

## Protected Areas of Nepal

Nepal crossed the threshold into the modern history of biodiversity conservation with the enactment of the National Parks and Wildlife Conservation Act 1973. Clause 3 of this Act empowers the Government of Nepal to establish protected areas such as strict nature reserves, national parks, wildlife reserves, hunting reserves, conservation areas, and buffer zones within four boundaries in any part of the country through gazette notification. The Act also allows the government to withdraw from the protected areas and to hand over ownership or modify the boundaries through similar notifications. At present, the protected areas in Nepal include nine national parks, three wildlife reserves, one heritage reserve, three conservation areas, and 11 buffer zones covering a total area of 28,959.67 km<sup>2</sup>. Altogether these areas constitute 19.67% of the country's land area. Following are the profiles of these protected areas.

### Khaptad National Park Background

#### Area

Khaptad National Park (225 km<sup>2</sup>) and buffer zone (216 km<sup>2</sup>)

Site code: 7953

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	29° 16' 12"	29° 27' 36"	80° 59' 24"	81° 13' 48"	1,400	3,300
BZ	-	-	-	-	900	2,700

NP= national park; BZ= buffer zone

#### History

Established in 1984 on the advice of the region's remarkable holy man, Khaptad Baba; declared a buffer zone in 2006

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Khaptad National Park Regulations 1988  
Buffer Zone Regulations 1996

#### IUCN management category

National Park II, and buffer zone VI

#### Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Lower Sub-Alpine	3001 to 3500	High Mountains
Upper Temperate	2501 to 3000	Mid-hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	

Sources: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Biological aspects cover species and habitat including ecosystem description, conservation and management.

- The landscape consists of 22 'Patans' (moorland), steep slopes, and streams
- In the north-eastern part of the park is a lake called Khaptad Daha
- Five hundred and sixty-seven species of flora have been recorded from the Park (BPP 1995)
- Two hundred and ninety-five vascular plants, six pteridophytes, eight gymnosperms, 238 dicots, and 43 monocots have also been recorded (**Annex 1.9.1**), and four flowering

Ecosystem Type	NBRB 2006
<b>Eight types of ecosystems</b> 3201 Lower sub-alpine mesophytic Fir forest 4001 Mesophytic montane oak-rhododendron 4003 Mixed hygrophytic oak-hemlock-fir 5002 Collinean pak forest 5004 Mixed oaks-laurel forest 6101 Mixed Chir Pine-oak forest 6201 Chir Pine forest with grasses and <i>Engelhardtia</i> 6203 <i>Alnus nepalensis</i> riverine* forest	<b>Six types of vegetation</b> 3221 Fir - Oak-Rhododendron 4122 West Himalayan Fir-Hemlock-Oak forest 4134 Mountain Oak-Rhododendron forest 4231 Lower Temperate Oak forest 5011 Chir Pine forest 5021 Chir Pine Rhododendron Forest
*listed as riverain forest in the original BPP document Sources: BPP 1995, TISC MAPs for NBRB	

endemic plant species (Shrestha and Joshi 1996)

- Twenty-one species of mammals and 266 species of birds have been recorded from the Park (CEDA 2003); current checklists include 23 mammals, 287 birds, and 23 herpeto species (**Annex 2.11**)
- Eleven species of mammals found in the park are protected by CITES
- Two species of mammals and two bird species are protected under Appendix I of the National Parks and Wildlife Conservation Act 1973
- The mammal species symbolic of the park are the common leopard (*Panthera pardus*), Himalayan black bear (*Selenarctos thibetanus*), wild dog (*Cuon alpinus*), and musk deer (*Moschus chrysogaster*)
- Bird species symbolic of the park include the Impeyan pheasant, Peregrine falcon, and White rumped vulture
- The renowned Khaptad Baba Ashram, a religious site where Hindu pilgrims come to worship Shiva on the full moon of July-August each year, is located near the Park



A musk deer (*Moschus chrysogaster*) found at Khaptad National Park

headquarters; many pilgrims also visit the Park during the Ganga Dashahara festival on Jestha Purnima (the full moon of mid-June or July)

- Sahashra Linga is another religious site situated at the highest point (3200m) of the Park
- The Tribeni confluence of three rivers and a Shiva temple are near the Park
- Other religious places in the Park include a Ganesh temple, 'Nagdhunga' (cobra-like stone), and Kedardhunga; these areas are revered for meditation and tranquility, and prohibit intrusions on nature, and sale or use of tobacco products, alcohol, and animal sacrifice
- Checklists of the fauna are presented in **Annex 2.11**

## Achievements

The major achievements of Khaptad National Park (KNP) are:

- A separate KNP regulation formulated in 1987
- Declaration of a KNP buffer zone in 2006, and activation of a buffer zone management committee, user committee, and user group
- Consolidation of the Park People Programme (PPP) through immediate initiation of the Participatory Conservation Programme following the PPP Project phase-out (DNPWC/PCP, 2002)
- Commitment to park ethics: five people involved in illegal activities have been arrested in 2000-2001 (DNPWC, 2003a)
- Preparation of a park management strategy framework and management plan
- Inclusion in Nepal Tourism Board's national tourism destination list

## Bardia National Park

### Background

#### Area

Bardia National Park (968 km<sup>2</sup>) and buffer zone (328 km<sup>2</sup>)

Site codes: 1308 (Park) 303303 (buffer zone) (DNPWC 2001)

#### Location

Co ordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	28° 16' 12"	28° 40' 12"	81° 13' 12"	81° 42' 36"	152	1441
BZ	-	-	-	-	-	-

NP= national park; BZ= buffer zone

The districts of Bardia and Banke encompassing 17 VDCs in the buffer zone (DNPWC, 2001), and a proposed buffer zone extension in Surkhet (**Annex 3**)

#### History

Established in 1976 as a wildlife reserve, later extended and declared a national park in 1988 (DNPWC 2001)

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

National Trust for Nature Conservation Act 1982

Buffer Zone Regulations 1996

Royal Bardia National Park Regulations 1997

Elephant Management Regulations 1966

#### IUCN management category

National Park II and Buffer Zone VI

### Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic Zone	Altitude (metre)	Physio-graphic Zone
Upper Tropical	501 to 1000 (~1441)	Siwaliks
Lower Tropical	Below 500	Terai

Sources: Dobremez 1972, LRMP 1986

The area's forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Biological aspects cover species and habitat including ecosystem description, conservation and management.

- Landscape consists of the Karnali floodplain, the Babai River Valley, and Siwaliks, with the highest peak of Sukarmala (1441m)
- Eight hundred and thirty-nine species of flora are estimated in the Park (BPP 1995)
- One hundred and seventy-three vascular plants recorded in the Park: six pteridophytes, one gymnosperms, 140 dicots, and 26 monocots (**Annex 1.9.2**)
- Fifty three species of mammals, 400 species of birds, 25 species of reptiles/amphibians, and 125 species of fish have been recorded from the Park (DNPWC, 2001)
- Current checklists include species of 59 mammals, 407 birds, 52 herpeto, and 124 fish (**Annex 2.12**)
- Twenty-two species of mammals found in BNP are protected by CITES
- Thirteen species of mammals, five species of birds, and three species of reptiles are endangered and protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of BNP are the Royal Bengal tiger (*Panthera tigris*), Asian elephant (*Elephas maximus*), and Black buck (*Antelope cervicapra*)
- Bird species symbolic of BNP include the Bengal florican (*Houbaropsis bengalensis*), white sumpted vulture (*Gyps africanus*), peacock (*Pavo cristatus*, *Pavo muticus*), and the bar-headed geese (*Anser indicus*)



A cub leopard (*Panthera pardus*) found in Bardia National Park

U R Bhujju



Ecosystem Type	NBRB 2006
<b>Seven types of ecosystems</b>	<b>Three types of vegetation</b>
6104 Upper Siwaliks Chir Pine-Oak forest	5011 Chir Pine forest
6205 Siwaliks Chir Pine-Oak forest	6131 Hill Sal forest
7101 Tropical hill Sal forest in inner valleys	6231 Lower Tropical Sal and Mixed broad-leaved forest
7201 Terai tropical Sal forest	
7202 Khair-Sissoo scrub and riverine forest	
7205 Bhabar light Sal forest	
9002 Terai cultivated land	

Sources: BPP 1995, TISC maps 2002

## Achievements

The major achievements of Bardia National Park include the following.

- A buffer zone area of 327 km<sup>2</sup> was declared in 1996 (DNPWC 2001f)
- Extension of the park by an additional area of 893 km<sup>2</sup> has been proposed in line with 'Gift to the Earth' project
- Habitat management activities such as uprooting of inedible vegetation, seasonal cutting and burning of tall grasses, and construction of and traffic control mechanism at water holes have been adopted
- The Park has the second largest recorded population of rhinos in Nepal (DNPWC 2001)
- Anti-poaching activities have been conducted successfully
- Remarkable increase in the Black buck population at Khairapur to 177 during the early 1990s; currently, there are over 100 animals
- Fifty-eight rhinos were released in two separate sites (the Karnali floodplains and Babai Valley); the rhino population in the Park has multiplied to 73 and has established permanent residency (DNPWC 2001)
- Implementation of separate action plans for the rhino, tiger, and domestic elephant
- Enactment of a separate regulation for Bardia National Park
- Preparation of a park management strategy framework and tourism plan and buffer zone management plan (DNPWC 2001)
- Successful coordination with various donors such as WWF, CARE, NORAD, and UNDP for the implementation of several park and conservation projects
- Park researches since 1999 included studies on the nilgai (*Boselaphus tragocamelus*), gharial (*Gavialis gangeticus*), dolphin disambiguation, black buck ecology, fisheries, ethnobotany, forest resources sustainability, agroforestry, corridor mapping, corridor socioeconomy, and Parks and People Project impact (DNPWC/PCP 2002)
- 2,137 households over an area of 1,581.6 ha have benefited from seven agroforestry plots in the Park over a period of three years from May 2000 to April 2003
- Establishment of a park community health center at Thakurdwara



Yarcha gumbu (*Cordyceps sinensis*), a plant-animal combination unique to the Himalayan region and reputed to possess remarkable medicinal qualities (Photo taken from Dolpa, 428m)

- 14% per annum increase in the number of tourists visiting the Park
- Commitment to wildlife and park ethics: action has been taken against 23 poachers and illegal dealers between 2002 and 2003 (DNPWC 2002a)
- Establishment of endowment funds including the 'Rahat Kosh' (Relief Fund), 'Apatkalin Kosh' (Emergency Fund), and 'Chetipurti Kosh' (Compensation Fund) to compensate for injuries and loss of life, livestock depredation, and damage to property by wild animals (DNPWC 2001f)
- Proposal to extend the Park area in order to meet the 'Gift to the Earth' criteria
- Recognition of the Park as a major player in the Tiger Conservation Landscape given by the Global Tiger Forum

## Rara National Park Background

### Area

Rara National Park (106 km<sup>2</sup>) and buffer zone (198 km<sup>2</sup>)

Site code: 806 (HMGN/MFSC, 2002)

### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	29° 25' 48''	29° 33' 00''	81° 00' 00''	82° 09' 00''	1800	4039
BZ	-	-	-	-	-	-

NP= national park; BZ= buffer zone

Districts of Mugu and Jumla encompassing nine VDCs (DNPWC 2001) (**Annex 3**)

### History

Established in 1976; the smallest national park in Nepal (DNPWC 2001); Declaration of a buffer zone in the Park in 2006

### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Himalayan National Parks Regulations 1980  
Buffer Zone Regulations 1996

### IUCN management category

National Park II, and Buffer zone VI

## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic Zone	Altitude (metre)	Physio-graphic Zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-alpine	3501 to 4000	
Lower Sub-alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-hills
Lower Temperate	2001 to 2500	
Upper Sub-tropical	1501 to 2000	

Sources: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Biological aspects cover species and habitat, including ecosystem description, conservation and management:

- Rara Lake (2990m), Nepal's biggest lake (167m deep, 10.8km<sup>2</sup> long) is the main feature of the Park; the lake is oval-shaped with an east-west axis; maximum length 5 km, and width 3 km; drains into the Mugu-Karnali River via Nijar Khola
- Chuchemara peak (4039m), the highest point in the park, is located on the southern side of the lake and provides an excellent backdrop to Lake Rara
- Two other major peaks, Ruma Kand (3731m), and Malika Kand (3444m), are located on the northern side of the lake and provide added view
- Mammal species symbolic of the Park are the Snow leopard (*Uncia uncia*); musk deer (*Moschus chrysogaster*) and Red panda (*Ailurus fulgens*)
- Rhododendron, fir, oak, and birch species are found in the sub-alpine region
- One thousand and seventy species of flora are estimated from the Park (BPP 1995), 16 are endemic flowering plants (HMGN/MFSC 2002), 88 vascular plants: 10 gymnosperms, 64 dicots, and 14 monocots (**Annex 1.9.3**)
- Fifty-one species of mammals, 214 species of birds, two species of reptiles/amphibians, and three species of fish have been recorded from the Park (BPP 1995)
- Current checklists include species of 51 mammals, 241 birds, two herpeto (reptile amphibians), and three fish species (**Annex 2.13**)
- Twenty-six species of mammals found in the Park are protected by CITES (**Annex 2.13**)

Ecosystem Type	NBRB 2006
<b>11 types of ecosystems</b> 2104 Mesophytic & hydrophytic mat patches and vegetation on rocks* 3102 Upper sub-alpine Rhododendron-Birch forest 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) forest 4002 Mixed Blue Pine-Oak 4004 Open and dry montane Blue Pine 4005 Blue Pine-Spruce forest 4006 Juniper forest 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 5010 Deciduous broadleaved forest ( <i>Alnus</i> , <i>Juglans</i> ) 6203 <i>Alnus nepalensis</i> riverain forest 9900 Water bodies	<b>10 types of vegetation</b> 2231 Moist Alpine Scrub 3131 Birch-Rhododendron forest 3211 Fir forest 3231 Sub-alpine Mountain Oak forest 4111 Upper Temperate Blue Pine forest 4114 Spruce forest 4213 Cypress forest 4231 Lower Temperate Oak forest 4234 Deciduous Walnut-Maple-Alder forest 5021 Chir Pine – Broadleaved Forest
*veg. rocks in the original BPP document Sources: BPP 1995, TISC maps 2001	

- Eight species of mammals and two species of birds are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of RNP are the snow leopard (*Uncia uncia*), musk deer (*Moschus chrysogaster*), red panda (*Ailurus fulgens*), and Himalayan black bear (*Ursus selenarctos thibetanus*)
- Bird species symbolic of RNP are the Impeyan pheasant (*Lophophorus impejanus*), Cheer pheasant, Koklas pheasant, White crested kalij pheasant (*Lophura leucomelanos*) and Chukor partridge (*Alectoris chukar*)
- Of the six endemic fish species found in Nepal, three species of 'Asala' (snow trout) are recorded only in Rara National Park; they are *Schizothorax macrophthalmus*, *Schizothorax nepalensis* and *Schizothorax raraensis*

## Achievements

The major achievements of RNP are:

- Declaration of 158 km<sup>2</sup> buffer zone in 2006
- Consolidation of successful programmes: Parks and People Project has continued activities through the Participatory Conservation Programme in the buffer zone and in the Park
- Operation of the airport at Talcha
- Reduction in crop damage by wild boars through construction of 5 km stonewall
- RNP has been selected as an eco-tourism destination
- Development of a trail along Rara Lake for tourism promotion and patrolling
- Significant increase in the population of symbolic species
- Introduction of boating facilities in the lake
- Preparation of the park management strategy framework

## Shey Phoksundo National Park Background

### Area

Shey-Phoksundo National Park (3,555 km<sup>2</sup>) and buffer zone (1,349 km<sup>2</sup>)

Site code: 7952 Site code: 313457  
(DNPWC, 2002a)

### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	28° 58' 12"	29° 46' 12"	82° 29' 24"	83° 08' 24"	2,130	6,883
BZ	-	-	-	-	-	-

NP= national park; BZ= buffer zone

Districts of Mugu and Dolpa encompassing 11 VDCs, with a few VDCs inside the Park area (DNPWC 2003) (**Annex 3**).

### History

Established in 1984; the biggest national park representing the Trans-Himalayan ecosystem; declaration of a buffer zone in the Park in 1998 (DNPWC 2003a).

### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Mountaineering Expedition Regulations 1979  
Himalayan National Parks Regulations 1980

Buffer Zone Regulations 1996

### IUCN management category

National Park II, and Buffer zone VI

## Significance

The physiographic aspects of the protected area are as follows:

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Sources: Dobremez 1972, LRMP 1986		

The forest ecosystems and vegetation types are as follows (Annex 1.1):

Ecosystem Type	NBRB 2006
<b>21 types of ecosystems</b> 1000 glaciers, snow and rock 2102 Xerophytic mat patches vegetation on rocks 2201 Rhododendron mesohygrophytic scrublands 2204 Xerophytic closed alpine mat and scrub 3102 Upper sub-alpine Rododendron-Birch forest 3103 Upper sub-alpine Birch Blue-Pine open forest 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest 4004 Open and dry montane Blue Pine 4006 Juniper forest 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 5001 Cypress forest with Dwarf Barberry 5006 Cedar forest 5009 <i>Aesculus</i> , <i>Juglans</i> riverain forest 6201 Chir Pine forest with grass and <i>Engelhardtia</i> 6207 Grasses- <i>Artemisia</i> steppe 8001 High altitude cushion plant formation 8003 <i>Caragana gerardiana</i> , <i>Lonicera spinosa</i> steppe 8004 <i>Caragana brevispina</i> , <i>Artemesia</i> steppe 8005 <i>Caragana pygmaea</i> , <i>Lonicera spinosa</i> xerophile steppe 8006 <i>Myricaria-Hippophae-Salix</i> riverain thickets 9900 Water bodies Sources: BPP 1995, TISC maps 2001	<b>10 types of vegetation</b> 2211 Dry Alpine Scrub 2231 Moist Alpine Scrub 3001 Trans-Himalayan Steppe 3002 Trans Himalayan Lower <i>Caragana</i> Steppe 3003 Trans Himalayan High Alpine vegetation 3231 Sub-alpine Mountain Oak forest 4111 Upper Temperate Blue Pine forest 4114 Spruce forest 4212 Cedar forest 4213 Cypress forest

Biological aspects cover species and habitat, including ecosystem description, conservation, and management:

- The landscape of this largest park in Nepal consists of the Trans-Himalayan landscape, Phoksundo high altitude lake, alpine meadows, forests and rivers
- Elevation in the Park ranges from 2130m in Ankhe to 6883m at the summit of Kanjiroba Himal
- Much of the Park lies to the north of the Himalayan crest, Nepal's deepest and second largest lake, Phoksundo Lake, famous for its magnificent turquoise color and spectacular scenery, lies in the upper regions of Suligad and makes the Park among the most scenic mountain parks in the world; Ringmo village,

a typical Tibetan village, is also scenically nestled in the area

- Many beautiful glaciers can be found near and above the lake area
- The country's highest waterfall is near the lake outlet
- The Park's major rivers include the Khung, Nmajung, and Panjang rivers; the Suligad and Jugdual rivers which are the major tributaries of Thuli Bheri and Langu rivers, drains the high Dolpo Plateau to the east and flows westward
- One thousand five hundred and seventy-nine species of flora are estimated present in the Park (BPP 1995)

- One hundred and seventy-four vascular plants have also been recorded: seven gymnosperms, 150 dicots, and 17 monocots (Annex 1.9.4)
- Thirty-two species of mammals, 200 species of birds, and six species of reptile/amphibians have been recorded from the Park (Regmi 2003)
- Current checklists include species of 35 mammals, 208 birds, and three herpeto reptile amphibians (Annex 2.14)
- Nineteen species of mammals found in the Park are protected by CITES
- Ten species of mammals, and two species of birds are classified as endangered and protected under Appendix I of NPWC Act 1973





Phoksundo Lake, Dolpa

- Thirty endemic species of flowering plants have been recorded from the Park (Shrestha and Joshi 1996)
- The Park supports prime habitat for the highest number of Snow leopard (*Uncia uncia*), Tibetan wolf (*Canis lupus*), Musk deer (*Moschus chrysogaster*), and Blue sheep (Regmi, 2003)
- The Park harbours one of the highest number of rare, endangered, endemic, and medicinal plants in Nepal (Regmi 2003)
- Mammal species symbolic of SPNP are the Snow leopard (*Uncia uncia*), Blue sheep (*Pseudois schaeferi*), Musk deer (*Moschus chrysogaster*), wild dog (*Lycaon pictus*), and Tibetan wolf (*Canis lupus*)
- Bird species symbolic of the Park are the Himalayan griffon, White breasted deeper, Monal pheasant, and Cheer pheasant
- The park contains many 'gombas' (monasteries) and religious sites. The famous Shey Gompa was established in the 11th Century. Thashung Gompa located near Phoksundo Lake was built 900 years before to conserve wildlife

### Achievements

The major achievements of the Shey Phoksundo National Park (SPNP) include:

- Preparation of the Park tourism plan
- Preparation of a park management plan
- Declaration of a buffer zone in the area
- Development of the Snow Leopard Action Plan
- Formation of Snow Leopard Management Committee, and Rangeland Management Committee
- SPNP was proposed as a World Heritage site for its unique flora, fauna, and traditional culture

- Second Phase of the Northern Mountain Conservation Project is currently under implementation
- Commitment to wildlife and park ethics: six people were arrested by Park authorities between 1999 and 2000 for conducting illegal activities inside the park
- Successful completion of WWF's People Plant Initiative Project
- Renovation of several gombas in the Park
- Mobilisation of 16 eco-clubs in the area
- Formation of 17 Park forest user committees
- Conduct of several researches at both institutional and individual capacity levels (DNPWC Annual Report 1999-2003):
  - Three research initiatives on plants were conducted between 1999 and 2000, one study focused on management of medicinal plants in SPNP
  - Two research initiatives were conducted between 2001 and 2002: one related to the management of Tripurakot buffer zone, the other studied 'Amchi' (traditional faith healers) knowledge of medicinal plants
  - One research initiative conducted between 2002 and 2003 related to Dolpha's flora
- Perceptible increase in development of skills, human resource, and capacity of local communities of the Park (WWF 2003)
- Perceptible positive transformation in local attitudes towards education, basic health care, hygienic living, and conservation (WWF 2003) in the Park.

## Chitwan National Park

### Background

#### Area

Chitwan National Park (932 km<sup>2</sup>)  
buffer zone (750km<sup>2</sup>)

Site codes: 805 (Park) and 303694 (buffer zone) (DNPWC 2002)

#### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	27° 24' 00"	27° 40' 48"	83° 52' 48"	84° 49' 48"	110	850
BZ	27° 16' 56"	27° 42' 14"	83° 50' 23"	84° 46' 26"	-	-

NP= national park; BZ= buffer zone



Districts of Chitwan, Nawalparasi, Parsa, and Makwanpur encompassing 35 VDCs, and two municipalities (Bharatpur and Ratnanagar) (DNPWC 2001) (**Annex 3**)

### History

Established in 1973 as the first national park; royal approval granted in 1970/71; extended from 544 to 932 km<sup>2</sup> in 1977; declared the 284<sup>th</sup> World Heritage Site in 1984; declaration of a buffer zone in the Park in 1997 (DNPWC 2002).

### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974  
Royal Chitwan National Park Regulations 1974  
NTNC Act 1982  
Buffer Zone Regulations 1996  
Elephant Management Regulations 1966

### IUCN management category

National Park II, and Buffer zone VI

### Significance

The physiographic aspects of the protected area are as follows:

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Upper Tropical	501 to 1000	Siwaliks
Lower Tropical	Below 500	Terai
Sources: Dobremez 1972, LRMP 1986		

The forest ecosystems and vegetation types are as follows (**Annex 1.1**):

Ecosystem Type	NBRB 2006
<b>Seven types of ecosystems</b>	<b>Two types of vegetation</b>
7101 Tropical hill Sal forest in inner valleys	6131 Hill Sal forest
7103 Sal forest in inner valleys	6231 Lower Tropical Sal and Mixed Broadleafed forest
7121 Tropical riverain forest	
7202 Khair-Sissoo riverain forest	
7206 Pseudo steppe with Graminae	
7220 Terai tropical Sal forest	
9002 Terai cultivated land	
Sources: BPP 1995, TISC maps 2001	

Biological aspects cover species and habitat, including ecosystem description, conservation and management:

- The Park consists of a diversity of ecosystems, including the Churia hills, ox-bow lakes, and the flood plains of the Rapti, Reu, and Narayani rivers

- The Churia hills rise progressively towards the east from 150m to over 800m
- The western portion of the Park consists of the lower but more rugged Someshwor hill;
- The Park shares eastern boundary with Parsa Wildlife Reserve
- The landscape includes the Dun valley, Churia and Someshwor range, and the water bodies of Narayani and Rapti rivers, Lamital, Devital, Beeshazar Tal Ramsar site, and other wetlands
- Nine hundred and nineteen species of flora are estimated present in the Park, including endangered species such as the Tree fern (*Cyathea spinosa*), Cycas (*Cycas pectinata*), Screw pine (*Pandanus nepalensis*), and several other orchids (BPP 1995)
- Two hundred and thirty-four vascular plants have been listed from the available records: seven pteridophytes, three gymnosperms, 161 dicots, and 63 monocots (**Annex 1.9.5**)
- Fourty-three species of mammals (CEDA 2003), 450 species of birds, and 100 species of reptile/amphibians have been recorded from the Park (BPP 1995)
- Current checklists include 58 mammals, 539 birds, 56 herpeto, and 124 fish species (**Annex 2.15**)
- Twenty-three species of mammals found in CNP are protected by CITES
- Thirteen species of mammals, six species of birds, and three species of reptiles are considered endangered and protected under Appendix I of NPWC Act 1973
- The mammal species symbolic of CNP are the Greater one-horned rhinoceros (*Rhinoceros unicornis*), Royal Bengal tiger (*Panthera tigris tigris*), and Asiatic elephant (*Elephas maximus*)
  - The species endemic to the park is the Maskey frog (*Tomopterna maskeyi*) (DNPWC 2001a)
  - The bird species symbolic of the park are the Black-necked stork, Lesser-adjutant stork, Grey-headed fishing eagle, and the Brahmini duck

### Achievements

The primary biological achievements of CNP are:

- Subsequent to complete evacuation of 11,208 human inhabitants of Old Padampur VDC in 2004, this 17.82 km<sup>2</sup> area has excellent potential for tourism development and is prime habitat for about 100 rhinos (CNP Management Plan 2000)

- Continual rehabilitation of an estimated 50 ha of grassland, and two wetlands every year since 1996
- Restoration of Devital and Lamital wetlands in CNP
- Considerable extension of the Park area from 544 km<sup>2</sup> to 932 km<sup>2</sup> in 1977 (DNPWC 2001)
- Significant 3.38% increase in rhino population from 446 to 466 in 1994, to 544 in 2000; the rhino count was initiated in 1994 by a team of Nepal experts
- Successful translocation of rhinos from 1986 to 2003: 83 rhinos from CNP were translocated to BNP, and four were translocated to Shuklaphanta Wildlife Reserve, as tabulated in the DNPWC's Annual Report 2002-2003
- Symbolic presentation of rhinos as gifts to various countries, including two to Japan in 2001 (DNPWC 2001c)
- Notable increase in tiger population from 46 in 1977, to 110 in 1995 (DNPWC 2001)
- Initiation of radio collaring of tigers, rhinos, sloth bears, and some ungulates in the early period of park management; radio collaring of the tiger was initiated under the tiger research work supported by the Smithsonian Institution; the camera trap and pug marks method of tiger monitoring are also being implemented
- Significant increase in gharial (>500), and sloth bear (about 250) populations (DNPWC 2001c).
- CNP was recognised as a World Heritage Site in 1984 for its high biodiversity and for maintaining ecological process ecosystems of international significance (DNPWC 2001)
- The Park is recognised as a major element in the Tiger Conservation Landscape by the Global Tiger Forum
- Designation of Beeshazari Tal as a Ramsar site within the Park buffer zone (DNPWC 2001c)
- Internationally acclaimed as the Best Managed Park at the 5<sup>th</sup> World Park Congress held in Durban, South Africa in September 2003

## Langtang National Park

### Background

#### Area

Langtang National Park (1,710 km<sup>2</sup>) and buffer zone (420 km<sup>2</sup>) (WDPA)

Site codes 803 (Park) 313458 (buffer zone) (DNPWC, 2001)

#### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	27° 57' 36"	28° 22' 48"	85° 12' 36"	85° 52' 48"	-	7245
BZ	-	-	-	-	845	-

NP= national park; BZ= buffer zone

Districts of Rasuwa, Nuwakot and Sindhupalchowk encompassing 26 VDCs (DNPWC, 2001) (**Annex 3**).

#### History

Established in 1976; royal approval granted as the first Himalayan national park in 1970/71. Declaration of buffer zone in 1998 (DNPWC 2001, DNPWC 2002).

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Mountaineering Expedition Regulations 1979

Himalayan National Parks Regulations 1980  
Buffer Zone Regulations 1996

#### IUCN management category

National Park II, and Buffer zone VI

### Significance

The physiographic aspects of CNP and BZ are as follows:

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	
Upper Tropical	501 to 1000	

Source: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (Annex 1.1)

Ecosystem type	NBRB 2006
<b>18 ecosystems included</b>	<b>14 types of vegetation</b>
1000 Glaciers, snow, rock	2101 Upper Alpine Meadow
2108 Meadows (mat patches)	2211 Dry Alpine Scrub
2110 Meadows (mat patches) and common land	2231 Moist Alpine Scrub
2202 Mesohygrophile rhododendron ( <i>R. anthopogen</i> , <i>R. nivale</i> )	3001 Trans-Himalayan Steppe
2203 Mesohygrophytic juniper scrublands	3131 Birch-Rhododendron forest
3102 Upper sub-alpine Rhododendron-Birch forest	3211 Fir forest
3121 Upper sub alpine Rhododendron scrubland	3212 Larch forest
3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest	4131 Temperate Mountain Oak forest
3222 Lower sub-alpine <i>Larix griffithiana</i> , <i>L. potanini</i> forest	4221 Mixed Blue Pine-Oak forest
4004 Open and dry montane Blue Pine	4231 Lower Temperate Oak forest
4009 Mountain Oak ( <i>Q. semecarpifolia</i> )	4235 East Himalayan Oak-Laurel forest
4021 <i>Rhododendron cinnamomeum</i> forest	5021 Chir Pine and Broadleaved forest
5008 Collinean oak-mixed Broadleaved forest	5033 <i>Schima-Castanopsis</i> forest
5010 Deciduous Broadleaved forest ( <i>Alnus</i> , <i>Juglans</i> )	6131 Hill Sal forest
5013 Mesohygrophile forest with <i>Q. lanata</i> , <i>P. excelsa</i>	
6220 <i>Schima wallichii</i> , <i>Castanopsis indica</i> hygrophile	
6221 <i>Schima wallichii</i> , <i>Pinus roxburghii</i> mesohygrophile	
6222 <i>Pinus roxburghii</i> xerophile forest	
Sources: BPP 1995, TISC maps 2001	

Biological aspects cover species and habitat, including ecosystem description, conservation and management:

- Park landscape consists of mountain peaks, glaciers, high altitude lakes, rivers, pastures, and forests
- Encompassed by an altitudinal range exceeding 6450m
- Estimated 3,689 species of flora are native to the Park (BPP 1995)
- One thousand and fourty-three species of vascular plants recorded: 67 pteridophytes, 10 gymnosperms, 818 dicots, and 148 monocots (Annex 1.9.6)
- Forty-six species of mammals, 345 species of birds, 11 species of herpeto fauna, and 30 species of fish recorded from the Park (DNPWC 2003)
- Current checklists include 45 mammals, 345 birds, four herpeto, and two fish species (Annex 2.16)
- Nineteen species of mammals found in LNP are protected by CITES
- Twelve species of mammals, and two species of birds are considered endangered and protected under Appendix I of NPWC Act 1973
- Fifteen endemic species of flowering plants such as the *Rhododendron cownianum*, *R. lowndesii*, and *Larix nepalensis* (Shrestha and Joshi, 1996) have been recorded from the Park
- Mammal species symbolic to the Park include the Snow leopard (*Uncia uncia*), Clouded leopard (*Pardofelis nebulosa*), Musk deer (*Moschus chrysogaster*), and Red panda (*Ailurus fulgens*)

- Bird species symbolic to the Park are the Impeyan pheasant, Ibis bill, White-winged redstart, and Snow partridge

## Achievements

The major achievements of Langtang National Park (LNP) are:

- Formulation of a Species Action Plan for the Snow Leopard
- Research on the Red Panda
- Survey of ethnobotany
- Research on the Assamese monkey
- Preparation and endorsement of a management plan for the Park buffer zone in 2003
- Restoration of Rasuwa Gadi, Gosainkunda, and Panch Pokhari
- Mobilisation of Tourism for the Rural Poverty Alleviation Project (TRPAP) in the buffer zone for park conservation
- Participation of an estimated 2000 locals in various TRPAP activities
- Successful transfer of 78 forest patches over 11,132.61 ha to local users as community forest benefitting about 9,105 households (DNPWC 2001)
- Successful handover of three forest patches of religious significance, benefitting about 199 households (DNPWC 2001)
- Development of a park management plan (1977-82) by Durham University Himalayan Expedition, in conjunction with HMG/UNDP/Food and Agriculture Organization (FAO) Project Nep/72/002

## Shivapuri National Park

### Background

#### Area

Shivapuri National Park (144 km<sup>2</sup>)  
Site code: 10910 and buffer zone  
(conceived) (FAO/HMG 1995)

#### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	27° 45' 36''	27° 49' 48''	85° 17' 24''	85° 29' 24''	1000	2732
NP= national park						

Kathmandu, Nuwakot, and Sindhupalchowk districts with 23 VDCs adjoining the Park zone (**Annex 3**)

#### History

Established in 1976 as a watershed and wildlife reserve; gazetted as a national park in 2002

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974

#### IUCN management category

National Park II

### Significance

The physiographic aspects of the protected area are as follows:

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	
Sources: Dobremez 1972, LRMP 1986		

The forest ecosystems and vegetation types are as follows (**Annex 1.1**):

Biological aspects cover species and habitat including, ecosystem description, conservation and management:

- Mountain slopes, forests, and streams in the northern rim of Kathmandu Valley comprise the landscape
- An estimated 2,122 species of flora in the Park (BPP 1995)
- Sixteen species of endemic flowering plants recorded in the area (HMGN/MFSC 2002)
- Four hundred and forty-nine vascular plants listed from available records: four gymnosperms, 313 dicots, and 132 monocots (**Annex 1.9.7**)
- Nineteen species of mammals and 177 species of birds recorded from the Park (DNPWC 2002)
- Current checklists include 19 mammals, 311 bird and 3 herpeto species (**Annex 2.17**)
- Of the total 311 species of birds recorded in ShNP, nearly 73%, or 227 species are resident species, 48 are migrants, and 36 are both resident and migrant
- Eleven species of mammals, found in ShNP are protected by CITES
- Four species of mammals, and one bird species are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of ShNP are the common Leopard (*Panthera pardus*), Wild boar, (*Sus scrofa*) and Himalayan black bear (*ursus thibetanus*)
- Bird species symbolic to the area are the Slender billed scimitar babbler, White-gorgetted flycatcher, barred cuckoo dove, and golden-throated barbet,

### Achievements

The major achievements at Shivapuri National Park (ShNP) are the following.

- The Park was upgraded from the status of a wildlife reserve to a national park in 2002 (Falgun 2001)
- Tremendous increase noted in the population of Park wild boars in the late 1990s
- Commitment to wildlife and park ethics: over 115 illegal collectors and poachers arrested in 2002-2003 (DNPWC 2002, DNPWC 2003)
- Construction of 111 km stonewall boundary around the Park effectively limited access to and from the Park
- Re-vegetation by natural regeneration and plantation
- Increase in capacity of water discharge from the catchment area generates one million cubic liter of water per day



Ecosystem type	NBRB 2006
<b>Five types of ecosystems</b> 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 5008 Collinean Oak-mixed Broadleaved forest 6220 <i>Schima wallichii</i> , <i>Castanopsis indica</i> hygrophytic 6221 <i>Schima wallichii</i> , <i>Pinus roxburghii</i> mesohygrophile 6222 <i>Pinus roxburghii</i> xerophile forest	<b>Four types of vegetation</b> 4131 Temperate Mountain Oak Forest 4235 East Himalayan Oak-Laurel forest 5021 Chir Pine and Broadleaved forest 5033 <i>Schima</i> - <i>Castanopsis</i> forest

- Construction and management of a 90 km road
- Completion of research initiatives on mammal diversity, wildlife-human interface, the Sundarijal reservoir, and pre- and post Park situation from 1999 to 2003 (DNPWC 2000, DNPWC 2001, DNPWC 2002, DNPWC, 2003)

## Sagarmatha National Park

### Background

#### Area

Sagarmatha National Park (1,148 km<sup>2</sup>) and buffer zone (275 km<sup>2</sup>)

Site code: 804 (Park) Site code: 313459 (buffer zone)

#### Location

##### Coordinates

	Latitude (North)		Longitude (East)		Altitudes (metre)	
NP	27°	28°	86°	85°	2,845	8848
	45'	06'	30'	58'		
	00''	36''	36''	48''		
BZ	27°	27°	86°	85°	2,800	-
	38'	48'	33'	49'		
	46''	07''	21''	30''		

NP= national park, BZ= buffer zone

District of Solukhumbu encompassing three VDCs, two in the Park, and one adjoining the Park (**Annex 3**)

#### History

Established in 1976; declared a World Heritage site in 1979; declaration of a buffer zone in 2002

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
 National Parks and Wildlife Conservation Regulations 1974  
 Mountaineering Expedition Regulations 1979  
 Himalayan National Parks Regulations 1980  
 Buffer Zone Regulations 1996

#### IUCN management category

National Park II and Buffer zone VI

### Significance

The physiographic aspects of the protected area are as follows:

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	Mid-Hills
Upper Temperate	2501 to 3000	

Sources: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (**Annex 1.1**):

Biological aspects cover species and habitat including ecosystem description, conservation and management:

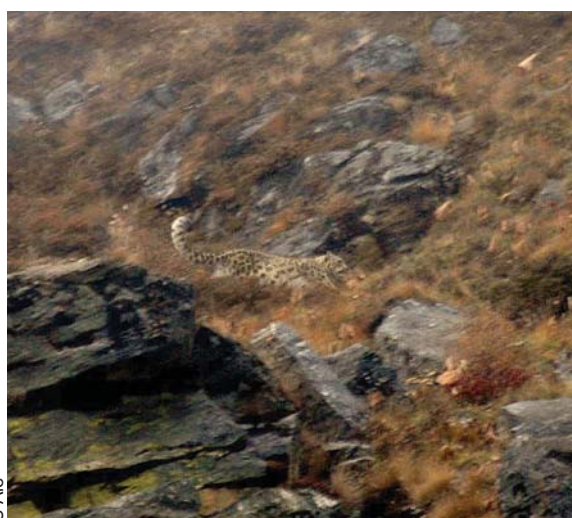
- Landscape comprises the highest mountain peaks, rugged terrain, high altitude wetlands, glaciers, rivers, forests and pastures
- An estimated 1,074 species of flora found in the Park (BPP 1995)
- Records of 160 vascular plants, six gymnosperms, 109 dicots, and 45 monocots (**Annex 1.9.8**)



The Yellow-billed chough (*Pyrrhocorax graculus*), Sagarmatha National Park

Ecosystem type	NBRB 2006
<b>8 types of ecosystems</b> 1000 Glaciers, snow, rock 2101 Alpine meadows with Graminae and Cyperaceae 2108 Meadows (mat patches) 2109 Sparsely vegetated rocks and screes 2110 Meadows and common land 2203 Mesohygrophytic juniper scrublands 3120 Upper sub-alpine <i>Betula utilis</i> with Rhododendron and Fir 4004 Open & dry montane Blue Pine 4006 Juniper forest Sources: BPP 1995, TISC maps 2001	<b>8 types of vegetation</b> 2101 Upper Alpine Meadow 2211 Dry Alpine Scrub 2231 Moist Alpine Scrub 3131 Birch – Rhododendron forest 3211 Fir forest 4111 Upper Temperate Blue Pine forest 4131 Temperate Mountain Oak Forest 4231 Lower Temperate Oak forest

- Records of 26 species of mammals, 162 species of birds, and 13 species of reptiles/amphibians from the Park (DNPWC 2003)
- Current checklists include 33 mammals, 208 birds, five herpeto, and one fish species (**Annex 2.18**)
- Twenty-one endemic species of flowering plants were recorded from the Park (HMGN/MFSC 2002)
- Thirteen species of mammals found in SNP are protected by CITES
- Six species of mammals, and two bird species are considered endangered and protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of the park include the Snow leopard (*Uncia uncia*), Musk deer (*Moschus chrysogaster*), and Red Panda (*Ailurus fulgens*)
- Bird species symbolic of the Park are the Impeyan pheasant, Lammergeyer, Bearded vulture, Snow cock, and the Yellow-billed chough
- The Park is home to Gokyo and other high altitude lakes



Snow leopard (*Panthera uncia*), Sagarmatha National Park

## Achievements

The major achievements at Sagarmatha National Park (SNP) are the following.

- First national park in Nepal to become accredited as a UNESCO World Heritage Site (WHS) in 1979 for its exceptional area with dramatic mountains, glaciers, and deep valleys dominated by Mount Everest (popularly known as 'Sagarmatha' in Nepal), the highest peak in the world
- Commitment to wildlife and park ethics: 23 violators have been arrested for conducting illegal activities inside SNP in 2001-2002 (DNPWC 2001, DNPWC 2002)
- Increase in the population of the Himalayan tahr, Red panda, Musk deer, wolf, and Snow leopard (DNPWC 2003)
- Declaration of a Park buffer zone in January 2002 (DNPWC 2003)
- Completion of a draft management plan
- Completion of training needs assessment for Park authorities
- Revision of park management modality currently underway (DNPWC 2003c)
- Considered a focal park for the eco-regional complex connecting Langtang National Park via the proposed Gaurisankar area<sup>8</sup>, Makalu Barun National Park, and the Tinjure-Milke-Jaljala community-managed rhododendron conservation project area, and the Qomolangma Nature Preserve in Tibet
- Effective implementation of a pollution free policy
- High levels of community awareness in maintaining WHS standards as indicated by Park protests against the proposed expansion of Syangboche airstrip, renovation of major monasteries, and proposal for an electrical incinerator for cremation
- Increased social facilities such as trail improvement, drinking water, garbage management, and provision of electricity

<sup>8</sup> In support of the Dolkha DDC's proposal, the Dolkha Chamber of Commerce and Industries in April 2006 has requested the Government of Nepal and the Nepal Tourism Board in April 2006 to declare the Rolwaling area as a Gaurishankar National Park.

- Completion of potential micro hydro sites in the buffer zone survey
- Introduction of appropriate alternative sources of energy such as hydroelectricity, solar heating system, kerosene oil, and improved cooking stoves for energy efficiency and reduced fuel wood collection (WWF 2003)
- Establishment of kerosene depots at Namche and Lukla to reduce the pressure on the ecosystem
- Evacuation of goats from the Park a decade ago in consideration of their negative impact on conservation
- Minimal poaching and illegal slaughter of animals by local Sherpas due to cultural and religious significance of non-violence
- Involvement of 46% of total households in trekking and related businesses (DNPWC 2003)
- Initiation of habitat management and improvement in the Park through establishment of a plant nursery, and reforestation of the barren lands in the vicinity of Namche Bazaar
- Significant research conducted at SNP during the last three years on community land management, crop damage by the Himalayan tahr, forest management outside the park, environment impact analysis (EIA) study of herpetofauna, landscape management, and conservation governance
- Plantation of over 151 ha forest cover with the help of the Himalayan Trust
- Some 230,731 kg of garbage cleaned from the region in 2001/2002 (DNPWC 2003)
- Formation of buffer zone user groups, and three buffer zone user committees
- Major projects and programs currently in operation in SNP include:
  - Tourism for Rural Poverty Alleviation Project supported by DFID, SNV, and UNDP
  - Sagarmatha Community Agroforestry Project (1996-2002) jointly implemented by DNPWC and WWF Nepal Program; the project focuses on community participation in sustainable natural resource management and primary activities include the establishment of a forest nursery, plantation, local capacity enhancement, and conservation awareness (WWF 2003)
- Sagarmatha Pollution Control Committee with support from WWF, Himalayan Adventure Trust of Japan (HAT-J), and the Nepal Tourism Board coordinate solid waste management in SNP (WWF, 2003)

## Makalu Barun National Park Background

### Area

Makalu Barun National Park (1,500 km<sup>2</sup>) and buffer zone (830 km<sup>2</sup>)

Site code: 26606 Site code: 26605  
(HMGN/MFSC 2002)

### Location

#### Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	27° 33' 00''	27° 57' 00''	85° 46' 12''	87° 26' 24''	435	8463
BZ	27° 25' 48''	27° 40' 48''	86° 46' 48''	87° 21' 36''	-	-

NP= national park, BZ = Buffer zone

Districts of Solukhumbu and Sankuwasabha, encompassing 12 VDCs in the buffer zone (DNPWC 2001) (**Annex 3**)

### History

Established in 1991; conservation area was converted into a buffer zone in 1999; The first park adjacent to an inhabited conservation area (HMGN/MFSC 2002)

### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974  
Mountaineering Expedition Regulations 1979  
Himalayan National Parks Regulations 1980  
Buffer Zone Regulations 1996

### IUCN management category

Core area I, National Park II, and Buffer zone VI



Mixed broad-leaved deciduous forest, Arun Valley (2700m)

P R Shakya

## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio- Graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	
Lower Temperate	2001 to 2500	Mid-Hills
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	
Upper Tropical	501 to 1000	
Source: Dobremez 1976, LRMP 1986		

The forest ecosystems and vegetation types are as follows (Annex 1.1):

Ecosystem type	NBRB 2006
<b>20 types of ecosystems</b> 1000 Glaciers, snow, rock 2101 Alpine meadows with <i>Graminae</i> and <i>Cyperaceae</i> 2201 Rhododendron mesohygrophitic scrublands 2202 Mesohygrophile Rhododendrons ( <i>R. anthopogen</i> , <i>R. nivale</i> ..) 2206 Shrublands with Rhododendrons 3102 Upper sub-alpine Rhododendron-Birch forest 3120 Upper sub-alpine <i>Betula utilis</i> with Rhododendron and Fir 3121 Upper-sub-alpine Rhododendron scrublands 3122 Upper-sub-alpine Rhododendron-Juniper scrublands 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest 3220 Lower sub-alpine <i>Abies spectabilis</i> Forest 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 4022 Deciduous mixed Broadleafed forest 4023 Mixed Broadleafed forest 4024 <i>Daphniphyllum himalayense</i> 5008 Collinean oak-mixed Broadleafed forest 5010 Deciduous Broadleafed forest ( <i>Alnus</i> , <i>Juglans</i> ) 6110 Hygrophilic <i>Schima wallichii</i> 6220 <i>Schima wallichii</i> , <i>Castanopsis indica</i> hygrophile 6221 <i>Schima wallichii</i> , <i>Pinus roxburghii</i> mesohygrophile 7101 Tropical hill Sal forest in inner valleys Source: BPP 1995, TISC maps 2001	<b>12 types of vegetation</b> 2101 Upper Alpine Meadow 2231 Moist Alpine Scrub 3131 Birch-Rhododendron forest 3211 Fir forest 4131 Temperate Mountain Oak forest 4135 Deciduous Maple-Magnolia-Sorbus forest 4136 Mixed Rhododendron-Maple forest 4231 Lower Temperate Oak forest 4235 East Himalayan Oak-Laurel forest 5021 Chir Pine and Broadleafed forest 5033 <i>Schima-Castanopsis</i> forest 6131 Hill Sal forest

Biological aspects of the Park cover species and their habitat including ecosystem, description, conservation, and management.

- From tropical forests along the Arun River to icy mountain summits, Nepal's Makalu-Barun National Park and buffer zone is the only protected area on earth with an elevation gain of 8000m
- The landscape consists of mountain peaks, glaciers, high altitude lakes, pastures, forests and rivers
- The skyline is a panorama of rugged Himalayan peaks including Mt. Makalu (8463m), the fifth highest mountain in the

world and fourth highest in Nepal; Mt. Chamlang (7319m), Mt. Baruntse (7129m), and Mera Peak (6654m); Mt Makalu is the Park's major landmark; Makalu base camp and Mera peak are popular trekking routes

- An estimated 3073 species of flora are found in the Park (BPP 1995) and include records of 284 vascular plants: four pteridophytes, seven gymnosperms, 245 dicots, and 28 monocots (**Annex 1.9.9**); eight species are endemic flowering plants (HMGN/MFSC 2002)
- The Park has records of 88 species of mammals, 440 species of birds, 59 species of reptiles/amphibians, and 78 species of fish (TMI/IUCN 1995)
- Current checklists include 81 species of mammals, 421 species of birds, 14 species of herpeto, and 13 species of fish (**Annex 2.19**)

- Twenty-four species of mammals found in Makalu Barun National Park (MBNP) are protected by CITES
- Eleven species of mammals and three species of birds are protected under Appendix I of NPWC Act 1973
- The mammal species symbolic of MBNP are the Snow leopard (*Uncia uncia*), Musk deer (*Moschus chrysogaster*), and Himalayan black bear (*Ursus thibetarus*)
- Bird species symbolic to the Park are the Spiny babbler, Impeyan pheasant, Rufous throated wren babbler, and Slety-bellied tesia



## Achievements

The major achievements in Makalu Barun National Park are the following.

- Completion of a meticulous Park survey and research including environmental relations aspects, temporal dynamics, and spatial diversity of habitats, communities, and species along mountain transects; specific research initiatives include the following:
  - Biodiversity conservation, a buffer zone community forest, and small-scale enterprise, carried out in 2000-2001 (DNPWC 2001)
  - Biodiversity conservation and rituals, carried out in 2001-2002 (DNPWC 2002)
- Successful management and protection of the Park without involving the Nepal Army
- Successful cultivation and marketing of non-timber forest products
- Declaration of the Park as a conservation area and buffer zone in 1999
- Incorporation and strengthening of traditional resource management systems such as community control-led grazing and forest guardianship, and introduction of low level technologies where appropriate
- Establishment of Nepal's first grazing user group at Lamaden in 1996 laid the

groundwork for the proposed establishment of up to a dozen grazing user groups in the Park

- Construction and installation of emergency safety shelters, trail markers, and improvements of hazardous trails and bridges to minimise accidents and death among tourists, support staff, and local users
- Successful anti-pollution measures: "Pack It In and Pack It Out" policy has been effective in reducing garbage along the Park's trekking routes

## Shuklaphanta Wildlife Reserve Background

### Area

Shuklaphanta Wildlife Reserve (305 km<sup>2</sup>) and buffer zone (243.5 km<sup>2</sup>)

Site code: 1309 (HMGN/MFSC 2002)

### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	28° 42' 29"	29° 03' 27"	80° 03' 08"	80° 25' 53"	174	1,386
BZ	-	-	-	-	-	-

NP= national park ; BZ = buffer zone

District of Kanchanpur, with 11 VDCs (HMGN/MFSC 2002) (**Annex 3**)

### History

Established in 1976 (DNPWC 2000); declaration of Park buffer zone in 2004

### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Wildlife Reserves Regulations 1978

NTNC Act 1982

Buffer Zone Regulations 1996

Elephant Management Regulations 1966

### IUCN management category

Wildlife Reserve IV and buffer zone VI

## Significance

The physiographic aspects of the protected area are as follows.



P R Shakya

*Tetracentron sinense* Oliver, Khiraunle, Sankhuwasabha, 2740m

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Lower Sub-Tropical	1001 +	Siwaliks
Upper Tropical	501 to 1000	
Lower Tropical	Below 500	Terai
Source: Dobremez 1972, LRMP 1986		

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Ecosystem types	NBRB 2006
<b>Three types of ecosystems</b>	<b>Three types of vegetation</b>
7201 Terai tropical Sal forest	5011 Chir Pine forest
7202 Khair-Sissoo riverain forest	6131 Hill Sal forest
9002 Terai cultivated land	6231 Lower Tropical Sal and Mixed Broadleafed forest

Biological aspects of the Park cover species and their habitat including ecosystem description, conservation, and management.

- The landscape consists of open grassland, forests, riverbed and tropical wetlands
- Some 700 species of flora are estimated in the Reserve (BPP 1995), with records of 553 vascular plants, 18 pteridophytes, 410 dicots, and 125 monocots (**Annex 1.9.10**)
- Records also of 43 species of mammals, 349 species of birds, 12 species of reptiles/amphibians, and 24 species of fish in the reserve (DNPWC 2003a); current checklists include species of 46 mammals, 351 birds, seven herpeto, and 28 fish (**Annex 2.20**)
- Eighteen species of mammals found in Shuklaphanta Wildlife Reserve (SWR) are protected under CITES
- The mammal species symbolic of the Reserve include the Swamp deer (*Cervus duvaucelli*), Bengal tiger (*Panthera tigris*), Asiatic elephant (*Elephas maximus*), and Hispid hare (*Caprolagus hispidus*)
- Bird species symbolic of the Park include the Bengal florican, Back-capped kingfisher, and Finn's weaver

### Achievements

The major achievements of Shuklaphanta Wildlife Reserve are the following.

- Declaration of an area of 155 km<sup>2</sup> as a wildlife reserve in 1976
- Extension of the Reserve area to 305 km<sup>2</sup> in the late 1980s
- Effective protection and management of the last remaining herd of swamp deers (*Cervus duvaucelli*)

- Declaration of an area of about 152 km<sup>2</sup> adjacent to the reserve as a buffer zone
- Adequate management of 95 ha of grassland
- Maintenance of six water holes, 22 km trench, and 10 km of barbed wire fence
- Construction of three 'machans' (Tree-top lookout/house), and 22 km of fire lines (DNPWC 2003)
- Rehabilitation of two 'tals' (wetlands) (DNPWC 2003d)
- Implementation of various activities for the management of grasslands within the Reserve, including construction and clearing of access roads, regular burning and ploughing of grasslands, and construction of water holes (DNPWC 2003)
- Preparation of a management strategy framework in 2000 (DNPWC 2003)
- Development of a strategy to translocate 10 additional rhinos from Chitwan to enable Nepal to establish a third viable population of the one-horned rhinos in SWR (DNPWC 2002)
- A high density tiger population, completed research on tigers and small mammals, and regular monitoring of tigers using the camera trap method
- Commitment to wildlife: two poaching units established in order to control the poaching and illegal slaughter of wild animals (DNPWC 2003)
- Nominated by CITES as A site for Monitoring of Illegally killed elephants (MIKE)
- Formulation of a Tiger Conservation Action Plan to increase the number of breeding tigers
- Establishment of 422 user groups (DNPWC/PCP 2002)
- Development of databases and annual and five-year plans of 40 user groups with the technical and financial support of the Shuklaphanta Wildlife Reserve Participatory Community Programme (DNPWC/PCP 2002)
- Research undertaken at SWR during the last three years include:
  - A study of the effect of wild elephants on woody vegetation in 1999-2000 (DNPWC 2000, DNPWC 2001, DNPWC 2002)
  - Specific researches in 2000-2001 on the effectiveness of community-based programmes, wetland vegetation dynamics, population ecology of the nilgai and swamp deer (DNPWC 2000, DNPWC 2001, DNPWC 2002)
  - Researches undertaken in 2002-2003 include a study of habitat structure, the

swamp deer, wildlife damage, small mammals, and rhinos (DNPWC 2000, DNPWC 2001, DNPWC 2002)

- The final draft of the SWR management plan has been submitted to the Department of National Parks and Wildlife Conservation
- Development of a park management strategy framework
- Ongoing projects and programme in the SWR area:
  - Participatory Conservation Programme (May 2002-April 2004) in continuation of the - Park and People Programme supported by UNDP (DNPWC/PCP 2002)
  - National Trust for Nature Conservation's recently established Shuklphanta Conservation Programme

## Parsa Wildlife Reserve Background

### Area

Parsa Wildlife Reserve and (499 km<sup>2</sup>) and buffer zone (298.2 km<sup>2</sup>)

Site code: 10089 (HMG/N/MFSC 2002)

### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitudes (metre)	
NP	27° 13' 48''	27° 27' 36''	84° 31' 48''	84° 58' 12''	435	950
BZ	-	-	-	-	-	-

NP= national park, BZ = buffer zone

Districts of Bara, Parsa, and Makwanpur, with 22 VDCs in the Reserve's buffer zone (**Annex 3**)

### History

Established in 1984 as a wildlife reserve by converting the hunting grounds of the royal family; declaration of reserve buffer zone in 2005

### Relevant legislation

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Wildlife Reserves Regulations 1978

Buffer Zone Regulations 1996

Elephant Management Regulations 1966

### IUCN management category

Wildlife Reserve IV, and buffer zone VI

## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Upper Tropical	501 to 1000	Siwaliks
Lower Tropical	Below 500	Terai

Sources: Dobremez 1972, LRMP 1986

The Reserve's forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Biological aspects of the Reserve cover species and their habitat including ecosystem description, conservation, and management.

- The Reserve's landscape consists of Siwalik Hills (750m to 950m east to west), and forests contiguous with Chitwan National Park
- The soil is primarily composed of gravel and conglomerates susceptible to erosion
- The hills present a 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 Reserve's hill base
- An estimated 919 species of flora recorded at the Reserve (BPP 1995); these include records of 298 vascular plants, five pteridophytes, one gymnosperm, 234 dicots, and 58 monocots (**Annex 1.9.11**)
- Thirty species of mammals, 500 species of birds, 13 species of reptiles/amphibians, and eight species of fish are recorded from the Reserve (DNPWC 2002), but current checklists include 37 species of mammals, 503 species of birds, eight species of herpeto, and eight species of fish (**Annex 2.21**)
- Sixteen species of mammals found in the Reserve are protected under CITES
- Eleven species of mammals, six species of birds, and two species of reptiles are protected under Appendix I of the National Parks and Wildlife Conservation Act 1973
- Mammal species symbolic of PWR are the Royal Bengal Tiger (*Panthera tigris*), Gaur (*Bos gaurus*), wild elephant (*Elephas maximus*), and Hyena (*Hyaena hyaena*);
- Bird species symbolic of Parsa Wildlife Reserve include the Crow-billed drongo, Thick-billed green pigeon, Long-tailed broadbill, and Red jungle fowl

Ecosystem type	NBRB 2006
<b>Eight types of ecosystems</b> 7101 Tropical hill Sal forest in inner valleys 7103 Sal forest in inner valleys 7105 Hygrophytic tropical forest on northern slopes 7121 Tropical riverain forest 7202 Khair-Sissoo riverain forest 7206 Pseudo steppe with Graminae 7220 Terai tropical Sal forest 7222 Tropical dense forest with <i>Terminalia</i>	<b>Two types of vegetation</b> 6131 Hill Sal forest 6231 Lower Tropical Sal and Mixed Broad leaved forest
Sources: BPP 1995, TISC maps 2001	

## Achievements

The major achievements of Parsa Wildlife Reserve include the following.

- Creation of a water hole near the Adhabar grassland, and renovation of Kamini 'Daha' (pond)
- Development of a draft management plan of the area
- Establishment of an anti-poaching unit
- Creation of a 110 km fire line network in the Reserve to prevent spread of fire from one area to another (DNPWC 2002)
- Commitment to park ethics: confiscation of a large volume of illegally collected NTFPs (DNPWC 2003)
- Established Hattisar in Amlekhgunj, about 5 km north of the reserve headquarters for patrolling, tourism activities, research programmes, rescue and search operations
- Maintenance of an orphanage centre to care for abandoned wildlife until they recover and are ready for release back into the Reserve; 12 wild animals have been released in the Reserve between 2000-2002
- Commitment to wildlife: action has been taken against 91 poachers and illegal dealers between 2002-2003 (DNPWC 2003)
- Community plantations have been carried out over a 5,491 ha area benefitting 8,765 beneficiary households (DNPWC 2003)
- Reforestation over an area of 97 ha of private lands carried out by 804 households
- Minimal human injuries by wildlife: one person injured by wildlife in 2002/03; two in 2001/02
- Ongoing project: Parks Conservation Programme (May 2002 – April 2004) in continuation of the People and Parks Programme supported by UNDP

## Koshitappu Wildlife Reserve

### Background

#### Area

Koshitappu Wildlife Reserve (175 km<sup>2</sup>) and buffer zone (173 km<sup>2</sup>)

Site code: 1310

#### Location

Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	26° 33' 00"	26° 42' 00"	86° 54' 36"	87° 03' 36"	80	100
BZ	26° 33' 58"	26° 43' 42"	86° 53' 41"	87° 06' 32"	-	-

NP= national park ; BZ = buffer zone

The districts of Sunsari, Saptari, and Udaypur with 16 VDCs in the buffer zone (DNPWC, 2002) (**Annex 3**)

#### History

Established in 1976 over 65 km<sup>2</sup>; extended to its present size in 1980 by including the flood plains of the Koshi River to protect the last remnant population of wild water-buffaloes. Declared a Ramsar site on 17 December 1987 (IUCN 1998); and buffer zone in 2004 (DNPWC 2004)

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
 National Parks and Wildlife Conservation Regulations 1974  
 Wildlife Reserves Regulations 1978  
 Buffer Zone Regulations 1996  
 Elephant Management Regulations 1966

#### IUCN management category

Wildlife Reserve IV, and Buffer Zone VI



## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Lower Tropical	Below 500	Terai
Sources: Dobremez 1972, LRMP 1986		

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Ecosystem types	NBRB 2006
<b>Five types of ecosystems</b>	<b>One vegetation type</b>
7202 Khair-Sissoo riverain forest	6231 Lower Tropical
7206 Pseudo steppe with Graminae	Sal and Mixed
9000 Cultivated land	Broad leaved
9002 Terai cultivated land	forest
9900 Water bodies	
Sources: BPP 1995, TISC maps 2001	

The wildlife reserve's biological aspects cover species and habitat, including ecosystem description, conservation, and management.

- The landscape consists of riverbeds, floodplains, grasslands, and forests
- Sapta Koshi is one of three main tributaries of the Ganges; there is rapid and intense flooding in the Reserve during the rainy season; embankments constructed parallel to the river control flooding
- Records of 514 species of flora from the Reserve (DNPWC 2002b)
- Some 514 species of plants found in the wetlands common species include the Sissoo tree (*Dalbergia sissoo*), Kapok (*Bombyx ceiba*), Sugarcane (*Saccharum* sp.), reed beds (*Phragmites* sp.), Cattail (*Typha* sp.), Cassava (*Imperata* sp.), eel grass (*Vallisneria* sp.), *Eichornia* sp., *Hydrilla* sp., *Azolla* sp., and

*Lotus* sp.

- Six species of plants found in this area, the Indian snakeroot (*Rauwolfia serpentina*), Saptaparna (*Alstonia scholaris*), Indian trumpet flower (*Oroxylum indicum*), Acacia (*Acacia catechu*), Palash (*Butea monosperma*) and Indian rosewood (*Dalbergia latifolia*), are listed in the specific threat categories and appendices of IUCN and CITES; with the exception of *Acacia catechu*, the five plant species are sparse in the area
- Lacustrine habitats such as the Kamal Daha oxbow lake, harbour 28 species of plants; four species of flowering plants from the reserve are recorded as endemic (HMG/N/MFSC 2002)
- Records of 158 vascular plants, four pteridophytes, 112 dicots, and 42 monocots (**Annex 1.9.12**) in the Reserve; current checklists include 23 species of mammals, 485 birds, 17 species of herpeto, and 105 species of fish (**Annex 2.22**)
- Notable among the 485 species of birds are the Watercock (*Gallicrex cinerea*), Indian nightjar (*Caprimulgus asiaticus*), Dusky eagle owl (*Bubo coromandus*), Black-headed cuckooshrike (*Coracina melanoptera*), White-tailed stonechat (*Saxicola leucura*) Striated grassbird (*Megalurus palustris*), Large adjutant stork (*Leptoptilos dubius*), Pallas's fish eagle (*Haliaeetus leucoryphus*), Common golden-eye (*Bucephala clangula*), and Gull-billed tern (*Gelochelidon nilotica*)
- Out of the 485 species of birds, 12 species are globally threatened and 101 species endangered within Nepal; 114 species are water birds, 176 species bred in the reserve, and 180 species are passage migrants or winter visitors; Koshitappu is the only area in Nepal where the Water cock (*Gallicrex*



*Nelumbo nucifera* Gaertn. Kamalpur lake



Arna (*Bubalus anree*), Koshitappu Wildlife Reserve

*cinerea*) and Abbott's babbler (*Malacocincla abbotti*) can be found

- Of the 31 species of mammals recorded, Nepal's last remaining population of wild water-buffalo (*Bubalus arnee*) inhabit the area; the Gangetic dolphin (*Platanista gangetica*) has also been recorded in the Koshi River
- A steady decline in the numbers of large mammals such as the Gaur (*Bos gaurus*), and Blue bull (*Boselaphus tragocamelus*) has been noted in the Reserve; other mammals from the area include the Wild elephant (*Elephas maximus*), Wildboar (*Sus scrofa*), Hog deer (*Axis porcinus*), Spotted deer (*Axis axis*), Smooth-coated otter (*Lutra perspicillata*), and the jackal (*Canis aureus*)
- Of 200 species of fish, 91 species are resident, 21 species are local migratory, and five species migratory; of these, nine species are listed in various threatened categories, eight species are vulnerable, and one species considered endangered
- Eleven amphibians (two toads and nine frogs) and 24 reptile species (two crocodiles, 11 turtles, six lizards and five snakes) are recorded in the Park
- Seventeen of the species of herpetofauna are nationally threatened, of which six species are globally threatened
- There is a record of 77 butterfly species in the area
- A total of 13 species of mammals found in Koshitappu are protected by CITES
- Six species of mammals, five species of birds, and three species of reptiles are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of KWR are the wild water-buffalo (*Bubalus arnee*) and the Gangetic dolphin (*Platanista gangetica*)

## Achievements

The major achievements at Koshitappu Wildlife Reserve (KWR) are the following.

- Declared the first Ramsar site of Nepal on 17 December 1987, when Nepal became party to the Convention on Wetlands of International Importance, with a reinforced commitment to conservation as a Waterfowl Habitat in particular (DNPWC 2002)
- Preservation of the last remnant population of the critically endangered wild water buffaloes and their habitats; a comprehensive management strategy framework and plan has been prepared involving key KWR stakeholders (DNPWC 2002b)

- Increase in bird sightings as well as number and frequency of visiting migratory birds (DNPWC 2002b)
- The Reserve supports over 20,000 waterfowls and is a hotspot for 200 species of fish (DNPWC 2002b)
- Developed a proposal for the translocation of the wild water-buffalo within Nepal (DNPWC 2002b)
- About 500 domestic buffaloes have been evacuated from the reserve
- Improved conditions for wildlife: only three reported wildlife deaths due to natural causes recorded in 2002/03 compared to seven in 2001/02
- Effective protection from wildlife: only one human casualty from encounter with wildlife in 2001/02
- Various kinds of research have been done at KWR under DNPWC:
  - Research carried out from 1999-2000 included studies on crop damage and livestock depredation, riverine forests, the Arna habitat, and the swamp partridge
  - Three studies conducted from 2000-2001 assessed the economics of the wild buffalo, prospective challenges in the the Reserve buffer zone, and a 'nilgai' (bluebull) survey
  - Research initiatives undertaken in 2001-2002 studied wetland sites, fish, and the elephant-human interface

## Dhorpatan Hunting Reserve Background

### Area

Dhorpatan Hunting Reserve (1,325 km<sup>2</sup>)  
Site code: 10087 (HMG/N/MFSC 2002)

### Location

Coordinates

Latitude (North)		Longitude (East)		Altitude (metre)	
28°	28°	82°	83°	2,850	5,500
28'	49'	45'	16'		
12''	48''	00''	48''		

Rukum, Myagdi and Baglung districts (**Annex 3**).

### History

Established in 1987 as the only hunting reserve meeting the demands for controlled wildlife hunting of blue sheep and other game animals by Nepali and foreign hunters

**Relevant legislation**

National Parks and Wildlife Conservation Act 1973

National Parks and Wildlife Conservation Regulations 1974

Wildlife Reserves Regulations 1978

Mountaineering Expedition Regulations 1979

Himalayan National Parks Regulations 1980

**IUCN management category**

Hunting reserve VIII (Multiple Use management)

**Significance**

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	

Sources: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Ecosystem type	NBRB 2006
<b>14 types of ecosystems</b> 1000 Glaciers, snow, rock 2103 Mesophytic mat patches and vegetation on rocks* 2201 Rhododendron mesohygrophytic scrublands 3102 Upper sub-alpine Rhododendron-Birch forest 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest 4002 Mixed Blue Pine-Oak 4006 Juniper forest 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 5002 Collinean pak forest 5009 <i>Aesculus</i> , <i>Juglans</i> riverain forest 5011 Hygrophytic <i>Quercus lamellosa</i> forest 6101 Mixed Chir Pine-Oak forest 6204 <i>Euphorbia royleana</i> steppe in inner valleys 8001 High altitude cushion plant formation	<b>10 types of vegetation</b> 2101 Upper Alpine Meadow 2231 Moist Alpine Scrub 3003 Trans Himalayan High Alpine vegetation 3131 Birch-Rhododendron forest 3211 Fir forest 4112 Temperate Juniper forest 4131 Temperate Mountain Oak forest 4231 Lower Temperate Oak forest 4234 Deciduous Walnut-Maple-Alder forest 5021 Chir Pine and Broadleafed forest

\*veg rocks in the original BPP document

Sources: BPP 1995, TISC maps 2001

for animals such as the Blue sheep and other herbivores

- An estimated 1150 species of flora have been recorded in the Reserve (BPP 1995);
- Thirty-six species of flowering plants are endemic (HMGN/MFSC 2002)
- Fifty-eight vascular plants are recorded in the Reserve; seven gymnosperms, 43 dicots, and eight monocots (**Annex 1.9.13**)
- Current checklists include 18 mammal species, 137 birds, and two herpeto species (**Annex 2.23**)
- Sixteen species of mammals found in the Reserve are protected by CITES
- Seven species of mammals and three species of birds are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic to Dhorpatan Hunting Reserve (DHR) include the Blue sheep (*Pseudois nayaur*), snow leopard, and musk deer (*Moschus chrysogaster*)
- Bird species symbolic to DHR are the cheer pheasant, koklas pheasant, and Impeyan pheasant.

**Achievements**

The major achievements of Dhorpatan Hunting Reserve include the following.

- The only designated hunting reserve in the country; well designated hunting safaris has attracted visitors from abroad to the Reserve

The Reserve's biological aspects cover species and their habitat including ecosystem description, conservation, and management.

- 'Dhor' (marshland) and forests comprise the landscape; the Reserve's higher elevations remain snow-capped throughout the year
- Locally known as 'Patans', flat meadows above the tree line (4000m), are renowned

- DNPWC annual reports (1999, 2001, 2002) report two researches conducted in this hunting reserve on institutional as well as individual levels:
  - Problems and prospects of the hunting reserve (2001)
  - Status and distribution of cheer pheasant (2003)

## Annapurna Conservation Area Background

### Area

Annapurna Conservation Area (7,629 km<sup>2</sup>)  
Site code: 10091 (HMG/N/MFSC, 2002)

### Location

Coordinates

Latitude (North)		Longitude (East)		Altitude (metre)	
28°	29°	83°	84°	790	8,090
13'	19'	28'	26'		
48''	48''	48''	24''		

Manang, Mustang, Kaski, Myagdi, and Lamjung districts, with 55 VDCs inhabited by various ethnic groups (KMTNC 2002a) (Annex 3)

### History

Established in 1985 and gazetted in 1992 as the largest conservation area in Nepal; managed by National Trust for Nature Conservation, a national NGO (KMTNC 1997)

### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974  
Mountaineering Expedition Regulations 1979  
NTNC Act 1982  
Conservation Area Regulations 1997

### IUCN management category

Conservation VI

## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	
Upper Tropical	501 to 1000	

Sources: Dobremez 1972, LRMP 1986

The forest ecosystems and vegetation types are as follows (Annex 1.1).

The Conservation Area's biological aspects cover species and habitat including ecosystem description, conservation, and management.

- Mountain peaks, high altitude pastures, trans-Himalayan valleys, forests, lakes, glaciers, rivers, and cultivated lands comprise the landscape; some of the highest peaks in the world (Annapurna I: 8091m, Machhapuchhere: 6993m) are contained in this conservation area, also the world's deepest gorge, Kali Gandaki, and highest altitude lake, Tilicho Lake
- Two distinct climatic regions within a span of 120 km and altitude of 1000-8000m: 3000 mm annual rainfall in the south (cis Himalayas); and <500 mm annual rainfall in the north (trans-Himalayas)
- Home to 101 species of mammals including the Snow leopard, Musk deer, Tibetan Argali, Tibetan wolf, and Tibetan fox
- Home to 474 species of birds including 38 species of birds at risk in Nepal, and six species of Himalayan pheasants found in Nepal
- Also hosts 39 species of reptiles and 22 species of amphibians
- Nepal's most extensive protected area and the first conservation area consisting of the entire habitat gradient from subtropical sal forest to perennial snow
- Home to over 100,000 inhabitants from over 10 ethnic groups (Tibeto-Burmese: Gurung, Thakali, Bhotia, Ethnic Tibetan, and Magar; and Indo Aryan: Brahmin, Kshetri, Kami, Damai and Sarki)
- An estimated 3,430 species of flora have been recorded in the conservation area (BPP 1995)
- Fifty-six species of flowering plants are endemic to the area (Shrestha and Joshi 1996);
- Records of 456 vascular plants: five pteridophytes, 11 gymnosperms, 392 dicots, and 48 monocots (Annex 1.9.14)
- Current checklists include species of 97 mammals, 476 birds, 56 herpeto, and two fish species (Annex 2.24)
- Records of 101 species of mammals, 478 species of birds, 41 species of reptiles, and 23 species of amphibians in the conservation area (KMTNC 2002a)
- Twenty-seven species of mammals found in the Annapurna Conservation Area (ACA) are protected under CITES
- Thirteen species of mammals and three bird species are protected under Appendix I of NPWC Act 1973



Ecosystem Type	NBRB 2006
<b>28 types of ecosystems</b> 1000 Glaciers, snow, rock 2103 Mesophytic mat patches and vegetation on rocks* 2104 Mesophytic and hydrophytic mat patches and vegetation on rocks* 2201 Rhododendron mesohygrophytic scrublands 3102 Upper sub-alpine Rhododendron-Birch forest 3103 Upper sub-alpine Birch Blue-Pine open forest 3110 Upper sub-alpine north Himalayan alpine veg. 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest 8001 High altitude cushion plant formation 8002 <i>Caragana versicolor</i> , <i>Lonicera spinosa</i> steppe 8003 <i>Caragana gerardiana</i> , <i>Lonicera spinosa</i> steppe 8004 <i>Caragana brevispina</i> , <i>Artemesia</i> steppe 8006 <i>Myricaria-Hippophae-Salix</i> riverain thickets 8007 <i>Sophora moorcroftiana</i> , <i>Oxtropis mollis</i> steppe 4003 Mixed hygrophytic Oak-Hemlock-Fir 4004 Open and dry montane Blue Pine 4006 Juniper forest 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 4010 Blue Pine-spruce forest 4011 Spruce mountain forest 5000 Blue Pine-cypress forest 5001 Cypress forest with Dwarf Barberry 5007 Open Blue Pine forest 5008 Collinean Oak-mixed Broadleaved forest 5009 <i>Aesculus</i> , <i>Juglans</i> riverain forest 5011 Hygrophytic <i>Quercus lamellosa</i> forest 6110 Hygrophytic <i>Schima wallichii</i> 6220 <i>Schima wallichii</i> , <i>Castanopsis indica</i> hygrophytic 9003 Pokhara cultivated areas	<b>15 types of vegetation</b> 2101 Upper Alpine Meadow 2231 Moist Alpine Scrub 3001 Trans-Himalayan Steppe 3002 Trans Himalayan Lower <i>Caragana</i> Steppe 3003 Trans Himalayan High Alpine vegetation 3111 Fir-Blue Pine forest 3211 Fir forest 4111 Upper Temperate Blue Pine forest 4114 Spruce forest 4213 Cypress forest 4221 Mixed Blue Pine-Oak forest 4231 Lower Temperate Oak forest 4235 East Himalayan Oak-Laurel forest 5033 <i>Schima-Castanopsis</i> forest 6131 Hill Sal forest
*written as 'veg rocks' in original BPP document Sources: BPP 1995, TISC maps 2001	

- Mammal species symbolic of ACA are the Snow leopard, Musk deer, Tibetan argali, and Tibetan wolf
- Bird species symbolic of the area are the Golden eagle, Demoiselle crane, and various pheasants

## Achievements

The major achievements of the Annapurna Conservation Area (ACA) include the following.

- The Annapurna Conservation Area Project (ACAP) is considered a model for conservation projects both within Nepal and throughout the world
- The Project began in a single VDC, Ghandru, in 1986 as a pilot phase and was extended to Lwang and Sikles in 1990 under the first phase of expansion; the second expansion phase in 1992 and 1993 further extended the project to Lomanthang, Jomsom, Manang (a field site), and Bhujung, covering a total of 55 VDCs in five districts (KMTNC 1997)
- Development and implementation of ACAP management plan for 1997 – 2002

- Development of the Conservation Area Management Regulation 1997 and enforcement of Conservation Area Directives (KMTNC 2002)
- The National Trust for Nature Conservation (NTNC) submitted a phase-out strategy for ACAP to the government in 2001; in consideration of ACAP's commendable



Satin Poppy (*Meconopsis napaulensis*) DC., found at the base of Machhapuchre, 3490m

P. R. Shaky

undertakings during the first 10-year phase, 1991-2001, the government has extended management responsibility by NTNC for another 10 years until 2012

- Intensive capacity-building of all 55 conservation area management committees to enable handover of management responsibility by ACAP to local community-based organisations was the primary strategy for ACAP's phase-out from the Annapurna Conservation Area (KMTNC 2002)
- The Upper Mustang Biodiversity Conservation Project collectively funded by GEF, UNDP, the American Himalayan Foundation, ICIMOD, and NTNC, has been ongoing for five years since 2000 in the Lomanthang sector of ACAP and covers seven VDCs
- ACAP has proved that the principle of participatory integrated conservation and development in conservation area management is a successful Nepal model; this as well as a people-centred buffer zone management strategy in national parks have been replicated in Manaslu and Kangchenjunga conservation areas (KMTNC 2001a)
- Conservation education has been the backbone of all programmes and is an essential backdrop in most schools in the area
- The conservation of local culture is accorded utmost priority as conservation of nature; the first phase of the cultural conservation programme of Upper Mustang has been completed and will be expanded to other monasteries in the second phase (KMTNC 2002)

## Achievements

The major achievements of the Annapurna Conservation Area Project (ACAP) up to year 2000 include the following.



P. R. Shakya

*Pinus wallichiana* A.B Jackson Blue pine forest, Lower Mustang 2750m

- ACAP's Natural Resource Conservation Programme conducted a variety of activities, prepared 55 conservation area management committee (CAMC) operational plans, established 27 project and private nurseries, planted 1,662,014 tree seedlings, and established a CAMC fund raising NRs 2,366,000 (US\$36,400) as a form of economic empowerment; it also established 10 musk deer and snow leopard conservation committees, conducted various training programmes and study tour activities on various aspects of conservation
- An Alternative Energy Programme conducted and completed various activities, set up 13 micro-hydro schemes benefiting 1,989,000 households and serving as hotels, installed 589 back boiler systems, established 36 kerosene depots and conducted training programmes and study tours
- The Conservation Education Programme conducted various activities including 74 conservation education classes in local schools, and 72 study tours for local students
- The Community Development Programme conducted a variety of programme activities including construction of 62 suspension bridges, construction and repair of a 60,191m trail, construction of 194 school buildings, 141 drinking water schemes, and eight river training sites
- The Agriculture Development Programme conducted various activities and training programmes, set up 10 agricultural demonstration sites, distributed 10,143,157 vegetable seedlings, trained 524 people trained in kitchen gardening, and provided soft loans to 45 households for agricultural development and other activities
- The Livestock Development Programme conducted various activities including training for 36 farmers on poultry farming for nine village animal health workers, and provided support to 11 veterinary clinics and 124 shed improvement activities
- The Women Development Programme conducted self-help activities among 290 mothers groups, provided group management training to 36 mother's groups, and operated seven day care centers, 139 adult literacy classes, 27 school endowments for girls; it also formed 18 savings and credit group cooperatives and provided training on their various aspects

- The Tourism Development Programme conducted a variety of activities including forming 27 tourism management sub-committees that benefitted 5,120 participants through 89 tourism awareness camps; 656 people participated in 22 lodge management training programmes, 117 rubbish pit and 12 dumping sites were constructed, 29 visitor information centers established; two micro-enterprise training courses conducted; various other training programmes and visits were carried out
- The Cultural Heritage Conservation Programme conducted 15 different activities, renovated 52 monasteries, formed 13 monastery management committees, and constructed 19 temples
- Research and documentation: 13 diverse activities were conducted including two wildlife surveys, seven medicinal plant surveys, and 16 VDC socioeconomic surveys
- Community Health Programme: some 7,117 people have benefited from the Programme's improved health services; conducted 30 mobile health camps benefiting 2,953; conducted 23 health awareness camps with 611 participants
- Recipient of the Deutscher Rieseuro-Verband Award for Tourism and Environment; Tourism for Tomorrow – Worldwide; Tourism for Tomorrow – Asia Pacific
- Recipient of numerous awards including the J. Paul Getty Conservation Award, Global 500 Award, the Abraham Conservation Award 2001 and 2002 from WWF/Nepal, for the Mothers' Group of Jomsom village and for the Tourism Management Sub-Committee of Chhomrong village
- ACAP has brought positive impacts in the lives of people from 55 VDCs; communities that did not have basic clean drinking water at the onset now have this supply; community-owned and managed drinking water supply, health posts, and health services that provide adequate health care
- Alternative means of energy through community-owned and managed systems such as micro-hydro and kerosene depots
- Improved access to and mobility through regular repair and maintenance of trails, and construction of bridges

## Manaslu Conservation Area Background

### Area

Manaslu Conservation Area (1,663 km<sup>2</sup>)  
Site code: 143002 (HMG/N/MFSC, 2002)

### Location

#### Coordinates

	Latitude (North)		Longitude (East)		Altitude (metre)	
NP	28° 20' 24''	28° 45' 00''	84° 28' 48''	85° 11' 24''	-	-
NP= national park						

Gorkha district, with seven VDCs inhabited by various ethnic groups (KMTNC 2002)  
(Annex 3)

### History

Established in 1998 as a conservation area, the second conservation area managed by the National Trust for Nature Conservation (NTNC)

### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974  
Mountaineering Expedition Regulations 1979  
NTNC Act 1982  
Conservation Area Regulations 1997

### IUCN management category

Conservation VI

## Significance

The physiographic aspects of the protected area are as follows.

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	

The forest ecosystems and vegetation types are as follows (Annex 1.1).

Ecosystem type	NBRB 2006
<b>19 types of ecosystems</b> 1000 Glaciers, snow, rock 2101 Alpine meadows with <i>Graminae</i> and <i>Cyperaceae</i> 2103 Mesophytic mat patches and vegetation on rocks 2105 Alpine meadows on the southern side of the Himalayas 2201 Rhododendron mesohygrophytic scrublands 3102 Upper sub-alpine Rhododendron-Birch forest 3103 Upper sub-alpine Birch Blue-Pine open forest 3110 Upper sub-alpine north Himalayan alpine vegetation 3203 Lower sub-alpine Fir ( <i>Abies spectabilis</i> ) Forest 4004 Open & dry montane Blue Pine 4006 Juniper forest 4007 Rhododendron-Hemlock-Oak forests 4009 Mountain Oak ( <i>Q. semecarpifolia</i> ) 4010 Blue Pine-spruce forest 4011 Spruce mountain forest 5011 Hygrophytic <i>Quercus lamellosa</i> forest 6109 Hygrophytic <i>Schima-Castanopsis-Englehardtia</i> forest upper subtropical 6210 Hygrophytic <i>Schima-Castanopsis-Englehardtia</i> forest lower subtropical 8001 High altitude cushion plant formation Sources: BPP 1995, TISC maps 2001	<b>11 types of vegetation</b> 2101 Upper Alpine Meadow 2231 Moist Alpine Scrub 3001 Trans Himalayan Steppe 3003 Trans Himalayan High Alpine vegetation 3131 Birch-Rhododendron forest 3211 Fir forest 3212 Larch forest 4111 Upper Temperate Blue Pine forest 4131 Temperate Mountain Oak Forest 4231 Lower Temperate Oak forest 5021 Chir Pine and Broad-leaved forest

The biological aspects cover species and habitat including ecosystem description, conservation, and management:

- Mountain peaks, glaciers, high latitude lakes, rivers, pastures, forests and cultivated lands comprise the landscape of Manaslu Conservation Area
- An estimated 2,500 species of flora recorded in the area (BPP 1995), including 587 vascular plants: 10 gymnosperms, 491 dicots, and 86 monocots (**Annex 1.9.15**)
- Records of 33 species of mammals, 110 species of birds, and three species of reptiles and amphibians in Manaslu (KMTNC 2002); current checklists include nine species of mammals protected under CITES
- Six species of mammals and one bird species are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of Manaslu Conservation Area (MCA) include the Snow leopard (*Panthera uncia*, *Uncia uncia*), Musk deer (*Moschus chrysogaster*), Himalayan Tahr (*Hemitragus jemalhicus*), and ground squirrel (family Sciuridae)
- Bird species symbolic of MCA are the Variegated laughing-thrush (*Garrulax variegatus*), Grandala (*Grandala coelicolor*), and Northern Goshawk (*Accipiter gentiles*)

## Achievements

The major achievements of Manaslu Conservation Area are as follows.

- Conservation area management committees (CAMCs) have been established in each of the seven VDCs in Manaslu; the major community-based organisations in the area are 12 forest management committees at the ward level, 25 women's groups (WGs), four micro-hydro management committees, and two tourism management committees

- Material distribution centre and check post and tourist information centre established at MCA Project headquarters in Phidim
- Improved access to the area (as the nearest roadhead is a three- day walk); a 10.8 km trail was improved by stone paving and widening; sign posts were placed along the entire Larkye trail with tourism management committees taking responsibility for road maintenance; construction of 16 new wooden bridges and restoration of two old ones; construction of two helipads; survey of short take off and landing airport at Prok village; establishment of six wireless radio communication sets
- Alternative energy: four micro-hydro electricity projects are underway, the Samagaon 33 kW, Lho 30 kW, Prok 23 kW, and Namrung 15 kW projects, benefiting 351 households; seven kerosene depots have been established under a loan agreement; eight gombas were supported with 40-50 watt solar energy systems
- Nature conservation: development of a strategy to seek alternatives to natural resources; formation and strengthening of CAMCs through training programmes, workshops, and exposure visits; and deposit of NRs 24,000 (US\$370) in each CAMC account since 2000 (the CAMCs employ a forest guard in each ward); formation of 11



forest management committees in each ward in three VDCs; establishment of a forest nursery and production of 7000 seedlings for the plantation; conduct of various village conservation education and extension activities; a workshop held as a first step in developing operational plans for each CAMC

- Sustainable tourism development and management: built five community-owned camp grounds; supported the construction of toilets in five private campsites; provided financial support to three local lodge owners; organised various training programmes to build local capacity; 20 campsites now have piped drinking water, 10 have dumping pits, 15 have toilets; organised tourism awareness camps and formed tourism management committees in two VDCs; provided training on various aspects of hospitality
- Sustainable community development: established drinking water supply schemes in 11 villages, with 55 tap water supply systems benefiting 525 households; built 14 community toilets; various kinds of support to schools such as for the construction of roofs and inclusion of conservation education in the curriculum; launched health improvement and sanitation programmes through various training and extension programmes and through infrastructure support; provided support for the continuation of traditional 'Amchi' (Tibetan healing) practices
- Heritage conservation: renovated 120 gombas through financial and technical support; provided support for the installation of solar photovoltaic electricity
- Women in conservation and development: formed 25 women's groups (WGs) in seven VDCs; launched adult literacy classes in 10 villages in four VDCs: WGs are among the most active institutions, playing significant roles in conservation and development
- Agriculture and livestock development: promoted vegetable production, established demonstration plots in four sites; provided training on kitchen gardening, as a result of which local people have started their own kitchen gardens
- Capacity building: strengthened technical, analytical and decision-making skills for local people; conducted five exposure tours of VDCs, WGs, CAMCs; organised micro hydro-electricity management committee representatives and provided training on various aspects

- Research, promotion and publicity: conducted biodiversity survey in 1998/99; prepared a promotional documentary film

## Kangchenjunga Conservation Area

### Background

#### Area

Kangchenjunga Conservation Area (2,035 km<sup>2</sup>)

Site code: 143001 (HMG/N/MFSC 2002)

#### Location

Coordinates

Latitude (North)		Longitude (East)		Altitude (metre)	
27°	27°	87°	88°	-	8586
28'	56'	39'	12'		
48''	24''	00''	00''		

Taplejung district, with four VDCs inhabited by various ethnic groups (WWF 2003) (**Annex 3**)

#### History

Established in 1997 as a conservation area adjoining the Qomolangma Nature Preserve in Tibet, and Kanchenjunga Biosphere Reserve in Sikkim, India; Declared as a 'Gift to the Earth' (WWF 2003) in 1997

#### Relevant legislation

National Parks and Wildlife Conservation Act 1973  
National Parks and Wildlife Conservation Regulations 1974  
Mountaineering Expedition Regulations 1979  
Conservation Area Government Regulations 1997

#### IUCN management category

Conservation VI

### Significance

The physiographic aspects of the protected area are as follows.

The forest ecosystems and vegetation types are as follows (**Annex 1.1**).

Bioclimatic zone	Altitude (metre)	Physio-graphic zone
Nival	Above 5000	High Himal
Upper Alpine	4501 to 5000	High Mountains
Lower Alpine	4001 to 4500	
Upper Sub-Alpine	3501 to 4000	
Lower Sub-Alpine	3001 to 3500	
Upper Temperate	2501 to 3000	Mid-Hills
Lower Temperate	2001 to 2500	
Upper Sub-Tropical	1501 to 2000	
Lower Sub-Tropical	1001 to 1500	
Upper Tropical	501 to 1000	
Sources: Dobremez 1972, LRMP 1986		

Biological aspects cover species and habitat, including ecosystem description, conservation and management.

- Mountain peaks, glaciers, high latitude lakes, rivers, pastures, forests and cultivated lands comprise the landscape
- An estimated 3,000 species of flora can be found in the conservation area (BPP 1995)
- Twenty-three species of flowering plants are endemic to the area (Shrestha and Joshi 1996)
- Records of 77 vascular plants: three gymnosperms, 70 dicots, and four monocots in the area (**Annex 1.9.16**)

Ecosystem type	NBRB 2006
<b>12 types of ecosystems</b> 1000 Glaciers, snow, rock 2101 Alpine meadows with <i>Graminae</i> and <i>Cyperaceae</i> 2202 Mesohygrophyte <i>Rhododendrons</i> ( <i>R. anthopogen</i> , <i>R. nivale</i> ..) 2206 Shrublands with <i>Rhododendrons</i> 3121 Upper-sub-alpine <i>Rhododendron</i> shrublands 3220 Lower sub-alpine <i>Abies spectabilis</i> Forest 3221 <i>Larix griffithiana</i> forest 4008 Hemlock forest ( <i>Tsuga dumosa</i> ) 4023 Mixed Broadleaved forest 5012 Hygrophytic forest with <i>Quercus lamellosa</i> 6110 Hygrophytic <i>Schima wallichii</i> 6220 <i>Schima wallichii</i> , <i>Castanopsis indica</i> hygrophytic	<b>Eight types of vegetation</b> 2101- Upper Alpine Meadow 2231- Moist Alpine Scrub 3211- Fir forest 3212- Larch forest 4136- Mixed <i>Rhododendron</i> -Maple forest 4235- East Himalayan Oak-Laurel forest 5033- <i>Schima</i> - <i>Castanopsis</i> forest 6131- Hill Sal forest
Sources: BPP 1995, TISC maps 2001	



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*Rhododendron falconeri* Hook.f., Taplejung

- Current checklists include 13 mammal, and 280 bird species (**Annex 2.26**)
- Fifteen species of mammals found in the Kangchenjunga Conservation Area (KCA) are protected under CITES
- Seven species of mammals and one bird species are protected under Appendix I of NPWC Act 1973
- Mammal species symbolic of KCA include the Snow leopard, musk deer and Red panda (*Ailurus fulgens*)
- Bird species symbolic of the area include the Golden-breasted fulvetta, snow cock, blood pheasant, and red-billed chough
- Declared as a 'Gift to the Earth' in April 1997 by HMG of Nepal in support of WWF's Living Planet Campaign in recognition of the area's rich natural and cultural resources (WWF 2003)

### Achievements

The major achievements of Kangchenjunga Conservation Area are as follows.

- Research endeavours conducted in and around KCA have studied ecotourism, transhumance grazing, and the red panda

- Development of the Kanchenjunga Management Plan is currently underway
- Successful development of user committee operational plan
- Successful development and monitoring of the Snow Leopard Action Plan
- Completion of Red Panda status survey
- Development of a Tourism Plan by the DNPWC designed to introduce and regulate efficient tourism management practices
- Effective formation of Conservation Area Management Council
- Extension of KCA area from 1,650 km<sup>2</sup> to 2,035 km<sup>2</sup>
- WWF is promoting a long-term concept of a 'Tri-Nation Peace Park' in collaboration with



High altitude Topke Lake 3680m, Taplejung

P. R. Shaky

several international organisations to connect KCA to neighbouring protected areas in India and China (WWF, 2003)

## Proposed protected areas

Along with the gazette notified protected areas described in the preceding table on Protected Areas, eight are recommended sites: five conservation areas and three hunting

reserves; and one is a proposed extension to the national park as mentioned in the World Database on Protected Areas (<http://www.unep-wcmc.org/wdpa/>).

Site code	Name	Latitude (North)	Longitude (East)	Area (ha)
<b>Conservation Areas</b>				
10085	Bara	27° 0' (27.000°)	84° 59' 59" (85.000°)	20,000
33551	Ghodaghodi Tal	28° 40' 59" (28.683°)	80° 55' 59" (80.933°)	10,000
33552	Phulchoki	27° 37' (27.617°)	85° 16' (85.267°)	15,000
143004	Tambedanda	27° 30' (27.500°)	86° 15' (86.250°)	200
143003	Thodung	27° 10' 13" (27.170°)	88° 7' 18" (88.122°)	5,400
			Total	50,600
<b>Hunting Reserves</b>				
10086	Banke	-	-	51,800
10088	Rasuwa	-	-	10,400
10090	Trijuga	-	-	36,300
			Total	98,500
<b>National Park Extension</b>				
303304	Bardia National Park (altitude 141m-1,156m)	28° 9' 22" (28.156°)	81° 54' 45" (81.913°)	96,200
Source: IUCN World Commission on Protected Areas and the World Database on Protected Areas Consortium				





A wetland area around Koshitappu Wildlife Reserve  
(Govinda Joshi)