a Satyr Tragopan had been killed and eaten here (Inskipp *et al.* 2022).

Ilam district in which the upper Mai valley chiefly lies, is now a diclofenac-free zone (BCN 2014).

A 2011 assessment of the status of Nepal's IBAs found that the Mai valley IBA was among five in the most unfavourable condition facing high pressures and there had been a negligible response to rectify this. Whilst the approved forest management plans of community forests were leading to some positive changes (e.g. removal of Japanese Sallo and replacement with native broadleaved forest), in many parts of the IBA, illegal farming on hill slopes is taking place. Increased farming of cash crops like cardamom and tea is also changing the habitat into a monoculture (BCN and DNPWC 2012).

# MAKALU BARUN NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



### Site description

Declared in 1992, Makalu Barun National Park and Buffer Zone (MBNPBZ) lie in east Nepal. The area was initially designated a Conservation Area. Significant features of the park include a unique assemblage of various forest ecosystems along the elevation gradient from tropical to alpine climate; a transboundary linkage with biodiversity hotspots *viz.* Sagarmatha National Park in Nepal and Qomolangma National Nature Preserve in the Tibetan Autonomous Region of China; a source of fresh water; pristine nature that provides recreational facilities and tourism potential, and unique cultural practices in and around Buffer Zone (DNPWC 2014c). The fifth highest mountain peak in the world, Makalu (8463 m) and the wild and comparatively uninhabited Barun valley lie in the park. The park also holds several large tributaries of the Arun River which form important watersheds (Shrestha 1989). MBNPBZ comprises 35.67% barren land, 32.84% forest, 14.71% bush/shrub land, 6.81% cultivated land, 8.38% glacier, and 1.61 % other landuse types (grassland, pond or lakes, river cutting/cliffs, sandy area and water bodies) (DNPWC 2012b).

A wide range of vegetation is represented here in undisturbed form; even some of the steepest slopes of the mountain are vegetated. Sal forests reach their northern limit in Nepal along the banks of the Arun below 1000 m. Other forest types comprise subtropical broadleaved *Castanopsis tribuloides*, *C. indica*, *C. hystrix*, *Schima wallichii*, *Alnus nipalensis*; temperate *Quercus lamellosa*, *Q. lineata*, *Acer campbellii*, *Magnolia campbellii* and subalpine *Abies spectabilis*, *Betula utilis*, and shrubberies of *Rhododendron* spp. Vegetation in the alpine zone consists of herbs, grasses and shrubs of *Rhododendron* spp. (Shrestha 1989).

In 2011 the population of the park and Buffer Zone was 36,395 persons (DNPWC 2014c).

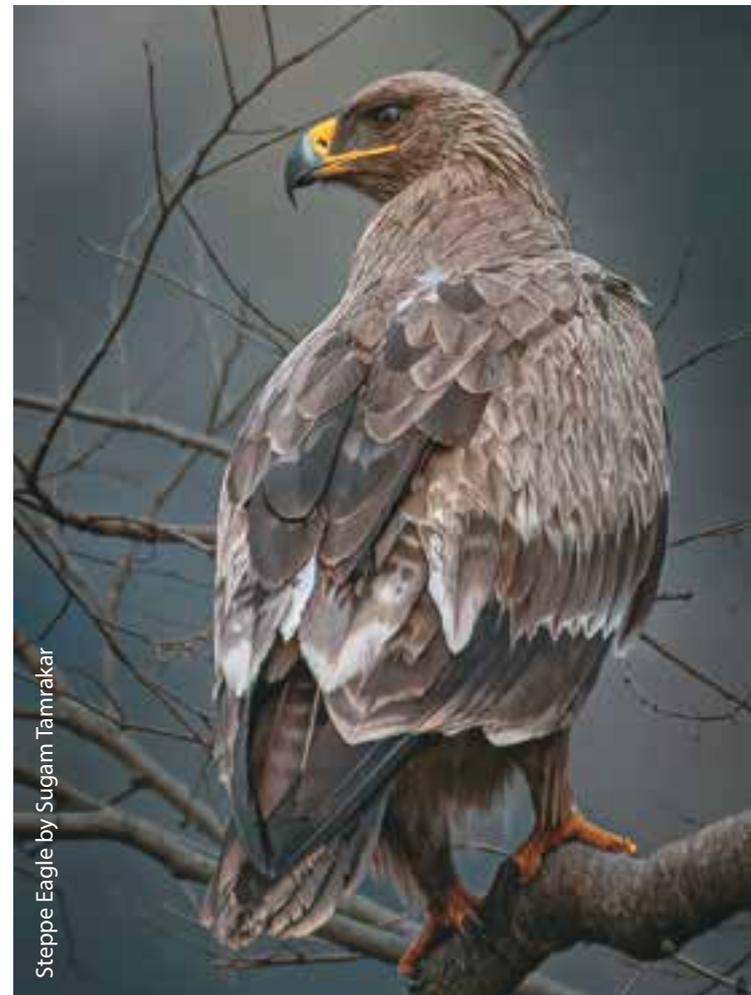
**Status:** Protected

**Altitude:** 435-8463m

**Area:** 150,000ha NP; 83,000 BZ

**Geographical coordinates:** 27°45'N/87°00'E, Sankhuwasabha and Bhojpur Districts of Koshi Province

**Categories:** A1 (globally threatened species); A2 (restricted range species, Central and Eastern Himalayas EBAs); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species)



Steppe Eagle by Sugam Tamrakar

## Birds

Globally threatened species	Threat status	Status and habitat
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Common passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Yellow-vented Warbler <i>Phylloscopus cantator</i>	Eastern Himalayas	Local and uncommon breeding altitudinal migrant, possibly resident; mainly in evergreen broadleaved forest
Broad-billed Warbler <i>Tickellia hodgsoni</i>	Eastern Himalayas	Rare altitudinal migrant, possibly resident in understorey in broadleaved evergreen forest, no records since 1984.
Rufous-throated Wren-babbler <i>Spelaeornis caudatus</i>	Eastern Himalayas	Probably resident (Hari Basnet <i>in litt.</i> to C. Inskipp, 11 January 2023) amongst mossy rocks and ferns in dense broadleaved forest
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Locally fairly common altitudinal migrant, possibly resident in tall herbage at forest edges and in open forest near running water
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Frequent resident and altitudinal migrant in dense scrub
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common resident and altitudinal migrant in mossy broadleaved forest
White-naped Yuhina <i>Yuhina bakeri</i>	Eastern Himalayas	Very local and frequent resident in Buffer Zone in broadleaved forest

A total of 348 bird species was recorded from MBNPBZ by Cox (1999). Nineteen additional species were recorded by 2009 (Cox 1992, 2009; Choudhary 1995, Giri and Choudhary 2006b, Halberg 1991, Inskipp *et al.* 2005), and a further six species were added by 2023 (Hari Basnet *in litt.* to C. Inskipp, 11 January 2023), making a total of 373 species.

MBNPBZ supports significant populations of the globally threatened Steppe Eagle and so qualifies as an IBA based on the globally threatened species criterion.

The globally threatened Wood Snipe *Gallinago nemoricola* and Eastern Imperial Eagle *Aquila heliaca* have been recorded but both species are rare. Further fieldwork may find the park supports significant populations of these species.

MBNPBZ is of special importance for a high number of restricted-range species that are probably resident: Yellow-vented Warbler, Rufous-throated Wren-babbler, White-naped Yuhina and possibly Broad-billed Warbler from the Eastern Himalayas

(EBA 30) and Nepal Cupwing, Spiny Babbler and Hoary-throated Barwing from the Central Himalayas (EBA 129). The BZ is the only Nepal locality where White-naped Yuhina has been recorded since 1989 (Cox 1999, Tymstra 1993). MBNPBZ therefore qualifies as an IBA based on the restricted-range species criterion.

There are extensive subtropical and temperate forests and alpine zone areas which support significant proportions of the characteristic species of the Sino-Himalayan subtropical forest, Sino-Himalayan temperate forest and Eurasian high montane biomes (see Appendices 2,7) and so MBNPBZ also qualifies as an IBA based on the biome-restricted criterion.

Eight near-threatened species have been recorded: River Lapwing *Vanellus duvaucelii* (common resident); Bearded Vulture *Gypaetus barbatus* (fairly common resident); Himalayan Griffon *Gyps himalayensis* (locally fairly common resident); Asian Woollyneck *Ciconia episcopus* (fairly common resident) Satyr Tragopan *Tragopan satyra* (common



resident); Yellow-rumped Honeyguide *Indicator xanthonotus* (uncommon resident); Red-headed Falcon *Falco chicquera* (rare resident), and Rufous-throated Wren Babbler *Spelaeornis caudatus* (probably resident).

### Other wildlife

A total of 88 mammal species has been recorded. Globally threatened species include Himalayan Black Bear *Ursus thibetanus*, Himalayan Musk Deer *Moschus chrysogaster*, Red Panda *Ailurus fulgens*, Asiatic Wild Dog *Cuon alpinus*, Mainland Serow *Capricornis sumatraensis*, and Leopard *Panthera pardus*. The near-threatened Assamese Macaque *Macaca assamensis*, Himalayan Tahr *Hemitragus jemlahicus* and Himalayan Goral *Naemorhedus goral* have been recorded. Total of 43 species of reptiles, 16 of amphibians, 315 of butterflies, and 13 fish species have been recorded. In addition, MBNPBZ is recognised for its high botanical diversity supporting more than 3,000 species of plants including 18 endemic species (Hari Basnet *in litt.* to C. Inskipp, 11 January 2023; DNPWC 2014c).

### Conservation issues and management

This park is administered and managed by DNPWC, GoN and supported by The Mountain Institute's initiative and is an innovative conservation model that integrates protected area management and community development (DNPWC 2015i).

During the period 1995-2013 a significant change in major land use types was observed in the park. There was an overall increase in shrub land and cultivated land by 150.84 km<sup>2</sup> (78.6%) and 64.76 km<sup>2</sup> (68.9%) respectively, whereas forest land and grass land decreased by 118.78 km<sup>2</sup> (13.5%) and 281.45 km<sup>2</sup> (95.5%) respectively (DNPWC data, 2013). The overall increase in shrub land could be the natural succession of grassland to shrubland in the upper reaches and conversion of forest to shrubland due to slash and burn practices for shifting cultivation (Chaudhary and Vetaas 2002).

Slash and burn is a common and traditional farming practice in the park. Under the rotational farming system, crops are usually sown in slash and burn

fields at intervals of five to seven years, but these intervals have been reduced to two to three years, thus limiting time for soil fertility reclamation. The practice has immense impacts on vegetation growth and makes land vulnerable to erosion and landslides (SCDNPWC 2013).

Cox (1999) highlighted the degradation of forests and found evidence of hunting for game birds. He also described widespread and over-collection of honey from Giant Rock Bee *Apis dorsata* nests in the Kasuwa watershed resulting in the decrease of local bee populations in the previous 10-20 years. This is likely to have had a damaging impact on Yellow-rumped Honeyguide *Indicator xanthonotus* populations in the park.

A 2011 assessment of the state of MBNPBZ IBA found it was in a very unfavourable condition (BirdLife International 2015b).

A draft management plan (2015-19) was prepared in 2014. The objectives of the draft management plan, issues in achieving these objectives and actions aimed at addressing these issues with a focus on bird conservation follow DNPWC (2014c).

### Objective 1

The park management objective is to conserve ecosystem and species diversity, and genetic resources.

#### Issues include:

- a. Encroachment of forest due to slash and burn practices for shifting cultivation;
- b. Illegal firewood collection for cattle sheds in grazing sites and for tourism business along some major trails increasing;
- c. Grazing activity not regulated;
- d. Major wetlands in high pastures polluted by solid wastes and religious activities;
- e. Clearing of vegetation for grazing areas' expansion;
- f. Spread of invasive species increasing;
- g. Extensive occurrence of fire in forests and rangelands;
- h. Potential Ramsar Site wetlands need further formal action from park;

- i. Illegal extraction of NTFPs and poaching activities increasing especially in high altitude areas park due to weak patrolling and monitoring and transborder trade activities;
- j. Due to open border and absence of security posts especially in the northern border areas, illegal wildlife trade prevalent, and
- k. Inter park coordination and cooperation is weak in controlling poaching, illegal trade, forest fires and promoting mutual benefits.

#### Recommended actions include:

- l. Survey and delineate boundary between park area and private land bordering BZ;
- m. Conduct impact of climate change studies on forest ecosystems;
- n. Survey *kharkas* to develop baseline data on livestock, herders, firewood consumption, and carrying capacity;
- o. Conduct awareness campaigns to herders, and religious mass tourists during festival times to conserve the ecological integrity of wetlands;
- p. Provide subsidy on kerosene and other alternative energy sources in higher altitude villages and in hotel/teashops (at cost price as practiced in Sagarmatha National Park);
- q. Organise cleaning campaigns in and around major wetlands by mobilizing both owners and religious groups by coordinating both communities, religious institutions and BZ User Committees;
- r. Form anti-poaching units and mobilise them providing training and equipment;
- s. Conduct detailed NTFPs and threatened wildlife species surveys;
- t. Conduct awareness programmes on conservation of threatened wildlife;
- u. Assess impact of climate change on snow, wildlife populations and habitat, and natural vegetation including NTFPs;
- v. Conduct status survey on invasive species and its impacts on forest and agro ecosystems, and
- w. Conduct local level transboundary meeting/s with Chinese National Park officials to control illegal wildlife trade.

## Objective 2

Buffer Zone management objective is to achieve balance between biodiversity conservation and sustainable livelihood.

**Issues include:** forests as primary sources of firewood, fodder, timber and NTFPs not properly managed; anthropogenic forest fires and encroachment of government forests for Cardamom and Chiraito cultivation increasing; alternative energy systems not adequately promoted; agricultural production system does not support year round food sufficiency; high proportion of population lacks drinking water supply and sanitary facilities; BZ communities have poor access to socio-economic services including agriculture and forestry extension, cooperatives, markets; few conservation awareness and development programmes carried out; community participation, especially of women and poor/deprived people in conservation and BZ institutions very limited, and forest degradation and illegal trade of NTFPs in MBNPBZ and adjoining areas increasing.

**Recommended actions include:** provide firefighting equipment to BZ Community Forest User Groups; conduct awareness programmes to control shifting cultivation and to demonstrate alternative farming systems; operate and promote nurseries; install alternative energy sources; establish community agriculture seed bank and multi-purpose nursery; improve agriculture extension services; provide training on agro-forestry, processing and marketing of NTFPS, off-season vegetables, sheep, chauri, goat, and pig farming; provide support on technical aspects of farming of major vegetable and fruit crops, and allo, lokta, cardamom and chiraito planting, processing, and marketing; help establish/strengthen chauri milk collection and processing; provide financial assistance to develop school infrastructure and create scholarship programmes for students from economically deprived families and communities; launch health awareness programmes in coordination with local health institutions; support infrastructure development, such as trails, drinking water supply system; conduct conservation education to local community and institutions; introduce and strengthen eco clubs in schools; conduct teachers' training on conservation education and eco clubs; provide conservation

educational materials to schools and communities; create awareness amongst communities to control forest fires, forest encroachment and impacts of short cycle of shifting cultivation, and identify potential biological corridors linking MBNPBZ to biodiversity hotspots of Eastern Himalaya;

## Objective 3

Tourism management objective is to enhance eco-friendly tourism in the park and Buffer Zone.

**Issues include:** despite high potential to attract visitors, their numbers have not increased - only 1,678 tourists visited the park in 2010-11; diversified tourism package programmes are not available; local communities not able to benefit from tourism; adequate ecotourism oriented income generating activity programmes and skills such as hospitality management and nature guiding are lacking, and coordination between park authority, tourism stakeholders and local communities is poor.

**Recommended actions include:** organise meetings with concerned stakeholders to promote ecotourism; include bird watching, flora exploration and other recreational activities in tourism packages; train local communities on nature guide, home stay tourism management/hospitality and garbage management; develop more home stay tourism facilities, and establish information and communication centres;

## Objective 4

Institutional development objective is to enhance management capacity of MBNPBZ institutions.

**Issues include:** number and skill of park personnel inadequate for effective park management; park revenue limited; coordination between park and conservation and developmental organisations poor; Nepal army as protection unit not yet deployed; physical infrastructure, communication, and other equipment are inadequate; park staff have inadequate knowledge on survey, flora and fauna, biodiversity monitoring, habitat management, community development etc.; park headquarters, staff quarters, and field posts not well maintained; few NGOs and community-based organisations operate in BZ; community motivation in biodiversity conservation lacking; development and governance

of BZ weak; research needs not identified, and capacity and resources inadequate to implement monitoring and evaluation.

**Recommended actions include:** conduct management and other skill enhancement training for park staff; provide basic equipment for research and monitoring; organise training on procedural and other relevant law, wildlife identification, herbarium management, field-based climate change vulnerability mapping etc.; provide health and accident insurance coverage, plus suitable field and safety equipment; construct new park headquarters; construct, repair and upgrade office buildings and staff quarters and two ranger's posts; organise training on institutional development, fund management, strategic planning, fund raising, conservation-related acts, rules, policies, guidelines, proposal development and networking to BZ and other local strategic institutions; form, strengthen and mobilise eco clubs, youth clubs, woman groups, and other community-based organisations directly related to conservation; organise training on community forest inventory and management to BZ User Committees, and conduct training on research methodology.

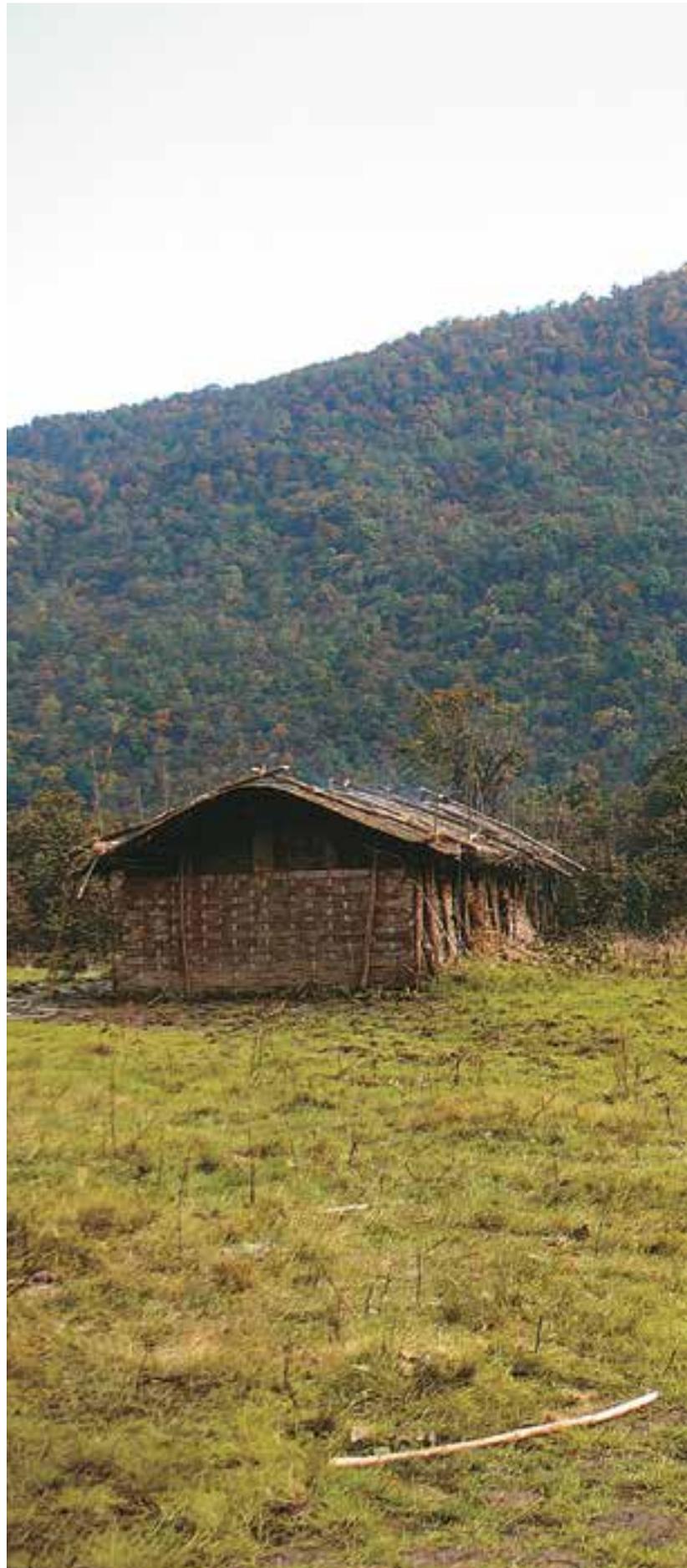
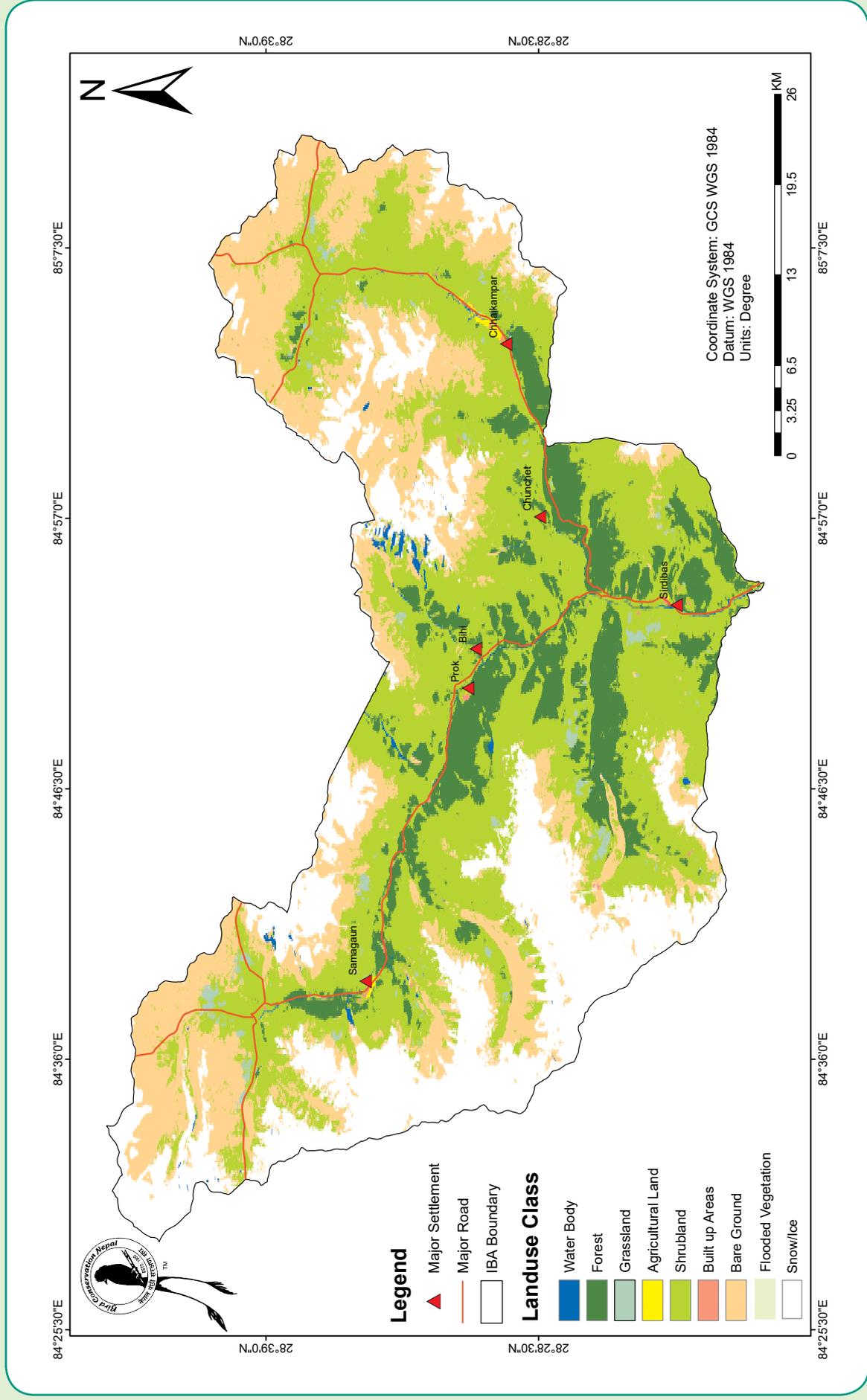




Photo by Hem Sagar Baral

# MANASLU CONSERVATION AREA SITE MAP



30

# MANASLU CONSERVATION AREA

## Site description

Manaslu Conservation Area (MCA) lies in the central Himalaya east of the Annapurna range. It was declared a "Conservation Area" in December 1998.

Major peaks include Manaslu (8,163 m), the eighth highest peak in the world, Himalchuli (7,893 m) and Shringi (7,187 m). Important high passes include Larke La (5,205m) and Gya La (5,375m). Major rivers in MCA are the Budhi Gandaki and Syar Khola, while Kalchuvan Lake (Kal Tal) and Birendra Lake are important lakes and wetlands in the area (NTNC 2015f).

Nineteen vegetation types have been recorded in MCA: *Pinus roxburghii*, *Schima-Castanopsis*, *Alnus nipalensis*, *Quercus floribunda*, mixed *Quercus*, *Pinus wallichiana*, *Picea smithiana-Tsuga dumosa*, *Quercus semecarpifolia*, mixed hardwood, *Populus ciliata*, *Larix griffithiana*, *Larix himalaica*, Mixed *Larix*, *Abies spectabilis*, and *Betula utilis* forests, and *Juniperus recurva* scrub, *Rhododendron-Juniper-Betula* bushes, moist alpine scrub and dry alpine scrub (NTNC 2015f).

There is a population of about 9,000 inhabitants in seven wards of Chum Nubri Rural Municipality (NTNC 2015f).

Tourism, due to the semi-restricted area status of the six wards adjoining the Tibet Autonomous Region of China, was limited to 1,000 trekkers per annum, and only about 60% of the quota was subscribed (NTNC 2015f). However, the number of trekkers increased to 1,342 persons in 2012 after MCA was declared (Ghimire 2013).

### Birds

A total of 227 bird species was recorded in 1998, 2012 and 2013 (Katuwal *et al.* 2013, Shah 1998, Thakuri 2013a). A significant proportion of species characteristic of the Eurasian high montane (alpine and Tibetan) biome have been recorded. As MCA has large areas of temperate forests it is considered

**Status:** Protected

**Altitude:** 1239-8163 m

**Area:** 166,300ha

**Geographical coordinates:** 28°20'-28°45'N, 84°29'-85°11'E Gorham District, Gandaki Province

**Categories:** A3 (Eurasian high montane biome species, Sino-Himalayan temperate biome species?)

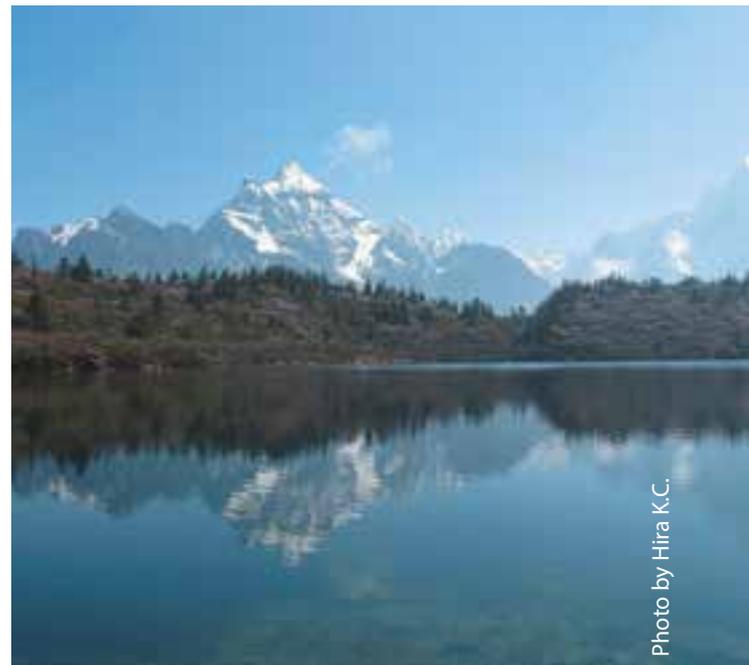


Photo by Hira K.C.

likely to support a significant proportion of species characteristic of the Sino-Himalayan temperate forest biome, although the number recorded so far is just short of this figure (see Appendices 2,7). MCA is therefore an IBA based on the biome-restricted assemblage criterion.

One globally threatened species has been recorded, Red-headed Vulture *Sarcogyps calvus* (Critically Endangered) which is possibly a regular visitor.



Further fieldwork may show that MCA supports a significant population of this species.

Four near-threatened species have been recorded: River Lapwing *Vanellus duvaucelii* (possibly resident); Satyr Tragopan *Tragopan satyra* (possibly resident); Bearded Vulture *Gypaetus barbatus* (common resident), and Himalayan Griffon *Gyps himalayensis* (probably resident).

### Other fauna and flora

A total of 38 species of mammals including the globally threatened Himalayan Musk Deer *Moschus chrysogaster*, Snow Leopard *Panthera uncia* and Himalayan Black Bear *Ursus thibetanus* and near-threatened Himalayan Thar *Hemitragus jemlahicus*, Himalayan Goral *Naemorhedus goral* and Himalayan Serow *Capricornis thar* are known to occur (NTNC 2015f). In addition, three reptile species and 11 butterfly species have been found in the area. About 2000 flowering plants and the large number of 22 Nepal endemic plant species have been recorded. MCA is also rich in high-altitude medicinal and aromatic plants (Kathmandu Forestry College 2013).

### Conservation issues and management

As a result of the April and May 2015 earthquakes villages including homes, schools, health posts, as well as government buildings and infrastructure were very seriously damaged or destroyed and the environment was significantly impacted. Mainly the eastern part of MCA (Tsum valley) was affected (Madhu Chetri, Senior Conservation Officer, NTNC). The priority was to reconstruct homes and other buildings and restore infrastructure which will be a very challenging task. Governance for conservation/protection will be very difficult without proper shelter and equipment for staff.

Like elsewhere in the mountains, deforestation, overgrazing and unsustainable use of natural resources were the main problems identified before the earthquakes.

With the declaration of MCA in 1998, GoN handed over management responsibility of MCA to NTNC for ten years. The objectives were to conserve and sustainably manage the area's natural resources and rich cultural heritage and to improve the capacity of local communities in the Manaslu area

to benefit from tourism in an environmentally benign manner for sustainable development. With the expiry of the management mandate, on the request of the local communities, the Gorkha District Coordination Committee and the major political parties in the district, the GoN extended the management mandate for another 10 years till 2018 (NTNC 2015f).

When MCA was established the area was neglected in terms of infrastructure development as well as all basic services, which directly affected the livelihoods of the people. The local people were deprived of the benefits of access, safe drinking water supply and electricity. Education and health services were almost non-existent. Since no other economic opportunities were available, they had to depend on marginal agriculture, animal husbandry and exploitation of natural resources for survival. As Manaslu is a food deficit region, high dependency on natural resources was constantly straining the capacity of the ecosystem.

NTNC has been implementing various field programmes in the region to motivate and mobilise local people to take the lead in managing their own resources. As in ACAP, the main backbone of all these programmes is Conservation Education. Extensive extension programmes are underway to create awareness among the local people so that they understand and become an integral part of



Photo by Hira K.C.

the undertaking. Without their active participation and support, no programme, however novel or well designed, is going to achieve success. The capacity of the local Conservation Area Management Committees is regularly enhanced through regular training and they are entrusted with the responsibility of managing the natural resources of their region in a sustainable manner (NTNC 2015f).

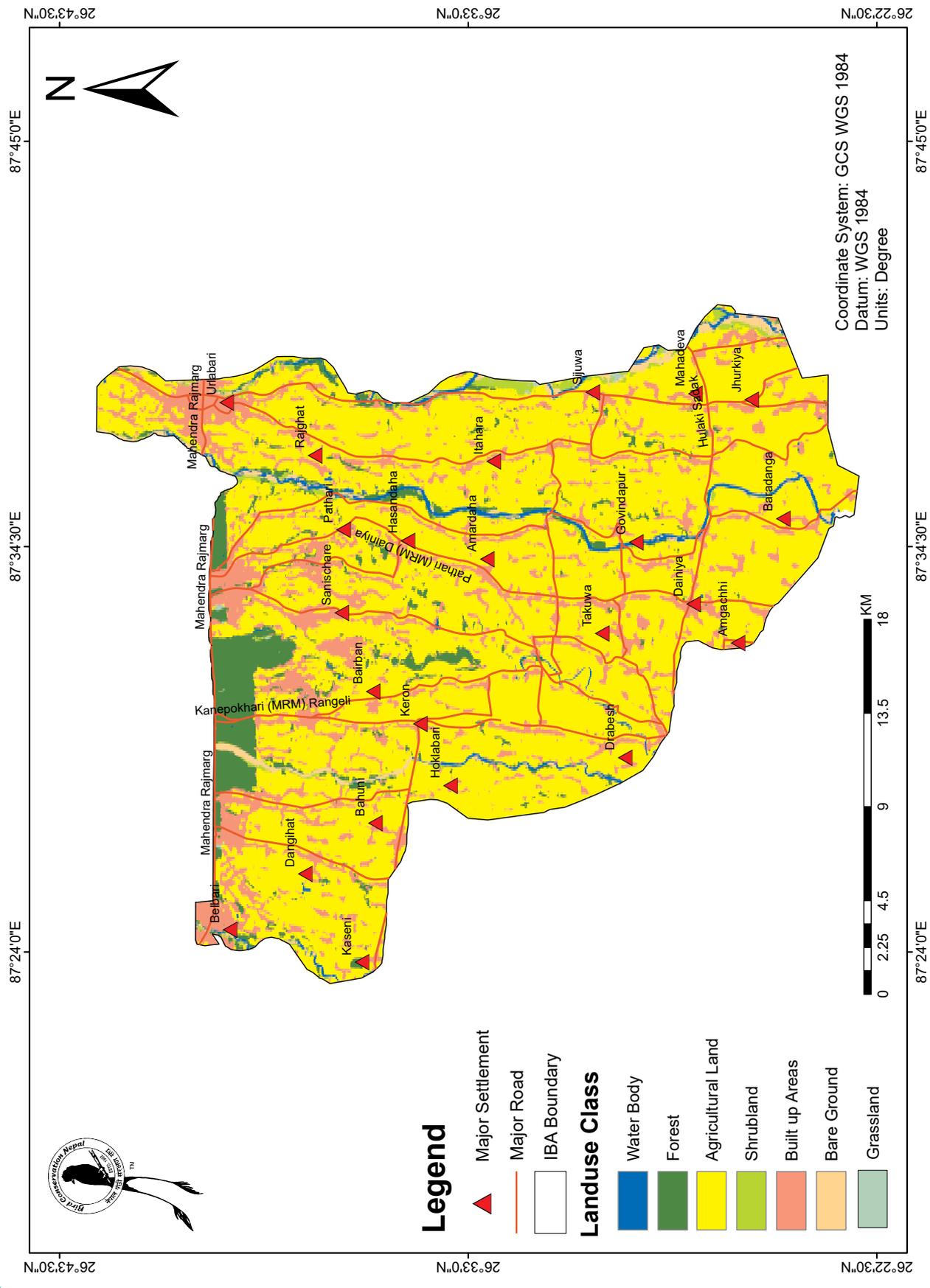
Research is conducted regularly to develop database on biodiversity and socio-economic conditions in the region on through the collection of data to record physical and social changes (NTNC 2015f).

MCA lies in the area covered by Chitwan-Annapurna Landscape (CHAL).



Photo by Rajendra Gurung

# MORANG AREA SITE MAP



# 31 MORANG

## Site description

Morang IBA comprises Belbari which is forested; Urlabari which is forest and some farmland and the southern Morang which is all farmland with some settlements. In the farmland multiple crops are grown in each field over the year, with flooded rice paddies dominating during the monsoon season (June– September), and wheat, maize, sugarcane, and lentils during the winter (November–February). The fields are kept largely fallow during the hot summers (March–June) (Katuwal *et al.* 2020).

**Status:** Unprotected

**Altitude:** 65–135 m

**Area:** 62,000 ha

**Geographical coordinates:** 26° 40'N 87° 45'E  
Morang District, Koshi Province

**Categories:** A1 (Globally threatened species);  
A4 (Congregation of a waterbird species)

## Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	In 2019, 53 nests in 19 colonies, 83 chicks fledged (Katuwal <i>et al.</i> 2022); in 2020, 65 nests in 16 colonies, 118 chicks fledged (Katuwal <i>et al.</i> under review).

In 2012, a study of breeding Lesser Adjutant was carried out in eastern Nepal in Morang, Sunsari and Jhapa districts (Karki and Thapa 2013) and covered some of the colonies studied by Katuwal *et al.* (2022) and Katuwal *et al.* (under review). There was a total of 98 individuals in pre-breeding and 240 individuals (94 chicks and 146 adults) of Lesser Adjutants in post-breeding periods in the study area. On average, there were 1.29 chicks per nest (Karki and Thapa 2013).

The 2019 and 2020 studies (Katuwal *et al.* 2022; Katuwal *et al.* under review) show that Morang district supports significant populations of Lesser Adjutant and so meets the globally threatened criterion.

As the number of nests in 2020 totalled 65, the number of mature individuals present can be estimated to be 130 birds. Morang district therefore also qualifies as an IBA based on the congregatory criterion as the population is greater than 1% of the biogeographic population of a waterbird species.

## Other wildlife

No information.

## Conservation issues and management

A questionnaire survey of local people in eastern Nepal revealed that they were not aware about conservation of the Lesser Adjutant. More than 80% of respondents (n=145) opined that forest destruction was the most serious threat to storks followed by human disturbance (79%), poaching (73%), pesticide use (52%), and urbanization/industrialization (43%) (Karki and Thapa 2013).

In breeding studies in 2019–21, the main threat was cutting down of nesting trees by farmers. In 2021, one nesting tree was cut down by the farmer where there were 13 nests in 2020, and a similar number was also observed in 2021. Hunting was found to be the next most important threat (Hem Bahadur Katuwal *in litt.* to C. Inskipp, 5 December 2022).



# 32 PANCHASE FOREST CONSERVATION AREA

## Site description

Panchase Hill in westcentral Nepal is a Forest Conservation Area (PFCA) under the Forest Act. It contains important Middle Mountains ecosystems of Nepal of which more than two thirds is covered by forests and a good portion falls under highland pastures (Kathmandu Forestry College (2013). Middle Mountains ecosystems are under-represented in Nepal's protected area system. The forest is also a significant corridor linking lowland Nepal (Chitwan–Nawalparasi) and the Annapurna Himalaya range (Baral 2014).

The forest is characterised by subtropical and temperate vegetation. Four forest types are predominant: upper mixed hardwood including *Rhododendron-Daphniphyllum* (16% of forest cover; from 1450-2500 m), and subtropical forests of Chir pine *Pinus roxburghii* (19% of forest cover; 1450-1500 m), *Schima-Castanopsis* (57%; 1450-2000 m), Hill Sal *Shorea robusta* (2.8%; 1450-1500 m); also *Alnus nipalensis* (2.3%) and shrubs (3%).

Bird surveys were carried out in July and October 2013 and March-April 2014 when 151 species were recorded (Baral 2014), and in November 2014 and June 2015 (Thakuri and Thapa 2012). when 205 species were recorded. The overall total for PFCA is

**Status:** Protected

**Altitude:** 1450-2517 m

**Area:** 5,776 ha

**Geographical coordinates:** 27°11'N - 27°16'N  
83°48' - 83°50'E, Kaski, Parbat and Syangja Districts,  
Gandaki Province

**Categories:** A1 (globally threatened species);  
A2 (restricted-range species, Central Himalayas  
EBA); A3 (Sino-Himalayan subtropical forest  
biome species)



Hoary Throated Barwing by Jyotendra Jyu Thakuri

## Birds

Globally threatened species	Threat status	Status and habitat
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Uncommon resident in open country
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Uncommon resident in open country
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Uncommon resident in open country
Restricted-range species	Endemic bird area	Status and habitat
Nepal Cupwing <i>Pnoepyga immaculata</i>	Central Himalayas	Altitudinal migrant; fairly common in November, rare in breeding season
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Fairly common in winter



235 species. This includes a significant proportion of species characteristic of the Sino-Himalayan subtropical forest biome (see Appendices 2,7) and so PFCA qualifies as an IBA based on the biome-restricted species assemblage criterion.

PFCA supports significant populations of the globally threatened White-rumped Vulture, Egyptian Vulture and Red-headed Vulture and therefore qualifies as an IBA based on the globally threatened criterion.

Steppe Eagle *Aquila nipalensis* is a passage migrant of uncertain status. Further fieldwork may show PFCA also supports significant populations of this globally threatened species.

PFCA supports significant populations of two restricted-range species from the Central Himalayas (EBA 129): Nepal Cupwing and Hoary-throated

Barwing. PFCA therefore qualifies as an IBA based on the restricted-range criterion. The restricted-range Spiny Babbler *Acanthoptila nipalensis* has also been recorded and further fieldwork may show that it also has significant populations in PFCA.

Five near-threatened species have been recorded: Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis* (both common winter visitors); Mountain Hawk-eagle *Nisaetus nipalensis* (uncommon resident); Cinereous Vulture *Aegypius monachus* (very uncommon winter visitor), and Asian Woollyneck *Ciconia episcopus* (uncommon, possibly resident, recorded pre- and post-monsoon).

### Other fauna and flora

Mammals recorded include: Himalayan Black Bear *Ursus thibetanus*, Northern Red Muntjac *Muntiacus vaginalis*, Leopard *Panthera pardus*, Jungle Cat *Felis chaus*, Red

Fox *Vulpes vulpes*, Golden Jackal *Canis aureus*, Yellow-throated Marten *Martes flavigula* and eight bat species (GC and GGN 2014).

More than 589 flowering plant species have been recorded in PFCA. There are 107 species of medicinal plants, 8 species of fibre-yielding plants, 23 species of natural dye yielding plants; 18 wild species with potential for floriculture (except Orchids), 56 species of wild mushroom, and 98 species of ferns in the area. This region is commonly known as Kingdom of wild Orchids. Among the 412 species of orchid reported in Nepal, 113 species of orchid have been found in the Panchase region including two endemic species (*Panisea panchasenensis* and *Eriapokharensia*) and 35 species with high commercial value (Machhapuchhre Development Organisation 2010).

### Conservation issues and management

In February 2011 PFCA was gazetted as a 'Protected Forest' under article 23 of the Forest Act 2002 recognising its rich biodiversity, forest resources as well as cultural and spiritual values in February 2011. It comprises an inner core area designated as the 'protected forest' and covering 2,035 ha and a fringe area designated as the 'intensive use' zone covering 3,740 ha.

PFCA is managed and controlled by the Government but 79% of the area has been handed over to 144 community forest user groups that cover 4,559 ha with 13,713 households as their beneficiaries. The remaining 21% is managed as government forest (GC and GGN 2014).

Major threats to birds in PFCA were identified as deforestation and also lack of awareness about the importance of birds and hunting (Baral 2014).

Forests in Panchase area are important sources of fuelwood, fodder, timber and many other forest products that support the local subsistence economy. Approximately 36,759 people living in this area depend on the forest for fuelwood, timber, and livestock grazing and poaching. Due to open access, some species like *Rhododendron arboreum* and *Quercus semecarpifolia* have been extensively over-harvested which has led to the decline of these species in the forest. Indeed, extensive use of these

species has resulted in overall changes in the forest type in some locations. For example, the original primary *Rhododendron forest* near settlements is gradually converting to *Rhododendron-Daphniphyllum forest*, which is secondary (GC and GGN 2014).

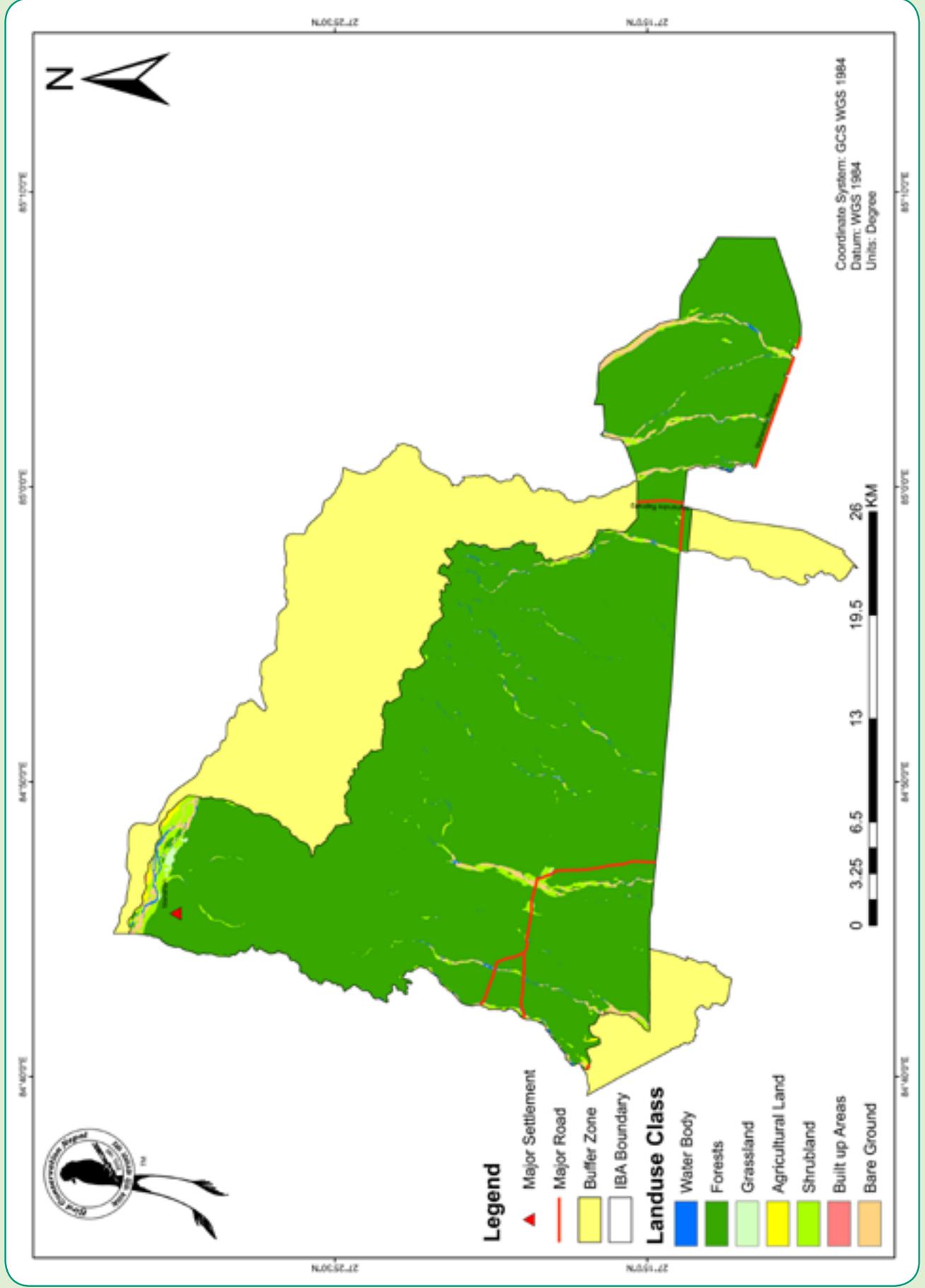
A farmer's group in the Panchase area noted specific climate issues that are adversely affecting agricultural system in the area including: the appearance of fog, decrease of rainfall in winter, early flowering, early ripening, shortened rainy season, increased temperature, hotter summer and colder winter (GC and GGN 2014). Climate changes are probably affecting birds in PFCA but the impacts are unknown.

The Department of Forest and Soil Conservation intends to test the concept of Payment for Ecosystem Services in this area and prepare local people to undertake Reducing Emissions through Deforestation and Forest Degradation related projects (GC and GGN 2014).

The Ecosystem Based Adaptation (EbA) in Mountain Ecosystems project is working in Nepal and is being piloted in PFCA and its surrounding areas in Kaski, Parbat and Syangja districts. The project has four components: development of methodologies and tools for EbA decision-making in mountain ecosystems: application of EbA methodologies and tools at the ecosystem level; implementation of EbA pilots at ecosystem level, and development of business case for EbA at the national level. The project is being executed by the DoFSC under the Ministry of Forest and Environment as a lead agency at the national level in partnership with UNDP, International Union for Conservation of Nature (IUCN) and United Nations Environment Programme (UNEP). The project is being funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (GC and GGN 2014).

Panchase is seen as an ideal place to undertake watershed conservation work based on the sub-watershed conservation and management model (Kathmandu Forestry College 2013). Panchase lies in the area covered by Chitwan-Annapurna Landscape (CHAL).

# PARSA NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



### Site description

Parsa National Park (PNP) is located in the southcentral lowland terai of Nepal. In 1984, it was gazetted to preserve the habitat for Asian Elephant *Elephas maximus*, and a variety of other fauna. The reserve is contiguous with Chitwan National Park in the west and has a Buffer Zone. Its floral and faunal composition is similar to Chitwan except that PNP is much drier on its southern side (DNPWC 2015j). The 2015 extension area of PNP included the most important addition of a permanent lake, Halkhoriya Daha to the core area. The core area is connected with Churia (Siwalik) hills to the north via community-managed forests. This will be an advantage for birds which use the hillsides for breeding or as a migrating corridor to the Mahabharat ranges (Hem Sagar Baral *in litt.* to C. Inskipp, 3 August 2015).

The soil is primarily composed of gravel and conglomerates, making it susceptible to erosion. The hills present a very rugged face with numerous gullies and dry streambeds. As the foothills are very porous, water flows underground and surfaces at a distance of about 15 km. from the hills base. The Churia hills range from 750m to 950m running east to west (DNPWC 2015j).

**Status:** Protected

**Altitude:** 200-950m

**Area:** 62,739ha NP; 28,530ha BZ

**Geographical coordinates:** 27°28'N 84°20'E,  
Makawanpur, Bara and Parsa Districts, Madesh Pradesh

**Categories:** A1 (globally threatened species);  
A3 (Indo-Malayan tropical dry zone biome species)

The forests mainly comprise tropical and subtropical species. Sal *Shorea robusta* forests compose about 90 percent of the reserve's vegetation. Along the banks of the rivers, riverine forests are found containing species like Khair *Acacia catechu* and Silk cotton tree *Bombax ceiba*. In the northeastern part of the reserve, at higher altitudes, Sal and Chir Pine *Pinus roxburghii* forests occur. On the southern slope of the Siwalik hills, the forests are dominated by Chir Pine. Sabai Grass *Eulaliopsis binata* is a commercially important species which grows well on the southern face of the Churia hills (DNPWC 2015j).

### Birds

Globally threatened species	Threat status	Status and habitat
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Uncommon resident
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Fairly common resident
Great Hornbill <i>Buceros bicornis</i>	Vulnerable	Uncommon resident
Grey-crowned Prinia <i>Prinia cinereocapilla</i>	Vulnerable	Frequent resident in grasslands
Bristled Grassbird <i>Schoenicola striatus</i>	Vulnerable	Fairly common summer visitor and passage migrant

Ramauli and Pratapur villages have been resettled from Parsa to the area north of the highway at the request of the residents. The sites have now developed into good grasslands with a high ungulate biomass as well as large predators.

Very few tourists visit Parsa, for example there were 48 visitors in 2012 (Ghimire 2013).

A total of 341 species has been recorded in Parsa National Park (NTNC 2017, Giri and Inskipp 2023).

This total includes 335 species listed in NTNC (2017) and six species that Tikram Giri and Carol Inskipp recorded during a five-day visit to the park in March 2023. The list includes significant populations of five globally threatened species: Indian Spotted Eagle, Lesser Adjutant, Great Hornbill, Grey-crowned Prinia and Bristled Grassbird. PNP therefore qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded are: Great Slaty Woodpecker *Mulleripicus pulverulentus*, White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Egyptian Vulture *Neophron percnopterus*, and Steppe Eagle *Aquila nipalensis*. Further fieldwork may show that PNP also supports significant populations of some of these species.

There are large areas of dry tropical forest that support a significant proportion of characteristic species of the Indo-Malayan tropical dry zone biome (see Appendices 2,7), and so PNP qualifies as an IBA based on the biome-restricted assemblage criterion.

Although very disturbed in 2015 when Halkhoriya Daha was included in PNP core area, the lake is likely to become valuable for waterbirds now it is protected (Hem Sagar Baral *in litt.* to C. Inskipp, 3 August 2015).

Six near-threatened species have been recorded: Asian Woollyneck *Ciconia episcopus* (fairly common resident), Alexandrine Parakeet *Palaeornis eupatria* and River Lapwing *Vanellus duvaucelii* (common residents), Red-breasted Parakeet *Psittacula alexandri* and Ashy-headed Green-pigeon *Treron phayrei* (fairly common residents); and Himalayan Griffon *Gyps himalayensis* (uncommon winter visitor and passage migrant).

## Other wildlife

A total of 37 species of mammals, 336 species of plant, 3 species of Amphibians, 8 species of Pisces thirteen species of reptiles are reported from park (BPP 1995, PNP 2018). The Park is home to several globally threatened mammals including Asian Elephant *Elephas maximus*, Tiger *Panthera tigris*, Indian Rhinoceros *Rhinoceros unicornis* and Sloth Bear *Melursus ursinus*, and also the near-threatened Striped Hyena *Hyaena hyaena*. Other mammals recorded include Leopard *Panthera pardus*. Nilgai *Boselaphus tragocamelus*, Sambar Deer *Rusa unicolor*, Chital *Axis axis*, Northern Red Muntjac *Muntiacus vaginalis*, and Jungle Cat *Felis chaus* are also found in the reserve (DNPWC 2015j, Kathmandu Forestry College 2013). The reserve is famous for its variety of snakes including the globally threatened King Cobra *Ophiophagus hannah* and Burmese Python *Python bivittatus* (DNPWC 2015j). Indian Rhinoceros is now regularly mud wallowing in Halkhoriya Daha and a Tiger has been seen here.

## Conservation issues and management

Parsa National Park forests are naturally very dry which has been a limiting factor in supporting wildlife. Several years ago the few natural pools were extended and many manmade pools were created throughout the national park. Water levels in these new pools are regularly maintained by bringing water from 16 km distant in the Churia Hills where there is a good water supply (Ashok Ram, Chief Warden, pers. comm. to C. Inskipp, 10 March 2023).

Disturbance and small scale hunting are threats to the birds of PNP. The northern BZ which lies in the hills is not as heavily guarded as other reserve areas and suffers the most from disturbance and poaching. A large human population lives south of PNP and here small-scale hunting and trapping of birds have been reported. The East-West Highway is a threat to birds due to collision with moving vehicles. Grazing by domestic cattle is also a problem in certain sections of PNP.

In the area designated in 2015 the forests have been highly exploited for collection of firewood, timber, fodder, etc in the past. Further, in Pasaha khola as many as 300 tractors were seen in a stretch of 5 km loading sand for construction. During winter months, the whole of Halkhoriya daha was filled



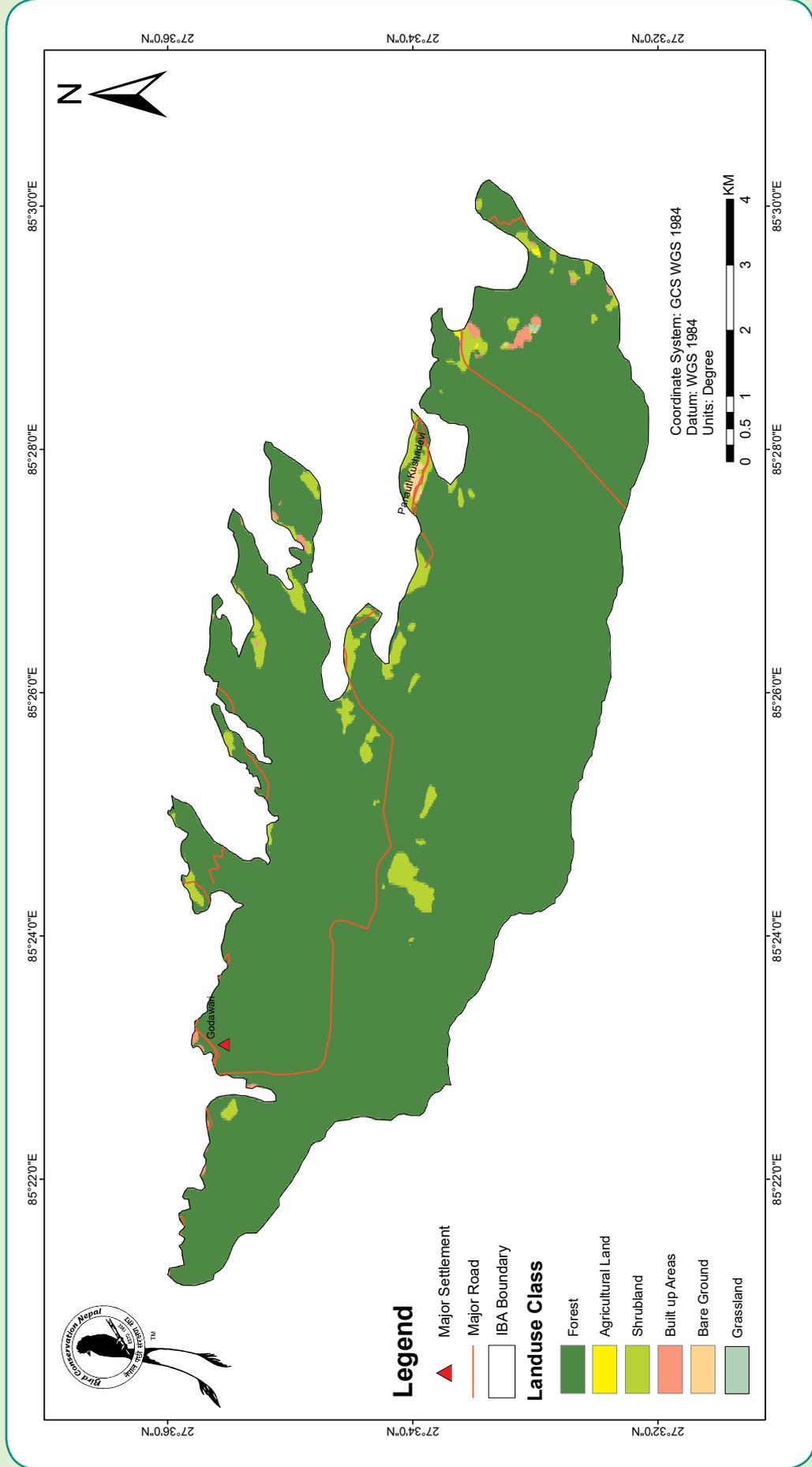
Photo by Jyotendra Jyu Thakuri

with fish-farmers. Although direct evidence of hunting was not reported, there must have been some hunting in the forests as populations of ungulates and game birds (e.g. Red Jungle Fowl *Gallus gallus* and Indian Blue Peafowl *Pavo cristatus*) populations have been low. However, all this will change as the area was declared as protected and within the core area of PNP in 2015. By early August 2015 the Nepal army had started patrolling the area regularly and three guard posts had been set up to ensure full protection of animals that reside in this important wildlife habitat. The Zoological Society of London has invested a considerable amount of resources through the DNPWC and

NTNC to highlight the value of the national park as an important repository of biodiversity. It has also started tourism promotion activities and proposed that the existing dirt road of PNP be linked with Chitwan National Park to provide a patrolling opportunity by vehicle as well as for tourism promotion.

PNP lies within the Nepal Government's Terai Arc Landscape (TAL) programme. The area near the northern boundary of Parsa forms a part of CHAL. A 2011 assessment of the state of PNP IBA found it was in a very unfavourable condition (BirdLife International 2015b).

# PHULCHOKI MOUNTAIN FOREST SITE MAP



# 34 PHULCHOKI MOUNTAIN FOREST

## Site description

Phulchoki Mountain Forest, the highest peak on the rim of the Kathmandu Valley, lies 16 km southeast of Kathmandu. The mountain mainly comprises limestone and low-grade metamorphic marble. Phulchoki receives high rainfall and supports a luxuriant growth of subtropical broadleaved *Schima wallichii* and *Castanopsis indica* forests on the lower slopes, with *Quercus lamellosa* and *Q. lanata* mixed with *Rhododendron arboreum* and small bamboo patches higher up, and *Quercus semecarpifolia* and a little bamboo at the highest elevations.

The high total of 290 species has been recorded in Phulchoki Mountain Forest (PMF) (Hem Sagar Baral pers. obs, Baral 1995, Choudhary 1996a, Giri and Choudhary 1996, 2000a, 2001, 2002, 2004; Inskipp 1989, 1993; Lama 1994, 1995, Mallalieu 2008).

PMF supports a significant population of the globally threatened Steppe Eagle and so qualifies as an IBA based on the globally threatened species criterion.

Other globally threatened species recorded are White-rumped Vulture *Gyps bengalensis* and Slender-billed Vulture *Gyps tenuirostris* (former rare visitors), and Wood Snipe *Gallinago nemoricola* (winter visitor in 19<sup>th</sup> century).

Phulchoki is known to support a significant population of one restricted-range species, Hoary-throated

**Status:** Unprotected

**Altitude:** 1400–2800m

**Area:** 4,296 ha

**Geographical coordinates:** 27°37'N/85°16'E, Lalitpur and Kabhrepalanchok Districts, Bagmati Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Central Himalayas EBA)?; A3 (Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species)

Barwing from the Central Himalayas (EBA 129). Other restricted-range species recorded include two species from the Central Himalayas (EBA 129): Nepal Cupwing *Phoenicurus immaculata* (very rare passage migrant) and Spiny Babbler *Acanthoptila nipalensis* (former frequent resident, its dense scrub habitat that has now succeeded to forest and no suitable habitat for this species remains), Spectacled Finch *Callacanthis burtoni* from the Western Himalayas (EBA 128) is a rare winter visitor. The IBA would qualify under the restricted-range criterion (A2) if further fieldwork shows that any of these or other restricted-range species have significant populations there.

## Birds

Globally threatened species	Threat status	Status and habitat
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common passage migrant and winter visitor
Restricted-range species	Endemic bird area	Status and habitat
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Frequent resident and altitudinal migrant in mossy oak forest

There are large areas of broadleaved temperate forests that hold a significant proportion of species characteristic of the Sino-Himalayan temperate forest biome. Although partly degraded, Phulchoki's broadleaved subtropical moist forests still hold a significant proportion of characteristic species of the Sino-Himalayan subtropical forest biome (see Appendices 2, 7). PMF therefore also qualify as an IBA based on biome-restricted criterion.

Five near-threatened species have been recorded: Satyr Tragopan *Tragopan satyra* (very uncommon, has bred recently); Mountain Hawk-eagle *Nisaetus nipalensis*; Himalayan Griffon *Gyps himalayensis* (winter visitor) and Cinereous Vulture *Aegypius monachus* (very rare visitor).

### Other wildlife

Phulchoki's forests are internationally renowned for their other wildlife. Martens (1979) stated that 'Numerous animal species, especially insects and Arachnida hitherto unknown to science have been discovered here in recent years'. Phulchoki supports a rich variety of butterflies, including the rare Golden Emperor *Dilipa morgiana* and Kaiser-I-Hind *Teinopalpus imperialis* (Limbu and Gurung 1998). Ghimre (1984-1985) advocated their protection for their botanical importance alone. Mainly smaller mammals occur, for example Northern Red Muntjac *Muntiacus vaginalis*, Yellow-throated Marten *Martes flavigula*, Orange-bellied Squirrel *Dremomys lokriah* and Leopard *Panthera pardus*, which is rare.

### Conservation issues and management

The PMF IBA is especially at risk because of its close proximity to Kathmandu. The forests are threatened by felling of trees for wood and fodder, intentional forest fires in the dry season, hunting, and illegal collection of orchids and disturbance. The loss of tree cover has resulted in a considerable reduction of water in streams flowing from Phulchoki. A road runs from the mountain's base to its summit, although the top area is controlled by the army where public access is restricted. The road enables vehicles to easily remove forest products from the upper slopes. However, the state of Phulchoki's forests has improved following the establishment of community forestry some 15 years ago, in clear contrast to the surrounding degraded and converted land. A total of 18% of the forests are protected as community forests and the remaining area is National Forest.



An assessment was made on the ecosystem services provided by the PMF IBA in 2011. The benefits that people receive from ecosystem services under the current state (community forests) were compared to an alternative state. In the absence of community forestry, the forest would have been gradually converted to a mixture of degraded forest, farmland and built up areas. Current benefits received from carbon sequestration, water quality, harvested wild goods and revenues from recreational visitors (picnickers) would decline. However, in the alternative state, there would be increased benefits from agricultural production (BCN and DNPWC 2012).

The assessment found that in general, community forestry has meant that more resources are now captured locally rather than by distant users coming



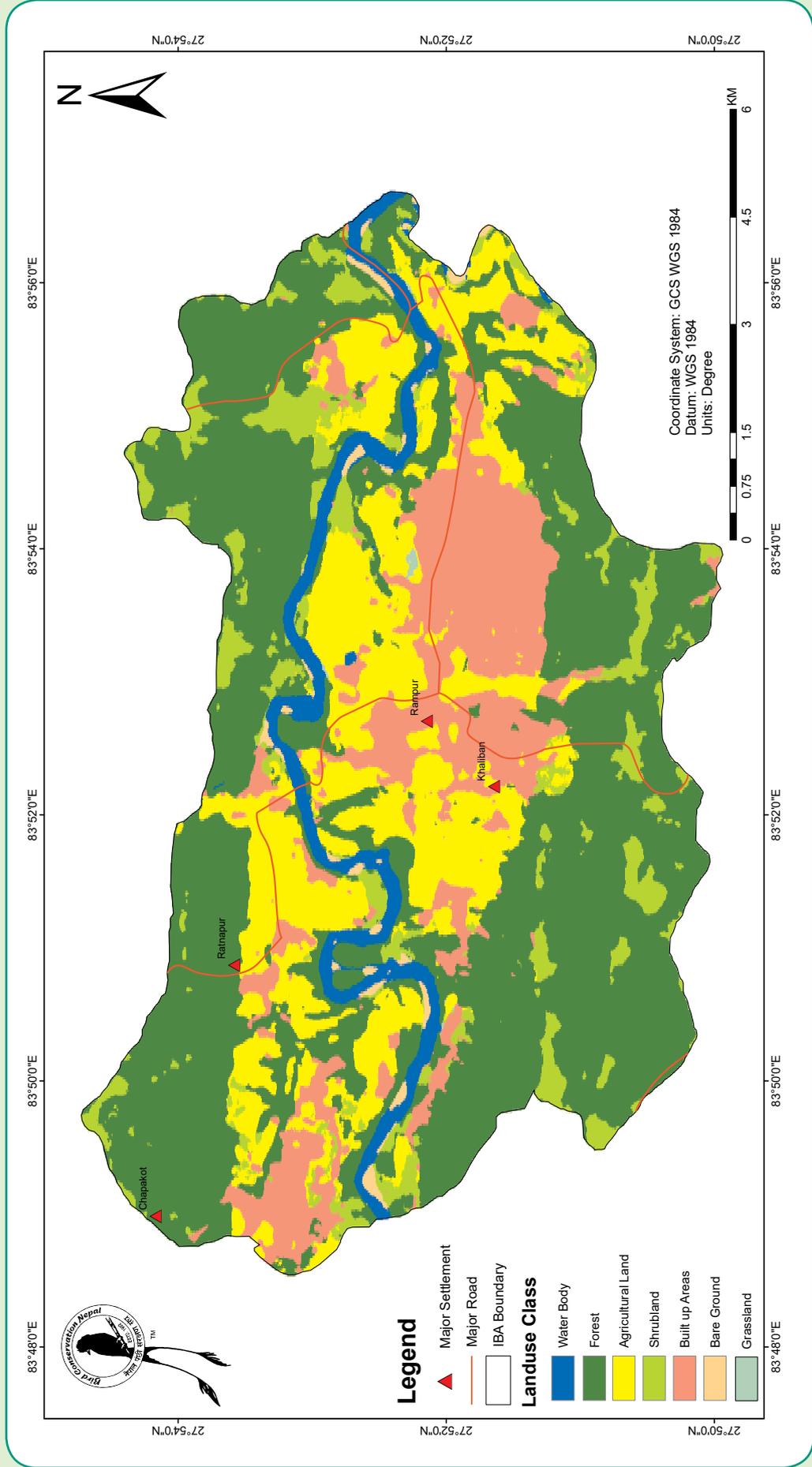
to take resources (as was the case in the past), but not everyone benefits equally. There have been differential impacts according to localness, gender, economic status, occupation, caste and ethnicity. For example, heavy use of forest resources in the past was made by non-local Kami (blacksmiths) and Sunar (goldsmiths) castes for the production of charcoal. These people no longer have access unless they are living locally and are members of a FUG. Also, restrictions linked to community forestry have impacted poorer households (who are most reliant on harvesting wild goods) as their lower social status means that they are less influential when it comes to making management decisions. Hence, well-targeted local development should be implemented to deliver more equitable outcomes within the FUGs by enhancing the capture of ecosystem service values by the poorer members of the community

and other vulnerable groups, while continuing to conserve the important biodiversity at the site. This could be achieved through improving the recreational facilities (e.g. picnic areas) around the forest and engaging the poorer households in their management in order to increase local cash incomes (BCN and DNPWC 2012).

A 2011 assessment of the condition of PMF IBA found it was in a near favourable condition (BirdLife International 2015b).

Since about 1975 the lower slopes were extensively quarried for marble, endangering the subtropical forests, but after a long legal battle the Supreme Court ordered the closure of the Godavari Marbles Factory to protect the environment and biodiversity in April 2015 (Shahi 2015).

# RAMPUR VALLEY AREA SITE MAP



# 35 RAMPUR VALLEY

## Site description

Rampur Valley (=Rampurphant) lies in Palpa district of westcentral Nepal. The Kali Gandaki River borders Rampur valley on the northern side. Agricultural land covers about 41.85% of Palpa district area while forest land covers 39.6%. The district is thinly populated, but the valley has been attracting more immigrants in recent years. Most of the communities consist of farmers who practice terraced agriculture on the lower slopes; the higher slopes remain vegetated in some form.

The IBA has been identified because of its important White-rumped Vulture nesting colony. Vulture nests are spread along the Kali Gandaki River in a 15 km stretch in patches of riverine forests. The most important of the nesting sites is located at Khaireni forest have been located.

The riverine forests growing along the Kali Gandaki River have *Bombax ceiba*, *Trewia nudiflora*, *Acacia catechu* and various other tree species. Silk-Cotton is the main nesting tree species in the area.

Rampur valley supports significant populations of the globally threatened White-rumped Vulture and Red-headed Vulture and so qualifies as an IBA on the globally threatened criterion. In 2003 the post-breeding population of White-rumped Vulture was 123 birds and a total of 70 active nests was found. These included 31 nests at Khaireni forest in an area of 0.25 km<sup>2</sup>; this was the highest known concentration of White-rumped Vulture nests in the country at

**Status:** Unprotected

**Altitude:** 400m

**Area:** 3,000ha

**Geographical coordinates:** 27°51'N 83°54'E, Palpa District, Lumbini Province and Syangja District, Gandaki Provinces

**Categories:** A1 (globally threatened species)



Photo by Deu Bahadur Rana

that time. Half of the nests in Rampur valley were successful in 2003, a better breeding success than elsewhere in Nepal at the time (Gautam *et al.* 2003a,

## Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Fairly common. In 20/21 population size 81 birds, 41 nests and 54% breeding success (Ramji Gautam in litt. to C. Inskipp, 17 January 2023).
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Frequent in open country

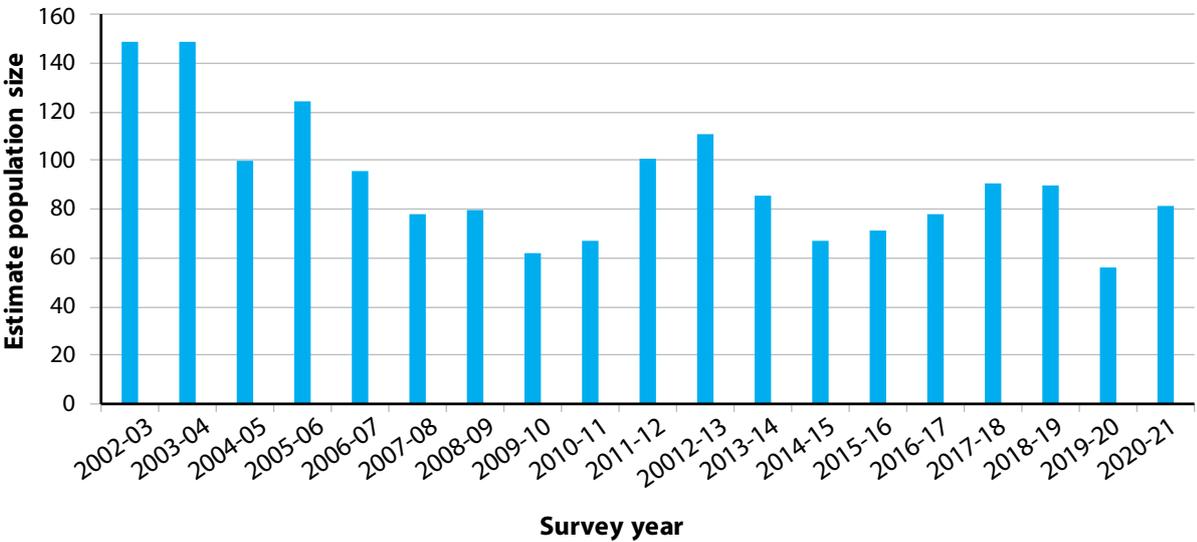


b, Baral and Pain 2003, Gautam and Baral 2004). In 2004 the number of active nests had fallen a little to 64, although the observer did not consider that the vulture population had declined (Ramji Gautam *in litt.* to C. Inskipp May 2004).

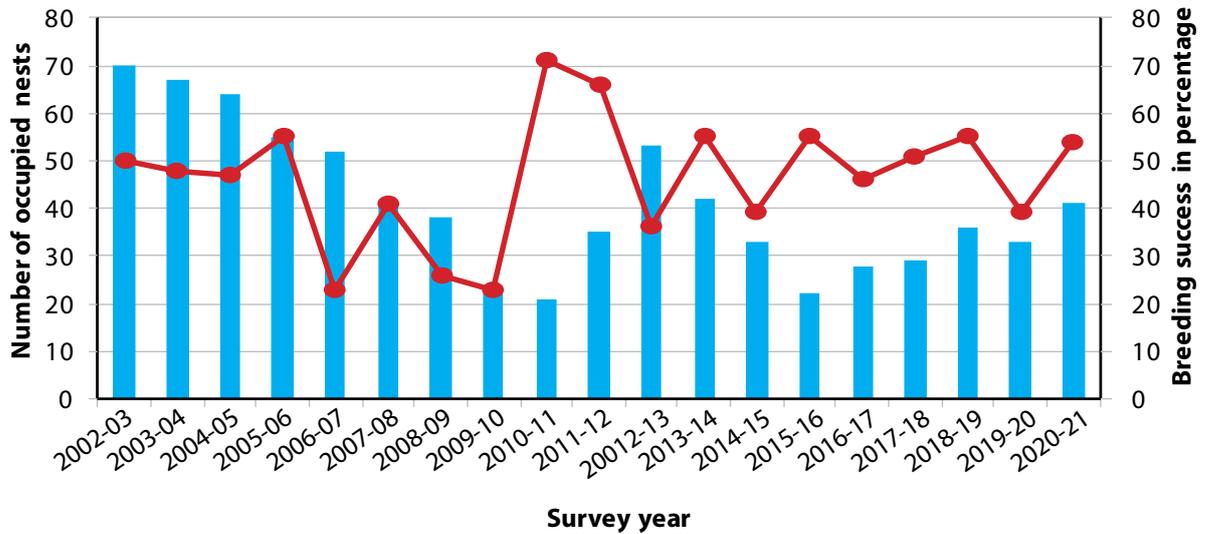
In 2014 the post-breeding population of the species was 67 vultures and the total number of active nests in Rampur was 32 during the 2013/14 breeding period. Rampur's overall decrease in occupied nests was 50% during the previous decade (Gautam and

Baral 2014). Since 2014, Ramji Gautam has monitored breeding of the White-rumped Vulture annually (see table and Figures 1 and 2). The population size has fluctuated since 2014, and was about the same in the 2013/14 breeding season as in the 2020/21 breeding season (Figure 1). The number of nests and breeding success (measured in occupied nests) (Figure 2) has also fluctuated since 2014 and there is no marked difference between 2013/14 and 2021/22 breeding seasons (Ramji Gautam *in litt.* to C. Inskipp, 17 January 2023).

**Figure 1:** The estimated population size of White-rumped Vultures in Rampur. (Source: Gautam and Baral 2014; Ramji Gautam *in litt.* to C. Inskipp, 17 January 2023).



**Figure 2:** The number of occupied nests (shown in bars) and breeding success (a line) of White-rumped Vultures in Rampur (Source: Gautam and Baral 2014; Ramji Gautam in litt. to C. Inskipp, 17 January 2023)..



Other globally threatened species recorded are Egyptian Vulture *Neophron percnopterus* (status unknown) and Slender-billed Vulture *Gyps tenuirostris* (previously fairly common, but declined by 2014). Further fieldwork may show that Rampur valley supports significant populations of these species.

Near-threatened species recorded are River Lapwing *Vanellus duvaucelii* and Asian Woollyneck *Ciconia episcopus* (both species status unknown).

### Other wildlife

Golden Jackal *Canis aureus*, Indian Hare *Lepus nigricollis*, Bengal Fox *Vulpes bengalensis* have been seen at Rampur.

### Conservation issues and management

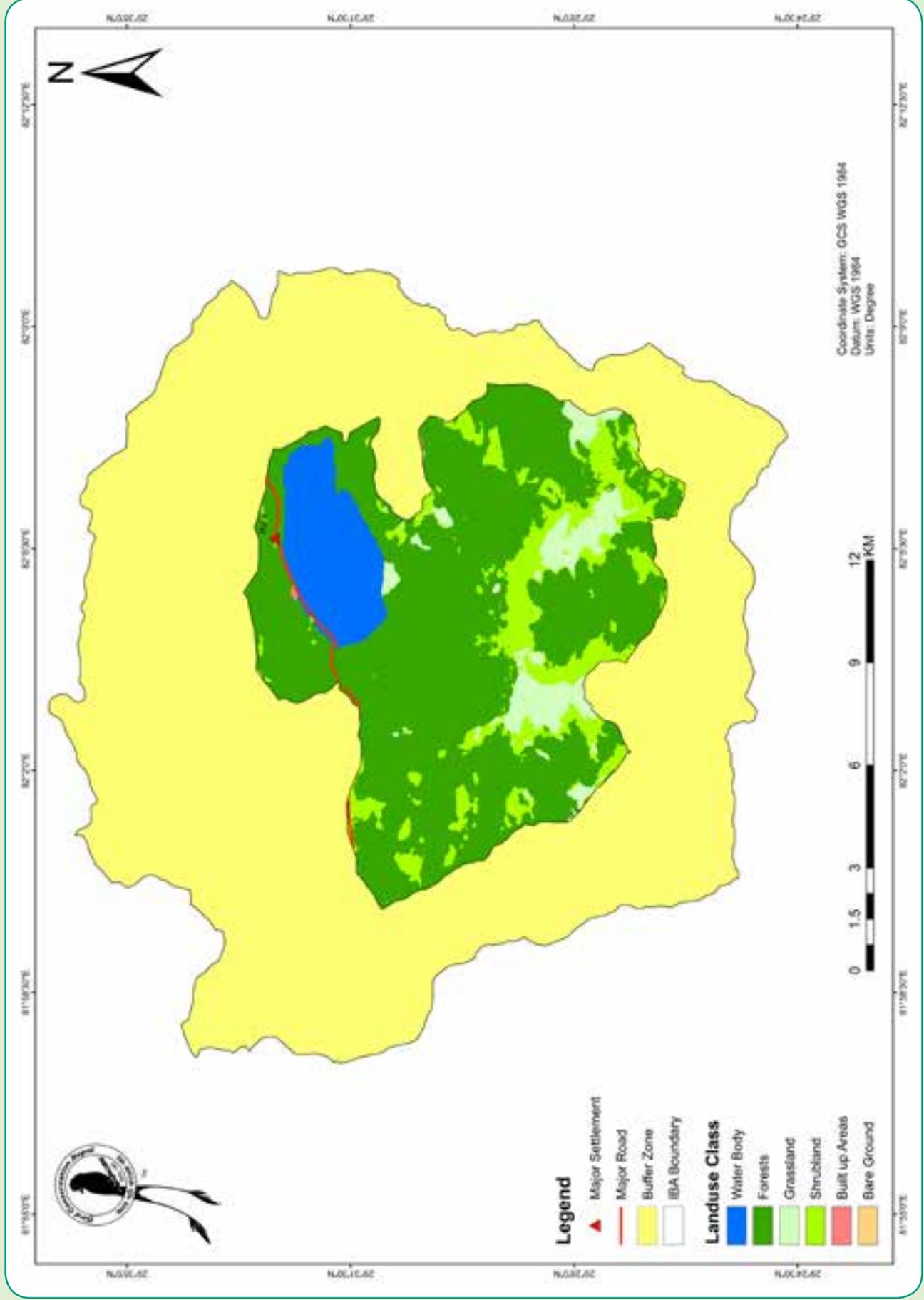
The forests where vultures are nesting are primarily managed by local communities under agreement with the DOFSC. Communities managing the forests are mostly not aware of the significance of the nesting vultures. Use of diclofenac in the area was proved as a dead adult vulture collected there showed gout and traces of diclofenac were found (Shultz *et al.* 2004).

However, Palpa district has been a diclofenac-free zone since at least July 2014 (BCN 2014).

Current major threats at Rampur include cutting of nesting trees, disturbance to birds, especially during the nesting period and food shortage. BCN was informed by the field researchers that all Silk-Cotton trees in the Khaireni area had been given license to be cut by a contractor. In an attempt to stop the tree cutting, BCN informed the authorities and consequently no additional trees were cut in the area. However, the fear is that such a halt had only a temporary effect and it is likely that all the trees will be cut in the future. Urbanisation is a potential threat as it may lead to a change in animal husbandry, which may seriously limit the vultures' food supply. Other potential threats are the high amounts of chemical pesticides and fertilisers that are being used in Rampur which may pose a serious threat not only to the vultures but to the entire ecosystem.

A 2011 assessment of the condition of RVIBA found it was in a very unfavourable state (BirdLife International 2015b).

# RARA NATIONAL PARK AND BUFFER ZONE AREA SITE MAP





36

## RARA NATIONAL PARK AND BUFFER ZONE

### Site description

Rara National Park, one of the smallest protected area in Nepal lies in the northwest of the country. Lake Rara, Nepal's largest lake which lies at 2990m is the most prominent feature in the national park; it has an area of 1080 ha and is recognized as a Ramsar site. The north side of the lake is marshy and dominated by reeds (DNPWC 2014d).

Vegetation in the park comprises: upper temperate forests of *Pinus wallichiana*, sometimes mixed with *Quercus semecarpifolia*, and *Picea smithiana*; subalpine forests of *Abies spectabilis* and *Betula utilis*-*Rhododendron campanulatum* and moist alpine scrub and meadows higher up according to BPP (1995).

**Status:** Protected

**Altitude:** 1800-4087m

**Area:** 10,600ha NP; 19,800ha BZ

**Geographical coordinates:** 29°34'N/82°05'E,  
Mugu and Jumla Districts, Karnali Province

**Categories:** A1 (globally threatened species);  
A2 (restricted-range species, Western Himalayas  
EBA); A3 (Eurasian high montane biome species,  
Sino-Himalayan temperate forest biome species)



Photo by Jyotendra Jyu Thakuri

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Local and uncommon resident on steep craggy slopes with scrub and secondary growth
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Local and uncommon resident on steep craggy slopes with scrub and secondary growth.
Kashmir Nuthatch <i>Sitta cashmirensis</i>	Western Himalayas	Frequent resident in deciduous and deciduous/coniferous forest
White-throated Tit <i>Aegithalos niveogularis</i>	Western Himalayas	Uncommon, possibly resident and altitudinal migrant in bushes in birch/coniferous forest and in high altitude shrubberies

However, a comprehensive vegetation survey of the park and Buffer Zone is recommended in the 2014 draft management plan (DNPWC 2014d).

The Buffer Zone was declared in 2006. Its population was 13,876 persons (2011 census) and is increasing at an annual rate of 1.6% (DNPWC 2014d). The park's only human settlement is a small village of about 25 houses which came into existence after two villages inside the park were evacuated when the park was declared (DNPWC 2014d).

The total area of the park and Buffer Zone (RNPBZ) is 30,400ha, comprising 60.25% forest, 6.56% shrubland, 18.24% grassland, 11.04% cultivated land, 3.49% lake, 0.33% other water bodies, and 0.09% sandy area (DNPWC 2012).

RNPBZ has been providing numerous ecosystem services including cultural, aesthetic and recreational values of the lake; timber and firewood, high value NTFPs, including medicinal plants; water sources (DNPWC 2014d).

Few foreigners visit the park averaging 129 persons a year between 2008 and 2012 (Ghimire 2013).

A total of 296 bird species are listed for RNPBZ (BCN and DNPWC 2020).

The Buffer Zone could be especially important for the globally threatened resident Cheer Pheasant. RNPBZ therefore qualifies as an IBA based on the globally threatened criterion.

Other globally threatened species recorded are: Egyptian Vulture *Neophron percnopterus* and Steppe Eagle *Aquila nipalensis* (current status of both species is unknown). Further survey work may show RNPBZ supports globally important populations of these species.

The park is important for three restricted-range species from the Western Himalayas (EBA 128): Cheer Pheasant, White-throated Tit and Kashmir Nuthatch which are all resident. As a result, RNPBZ qualifies as an IBA based on the restricted-range criterion.

RNPBZ has large temperate forest areas where a significant proportion of characteristic species of the Sino-Himalayan temperate forest biome have been recorded. Alpine areas support a significant proportion of characteristic species of the Eurasian high montane biome. RNPBZ therefore also qualifies as an IBA based on the biome-restricted assemblage criterion.

Four near-threatened species have been recorded: Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis* (common residents); Pallid Harrier *Circus macrourus* (rare passage migrant, no known recent records) and Ferruginous Duck *Aythya nyroca* (rare passage migrant).

The lake is a valuable staging post for migrating wetland birds. A total of 49 wetland species has been recorded so far, although only small numbers are involved (BCN and DNPWC 2015).



### Other wildlife

A total of 52 mammal species has been recorded from RNPBZ including the globally threatened Red Panda *Ailurus fulgens*, Himalayan Black Bear *Ursus thibetanus* and Himalayan Musk Deer *Moschus chrysogaster* and near-threatened Himalayan Tahr *Hemitragus jemlahicus*, Himalayan Goral *Naemorhedus goral* and Common Otter *Lutra lutra* (DNPWC 2010). The lake harbours three endemic species of Himalayan Snow Trout: *Schizothorax macrophthalmus S. nepalensis* and *S. raraensis* (Terashima 1984). An estimated 1024 plant species have been recorded (BPP 1995) including 16 species of Nepal endemic flowering plants (Shrestha and Joshi, 1996).

### Conservation issues and management

An assessment of ecosystem services provided by Rara National Park and Buffer Zone was made in 2011. The benefits that people receive from carbon storage and sequestration, harvested wild goods, cultivated goods, nature-based recreation and water services were assessed by comparing the core zone of the National Park, its BZ and the surrounding area.

The study suggests that resource use in the BZ is unsustainable, resulting in the rapid degradation of its forests and increasing encroachment into the core zone (BCN and DNPWC 2012).

The assessment concluded that to ensure the long-term wildlife value of the forest and sustainability of harvested wild goods for local people, a better forest management model is required. Restoring the 41 Community Forests that existed prior to the creation of the BZ could help to achieve this. As annual revenues received by Rara are low (the lowest revenue of all of Nepal's national parks) the net additional financial benefit to living within the BZ is currently negligible, so investment in engaging local people in the developing tourism industry, and encouraging other income-generating activities is recommended (BCN and DNPWC 2012).

A third revision of Rara National Park and its Buffer Zone Management Plan for the period (2076/77-2080/81) has been produced (RNP 2019).

The objectives of the management plan, issues in achieving these objectives and actions aimed at addressing these issues with a focus on bird conservation follow (RNP 2018)

### **Park management**

**Objective** is to maintain species and ecosystem diversity

**Issues include:**

Massive illegal domestic grazing inside the Park and buffer zone; Lack of research and baseline data on water quality, aquatic biodiversity, aquatic habitat management; Increasing sedimentation in the Rara Lake, Illegal fishing, Presence of invasive species in rangelands, High pressure of livestock on rangelands, Inadequate research on status of keystone species; Illegal smuggling of timber from the Park; Lack of integrated wetland management plan; poor Coordination: no formal established coordination mechanism; Forest fire; Poaching of wildlife species; Pollution of the lake by sedimentation from adjacent hills, by discharge of domestic sewage and wallow of livestock; Eastern boundary of the lake is said to be prone to bursting; Siltation in the river mainly due to decomposed leaf litters and soil erosion

a. Recommendation includes;

**Recommended actions include:**

Undertake assessment of wetland management intervention; Control invasion of pasture/rangeland by pines; Inventory and monitoring rangelands and species Strengthen communication, collaboration and coordination for management of transboundary wetlands and migratory species; Identification of fire prone areas Make a fire management plan; Strengthen communication, collaboration and coordination for management of transboundary wetlands and migratory species,

- b. Prepare a comprehensive strategic plan for lake management including construction of soak pits and sewage treatment to control water pollution;
- c. Provide firefighting training and required equipment to control forest fires;
- d. Organise coordination meetings of Buffer Zone institutions with other stakeholders to control poaching, illegal logging and illegal harvesting of NTFPs;

- e. Prepare and implement species specific conservation plans to maintain viable populations of endangered species and for sustainable harvest of commercially threatened NTFPs

### **Tourism management**

**Objective** is to promote eco-friendly tourism in the park and Buffer Zone.

**Issues include:**

Limited and poor condition of access road; Few infrastructure and untrustworthy communication, inadequate publicity in the target markets (domestic and International), Lack of adequate and high quality tourist information and interpretation facilities; Lack of tourism focused organizations; Lack of trained human resources; Lack of integrated tourism development; poor packaging of Rara Lake and Rara NP. Poor state of product linkages with Dolpa and Humla regions (RNP 2019)

**Recommended actions include:** Develop tourism infrastructures in designated area of the Buffer Zone through the collaboration with private sector; Promote private entrepreneurs to operate tourism business by providing conducive environment; Initiate monitoring on the impact of tourism on ecological aspects to determine Limit of Acceptable Change which will help in devising site-specific method for regulating tourism; Develop plan to minimize the negative impact such as minimizing crowd, noise and dust, examine the prospects of developing permanent tracks with natural look to minimize crowd and noise; Explore the prospect of promoting low volume high value tourism designating the Limited Tourism Zone' in inner core of the park; Develop a separate unit in the park to manage the tourism activities; Build capacity of the staff to handle the tourism related issues in the park; Devise a set of Conservation Code of Conduct for visitors and implement it strictly; Trained more nature guides and develop nature guide based tourism; Publication of brochure on different aspects of the park relating tourism activities; Develop and market eco-friendly tourism packages through national and international tourism operators and Adopt information and communication to attract national and international tourist in the Park and its BZ (RNP 2019)

**Institution**

**Objective** is to strengthen Park and BZ institutions

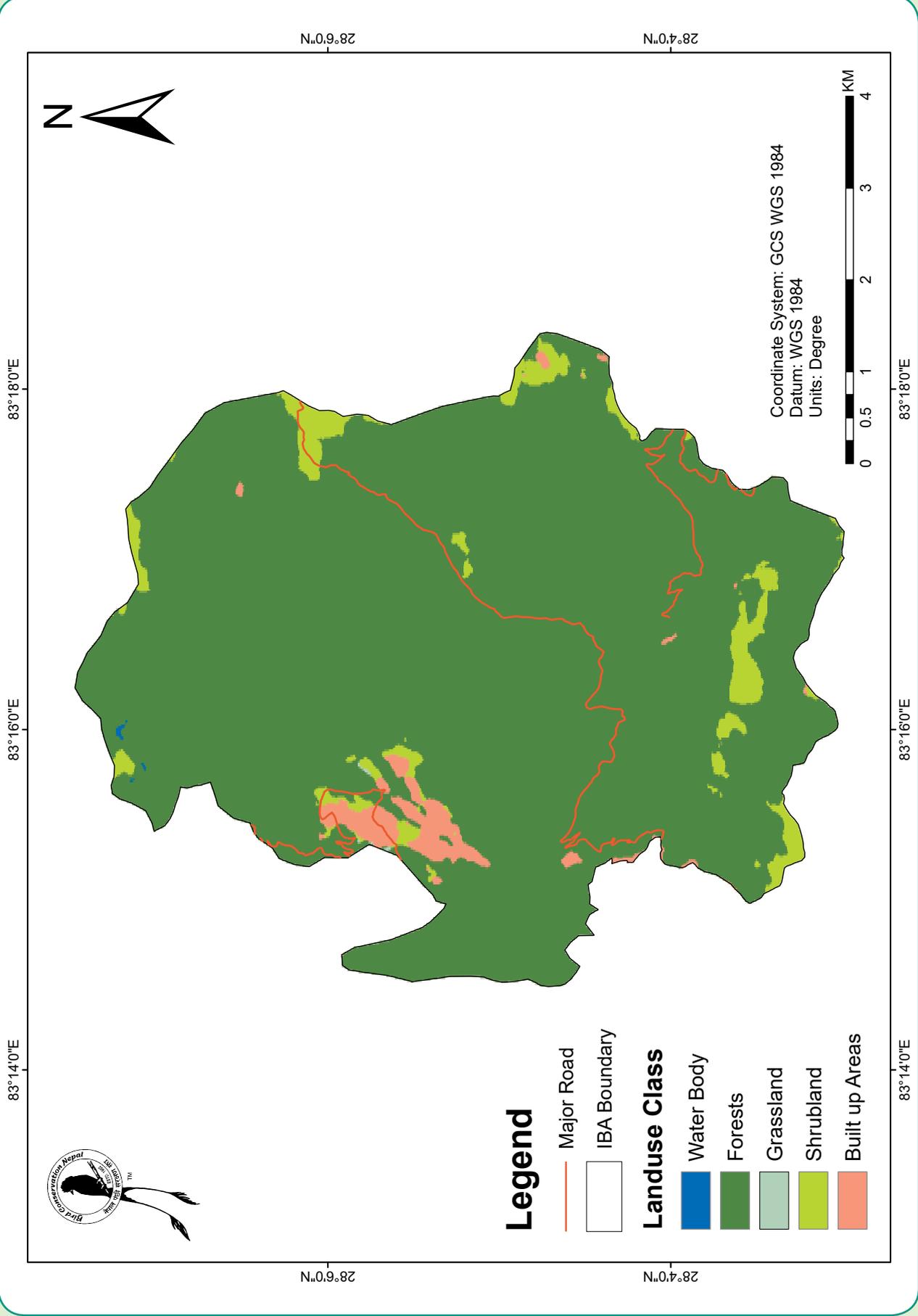
**Issues include:** RNPBZ fall in a very weak category in terms of infrastructure, information, communication technology, research and monitoring and facilities such as guest house, visitor centre and health post (SCDNPWC Report 2013 Task 3.2). Inadequate human and financial resources of the park and coordination between development partners are major concerns of the park authority (SCDNPWC Report 2013 Task 3.3).

**Recommended actions** A wide-ranging number of activities are planned to strengthen the management capacity of the park and BZ institutions. The latter

include organising training on community forest inventory for BZ Community Forest User Groups; forming, strengthening and mobilising eco clubs, youth clubs, women groups; organising community programmes on anti-poaching; wildlife data collection, monitoring and evaluation, and conducting community based climate change vulnerability assessment and adaptation training. A number of activities are planned to enhance research and strengthen monitoring and evaluation. These include: conducting training on research methodology; assessing climate change impacts on ecosystems, and gathering reliable baseline information to monitor changes in the status of biodiversity, socio-economy, tourism and other resources (DNPWC 2014d).



# RESHUNGA FOREST CONSERVATION AREA SITE MAP



# 37 RESHUNGA FOREST CONSERVATION AREA

## Site description

Reshunga forest (RPF) is part of an important watershed and includes nearly 40 small brooks and streams. On the lower slope there is a lower temperate mixed broadleaved forest and on the higher slope rhododendron forest that still exists in good condition. Reshunga is a renowned and highly treasured pilgrimage site in Gulmi district and in Nepal, having many shrines, temples and hermitages. In the Gai/cow puja (Tihar), every first day of Shrawan (in July) and on the first day of Maghe (in January) hundreds of devotees visit this area. The top of Reshunga facilitates a wide range of view because of its height and geographical setting (Thakuri 2013, Thakuri and Thapa 2012.)

**Status:** Protected

**Altitude:** 800-2330 m

**Area:** 3,400ha

**Geographical coordinates:** 28°16'N / 83°22' E  
in Gulmi District of Lumbini Province

**Categories:** A1 (globally threatened species);  
A2 (restricted-range species, Central Himalayas EBA)?;  
A3 (Sino-Himalayan subtropical forest species;  
Sino-Himalayan temperate forest species)

## Birds

Globally threatened species	Threat status	Status and habitat
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Frequent resident
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Uncommon visitor
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Uncommon visitor, possibly resident
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Uncommon passage migrant and/or winter visitor
Restricted-range species	Endemic bird area	Status and habitat
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Uncommon, possibly resident

A total of 253 bird species recorded in Resunga Protection Forest (BCN 2021)

A total of 26 species of mammals, 19 species of butterflies, 11 species of fish, 7 species of amphibians, and 25 species of reptiles have been recorded in the Reshunga Forest Conservation Area (BCN 2021). Five globally threatened species have been recorded and four of these in significant numbers: Egyptian Vulture, White-rumped Vulture, Red-headed Vulture and Steppe Eagle (Thakuri 2013b, Thakuri and

Thapa 2012, Chaudhary and Magar 2017a) and so RPF qualifies as an IBA based on globally threatened criterion.

The globally threatened Eastern Imperial Eagle *Aquila heliaca* has also been recorded and is a rare passage migrant and/or winter visitor.

Reshunga supports a significant population of the restricted-range and endemic Spiny Babbler. Kashmir Nuthatch *Sitta cashmirensis* from the Western



Photo by Nahakul Bhusal

Himalayas (EBA 128) has been recorded but is very rare and may be a visitor or vagrant. The IBA would qualify under the restricted-range criterion (A2) if further fieldwork shows that other restricted-range species have significant populations there.

Significant numbers of characteristic species from the Sino-Himalayan subtropical forest biome have been recorded (see Appendices 2,7), so RPF qualifies as an IBA based on the biome-restricted assemblage criterion. Although there are extensive areas of temperate forest, significant numbers of characteristic species from the Sino-Himalayan Temperate zone have not been found so far (see Appendices 2,7). However, as the species-richness curve using the Mackinnon's List method was rising at the end of each survey, the observers concluded that more species are likely to be found with further fieldwork (Chaudhary and Raut 2015, Chaudhary and Magar 2017a, Thakuri 2013b, Thakuri and Thapa 2012).

Four near-threatened species have been recorded: Himalayan Griffon *Gyps himalayensis* (fairly common resident); Mountain Hawk-eagle *Nisaetus nipalensis* (uncommon resident); Bearded Vulture *Gypaetus barbatus* (uncommon visitor), and Cinereous Vulture *Aegypius monachus* (rare winter visitor).

### Other wildlife

Northern Red Muntjac *Muntiacus vaginalis*, Asiatic Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*,

Yellow-throated Marten *Martes flavigula*, Common Leopard *Panthera pardus*, Porcupine *Hystrix indica*, Indian Hare *Lepus nigricollis*, Northern Plains Gray Langur *Semnopithecus entellus* have been recorded in RF (Baral and Inskipp 2005).

### Conservation Issues and management

RF IBA is surrounded by forest-dependent communities which are mostly poor according to the National Poverty Index. It is an important Hindu religious area and the core area is managed as religious forest by the Reshunga Forest Conservation Committee, which also looks after the temple. The outer area is managed by at least 18 Community Forestry User Groups covering 24,871 people. There are seven wards surrounding RF with a population of 36,800. Subsistence is mainly based on agriculture, harvesting of forest products, business and remittance. The area has good potential for tourism. Civil society organisations in the area include the Reshunga Forest Conservation Committee and Janajagan Kendra Nepal, a small local organisation work for empowerment, biodiversity conservation and livelihoods (Dansk Ornitologisk Forening 2014).

Firewood and fodder collection, forest fires and grazing are major reasons for pressure on the ecosystem (Dansk Ornitologisk Forening 2014). In a June 2015 survey (Chaudhary and Raut 2015) and January 2017 survey (Chaudhary and Magar 2017) found that road construction inside RF seems a

major threat for birds. Since it is a dirt road, erosion and mud slides up and down the road during the monsoon. Further clearance of mud and stone on the road side was found to be destroying feeding and breeding habitats for ground-dwelling birds. Harvesting trees and scrub during the road construction can still be seen in many places. People said after the opening of roads inside the forest the water level of springs has reduced. Reshunga is the only mountain having forest in good condition in the district and so is under heavy pressure. People have been seen collecting fodder and fire wood every day throughout the year and collecting more resources from the core area than from community forests. The forest is also widely used for livestock grazing. Informal talks with local people revealed that hunting of Northern Red Muntjac *Muntiacus vaginalis* and Kalij Pheasant *Lophura leucomelanos* was common in RF. Abundant rubbish and noise from vehicles and picnickers are other threats to birds (Chaudhary and Raut 2015, Chaudhary and Magar 2017).

Around 150,000 people from 23 Village Development Committees are benefitting from the springs and brooks of Reshunga Forest. However, construction of roads through the forest is destroying available water sources and some of these have already dried out. This area also receives high pressure from local people for the collection of wild harvested goods. The large number of devotees who visit Reshunga at festival times and for pilgrimages cause disturbance and haphazardly thrown plastic litter can be seen around the walking trails and temples. The cow shed or Gaushala located inside the forest is a regular source of food for vultures, but the disposal method used for carcasses makes it difficult for vultures to access them as they are thrown into a deep gorge filled with dense undergrowth (Thakuri 2013b, Thakuri and Thapa 2012).

In an initial response the Reshunga Forest Conservation Committee was formed and is actively working at the site. Dansk Ornitologisk Forening and BCN are carrying out a three year programme, *Integrating Livelihoods and Conservation. People Partner with Nature for Sustainability* in RF IBA from 2015-17. The programme's long term objective is to improve the management of natural resources, especially the forests, on which local livelihoods depend and for critical ecosystem services, such as water, soil conservation and reduced vulnerability

to natural disasters such as landslides, and climate change. The programme's focus is on equitably shared benefits from participatory management practices addressing the needs of poor and marginalised people, and the strengthening of civil society and local civil society groups through capacity building, facilitation of networks and advocacy (Dansk Ornitologisk Forening 2014).

### Objective

- To reduce the depletion of forest in RF IBA and contribute to the realisation of best forest management practices for the benefit of all.

### Programme Components

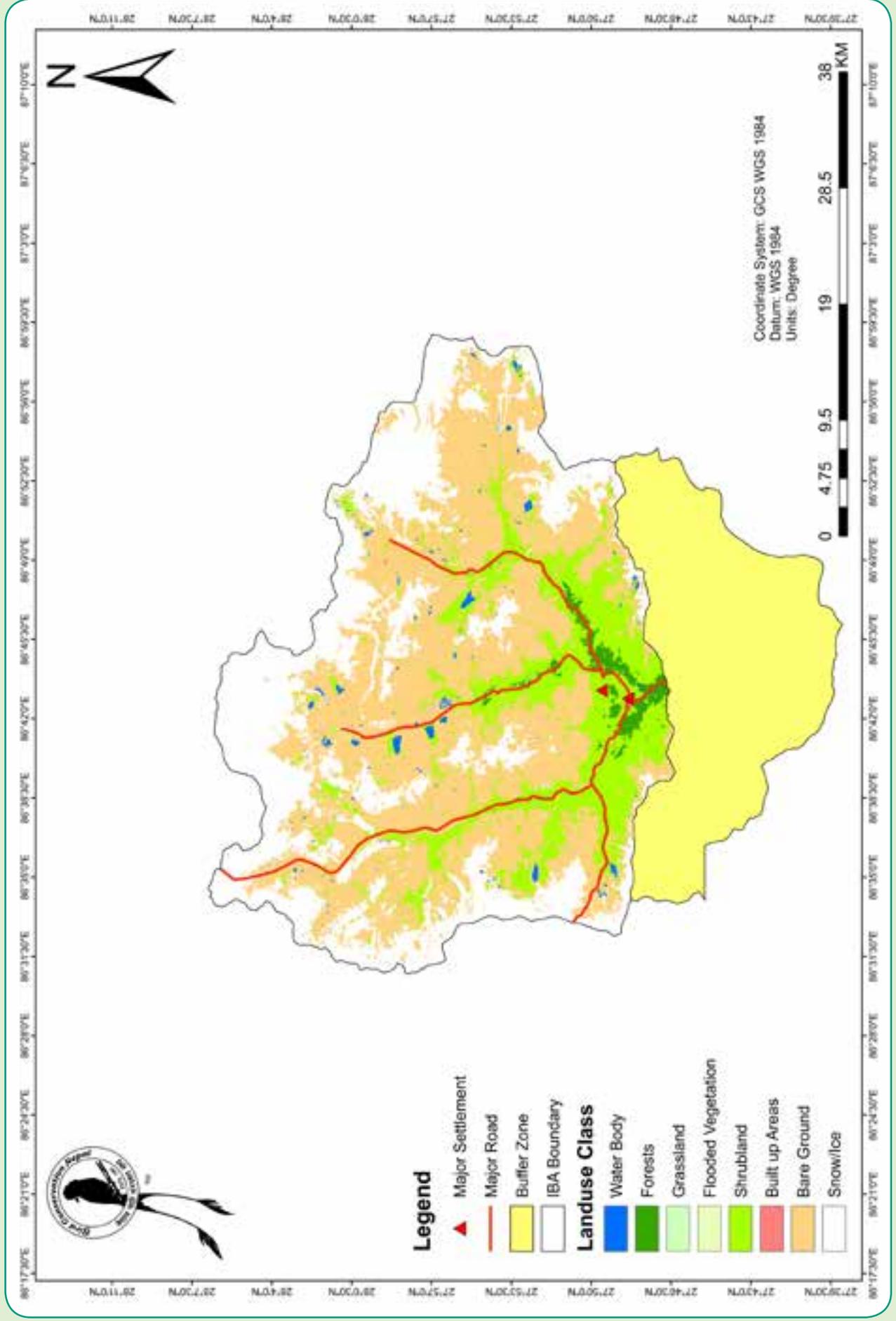
- Partners have increasing capacity to strategically work with the integration of poverty reduction and nature protection.
- Participatory forest management contributes to improved livelihoods of poor communities, and the reduction of pressure on ecosystems and biodiversity.
- Local civil society groups are empowered to engage in rights-based advocacy and decision-making processes.

### Main Activities

- Formulation of a Strategic Plan for IGAs and other poverty reduction initiatives.
- Baseline studies and analysis for gender and poverty orientation in natural resource management, social profiling of programme sites and establishment of forest and biodiversity indicators.
- Participatory forest management plans developed in a multi-stakeholder approach.
- Community-based monitoring of biodiversity and ecosystem services.
- Activities to explicitly empower and involve women based on the gender analyses.
- Assessment and start-up of financial support for prioritised nature-based inclusive livelihoods initiatives, and technical skills training.
- Market research, business development, value chains and branding.
- Capacity assessment, technical training and constituency development of stakeholders.
- Organisational strengthening and training of civil society groups.

Source: Bird Conservation Nepal

# SAGARMATHA NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



38

# SAGARMATHA NATIONAL PARK AND BUFFER ZONE

## Site description

Sagarmatha National Park was gazetted in 1976 and lies in northeastern Nepal. The park includes the upper catchments areas of the Dudhkoshi and Bhotakoshi Rivers and is largely composed of rugged terrain. The BZ was declared in 2002. The park and its Buffer Zone (SNPBZ) are bordered by Makalu-Barun National Park (MBNP) on the east, the Rolwaling valley of Dolakha district on the west, and the Qomolangma National Nature Preserve (QNNP) of the Tibet Autonomous Region of China to the north. The park is a spectacular mountainous area with three peaks above 8000m. As the highest point of the Earth's surface, Sagarmatha and its surroundings are of major global and national significance. Sagarmatha is one of two of Nepal's protected areas declared a World Heritage Site. Gokyo lakes in the park are a Ramsar site. There are nearly 100 BZ settlements with a resident population of 7,161 persons (DNPWC 2014e).

The park provides important ecosystem services. As an ecological unit the area is of important scientific value and offers unique research opportunities to scientists throughout the world because of its conditions of extreme elevation, associated flora and fauna, culture and environment. The high altitude forests and rangeland environment of the park are not only of aesthetic value, but are vital to the local people of the area as a source of fuel and building material. The glaciers and rivers of the area are important sources of water for people downstream. The park is of high recreational value and of major religious and cultural significance in Nepal since it abounds in sacred mountains and holy places (DNPWC 2014e).

The park represents the following ecosystems: glaciers, snow, rock; alpine meadows; meadows; sparsely vegetated rocks and screes; meadows and common land; *Juniperus* shrubberies and forests comprising subalpine *Betula utilis* with *Rhododendron campanulatum*, *R. campylocarpum* forest and *Abies spectabilis*; open and dry montane *Pinus wallichiana*; and *Juniperus* forest (Bhujju *et al.* 2007). Only 10% of the park is forested and lies mainly in low valley gorges (DNPWC 2014e).

**Status:** Protected

**Altitude:** 2845-8848m

**Area:** 142,300ha NP; 27,500ha BZ

**Geographical coordinates:** 27°46'-28°11'N 86°30'-86°59'E Solukhumbu District, Koshi Province

**Categories:** A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species)



Photo by Rajendra Gurung



The park has become an important destination for international visitors to Nepal and benefits the country through revenue generation and friendship building. The scenic and wilderness values are major tourism resources (DNPWC 2014e). An average of 32,697 foreign tourists a year visited the park between 2008 and 2012, with a total of 36,518 in 2012 (Ghimire 2013).

### Birds

A total of 219 bird species has been recorded in SNPBZ (SNP 2016).

The park has large areas in the alpine zone that support a significant proportion of characteristic species of the Eurasian high montane biome. There are also large areas of temperate forest, especially in the BZ and SNPBZ supports a significant proportion of characteristic species of the Sino-Himalayan temperate forest biome (see Appendices 2,7). SNPBZ therefore fulfils the biome-restricted assemblage criterion to qualify as an IBA.

Five globally threatened species have been recorded but are all very uncommon, very rare or vagrant species: Wood Snipe *Gallinago nemoricola* (very rare visitor),

Common Pochard *Aythya ferina* and Eastern Imperial Eagle *Aquila heliaca* (very rare passage migrants), Steppe Eagle *Aquila nipalensis* (very rare passage migrant), and Saker Falcon *Falco cherrug* (vagrant).

Five near-threatened species have been recorded: Himalayan Griffon *Gyps himalayensis* (fairly common resident); Bearded Vulture *Gypaetus barbatus* and Satyr Tragopan *Tragopan satyra* (rare residents), Ferruginous Duck *Aythya nyroca* (rare passage migrant) and Cinereous Vulture *Aegypius monachus* (rare visitor).

### Other wildlife

A total of 43 mammal species has been recorded including the globally threatened Himalayan Black Bear *Ursus thibetanus*, Asiatic Wild Dog *Cuon alpinus*, Himalayan Musk Deer *Moschus chrysogaster*, Snow Leopard *Panthera uncia*, Red Panda *Ailurus fulgens* and Wild Dog *Cuon alpinus*, and near-threatened Himalayan Tahr *Hemitragus jemlahicus*, Himalayan Serow *Capricornis thar* and Himalayan Goral *Naemorhedus goral*. Six amphibian and seven reptiles are also known from the park. There are 1074 known flowering plant species (DNPWC 2014e) including 21 endemic species (Bhujju *et al.* 2007). As many as 150 mushroom species belonging to 37 families were recorded from Lukla (2480 m) to Pangboche (4000 m) in the SNPBZ (Ranag and Giri 2006).

### Conservation issues and management

The Sherpa people, the main inhabitants of SNPBZ, refrain from hunting and slaughtering animals. These indigenous belief systems and practices provide an important cultural basis for wildlife conservation.

The overall climate change vulnerability index for Nepal showed that because of its high altitude, Solukhumbu district is highly vulnerable due to the risk of flooding from glacial lake outburst, drought and landslides.

The large and contiguous protected landscape comprising the park, Qomolangma National Nature Preserve, Tibetan Autonomous Region of China to the north, Gaurishankar Conservation Area (GCA) to the west, and Makalu Barun National Park to the east should secure the habitat needs of many wide-ranging species and allow ecological processes (DNPWC 2014e).

A 2011 assessment was made of the condition of SNPBZ and found it was in an unfavourable state (BirdLife International 2015b).

A management plan has been prepared for the period 2016-2020. The objectives of the management plan (DNPWC 2014e), issues in achieving these objectives and recommended actions aimed at addressing these issues with a focus on bird conservation.

However, since the management plan was most national park buildings and 630 village homes were very seriously damaged and the environment was significantly impacted in the April and May 2015 earthquakes (Laxman Paudel, Senior Warden SNPBZ). The priority will be to rebuild villages, and park buildings and infrastructure which will be a challenging task. Governance for conservation/protection will be very difficult without proper shelter and equipment for staff.

## Park management

### Objective

To conserve ecosystem, species diversity and genetic resources.

### Issues include:

- Scenic landscapes and open spaces adversely affected by increasing development activities posing threats to sustainability of tourism and biodiversity conservation;
- Wildlife predation by feral dogs and cats increasing;
- Habitat fragmentation increasing due to human encroachment and settlement development;
- Problem of low percentage of forest cover and slow growth rates compounded by high firewood and timber demand;
- Human pressure growing on temperate and alpine vegetation; some forests have been converted into shrubland. Shrublands also shrinking due to over-exploitation and climate change;
- Transboundary and inter-park cooperation is weak in controlling poaching, illegal trade, forest fires, and promoting mutual benefits of the park, MBNP, GCA and QNNP.

### Recommended actions include:

- Conduct awareness campaigns among local people and stakeholders on all aspects of landscape conservation for protecting public lands in and around their settlements;
- Mobilise BZ institutions for wildlife conservation activities by providing incentives;
- Control feral dogs and cat populations on regular basis ensuring that method employed is socially acceptable and biologically feasible;

- Conduct awareness programmes for tourist groups, lodge owners and local communities to control harvesting of alpine shrubs, cushion plants, turf blocks etc.;
- Provide training, equipment and awareness programmes to control forest fires;
- Provide training, awareness and incentive for construction of energy efficient buildings;
- Provide subsidy for electricity and alternative energy sources to replace wood-based heaters in all tourist lodges and private homes for cooking and heating;
- Identify and plant appropriate mix of local species on degraded slopes;
- Implement practice of limited use of forest products;
- Enforce a firewood-free camping policy; and
- Organise meetings with staff from QNNP, GCA and MBNP.

## Buffer Zone management

### Objective

- To achieve balance between biodiversity conservation and sustainable livelihood.

### Issues include:

- BZ forests and shrubland cannot produce adequate wood to meet increasing demands of tourists and local population;
- Extraction of rock, sand and clay from park increasing causing landscape damage, and erosion;
- Conservation education programmes limited and published materials lacking; and
- Forest degradation and illegal trade of forest resources pose threat to effective conservation.

Socio-economic issues include: economic migrants and business developers from outside are damaging the local socio-economy, culture and environment; poor sanitation; high dropout rates in local schools especially among students from lower income families and girls; and women still lag behind in education, representation in civil society groups and community level decision-making.

### Recommended actions include:

- Formulate technically sound forest operational plans for all the CFUGs and train the groups to implement their plans;
- Provide training on nursery management, reforestation, stand management, fire control,



Photo by Rajendra Gurung

and marketing and business skills to CFUGs and private owners;

- Identify suitable mining sites and ensure that mining and restoration are carried out according to regulations;
- Undertake a detailed feasibility study of alternative energy sources;
- Enforce all tourist lodges, restaurants, other businesses to fulfil at least 50% of their energy needs through alternative energy sources;
- Train SNPBZ staff, school teachers, students and community volunteers to deliver conservation education in schools and to wider public and design conservation awareness materials for this purpose;
- Identify and protect important forest corridors linking SNPBZ to biodiversity hotspots of adjoining landmarks in GCA, MBNP and QNNP.

Plans for addressing socio-economic issues include providing funding to improve education for economically marginal families and communities; organising health and sanitation campaigns; and organising professional training for women to work as guides, health, managers, teachers and social services.

### **Tourism management**

**Objective** To enhance quality ecotourism in park and Buffer Zone

**Issues** include growing tourism is producing a negative impact on environment e.g. rubbish dumping and water sources along major trails are being contaminated from improper effluent discharge and human waste.

**Recommended actions** include: strengthening Sagarmatha Pollution Control Committee a local NGO, run by Sherpas and funded by the WWF Nepal Programme; conduct waste management activities focusing on recycling, proper disposal and prohibiting use of polluting items such as plastic bags and glass bottles and incorporate provisions for sanitation in hotel and lodge management guidelines

### **Institutional development**

**Objective** To enhance management capacity of park and BZ institutions

**Issues include:** number and skill of park personnel inadequate for effective park management;



Photo by Rajendra Gurung

park facilities e.g. office buildings, field posts, staff accommodation and information centres inadequate, poorly maintained and are impacting staff morale and performance, and park image; important park infrastructure e.g. trails increasingly encroached and constrained by development along their margins; park staff have inadequate knowledge on flora and fauna, biodiversity monitoring, habitat management, tourism management, community development etc, and equipment, field gears and reference books for research and development inadequate.

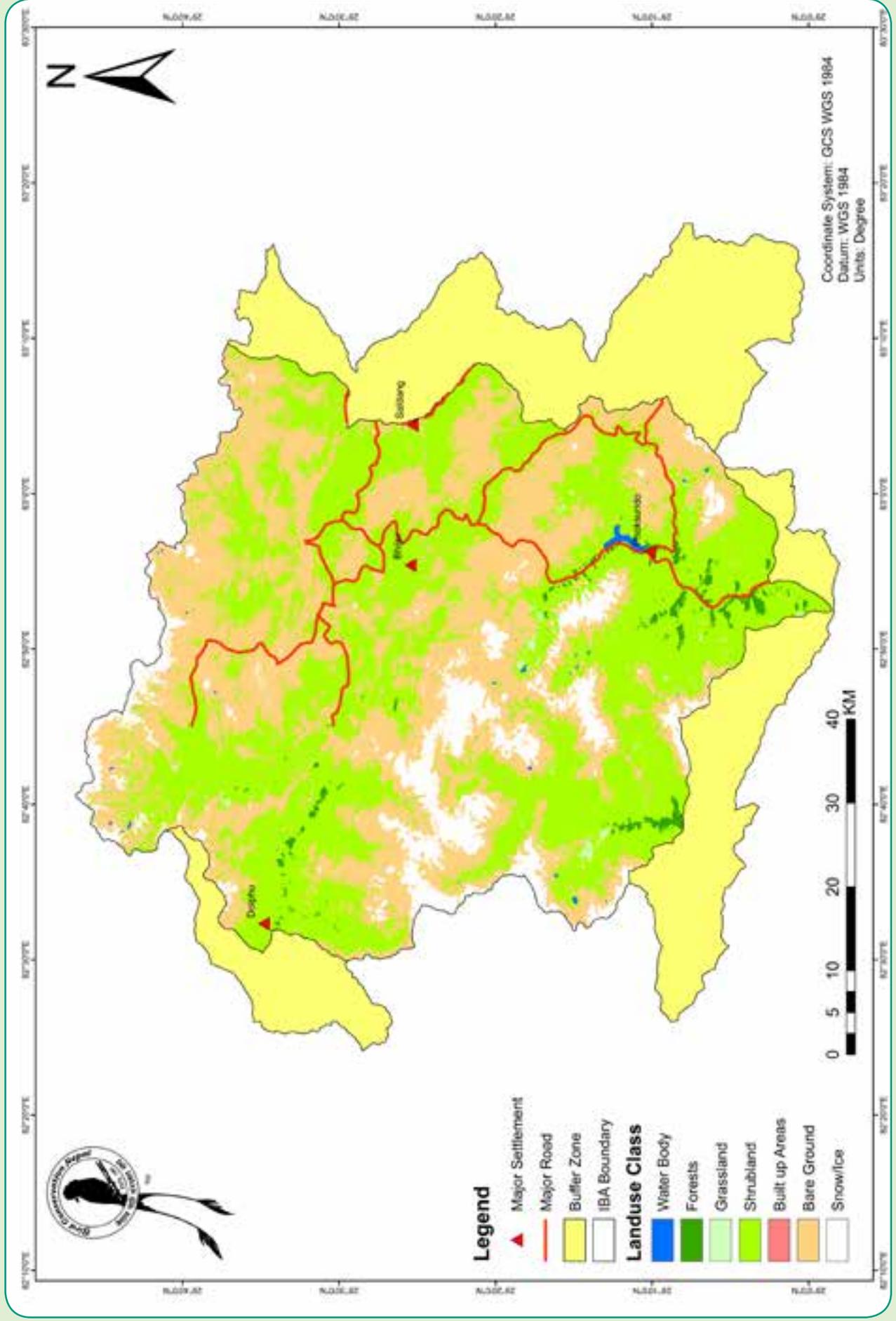
The largest source of SaNP revenue comes from mountaineering royalties but to date, no part of this revenue is spent for management of SaNP resources and community development in a systematic way.

**Recommended actions** A large number of activities are planned to strengthen the management capacity of SNPBZ institutions. These include organising training on wildlife identification and field-based climate change vulnerability mapping. A number of activities are planned to enhance research (including rapid

assessment of climate change vulnerability of key species of the park's flora and fauna and preparation of the inventory of the park's flora and fauna). Strengthening monitoring and evaluation activities will include conducting field observation and periodic wildlife monitoring and seeking engagement of Buffer Zone institutions, VDCs and other relevant stakeholders in the monitoring and evaluation process.

**The Sagarmatha National Park and Buffer Zone Support Project** was implemented jointly by DNPWC and WWF Nepal in SNPBZ in 2006 under the framework of the Sacred Himalayan Landscape. It covers an area of 142,300ha spanning over 4 wards of Khumbu Pasang Lahmu Rural Municipality and a population of more than 6,000 persons. The project includes supporting the BZMC to conduct community-based sustainable biodiversity conservation activities. Microhydro schemes have been completed and local people have been mobilised to adopt climate change adaptation activities and are involved in sustainable management of Gokyo and associated lakes. WWF Nepal had previously worked for more than ten years in SNPBZ (WWF Nepal 2015).

# SHEY-PHOKSUNDO NATIONAL PARK AREA SITE MAP



# 39 SHEY-PHOKSUNDO NATIONAL PARK

## Site description

Shey-Phoksundo National Park (SPNPBZ) was established in 1984 to preserve a unique Trans-Himalayan ecosystem with a diversity of flora and fauna. It is the largest of Nepal's national parks. The Buffer Zone was declared in 1998 and consists of forests and private lands and includes 17 BZUCs and 25 BZ CFUGs. The northern boundary, stretching from the mountain pass of Namja in the west to that of Marim in the east, borders on the Tibetan Autonomous Region of China. Nepal's deepest and second largest lake, Phoksundo Lake, lies in the upper regions of Suligad. Near the lake's outlet is the country's highest waterfall. About one-third of the park is situated south of the Kanjiroba Himal (6883m), and comprises extensive high altitude grasslands interspersed with forests and scrub below 4000m. There are forests of oak *Quercus semecarpifolia* and conifers *Pinus wallichiana*, *Abies spectabilis* and *Picea smithiana*, and mixed deciduous forests along the Suli Gad river. *Betula utilis* forest is common in the Jagdula Khola and Garpung Khola valleys. Higher up there are limited shrubberies of rhododendron and juniper *Juniperus*. North of the Kanjiroba Himal lie

**Status:** Protected

**Altitude:** 2200–6883m

**Area:** 355,500ha NP; 134,900ha BZ

**Geographical coordinates:** 29°26'N 82°56'E, Dolpa and Mugu Districts of Karnali Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Western Himalayas EBA); A3 (Eurasian high montane biome species, Sino-Himalayan temperate forest biome species)

the undulating hills of the Tibetan plateau where the vegetation is typically Trans-Himalayan, dominated by *Caragana*, *Cotoneaster* and dwarf junipers *Juniperus* spp. (Priemé and Øksnebjerg 1995). Rangelands cover about 20% of the park and buffer zone and there are at least 55 rangelands varying from 1–20 ha in size.



Photo by Rajendra Gurung

## Birds

Globally threatened species	Threat status	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Vulnerable	Uncommon resident
Restricted-range species	Endemic bird area	Status and habitat
Cheer Pheasant <i>Catreus wallichii</i>	Western Himalayas	Uncommon resident
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Uncommon resident
Kashmir Nuthatch <i>Sitta cashmirensis</i>	Western Himalayas	Frequent resident in oak/coniferous forest
White-throated Tit <i>Aegithalos niveogularis</i>	Western Himalayas	Uncommon, probably resident in bushes in oak/coniferous forest and birch forest

The park's micro-climatic condition, ecology, ecosystem, flora and fauna resemble the Tibetan desert type. With altitudes ranging from 2,000 to 6,883 m, the park has a sub-temperate to Trans-Himalayan climate. The Shey monastery which is believed to be built in the 11<sup>th</sup> century is a major attraction in the park (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

The relatively small number of 536 foreign trekkers visited the park in 2012 (Ghimire 2013).

Kusi *et al.* (2018) compiled a list of 300 bird species for Dolpa which includes the park and buffer zone, as well as a larger surrounding area. This list includes at least 293 species for SPNPBZ (Kusi *et al.* 2018) including the vagrant Rufous-tailed Rock Thrush *Monticola saxatilis* (Kusi *et al.* 2017).

SPNPBZ supports significant populations of Cheer Pheasant and so qualifies as an IBA based on the globally threatened criterion.

The globally threatened Common Pochard *Aythya ferina*, Wood Snipe *Gallinago nemoricola*, Steppe Eagle *Aquila nipalensis*, and Egyptian Vulture *Neophron percnopterus* have also been recorded. Further fieldwork may show the park supports significant populations of some of these species.

SPNPBZ supports important populations of the restricted-range Cheer Pheasant, Kashmir Nuthatch and White-throated Tit from the Western Himalayas

(EBA 128) and Hoary-throated Barwing from the Central Himalayas (EBA 129) and so qualifies as an IBA based on the restricted-range criterion.

There are large alpine zone areas that support a significant proportion of species characteristic of the Eurasian high montane biome. SPNPBZ therefore also qualifies as an IBA based on the biome-restricted assemblage criterion. The park also holds large temperate forest areas that support a significant proportion of species characteristic of the Sino-Himalayan temperate forest biome (see Appendices 2,7).

Five near-threatened species have been recorded, the resident Bearded Vulture *Gypaetus barbatus* and Himalayan Griffon *Gyps himalayensis* (common), Mountain Hawk-eagle *Nisaetus nipalensis* (rare resident) and Satyr Tragopan *Tragopan satyra* (frequent resident). Cinereous Vulture *Aegypius monachus* is a rare visitor.

### Other wildlife

A total of 36 species of mammals, 36 species of butterflies, and six species of reptiles are found in the park (L. B. Bhandari, Chief Conservation Officer, SPNPBZ). There are a number of globally threatened mammals, including Himalayan Wolf *Canis lupus himalayensis*, Dhole *Cuon alpinus*, Red Panda *Ailurus fulgens*, Musk Deer *Moschus sp.*, Common Leopard *Panthera pardus* and Snow Leopard *Panthera uncia* (Kusi *et al.* 2018). The park is especially important for the population of Snow Leopard and its prey species.



The park is also home to six reptiles and 29 species of butterfly, including the highest flying butterfly in the world, *Paralasa nepalaica* (DNPWC 2015k).

### Conservation issues and management

SPNPBZ is facing several problems, gaps and issues which affect the park in reaching its potential. While the magnitude, extent, and severity of issues and threats differ, the majority of the problems act together, influencing the park's conservation and management. Infrastructure development pressure, human-Snow Leopard conflict, and increasing human pressure for collecting the valuable Yarsha gumba are emerging challenges (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

The main challenge is ensuring a balance between conservation and development without compromising ecological balance, while meeting the local community's needs. This challenge continues to emerge as development activities, such as road and hotel construction are increasing at a higher rate than ever before. The other main challenge is reducing livestock depredation by Snow Leopards *Panthera uncia* and wolves, which is the major reason

for human-wildlife conflict and leads to retaliatory killings of Snow Leopards. Reducing anthropogenic impacts on local ecosystems during Yarsha gumba collection poses a different challenge. Despite having such a unique representation of the Himalayan and trans-Himalaya ecosystems in the entire protected area network of Nepal, SPNPBZ has lagged in terms of long-term ecological and ecosystem research on vegetation and rangelands, in the face of climate change-induced shifts in vegetation, flowering patterns etc. (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

SPNPBZ holds enormous potential to lift the region out of acute poverty by promoting high-quality Himalayan wildlife and trekking- and culture-based tourism with the support of WWF and local government agencies. However, there has been limited progress and prioritization on this so far.

### Park protection

Protecting national park resources, including wildlife and property, represents the central task of protected areas. The Nepal Army has been responsible for protecting SPNPBZ for the last three

decades. We are focusing on strengthening the park protection activities such as establishing security posts, equipping park staff with sufficient logistics, developing basic facilities, ensuring effective and reliable communication systems and transportation facilities, and having a highly dedicated staff for regular patrolling. A team of *Nepali Army* and park staff is dedicated to park protection. Still we have some issues which remain to be solved: inadequate infrastructures and other facilities to protect against poaching, encroachment, grazing, wildfire, NTFPs collection; inadequate security posts in the Upper Dolpa area; limited access to a large portion of the national park; poor communication network in a large part of the park area; poaching due to the porous border with China, and weak networking among local level conservation agencies to control wildlife-related illegal activities. The SPNPBZ is making some special arrangements and activities to cope with these problems by: developing infrastructure and communication facilities; enhancing information collection and intelligence to combat illegal activities; capacitating the park staff, army and community stakeholders, and increasing coordination with security agencies and the Wildlife Crime Control Bureau (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

### *Habitat management*

Rangelands of the park and buffer zone are critical, not only for wildlife, but also for local communities. Rangelands play an important role in sustaining the livelihood of local communities because livestock rearing is the main economic activity in large parts of SPNPBZ. These rangelands are dynamic as they are influenced by rainfall, fire, and encroachment by thorny and woody shrubs. Long drought, fire, and sustained heavy grazing can lead to rangeland degradation. Therefore, the rangelands need to be actively managed to meet the twin objectives of sustaining local livelihoods and conserving wildlife, while maintaining the quality of rangelands.

During the dry season, water becomes the main limiting factor for wildlife. Therefore, in dry areas like Dolpa, where limited rainfall occurs, provisioning water by creating water ponds in wildlife habitats is essential. In SPNPBZ, there are at least 20 wetlands of different sizes; the important ones are Phoksundo lake, Choita Tal, Chamkuni Daha, and Jagdulla

Tal. Many streams flowing from the mountains to lowlands are the other main source of water for wildlife and livestock. Managing these wetlands is important as they are prone to encroachment by invasive species and water pollution due to sewage and waste disposal. In particular, Phoksundo lake has seen an increased number of visitors over the years, and there is concern about waste disposal in the lake by local hotel owners. Therefore, a site management plan of Phoksundo lake has been prepared. This management plan will implement activities while aligning these activities proposed in the site management plan (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

### *Fire management*

Fire is an important management tool for wildlife habitats. Controlled burning can halt forest succession and maintain a mosaic of grass and woody patches. While stopping the encroachment of grassy habitat by colonisation of woody plants, controlled burning helps the growth of new grass shoots. It also avoids uncontrolled fire and the adverse effects of fire on wildlife and their habitats. A large part of SPNPBZ is generally dry and uncontrolled fire has serious negative consequences for forest regeneration and wildlife. Intentional and accidental fire by poachers and herders is also a huge problem in the park. Major issues and activities are focused on identifying fire prone areas by acquiring information from local people and park personnel. Managing firefighting tools at different level of social organizations such as BZMC, BZUC, BZCFUG, CBAPU, WCCB, etc. are the options and are applied in the park (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

### *Encroachment management*

In SPNPBZ, the Phoksundo Rural Municipality lies entirely inside the core area. Encroachment can be seen along the tourism trail by tea shops and construction of hotel lodges. This encroachment can have both positive and negative impacts. While some of these are illegal, other tea shops are temporary. These service centres (teashops/fast food shops) are also important for tourism. Care needs to be taken to control the permanent encroachment of government land and forest areas. SPNPBZ is collecting information about the status of forest land encroachment and is developing guidelines for temporary tea shops, camp sites, and rest houses to



control any form of permanent land encroachment along the trekking trails (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

#### *Wildlife health management*

Rescuing injured wildlife, performing their treatment, and rehabilitating them into nature is another essential task of protected area management these days. In addition, preventing close encounters and any sort of disease transmission between livestock and wildlife is also vital to prevent any sort of disease outbreak. The interaction between livestock and wildlife is high in Dolpa because both graze in the same rangeland, and thus there is a high chance of diseases transmission between them. Therefore, preventing close encounters between livestock and wildlife is important. Regular monitoring of livestock health and regular and timely immunization of domestic livestock in and around the park is essential. This can prevent the outbreak of infectious diseases such as anthrax, render pest, tuberculosis, brucellosis, and foot and mouth disease. Such preventive action can benefit wildlife and livestock, and humans as well (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

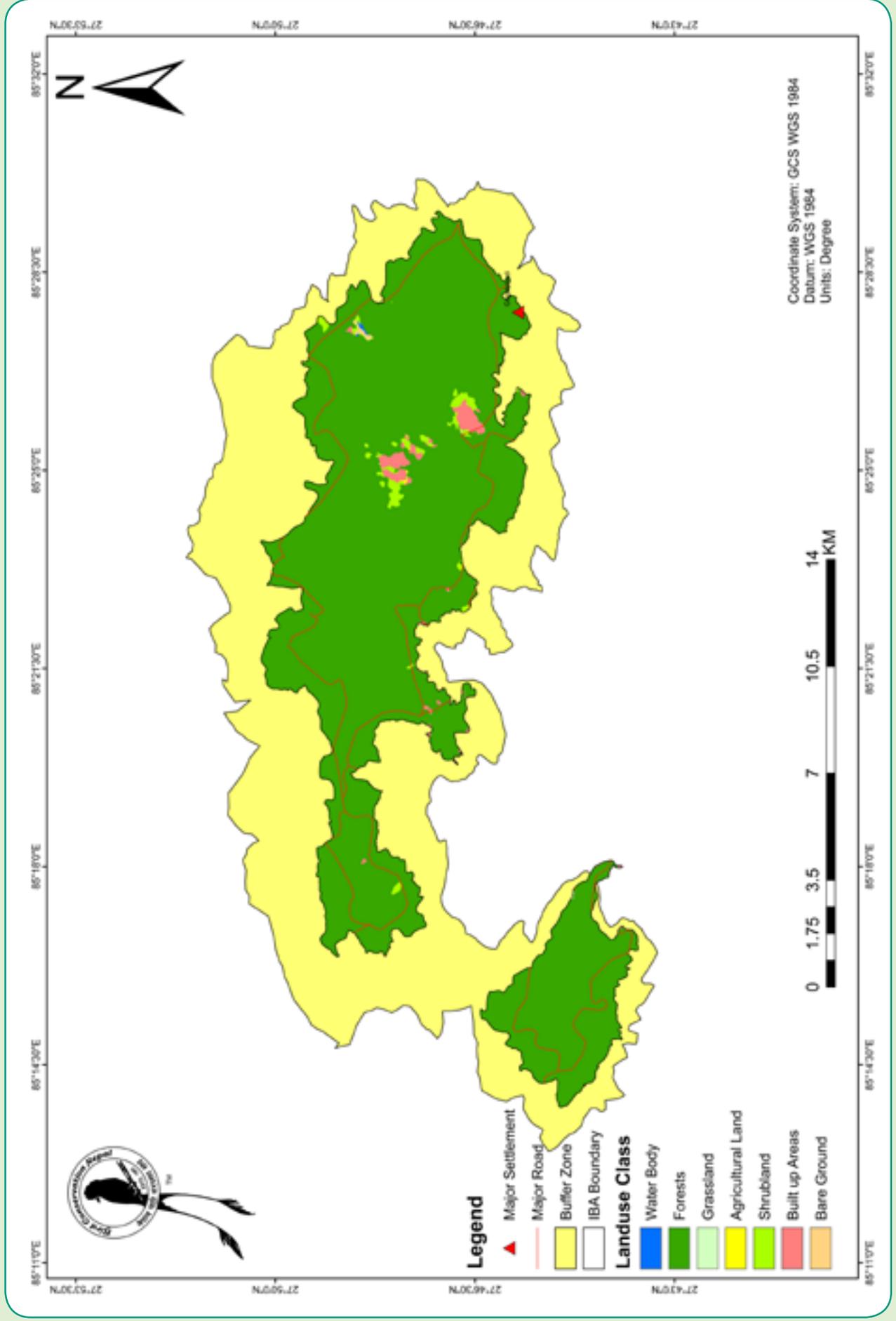
The WWF Nepal programme worked with wildlife

authorities in the park between 1992 and 2009 in the first phase. In the second phase from 2016 till now the WWF Nepal programme is helping to manage the park's natural resources in addition to the wellbeing of local people who are living in the park and periphery. Capacity development of park and security personnel, livelihood support for local people are major areas of support. Awareness raising activities are now increasing the relationship between park and people (L. B. Bhandari, Chief Conservation Officer, SPNPBZ).

In 2015 and 2016 burning of alpine shrubs (*Juniperus*, *Rhododendron* and others) by yarsagumba harvesters for fuel and haphazard felling of trees in the Sallaghari area (between Phoksundo lake and Shey monastery) for timber and construction works were observed. Trapping, usually for Galliformes, was considered a notable threat in the park in 2015 and 2016 (Kusi *et al.* 2018).

A 2011 assessment of the condition of SPNPBZBZ found it was in an unfavourable state (BirdLife International 2015).

# SHIVAPURI NAGARJUN NATIONAL PARK AND BUFFER ZONE AREA SITE MAP



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# SHIVAPURI NAGARJUN NATIONAL PARK AND BUFFER ZONE

## Site description

Shivapuri Nagarjun National Park (SNNP) was initially gazetted as Shivapuri National Park in 2002 and renamed Shivapuri Nagarjun National Park after the addition of Nagarjun forest patch (1500 ha) in 2009. SNNP is located on the northwestern fringe of the Kathmandu Valley, and represents the mid hill ecosystem in Nepal's protected area system. Shivapuri (2730m) is the second highest mountain that surrounds the Kathmandu Valley. It is the main source of the rivers Bagmati and Vishnumati that flow from the southern slopes of the mountain; streams on the northern slopes drain into the Likhu Khola (DNPWC 2014f).

Ecosystem services that SNNP provides include: a region of rich biodiversity of the mid hill region; an important biological corridor; a major source of fresh

**Status:** Protected

**Altitude:** 1000 m-2732 m

**Area:** 15900ha NP; 12,620ha BZ

**Geographical coordinates:** 27° 43' – 27° 52' N, 85° 13' – 85° 45' E in Kathmandu, Nuwakot, Sindhupalchok and Dhading Districts, Bagmati Province

**Categories:** A1 (globally threatened species); A2 (restricted-range species, Central Himalayas EBA); A3 (Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species)



Photo by Santosh Bajagain

## Birds

Globally threatened species	Threat status	Status and habitat
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Fairly common winter visitor and passage migrant
Restricted-range species	Endemic bird area	Status and habitat
Spiny Babbler <i>Acanthoptila nipalensis</i>	Central Himalayas	Frequent resident and altitudinal migrant in dense scrub
Hoary-throated Barwing <i>Sibia nipalensis</i>	Central Himalayas	Uncommon resident and altitudinal migrant in mossy oak forest

water for the Kathmandu Valley, fulfilling about 40 % of surface water demand; one of the major tourist destinations of nearby capital city; a potential area for research and exploration; a site for conservation education for students and researchers, and a sink for air pollution generated by the Valley (DNPWC 2014f); also provides important carbon storage and greenhouse gas flux (BCN and DNPWC 2012). The biological corridor that the park represents links Parsa National Park in the central terai to Langtang National Park (WWF 2013).

The lower slopes are extensively covered by scrub. Chir Pine *Pinus roxburghii* is the dominant tree species in the subtropical zone although other species are present, mainly *Alnus nepalensis*, *Castanopsis indica* and *Schima wallichii*. The northern slopes are dominated by these broadleaved trees at lower elevations and some scrub. *Quercus lanata* is the main tree species in the lower temperate zone, but little remains and this is badly degraded. Higher up in the upper temperate zone the mountain is densely vegetated with *Quercus semecarpifolia*.

The land use pattern in the park is predominated by forest (73.94%), followed by shrub land (20.14%), cultivated land (5.41%), grassland (0.44%) and other land uses (0.07%) (DoF 2012c).

The Buffer Zone covers 12,620 ha and according to the 2011 Census, the population number was 79,969 persons. Their main occupations are agriculture, animal husbandry, government services, and labour (DNPWC 2014f).

During the last five years the park has been visited by an average of 100,000 visitors annually (DNPWC 2014f), including 17,232 foreigners (Ghimire 2013).

A total of 317 species was recorded in Shivapuri National Park by SNP and BCN (2007). By 2022, the total had increased to 349 species, mainly as a result of surveys in 2021 and 2022 organised by the park management (Laxman Poudyal and Sanjib Acharya *in litt.* to C. Inskipp, 8 November 2022). A record of White-throated Tit *Aegithalos niveogularis*, a restricted range species that was included in SNP and BCN (2007) has been withdrawn by the observers.

The globally threatened Steppe Eagle has been recorded in significant numbers and so SNNP qualifies as an IBA based on the globally threatened criterion.

Other globally threatened species recorded are: Egyptian Vulture *Neophron percnopterus* (very rare visitor); White-rumped Vulture *Gyps bengalensis* (status uncertain, very rare visitor to Kathmandu Valley); Pallas's Fish-eagle *Haliaeetus leucoryphus* (very rare passage migrant), and three vagrants: Saker Falcon *Falco cherrug*, White-throated Bushchat *Saxicola insignis* and Kashmir Flycatcher *Ficedula subrubra*.

SNNP has good populations of Spiny Babbler and Hoary-throated Barwing, two restricted-range species from the Central Himalayas (EBA 129), and so SNNP qualifies as an IBA based on restricted-range criterion.

Other restricted-range species recorded are: Nepal Cupwing *Pnoepyga immaculata* from the Central Himalayas (EBA 129) which is a very rare passage migrant and two species from the Western Himalayas (EBA 128): Kashmir Flycatcher and Spectacled Finch *Callacanthus burtoni* which is very rare visitor.

There are large areas of temperate and subtropical forests, which support significant proportions of species characteristic of the Sino-Himalayan temperate forest and Sino-Himalayan subtropical forest biomes respectively. SNNP therefore qualifies as an IBA based on the biome-restricted assemblage criterion.

Seven near-threatened species have been recorded: Mountain Hawk-eagle *Nisaetus nipalensis* (probably resident); Satyr Tragopan *Tragopan satyra*, Alexandrine Parakeet *Palaeornis eupatria* and Asian Woollyneck *Ciconia episcopus* (status uncertain), and Himalayan Griffon *Gyps himalayensis*, Cinereous Vulture *Aegypius monachus* and Pallid Harrier *Circus macrourus* (very rare visitors or vagrants).

### Other wildlife

A total of 24 mammal species has been recorded including Pangolin (*Manis* spp.), Leopard Cat *Prionailurus bengalensis*, Common Leopard *Panthera pardus*, Jungle Cat *Felis chaus*, and near-threatened Himalayan Goral *Naemorhedus goral*. There are 102 butterfly species. Shivapuri is the only habitat for the near-threatened Himalayan Dragonfly *Epiophlebia laidlawi* in Nepal. A total of 1120 flowering plants including 16 endemic plants have been documented from SNNP. The park is home to diverse epiphytic and terrestrial orchids, nearly one third of Nepal's orchid species (123 species) (DNPWC 2014f).

### Conservation issues and management

The observed land use changes in Sundarijal catchment from 1990-2010 suggests an overall decline in forest land by 6.71 km<sup>2</sup> (0.91%), while agricultural land increased by 25.5 km<sup>2</sup> (0.72%) (Shrestha 2012). Adverse impacts of land use change on ecosystem services were observed in water quantity, soil condition and forest resources. Firewood and timber overharvesting, alcohol production, and population growth were the principle causes of the change (Shrestha 2012).

An assessment was made of ecosystem services provided by SNNP in 2011. The study compared the benefits that people receive from carbon storage and greenhouse gas flux, nature-based recreation, water provision and cultivated goods in the current state of the park to the most plausible alternative

state - a mosaic of agriculture and urban land with small forested patches remaining. With the loss of forest, the value of this site would be greatly diminished for global climate regulation with a huge decline in carbon storage (60 % decrease overall) and greenhouse gas sequestration (74 % decrease), equivalent to some \$220 million in total for the former and \$1.6 million per year for the latter. There would also be increased sedimentation in the rivers as a result of soil erosion, requiring additional treatment costs to make the water usable. No nature-based recreation would occur, which would represent a loss to the national economy of almost \$2 million per year. However, in the alternative state, there would be increased agricultural production of \$2 million / year and a one-off benefit from harvesting the wood of deforested trees (BCN and DNPWC 2012).

The assessment concluded that the current protected status of this IBA provides a number of important benefits (see above). However, at the local level, communities are losing the opportunity to convert land for farming or harvest wild products. The recent establishment of a BZ around the park should result in the sharing of the economic benefits more fairly as the BZ Management Committees would receive a proportion of the annual income to the park to use towards community development programmes. With careful management, this could reduce the pressure on the park, enabling it to continue to conserve nature and protect an important watershed for the nation (BCN and DNPWC 2012).

A 2011 assessment of the condition of SNNP found it was in a near-favourable state (BirdLife International 2015b).

A management plan was produced in 2017 which includes objectives, issues and recommended actions for the period 2018-2022 (SNNP, 2017). The issues in achieving the management plan's objectives and recommended actions aimed at addressing these issues with a focus on bird conservation.

### Park management

**Objective** To conserve ecosystem and species diversity, and genetic resources.

**Issues include:**

- Population growth which is resulting in increasing developmental activities, forest fragmentation, and erosion along park fringes;
- Unplanned land use practices and increasing land and water pollution in Sundarikal reservoir
- Inadequate protection and monitoring of water quality;
- Growth of pressure on forests due to demand of firewood for local brewed alcohol and fodder and natural trees infection (e.g. pine trees);
- Forest fire is common;
- Information on endangered and protected wildlife species and their habitats inadequate;
- Protected wildlife species are prone to poaching, and
- Incidence of invasive species e.g. *Lantana camera* increasing

**Recommended actions include:**

- Employ bioengineering techniques to minimise soil erosion and siltation in the reservoir and rivers;
- Maintain the park boundary wall to reduce human wildlife conflict;
- Identify degraded forest areas of the park;
- Prepare and implement habitat management plans for wetlands, grasslands, and forests;
- Provide training, awareness programme, and equipment to control forest fires;
- Conduct a study on causes of natural infection of forest trees;
- Establish community forests in peripheral areas of the BZ;
- Develop a conservation education centre at park entrance gate and equip it with basic information on flora and fauna representing mid mountain ecosystem, and
- Conduct detailed baseline surveys of endangered, protected and other wildlife species.

**Buffer Zone management**

**Objective** To achieve balance between biodiversity conservation and sustainable livelihood.

**Issues include:**

- Encroachment of government forests still prevalent;

- Forest degradation and illegal trade of NTFPs;
- Alternative energy systems not adequately promoted in proposed BZ;
- Community awareness and initiatives towards wildlife and their habitat conservation inadequate;
- Few conservation awareness and development programmes;
- Community participation, especially of women and poor people in conservation inadequate;
- Subsistence farming practices and high food deficiency in and around adjoining settlements of SNNP, and
- Practice of shifting cultivation inside SNNP posing threat to forest diversity.

**Socio-economic issues** include: poor public health, inadequate drinking water facility and sanitation and poor awareness of health issues in immediate surrounding settlements of SNNP; inadequate IGAs focusing on women, youth and small farmers; poor focus on NTFPs promotion, cultivation and marketing, and local communities compelled to follow strict park management policy and deprived of certain traditional rights to resources (collection of firewood, fodder, litter, soil; grazing livestock etc).

**Recommended actions include:**

- Identify degraded forest patches and bare lands for plantation of multipurpose tree species;
- Conduct periodic forest inventory to maintain baseline forest productivity database;
- Conduct inventory of invasive species on community forests;
- Establish multi-purpose nursery with demonstration plot to promote private and community plantation;
- Provide firefighting equipment to the BZCFUGs;
- Install alternative energy sources;
- Make communities aware of need to lengthen cycles of shifting cultivation;
- Initiate feasibility study for landscape level conservation linking SNNP with Godavari and Phulchoki hills and Langtang NP corridor;
- conduct conservation education to local community and institutions;
- conduct teachers' training on conservation education, eco clubs, and
- provide conservation educational materials to schools and communities.

Numerous activities are listed to address socio-economic issues including: organising training on organic farming and livestock; providing subsidy for alternative energy technologies; conducting training on solid waste management and compost making and on income generation and skill enhancement e.g. occupational skill, vegetable, fruit, floriculture, bee keeping, NTFPs (cultivation, processing and marketing); identifying appropriate location specific IGAs to displace the local liquor brewing and reducing firewood consumption and establishing community seed banks in proposed BZ VDCs.

### **Tourism management**

#### **Objective**

To enhance eco-friendly tourism in SNNP and BZ

**Issues** include: diverse tourism services and facilities lacking; domestic tourism ignored; SNNP could be major destination of Kathmandu Valley schools/colleges; local communities not able to reap benefits from tourism, and adequate ecotourism oriented IGA programmes and skills such as hospitality management and nature guide etc. lacking.

**Recommended actions** include: organize periodic coordination and cooperation meetings with tourism stakeholders to prioritize tourism development activities in and around SNNP; maintain trekking trails (all weather) with stone steps and signage; conduct ecotourism supportive IGA and skill development training programmes (agriculture, etc), using local products to provide benefit to adjacent villages; develop home stay tourism programmes; conduct awareness programme on tourism and environment, and organize nature guide training for local youths.

### **Institutional development**

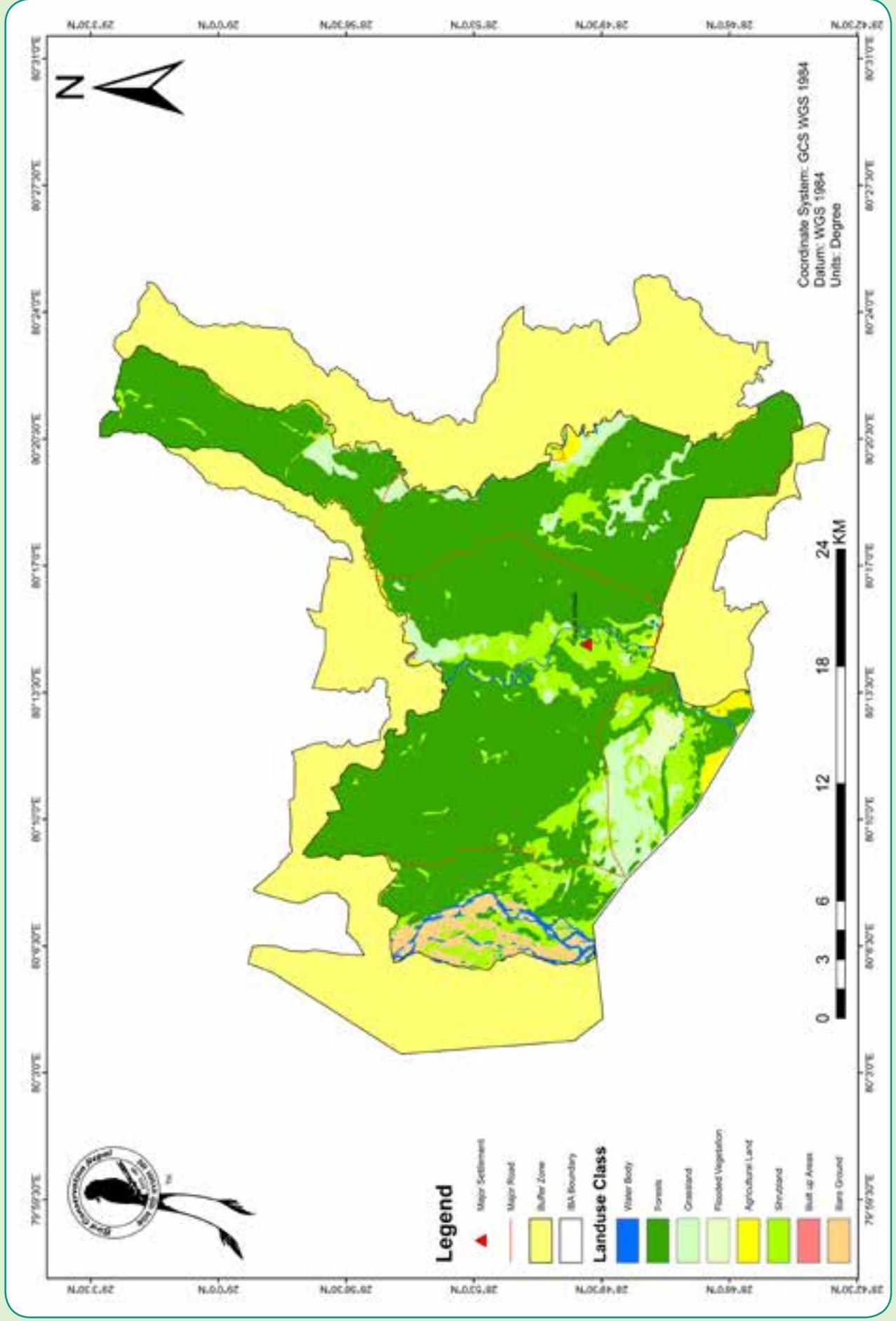
**Objective** To enhance management capacity of the park and BZ institutions

Compared to the other PAs of Nepal managed by the government, SNNP has good institutional status (DNPWC Report 2013 Task 3.2), though not sufficient to address the needs for effective management of SNNP and proposed BZ.

**Issues include:** skill of park personnel inadequate for effective park management; inadequate basic physical facilities and training; park staffs have inadequate knowledge on survey, flora and fauna, biodiversity monitoring, habitat management, community development etc; lack of basic equipment for research and development; local institutions engagement in park management and conservation activities not proactive; research needs of SNNP not identified, prioritized and planned; resources for research inadequate, and systematic and workable monitoring and evaluation system for park management not in place.

**Recommended actions** include: conduct management and other skill enhancement training for park staff; provide basic equipment for research and monitoring; prepare a watershed protection plan; institutionalize functioning of BZ institutions; form, strengthen and mobilize eco-club, youth clubs, woman groups, directly related to conservation; coordinate with partner organizations to establish well equipped conservation education centre; conduct training on research methodology, analysis etc and on handling scientific equipment for biodiversity monitoring, and organize training on newly developed monitoring and evaluation system to park personnel and BZ representatives.

# SHUKLA PHANTA NATIONAL PARK AND BUFFER ZONE AREA SITE MAP





# SHUKLA PHANTA NATIONAL PARK AND BUFFER ZONE

## Site description

Shukla Phanta National Park (ShNP) was managed as a hunting reserve since 1969, and gazetted as a Wildlife Reserve in 1976 with an area of about 15,500ha. Later the reserve was extended eastwards by an area of about 15,000ha to include more habitats and a corridor from the terai into the Churia hills for the seasonal migration of wildlife. The reserve lies in the extreme southwest of the *terai*. In 2004 the BZ was declared with 11 VDCs (now these include 5 municipalities and 2 rural municipalities), 280 settlements and a population of 100,953 persons (Adhikari 2003). In 2017 it was gazetted as a National Park.

ShNP shares a common boundary with India in the south and west which is formed by the Mahakali (Sarda) River, a major tributary of the Ganges. It is bordered on the eastern side by the Syali River and to the north by a forest belt and cultivations (DNPWC 2015j) and Siwalik ridge. Beyond the southern boundary lies the Lagga Bagga protected forests in India (Adhikari 2003), which is now contiguous to the Pilibhit Tiger Reserve.

The main vegetation types are: Sal *Shorea robusta* forest; Sal savanna, which is part of a continuum between climax forest and grassland that is maintained by fire or floods; mixed deciduous forest, which is patchily distributed among the more extensive grasslands in the south-west (Sal is absent); grasslands, which may be dry (locally known as phantas) or wet in the case of areas inundated during the monsoon; lowland savanna, which occurs on the fringes of all main grasslands and covers most of Karaiya Phanta; khair-sissoo forest, dominated by *Acacia catechu* and *Dalbergia sissoo* and forming an early succession in riverine areas; and marsh, in which tall dense grasses are predominant (e.g. *Phragmites karka*, *Saccharum spontaneum* and *Sclerostachya fusca*) (Schaaf 1978).

**Status:** Protected

**Altitude:** 175-1300m

**Area:** 30,500haNP; 24,350ha BZ

**Geographical coordinates:** 28°53'N/80°11'E,  
Kanchanpur District of Mahakali Zone

**Categories:** A1 (globally threatened species);  
A3 (Indo-Malayan tropical dry zone biome  
species and Indo-Gangetic Plain biome species)

ShNP is important both nationally and internationally for its extensive grasslands or phantas that constitute almost half the park's vegetation and a much greater area than grasslands in the rest of lowland Nepal. The main grassland, Shukla Phanta is the largest protected patch of continuous grassland in Nepal. It is approximately 3410ha in area (ShNP 2017, Poudyal *et al.* 2020). The main grass species include *Imperata cylindrica* and *Heteropogon contortus*. In the eastern half of the main phanta the grassland is damp with large areas of marshes and pools which add significantly to the park's biodiversity. There are other smaller phantas in the park which are also important for birds (Baral and Inskipp 2009).

Tourist numbers were rapidly growing with up to 12138 entries in 2018/2019, however the numbers have gone down sharply due to the coronavirus pandemic, for example only 1775 tourists in 2019/2020, 2930 in 2020/2021 and 2719 in 2021/2022 visited Shukla Phanta (Laxmi Joshi NTNC in litt to Hem Sagar Baral 2023).

## Birds

Globally threatened species	Threat status	Status and habitat
Swamp Francolin <i>Ortygornis gularis</i>	Vulnerable	Fairly common resident in grasslands
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	Vulnerable	Frequent resident in forest
Bengal Florican <i>Houbaropsis bengalensis</i>	Critically Endangered	Fairly common, probably resident in grasslands
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Uncommon breeding resident in open country near human habitation
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Uncommon resident in open country near human habitation; bred until very recently
Indian Spotted Eagle <i>Clanga hastata</i>	Vulnerable	Rare, breeding resident in open country
Steppe Eagle <i>Aquila nipalensis</i>	Endangered	Frequent winter visitor
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Frequent resident on marshes and lakes, has bred
White-throated Bushchat <i>Saxicola insignis</i>	Vulnerable	Uncommon winter visitor to grasslands
Bristled Grassbird <i>Schoenicola striatus</i>	Vulnerable	Fairly common summer visitor in grasslands
Jerdon's Babbler <i>Chrysomma altirostre</i>	Vulnerable	Rare resident in wet grasslands
Finn's Weaver <i>Ploceus megarhynchus</i>	Endangered	Uncommon breeding resident in grasslands

A list of 423 species of birds of the park recorded until 2008 were recognized by Baral and Inskipp (2009); later, another checklist produced claimed of 424 species in the national park (Regmi and Acharya 2012). Because of increasing survey and coverage of the park area, a number of birds was added in following years. The number of bird species found in Shukla Phanta rose to 450 (Poudyal and Chaudhary 2019) and only in subsequent years to increase the number further by additional 15 species totalling to 465 (Joshi *et al.* in prep). Breeding of Indian Spotted Eagle *Aquila hastata* and some new bird records for Shuklaphanta National Park have been added (Giri *et al.* 2020, Poudyal *et al.* 2022).

Species recorded in ShNP include significant populations of the globally threatened Swamp Francolin, Great Slaty Woodpecker, Bengal Florican, White-rumped Vulture, Slender-billed Vulture, Indian Spotted Eagle, Steppe Eagle, Lesser Adjutant,

White-throated Bushchat, Bristled Grassbird, Jerdon's Babbler and Finn's Weaver. ShNP is especially important for grassland species, supporting one of the two largest populations of the Critically Endangered Bengal Florican in Nepal and only one of two Nepal sites where Jerdon's Babbler has been recorded. The national park also holds the large majority of Nepal's wintering population of White-throated Bushchat and is the country's only regular wintering site for the species (Baral *et al.* 2021). In recent years, the population of this species has declined sharply warranting review of its global threat status. ShNP is the only site in Nepal having breeding populations of Finn's Weaver and the population present here is considered globally significant (Poudyal *et al.* 2020). Other globally threatened grassland specialists for which the reserve has significant populations are Swamp Francolin and Bristled Grassbird. Shukla Phanta therefore qualifies as an IBA based on globally threatened species criterion (A1).

Other globally threatened species that have been recorded are: Common Pochard *Aythya ferina* (winter visitor, status unknown), Sarus Crane *Grus antigone* (rare visitor, has bred), Lesser Florican *Sypheotides indica* (former very rare visitor, no recent records), River Tern *Sterna aurantia* (rare resident), Black-bellied Tern *S. acuticauda* (very rare visitor), Pallas's Fish-eagle *Haliaeetus leucoryphus* (rare former resident, no recent records), Egyptian Vulture *Neophron percnopterus* (rare visitor), Red-headed Vulture *Sarcogyps calvus* (uncommon winter visitor), Greater Spotted Eagle *Clanga clanga* (uncommon winter visitor and passage migrant), Tawny Eagle *Aquila rapax* (rare winter visitor), Eastern Imperial Eagle *A. heliaca* (vagrant), Great Hornbill *Buceros bicornis* (rare visitor), and Yellow-breasted Bunting *Emberiza aureola* (former frequent passage migrant and winter visitor, no recent records).

The national park has large areas of grasslands, and dry tropical forests. These are known to support significant proportions of species characteristic of the Indo-Gangetic Plain biome and of species characteristic of the Indo-Malayan tropical dry zone biome. ShNP therefore also qualifies as an IBA based on the biome-restricted species assemblage criterion (A3).

The large number of 22 near-threatened species have been recorded: Alexandrine Parakeet *Palaeornis eupatria* (common resident), Himalayan Griffon *Gyps himalayensis* (fairly common winter visitor); River Lapwing *Vanellus duvaucelii* (fairly common resident); Ashy-headed Green-pigeon *Treron phayrei* (frequent resident); Ferruginous Duck *Aythya nyroca* (uncommon winter visitor and passage migrant); Red-breasted Parakeet *Psittacula alexandri* (uncommon resident); Asian Woollyneck *Ciconia episcopus* (frequent resident), Black-headed Ibis *Threskiornis melanocephalus* (uncommon visitor); Darter *Anhinga melanogaster* (rare resident); Rufous-bellied Eagle *Lophotriorchis kienerii*, Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* (rare resident, has bred); Lesser Fish Eagle *Ichthyophaga humilis* (rare, no recent records); Cinereous Vulture *Aegypius monachus* (rare winter visitor); Pallid Harrier *Circus macrourus* (rare winter visitor and passage migrant); Black-necked Stork *Ephippiorhynchus asiaticus* (rare winter visitor); Great Thick-knee *Esacus recurvirostris* and Painted Stork *Mycteria leucocephala* (rare visitors); Eurasian Curlew *Numenius arquata* (rare

passage migrant); Falcated Duck *Anas falcata* and Red-headed Falcon *Falco chicquera* (vagrants). This IBA holds one of the largest populations of Indian Grass-babbler *Graminicola bengalensis* in Nepal (Baral 2001).

### Other wildlife

A total of 57 mammal species have been recorded including the following globally threatened species: Tiger *Panthera tigris*, Asian Elephant *Elephas maximus*, Hispid Hare *Caprolagushispidus*, Smooth-coated Otter *Lutrogaleperspicillata*, Barasingha (or Swamp Deer) *Rucervusduvaucelii* and, also Indian Rhinoceros *Rhinoceros unicornis*. (Adhikari 2003, Poudyal *et al.* 2020, 2021). ShNP supports the largest population of the nominate race of Barasingha *Cervus duvaucelii*, in the world (Schaaf 1978). ShNP has a record of 15 species of amphibians and 56 species of reptiles including a healthy population of the globally threatened Mugger Crocodile *Crocodylus palustris* and Burmese Python *Python vittatus* (Rawat *et al.* 2020). A total of 88 fish species has been recorded in rivers, lakes and ponds of ShNP (Bhatt and Shrestha, 1977, Poudyal *et al.* 2022). More than 650 plant species have been recorded in the reserve (Rijal and Yonzon 2003).

### Conservation issues and management

A 2011 assessment of the condition of ShNP found it was in an unfavourable state (BirdLife International 2015b).

In the BZ the demand for forest products including fuelwood is high. Average household wood fuel demand in Kanchanpur district was 7,300 kg a year in 2001. In addition, people need grass for roof thatching, fibre, oil seeds and other parts of plants for ceremonial use, medicine, and art and craft. As sustainable yield from these forests does not meet demand the forests will be depleted unless alternative sources are found (Rijal and Yonzon 2003). Grazing pressure from domestic livestock has been the major factor causing the decline of many grassland bird and mammal species that are now threatened. With the exception of the main phanta many grasslands in the national park are overgrazed, notably those lying close to human settlements e.g. grasslands close to Jhilmila. Although such overgrazed grasslands provide habitat for many common bird species, many threatened species are



Photo by Hiru Lal Dangaura

absent. Grassland encroachment by tree and shrub saplings is another major threat to the long-term existence of the main phantas.

Wetlands in the national park are at risk from drying out because of aquatic vegetation and possibly also due to climate breakdown. Shukla Phanta's forests are highly susceptible to fires that are lit deliberately and sometimes accidentally. Fire encourages the growth of new shoots of grasses and also kills some trees which villagers then tend to collect for using firewood. While fires benefit ungulates by encouraging a fresh growth of grasses, they have much reduced shrub and tree regeneration and resulted in open forests with little or no understorey and a much reduced bird community. It is notable that no laughing thrushes have been recorded at Shukla Phanta and only three other forest babbler.

This group depends on a good forest shrub layer. Widespread lack of conservation awareness amongst local communities is another important issue.

The main phanta is managed by cutting and burning in small patches and in rotation. Poudyal *et al.* (2008a, b) reported that the Shukla Phanta National Park Authority undertook restoration work on the main phanta in 2007, uprooting and removing bushes and trees to prevent succession to scrub/forest. Two territorial male Bengal Floricans were observed by Poudyal *et al.* (2008b) on these newly managed grassland patches where bushes and trees had been removed.

The UNDP funded Park and People Programme that was carried out in the 1990s aimed to reduce the conflicts between villagers and park resources.



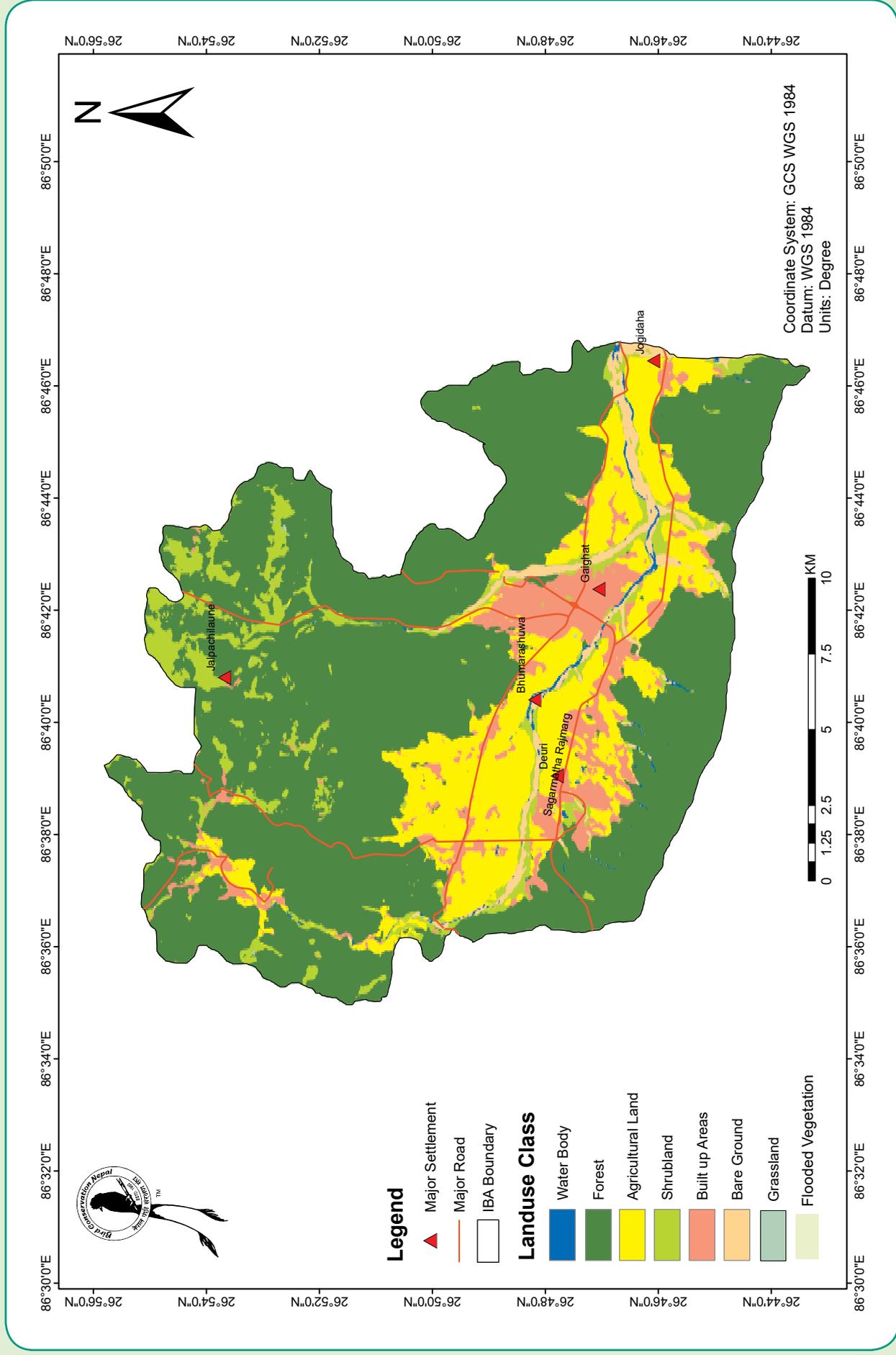
ShNP was included in the Western Terai Landscape Complex Project (WTLCP) which ran from 2006-12 and was aided by UNDP and GEF. The overall objective of WTLCP was to ensure the conservation and sustainable use of globally significant biodiversity in the area. The project's immediate objective was to establish effective and efficient integrated landscape planning and management systems for the conservation and sustainable use of the WTLCP. Although the western terai has three large protected areas (Banke and Bardiya National Parks and ShNP) the long-term viability of the area's biodiversity depends on managing large adjoining areas to provide a more extensive system of habitats across whole ecological landscapes (UNDP 2012).

ShNP lies within the Nepal Government's Terai Arc Landscape (TAL) programme where significant investment has been made by NTNC, WWF and ZSL

to improve its management benefiting both wildlife and people.

NTNC started its conservation in the Shukla Phanta 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 Shukla Phanta National Park (ShNP) and its buffer zone along with the Laljhadi and Branhadev Corridors (NTNC 2021).

# TRIYUGA WATERSHED AREA SITE MAP



# 42 TRIYUGA WATERSHED

## Site description

The Triyuga Watershed is designated as an IBA because of its important Lesser Adjutant colonies. Triyuga River is a small tributary of the Saptakoshi River. The Triyuga River watershed covers the Churia hills in the south inner *terai* and the Mahabharat hills in the north of Udaypur district, southeastern Nepal. The inner *terai* of Udaypur district is a flood plain formed by the main channel of the Triyuga River and several of its tributaries.

### Other wildlife

A total of 47 mammal species has been recorded including the globally threatened Indian Pangolin *Manis crassicaudata*, Chinese Pangolin *M. pentadactyla*, Clouded Leopard *Neofelis nebulosa*, Common Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus*, Mainland Serow *Capricornis thar*, Asian Wild Elephant *Elephas maximus*, Gaur *Bos gaurus* and Wild Water Buffalo *Bubalus arnee*.

### Conservation issues and management

A report on habitat suitability assessment for Tiger *Panthera tigris* in Triyuga (Himalayan Nature 2018) documents the following threats which are important for birds, as well as mammals:

#### Illegal hunting

- Overexploitation of natural resources, notably illegal timber collection and firewood collection

**Status:** Unprotected

**Altitude:** 169-193m

**Area:** 27654.17 ha

**Geographical coordinates:** Sai Khola Colony 26° 50.4'N 86° 39.6'E; Champ Colony 26° 46.2'N 86° 40.8'E, Udaypur District of Koshi Province

**Categories:** A1 (globally threatened species)

- Haphazard use of pesticides. Pesticides are used for fishing. Their haphazard use kill non-targeted species as well as pollute the environment.
- Forest encroachment, mainly for agriculture.
- Uncontrolled grazing occurs everywhere in the area. Local livestock are left unattended in the forests resulting in reduced forest and shrub regeneration.
- Low conservation awareness among local people
- Human disturbances. Survey data obtained from 90 quadrats of 10x10m, eight different anthropogenic disturbances were recorded in Triyuga forest, out of which; grazing (38), fire (30), fodder collection (18) and firewood collection (18) were the major disturbances (Himalayan Nature 2018).

### Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	In 2015, 21 nests in 2 breeding colonies, 25 juveniles (Thapa and Thakuri 2015); in 2019, 15 nests in 4 colonies, 14 fledged chicks (Katuwal <i>et al.</i> (2022); in 2020, 14 nests in 5 colonies, 15 fledged chicks in <i>Bombax ceiba</i> and <i>Shorea robusta</i> trees (Katuwal <i>et al.</i> under review)





# POTENTIAL IBAs





# BADHAIYA TAL

## Site description

Badhaiya Tal is a shallow, eutrophic, rain-fed lake that reaches maximum depths of 4m. The lake is surrounded by rice fields on all sides. It lies in a large marshy natural depression with occasional clumps of tall grasses (Bhujar *et al.* 2007).

### Birds

Birds at the lake are under-recorded. A total of 158 species has been recorded (BCN data and Hem Sagar Baral). These include eight globally threatened species: Egyptian Vulture *Neophron percnopterus*,

**Altitude:** 197 m

**Area:** 105 ha

**Geographical coordinates:** 28° 12'N 81° 30'E

Bardiya District, Lumbini Province

**Potential categories:** A1 (globally threatened species?)



Photo by Santosh Bajagian

White-rumped Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Indian Spotted Eagle *Clanga hastata*, Common Pochard *Aythya ferina*, River Tern *Sterna aurantia*, Sarus Crane *Grus antigone* and White-throated Bushchat *Saxicola insignis* (Rajan Chaudhary *in litt* to C. Inskipp, 20 January 2023), but the status of most of these is unknown. It is possible that the lake may hold significant populations of some of these birds.

Seven near-threatened species have been recorded (all of unknown status): Asian Woollyneck *Ciconia episcopus*, Painted Stork *Mycteria leucocephala*, Northern Lapwing *Vanellus vanellus*, Alexandrine Parakeet *Palaeornis eupatria*, Red-breasted Parakeet *Psittacula alexandri*, Pallid Harrier *Circus macrourus* and Oriental Darter *Anhinga melanogaster* (Rajan Chaudhary, 20 January 2023). The list also includes 45 waterbird species and a small number of species characteristic of the Indo-Malayan dry tropical forest biome.

In the Annual Waterbird count, the number of waterbirds on the lake was a maximum of 2,400 birds in 2020 (Baral 2022).

Year	Annual Waterbird Count
2007	887
2008	1,112
2009	2,973
2010	1,661
2011	958
2012	991
2013	1,369
2014	2,073
2015	1,789
2016	1,219
2017	1,492
2018	2,476
2019	1,975
2020	2,500
2021	1,136
2022	2,183

Source: AWC data (Baral 2022)

### Other wildlife

The lake supports a small population of otters and a number of wild ungulates including Spotted Deer *Axis axis*, and Sambar *Cervus unicolor* that use the lake as a waterhole. The site is rich in herpetofauna and fish. Eight reptile species and seven fish have been recorded. Lake vegetation is abundant in diverse rooted floating plants (Bhujju *et al.* 2007).

### Conservation issues and management

The site is threatened by disturbance. The following management recommendations have been made. A concrete dam around the lake is needed to regulate the outflow from the seven off-takes that irrigate surrounding agricultural land. This embankment should be raised around the lake to maintain adequate water levels in order to retain water for fisheries, irrigation, and for the enhancement of the habitat for waterbirds (Bhujju *et al.* 2007).

Further fieldwork is needed to determine whether the lake supports significant populations of any of the globally threatened species that have been recorded, or other species of conservation significance. Badhaiya Tal lies within the Nepal Government's Terai Arc Landscape (TAL) programme.





## 2 BLACKBUCK CONSERVATION AREA

### Site description

The Blackbuck Conservation Area (BCA) was declared in March 2009 and was the first organised effort to conserve the endangered Blackbuck *Antelope cervicapra* in Nepal (DNPWC 2015m)

Birds of BCA are poorly known; a total of 83 species have been recorded. These include four globally threatened species: Egyptian Vulture *Neophron percnopterus*, Red-headed Vulture *Sarcogyps calvus*, White-rumped Vulture *Gyps bengalensis* and Slender-billed Vulture *Gyps tenuirostris* (Hem Sagar Baral, Kunwar 2014). However, it is not known whether BCA holds significant populations of these species. Two near-threatened species, Himalayan Vulture *Gyps himalayensis* and Red-necked Falcon *Falco chicquera*, have been recorded. A small number of species characteristic of the Indo-Malayan tropical dry zone biome have also been recorded (Kunwar 2014).

### Other wildlife

The population of the globally threatened Blackbuck is increasing. A total of 14 mammals and 12 reptile species have been recorded from the area so far.

### Conservation issues and management

Conservation and management issues includes collection of timber and fuelwood, livestock grazing in Blackbuck habitat, encroachment and resettlement, intrusion of invasive alien species, degradation of wetlands and human-blackbuck conflict.

### Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Unknown status; open country
Slender-billed Vulture <i>Gyps tenuirostris</i>	Critically Endangered	Unknown status; open country
Egyptian Vulture <i>Neophron percnopterus</i>	Endangered	Unknown status; open country
Red-headed Vulture <i>Sarcogyps calvus</i>	Critically Endangered	Unknown status; open country

**Status:** Protected

**Altitude :** 142-152 m

**Area:** 1695 ha

**Geographical coordinates:** 28°7' and 28°39'N latitude and 81°3' to 81°4'E longitude  
Bardiya district of Lumbini Province

**Potential categories:** A1 (globally threatened species?); A3 (Indo-Malayan tropical dry zone?)

KrCA 2017. Krishnasaar Conservation Area Management Plan (2074/75 - 2078/79), Krishnasaar Conservation Area Office, Khairapur, Bardiya, Nepal

Further survey is needed to make a comprehensive checklist for BCA and to find out if it supports significant populations of any globally threatened species or significant numbers of characteristic biome species.

BCA lies within the WWF Nepal's Terai Arc Landscape (TAL) area. This is an ambitious initiative designed to benefit nature and people in Nepal.



## 3 BARJU (CHIMDI) LAKE

### Site description

Chimdi Lake, locally known as 'Barju Tal' comprises two lakes located in Ward-6, Barju Rural Municipality about 12 km west from Nepal's main industrial city Biratnagar. It is reported that many years ago the lake supported thousands of wetland birds. In recent years the lake has been partly rehabilitated and waterbirds have increased enormously as a result.

A monthly bird census carried out between December 2003 and February 2005 produced a list of 109 species (Surana *et al.* 2007). An additional ten species was recorded on 4 March 2015 (Chaudhary 2015). Additional globally threatened species recorded are

**Status:** Unprotected

**Altitude:** 70m

**Area:** 100.2ha

**Geographical coordinates:** 26°29'N, 87°10'E

Sunsari District of Koshi Province

**Potential categories:** A1 (globally threatened species)?

### Birds

Globally threatened species	Threat status	Status and habitat
Common Pochard <i>Aythya ferina</i>	Vulnerable	Fairly common winter visitor and passage migrant
Lesser Adjutant <i>Leptoptilus javanicus</i>	Vulnerable	Uncommon winter visitor



African Comb Duck by Chudamani Chaudhary

Baer's Pochard *Aythya baeri* (rare passage migrant), River Tern *Sterna aurantia* (status unknown). Four near-threatened species have also been recorded: Ferruginous Duck *Aythya nyroca*, Asian Woollyneck *Ciconia episcopus*, Eurasian Curlew *Numenius arquata*, and Oriental Darter *Anhinga melanogaster*. The lake is still under-recorded for birds.

In the Annual Waterbird Count the maximum of 12,248 waterbirds was recorded on the lake in 2019 (Baral 2022).

Year	Waterbird count
2014	3,673
2015	4,490
2016	6,404
2017	2,485
2018	5,083
2019	12,248
2020	9,449
2021	11,024
2022	2,728
2023	4,097

Source: AWC data (Baral 2022); 2023 data: Sanjib Acharya in litt. to C. Inskipp, 20 January 2023

### Other wildlife

No information is available on mammals or reptiles at the lake.

### Conservation issues and management

The eastern lake is used for fish farming and to catch fish by pumping out the water annually. Hunting and overgrazing are other threats to the lakes (Chaudhary 2015). An unsurfaced road encircles the western lake, which supports by far the largest number of the waterbirds present. This lake has picnic sites at several places and boating takes place at one end of this lake.

Since 2021, the western lake has been suffering from too much growth of aquatic vegetation which has resulted in much of the lake becoming unsuitable for many waterbirds. The lake is now managed by a Lake Management Committee under the Barju Rural Municipality ward office. Several disturbances such as lake expansion and vegetation clearance activities were carried out in the western part of the lake since 2021 resulting in a negative impact on waterbirds numbers compared to previous years. An adequate water level should be maintained in the western lake to attract waterbirds and human activities at this lake, including picnics with loudspeakers should be banned in order to conserve this site (Sanjib Acharya in litt. to C. Inskipp 26 January 2023).



# FORESTS AND GRASSLANDS OF DADELDHURA AND BAITADI DISTRICTS

## Site description

Forests of considerable size are found in Baitadi and Dadeldhura districts which represent west Himalayan forests. They mainly comprise *Quercus-Rhododendron* and coniferous forests, the latter mainly of *Abies* on several high ridges and some degraded *Pinus roxburghii* forests on lower slopes. The forests are important watershed areas for Dadeldhura city that lies to the north and also for many villages to the south (Hem Sagar Baral *in litt.* to C. Inskipp, 9 May 2015).

### Birds

The only bird survey that has been carried out in this region since the time the Flemings visited here in the 1950s (Rand and Fleming 1957) was a search for Himalayan Quail *Ophrysia superciliosa* from 21 May to 7 June 2010 (Baral *et al.* 2010). This site is close to Naini Tal in India (50 km as a crow flies) where Himalayan Quail was last recorded. Although the 2010 survey did not find the species, it is still possible that it occurs, and a further survey is recommended.

A total of 155 bird species was recorded during the 2010 survey. The richest forests for birds were found to be the higher altitude evergreen *Quercus-Rhododendron* forests. No globally threatened or near-threatened species were recorded. Numbers of biome-restricted species in the Sino-Himalayan subtropical forest and Sino-Himalayan temperate forest biomes fell short of being significant (see Appendix 2). However, further work could well provide evidence that Dadeldhura and Baitadi forests qualify as an IBA.

### Other wildlife

Himalayan Black Bear *Ursus thibetanus*, Leopard *Panthera pardus*.

**Status:** Unprotected

**Altitude:** 450-2100m?

**Area:** Unknown

**Coordinates:** ? Dadeldhura and Baitadi Districts, Sudurpashchim Province

**Potential categories:** A1 (globally threatened species?); A2 Restricted-range species?); A3 (Eurasian high montane biome species? Sino-Himalayan temperate forest biome species?, Sino-Himalayan subtropical forest biome species?)

### Conservation issues and management

Several illegal settlements were found in the forests, mainly populated by Magars who had migrated here from Surkhet and other districts. Each house kept a gun which apparently was for shooting Wild Boar that came to destroy potato fields. The 2010 survey also found high disturbance by local people for firewood and timber collection in the forests. There was a clear indication of over-exploitation for the turpentine industry which had virtually killed many pine trees. This forest is contiguous with forests in the east and should be further explored in spring as well as during mid-winter. Eastern forests may fall in Doti district. Even so, Doti and Dandelhdhura forests together may form one of the largest midhill primary forests of western Nepal.



# 5 TAMUR VALLEY AND WATERSHED

## Site description

The Tamur valley lies in far eastern Nepal. The Tamur forms a major watershed extending from the confluence with the Koshi River at 100m in the tropical zone (Dhankuta district) to the Tibetan border above 3800m in the alpine zone (Taplejung district). It includes two important forests of Nepal, one at Tinjure Danda and the other at Milke Danda, both of which lie outside the Kanchenjunga Conservation Area. However, the upper Tamur lies in the Kanchenjunga Conservation Area.

The Tamur watershed formerly had an extensive area of broadleaved lower temperate forests of *Quercus lamellosa*, *Castanopsis* spp. and mixed broadleaved forests. Some of these forest patches, for example those on Milke Danda, are particularly rich in rhododendron species. Higher up there were upper temperate forests of *Quercus semecarpifolia*, *Abies spectabilis* and *Rhododendron* spp., predominantly *Rhododendron arboretum*.

Little information about birds of the Tamur valley watershed is available since 1990 when a total of 260 species, including 215 possible breeding species were reported. These included the globally threatened White-rumped Vulture and the restricted-range Rufous-throated Wren Babbler, Spiny Babbler and Hoary-throated Barwing (all probably resident).

**Status:** Unprotected

**Altitude :** 100-3800 m

**Approximate area:** 20,000ha

**Geographical coordinates:** 26°55'N 87°10'E

Dhankuta and Taplejung districts, Koshi Province

**Potential categories:** A2 (restricted-range species?);

A3 (Sino-Himalayan temperate forest biome species?)

Four near-threatened species (all probably resident) were also recorded: Satyr Tragopan *Tragopan satyra*, Yellow-rumped Honeyguide *Indicator xanthonotus*, Himalayan Griffon *Gyps himalayensis* and Rufous-throated Wren Babbler *Spelaeornis caudatus* (Halliday and McKnight 1990). There were large areas of temperate forest that were thought very likely to support significant populations of species characteristic of the Sino-Himalayan temperate forest biome.

However, in April 2008 a bird survey team en route to Kanchenjunga Conservation Area spent two and a half days trekking through the Tamur valley and found

## Birds

Globally threatened species	Threat status	Status and habitat
White-rumped Vulture <i>Gyps bengalensis</i>	Critically Endangered	Former resident, current status unknown; probably very rare if it still occurs
<b>Restricted-range species</b>		
Rufous-throated Wren Babbler <i>Spelaeornis caudatus</i>		Resident or former resident. No recent records
Spiny Babbler <i>Acanthoptila nipalensis</i>		Probably resident, no recent records
Hoary-throated Barwing <i>Sibia nipalensis</i>		Uncommon, probably resident

the forests were fragmented and degraded. Two Satyr Tragopans *Tragopan satyra* (near-threatened), a number of sightings of Himalayan Griffon *Gyps himalayensis* (near-threatened) and three Hoary-throated Barwings (restricted-range species) were recorded (Inskipp *et al.* 2008).

### Other wildlife

Mammals recorded include the globally threatened Chinese Pangolin *Manis pentadactyla* and Clouded Leopard *Neofelis nebulosa*, near-threatened Assam Macaque *Macaca assamensis*, and also Leopard *Panthera pardus*, Northern Plains Gray Langur *Semnopithecus entellus*, Leopard Cat *Prionailurus bengalensis*, Grey Wolf *Canis lupus*, Yellow-throated Marten *Martes flavigula* and Northern Red Muntjac *Muntiacus vaginalis*. Several species of herpetofauna have been reported in the area (Oli *et al.* 2002).

### Conservation issues and management

Even in 1990 forests were rapidly being depleted (Halliday and McKnight 1990). In 2002 it was reported that large-scale human intervention and alteration of ecosystems in the area was threatening a number of

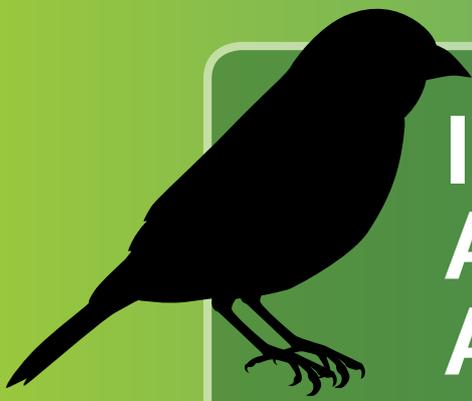
floral species, including *Taxus baccata*, *Lycopodium clavatum*, *Swertia chirayita*, *Daphne bholua*, *D. papyracea*, *Edgeworthia gardneri*, *Abies spectabilis*, *Michelia doltsopa*, *Castanopsis hystrix*, *Juglans regia*, *Symplocos* spp. (Oli *et al.* 2002).

A 2011 assessment of the status of Nepal's IBAs concluded that the Tamur valley and watershed IBA was one of the five most threatened in the country. It was under high pressure and in a very unfavourable state: further loss and degradation of broadleaved and rhododendron forests was expected as a result of expanding settlements, infrastructure development, particularly roads, and unregulated and unsustainable forest harvesting practices (BCN and DNPWC 2012).

In the first account of Nepal's IBAs (Baral and Inskipp 2005), Tamur valley was included as an IBA. However, in view of its very unfavourable state and lack of up-to-date knowledge of the valley's wildlife, it is now included as a potential IBA. Survey work of the Tamur valley is recommended to determine whether it qualifies as an IBA.



White-rumped Vulture by Ishwari Prasad Chaudhary



# IMPORTANT BIRD AND BIODIVERSITY AREAS SYNTHESIS

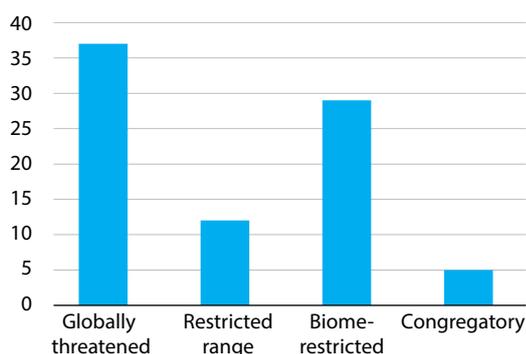
## Number of IBAs and potential IBAs

This directory documents 42 IBAs and five potential IBAs in Nepal, a significant increase from the 27 IBAs and five potential IBAs documented in the previous directory of *IBAs in Nepal* (Baral and Inskipp 2005).

## Selection criteria for IBAs

Through the application of the standard global criteria that are used by the BirdLife Partnership to identify IBAs worldwide, all these sites are of global importance for bird conservation. Of the 42 IBAs in Nepal, 37 qualify for globally threatened species (Category A1), 12 qualify for restricted-range species (Category A2), 29 qualify for biome-restricted assemblages (Category A3) and five qualify because they hold large congregations of a waterbird species (Category A4) (Figure 1).

**Figure 1:** IBAs in Nepal that qualify under the global Categories



## A1: Globally threatened species

A total of 42 globally threatened bird species occurs in Nepal, including 10 Critically Endangered, 8 Endangered and 24 Vulnerable species (Appendix 3). Thirty-seven (almost 90%) of the IBAs in the country are known to support significant populations of one or more of these threatened species, and the IBAs that support the largest numbers of these birds are Shukla Phanta NPBZ, Koshi Tappu WRBZ and Koshi Barrage, and Chitwan NPBZ. Recent fieldwork by BCN and others has located some important sites for vultures, and 10 IBAs have been newly identified for these highly threatened species. Recent surveys have also identified several important Lesser Adjutant nesting colonies, and six IBAs have been newly identified for this Vulnerable species. These new IBAs for vultures

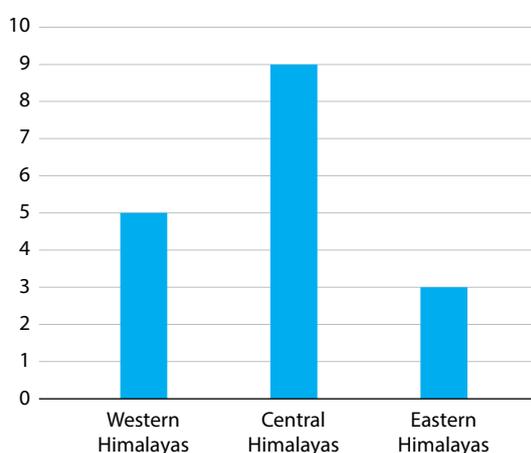
and Lesser Adjutant largely account for the increase in the total number of IBAs in Nepal since 2005.

However, note that two sites, Janakinagar-Murtiya Forest and associated farmlands (IBA 17) and Triyuga Watershed (IBA 42), will be downlisted to potential IBAs when the next IUCN Red List update is released in December 2023, because Lesser Adjutant *Leptoptilos javanicus* will be downlisted from Vulnerable to Near Threatened and they do not support more than 1% of the global population of the species.

## A2: Restricted-range species

In total, 14 restricted-range bird species occur in Nepal, which inhabit montane forests in three Endemic Bird Areas, the Western Himalayas (EBA 128), Central Himalayas (EBA 129) and Eastern Himalayas (EBA 130) (Appendix 4). Twelve (almost 30%) of the IBAs in the country support significant populations of two or more of these restricted-range species and qualify under the A2 criterion, including nine in the Central Himalayas EBA, five in the Western Himalayas EBA and three in the Eastern Himalayas EBA (Figure 2); the Central Himalayas EBA is almost entirely confined to Nepal and the IBAs selected for this EBA are of special significance. IBAs with important populations of restricted-range species include Annapurna CA (for West and Central Himalayas species) and Makalu Barun NPBZ and Khandbari-Num (for East and Central Himalayas species). Several additional IBAs have suitable montane forests for these species and occasional records of these birds and might be found in the future to qualify under A2.

**Figure 2:** IBAs in the three Endemic Bird Areas in Nepal



### A3: Biome-restricted assemblages

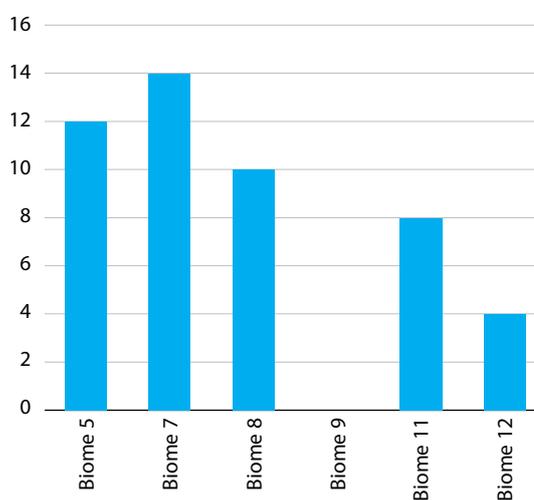
Nepal is an ecologically diverse country, and it has areas of six of the biomes that BirdLife International has defined under its IBA Programme. Twenty-nine (almost 70%) of the IBAs in the country support significant components of at least one of the groups of bird species whose global ranges are largely or wholly confined to a biome, and hence qualify under the A3 criterion. The most extensive biomes in the Himalayas of Nepal are the Eurasian high montane (Biome 05), Sino-Himalayan temperate forest (Biome 07) and the Sino-Himalayan subtropical forest (Biome 08), and in the lowlands of Nepal the Indo-Malayan tropical dry zone (Biome 11) and four important grassland IBAs in the Indo-Gangetic plains (Biome 12) (Figure 3). None of the IBAs in Nepal qualify for the Indochinese tropical moist forests (Biome 09), although Chitwan NPBZ supports some of the characteristic species. The most outstanding IBAs for biome-restricted assemblages, according to current knowledge, are given in Table 3.

### A4: Congregations

Four IBAs in Nepal are known to support more than 1% of the global population of Lesser Adjutant and qualify under the A4 criterion. Jagdishpur reservoir/Lumbini farmlands supports more than 80% of the Nepal population of Sarus Crane, and also qualifies under A4 for this species. The wetlands in three IBAs (Ghodaghodi Lake, Jagdishpur reservoir/Lumbini

farmlands and Koshi Tappu Wildlife Reserve and Koshi Barrage) and two potential IBAs (Badhaiya Tal and Barju/Chimdi Lake) support congregations of waterbirds, but none of these species is known to have sufficient individuals to qualify under A4. Koshi Tappu and Koshi Barrage supported more than 20,000 waterbirds in the 1990s, but their numbers have subsequently declined to a few thousands of birds and the IBA no longer meets A4. There is evidence of an increase in waterbird numbers at some sites, and it is possible that more IBAs will qualify under this category in the future as wetland management is improved and more complete waterbird count data becomes available.

**Figure 3:** Number of IBAs in the six biomes in Nepal



**Table 3: Outstanding IBAs for biome-restricted assemblages**

Biome	Outstanding IBAs & percentage of characteristic species of biome-restricted assemblages recorded to date
Biome 05: Eurasian high montane	Annapurna CA (62%) Langtang NPBZ (52%) Rara NPBZ (52%) Sagarmatha NPBZ (51%) Shey Phoksundo NPBZ (51%)
Biome 07: Sino-Himalayan temperate forest	Annapurna CA (54%) Makalu Barun NPBZ (49%) Rara NPBZ (47%) Langtang NPBZ (46%)
Biome 08: Sino-Himalayan subtropical forest	Annapurna CA (25%) Makalu Barun NPBZ (22%), Forest Conservation Area (22%), Shivapuri Nagarjun NPBZ (23%) Gadhi Siraichuli (21%)
Biome 11: Indo-Malayan tropical dry zone	Shukla Phanta NPBZ (50%) Chitwan NPBZ (47%), Bardiya NPBZ (46%) Koshi Tappu WRBZ & Koshi Barrage (46%)
Biome 12: Indo-Gangetic plains	Shukla Phanta NPBZ (59%) Koshi Tappu WRBZ & Kosi Barrage (53%) Chitwan NPBZ (47%)

## Area and altitude of Nepal's IBAs

The mean altitudes of the 42 IBAs in Nepal are summarised in Table 4. The four largest IBAs in the lowlands are Bardiya NPBZ, Chitwan NPBZ, Dang Deukhuri forests and West Rapti wetlands and Jagdishpur reservoir/Lumbini farmlands, which range in size from 129,500 ha to 178,600 ha. Most of the other IBAs in the lowlands and mid hills are relatively small, and include forests, wetlands, vulture breeding sites and Lesser Adjutant colonies, which are often located in agricultural lands. The largest IBAs are high-altitude protected areas, including six of over 200,000 ha, Annapurna CA (the largest at nearly 800,000 ha), Shey-Phoksundo NP, Makalu Barun NPBZ, Gaurishankar CA, Langtang NPBZ and Kanchenjunga CA.

**Table 4: Mean altitudes of Nepal's IBAs**

Mean altitudinal range (m)	Number of IBAs
78-1,000 m	19
1,000-2,000 m	7
2,000-3,000 m	4
>3,000 m	12

## Protected area status of IBAs

Of the 42 IBAs identified in Nepal, 22 (52%) lie wholly within protected areas, three (7%) are partially protected, and 17 (40%) receive no form of statutory protection. Many of the protected areas in Nepal are large and, in terms of area, about 80% of Nepal's IBA network is now protected. The average size of the 22 protected IBAs is 156,900 ha, whereas the average size of the 17 unprotected IBAs is just 40,300 ha. Most unprotected IBAs are found in the lowlands and mid-hills, where Nepal's protected areas system is least developed.

## Main habitats within Nepal's IBAs

Forest is the dominant natural habitat of most of Nepal, and 40 (95%) of the 42 IBAs contain examples of forest ecosystems. The IBA network contains extensive areas of Sino-Himalayan temperate forest, which (together with alpine habitats above the treeline) is well covered in the protected areas system. Several IBAs include subtropical broadleaf forests, but this forest type is not adequately represented in the current protected areas system, and the conservation

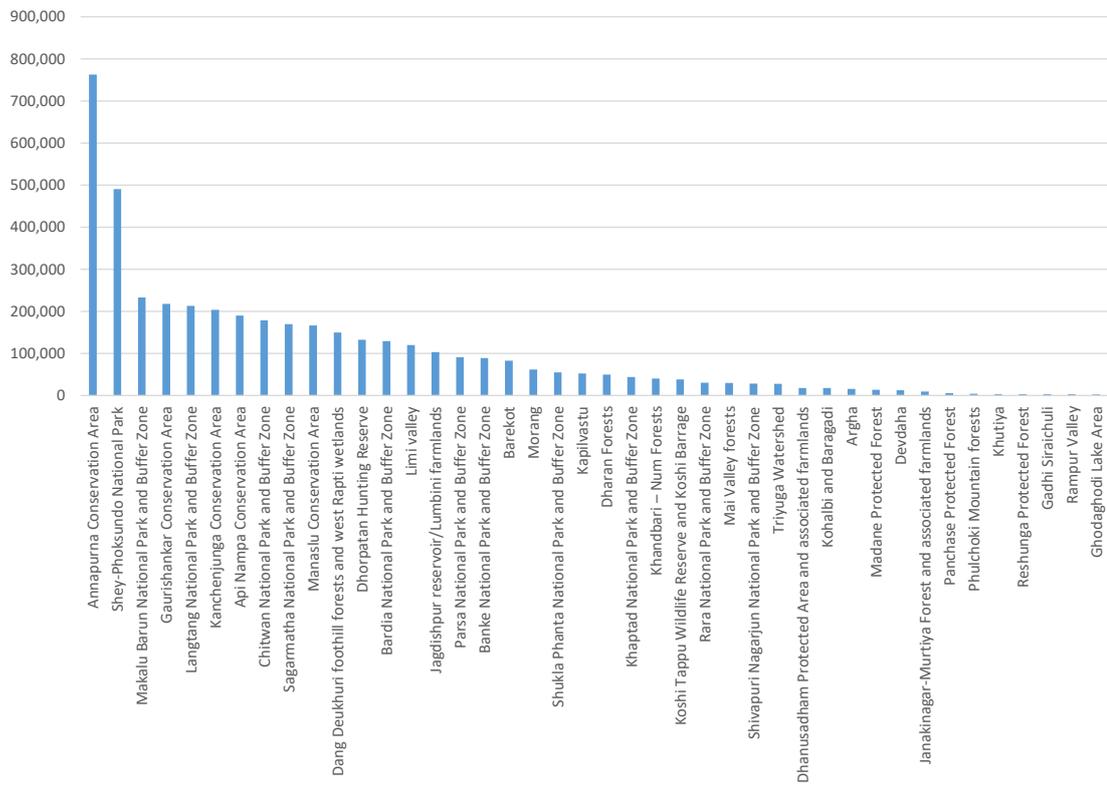
of this habitat would be greatly strengthened by designating the following IBAs as new protected areas: Gadhi Siraichuli, Khandbari – Num forests, Mai valley forests and Phulchoki Mountain Forest. Eight IBAs (19%) in the lowlands of Nepal include extensive dry dipterocarp forests in the Indo-Malayan tropical dry zone biome, and there are lowland grasslands in four IBAs (10%): Bardiya NPBZ, Chitwan NPBZ, Koshi Tappu WR and Kosi Barrage and Shukla Phanta NPBZ, including an outstanding example of this threatened habitat in Shukla Phanta. The IBAs that support breeding colonies of vultures and Lesser Adjutant are located in the lowlands and include a mixture of forests, agricultural land and wetlands. Several IBAs contain freshwater ecosystems, with the largest wetlands and congregations of waterbirds occurring in Ghodaghodi Lake, Jagdishpur reservoir/Lumbini farmlands and Koshi Tappu Wildlife Reserve and Koshi Barrage.

## Nepal Government's Programme Supported by WWF and ZSL Nepal

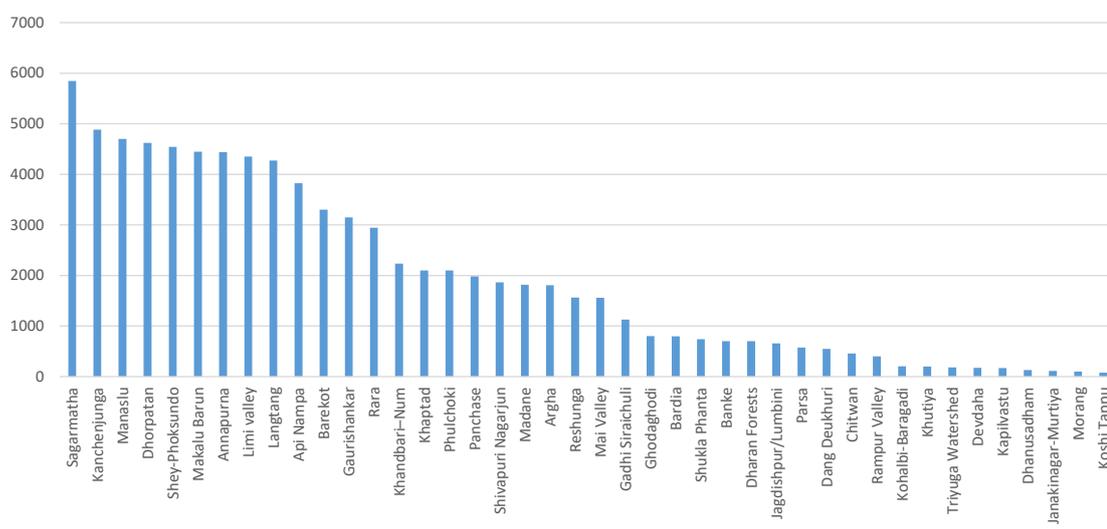
**The Terai Arc Landscape (TAL)** is a stretch of lowlands between the Bagmati River in Nepal and the Yamuna River in India. In Nepal, it lies between the Bagmati and Mahakali Rivers and includes six protected areas. The **TAL Programme** ([www.wwfnepal.org/our\\_working\\_areas/tal2](http://www.wwfnepal.org/our_working_areas/tal2)) is WWF Nepal's largest landscape level initiative supporting the government's TAL Programme and involves a large number of partner organisations, donor agencies, stakeholders, community-based organisations and local people. WWF's investment covers both protected areas and the IBAs that are outside the protected areas.

**The Zoological Society of London (ZSL) Programme** ([www.zsl.org/what-we-do/habitats-and-regions/regions/asia](http://www.zsl.org/what-we-do/habitats-and-regions/regions/asia)) has invested in the TAL annually since 2016. Their work is primarily focused on securing wildlife, habitat and people's livelihoods, by reducing human-wildlife conflict and providing training in life-skills to improving livelihoods. Over the next five years, they have secured funding for projects in three IBAs, Banke, Bardiya and Shukla Phanta. A central aim of these projects is to reduce human-wildlife conflict, and they will continue species monitoring and habitat restoration, as well as improving the livelihoods and well-being of the people living in the buffer zones.

**Figure 4: IBA Area**



**Figure 5: IBA Mean Altitude**



**The Hariyo Ban Programme** ([www.wwfnepal.org/together\\_possible/flagship\\_projects/hariyo\\_ban\\_programme](http://www.wwfnepal.org/together_possible/flagship_projects/hariyo_ban_programme)) was funded by USAID and led by WWF from 2011 to 2021. The programme aimed to reduce the adverse impacts of climate change and threats to biodiversity in Nepal by empowering local communities to safeguard the country's natural heritage while adapting to climate change through sound conservation and livelihood approaches. The programme emphasized the links between people and forests and was designed to benefit nature and people in Nepal. The Hariyo Ban programme also supported the broader conservation and

development objectives and strategies of the Government of Nepal.

**The Chitwan-Annapurna Landscape (CHAL)** ([www.wwfnepal.org/our\\_working\\_areas/chitwan\\_annapurna\\_landscape](http://www.wwfnepal.org/our_working_areas/chitwan_annapurna_landscape)) falls partly within the Sacred Himalayan Landscape that stretches from Bhutan in the east to Nepal's Kali Gandaki River in the west. CHAL itself is bounded by the Gandaki river basin. It contains seven major sub-river basins: Trishuli, Marsyandi, Seti, Kali Gandaki, Budi Gandaki, Rapti and Narayani. In CHAL, the Hariyo Ban Programme focuses on implementing an integrated river basin approach at different levels.



# THREATS

Threats are diverse and affect many sites. Habitat loss or damage is by far the major threat to bird species considered at risk nationally (Inskipp *et al.* 2016). Threats extend into protected areas, although to a lesser extent than outside. Protected areas' staff often lack sufficient resources to implement regulations and improve their own management skills.

### Forest losses and degradation

At one time Nepal was extensively forested and until around 1990 was experiencing forest losses. Loss of forest has been attributed to encroachment of forest areas for settlements and cultivation, unplanned and unregulated construction including roads and illegal building of schools, temples, hospitals etc., and planned conversion of forest land by the government for implementing economic development priority projects, such as road construction, electric transmission lines and reservoirs (MoFSC 2014). These losses were so widespread and extensive in the lower and middle hills that some forests have become very fragmented and invaluable habitat linkages between forests in the High Himal and lowlands have been lost. As a result, many bird species no longer have available the continuum of habitats that they require to move attitudinally with the seasons and their distributional range is restricted (Inskipp and Baral 2019).

While the newly developed forests make a significant contribution to biodiversity, they lack the richness and variety of primary forests and so are much less valuable for bird species. Further, these new forests are mainly taking place in the mountains, while forest losses in the Terai and Churia hills are continuing (Inskipp and Baral 2019).

Forest deterioration, fragmentation, and losses (the latter mainly in the lowlands and Churias) are the major threats to forest birds (Inskipp and Baral 2019), one quarter of Nepal's forest area is heavily degraded (World Bank 2008), which has led to loss of biodiversity, increased landslides, and soil erosion. The main causes of forest degradation include unsustainable overharvesting of biological resources to meet persistently high demands for fuel, construction timber, fodder and other forest products and is common in forests outside protected areas. Illicit felling of commercially valuable trees, illegal collection of firewood for sale, the trans-boundary timber trade, uncontrolled forest fires and

overgrazing by domestic livestock are also major problems (MoFSC 2014).

The opening up of forests by selective felling, removal of foliage and lopping of branches must result in their becoming unsuitable for numerous species, which require dense or moist forests, for example Hoary-throated Barwing *Sibia nipalensis*, a restricted-range species, whose distribution is largely confined to Nepal. Many species, including owls and woodpeckers require mature trees or very old trees that provide nesting and roosting places. Other birds such as babblers and some flycatchers need a well-developed shrub layer. Only 11% of breeding forest species have adapted to habitats heavily modified or created by people, such as gardens and shrubberies. Forest degradation must have benefited them, including Spiny Babbler *Acanthoptila nipalensis*, Nepal's only endemic bird. However, all of the species in this group are common or fairly common in Nepal (Inskipp and Baral 2019).

### Wetland losses, degradation and exploitation

Wetland birds face a wide range of threats in Nepal and these have increased since the review of Important Bird Areas in 2004 (Baral and Inskipp 2005). These are: drainage and encroachment for agriculture, settlement and infrastructure development; diversion and abstraction of water for irrigation; unsustainable exploitation of wetland resources, including overfishing and destructive fishing; widespread mining of gravel from streams and rivers beds; water pollution from households and industrial discharges and agricultural run-off; invasion of alien species into wetland ecosystems; illegal hunting and trapping of birds and other wildlife; siltation, and channelling and damming of rivers (MoFSC 2014).

Many observers have noted a decline in wetland birds since around 1990. The Annual Waterbird Counts are now providing data to illustrate trends on a national level and show declines in waterbird populations across Nepal (Baral 2022). This is happening at two IBAs that were formerly the most important in the country: Koshi Tappu Wildlife Reserve and Koshi Barrage and Jagdishpur Reservoir. As a result neither IBA now qualifies under the internationally important congregations criterion (A4).

Figures available over a ten-year period from 1989 to 1999 for three wetlands in Chitwan National Park revealed a decline in wetland dependent birds (Baral 1999). This trend is confirmed by later Annual Waterbird Counts that have been carried out at Chitwan.

Wetlands in the Pokhara valley which are unprotected are even more at risk: from drainage, diversion, obstruction, siltation, encroachment, infrastructure development, land use changes, pollution and fish poisoning (Karki and Thapa 1999, Subedi 2003c, Marcus Cotton *verbally* 2010) resulting in a marked reduction in bird numbers and species diversity since the 1970s (C. and T. Inskipp pers. obs.).

Nepal's large annual precipitation and dense river networks provide high potential for hydroelectricity resulting in a significant increase in hydropower plants in Nepal in recent years. A 900MW hydro project in the upper Karnali River was agreed by Nepal and India in 2014 (Anon 2014), for example. While this is a positive step towards meeting energy deficits, construction of hydroelectric dams brings substantial threats to wildlife and livelihoods of wetland-dependent communities. Dams can inundate important habitats, lead to associated development, displace people into new sensitive habitats, and can alter local microclimates (Dharmadhikary 1998). Other direct impacts include the blocking of fish migrations by the dam wall, so directly affecting the food supply of fish-eating birds. The dam also traps sediments, which are critical for maintaining physical processes and habitats downstream of the dam. Another significant impact is the transformation upstream of the dam from a free-flowing river ecosystem to an artificial slack-water reservoir habitat. Changes in temperature, chemical composition, dissolved oxygen levels and the physical properties of a reservoir are often not suitable to the aquatic plants and animals that evolved with a given river system. The alteration of a river's flow and sediment transport downstream of a dam often causes the greatest sustained environmental impacts. Life in and around a river evolves and is conditioned on the timing and quantities of river flow so the effects of disrupted and altered water flows can be severe. Even subtle changes in the quantity and timing of water flows impact aquatic and riparian life, which can unravel the ecological web of a river system. A dam also

holds back sediments that would naturally replenish downstream ecosystems. Riverbeds downstream of dams are typically eroded by several meters within the decade of first closing a dam; the damage can extend for tens or even hundreds of kilometers below a dam (Rosenberg *et al.* 2000). Specialised river birds such as kingfishers, dippers and forktails often find foraging more difficult and breeding sites reduced both upstream and downstream of dams.

### Grassland conversion and degradation

Grasslands in the Nepal terai have declined in area and quality, particularly since the malaria eradication programme in the mid 1950s. Since this period there has been rapid human population growth and large areas of grasslands have been lost to settlement, conversion to agriculture, forestry and flood control. Outside protected areas there are no significant remaining grassland areas that are capable of supporting threatened birds and other taxa, as most are heavily grazed by domestic livestock, harvested for thatch or paneling walls, and subject to overwhelming levels of human disturbance (Baral 2001).

Tall grasslands (up to 5 m tall), dominated by the genera *Erianthus*, *Narenga*, *Saccharum*, *Phragmites*, *Typha* and *Themeda*, and shorter grasslands, dominated by *Imperata cylindrica* remain in the five protected areas (all IBAs) of Shukla Phanta, Bardiya, Chitwan and Parsa National Parks, and Koshi Tappu Wildlife Reserve (Baral 2000b, 2001). Within these protected areas grasslands are threatened by several problems. For instance, the globally threatened Bengal Florican *Houbaropsis bengalensis*, Swamp Francolin *Ortygornis gularis* and White-throated Bushchat *Saxicola insignis* are suffering from inappropriate grassland management including intensive annual cutting and burning which alter species composition and grassland height and structure, and also ploughing (Baral 2001). Over-grazing by domestic livestock, fodder collection and human disturbance are also degrading grasslands at Shukla Phanta National Park (Baral 2000b) and at Koshi Tappu Wildlife Reserve.

### Climate change

The Himalayas is among the worst regions hit by global climate change, according to the 2022 Intergovernmental Panel on Climate Change (IPCC)

report (IPCC 2022) resulting in greater impacts on the Himalayan environment and its birds. Many Himalayan bird species are unable to respond and adapt fast enough, which will lead to population declines (Inskipp, under review).

One of the main impacts is that ranges of many bird species will move upwards in elevation from their present location. A study made between 1999 and 2011 in Mustang district showed that the highly adaptable House Crow *Corvus splendens* had moved upwards by an average altitude of 136 m annually from 2000 m to 4200 m (Acharya and Ghimirey 2013). Breeding at higher altitude is also being seen in several wetland species, for example Yellow Bittern *Ixobrychus sinens* and Purple Swamphen *Porphyrio porphyrio* which now breed in the Pokhara valley, Kaski district (860 m) but in the past only bred up to about 250 m in Nepal (Inskipp *et al.* 2016). These species have extended their ranges and so can be considered climate change winners. However, a Sikkim study found the most species shifted their ranges uphill in response to climate change resulting in reduced ranges and can be considered climate change losers (Acharya and Chettri 2012).

Many habitats, notably lower altitude forests are fragmented in much of Nepal. While habitat generalists can migrate through fragmented landscapes, habitat specialists are not able to do so. Ecological conditions within protected areas are likely to change beyond limits conducive for some species currently found there. Birds with specific habitat requirements will be unable to move if suitable habitat does not exist outside protected areas (Inskipp, under review).

Changes in phenology is another important impact on bird populations. Some species are breeding earlier and there may be a mismatch between the timing of breeding and available food sources for young birds. In contrast, breeding of other species is now taking place later, which has been attributed to unexpected weather events, such as drought or storms. Many species that depend on wetlands or moist forests are likely to lose their habitats as the climate becomes drier (Inskipp, under review). Impacts of climate change on Himalayan birds are still poorly understood.

## Over-exploitation

### Hunting and trapping

Hunting and trapping are contributing to the decline of some species, including the globally threatened Lesser Adjutant *Leptoptilos javanicus*, Sarus Crane *Grus Antigone*, Cheer Pheasant *Catreus wallichii* and Great Hornbill *Buceros bicornis*. Recent surveys indicate that Cheer Pheasant is widely hunted in west Nepal (e.g. Basnet and Poudyal 2017). The hunting of owls for meat has been reported in Patariya VDC, Kapilvastu district (Paudel 2016). In some areas, hunting is on the increase as traditional values wane. The slaughter of many larks and buntings for sale as snacks (locally known as *bagedi*) in village inns was recently observed in the *terai*. Illegal bird trading goes on near Koshi Barrage all year round. Buyers from Bihar in India purchase birds for food, including species of ducks, jacanas, doves, moorhens, egrets, munias, larks and francolins.

Once widespread throughout lowland Nepal, the distribution of Great Hornbill is now much reduced. The oil from the casque of this bird and the beak itself are much valued in the use of traditional medicine (Fleming *et al.* 1984). Other species affected include Himalayan Monal *Lophophorus impejanus*, the national bird, Indian Peafowl *Pavo cristatus*, quails, *Coturnix* spp., and Great Cormorant *Phalacrocorax carbo*. Hunters and villagers routinely shoot large and conspicuous birds both for medicine and for food. Some globally threatened species, such as Lesser Adjutant and Sarus Crane, live close to human settlements making them easy targets. Eggs are stolen from many species including lapwings *Vanellus* spp., gamebirds, quails *Coturnix* spp., terns *Sterna* spp., pratincoles *Glareola* spp., Indian Peafowl, Sarus Crane, and egrets *Egretta* spp (Inskipp *et al.* 2016). The establishment of protected areas does not necessarily ensure their conservation. What is needed is improved conservation awareness amongst local people.

Nepal is not a big market for illegal bird traders; however it is considered a good transit point because of its location and porous borders with the Peoples' Republic of China and India. The increased illegal bird trade in the Kathmandu Valley is a threat to some bird species (Thapa and Thakuri 2009).

Some bird species, notably owls, are persecuted because of negative social and cultural beliefs, whilst some young people kill birds, often using catapults, purely for entertainment (Acharya and Ghimirey 2009).

### Overfishing

Overfishing, which has led to a marked decline in prey, is a serious threat to many fish-eating bird species, for example Black-bellied Tern *Sterna acuticauda*, gulls, Indian Skimmer *Rynchops albicollis* and fish-eating raptors and owls such as Pallas's Fish-eagle *Haliaeetus leucoryphus*, Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*, Lesser Fish Eagle *I. humilis* and Tawny Fish Owl *Ketupa flavipes* (BCN and DNPWC 2011).

### Over-exploitation of Non Timber Forest Products (NTFPs) and Medicinal and Aromatic Plants (MAPs)

A number of mountain IBAs, are suffering from influxes of large numbers of people annually who illegally gather NTFPs and MAPs resulting in high levels of disturbance to wildlife; poaching, especially of pheasants and some mammal species, and forest losses and thinning due to fuelwood collection. Wildlife disturbance is especially high because NTFPs and MAPs are gathered during the breeding season for most birds and some mammals. IBAs most affected include Annapurna and Api Nampa Conservation Areas and Khaptad, Makalu Barun and Rara National Parks. NTFPs include the highly valuable yarsagumba.

### Stone, gravel and sand mining

Excessive extraction of boulders, gravel and sand from rivers and streams is a common practice across Nepal and can often be devastating for river systems, as well as leading to increased floods and landslides. Such extraction of gravel and sand is taking place in huge quantities, even in buffer zones of protected areas e.g. Chitwan National Park and is often illegal (Himalayan News Service, 2018; Rai, 2021; RSS 2021).

### Invasive alien species

Introduced species of fauna and flora are a common threat to native birds and other wildlife worldwide. In Nepal, many pools and small lakes have become overgrown by an exotic plant species, Water Hyacinth *Eichhornia crassipes*. The species produces free-floating mats causing a sharp decline in the number

of pure open water dwelling species especially Oriental Darter *Anhinga melanogaster*, cormorants, grebes and many duck species. Water Hyacinth can also lead to low dissolved oxygen levels and so reduced insect and fish populations on which many bird species feed (Dahal 2007).

Another rapidly increasing invasive alien plant, *Mikania micrantha*, has been having devastating effects in some areas, notably in the IBAs: Chitwan and Parsa National Parks and Koshi Tappu Wildlife Reserve. It is a climber that can cover trees and shrubs as well as the entire forest floor so making it impossible for terrestrial species, such as thrushes and pipits to feed (Baral 2002a). To date no introduced bird species have become established in Nepal, although the increasing bird trade carries some risks. Budgerigars *Melopsittacus undulatus* have been noted in city parks, but so far they have not been able to establish a wild population. Other recent invasive plants which are spreading rapidly are *Parthenium hysterophorus* (Shrestha *et al.* 2015) and *Mimosa diplotricha* (CABI 2017).

### Chemical poisoning

In Europe, use of some pesticides has been shown to cause widespread declines of numerous bird species, many of which were previously common, including birds of prey and finches (Tucker and Heath 1994). Effects of pesticides on wildlife and the environment in Nepal remain poorly known.

There is widespread documentation of farmers' lack of awareness of pesticides, including impacts on the environment and the ongoing need for farmers' education and development of safety culture in pesticide use e.g. Sharma *et al.* (2012).. This has led to over-use of pesticides being widely practiced in Nepal (Satyal 2017).

In Nepal persistent chemical pesticides have been banned for use in agriculture and public health since April 2001. However, there is serious concern about the illegal import of pesticides and fertilizers to adhere to government regulations for pesticide use (e.g. Dhital *et al.* 2015, Thapaliya 2011). By law it is mandatory to acquire a certificate of registration before the import, export, sale or purchase of pesticides but these guidelines are not followed in many parts of the country. This was illustrated by an

investigation of threats to Sarus Crane *Grus antigone* in Lumbini where Paudel (2009 a, b) carried out a survey of local markets and found that a wide range of pesticides was available and a disturbingly large range of insecticides was being used in the area. Out of 71 pesticides available locally, 23 were moderately hazardous and seven were highly hazardous according to WHO standards (Paudel, 2009 b).

Poisoning by diclofenac, a drug used to treatment livestock ailments was identified as the cause of drastic vulture declines in the Indian subcontinent, including Nepal (e.g. Cuthbert *et al.* 2006, Oaks *et al.* 2004, Shultz *et al.* 2004). In a bid to stop the other harmful NSAID's for veterinary use after its ban by GoN in 2006, Diclofenac Free Zones (DFZs) have been created in different districts of Nepal. Up to April 2016, 49 districts had been declared DFZs (BCN data). In 2007 BCN set up the first community-managed Vulture Safe Feeding Site at Pithauli and seven sites had been set up across Nepal by April 2015: one each in Nawalparasi, Rupandehi, Kailali, Kaski and Sunsari districts and two in Dang districts (BCN data). Pharmaceutical firms are encouraged to promote a safe alternative called meloxicam (Swan *et al.* 2006). BCN has carried out a widespread awareness programme on vulture conservation. The use of diclofenac has since declined by 90% across parts of Nepal although its complete elimination from the scavenger food chain has yet to be achieved (Gilbert *et al.* 2007). The Vulture Conservation Action Plan 2015-19 was launched in August 2015 (DNPWC 2015). After 15 years of hard work by conservationists in Nepal, there is more than a glimmer of hope that we can safeguard the remaining vulture population; research has already found that the population of some species (e.g. White-rumped, Slender-billed and Himalayan vultures) are now more stable. There is no room for complacency, however. Existing conservation activities are limited to particular geographical areas, and are much-focused in the southern lowland belts with only a few addressing issues in the 'mid-hills'. In addition to Diclofenac, it has recently been found that other NSAID drugs (e.g. Nimesulide, Aceclofenac and Ketoprofen) are also toxic to vultures. Poisoning of carcasses to exterminate carnivorous mammals, a practice that also kills vultures has been recorded; and direct persecution (Subedi 2020). For example two Himalayan Griffon *Gyps himalayensis* were killed by poisoning in Jajarkot district in 2016 (Krishna

Pd Bhusal, BCN). In Shukla Phanta National Park, in January 2016, 18 vultures were found killed by poison. Local people are using high injections of pesticide to kill old cattle and this may be to blame (Iswar Pant *in litt.* to Carol Inskipp, 17 January 2016).

## Development

Encroachment of forests and wetlands for settlements is a major cause of habitat loss in the terai and Churia hills, as well as the expansion of local markets along the East-West highway. Most of these settlements are illegal. Development of infrastructure inside forest land is another important factor. Unplanned and unregulated construction is thought to be a major threat in the Middle Mountains. Legal conversion of forest land by government for implementing road construction, electric transmission lines, irrigation canals and reservoirs is a cause of forest loss and degradation in some places. Forest land is often used for this development as no-one lives there. The results are fragmentation of forest and increased disturbance (MoFSC 2014). Collision and electrocution with poorly-designed electric power distribution lines and poles is a threat to large flying birds including raptors (Subedi 2020).

The Department of Roads estimated that around 25,000 kilometres of rural road tracks had been opened by 2010, most of which have been constructed without any environmental safeguard (DOR 2010). In recent years, Nepal has undergone a rapid rise in road infrastructure development (World Highways 2019). While Nepal is in transition to a federal structure from a centrally controlled political system, road construction is likely to continue risking biodiversity losses.

## Natural disasters

Natural disasters such as the 2008 and 2017 monsoon flooding of the Koshi River have had major impacts on wildlife and the environment. The Great Earthquake of 25 April 2015, the second major earthquake of 12 May 2015 and numerous accompanying aftershocks have seriously damaged or destroyed infrastructure, villages, towns and parts of Kathmandu as well as causing significant environmental damage. Fourteen districts were hit the hardest. Encroachment of forests and further degradation of habitats was considered likely as large numbers of people will be forced to find new settlements and farmland.

## Underlying factors

The underlying causes of the problems facing IBAs and the species that they support are a combination of a number of social, political, economic, technological, and cultural factors:

- Annual average population growth rate is 0.92 percent in 2021 compared to 1.35 percent in 2011. This shows a declining trend of population growth, however, as the fertile population is more than 50% of the total, Nepal's overall population is predicted to increase in coming years (NSO 2023).
- Widespread poverty, combined with a lack of or very limited alternative livelihood opportunities and general under development has led to high dependency on forests, wetlands, and rangelands thereby increasing pressure on these natural resources;
- Weak enforcement of the law and regulatory mechanisms; misdirected and conflicting policies in some cases, and inadequate political will;

The current government and corporate accounting systems have not taken into account

the environmental costs of biodiversity loss and degradation, and inadequate awareness and motivation to conserve biodiversity (MoFSC 2014). Another factor is the unfair sharing of natural resources.

## Nationally threatened birds

Inskipp *et al.* (2016) makes a detailed assessment of the status and distribution of all of Nepal's bird species (except vagrants). The large number of 172 species (19%) was assessed as nationally threatened. These comprise 68 (40%) which were considered Critically Endangered, 38 (23%) Endangered and 66 (37%) Vulnerable species. A total of 62 species was assessed as near-threatened. Eight species (1% of the total threatened) were Regionally Extinct; none of these have been recorded in Nepal since the 19<sup>th</sup> century. A total of 22 species (2.5% of the total) was considered Data Deficient, Lowland grassland specialist birds were found to be the most threatened group of birds with 55% of lowland grassland specialists threatened, followed by wetland birds (25%) and tropical and subtropical broadleaved forest birds (24%).



Photo by Mahakul Bhusal



# THE INSTITUTIONAL FRAMEWORK

## Background

Conservation awareness dates back many centuries in Nepalese society. Wildlife, forests and water are viewed primarily as important resources and so people have traditionally created many ways to preserve, manage and use them. The tradition of preserving large expanses of forest adjacent to places of worship or important sources of water is deep-rooted. In Kathmandu Valley alone, there are 45 sacred forests ranging in size from one to several thousand hectares, which have been preserved by countless generations in accordance with ancient religious traditions. These forests, protected for religious reasons, for example in Pashupatinath, Swayambhunath, Dakshinkali and Chapagaon, are important bird and wildlife habitats. In every aspect of communal interest, such as forestry and pasture, local people established unwritten laws and customs that have become a way of life. Special permission was required to cut down trees in community forests, for example. Defaulters were fined and the revenue collected was used in community welfare. Traditional forms of resource conservation disappeared when all the forests in the country were nationalised in 1957 under the Private Forests Nationalization Act, 1957. This gave rise to increasing deforestation and environmental degradation (Basnet 1992).

## Current legislation and policy

Article 51 of the Constitution of Nepal 2015 has stipulated that: 21 (g) (1) To protect, promote, and make environmental friendly and sustainable use of, natural resources available in the country, in consonance with national interest and by adopting the concept of inter-generational equity, and make equitable distribution of benefits, according priority and preferential right to the local communities; (5) To conserve, promote,

and make sustainable use of, forests, wildlife, birds, vegetation and bio-diversity, by mitigating possible risks to environment from industrial and physical development, while raising awareness of public-in-general about environment cleanliness.

In response to meet the constitutional requirement there are two specific legal provisions, i.e., the Environmental Protection Act (EPA) 2019 and the Environmental Protection Regulations (EPR) 2020. These two provisions are responsible for governing access to environmental services. In addition, there are also other acts supporting environmental governance (Table 5). Of key importance for IBA conservation, Environmental Impact Assessment (EIA) has been made mandatory with the enforcement of Environment Protection Act and Rules. Guidelines have also been prepared and revised. These have been carried out in the fields of multipurpose hydro projects, irrigation, pollution – prone industries and tourism.

There are also some other important provisions to facilitate environmental governance such as the Parliamentary Council for Conservation of Natural & Cultural Resources (CCNCR), the Environment Conservation Council, the Parliament, National Planning Commission (NPC), Environment Protection Council (EPC), Water and Energy Commission (WEC) (Silwal and Prasad, 2002); also National Biodiversity Coordination Committee, National Wildlife Crime Control Committee and Wildlife Crime Control Bureaus, National Wetland Committee, South Asia Wildlife Enforcement Network, Climate Change Council, REDD Forestry and Climate Change Cell, academic and research institutions, NGOs e.g. NTNC, WWF Nepal, IUCN, BCN; local bodies and local user groups and their networks (MoFSC 2014).

**Table 5: Nepal's major environmental legislation 1960-2020**

Major Environmental Legislation	Year	Purpose	Govt institution mandated to lead
Constitution [Article 51g(1)]	2015	The State shall pursue a policy to protect, promote, and make environmental friendly and sustainable use of, natural resources available in the country, in consonance with national interest and by adopting the concept of inter-generational equity, and make equitable distribution of benefits, according priority and preferential right to the local communities.	

Major Environmental Legislation	Year	Purpose	Govt institution mandated to lead
Constitution [Article 51g (5)]	2015	The State shall give priority to conserve, promote, and make sustainable use of, forests, wildlife, birds, vegetation and bio-diversity, by mitigating possible risks to environment from industrial and physical development, while raising awareness of public-in-general about environment cleanliness;	
The Town Development Act	1998	Regulate, control or prohibit any act and activity which causes adverse effect on natural beauty, tourism site and public health or which causes environmental pollution.	
The Water Resources Act	1992	Sets quality standard of water resources. Restricts water resource to be polluted. Restricted to cause substantial adverse effect on environment thru floods and landslides.	Ministry of Water Resources
The Vehicle & Transport Management Act	1993	Defines and prescribe necessary standards for the vehicles.	
Management & Resource Mobilization Act	1987	Manages solid waste and controls air, water and soil pollution from solid waste.	
The Electricity Act	1992	Makes provision of license to carry out electricity generation with no substantial adverse effect on environment.	
The Industrial Enterprises Act	2020	Regulates industries with providing permission to those, which may not cause significantly adverse effect on environment.	Ministry of Industry, Commerce and Supplies
The Municipality Act	1991	Makes provision of legal measures for environment protection in town areas.	
Local Government Operation Act	2017	Section 11(j) of the Local Government Act, 2017, provides for environmental protection, local policy, laws, norms, planning and implementation, follow-up and regulation, environmental conservation area determination and management at the local level, conservation of water, wildlife and minerals. At the local level, arrangements have been made to carry out environmental risk reduction measures.	
The Land Act	1965	Makes a provision related to land consolidation and development along with control of land degradation.	Ministry of Land Mangement, Cooperatives and Poverty Alleviation.
The Aquatic Animals Protection Act	1960	Restricts the use of explosives and poisonous substances in water for killing animals.	
His Majesty King Mahendra Trust for Conservation	1982	Aims to protect natural resources against damages Nature Conservation in the area of work.	Ministry of Forests and Environment
The Pesticide Act	1991	Makes provisions of registration of pesticides.	Ministry of Agriculture
The Nepal Water Supply Corporation Act	1989	Takes necessary steps to control water pollution and provides legal provision to penalize to those who found contaminating the drinking water.	Ministry of Water Resources
The Tourism Act	1978	Makes mandatory for mountaineers to keep the environment clean and abide by the specified conditions.	Ministry of Culture, Tourism and Civil Aviation
Kathmandu Valley Development Authority Act	1988	Takes also care of environment of Kathmandu Authority Act Valley.	Ministry of Urban Development

The Government of Nepal uses general policy documents to facilitate environmental governance practice. These include Periodic Five Year Plans, The National Conservation Strategy (NCS) (1988), The EIA Guidelines (2022), Nepal Environmental Policy and Action Plan (NEPAP I 1995 and II 1996), Sustainable Development Agenda of Nepal (SDAN) (2002). Also sectoral policy documents like Agriculture Perspective Plan (APP), Hydropower Development Policy (1992/2002), National Forest Policy (2019), The Industrial Policy (2011), Nepal Environmental Health Initiatives (NEHI) (1997), Cleaner Production Policy (2001).

A National Conservation Strategy for Nepal was completed in 1987 and endorsed as policy in 1988. Policy resolutions cover the basic requirements of the people, as well as the need to safeguard natural and aesthetic values and to maintain the country's cultural heritage. It was also resolved that a separate body, the National Council for the Conservation of Natural and Cultural Resources, was to replace the National Commission for the Conservation of Natural Resources to be responsible for implementing the National Conservation Strategy and formulating guidelines concerning resource conservation matters. This Council has since been formed and represents the most important step to date towards establishing an institutional framework for co-operative environmental management and protection in the country.

A number of organisations and GoN departments have partially overlapping responsibilities for planning, co-coordinating, implementing and monitoring GoN policies and legislation on the environment. The mandates for different facets of environmental management change as ministries are created and others are abolished, and the limits of institutional responsibility are not always clear. As far as specific flora and fauna including birds are concerned, the main responsibility lies, however, with the Department of National Parks and Wildlife Conservation (DNPWC) under the Ministry of Forests and Soil Conservation of GoN.

Nepal has been adopting the concept of conservation-friendly economic growth since it was first introduced in the Ninth Five Year Plan (1997-2002). The concept was further refined and internalized by the Tenth Plan (2002-2007). Since then, various enabling plans, policies, strategies and legislations have been developed and implemented to facilitate sustainable economic growth with participation of local communities. Policies and legislation relating

to community-based forest and protected area management are examples of such enabling policies and successful conservation models. Biodiversity has also been featured prominently in the Approach Paper to the Thirteenth Plan (2013) (MoFSC 2014).

Nepal's National Biodiversity Strategy and Action Plan 2014-2020 was published in 2014 (MoFSC 2014). This document identified the following major gaps in the existing policies, strategies and legislation with regard to management of biodiversity.

### **(i) Policy and legislative gaps**

Although Nepal became a Party to the Convention on Biological Diversity (1992) in 1994, it is yet to enact comprehensive legislation for conservation of biodiversity and sustainable use of its components. This legislative gap is speculated to have negatively affected the functional ability of the National Biodiversity Coordination Committee and overall conservation of biodiversity, sustainable use of its components and fair and equitable sharing of the benefits arising from the utilization of biological resources.

### **(ii) Inadequate importance to biodiversity by some policies and most of the legislations**

Many of the relevant policies, such as those related to environment, industry, roads and local governance sectors do not have clearly stated objectives relating to biodiversity.

### **(iii) Poor integration and harmonization of policies and laws**

The policies of different sectors are not well connected and coordinated. Some of the existing laws are inconsistent, overlapping or contradictory. The extent of the rights allocated by different laws to various local user groups differs substantially (Belbase and Thapa, 2007). For example, provisions in the Forest Act (1993) and several other environment-related Acts contradict with the Local Self-Governance Act (1999).

### **(iv) Gaps in implementation of policies**

Nepal has many good policies and strategies for conservation of biodiversity and natural resources, but implementation and monitoring of many of the policies and strategies is less than satisfactory. Poor level of ownership over the policies and strategies by stakeholders because of their inadequate participation in the policy process has also negatively affected the implementation. *Source: MoFSC (2014).*

## Land tenure and land use

Nepal is an agrarian country that places high emphasis on the use of land. It is considered a valuable source of social prestige, political power and economic enjoyment. Private individuals, institutions and GoN hold Land. In Nepal, “fee simple ownership” (see below for definition) is a common practice for private individuals. Persons may sell, purchase or lease out lands under their jurisdiction.

## International conventions and agreements

Nepal has entered a number of obligations and co-operative agreements related to conservation. Nepal is a signatory to six international conventions (Table 6). Nepal is not yet a signatory to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), but is currently preparing to join this important convention on migratory species.

Promoting synergy among biodiversity related MEAs (e.g. CBD, CITES, Ramsar and World Heritage Convention) is an issue in smooth implementation of the MEAs. There is a need to generate a set of coherent guidelines to bring synergy among the biodiversity related MEAs. This can be useful in a number of ways, including: (i) enhancing the science-policy interface, (ii) promoting cooperation at the international level in the implementation of the NBSAP, (iii) simplifying the national reporting, (iv) improving information management, and (v) capacity building (MoFSC 2014).

<b>State ownership:</b>	According to the prevailing law of the country, land not registered in any person's name belongs to the state. Lands lying within this area are owned by the state and come largely under the jurisdiction of the Ministry of Forests and Soil Conservation. There are lands such as city parks that are managed and owned by local government councils. These areas are monitored by local elected councils (wards, municipalities and metropolitan cities).
<b>Gazetted landownership:</b>	Land inside protected areas falls under this category. The ownership of the land is legally held by the Government of Nepal, Department of National Parks and Wildlife Conservation
<b>Trust ownership:</b>	Some lands that are of religious significance legally belong to the Guthi Sasthan and similar trusts. For example, the land covered by the Lumbini Master Plan belongs to the Lumbini Development Trust.
<b>Corporate ownership:</b>	Certain corporations own land, for example the Nepal Electricity Authority manages large areas of land for power stations.
<b>Private ownership:</b>	Lands are owned by private individuals upon payment of land fees to GoN. This is also called “fee simple ownership”. The cultivated and settled lands fall under this category. Such ownership is inheritable and transferable.

**Table 6: International conventions and agreements agreed by Nepal**

Convention	Details
Ramsar Convention	Nepal ratified the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat on 17 December 1987, at which time Koshi Tappu was added to the List of Wetlands of International Importance. In 2003, three other wetlands were designated as Ramsar sites: Ghodaghodi Lake, Jagdishpur Reservoir and Bees Hazari Tal. All four Ramsar Sites in Nepal are IBAs.
The Convention on Biological Diversity (CBD)	Nepal became a signatory to the CBD soon after the Rio de Janeiro, UNEP meeting in 1993
The World Heritage Convention	Nepal is a signatory to the Convention concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), which it accepted on 20 June 1978. Two natural sites, Sagarmatha (1979) and Chitwan National Parks (1984), have been listed on the World Heritage List.
United Nation' Convention on Combating Desertification (UNCCD)	UNCCD is the United Nations Convention to Combat Desertification was signed by Nepal in 1995 and ratified in 1996.
UNESCO's Man and Biosphere Programme	Nepal has been a regular participant in the United Nations Educational, Social and Cultural Organization (UNESCO's) Man and Biosphere Programme. However no reserve has been established in the country under the programme nor is there a provision to establish one in the National Parks and Wildlife Conservation Act-1973.
The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)	Nepal became signatory of CITES on 12 June 1975 and since then has been actively involved to implement the convention in the country.



Asian Koel by Sudeep KC



# CURRENT SITE-BASED CONSERVATION MEASURES

## National Parks and Wildlife Conservation Act, 1973

A national conservation programme was initiated by GoN in 1971. This was given a legal basis following the passing of the National Parks and Wildlife Conservation Act 2029 in March 1973, which provides for the establishment and administration of protected areas and 'the conservation of animals and birds and their habitats.' This Act supersedes the Wildlife Conservation Act 1958 (1958) and the Hunting Rules of 1967, under which six royal hunting reserves were established in July 1969. The 1973 Act enables GoN to establish any area as a national park, wildlife reserve, conservation area or hunting reserve. This Act is the main framework under whose guidance policy and action of Department of National Parks and Wildlife Conservation are made and implemented. This Act prohibits hunting of any animals or birds, building any house, hut or other structure, clearing or cultivation in any part of the land or harvesting any crops, cutting, burning or damaging any tree, bush or other forest product, and mining within national parks or protected areas. The Act has been amended four times (1974, 1982, 1989 and 1991), but no efforts have been made to make a thorough amendment of the Act for over a decade. The Act defines wildlife as any wild animals including mammals, birds, fish and reptiles. This Act has been a key instrument in protecting biodiversity within the protected areas (PAs) system.

In addition to this Act, there are a number of regulations which are formulated by the GoN to meet the specific needs of the area. For example, Himalayan National Parks Regulations (1979), Wildlife Reserve Regulations (1977), Chitwan National Park Regulations (1974), Bardiyā National Park Regulations (1995), Khaptad National Park Regulations (1987), Conservation Area Regulations (1995), GoN Managed Conservation Area Regulations (1998) etc.

### The protected areas system

Since the first edition of the Nepal IBAs book here has been a substantial expansion of protected area from 15% to 23.23% of the country. DNPWC is the authorized body for the maintenance and conservation of protected areas in Nepal. Some areas are better protected than others because of their location and the nature of the local community. The Nepal Army, normally guards some protected areas. Involvement of local people in the management of protected areas was further promoted during the period by the establishment of new Buffer Zones around protected areas.

The government handed over management responsibility of Kanchenjunga Conservation Area to the local conservation area management council in 2006 making it the first protected area managed by local communities. Local people are also involved in the management of Annapurna, Manaslu and Gaurishankar conservation areas through conservation committees. These initiatives have put Nepal at the forefront in linking communities to benefits from protected areas (MoFSC 2014). These actions put Nepal in the top 20 countries in the world and second in Asia for the percentage of its surface area that is protected (USAID, 2012) and illustrate Nepal's enlightened attitude to both biodiversity and landscape conservation. Protected areas cover a large range of habitat types, fauna and scenic landscapes. The main categories of protected areas in Nepal are outlined below.

### National Park

Area set aside for conservation, management and utilisation of animals, birds, vegetation, and landscape together with the natural environment. Entry is restricted to persons possessing an entry permit or written permission from an authorised officer, except in the case of GoN officials or persons travelling on an existing right-of-way. Prohibited activities include: hunting or damaging any animal; building or occupying any form of shelter or house; occupying, clearing or cultivating land; grazing or watering any domesticated animal; damaging, felling or removing any tree or other plant; mining, quarrying or removing stone, minerals or earth; carrying or using any weapon, ammunition or poison; carrying any domestic or other animal or trophy, except by a Government official on duty or by a person travelling along an existing right-of-way; blocking or diverting any river, stream or other sources of water flowing into a national park, or introducing any harmful or poisonous substance therein; and damaging or removing any boundary marks, signposts or notices. Services or amenities may be provided by GoN or under contract to GoN.

A policy introduced in 2003 allows NGOs and other organisations to manage some of Nepal's protected areas under certain circumstances in future. All protected areas except Chitwan National Park, Bardiyā National Park, Sagarmatha National Park, Langtang National Park and Shukla Phanta National Park could be managed by NGOs in future (Newar 2003). Currently there are twelve National Parks in Nepal, all of which are IBAs, which are as follows:

- **Banke National Park**
- **Bardiya National Park**
- **Chitwan National Park**
- **Khaptad National Park**
- **Langtang National Park**
- **Makalu Barun National Park**
- **Parsa National Park**
- **Rara National Park**
- **Sagarmatha National Park**
- **Shey-Phoksundo National Park**
- **Shivapuri Nagarjun National Park**
- **Shukla Phanta National Park**

### Strict Nature Reserve

Area of ecological or other significance set aside for the purpose of scientific study. Entry is restricted to persons having written permission from an authorised officer. None of the activities prohibited within a national park is permitted without written permission from an authorised officer. So far, no area is declared under this category.

### Wildlife Reserve

Area set aside for the conservation and management of animals, birds and other resources and their habitats. None of the activities prohibited within a national park is permitted without written permission from an authorised officer. Currently there is one Wildlife Reserve in Nepal, which is an IBA:

- **Koshi Tappu Wildlife Reserve**

### Hunting Reserve

Area set aside for the management of animals, birds, and other resources to provide for hunting. None of the activities prohibited within a national park is permitted without written permission from an authorised officer. Currently there is only one Hunting Reserve in Nepal, which is an IBA:

- **Dhorpatan Hunting Reserve**

### Conservation Area

Area managed in accordance with an integrated plan for the conservation of the natural environment and the sustainable use of natural resources. Currently there are six Conservation Areas in Nepal, five of which are IBAs, and one a Potential IBA:

- **Annapurna Conservation Area**
- **Api Nampa Conservation Area**
- **Blackbuck Conservation Area (Potential IBA)**
- **Gaurishankar Conservation Area**
- **Kanchenjunga Conservation Area**
- **Manaslu Conservation Area**

Of these, the Annapurna, Gaurishankar and Manaslu Conservation Area are managed by the National Trust for Nature Conservation (NTNC). NTNC is the leading national NGO dedicated to nature conservation in Nepal. Api Nampa and the Blackbuck Conservation Areas are managed by DNPWC.

### Bird Sanctuary

Ghodaghodi wetland was designated as the country's first bird sanctuary in March 2022 and Jagdishpur Reservoir was designated as second bird sanctuary in July 2022.

### Forest Conservation Area

- **Madane**
- **Reshunga**
- **Kankre Bihar**
- **Barandabhar**
- **Panchase**
- **Laljhadi-Mohana**
- **Khata**
- **Dhanushadham**
- **Basanta**
- **Godavari-Phulchoki**

### Buffer Zone

An area surrounding a park or a reserve encompassing forests, agricultural lands, settlements, village open spaces and many other land use forms. To date Buffer Zones have been declared for all national parks; Koshi Tappu Wildlife Reserve and Dhorpatan Hunting Reserve, but not the Conservation Areas. Buffer Zones are now included in the IBAs, although, with the exception of Makalu Barun National Park, they were not included in the previous Nepal IBA assessment (Baral and Inskipp 2005).

### Buffer Zone Management Regulations, 1996

These are the sole regulations to promote community forestry programmes in Buffer Zones and to improve the stocking of forests by community management. The provision of community forests and other forestry operations described in the Forest Act are not applicable in Buffer Zones. The committees formed under the Buffer Zone Management Regulations can also be entrusted with the management of fallen trees, grasses, and driftwood inside the protected areas.



Ruddy Shelduck by Sugam Tamrakar



# CURRENT HABITAT CONSERVATION MEASURES

## Forest management

### *The Forests Act, policy and management*

The first forest act of the Nepal was implemented on 2049 (1993). The Forest act of 2049 (1993) provides a framework to ensure an “operational management of the forestry sector, ensure the development, the conservation and the proper use of forest products”. Later, the Forest act 2049 (1993) was amendment and Forest (First Amendment) Act, 2055 (1999) was enacted. Now, The Forest Act 2076 (2019) is in implementation. This Act is enacted to “Manage the national forests and to make contribution to national prosperity by protecting, promoting and utilizing the wildlife, environment, watersheds and bio-diversity, while promoting the private, public and urban forests. In Nepal, the Community Based Forest Management (CBFM) programme has a four-decade history, beginning with the enactment of the National Forestry Plan in 1976, in response to the rapid decline of forest area and biodiversity. Following that, in 1978, the Government of Nepal (GoN) formally adopted the CBFM approach with the goals of meeting local livelihood needs, reducing poverty, promoting public cooperation, and reducing environmental degradation through sustainable forest management (Adhikari, 2005; Gautam et al., 2004). Today, it has become one of Nepal's most popular forest management regimes, claiming to be a key instrument for both forest conservation and rural development. Different modes of CBFM in Nepal are:

### *Community Forest*

In Nepal, community forest (CF) is defined as national forests handed over to a local user group pursuant to Section 18 of the Forest Act, 2019 to develop, conserve use, and the forest, as well as sell and distribute forest products independently by fixing their prices in accordance with an approved operational plan (MoFE, 2019). The forests are managed in accordance with the Division Forest Office's (DFO) approved Operational Plan (OP) prepared by Community Forest Users Groups (CFUGs). Before handing over the forests, CFUGs must be established and registered at the Divisional Forest Office, and they must be self-sustaining institutions (MoFSC, 1993; MoFE, 2019). The CFUGs can function as self-governing entities to generate, use, and sell the forest products specified in the Operational Plan. By June 2023, 2508326ha

of Nepal's forest area was directly managed as community forests by 31,68,449 households in 74 of Nepal's 77 districts.

### *Leasehold Forest*

Leasehold forests (LF) are national forests that have been leased for the specified purpose(s) to an arbitrarily defined institution, forest-based industry, or community in accordance with section 26 of the Forest Act, 2019 (MoFE, 2019). The primary goal of this modality was to improve degraded forestland by improving poor people's livelihoods through the sustainable use of forest resources. Leasehold Forest Rules were introduced by the government in 1978 with the goal of producing timber, firewood, raw material for forest-based industries, fodder, and Non-Timber Forest Products (NTFPs). Furthermore, the Forest Act 1993 and Forest Regulation 1995, as well as the federal Forest Act 2019 (MoFE, 2019), provide legal support for the modality. The Leasehold Forest Rules include two provisions for allocating forest areas to firms or groups of pro-poor households. The Ministry of Forests and Environment (MoFE) has the authority to transfer leasehold forests for a period of 40 years in exchange for payment of lease rent (Oli, 2014; MoFE, 2019).

### *Collaborative Forest Management*

According to historical evidence, community forestry has become more popular and successful in Nepal's hills than any other forest management system. However, the community forest programme in Terai has not been as successful as hoped. Community forestry implementation in Terai has always been plagued by a lack of accountability and transparency, high population pressure, and cross-border issues that frequently spark controversy (Bompton et al., 2007). As a result, large blocks of highly valuable national forests in the Terai's northern belt have been reduced in size, and the quality of existing forests has deteriorated. To address the prevailing issues of community forests in Terai, the Nepalese government has been undertaking a series of reform policy efforts in order to sustainably manage the forests in Terai and inner Terai, which may secure conservation, livelihood welfare of local forest users, and a regular flow of revenue on the part of the government. In these circumstances, the Nepalese government introduced a new concept of participatory forest management called Collaborative Forest

Management (CFM) through Forest Policy 2000 in 2000 for the management of large productive forests in the Terai, Inner Terai, and Churia region (MoFSC, 2000). The CFM modality was developed as a bridge between two approaches to forest management: community forestry management and conventional government forest management. According to the 2011 CFM guideline, Collaborative Forest Management as a means of sustainable forest management where forests are managed by government and stakeholders collaboratively according to the approved forest management plan to improve livelihoods, economic opportunities and other multipurpose benefits such as maintaining ecological balance (MoFSC, 2011,).

### *Religious Forest*

According to Nepal's Forest Act 2019, Religious Forest is defined as national forest given to any religious body, group, or community pursuant to Section 28 for development, conservation, and utilization (MoFE, 2019). The goal of Religious Forest is to conserve and promote religious values, including basic human needs, through the sustainable management of religious forests. These forests are typically found around temples or other sacred religious sites and have been designated as religious forests. After a formal application with a forest management plan, the Divisional Forest Officer (DFO) has the authority to hand over such forest to the group or community (MoFE, 2019). The religious forest's forest products may be used for religious activities other than commercial purposes by the concerned community. Trees cannot be felled in such a way that it has a significant negative impact on the environment or causes damage or soil erosion in the watershed. For any type of extraction from religious forests, prior approval from the relevant DFO is required (MoFE, 2019). As previously stated, these forests have little impact on the livelihood improvement of local communities, but they do enhance the cultural and aesthetic value of the religious site and help protect it from illegal activities. Currently, 36 religious groups have registered religious forests, occupying 2,036 hectares of national forest (0.07% of total CBFM area) (DoF, 2017).

### *Forest Conservation Area*

In Nepal, a Forest Conservation Area (FCA), formerly known as a Protected Forest, is a national forest or

landscape area designated by the government as a forest protected area under the provisions of Section 15 of the Forest Act 2019 because it has special environmental, scientific, or cultural significance (MoFSC, 2019). The government may designate any forest area as protected for religious, cultural, or scientific reasons, and must publish a notification in the Nepal Gazette (MoFSC, 2019). The concept of FCA is evolving as a viable approach for managing forests with unique characteristics. It is regarded as one of the most important forest management models for preserving biodiversity and cultural value while also improving people's livelihoods. However, the emphasis remains on the key features of that forest that could be designated as a forest protected area. To date, the government of Nepal has designated 10 Forest Conservation Areas covering a total area of 1,92,027 ha; 6 more Forest Conservation Areas are in the process of being declared throughout the country to safeguard special environmental, scientific, or cultural values of the forests (DoF, 2017). These forests are important wildlife corridors and rich in biodiversity (MoFSC 2014).

### *Buffer Zone Community Forest*

Under the Wildlife Conservation Act of 1973, the Buffer Zone Management Rules 1996 provide legal space for Buffer Zone Community Forest (BZCFs) provisions and practices (MoFSC, 1996). BZCFs are defined in the regulation as forest areas in protected area buffer zones that have been handed over to the users committee under rule 21. Aside from biodiversity conservation, the main goals of buffer zone community forests are to meet the basic needs of local communities for forest products and to support community development activities in the buffer zone area. The warden of PA hands over part of the government forests of the designated buffer zone to the local unit as user committee in this model. The committee delegated its authority to community forest user groups in the buffer zone as a subcommittee (MoFSC, 1999). There are currently 608 BZCFs covering 144,010 hectares of forest area, benefiting approximately 101,462 households (DoF, 2017).

### *Wetland Management*

GoN formulated the National Wetland Policy 2003 thereby fulfilling a government obligation under the Ramsar Convention. This was later replaced by the National Wetland Policy 2012. This policy envisions

healthy wetlands for sustainable development and environmental balance and aims to conserve and manage wetlands resources sustainably and wisely.

The objectives are to conserve biodiversity and protect environment by conservation of wetlands, involving local people in the management of wetlands, and conservation, rehabilitation and effective management of wetland areas; supporting the wellbeing of wetland dependent communities; and enhancing the knowledge and capacity of stakeholders along with maintaining good governance in management of wetland areas.

The policy emphasises identification and prioritisation of wetlands on the basis of ecological, social and economic importance and conservation, rehabilitation and management of such areas; identification, respect and utilization of traditional knowledge and skills of wetland dependent communities; making provisions for equitable distribution of the benefits arising from the utilization of wetland based resources, and promoting good governance. It provides working policies for conservation, restoration, and effective management of wetland areas; wise use of wetlands; and promoting good governance in the management of the wetlands. The policy also establishes a high-level National Wetlands Committee.

As part of its obligation under the Ramsar Convention the GoN has designated nine Ramsar sites, all of which are covered by the IBA network – Wetlands of International Importance: Koshi Tappu Wildlife Reserve and Koshi Barrage, Jagdishpur Reservoir, Ghodaghodi lake complex, Rara Lake, Gokyo and associated lakes, Gosaikunda and associated lakes, Phoksundo, Beeshazar and associated lakes and Mai Pokhari. However, there are a further six wetlands within IBAs that could also qualify.

The National Lake Conservation Development Committee was formed in 2006 with the objectives of conserving Nepal's lakes, resolving conflicts, making policy recommendations and taking responsibility for national and international coordination on issues relating to lakes (Pokharel and Shah 2006).

The International Centre for Integrated Mountain Development (ICIMOD) initiated the Himalayan

Wetlands Initiative in 2009 in order to enhance the water storage capacity of the Himalayas. ICIMOD are collaborating with the Ramsar Convention Secretariat, Wetlands International and WWF in this initiative. The overall goal is to promote the conservation and sustainable use of Himalayan wetlands in the Hindu Kush-Himalayan region.

The Water Resource Strategy (2002) The goal is to improve living conditions of Nepali people in a sustainable manner. Sustainable management of watersheds and aquatic ecosystems is one of the strategic outputs (MoFSC 2014).

The Conservation and Sustainable Use of Wetlands (CSUWN) in Nepal was a joint undertaking of the Ministry of Forests and Soil Conservation (MoFSC), Global Environmental Facility and the United National Development Programme. The project was executed by MoFSC. CSUWN aimed to build the capacity, legal and policy frameworks related to conservation and development for ecosystem management for wetlands conservation and sustainable use. The project focused on two Ramsar sites (both IBAs): Koshi Tappu Wildlife Reserve and the Ghodaghodi Lake area. The five year project ended in 2013 (UNDP 2014b).

Until 2003, Nepal did not have a unified policy for wetland management. However, some Acts dealt with water resources. These are:

#### **Aquatic Animals Protection Act, 1961**

The Aquatic Animals Protection Act, 1961 is one of Nepal's oldest pieces of legislation, indicating the early recognition of the importance of wetlands and aquatic life. It forbids the introduction of poisonous, noxious, or explosive materials into a water source, or the destruction of any dam, bridge or water system with intent to catch or kill aquatic life. The Act defines 'private water' as a lake, pond, ditch, pool, or reservoir that is in land-use by a person who has been paying land tax to GoN.

#### **Soil and Watershed Conservation Act, 1982**

The mismanagement of watersheds leads to degradation of valuable land, through floods, water-logging, salinity in irrigated areas, and acceleration of siltation in the storage reservoirs. In order to manage the watersheds properly, the Soil and Watershed

Conservation Act was enacted in 1982. According to this Act, GoN is to construct and maintain dams, embankments, terrace improvements, diversion channels, and retaining walls, as well as protect vegetation in landslide-prone areas.

#### **Canal, Electricity and Related Water Resources Act, 1967**

The Water Resources Act, 2049 (1992) (erstwhile Canal, Electricity and Related Water Resources Act, 1967) is also related to the conservation of the environment. Its primary aim is to prevent soil erosion, landslides, floods, or adverse impacts on the environment while generating electricity, digging, canal and other works. According to this Act, Nepal owns water resources within its territory. This Act is public trust doctrine. It strives to prevent environmental damage to wetlands, lakes and rivers through environmental impact assessment studies.

#### **National Ramsar Strategy and Action Plan, (2018-2024)**

The National Ramsar Strategy and Action Plan (2018-2024), which is in accordance with both the Sustainable Development Goals and the Aichi Biodiversity Targets, is Nepal's first strategy and action plan for the conservation of Ramsar sites. It takes into account the thirteen priority areas, which are very similar to the Ramsar Convention's priority areas. The National Ramsar Strategy and Action Plan (2018-2024) has as its objective the preservation,

wise use, and restoration of the Ramsar Sites while ensuring benefits to the surrounding communities. It seeks to conserve and manage the Ramsar site network, value and recognise Nepal's Ramsar sites nationally, manage wetlands, including the Ramsar sites, engage federal, state, and local stakeholders, and build their capacity for wetland and Ramsar site conservation. It also seeks to improve Ramsar implementation through national and international cooperation. Finally, it monitors and evaluates the National Ramsar Strategy and Action Plan's implementation.

#### **Grassland management**

Nepal's National Biodiversity and Action Plan 2014-20 describes the threats to lowland grasslands including their birds, but these issues have not yet been addressed by management guidelines or regulations which cover pastureland of in the Himalayas. However, the recently awarded Darwin Initiative project for the Zoological Society of London that aims to improve grasslands in Shukla Phanta has a component to formulate guidelines for lowland grassland management through the DNPWC. Site level grassland management guidelines for Shukla Phanta are already prepared and other guidelines at a national level has been recommended to the government for approval. Currently DNPWC allows local people to harvest grasses for a limited period each year in lowland protected areas (Chitwan, Bardiya, and Shukla Phanta).





# CURRENT SPECIES CONSERVATION MEASURES

## **Fauna conservation measures**

Schedule 1 of the National Parks and Wildlife Conservation Act, 1973 provides a list of protected wild animals. While 149 nationally threatened bird species have been identified in Nepal (BCN and DNPWC 2011), so far only nine species have been declared protected by law. The protected animal list dates back to more than 40 years and is out of date; however, no revision has been made so far. There is an urgent need to revise and expand this list.

The National Parks and Wildlife Conservation Act-1973 regulates wildlife laws in Nepal. It is implemented through the DNPWC and Division Forest Offices.

Inskipp (1989) identified some important omissions in the representation of forest types at lower altitudes in the protected area network. While there have been significant extensions since then and Nepal has good protected area coverage, subtropical broadleaved forests and Middle Mountain broadleaf forests are

still not well represented. Over half 56% (83 species) of Nepal's nationally threatened birds are only found in the lowlands (75m -1000m); 19% (28 species) are found in the lowlands as well as in the middle hills (75-3050m); 13% (20 species) are found only in the middle hills (1000-3050m) and the remaining 5% (8 species) in the middle hills and higher altitudes, and just 1% (2 species) only at higher altitudes (BCN and DNPWC 2011). This shows the varying degree of pressure on habitats in different regions and inadequate or poor representation of habitats at different elevations.

## **Plant Protection Act (2007)**

The Act has provisions for prevention of the introduction, establishment, prevalence and spread of pests while importing and exporting plants and plant products, promoting trade in plants and plant products. It requires entry permits for importing plants, plant products, biological control agents, beneficial organisms or means of growing plants such as soil and moss (MoFSC 2014).



# CROSS-CUTTING EFFORTS AND OUTCOMES

## Environment Protection Act (2019)

GoN filled a major gap that existed between 'wildlife' and 'environment' protection by enacting the Environment Protection Act 2019. This Act is especially effective in monitoring several industries and development activities that may have detrimental effects on the health of people and ecosystems. The Act authorises GoN to monitor and implement activities that directly affect the environment, such as pollution, negative impacts on ecosystems etc. The environment has been defined by the Act rather broadly as 'natural, cultural and social systems, financial and human activities and their components, as well as interactions between these'.

The Act ensures that an Initial Environment Examination (IEE) and Environmental Impact Assessment (EIA) are carried out where necessary by any industry or where dams, bridges or similar development activities are planned. The term protection has been defined by this Act as, 'environment and cultural heritage protection, maintenance, restoration, improved conservation, management and its utilisation'.

The Act has also formed an Environment Protection and Climate Change Management National Council whose members are nominated based on their conservation background or who are political figures who will ensure successful implementation of the programme conducted under the Act (EPC 2019). The Ministry of Forest and Environment is the focal ministry for monitoring this Act.

## Ecosystem Services

Ecosystems and the services they deliver underpin our very existence. We depend on ecosystem services to produce our food, regulate our water supplies and climate, and protect us from extreme weather. We also value them in less obvious ways: contact with nature can contribute to spiritual experience, provide recreational enjoyment and is known to have a positive impact on long-term health and happiness. Despite their importance, ecosystem services are consistently undervalued in conventional economic analyses and decisions. In Nepal the majority of the population lives in rural areas and so derives its livelihood directly from ecosystems services. Understanding, assessing and monitoring ecosystem

services can lead to better policy formulation, resulting in land-use and management options that deliver more effective conservation, resilient livelihoods and poverty reduction (BCN and DNPWC 2012).

The continued delivery of ecosystem services depends on the integrity of the ecosystems supplying those services and this in turn depends on the maintenance of biodiversity. Declines in biodiversity, such as those taking place in Nepal and globally, are resulting in the reduction and degradation of ecosystem services. Birds, which are involved in many ecosystem functions, can be considered as important indicators of the general state of ecosystem health (BCN and DNPWC 2012).

Nepal is richly endowed with a variety of natural ecosystems that provide invaluable ecosystem services to local people and to the nation as a whole. The challenge is to ensure that the true value of ecosystem services becomes fully incorporated into decision-making at all levels. Management actions taken and policy decisions made now will have implications far into the future for biodiversity, ecosystem services and human well-being. It is important that the consequences are understood; so that the country's natural ecosystems can continue to deliver benefits for its people into the future (BCN and DNPWC 2012).

## Landscapes Management

The Tenth Five Year Plan (2002-2007) incorporated landscape approach as a new strategic and operational direction to conservation and sustainable use of biological resources. Accordingly, the MoFE has been implementing landscape-specific programmes in the Terai Arc Landscape, Sacred Himalayan Landscape, and Kailash Sacred Landscape. Another landscape programme has been under implementation by a consortium of I/NGOs in the Chitwan-Annapurna Landscape and Terai (MoFSC 2014).

The MoFE has developed and implemented a ten-year (2006-2016) strategic plan for long-term sustainable management of biodiversity, local culture and water resources in the Nepal side of the Sacred Himalayan Landscape that extends eastward from Langtang National Park in central Nepal through the Kanchenjunga region in India to Toorsa Strict Nature

Reserve in western Bhutan, covering 39,021 km<sup>2</sup> (MoFSC, 2006).

The Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI) is another trans-boundary collaborative programme between Nepal, China, and India. In Nepal, it is implemented by the MoFSC in close cooperation with ICIMOD, RECAST and other partner institutions. The main components of the KSLCDI include innovative livelihoods, ecosystems management, access and benefit sharing, long-term environmental and socioeconomic conservation and monitoring, and regional cooperation (ICIMOD, 2013).

An USAID-funded landscape management programme (Hariyo Ban) is being implemented in the Chitwan-Annapurna Landscape and TAL by WWF Nepal and its consortium partners CARE Nepal, Federation of Community Forest User Groups in Nepal (FECOFUN), and NTNC. The landscape includes whole or part of 19 districts and covers an area of 32,057 km<sup>2</sup> of the Gandaki river basin in western Nepal (USAID 2010).

### **Climate Change Adaptation and Mitigation**

Nepal joined the UNFCCC in 1992 and Kyoto Protocol in 1997. Since then, GoN has focused on managing climate change impacts by: developing institutions, formulating policies, development of plans, establishing coordination mechanism, generating and mobilizing climate funds, implementing adaptation projects, and integrating climate change issues in planning process, among others (MoFSC 2014).

Nepal is considered the fourth most vulnerable country in the world from the perspective of climate change. As the per capita greenhouse gas emission in Nepal is negligible, adaptation has remained as a top priority for Nepal. However, the GoN has also recognized the need for mitigation through various means (MoFSC 2014).

The goal of the National Climate Change Policy 2019 is to improve livelihoods by mitigating and adapting to the adverse impacts of climate change, adopting a low-carbon socio-economic development path and supporting and collaborating in the spirits of

country's commitments to national and international agreements related to climate change (MOFSC 2014).

### **Sustainable Development Agenda (2003)**

Environmental conservation is to be an integral component of poverty alleviation and sustainable economic growth. The agenda emphasized the need for more effective management of forests, ecosystems and biodiversity in order to achieve the goal of sustainable development. It recommended promoting people's participation in forestry resource development, and enhancing economic benefits to local people from protected areas. (Source: MoFSC 2014)

### **Tourism Policy (2009)**

The objectives are to develop Nepal as a major tourism destination by conserving, promoting and developing tangible and intangible natural, cultural, and biological heritages; and conserve and sustainably use environmental resources while utilizing natural resources during development and construction of tourism infrastructure.

The policy emphasises the formulation and implementation of a separate environment protection and solid waste management guidelines for the sustainable management and environmental cleanliness of tourism activities. Source: MoFSC (2014)

### **National Agricultural Policy (2004)**

One of the objectives is conservation, promotion and proper utilization of natural resources, environment and biodiversity.

### **Rural Energy Policy (2006)**

One of the goals is to reduce dependency on traditional energy and conserve environment by increasing access to clean and cost effective energy in the rural areas. The policy emphasises development of environment-friendly rural energy technologies. It highlights the promotion, research and development of technologies related to micro and small hydropower; biogas; fuel wood, charcoal, briquette, biomass energy, biomass gasification; solar energy; wind energy; improved cook stove; improved water mill; and rural electrification. Source: MoFSC (2014)

### **Interim Constitution of Nepal (2007)**

Guarantees the fundamental right of every person to live in a clean environment. It requires the state to make arrangements for the special protection of the environment and of rare wildlife and provide for the protection of forest, vegetation and biodiversity, its sustainable use and for equitable distribution of the benefit derived from it. The state is also obliged to pursue a policy aimed at identifying and protecting traditional knowledge, skills and practices. Source: MoFSC (2014)

### **Three Year Plan (2010-13)**

Emphasised development and expansion of adaption to climate change by conserving and utilizing agro biodiversity and organic farming.

Highlighted increasing the productivity of forest by promoting ecosystem services through scientific, inclusive and participatory, management of forest heritage.

Promoted research, development and sustainable management of forest, plants, watersheds, protected areas and biodiversity through participatory system.

Emphasised adoption of preventive and controlling measure for protecting forest from forest fire through participatory system.

Provided basis for formulation and implementation of a new national forest strategy with long term perspective in participation of relevant stakeholders.

Stressed maintaining a balance between livelihoods and biodiversity conservation by achieving public support and participation in the management of protected areas.

Committed to refine and internalize the NBS and NBSIP and implementing them.

Committed to promote the concept of green development by making human activities and development works environment-friendly to minimize the adverse effect of climate change and adaption to climate change impacts. Source: MoFSC (2014).

### **National Land Use Policy (2015)**

Has envisioned achieving sustainable social, financial and environmental development.

Objectives include maintaining a balance between development and environment.

Categorises land into seven types for optimum use of land and the land resources.

Emphasises identification and protection of environmentally sensitive areas; conservation and promotion of biodiversity by maintaining balance among land, environment and development; and execution of developmental activities by taking into account the principle of sustainable development and impacts of climate change.

Source: MoFSC (2014)

### **Environment Friendly Local Governance Framework (2013)**

The objectives are to mainstream environment, climate change, and disaster management in the local planning process; make the local governance system environment-friendly; make every person responsible for environment-friendly sustainable development; encourage coordination and collaboration in environment and development; and increase the local ownership. Source: MoFSC (2014)

### **Industrial Policy (2011)**

One of the main objectives is to establish industrial entrepreneurship as a sustainable and reliable sector by utilizing latest technology and environment friendly production process.

The policy provides a basis for technical and financial assistance to the industries that use environment-friendly and energy saving technology on their own costs. It emphasises special measures to be taken to promote green industries and to make the established industries pollution-free and zero carbon emission. Source: MoFSC (2014)

### **Awareness Raising**

Government of Nepal (GoN) ministries, such as MoFSC and concerned departments have been implementing targeted awareness raising programmes using TV and radio programmes, regular publications, training, visits, and study tours.

Many forest user groups are implementing awareness campaigns against forest fires. The Department of Forest and Soil Conservation is using different media (including television and radio) to raise awareness on forest fire, uncontrolled grazing, and afforestation.

Many NGOs and individuals are working to change local people's attitudes towards biodiversity by working with them to recognize the importance of conserving biodiversity for their own livelihoods and wellbeing. The Bird Education Society's Green Clubs in local schools and Raju Acharya's widespread campaign to raising awareness of the plight of owls in Nepal are some examples of these efforts (BCN and DNPWC 2011). Methods used include television and radio programmes, public awareness campaigns on International Biodiversity Day (May 22), World Environment Day (June 5), National Conservation Day (September 23), World Wetlands Day (February 2), World Wildlife Day (March 03), World Migratory Bird Day (10-11 May) and International Vulture Awareness Day (first Saturday of September), street theatre, exhibitions, information boards, and distribution of brochures and newsletters.

### **Gender and Social Inclusion**

The GoN's commitment to addressing gender and social inclusion issues has been clearly reflected in all the national development plans, policies and strategies developed after 2002. The Tenth Five-Year Plan (2002–2006) emphasized linking forest

conservation with poverty alleviation and social inclusion by encouraging participatory systems in which the poor, women and other members of disadvantaged sections of society have equal employment opportunities (MoFSC 2014).

The following are some of the gaps, issues and challenges in addressing gender and social inclusion issues: gender equality and social inclusion policies are not well implemented; institutional structure and capacity is weak; gender and social inclusion criteria are not included in monitoring and evaluation or in budgeting programmes; inadequacy of gender disaggregated data, and inadequate awareness (MoFSC 2014).

### **Mainstreaming Biodiversity Considerations into National Development Plans**

Policies, Programmes and Sectors Mainstreaming efforts are limited to the incorporation of biodiversity and environmental conservation into national development plans and most of the sectoral policies. For example, Nepal has been systematically adopting the concept of conservation-friendly economic growth since it was first introduced by the Ninth Five Year Plan (1997-2002). Despite these efforts, there has been little effort to mainstream biodiversity across different sectors, primarily because it has so far been a priority for only the MoFSC (MoFSC 2014).



Photo by Santosh Bajagain



# RECOMMENDATIONS FOR IBA CONSERVATION

## Long term priorities

All protected areas are IBAs, with the exception of the Blackbuck Conservation Area which is a PIBA. A total of 20 IBAs (54%) are protected areas covering around 80% of the IBA network. Until some years ago all of Nepal's protected areas were guarded by the Nepalese Army. During the 1980s models of protected area management involving the direct participation of communities were developed in the mountains, initially in the Annapurna Conservation Area and later in Kanchenjunga, Gaurishankar and Manaslu Conservation Areas. Efforts should be made to extend this approach to other protected areas. The Nepal Biodiversity Strategy 2014-20 states, 'Meaningful participation of local communities in the management of natural resources is a key to ensuring success and sustainability of programme interventions. The successful management of thousands of community and leasehold forests across the country and of Kanchenjunga and Annapurna conservation areas and corridors provide evidence.'

Long term conservation of most IBAs will only be possible through community stewardship and involvement. Conservation also needs to harness many livelihood programmes to encourage appropriate management of areas both within and outside the protected areas network.

Conservation of many IBAs will succeed and become sustainable if local people benefit economically from the natural habitats that support biodiversity. This requires expansion of the community forestry model to deliver the twin benefits of supplying natural resources and maintaining forest biodiversity. It also requires economic growth and the longer-term benefits of health and education programmes to deliver sustainable conservation. Education and awareness programmes are vital, especially as some of the IBAs are already managed by their local communities.

The Nepal Biodiversity Strategy and Action Plan 2014-20 points out the need for effective cross-sectoral co-ordination for the conservation of biodiversity in and around protected areas, especially between certain institutions, organisations and the DNPWC. The Strategy includes the need for the training of staff, law enforcement officials, community groups, NGOs, CSOs, private sector, media persons and other

stakeholders at various levels on different aspects of biodiversity management staff. Strengthening the DNPWC's staff capacity to conserve and manage biodiversity is highlighted. Enhancing the capacity of CFUGs, collaborative groups, LFUGs, protected area local institutions, farmers' groups, and other CBOs for conservation-friendly management of their forests, rangelands, wetlands and farmlands is also included in the strategy (MoFSC 2014). Although tourist visitors to parks, conservation areas and reserves decreased following the 2015 Great Earthquake and again in 2020 during the covid pandemic, they will probably increase significantly in the foreseeable future and so it will be highly beneficial to have an integrated tourism management plan in place soon.

## Increased protected areas coverage, especially of Nepal's IBAs

More than 23% of Nepal's land area is strictly protected within the core areas of existing parks and reserves. An analysis carried out as part of the research for this report of the IBAs indicates that 16% of current IBA land remains unprotected. Complete coverage of all IBAs through the recognition of new protected areas, expansion of existing protected areas or as forest conservation area is an urgent step for the Nepal government to take. Such expansion would assist the GoN to meet its commitments under Article 8(a) of the CBD, the COP – 7 Decision on Protected Areas, and Millennium Development Goal 7 (BirdLife International 2004). Protection, management and conservation of IBAs should be included in the next Nepal Biodiversity Strategy and Action Plan and the follow up implementation plan for Nepal.

MoFSC (2014) points out that the representation of the physiographic zones in the country's protected areas is very uneven. A high proportion of the total area of protected areas in Nepal comprises bare rock and ice. While these are important physical features, they themselves are very poor in biodiversity. Many protected areas in the highlands seem to have been set up because it is easier to establish reserves in areas with low human populations where there is minimal resistance from local people. However, the areas of Nepal with the highest biodiversity value are not in the high mountains but in the lowlands and Middle Mountain areas. The present network of protected areas covers the unique biodiversity of the high Himalayas very well, but the IBA analysis clearly

shows that we have lagged behind in conserving the biodiversity hotspots of the Middle Mountains. MoFSC (2014) states, 'The Middle Mountains in general and the zone between 400-2,800 m in particular is significantly under-represented, while the representation of the areas above 2,800 m is comparatively high'. Subtropical broadleaved forests also need better representation in protected areas, notably Gadhi Siraichuli, Phulchoki, Khandbari-Num and Mai Valley forests.

MoFSC (2014) recommends priority conservation efforts for several natural forest ecosystems that have high conservation value which are IBAs or potential IBAs, but remain without effective conservation systems in place. These are the Tinjure-Milke-Jaljale rhododendron area (Tamur valley); Makalu-Barun southern extension; Daman-Palung-Phulchoki-Chandragiri range in central Nepal (Phulchoki Mountain Forest), and Gaighat-Seti River- Panchase stretch (Panchase Forest Conservation Area potential IBA). MoFSC (2014) points out that if conserved effectively, these areas can also serve as important climate refugia.

The revision and expansion of the list of legally protected birds in Nepal is long overdue. Only nine bird species are legally protected to date.

### Public awareness

It is recommended that the following actions are taken to improve understanding of the global and national importance of Nepal's IBAs amongst government and civil society:

- Policy makers, aid agencies and other NGOs are informed of the IBA network, and its relevance to the implementation of national and international land use policies and agreements
- A massive radio/TV, internet and print media campaign to promote awareness of the IBAs and their importance for conserving biodiversity
- Local level awareness campaigns are conducted, including through the establishment of a Nepal Bird Conservation Network.

Conservation awareness work has been carried out in many IBAs, especially since the first review of Nepal IBAs (Baral and Inskipp 2005). However, there are gaps: notably Dang, Dhorpatan Hunting Reserve, Khaptad

and Shey Phoksundo National Parks and some new IBAs: Api Nampa and Gaurishankar Conservation Areas, Argha, Barekot, Devdaha, Kapilvastu, Khutiya, Reshunga Conservation Area, Madane Conservation Area, Limi and Rampur Valleys, Tarahara Forest and Triyuga Watershed. Nearly all these sites are unprotected and are areas where the community can play a significant role in their conservation. While carrying out any conservation and awareness work at IBAs, national organisations should work with local community-based organisations so that not only the people, but active civil societies are also aware of the problems. In time, these local organisations could evolve into strong Local Conservation Groups (also known as Site Support Groups or Caretakers) to advocate and work for the conservation of IBAs at the local level. Working in partnership with communities and other stakeholders at IBAs towards shared objectives of conservation and sustainable resource management is one of a range of different approaches being adopted by BirdLife Partners to help conserve IBAs. Working with people at IBAs helps to engage a mainly local constituency in IBA conservation. It builds on what are often strong connections – be they economic, cultural, historical – between people and the sites where they live, work and engage in recreation.

### Research, monitoring, survey and information management

It is only possible to protect and manage a site effectively if adequate research work and surveys have provided the information required by planners. Since the first compilation of Nepal's IBAs (Baral and Inskipp 2005), surveys of some poorly known IBAs have been carried out by or on behalf of BCN e.g. Dang Deukhuri foothill forests and West Rapti wetlands (Thakuri 2009a) and Kanchenjunga Conservation Area (Inskipp *et al.* 2008). Many other individuals have carried out bird survey work on IBAs, notably the late Jack Cox Jr. including his important work in the Makalu Barun National Park and Buffer Zone IBA.

While some IBAs are well explored others remain under-recorded, for example Khaptad National Park and some new IBAs: Banke National Park, Api Nampa and Gaurishankar Conservation Areas, Triyuga Watershed, and Limi valley. Additional surveys in these IBAs and in the five potential IBAs

would be valuable to fill the most important gaps in information. A list of potential IBAs is given in this publication. Some survey work has been carried out at most of these but further surveys are needed to fill in gaps in knowledge to establish whether these sites are of global importance for birds, and to gather the information required for their protection and management.

Once baseline information has been collated, monitoring of IBAs is essential to record any changes in their value for birds and other biodiversity, and the effectiveness of any measures for their protection and management. BCN has established a process of monitoring across all IBAs using BirdLife International's standardized and simple methods for scoring their condition (based on the key species and habitats within them), the pressures (threats) impacting the sites, and the conservation responses in place (such as action plans and management activities).

### Policy analysis and responses

All IBAs need some form of recognition and protection, including through education and awareness work. However, not all IBAs can be conserved simply by declaring them as strictly protected. There are some unprotected IBAs that need recognition by communities, for example Limi and Rampur Valleys, Reshunga Forest, Farmlands of Lumbini, Dang and some vulture IBAs (Argha, Barekot, Devdaha, Kapilvastu, Khutiya, Rampur). It is important that ways are found to deliver some economic or livelihood incentives to local people in these areas.

Similarly, there are protected IBAs which require urgent management interventions, for example to address the problems caused by eutrophication and alien invasive species in Koshi Tappu Wildlife Reserve, and Shukla Phanta and Chitwan National Parks. The habitats preferred by some globally threatened bird species, especially wetland species are rapidly deteriorating and appropriate management is needed to maintain existing biodiversity.

### Forest-related issues

Most of Nepal's forests important for birds have been influenced by human activities. Lowland forests are being exploited at unsustainable rate throughout

the country, and all lowland forests outside protected areas are threatened. Primary forests that still exist in several unprotected lowland IBAs in Nepal are sensitive to even low levels of disturbance and are deteriorating and disappearing at an alarming rate.

The provision of more resources to park and forestry field staff should help improve their monitoring of forest exploitation.

There is enormous potential for improved management of existing low density and depleted forests. As the large majority of Nepalis depend on forests for their essential requirements of fuel, animal fodder and other basic materials, conservation of Nepal's forests is vital for the future of the country's people as well as its birds. The 2014-2020 National Biodiversity Strategy and Action Plan includes a target of a significant reduction (by at least 75% of the current rate) in the loss and degradation of forest. Another valuable target is the promotion of nonconventional energy sources (such as biogas, solar energy, and hydropower), and fuel-efficient technologies (such as bio-briquettes, improved stoves) to reduce demand of firewood (MoSFC 2014). Other important targets include the development and implementation of plans to reduce occurrence of forest fires and overgrazing; reclaiming at least 10,000 ha of encroached forestland through effective implementation of the Forest Encroachment Control Strategy (2012), and the establishment of forest conservation area where necessary and feasible (MoFSC 2014).

When forests have become degraded because of people pressure, the Division Forest Office can hand them over to the community for management. Most of the community-managed forests thus transferred have been secondary or heavily degraded primary forests. Under community management, protection of most areas has been extremely successful and regeneration of lost cover has been phenomenal. Communities throughout Nepal have demonstrated that they can effectively protect and sustainably use the forests under their care. The community forestry programmes should therefore be extended and strengthened. MoFSC (2014) includes a target for further promotion, improvement and strengthening of the community based forestry programmes. MoFSC (2014) also aims to improve conservation

of biodiversity in community-managed forest. By 2020, all the community managed forests must include a biodiversity chapter in their management or operational plans and respective user groups must effectively implement those plans. Another target is to promote mixed forests of indigenous plant species in community managed forests with due consideration to NTFPs and biodiversity (MoFSC 2014).

Community management of forests benefits biodiversity, although the value of biodiversity to local people's livelihood is sometimes not clearly understood at the local scale (Widman *et al.* 2003). However, some forest management practices have negative impacts on biodiversity. For example, the removal of all dead trees that may be used by nesting owls and woodpeckers, and the collecting from the forest floor of all leaf litter, which forms a valuable feeding ground for thrushes and some babblers. Involvement of biodiversity experts in community-managed forests should help to redress these problems. Training of forest user groups to manage blocks of forests on a rotational basis should allow sufficient time for plant regeneration in fallow forests. The provision of technical knowledge in sustainable harvesting of forest resources may also help some communities. The involvement of disadvantaged groups and women in community forestry should be ensured. Working directly with local communities in ways such as the above should ensure the balancing of maximum biodiversity benefits from forests with profitable and sustainable use of forest resources that fulfill the peoples' needs.

BCN conducted a pilot project on Participatory Assessment, Monitoring and Evaluation of Biodiversity (PAMEB) in 21 community forest areas of the terai and Middle Mountains in eastern Nepal. This project assessed villagers' basic skills to identify bird and mammal taxa and based on this a participatory biodiversity monitoring scheme was proposed. A set of easily identifiable indicator bird species was chosen and a monitoring protocol was developed. The protocol was tested by BCN and Federation of Community Forest User Groups of Nepal in various community forest areas. In this programme, by monitoring indicator bird species villagers assessed the health of forests and adjusted their use of natural resources. This project also aimed

to highlight the biodiversity benefits of community forests. The project successfully demonstrated that highly reliable forest assessments can be effectively implemented by local resource users (Ishana Thapa in BCN and DNPWC 2011).

Effective control of NTFP and MAP harvesting would reduce pressure on forests; reduce hunting pressure which annually results from the influx of huge numbers of people to harvest these products, as well as reduce disturbance to bird and other wildlife, especially during the breeding season. MoFSC (2014) includes a target to develop and implement a NTFPs/ MAPs management plan by all Division Forest Office and relevant community-based forest user groups, especially targeting conservation of over-harvested and threatened species. Another valuable target is the promotion of NTFP-based and other green micro-enterprises, and culture and environment based tourism in community managed forest sites to enhance local livelihoods and income (MoFSC 2014).

Religious forests and sacred groves in urban and agricultural areas are often refuges for bird species that are otherwise scarce in these districts (Inskipp 1989a). MoFSC (2014) included the target to integrate relevant local cultural and religious practices in the management of sacred natural sites within protected areas and protected forests, by 2016.

Enforcement of the Tourism Policy (2009) should alert tourists about the extensive environmental damage caused by over-exploitation of forests to provide lodge and camp fires for heating and hot showers for visitors. It should also encourage them to patronise lodges that use alternative forms of energy to wood, such as solar power. MoFSC (2014) includes targets to: promote eco-tourism in protected areas; review and revise existing guidelines on tourism in protected areas, and promote sustainable tourism in selected protected areas.

### *Wetland-related issues*

Most biodiversity rich wetlands are in the lowlands and Middle Mountains. A very few high altitude wetlands are important for biodiversity, notably Rara Lake. Lowland wetlands are threatened by over-exploitation, eutrophication, pollution, siltation, encroachment, drainage and conversion for agriculture, and alien invasive species.

Conservation of wetland biodiversity is a challenging task in Nepal. Many important wetlands of Nepal lie outside the protected area system and all of these are highly threatened. The Rapti, Reu and Narayani Rivers in Chitwan National Park and the Karnali River in Bardiya National Park form the boundaries of these parks. Because all these rivers lie at the edges of these protected areas, they suffer tremendous people pressure. Koshi Barrage, which lies south of Koshi Tappu, and all large lakes in the Pokhara area are unprotected and face similar pressure.

The effective implementation of Nepal's National Wetland Policy is urgently needed. This policy aims to put people at the centre of conservation and natural resource management. Nepal's wetlands are important for national sustainable development as they contribute significantly to local livelihoods. While all communities benefit from wetlands, about 17% of the Nepali population, who are from 21 ethnic communities, have traditionally based their livelihoods on wetlands. They are some of the most marginalised and poorest people in Nepal (IUCN undated).

Implementation of the Water Resource Strategy should benefit all aquatic ecosystems.

Three of Nepal's Ramsar sites, Ghodaghodi Tal and Jagdishpur (both IBAs) and Beeshazari Tal (part of Chitwan National Park and Buffer Zone IBA) are highly threatened and urgently need protected status and the implementation of conservation measures. BCN have carried out successful conservation projects at both Ghodaghodi Tal and Jagdishpur in the recent years.

The encouragement of participation by user groups and community-based organisations in collaborative management of wetland resources, as advocated in Nepal's Wetland Policy, will be key to achieving sustainable resource use. These measures should help to prevent over-exploitation including over-fishing, the use of poisons to kill fish, over-grazing and excessive grass cutting along watercourses. The wetlands within IBAs that could also qualify as Ramsar sites should be designated. MoFSC (2014) states that by 2020, five wetlands of international importance are to be enlisted as Ramsar sites.

Continuation of programmes to raise awareness in wetland conservation, particularly amongst communities living close to wetlands, is vital. This will help to ensure their better management and also to significantly reduce hunting and disturbance of wetland birds from hunting, which is a major threat at some IBAs, for instance at Koshi. Human disturbance and potentially damaging economic activities should be monitored and managed to help maintain biodiversity in these wetlands.

Control of sand and gravel mining of rivers is urgently needed. MoFSC (2014) includes a target for the development and implementation, by 2015, an effective mechanism to control mining of gravel and sand from rivers and streams.

Environmental impact assessments which adequately take account of impacts on riverine life, including birds, are essential before proposed dam projects go ahead.

Reducing pollution of wetlands is also very important, especially in the rivers of Chitwan National Park. The Narayani River is the worst affected, especially by point source pollution, which is seriously affecting water quality. This pollution could be drastically reduced by the installation of sewage treatment works for the towns of Bharatpur and Narayanghat. Enforcement of the Industrial Policy (2011) should help reduce water pollution. MoFSC (2014) states that plans should be developed and implemented to control industrial pollution in five major rivers and five major wetlands, by 2020.

Diffuse pollution from fertilisers from agricultural land has led to over-enrichment in many wetlands in the lowlands and also in the subtropical zone, notably in lakes near the Pokhara valley. The impacts of diffuse pollution from pesticides in agricultural run-off on wildlife are very poorly understood in Nepal, but are likely to be highly significant and could be a major factor in the decline of large wading birds, such as the globally threatened Lesser Adjutant *Leptoptilos javanicus*. MoFSC (2014) includes a target to control encroachment and eutrophication in at least ten major wetlands and restore at least five major degraded wetlands by 2020.

Strict enforcement of Nepal's pesticide regulations should greatly reduce the threat from pesticides to people, wildlife and the environment.

The Integrated Pest Management approach was emphasized in Nepal's National Agricultural Perspective Plan to try and reduce pesticide use. An increase in training of IPM use is badly needed.

Using EM technology, a combination of various beneficial organisms is formed, that is helpful for plant growth, acting as a fertiliser. The combination of organisms can also act as a bio-pesticide. Since 2004 the Bird Education Society has run a few week long training camps for farmers living in Chitwan's Buffer Zone in the use of EM and Integrated Pest Management. The running of repeat training camps for other farmers at Chitwan and for farmers elsewhere in Nepal, especially close to lowland IBAs, such as Koshi Wildlife Reserve, Bardiya National Park, Shukla Phanta National Park, farmlands in Lumbini, Ghodaghodi Tal, Jagdishpur, and Urlabari, is highly recommended.

### *Grassland-related issues*

The National Biodiversity Strategy and Action Plan 2014-20 addresses pasture lands in the higher Himalayas but not lowland grasslands. However, one of the Action Plan targets is the development and implementation of guidelines for sustainable management of grasslands, wetlands and other important habitats located inside protected areas (MoFSC 2014).

Currently, grassland management measures are carried out specifically for mammals and not for birds. For example, in Chitwan National Park's new management plan, cutting and/or controlled burning are planned to remove dry, coarse and unpalatable grasses and produce new flush which will be highly palatable and nutritious for some mammals (DNPWC 2012). These are inappropriate management practices for birds and are reducing the area of ideal grassland habitat for some globally threatened species such as Bengal Florican *Houbaropsis bengalensis* which has declined in the park. Areas of shorter grassland favoured by the floricans have succeeded to taller *Narenga* – and *Saccharum*- dominated grassland. In addition, burning is sometimes inadvertently carried out in

the birds' breeding season (e.g. Baral *et al.* 2003, Poudyal *et al.* 2008a,b).

Tall grasslands are maintained either as edaphic climaxes by seasonal inundation during the monsoon or by disturbance from the combined effects of fire, cutting and grazing, which slow the succession of grassland to forest (Lehmkul 1994, Peet 1997). Maintenance of monsoonal flooding regimes is vital for the persistence of the riverine grasslands in Nepal. Any change in these factors threatens the stability of grassland ecosystems; dams and irrigation schemes would have serious consequences for tall grasslands and their fauna, for example.

In the context of the rapidly changing condition of grasslands, active habitat management is a vital tool for maintaining grassland habitats. Compared to many mammals, grassland birds are often highly sensitive to changes in habitat quality and the microenvironment around them. In addition, there are several bird species that are especially adapted to living only in tall grasslands (Baral 2001). In the absence or alteration of such grassland habitat, these species may become extirpated. Black-breasted Parrotbill, that occurred in the subtropical grasslands of Nepal during the 19<sup>th</sup> century is now extirpated in Nepal, probably because of the loss and changes in the grassland habitat (BCN and DNPWC 2011).

The management of grasslands in protected areas is beset by the complex issue of balancing wildlife conservation with the sustainable utilisation of grasslands by local communities (Peet 1997, Richard *et al.* 2000). Grasslands inside protected areas are vital natural resources for local people who depend on grasses for building and thatching materials (Brown 1997, Peet *et al.* 1999b, Baral 2001). People are allowed into protected areas for three to ten days annually to cut grass, at which time the grasslands are also burned; in the case of Chitwan this involves an influx of many thousands of people (Sharma and Shaw 1993, Peet *et al.* 1999b). This harvesting is vital in maintaining grassland, but disturbance is a problem and there is sometimes no refuge for grassland fauna (Peet 1997). The disturbance has caused much damage to species such as Bengal Florican *Houbaropsis bengalensis*, and other grassland specialists (Inskipp and Inskipp 1983, Baral 2001, Poudyal *et al.* 2008a,b). Bengal Floricans

have been forced to move out from the grasslands and have been seen in agricultural lands outside the protected areas at these times. In particular, the timing and method of burning regimes can be inappropriate and then become major conservation issues.

Current cutting and burning regimes lead to extensive, if temporary, loss of habitat and cover. Whilst cutting and burning may create open areas beneficial to Bengal Florican and Swamp Francolin *Ortygornis gularis* (Baral 1998a), other species require intact areas of grassland, and most will require refugia during and immediately after the cutting and burning period; in addition, some threatened grassland mammals require unburnt refugia (Peet 1997, Baral 2001, Poudyal *et al.* 2008a,b).

Management should therefore aim to maintain areas of intact grassland that are not cut or burnt, on a rotational basis, whilst allowing other areas to be harvested by local people (Peet 1997, Peet *et al.* 1999b). Whilst rotational management will be difficult to achieve, given the resources available to protected area authorities and the huge number of people involved, it is vital to bring the cutting and burning regime under greater control. Experimental work in *Imperata* grassland in Bardiya National Park has indicated that rotational cutting and burning is possible without the loss of thatch grasses from the sward (Peet *et al.* 1999b). The exact role(s) of fire and cutting in succession between different grassland species assemblages is unclear and further research is required. In order to reduce pressure on grasslands inside protected areas, alternatives to grass harvesting should be promoted in communities currently dependent on grassland resources (Peet 1997).

Baral (2001) recommended an experimental approach to community-managed grassland in lowland Nepal. This idea could work along similar lines to that of community forestry already widely practised in the country, but would be maintained exclusively for grasslands, to fulfill the needs of village people for cattle fodder and thatch grasses.

Despite being located inside protected areas, some grasslands continue to suffer degradation and disturbance from grazing livestock. Grassland that

has been degraded by overgrazing can regenerate into fairly high-quality *Saccharum-Imperata* grassland within two years, depending upon the existing composition of grasses (BirdLife International 2004).

Grassland management should seek to maintain the existing diversity of grassland assemblages in protected areas in order to maintain the diversity of threatened taxa dependent on this habitat (Peet *et al.* 1999a). The physical structure of grasslands, together with a complex mosaic of various grass species, are important factors for determining bird diversity (Baral 2001).

The *Imperata* grassland type within the protected areas has become rarer in recent years and this in turn has affected birds and other animals dependent on it. Consideration should therefore be given to maintaining areas of shorter grassland dominated by *Imperata cylindrica* that are currently succeeding to tall grassland or forest (Peet *et al.* 1999b, Baral 2001, Baral *et al.* 2002, Poudyal *et al.* 2008). Saplings of various trees and bushes should be removed from such areas (Peet 1997). Preventing succession to tall grassland is more complex and further research is probably necessary to discover a suitable methodology. The current practices of cutting and burning do not seem sufficient to arrest the succession to taller grasses.

Ploughing has been found to be counterproductive and should be avoided (Peet 1997, Baral 2001). Burning is an important management tool for the conservation of threatened grassland taxa (Baral 2001) and suggestions have been made that it should be carried out before or after the birds' breeding season (Inskipp and Inskipp 1983, Baral *et al.* 2000). The construction of watchtowers in the middle of grassland, and water canals in the drier parts of main Shukla Phanta and unnecessary harassment to birds and other wildlife should be strictly discouraged (Rai 1996, Baral 1997b, Peet 1997, H. S. Baral pers. obs.). Some common predatory mammals such as Golden Jackal *Canis aureus* and Common Mongoose *Herpestes edwardsii* should be controlled to minimise predation of certain species, for example Swamp Francolin (Baral 1998a) and Bengal Florican (Tamang and Baral 2000).

In addition to better management of existing grasslands, the expansion and conservation of

new grassland areas are recommended (Baral 2001, Poudyal *et al.* 2008a,b). The future of the currently highly fragmented population of grassland birds should also be considered. Several of these species are sedentary in nature or show very little movement. Maintaining grassland corridors is vital for these birds. Work such as this may require joint collaboration at the international level (Baral 2001). For example, Shukla Phanta National Park and Lugga Bugga Nature Reserve in India could benefit from a joint initiative. This is important to ensure a diverse gene flow within species.

### *Climate change*

Detailed breeding studies of a wide range of species throughout the mountains would be highly valuable, especially to determine links between breeding success and climate change, as this is still not proven for Himalayan birds. Other useful studies would be to find out whether climate change is reducing the effectiveness of protected areas and if there are any globally threatened or restricted-range species that

now lie outside protected areas' systems (Inskipp, under review).

More long-term monitoring is needed in order to determine mitigation measures that will be necessary to combat the impacts of climate change on birds, which will be vital if we are to conserve Nepal's avifauna in the long term (Inskipp, under review).

### *Invasive alien plants*

Urgent action is needed to try and control the spread of invasive alien plant species, especially *Mikania micrantha* and Water Hyacinth *Eichhornia crassipes*. MoFSC (2014) includes a target for nation-wide survey and research on at least five most problematic invasive alien plant species by 2020, although no individual species are suggested. Another target is the formulation and implementation of a plan for regulating introduction and expansion of invasive alien species of aquatic fauna, by 2018 (MoFSC 2014). This will be invaluable in controlling Water Hyacinth and other invasive alien plants which threaten many waterbirds.





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# APPENDICES

## APPENDIX 1: LIST OF ACRONYMS AND ABBREVIATION

ACAP	Annapurna Conservation Area Project
BCN	Bird Conservation Nepal
BES	Bird Education Society
BLI	BirdLife International
BZ	Buffer Zone
CBD	Convention on Biological Diversity
CF	Community Forest
CHAL	Chitwan Annapurna Landscape
CITES	Convention on International Trade in Endangered Species
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forests
EBA	Endemic Bird Area
FECOFUN	Federation of Community Forest User Groups in Nepal
GEF	Global Environment Facility
GoN	Government of Nepal
HN	Himalayan Nature
IBA	Important Bird and Biodiversity Area
ICIMOD	International Centre for Integrated Mountain Development
IGA	Income-generating activity
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KCAP	Kanchenjunga Conservation Area Project
LCCC	Lumbini Crane Conservation Centre
MAPs	Medicinal and aromatic plants
MoFSC	Ministry of Forests and Soil Conservation
NP	National Park
NTNC	National Trust for Nature Conservation
NTFP	Non Timber Forest Product
PIBA	Potential Important Bird Area
RH	Resources Himalaya
RSPB	Royal Society for the Protection of Birds
TAL	Terai Arc Landscape
TMI	The Mountain Institute
TPF	The Peregrine Fund
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Social and Cultural Organization
WI	Wetlands International
WPA	World Pheasant Association
WR	Wildlife Reserve
WWF	World Wide Fund for Nature
ZSL	Zoological Society of London

## APPENDIX 2: NUMBERS AND PERCENTAGES OF CHARACTERISTIC SPECIES OF BIOMES FOR IBAS AND PIBAS

IBA name	Biome 05	Biome 07	Biome 08	Biome 09	Biome 11	Biome 12
ANCA	11 species 18%	60 species 32%	19 species 11%			
ACA	38 species 62%	102 species 54%	42 species 25%			
BaNPBZ					27 species 34%	
BNPBZ			25 species 15%		36 species 46%	7 species 41%
BDP			20 species 12%		16 species 20%	
CNPBZ			27 species 16%	9 species 19%	37 species 47%	8 species 47%
DDWR			9 species 5%		29 species 37%	
DF			21 species 12%	4 species 9%	24 species 31%	
DHR	18 species 30%	61 species 33%				
GCA	19 species 31%	59 species 32%				
GLA					22 species 28%	
GS			36 species 21%			
KCA	28 species 46%	77 species 39%	24 species 14%			
KN	4 species 6%	43 species 23%	32 species 19%			
KNPBZ	22 species 36%	67 species 36%	25 species 15%			
KTWRKB					36 species 46%	9 species 53%
LNPBZ	32 species 52%	86 species 46%	30 species 17%			
LV	18 species 30%					
MVF		59 species 32%	32 species 19%	5 species 11%	12 species 15%	
MPF			32 species 19%			
MBNPBZ	28 species 46%	91 species 49%	38 species 22%			
MCA	21 species 34%	52 species 28%				
PPF		39 species 21%	32 species 19%			
PNP					26 species 33%	
PMF		58 species 31%	37 species 22%			
RNPBZ	32 species 52%	87 species 47%				
RPF		36 species 19%	32 species 19%			
SNPBZ	31 species 51%	57 species 31%				
SPNPBZ	31 species 51%	67 species 35%				
SNNP		70 species 38%	42 species 23%			
ShNp					39 species 50%	10 species 59%

30% and higher is considered a significant number of characteristic species recorded in the biome according to BirdLife International. However as only 61 Sino-Himalayan subtropical forest species have been recorded in Nepal (36% of the total for the biome), significant numbers in this biome are considered to be 32 or more (18% of the total for the biome).

Where the number of species recorded in a biome is small, these are excluded.

Biome 5 Eurasian High Montane (Alpine and Tibetan)

Biome 7 Sino-Himalayan Temperate

Biome 8 Sino-Himalayan Subtropical Forest

Biome 9 Indochinese Tropical Moist Forest

Biome 11 Indo-Malayan Tropical Dry Zone

Biome 12 Indo-Gangetic plains

ANCA	=	Api Nampa CA
ACA	=	Annapurna CA
BaNPBZ	=	Banke NP and BZ
BFW	=	Barandabhar Forests and Wetlands
BNPBZ	=	Bardiya NP and BZ
CNPBZ	=	Chitwan NP and BZ
DDWR	=	Dang Deukhuri forests and West Rapti wetlands
DF	=	Dharan Forests
DhH	=	Dhorpatan Hunting Reserve
GCA	=	Gaurishankar CA
GLA	=	Ghodaghodi Lake area
GS	=	Gadhi Siraichuli
KB	=	Khandbari-Num
KCA	=	Kanchenjunga CA
KN	=	Khandburi-Num
KNPBZ	=	Khaptad NP and BZ
KTWRKB	=	Koshi Tappu WR and Koshi Barrage
LNPBZ	=	Langtang NP and BZ
LV	=	Limi valley
MFCA	=	Madane Forest Conservation Area
MVF	=	Mai valley forests
MBNPBZ	=	Makalu Barun NPBZ
MCA	=	Manaslu CA
PFCA	=	Panchase Forest Conservation Area
PNP	=	Parsa National Park
PMF	=	Phulchoki Mountain Forest
RNPBZ	=	Rara NP and BZ
RFC	=	Reshunga Forest Conservation Area
SNPBZ	=	Sagarmatha NP and BZ
SPNBZ	=	Shey Phoksundo NP and BZ
SNNP	=	Shivapuri NP and BZ
ShNp	=	Shukla Phanta National Park

## APPENDIX 3: GLOBALLY THREATENED SPECIES RECORDED IN NEPAL

Species name	Globally threatened status	National status	Habitat	Threats in Nepal
Swamp Francolin <i>Ortygornis gularis</i>	VU	Local resident, common at Koshi and Shukla Phanta, no recent records elsewhere; below 250 m	Tall wet grassland and marshes	2
Cheer Pheasant <i>Catreus wallichii</i>	VU	Resident in west, 1445-3050 m; uncommon in and around Dhorpatan Hunting Reserve, scarce elsewhere	Steep craggy slopes with scrub, secondary growth	3, 5
Pink-headed Duck <i>Rhodonessa caryophyllacea</i>	EX	Probably extinct	Pools and marshes in forest	?
Common Pochard <i>Aythya ferina</i>	VU	Locally frequent winter visitor and passage migrant	Lakes and reservoirs	1,5
Baer's Pochard <i>Aythya baeri</i>	CR	Rare and local passage migrant below 915 m, mainly at Koshi	Large rivers and lakes	1,5
Long-tailed Duck <i>Clangula hyemalis</i>	VU	Vagrant	Large rivers and lakes	1
Great Hornbill <i>Buceros bicornis</i>	VU	Rare and local	Mature broadleaved forest 75-250 m	3,5
Rufous-necked Hornbill <i>Aceros nipalensis</i>	VU	Extirpated	Subtropical broadleaved forests with large trees	3
Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	VU	Rare and local resident; 175-350 m	Climax sal and other broadleaved forests	3
Sarus Crane <i>Grus antigone</i>	VU	Uncommon and local resident in western terai, 150-300 m	Cultivation in well-watered country	1, 5, 8
Bengal Florican <i>Houbaropsis bengalensis</i>	CR	Rare and local, probably resident; below 305 m	Tall grasslands with scattered bushes	2, 5
Lesser Florican <i>Sypheotides indicus</i>	EN	Very rare late summer visitor, mainly up to 250 m	Grasslands and cultivation	2, 5
Wood Snipe <i>Gallinago nemoricola</i>	VU	Rare and sparsely distributed summer visitor, possibly also resident; breeds 3650-4520 m (-4900 m), winters 75-3050 m.	Breeds in alpine meadows and dwarf scrub; winters in forest marshes	4
River Tern <i>Sterna aurantia</i>	VU	Rare and very local	Lakes and large rivers 75-610 m	1,7
Black-bellied Tern <i>Sterna acuticauda</i>	EN	Rare and very local visitor; 75-730 m	Lowland rivers	1, 5, 7
Indian Skimmer <i>Rynchops albigollis</i>	EN	Irregular, very rare and very local non-breeding visitor; 75-250 m	Large rivers	1, 5, 7
Pallas's Fish-eagle <i>Haliaeetus leucorhynchus</i>	EN	Very rare and erratic visitor in winter and on passage; mainly 75-305 m (-2745 m on passage)	Large rivers and lakes	1, 6, 7
Egyptian Vulture <i>Neophron percnopterus</i>	EN	Resident, widespread and locally fairly common in west and west-centre, rare in east; 75-2910 m (-3810 m)	Around habitation	4, 5, 7
White-rumped Vulture <i>Gyps bengalensis</i>	CR	Patchily distributed resident; rare and local in centre and east, generally uncommon in west; resident 75-1000 m, summers to 1800 m	Around habitation	4, 5, 7
Slender-billed Vulture <i>Gyps tenuirostris</i>	CR	Local resident; extremely rare in the east, uncommon in the centre, and locally common though generally uncommon west; 350-1525 m	Around habitation	4, 5, 7
Indian Vulture <i>Gyps indicus</i>	CR	Vagrant	Open country	5,7

Red-headed Vulture <i>Sarcogyps calvus</i>	CR	Resident, quite widespread and locally frequent in west; very rare to absent further east; 75-2000 m (-3050 m)	Open country and well-wooded hills near habitation	5, 6? 7
Indian Spotted Eagle <i>Clanga hastata</i>	VU	Rare resident, 75-350 m	Wetlands and well-wooded areas	6?
Greater Spotted Eagle <i>Clanga clanga</i>	VU	Rare winter visitor mainly 75-250 m; passage migrant to 3840 m	Well-wooded areas near large water bodies	6?
Tawny Eagle <i>Aquila rapax</i>	VU	Very rare, possibly resident	Open dry country 75-250 m	6?
Steppe Eagle <i>Aquila nipalensis</i>	EN	Fairly common winter visitor and passage migrant	Wooded hills, open country, lakes and large rivers	6?
Eastern Imperial Eagle <i>Aquila heliaca</i>	VU	Scarce passage migrant and winter visitor 75-1370 m (-3900 m on passage)	Large rivers and lakes	2? 6?
Saker Falcon <i>Falco cherrug</i>	EN	Rare winter visitor and passage migrant; 75-3795 m	Semi-desert and open, dry scrubby areas in mountains	5? 6?
White-bellied Heron <i>Ardea insignis</i>	EN	Extirpated	Rivers in broadleaved foothill forests	3
Lesser Adjutant* <i>Leptoptilos javanicus</i>	VU	Local and resident 75-250 m (-1450 m)	Marshes, pools and wet fields	1, 5, 6?
Greater Adjutant <i>Leptoptilos dubius</i>	EN	Uncertain status, no known records since 1995; formerly very rare, local and erratic visitor 75-250 m	Marshes	1, 5, 6?
Kashmir Flycatcher <i>Ficedula subrubra</i>	VU	Very rare visitor; 150-2135 m	Open broadleaved forest	3?
White-throated Bushchat <i>Saxicola insignis</i>	VU	Very local winter visitor; 75-250 m (-1800 m on passage)	Grassland and tall grasses and reeds along rivers	2
Grey-sided Thrush <i>Turdus feae</i>	VU	Vagrant	Forest	3
Grey-crowned Prinia <i>Prinia cinereocapilla</i>	VU	Local resident; fairly common at Chitwan, rare elsewhere; 150-1065 m	Themeda grasslands in forest clearings and at forest edges	2
Bristled Grassbird <i>Schoenicola striatus</i>	VU	Very local, mainly a summer visitor; 75-250 m	Short grassland with scattered bushes and some tall vegetation	2
Jerdon's Babbler <i>Chrysomma altirostre</i>	VU	Very rare and very local resident; 150-250 m	Reedbeds and tall grassland	1, 2
Slender-billed Babbler <i>Argya longirostris</i>	VU	Very local resident; only found at Chitwan and buffer zone where locally fairly common below 250 m	Tall grass and reeds	2
Black-breasted Parrotbill <i>Paradoxornis flavirostris</i>	VU	Extirpated	Dense thickets of reeds, high grass and bamboo	4
Finn's Weaver <i>Ploceus megarhynchus</i>	EN	Very rare and very local summer visitor and resident, mainly found at Shukla Phanta; 75-150 m	Grassland	2
Yellow-breasted Bunting <i>Emberiza aureola</i>	CR	Local, mainly a passage migrant, small numbers overwinter; 75-1370 m (-3400 m)	Cultivation and grasslands	5, 6

\* Lesser Adjutant *Leptoptilos javanicus* will be downlisted from Vulnerable to Near Threatened when the next IUCN Red List update is released in December 2023.

Species status in Nepal and habitat information are taken from Inskipp *et al.* (2016). Globally threatened species' status are taken from BirdLife International (2023).

#### KEY

CR	Critically Endangered
EN	Endangered
VU	Vulnerable
EX	Extinct

#### THREATS

1. Loss and degradation of wetlands
2. Loss and degradation of lowland grasslands
3. Loss and degradation of forests
4. Other habitat loss and degradation
5. Hunting/Trapping/Poisoning
6. Pesticides
7. Food shortage
8. Development

## APPENDIX 4: NEPAL'S RESTRICTED-RANGE SPECIES

Species name	Nepal status	Habitat	Endemic Bird Area (code)
Cheer Pheasant <i>Catreus wallichii</i>	Local, scarce resident in west, 1450-3050 m	Steep craggy slopes with scrub, secondary growth	Western Himalayas (128)
Kashmir Flycatcher <i>Ficedula subrubra</i>	Very rare passage migrant; 150-2135 m	Open broadleaved forest	Western Himalayas (128)
Kashmir Nuthatch <i>Sitta cashmirensis</i>	Local and fairly common resident in the northwest; 2400-3505 m	Forests in dry areas	Western Himalayas (128)
White-throated Tit <i>Aegithalos niveogularis</i>	Local and fairly common resident in the northwest; 2800-3965 m	Bushes in birch/coniferous forest and high altitude shrubberies	Western Himalayas (128)
Tytler's Leaf Warbler <i>Phylloscopus tytleri</i>	Rare and local passage migrant in the west; 2135-3050 m	Shrubberies at forest edges	Western Himalayas (128)
Yellow-vented Warbler <i>Phylloscopus cantator</i>	Rare and local resident in the east, has bred; 75-1525 m	Breeds in dense, moist broadleaved evergreen forest; winters in more open forest	Eastern Himalayas (130)
Broad-billed Warbler <i>Tickellia hodgsonii</i>	Probably resident, rare and local in the east; 2195-2300m	Bamboo and other undergrowth in broadleaved evergreen forest	Eastern Himalayas (130)
Nepal Cupwing <i>Proeopyga immaculata</i>	Locally common resident; 275 (winter) -2700 m (-3100 m) (summer).	Tall herbage at forest or in open forest near running water; secondary growth and amongst boulders and scrub.	Central Himalayas (129)
Rufous-throated Wren Babbler <i>Spelaeornis caudatus</i>	Very rare and local resident in the east; 2135-2400 m.	Mossy rocks, ferns and fallen trunks in dense broadleaved evergreen forest.	Eastern Himalayas (129)
Blackish-breasted Babbler <i>Stachyris humei</i>	Very rare and local, possibly resident in the east; 500 m.	Dense streamside vegetation in moist broadleaved forest.	Eastern Himalayas (130)
Spiny Babbler <i>Acanthoptila nipalensis</i>	Frequent and fairly widespread endemic resident from west to east; summers 1500-2135m winters 500-1830 m.	Dense scrub on hillsides, especially thicker areas .	Central Himalayas (129)
Hoary-throated Barwing <i>Sibia nipalensis</i>	Locally fairly common and quite widespread resident from west to east; mainly 1980-3000m (1500-3500 m).	Mossy oak-rhododendron forest	Central Himalayas (129)
White-naped Yuhina <i>Yuhina bakeri</i>	Rare and very local resident in the east; 915-2200 m.	Broadleaved evergreen forest	Eastern Himalayas (130)
Black-breasted Parrotbill <i>Paradoxornis flavirostris</i>	Extirpated	Dense thickets of reeds and bamboo.	Assam plains (131)
Spectacled Finch <i>Callacanthus burtoni</i>	Chiefly a very uncommon, erratic and local winter visitor, one summer record, found from east central areas and westwards; 2135-3355 m.	Oak and hemlock forests in winter; rhododendron and fir forests in spring.	Western Himalayas (128)

Species status in Nepal and habitat information is taken from Inskipp *et al.* 2016 Restricted-range species and Endemic Bird Areas from Stattersfield *et al.* (1998).





## APPENDIX 6: SUMMARY DATA FOR 42 IBAS IN NEPAL

Site Code	Site name	Area (ha)	Mean altitude (m)	Habitats	Biomes	IBA Categories	EBA	PA	Threats
NP01	Annapurna Conservation Area	762,900	4,440	SM, SD, LT, UT, S, B, A, T, W	SSF, STF, EHM	T, R, B	WH, CH	Y	C, CA, DF, H, OG, PC, RB, T
NP02	Api Nampa Conservation Area	190,300	3,825	SD, LT, UT, S, A	STF, EHM	T, R, B	WH	Y	C, CA, DF, H, OG
NP03	Argha	15,592	1,046	SD		T		N	CA, D, DF, PC
NP04	Banke National Park and Buffer Zone	89,300	700	TD, SD, G	ITD, IGP	T, B		Y	C? CA, D, DF, DV, GM, H, PC
NP05	Bardiya National Park and Buffer Zone	129,500	795	W, G, TD, SD	ITD, SSF, IGP	T, B		Y	C? CA, D, DF, DV, GM, H, OG, PC, T
NP06	Barekot	82,922	1,519	SD		T		N	CA, DF, H, PC
NP07	Chitwan National Park and Buffer Zone	178,600	457	W, G, TD, TM, TE, SD	IGP, ITM, ITD, SSF	T, B, C		Y	C? CA, DV, GM, IS, OF, PC, PO, T
NP08	Dang Deukhuri foothill forests and west Rapti wetlands	150,000	550	W, TD, SD	IGP, ITD, SSF	T, B		N	C? CA, D, DF, DV, H, OG, PC
NP09	Devdaha	12,457	107	TD		T		N	CA, DF, H, PC
NP 10	Dhanushdham Protected Forest and Associated Farmlands	18,024	128.5	FW, TD		T		N	DFH
NP11	Dharan Forests	50,000	500	TM, TD, TE, SM, SD	ITM, ITD, SSF	T, R? B, C	CH, EH	N	DR, OG, RB, PC, H
NP12	Dhorpatan Hunting Reserve	132,500	4,623	UT, S, A, W	STF, EHM	T, R, B	CH, WH	Y	C, CA, DF, H, OG, PO
NP13	Gadhi Siraichuli	3,000	1,419	SM	SSF	T, R, B	CH	N	DF, H, DV
NP14	Gaurishankar Conservation Area	217,900	3,150	SD, SM, LT, UT, S, A	SSF, STF, EHM	R? B	CH	Y	C, CA, DF, DV, H, OG
NP15	Ghodaghodi Lake Area	2,726	225	W, TD	ITD	T		N	D, DF, DR, DV, H, OG, PC
NP16	Jagdishpur Reservoir/Lumbini Farmlands	141,592	657	W, TD, F	IGP, ITD	T, C		N	CA, D, DF, DR, DV, H, OF?PC, PO, IS
NP 17	Janakinagar-Murtiya Forest and Associated Farmlands	9,600	114	FW, G, TD, TM		T, C		N	DFH
NP18	Kancherjunga Conservation Area	203,500	4,883	SM, LT, UT, S, B, A	STF, SSF, EHM	T? R, B	CH	Y	C? CA, DF, H, OG, RB
NP19	Kapilvastu	52,639	104	TD		T		N	CA, D, DF, PC
NP20	Khandbari-Num	45,000	1,500	SM, LT UP	SSF, STF	T? R, B	CH, EH	N	CA, D, DF, H, OG, RB

NP21	Khaptad National Park and Buffer Zone	44,100	2,350	G, SM, SD, LT, UT	SSF, STF, EHM	T, R, B	CH	Y	C, CA, D, DF, H, IS, OG,
NP22	Khutiya	3,418	198	TD		T		N	CA, D, DF, PC
NP 23	Kohalbi and Baragadi	18,000	205	F		T,C		N	
NP24	Koshi Tappu Wildlife Reserve and Koshi Barrage	38,350	78	W, G, TD	IGP, ITD	T, B		Y	C, CA, DF, DR, H, IS, OF, OG, HD, PC, PO
NP25	Langtang National Park and Buffer Zone	213,000	4,272	SM, SD, LT, UT, S, B, A, W	SSF, STF, EHM	T, R, B	CH	Y	C, CA, DF, H, OG, PC, RB, T
NP26	Limi valley	120,088	4,350	UT, A, T	EHM	T? B		N	C? CA, D, DV, H
NP 27	Madane Forest Conservation Area	13,761	1816	SD, LT, F, W, G	SSF, STF	T, R, B	CH	N	CA, H, D, DV
NP28	Mai valley forests	30,000	1,560	TM, TD, TE, SM, LT, UT, B	ITM, ITD, SSF, STF	R, B	CH, EH	N	DF, OG, RB, PC, H
NP29	Makalu Barun National Park and Buffer Zone	233,000	4,449	SM, LT, UT, S, A	SSF, STF, EHM	T, R, B	CH, EH	Y	C, CA, DF, H, OG, RB, T
NP30	Manaslu Conservation Area	166,300	4,701	SD, SM, LT, UT, S, A	SSF, STF, EHM	B		Y	C, CA, DF, H, OG
NP 31	Morang Farmlands	62,000	100	F, TD		T, C		N	CA, DFH
NP32	Panchase Forest Conservation Area	5,776	1,983	SD, LT, UT	SSF, STF	T? R, B	CH	Y	C, CA, DF, H, OG
NP33	Parisa National Park	90,800	565	TD, SD	ITD	T, B		Y	CA, D, DV, H, IS, OG
NP34	Phulchoki Mountain Forest	4,296	1,600	SM, LT, UT	SSF, STF	T, R, B	CH	N	D, DF, H, OG, RB
NP35	Rampur Valley	3,000	400	F, TD	ITD	T		N	D, DF, DV, PC
NP36	Rara National Park and Buffer Zone	30,400	2,943	UT, S, A, W	STF, EHM	T, R, B	WH	Y	C, CA, D, DF, H, OG
NP37	Reshunga Forest	3,400	1,565	SD, LT	SSF, STF	T, R, B	CH	N	CA, D, DF, DV, OG
NP38	Sagarmatha National Park and Buffer Zone	169,800	5,846	UT, S, A	STF, EHM	B		Y	C, CA, D, DF, DV, H, OG, RB, T
NP39	Shey-Phoksundo National Park	490,400	4,541	UT, S, A, T	STF, EHM	R, B	WH	Y	C, CA, DF, H, OG
NP40	Shivapuri Nagarjun National Park and Buffer Zone	15,900	1,866	SD, LT, UT	SSF, STF	T, R, B	CH	Y	CA, D, DF, DV, H, OG
NP41	Shukla Phanta National Park	54,850	375	W, G, TD, SD	IGP, ITD, SSF,	T, B		Y	CA, DF, GM, H, IS, OG, PC
NP42	Triyuga Watershed	?	181	TM, F		T, C		N	CA, DF, H, PC

**Biomes:**

IGP	Indo-Gangetic Plain
ITM	Indochinese Tropical Moist Forest
ITD	Indo-Malayan Tropical dry zone
SSF	Sino-Himalayan Subtropical forest
STF	Sino-Himalayan Temperate forest
EHM	Eurasian high montane

**Habitats:**

G	Grasslands (except high altitude steppe grasslands)
W	Wetlands
F	Farmland in lowlands
TM	Tropical moist forest
TD	Tropical dry forest
TE	Tropical evergreen forest
SM	Subtropical moist broadleaved forest
SD	Subtropical dry broadleaved and coniferous forests
LT	Lower temperate forest
UT	Upper temperate forest
S	Subalpine forest
B	Habitat rich in bamboo stands
A	Alpine habitats - shrubberies, grassland, rock
T	Tibetan steppe – shrubberies, grasslands, rock

**IBA Categories:**

T	Globally threatened species
R	Restricted-range species
B	Biome-restricted species
C	Congregations

**EBA:**

WH	Western Himalayas
EH	Eastern Himalayas
CH	Central Himalayas
AP	Assam Plains

**PA:**

N	Entirely or largely outside a protected area
Y	Entirely or largely within a protected area

**Threats:**

DF	Forest loss and deterioration, and removal of forest products
RB	Removal of bamboo
OG	Overgrazing
HD	Hydroelectric dam construction
DR	Wetland drainage
PO	Wetland pollution
PC	Pesticides and/or other chemicals
DV	Development including roads, industry, urban development
GM	Poor grassland management
H	Hunting
OF	Overfishing
IS	Introduced species
T	Tourism
C	Climate change
D	Disturbance
CA	Lack of conservation awareness



Spot-bellied Eagle-Owl © Umang Jung Thapa



















## APPENDIX 8: IBAS AND ONE POTENTIAL IBA IDENTIFIED IN THE FIRST NEPAL IBAS ASSESSMENT WHICH NO LONGER QUALIFY

### **Nawalparasi**

**Status:** Unprotected

**Altitude:** 350 m

**Area:** 4,000ha

Nawalparasi district of Lumbini Zone

#### **Site description**

The Nawalparasi forests lie between Bardghat and Sunwal at the base of the Siwalik hills of Nawalparasi district in south-central Nepal. This area is largely used for agriculture and almost all of the southern part is intensively farmed. Natural and semi-natural forests remain towards the north, along the northern section of the East-West highway. These forests are managed by local communities, as community forest.

The forest is mainly Sal *Shorea robusta* with Saj *Terminalia tomentosa* as the co-dominant species. In degraded areas, there are Sissoo *Dalbergia sissoo* plantations. Agriculture forms a significant part of the landscape.

Nawalparasi was identified as an IBA because of its important nesting colony of White-rumped Vultures *Gyps bengalensis*.

#### **Birds**

A total of 71 nests of White-rumped Vulture was counted here during the 2002-03 breeding season, of these 23 nests were successful in raising young (Baral *et al.* 2003). A total of 22 nests was counted during the 2008/08 breeding season (BCN data). However, numbers have declined and in 2013/14 there were 1 nest and only two nests in 2016/17 (BCN data). In 2009/10 there was also one nest of Slender-billed Vulture *Gyps tenuirostris* (BCN data). As the number of nests has significantly declined and after 2017 no nest of the vulture has been recorded, the site is no longer considered to qualify as an IBA.

#### **Conservation issues and management**

The forests where vultures nest are in community forest primarily managed by local communities under agreement with DoFSC. Communities managing the forests are not aware of the significance of the nesting vultures. Tree-felling, disturbance during the breeding season, other harmful NSAIDs, forest fire, unintentional poisoning, and limited vulture conservation awareness threaten the nesting vultures or their habitat (BCN).

## Urlabari Forest Grove

**Status:** Unprotected

**Altitude:** 75m

**Area:** 100ha

26°39'N 87°36'E, Morang district of Koshi Zone

**Categories:** Globally threatened species, congregations

### Site description

Urlabari Grove lies on the south side of the East West Highway on the eastern edge of Morang district. The grove consists of a few tall and mature Karam *Adina cordifolia* trees spread over an area of 100 ha.

In the 2004 IBA assessment the site has been identified as an IBA because of its important Lesser Adjutant *Leptoptilos javanicus* nesting colony.

### Birds

Globally threatened species	Threat status	Status and habitat
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	Nesting colony in a few mature tall trees

A total of 31 nests with 56 young and an estimated population of 62 adults were counted here in the 2003/2004 breeding season (Baral 2004). The number of 118 adults and young totals more than 2% of the current global population estimate (Wetlands International 2002). This site therefore qualified under the 1% global population criterion as an IBA. However nine nests and 45 birds were recorded in January 2014 in the Asian Waterbird Count (H. S. Baral *in litt.* to C. Inskipp 20 May 2015) and ten nests were located at the site during a visit in October or November 2014 (Ian Barber *in litt.* to C. Inskipp 21 April 2015). Some of the storks had moved to another nesting site (Jyotendra Jyu Thakuri). Considering the changed nature of the site, current threats and the reduction in Lesser Adjutant nesting numbers and that some of the storks have moved to another site) Urlabari the site is no longer considered to qualify as an IBA.

### Other wildlife

No other notable wildlife has been listed for this area.

### Conservation issues and management

Ownership of forests lies with the community. A 2011 assessment of Urlabari as an IBA found that urbanisation and especially a plan to build a hospital within the area would destroy the stork's two most important nesting places. Road building and pesticides were other threats to the colony (Sapkota 2011). BCN has carried out some conservation awareness work with local communities near the site.

## **Bagmati Valley (former Potential IBA)**

**Status:** Unprotected

**Altitude:** 900-2500m

**Area:** Unknown

27°40'N/85°15'E Kathmandu district of Bagmati Zone and Makawanpur district of Narayani Zone

**Categories:** Restricted-range species? Eurasian high montane biome species, Sino-Himalayan temperate forest biome species, Sino-Himalayan subtropical forest biome species?

### **Site description**

A sizeable forest once existed in the northern part of Makawanpur and southern part of Kathmandu districts. The importance of this forest was first noted by Inskipp and Inskipp (1986). In 1992 a survey was made of one portion, Chitlang forest, by Bird Conservation Nepal which reported deforestation and fodder collection as major threats to the area (Manandhar *et al.* 1992). However, the forest is now reduced to remnant forest patches and agricultural lands with some trees (Thakuri and Thapa 2009a,b).

### **Birds**

In recent years three bird surveys have partly covered the Bagmati valley (see below) but the valley is still under-recorded in winter. A total of 112 bird species was recorded from the corridor of the Bagmati and its major tributaries (the Manohara, Bishumati and Dhobikhola), between 30 July and 8 August 2008 (Thakuri and Thapa 2009a,b). An additional 42 species were recorded on 10 and 11 July 2012 and September 2013 (Baral *et al.* 2012, Baral *et al.* 2013) making a total of 157 species. Species characteristic of the Sino-Himalayan subtropical forest, Indochinese Tropical Moist Forest and Indo-Malayan tropical dry zone biomes were recorded, but not in significant numbers, (see Appendix 2). No globally threatened or restricted-range species were recorded.

### **Other wildlife**

No recent information is available.

### **Conservation issues and management**

Thakuri and Thapa (2009a,b) commented that the Bagmati River is perhaps the most polluted river of the Kathmandu Valley and the entire country and that pollution as well as unplanned urbanization have severely impacted the birdlife that depend on riparian and river habitats.

The Bagmati valley was considered a Potential Important Bird Area in the first assessment of Nepal's Important Bird Areas, but the surveys carried out subsequently (Thapa and Thakuri 2009a,b, Baral *et al.* 2012, 2013) indicate that it no longer qualifies in this category.



Baya Weaver © Deepak Budathoki







## Bird Conservation Nepal (BCN)

Established in 1982, BCN is the leading organisation in Nepal, focusing on the conservation of birds, their habitats and sites. It seeks to promote interest in birds amongst the general public, encourage research on birds and identify major threats to birds' continued survival. As a result, we are the foremost scientific authority providing accurate information on birds and their habitats throughout Nepal. We provide scientific data and expertise on birds for the Government of Nepal through the Department of National Parks and Wildlife Conservation (DNPWC) and work closely in birds and biodiversity conservation throughout the country.

BCN is a membership based organisation with a executive council, patrons, life members, friends of BCN and several supporters. Our membership provides strength to the society and is drawn from people of all walks of life from students, professionals and conservationists. Our members act collectively to set the organisation's strategic agenda. We are committed to showing the value of birds and their special relationship with people. As such, we strongly advocate the need for peoples' participation as future stewards to attain long-term conservation goals. As the Nepalese Partner of BirdLife International, a network of 120 organisations around the world, BCN also works on a worldwide agenda to conserve the world's birds and their habitats.



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