

SIKKIM



Photo: Asad R. Rahmani

Some high altitude wetlands of Sikkim are important for waterbirds.

Sikkim (27° 05' - 28° 09' North and 87° 59' - 88° 56' East) is one of the smallest and the least populous states in India. It covers an area of 7,096 sq. km, extending approximately 114 km from North to South and 64 km from East to West. Wedged in between the Himalayan kingdoms of Nepal in the west and Bhutan in the east, Sikkim is bounded by the Darjeeling District of West Bengal in the south and a stretch of Tibetan Plateau in the north. There are four districts in Sikkim, namely North Sikkim, West Sikkim, South Sikkim and East Sikkim.

Sikkim is classified as part of the biogeographic province of Central Himalayas, which in India includes the Darjeeling District of West Bengal with a Temperate-Broadleaf forest. The north of Sikkim is a biogeographic province of Trans-Himalaya-Tibetan plateau (Rodgers *et al.* 2002) with biota of Palaearctic affinity.

Sikkim is the wettest region in the entire Himalayan chain as it receives the unobstructed inflow of the southwest monsoon winds from the Bay of Bengal, which then precipitate in this region (Ali 1962). It is surrounded by (i) the Singalila mountain chain culminating in the mighty Khangchendzonga peak which at over 8,598 m is the world's third highest, (ii) the Chola range and the Chumbi Valley on the Bhutan-Tibet side and (iii) the main Himalayan axis across the North. This forms a gigantic horseshoe catchment of the River Tista, the lifeline and the main river of Sikkim, and all its feeder streams, viz., Lhonak, Zemu, Lachung, Tolung, Great Rangit, Rongni and Rangpo. The Rangit and the Tista rivers form the main channels of drainage and run nearly North-South. These perennial rivers are rain-fed and snow-fed. The valleys cut by these rivers and their streams are very deep and mostly forested.

According to human population census of 2001, the State has a population of about 5,40,500, with the density of 76 persons per sq. km. Almost 92% of the population lives in rural areas. Literacy rate is about 70%. East Sikkim is the most populous district (2,44,790) among the four districts while the lowest population is found in North Sikkim (41,023).

The average annual rainfall ranges between 210 mm to 2,500 mm. The rainfall varies widely between sheltered valleys, foothills and high mountains (alpine region). Temperature varies with the altitude and the slope. In lower altitudes, the temperature is between 4.5 °C to 18.5 °C, whereas at higher altitude, it varies from 1.5 °C to 9.5 °C. Still higher up, the temperature can go down as low as -30 °C.

Forestry is the major land use in the State and nearly 80% of the total geographical area of the State is under the administrative control of the State Forest Department. This proportion is one of the largest in the country. There is one high altitude national park (and also biosphere reserve) and six wildlife sanctuaries, which together constitute over 30% of the total geographical area of the State.

Vegetation

Covering just 0.2% of the geographical area of India, Sikkim shows great biological diversity. In a land of vast variation in altitude within very short distances, ranging from around 300 m to 8,598 m, elevation plays a prime role in fashioning the ecoregions of the State. This is evident from the presence of Sal forests in the Rangit Valley in the south, to the temperate fir forests in the north, beyond which lie the Trans-Himalayas and the cold desert of the Tibetan plateau.

Broadly speaking, there are five altitudinal zones of vegetation, not clear-cut at their boundaries as they merge into one another.

The Tropical Ecoregion extends roughly from the foothills of the Outer Himalayas to an altitude of about 1,200 m. It contains steep-sided valleys and gorges with well-drained flanking slopes. Various species of orchids, *Rhapidophora*, wild banana, *Pandanus*, nettles and giant bamboo are characteristic of the region. In the region of Rangit Valley, Sal *Shorea robusta* shows a unique association with the Chir Pine *Pinus roxburghii*. In patches of protected forest, it is possible to see the weak Sal being slowly dominated by the Pine. These patches are relatively poor in bird life. However, the lowland forests of Sikkim are home to several threatened species of birds such as the Rufous-necked Hornbill *Aceros nipalensis*, the Great Pied Hornbill *Buceros bicornis*, locally called ‘Hongraio’, the Chestnut-breasted Partridge *Arborophila mandelli*, the Black-breasted Parrotbill *Paradoxornis flavirostris*, the Grey-crowned Prinia *Prinia cinereocapilla* and the Ward’s Trogon *Harpactes wardi*. Other lowland fauna includes the introduced Peafowl *Pavo cristatus*, python, geckos, porcupines, Assamese Macaque *Macaca assamensis* and Barking Deer *Muntiacus muntjak* and a host of butterflies and other invertebrates, fish, frogs and toads. Several species of migratory waterbirds use the river systems during transit. A representative area of the Kitam Reserve Forests is proposed to be notified as a bird sanctuary.

The Sub-Tropical ecoregion extends from about 1,800 m to 3,000 m. The rainfall in this zone is very heavy and conditions remain humid throughout the year. The upper-storey mainly consists of *Castanopsis hystrix*, *Machilus* spp., *Rhododendron* spp., *Symplocos spicata*, *S. theifolia*, *Michelia excelsa*, *Quercus lamellosa*, *Q. lineata*, *Q. pachyphylla* and *Leucosceptrum canum*. In the underwood are *Engelhardia spicata*, *Eurya japonica*, *Rhododendron arboreum* and *Viburnum* spp. In the middle storey, *Symplocos theifolia* is the main species and *Litsea* spp. and *Bucklandia populnea* are other associates. Dense tall evergreen forests with oaks and Rhododendrons predominate. The undergrowth consists of *Arundinaria maling*, dwarf Rhododendron, ferns, epiphytic mosses and orchids. This area is also rich in birds including the Rusty-bellied Shortwing *Brachypteryx hyperythra*, Lesser Shortwing *Brachypteryx leucophrys*, Kaleej Pheasant *Lophura leucomelanos* and Satyr Tragopan *Tragopan satyra*; reptiles such as Japalura lizards *Japalura* sp., Cobra *Naja naja*, Krait and Himalayan Pit Viper *Gloydius himalayanus*; Himalayan Bullfrog *Paa leibigii*; butterflies and leeches. Fambong Lho Wildlife Sanctuary in East Sikkim and Maenam Wildlife Sanctuary in South Sikkim are the two protected IBAs in this ecoregion.

The Temperate ecoregion extends from 3,000 m to 4,000 m, with mixed coniferous forests of Hemlock, Spruce, Pine, Fir and Junipers and with shrubby undergrowth of Rhododendron and *Arundinaria*. Red Panda *Ailurus fulgens*, Common Langur *Semnopithecus entellus* and Asiatic Black Bear *Ursus thibetanus*, Goral *Nemorhaedus goral*, Serow *Nemorhaedus sumatraensis*, Himalayan Monal *Lophophorus impejanus*, Fire-tailed Sunbird *Aethopyga ignicauda*, and some species of reptiles and amphibians are characteristic of this region. The Brown Trout *Salmo trutta fario* has been introduced in high-altitude lake and river systems. Wild Seabuckthorn *Hippophae* sp. is collected for medicinal properties and also to make a dye.

The Alpine forests and scrub extend up to 4,500 m with small crooked trees and large shrubs interspersed with fir and pine. The stunted forest is mainly of rhododendron of many species. Dominant wild fauna include the Musk Deer *Moschus chrysogaster*, the Himalayan Tahr *Hemitragus jemlahicus*, the Blue Sheep *Pseudois nayaur*, the Blood Pheasant *Ithaginis cruentus* and the Ibisbill *Ibidorhyncha struthersii*. River systems harbour some (introduced) Trout *Salmo trutta fario*. Most of the flora of this region attracts interest for medicinal purposes. Dwarf rhododendron leaves are used for burning as incense. This region has a very small resident human population, mainly *Bhutias* and mostly pastoral, herding livestock such as Yak, *Dzo* (cow-yak hybrid) and domestic cattle.

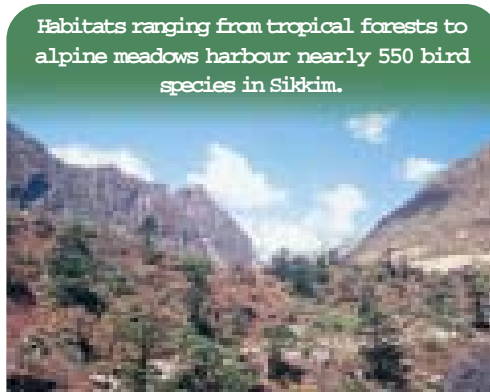
The Temperate and Alpine ecoregions are protected in four wildlife sanctuaries at Shingba (North), Kyongnosla (East), Pangolakha (East) and Barsey (West) and one national park namely Khangchendzonga National Park (North and West). They harbour a representative biodiversity of these ecoregions.

Shingba Rhododendron Sanctuary is home to the endemic *Rhododendron niveum* which has been designated the State Tree of Sikkim. The Kyongnosla Alpine Sanctuary has sheltered the Takin *Budorcas taxicolor*, which wandered over from Bhutan in 1999 through the newly declared Pangolakha Wildlife Sanctuary, which itself is contiguous with West Bengal’s Neora Valley National Park. The 104 sq. km Barsey Rhododendron Sanctuary with its pure stands is contiguous with the Singhalila National Park in West Bengal.

The Trans-Himalayan ecoregion extends from 4,500 m to over 5,500 m with characteristic cold desert vegetation, exclusively restricted to the north of Sikkim. This ecoregion has not yet been included in the protected area network of the State and is perhaps the most threatened. It contains many endangered species such as the Kiang or Tibetan Wild Ass *Equus kiang*, the Nayan *Ovis ammon*, the Tibetan Gazelle *Procapra picticaudata*, the Snow Leopard *Uncia uncia* and the Tibetan Wolf *Canis lupus chanco*. The Tibetan Snowcock *Tetraogallus tibetanus*, the Lammergeier *Gypaetus barbatus*, Golden Eagle *Aquila chrysaetos* and Ruddy Shelduck *Tadorna ferruginea* are also found here. The region has a short four-month growing season during which grasses, sedges and medicinal herbs spurt abundantly supporting a host of insect fauna as well as wild and domestic herbivores, larks and finches. There are no permanent settlements. The human population consists of a small number of nomadic Tibetan graziers or ‘Dokpas’ (who herd Yak, sheep and goats) and a large number of Defence personnel, as the area forms the international border with Tibet (China).

Forestry Practices: Past and Present

In 1914, the then Maharajah of Sikkim, Sidkeong Tulku, the tenth Chogyal after completing his studies at Oxford University in 1908 was given charge of forests, monasteries and schools. He initiated the demarcation of the forest areas of the then Kingdom



Habitats ranging from tropical forests to alpine meadows harbour nearly 550 bird species in Sikkim.

Photo: Asad R. Rahmani

IN-SK





Important Bird Areas in India – Sikkim

IN-SK

of Sikkim. Forests that were vital to the life support system and required full protection were set apart as Reserve Forests. These forests were to be left in their natural state and heavy penalties were imposed for illegal activities in these areas. Other forest areas that could be worked on a small scale, in order to meet the timber and fuel-wood requirements of the local populace, were carved out in the vicinity of villages. Those forests that were set apart in this manner to meet the wood requirements of the local people were called Khasmal Forests and those that were set apart as grazing grounds for village cattle were called Goucharan Forests. Forest rules and regulations were instituted for the first time during this period. The Chogyal introduced avenue plantation of trees on either side of bridle paths in Sikkim through public participation; he passed regulations for conserving 50 yards on either side of the rivers Rangit, Tista and their tributaries as River/Khola Reserves and for compulsory bench-terracing of the cultivable land of farmers.

Consequently, the system of exploitation of forests by selection felling, leaving the mother stock intact, was adopted. Contracts were given for lifting of forest produce from mature forests and extracted timber was exported with a view to generate revenue to meet increasing expenditure on administration, and to aid natural regeneration. This was supplemented by undertaking plantation work on a limited scale in marginal forests through the *Taungyadar* system.

In 1975, Sikkim was merged with India as its 22nd State and became part of the Indian Union. Developmental activities accelerated, aided by central assistance. Construction activities got a boost, and the lifestyle of the people also improved considerably. The increasing population, coupled with the timber-intensive lifestyle, has mounted pressure on the forest areas, and the requirement of forest produce for internal consumption has also increased considerably.

IBAs AND IBA CRITERIA

Eleven IBAs have been selected in the State. All of them fulfill A1, A2 and A3 criteria. Although some high altitude wetlands are found, none of them fulfill A4 criteria.

Number of IBAs and IBA criteria

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

IBAs of Sikkim

IBA site codes	IBA site names	IBA criteria
IN-SK-01	Barsey Rhododendron Sanctuary	A1, A2, A3
IN-SK-02	Dombang Valley – Lachung – Lema – Tsunghang	A1, A2, A3
IN-SK-03	Fambong Lho Wildlife Sanctuary – Himalayan Zoological Park – Ratey Chu Reserve Forest	A1, A2, A3
IN-SK-04	Khangchendzonga National Park and Biosphere Reserve	A1, A2, A3
IN-SK-05	Kyongnosla Alpine Sanctuary - Tsomgo -Tamze - Chola Complex	A1, A2, A3
IN-SK-06	Lhonak Valley	A1, A2, A3
IN-SK-07	Lowland Forests of South Sikkim	A1, A2, A3
IN-SK-08	Maenam Wildlife Sanctuary – Tendong Reserve Forest	A1, A2, A3
IN-SK-09	Pangolakha Wildlife Sanctuary - Zuluk - Bedang Tso - Natula Complex	A1, A2, A3
IN-SK-10	Tso Lhamo Plateau - Lashar - Sebu La - Yumesamdong Complex	A1, A2, A3
IN-SK-11	Yumthang-Shingba Rhododendron Wildlife Sanctuary	A1, A2, A3

AVIFAUNA

‘This abrupt telescoping of the terrain – from the hot steamy foothill valleys to the arctic cold of the snow capped peaks – which has produced the marked altitudinal zonation in the rainfall, humidity, climate and vegetation, is also responsible for the great variety and numerical abundance of the resident bird life, making Sikkim perhaps the richest area of its size anywhere in the world’ (Ali 1962). In an area of 0.2% of India, the old tally of around 550 bird species represents around 30% of the aggregate bird species and subspecies found in the entire Indian subcontinent. This region of the Central Himalayas lies within the Eastern Himalayas Endemic Bird Area (EBA) and for several bird species such as Chestnut-breasted Hill Partridge *Arborophila mandelli*, Rusty-bellied Shortwing *Brachypteryx hyperythra* and White-naped Yuhina *Yuhina bakeri* this EBA is very important. It also has globally threatened species such as the Black-necked Crane *Grus nigricollis* and Lesser Kestrel *Falco naumanni*.



List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-SK-03, 07
Slender-billed Vulture	<i>Gyps tenuirostris</i>	IN-SK-03, 07
Vulnerable		
Baer's Pochard	<i>Aythya baeri</i>	IN-SK-04
Pallas's Fish-Eagle	<i>Haliaeetus leucorhynchus</i>	IN-SK-01, 04, 05, 09
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-SK-05, 08, 09, 10
Lesser Kestrel	<i>Falco naumanni</i>	IN-SK-04, 06, 10
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>	IN-SK-03, 07, 08, 09
Blyth's Tragopan	<i>Tragopan blythii</i>	IN-SK-08
Black-necked Crane	<i>Grus nigricollis</i>	IN-SK-06, 10
Wood Snipe	<i>Gallinago nemoricola</i>	IN-SK-02, 05, 06, 09, 10, 11
Rufous-necked Hornbill	<i>Aceros nipalensis</i>	IN-SK-03, 07, 08, 09
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>	IN-SK-01, 03, 07, 08
Slender-billed Babbler	<i>Turdoides longirostris</i>	IN-SK-07, 09
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>	IN-SK-01, 04, 07, 09
Hodgson's Prinia	<i>Prinia cinereocapilla</i>	IN-SK-07, 09
Beautiful Nuthatch	<i>Sitta formosa</i>	IN-SK-02, 03, 07
Near Threatened		
Satyr Tragopan	<i>Tragopan satyra</i>	IN-SK-05
Giant Babax	<i>Babax waddelli</i>	IN-SK-06, 10
Endemic Bird Area 130: Eastern Himalayas		
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>	IN-SK-01, 03
Hoary-throated Barwing	<i>Actinodura nipalensis</i>	IN-SK-01, 03, 04, 05, 08, 09, 10, 11
White-naped Yuhina	<i>Yuhina bakeri</i>	IN-SK-02, 03, 04, 07, 08
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>	IN-SK-03
Black-browed Leaf-Warbler	<i>Phylloscopus cantator</i>	IN-SK-04, 07
Ward's Trogon	<i>Harpactes wardii</i>	IN-SK-07, 09
Rufous-throated Wren-Babbler	<i>Spelaeornis caudatus</i>	IN-SK-07, 08
Wedge-billed Wren-Babbler	<i>Sphenocichla humei</i>	IN-SK-07, 08
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>	IN-SK-08, 09, 10
Giant Babax	<i>Babax waddelli</i>	IN-SK-10
Endemic Bird Area 133: Tibetan Plateau		
Hoary-throated Barwing	<i>Actinodura nipalensis</i>	IN-SK-06
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>	IN-SK-06

THREATS AND CONSERVATION ISSUES

Despite the fact that about 80% of Sikkim is under forest cover and the human population is relatively low, the State suffers from many conservation problems. Out of the 11 IBAs, in eight, firewood collection is a problem, at least at fringes, and six suffers from agricultural expansion and intensification. Hunting is not a major problem in any IBA but general unsustainable exploitation is seen in four IBAs.

Threats to IBAs

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection; E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events

In the tropical Ecoregion at lower elevations, *Lantana camara* and *Mikania* sp. are the major weeds. Forest fires are generally reported from this zone and there is an occasional problem of illegal removal of Sal and Teak trees. New hydroelectric projects have also been taken up in this zone. This ecoregion is not yet represented in the protected area network, though a representative area of the Kitam Reserve Forest is proposed to be notified as a bird sanctuary.

In the Sub-Tropical Ecoregion *Eupatorium* spp. is a major weed competing with *Artemisia* and other secondary growth. Large Cardamom, under-planted in forest patches and a tea estate at Temi are dominant features of the landscape, as much as naturalized exotic *Cryptomeria japonica* patches.

The Temperate and Alpine and Trans-Himalayan ecoregions are home to about 90% of the Yak population of Sikkim. These ecoregions are also rich in medicinal plants. Trans-Himalayan Sikkim supports the only true alpine grasslands in the State. Closure of the International Border to trans-humance over the last three decades has led to intense grazing pressure by both, domestic and wild herbivores on the land. The area also suffers from the presence of landmines, causing casualties among Yak, Nayan, Kiang, Tibetan Gazelle and Tibetan Wolf. The existence of feral dogs around army camps is a major hazard in this region.

The Trans-Himalayan ecoregion with its lakes and glaciers urgently needs to be represented in the protected area network of the State. At present the area suffers from a host of biotic pressures, which are urgently in need of mitigation. There is a lack of awareness, the undecided status of the last 23 families of nomadic shepherds or 'Dokpas', increase in numbers of feral dogs, collection of medicinal and aromatic plants, poaching of wildlife and various defence priorities including minefields and migrant labour camps in charge of road construction and maintenance. It is also the only area, which cannot be patrolled regularly without proper transport and communication facilities due to its extremely high altitude (over 5,000 m), inhospitable weather and inaccessibility. Interference in this fragile ecosystem is damaging the area irretrievably.

Perhaps the greatest irreversible damage looming ahead is from a plan to build hydroelectric dams on the Tista river. These projects would threaten many IBAs, especially the Khangchendzonga National Park and Biosphere Reserve. Sikkim has innumerable number of rivers and streams flowing down the glaciers, which provide abundant potential of hydroelectric power projects. It is estimated that Sikkim has potential to generate 8,000 MW seasonally and about 3,000 MW power during winter months (Rajvanshi *et al.* 2000). The river Tista has potential to generate huge hydroelectric power, as it descends from an elevation of about 5,000 m to about 300 m, within a distance of 175 km.

KEY REFERENCES

- Ali, S. (1962) *The Birds of Sikkim*. Oxford University Press, Madras.
- Rajvanshi, A., Dash, P.K., Dubey, Y., Lachungpa, U. G. and Mukherjee, S. K. (2000) *Ecological Assessment of Teesta Hydroelectric Project, State –V, Sikkim*. Wildlife Institute of India, Dehra Dun. 70 pp.
- Rodger, W. A., Panwar, H. S. and Mathur, V. B. (2000) *Wildlife Protected Area Network in India: A Review (Executive Summary)*. Wildlife Institute of India, Dehra Dun. Pp. 44.

Many hydro-electric dams are planned on Teesta River. These will irreversibly damage the ecology of this mighty river.

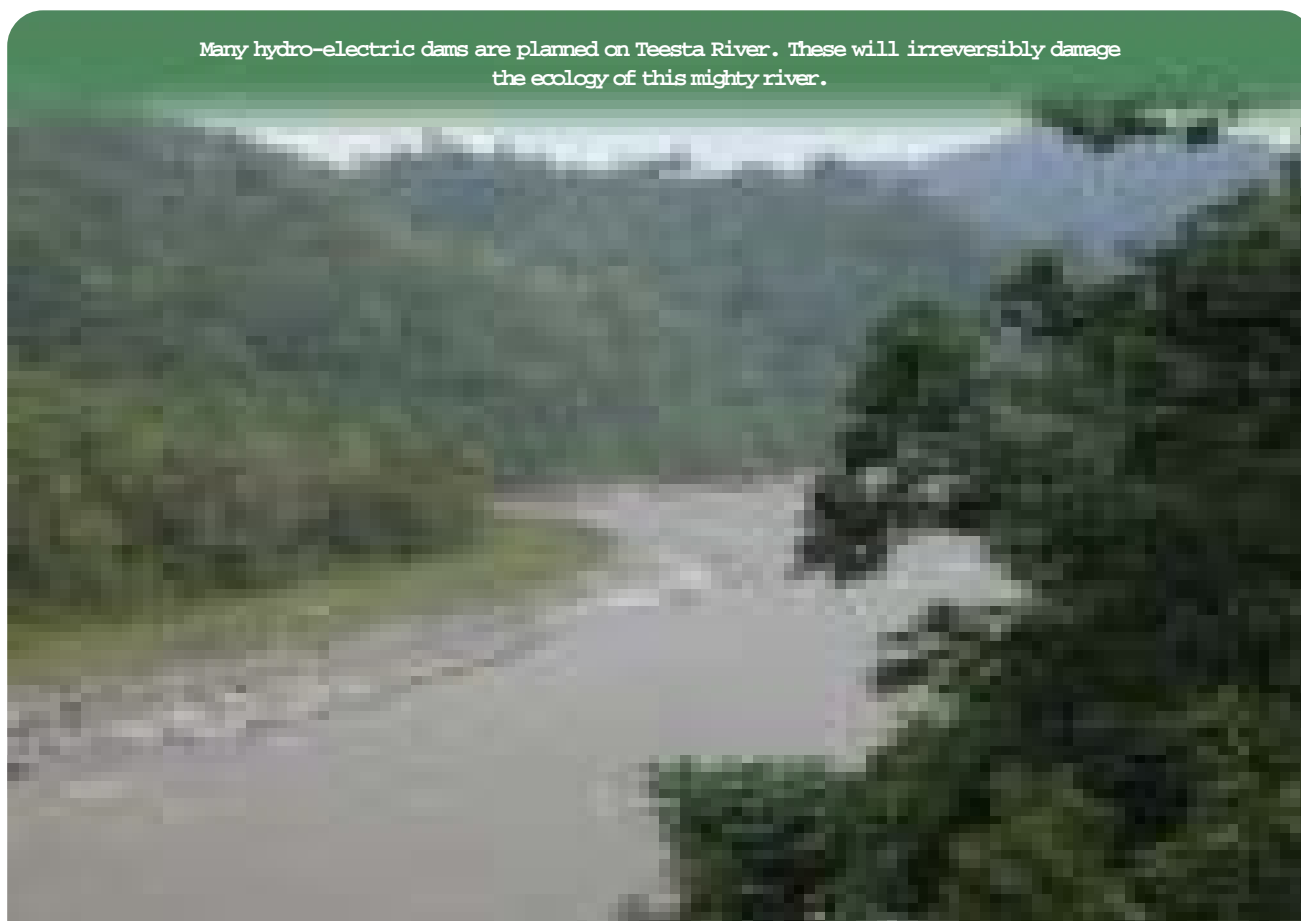
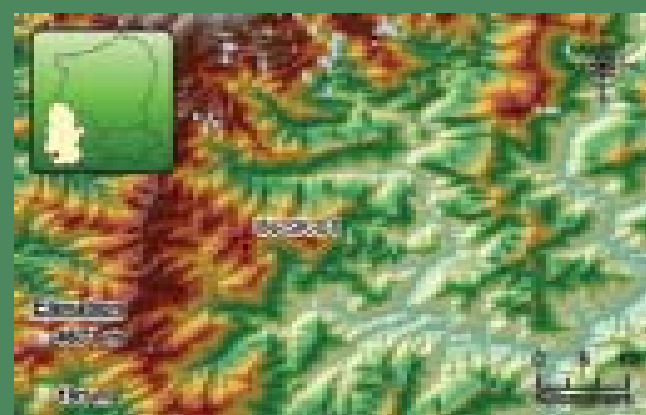


Photo: M. Zafar-ul-Islam

SK-01

BARSEY RHODODENDRON SANCTUARY



IBA Site Code	: IN-SK-01
State	: Sikkim
District	: West Sikkim
Coordinates	: 27° 11' 39" N, 88° 07' 06" E
Ownership	: State Forest Department
Area	: 10,400 ha
Altitude	: 2,000 – 4,100 m
Rainfall	: >250 cm
Temperature	: Not Available
Biogeographic Zone	: Himalaya
Habitats	: Subtropical Dry Evergreen, Subtropical Broadleaf Hill Forest, Alpine Moist Scrub

IBA CRITERIA A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas); A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest)

PROTECTION STATUS Wildlife Sanctuary, established in 1998

GENERAL DESCRIPTION

The 104 sq. km Barsey Rhododendron Sanctuary forms a vital corridor connecting the Khangchendzonga Biosphere Reserve (KBR) to its north with the Singalila National Park of West Bengal to its south. Five forest types are seen in this site: Subtropical Moist Deciduous Forests (2,200-2,400 m); Wet Temperate Forests (2,400-2,700 m); Moist Temperate Forests (2,700-3,250 m); Sub-alpine Forests (3,250-4000 m), and Alpine meadows (>4,000 m) (Sharma 2001). These diverse forest types shelter a wide range of faunal elements. This Sanctuary harbours some pure stands of *Rhododendron*, the dominant genus favored by the wet and cold climate along the Singalila Range and a variety of epiphytic orchids, ferns, mosses and lichens. Meadows take over from above 4,000 m and are rich in medicinal plants.

AVIFAUNA

This is an important IBA on the southeast corner of Sikkim with Nepal as its western border and contiguity with KBR and Singalila, stretching from alpine meadows down to subtropical forests. Birds from biomes 5, 7, 8 and 9 have been recorded here including at least three globally threatened species, two restricted range species, five out of 48 Biome-5 species, 38 out of 112 Biome-7 species, 21 out of 96 Biome-8 species and three out of 19 Biome-9 species. However, much more research input is needed (U. Lachungpa *pers. comm.* 2003). During a brief survey in September 1996, Biome-7 birds such as White-browed Tit-Babbler *Alcippe vinipectus*, Rufous Sibia *Heterophasia capistrata*, Grey-faced Leaf-Warbler *Phylloscopus maculipennis*, Orange-gorgeted Flycatcher *Ficedula strophciata*, Rufous-bellied Niltava *Niltava sundara*, Rufous-bellied Crested Tit *Parus rubidiventris* and Red-headed Bullfinch *Pyrrhula erythrocephala* were ringed with BNHS rings (Ganguli-Lachungpa 1996).

Vulnerable

Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>

Endemic Bird Area-130: Eastern Himalayas

Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Hoary-throated Barwing	<i>Actinodura nipalensis</i>

Biome-5: Eurasian High Montane (Alpine and Tibetan)

Snow Partridge	<i>Lerwa lerwa</i>
Snow Pigeon	<i>Columba leuconota</i>
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
Wallcreeper	<i>Tichodroma muraria</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>

Biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Blood Pheasant	<i>Ithaginis cruentus</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Himalayan Monal	<i>Lophophorus impejanus</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Greater Long-billed Thrush	<i>Zoothera monticola</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Streaked Laughingthrush	<i>Garrulax lineatus</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Greater Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Green Shrike-Babbler	<i>Pteruthius xanthochlorus</i>
Bar-throated Minla	<i>Minla strigula</i>
Red-tailed Minla	<i>Minla ignotincta</i>
White-browed Tit-Babbler	<i>Alcippe vinipectus</i>
Rufous Sibia	<i>Heterophasia capistrata</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Great Parrotbill	<i>Conostoma oemodium</i>
Fulvous-fronted Parrotbill	<i>Paradoxornis fulvifrons</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Ferruginous Flycatcher	<i>Muscicapa ferruginea</i>
Slaty-backed Flycatcher	<i>Ficedula hodgsonii</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophciata</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Fire-capped Tit	<i>Cephalopyrus flammiceps</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>

Biome-7: Sino-Himalayan Temperate Forest

Green-backed Tit	<i>Parus monticolus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Rusty-flanked Tree-Creeper	<i>Certhia nipalensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Gold-naped Black Finch	<i>Pyrrhoptectes epauletta</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>

OTHER KEY FAUNA

Notable mammals include Leopard *Panthera pardus*, Leopard Cat *Prionailurus bengalensis*, Yellow-throated Marten *Martes flavigula*, Masked Palm Civet *Paradoxurus hermaphroditus*, Goral *Nemorhaedus goral*, Barking Deer *Muntiacus muntjak*, Asian Black Bear *Ursus thibetanus*, Red Panda *Ailurus fulgens*, Crestless Porcupine *Hystrix brachyura*, and Himalayan Mouse-Hare *Ochotona roylei*. There are unconfirmed records of the Tibetan Wolf *Canis lupus chanco* and Wild Dog *Cuon alpinus*. Research is also needed on the herpetofauna and invertebrates of this IBA.

LAND USE

- ☐ Forestry
- ☐ Nature conservation and research
- ☐ Eco-tourism and recreation

THREATS AND CONSERVATION ISSUES

- ☐ Livestock grazing
- ☐ Poaching, collection of medicinal plants
- ☐ Recreation and tourism

Threats to forests in this IBA are yak and cow sheds, shepherds' activities, tree felling in forests, firewood and fodder collection, cattle trade from Nepal and landslides. Yak grazing was not a traditional activity but was started by foreign nationals from Nepal, with yak sheds multiplying from 1975 onwards. More

than the yaks, it is the caretaker who causes maximum damage through firewood collection, lopping of trees for fodder, smuggling of medicinal plants, hunting and trapping wild animals. In spring (March), once the snow starts melting, these graziers perform transhumance to the higher summer grazing grounds, moving in the peak monsoons along the traditional migration routes and camping in temporary yak sheds. Before the first snow arrives in November, they move back loaded with dairy products.

The areas adjacent to the yak sheds and their migration route are heavily overgrazed and consequently degraded (Tambe 2001). There is proliferation of unpalatable species around these sheds, namely *Potentilla peduncularis*, *Meconopsis paniculata*, and *Caltha palustris* in the alpine regions and *Rumex nepalensis*, *Berberis* and *Rosa* in the temperate regions.

The main cause of concern is the intensive, localized collection of firewood from the forests adjoining the yak sheds. At these altitudes, firewood is the only source of energy, which is met mostly from the slow growing *Rhododendron* shrubbery and Junipers. The graziers, especially the sheep graziers, indulge in trapping of the pheasants and wild mammals. The sheep dogs which are of immense utility to the graziers in rounding up the livestock are let loose during the night. They cause depredation of the pheasants, other ground nesting birds and their nestlings. Even small mammals are not spared. This has resulted in the wildlife becoming very shy, and as a result sightings are rare. Hence, though grazing *per se* may not be that damaging, the allied activities involved have highly deleterious impact on the biodiversity values of the Singalila Range that comprise this IBA.

Controlled tourism and livestock husbandry are the only two economic activities ecologically feasible in this region. Conventionally 'Eco-development' is carried out outside the sanctuary facilitated by the State Forest Department and aims at reducing the negative dependencies of the local communities on the natural resources of the sanctuary, the logic behind this approach being improving the socioeconomic status of the "High Impact Group". In the context of Barsey Rhododendron Sanctuary, the graziers constitute the "High Impact Group" and stay right within the sanctuary for all the twelve months of the year. Considering the kind of hardships they have to undergo in this tough terrain and inclement weather, most of them are eager to shift out to other alternate livelihoods. Some kind of capacity building and institutional support needs to be provided to these poor graziers as an alternative. Removing these graziers in a phased manner, employing a participatory approach, would be the biggest contribution to the well being of this unique ecosystem (Sharma 2001). This was attempted since 2001 and the State Forest Department has recently successfully removed cattle sheds from the Sanctuary (Sandeep Tambe *pers. comm.* 2003).

KEY CONTRIBUTORS

Sandeep Tambe and Usha Lachungpa

KEY REFERENCES

Ganguli-Lachungpa, U. (1996) *Baseline Bird Survey in Proposed Kitam Wildlife Sanctuary and other low-land forests of South Sikkim*. Report submitted to Oriental Bird Club (Unpublished).

Sharma, T. R. (2001) *Eco-Development of Barsey Rhododendron Sanctuary* (Unpublished). Department of Forests, Environment and Wildlife, Government of Sikkim.

Tambe, S. (2001) *Grazing in the Singalila Range, West Sikkim: A Detailed Report*. Unpublished report to the State Forest Department, Government of Sikkim.

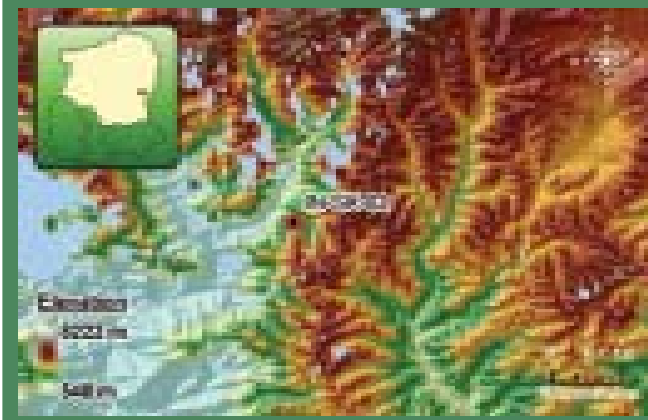
Yellow-billed Cough *Pyrrhocorax graculus* of Biome-5: Eurasian High Montane is commonly seen in this IBA.



Photo: Otto Fflisgar

SK-02

DOMBANG VALLEY-LACHUNG-LEMA-TSUNGTHANG



IBA Site Code	: IN-SK-02
State	: Sikkim
District	: North Sikkim
Coordinates	: 27° 37' 60" N, 88° 45' 00" E
Ownership	: Mixed (Village, Forest, GREF and Army land)
Area	: approx 60,000 ha
Altitude	: av. 2,679 m
Rainfall	: Not Available
Temperature	: -10 °C to 25 °C
Biogeographic Zone	: Trans-Himalaya
Habitats	: Hilly Evergreen Forest, Montane Broadleaf Evergreen and Deciduous Forest, Montane Mixed Broadleaf-Coniferous Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

This is a large IBA on village land, Forest Department land and land under the control of the army and GREF. The total area could be more than 60,000 ha. Starting from the small township of Tsungthang, there are small hamlets at Bop, Maltin, Khedum, Lema, Lachung, Sharchok and Dombang along the Lachung river in North Sikkim. Lachung is the northernmost frontier village in this Valley. Hence, there is heavy army deployment in the area. This IBA is subjected to seasonal grazing by livestock such as highland cows, yak and horses.

From subtropical Tsungthang to temperate Dombang Valley with hamlets and villages along Lachung Chu and forest patches under-planted with Large Cardamom *Ammomum subulatum*, there are mostly village lands with subsistence cultivation. The Mixed Coniferous Forests of Hemlock, Spruce, Pine, Fir and Junipers with shrubby undergrowth of Rhododendron and *Arundinaria* at Dombang give way to open Alder *Alnus nipalensis* towards Tsungthang. The degraded areas are overtaken by the ubiquitous *Eupatorium* an exotic invasive weed locally called 'Ban-Mara' or 'Forest Killer'.

AVIFAUNA

A full checklist of this site is not available but the bird records maintained by U. Lachungpa (*pers. comm.* 2002) show that this area could have significant populations of Vulnerable Beautiful Nuthatch *Sitta formosa* and Wood Snipe *Gallinago nemoricola*.

The site lies in Eastern Himalayas Endemic Bird Area (EBA 130) where Stattersfield *et al.* (1998) have identified 21 restricted range species. Only one such species, White-naped Yuhina *Yuhina bakeri* has been noticed till now (U. Lachungpa *pers. comm.* 2002), but looking at the extent of pristine habitat still available in this site, more restricted range species are likely to be found here.

This complex, with wide altitudinal variation, basically lies in Biome-7 (Sino-Himalayan Temperate Forest), but avian elements of Biome-5 (Eurasian High Montane - Alpine and Tibetan) and Biome-8 (Sino-Himalayan Subtropical Forest) are also found as these biomes merge with Biome-7, and secondly, many birds show seasonal altitudinal movement. Seventeen out of the 48 species listed in Biome-5 (BirdLife International, undated) are found in

this site. Similarly, 47 out of 112 species listed in Biome-7 are found here. As this site also has Montane Mixed Broadleaf-Coniferous Forest, Broadleaf Evergreen Forest and Deciduous Forest, many species of Biome-8 are also found here. Thus, this site perhaps has the most numerous biome restricted species among all the sites of Sikkim.

The important birds of the valley are Himalayan Griffon *Gyps himalayensis*, Wood Snipe *Gallinago nemoricola*, Snow Pigeon *Columba leuconota*, Grandala *Grandala coelicolor*, Plain Mountain-Finch *Leucosticte nemoricola* and Hill Partridge *Arborophila torqueola*. A specimen of Tibetan Horned Owl (Eurasian Eagle-Owl) *Bubo bubo* from Lema was collected and deposited with BNHS (Ganguli-Lachungpa 2002).

Vulnerable	
Wood Snipe	<i>Gallinago nemoricola</i>
Beautiful Nuthatch	<i>Sitta formosa</i>
Endemic Bird Area 130: Eastern Himalayas	
White-naped Yuhina	<i>Yuhina bakeri</i>
Biome-5: Eurasian High Montane (Alpine and Tibetan)	
Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Solitary Snipe	<i>Gallinago solitaria</i>
Ibisbill	<i>Ibidorhyncha struthersii</i>
Snow Pigeon	<i>Columba leuconota</i>
Grey-backed Shrike	<i>Lanius tephronotus</i>
Alpine Accentor	<i>Prunella collaris</i>
Altai Accentor	<i>Prunella himalayana</i>
Plain-backed Thrush	<i>Zoothera mollissima</i>
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
Guldenstadt's Redstart	<i>Phoenicurus erythrogaster</i>
Grandala	<i>Grandala coelicolor</i>
Wallcreeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Beautiful Rosefinch	<i>Carpodacus pulcherrimus</i>
Common Great Rosefinch	<i>Carpodacus rubicilla</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>

Biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Blood Pheasant	<i>Ithaginis cruentus</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Himalayan Monal	<i>Lophophorus impejanus</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophiatea</i>
Long-tailed Thrush	<i>Zoothera dixonii</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
White-browed Bush-Robin	<i>Tarsiger indicus</i>
Rufous-breasted Bush-Robin	<i>Tarsiger hyperythrus</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Spotted Laughingthrush	<i>Garrulax ocellatus</i>
Scaly Laughingthrush	<i>Garrulax subunicolor</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Slender-billed Scimitar-Babbler	<i>Xiphirhynchus superciliosus</i>
Greater Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Green Shrike-Babbler	<i>Pteruthius xanthochlorus</i>
Bar-throated Minla	<i>Minla strigula</i>
Red-tailed Minla	<i>Minla ignotincta</i>
Gold-breasted Tit-Babbler	<i>Alcippe chrysolis</i>
White-browed Tit-Babbler	<i>Alcippe vinipectus</i>
Rufous Sibia	<i>Heterophasia capistrata</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Brown Parrotbill	<i>Paradoxornis unicolor</i>
Chestnut-crowned Bush-Warbler	<i>Cettia major</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
Green-backed Tit	<i>Parus monticolus</i>
Yellow-browed Tit	<i>Sylviparus modestus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Rusty-flanked Tree-Creeper	<i>Certhia nipalensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
White-winged Grosbeak	<i>Mycerobas carnipes</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>

An old unconfirmed record of Oriental Stork *Ciconia boyciana* from Lachung (U. Lachungpa pers. comm. 2003), winter sightings of male Mallard *Anas platyrhynchos* at Chuba, Dombang, Common Merganser *Mergus merganser* at a fish pond near Sharchok, Lachung and Gadwall caught from Lachung a few years ago suggest that the valley could be a regular flyway for migratory waterbirds (U. Lachungpa pers. comm. 2003).

Biome-8: Sino-Himalayan Subtropical Forest

Asian Emerald Cuckoo	<i>Chrysococcyx maculatus</i>
Golden-throated Barbet	<i>Megalaima franklinii</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Striated Bulbul	<i>Pycnonotus striatus</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Grey-winged Blackbird	<i>Turdus bouboul</i>
Purple Cochoa	<i>Cochoa purpurea</i>
Green Cochoa	<i>Cochoa viridis</i>
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>
Grey-sided Laughingthrush	<i>Garrulax caeruleus</i>
Rufous-capped Babbler	<i>Stachyris ruficeps</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Yellow-throated Tit-Babbler	<i>Alcippe cinerea</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
Red-headed Tit	<i>Aegithalos concinnus</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>
Streaked Spiderhunter	<i>Arachnothera magna</i>
Maroon Oriole	<i>Oriolus traillii</i>

OTHER KEY FAUNA

Notable mammals are Yellow-throated Marten *Martes flavigula*, Leopard Cat *Prionailurus bengalensis*, Spotted Linsang *Prionodon pardicolor*, Asiatic Black Bear *Ursus thibetanus*, Goral *Nemorhaedus goral*, Barking Deer *Muntiacus muntjak*, Weasels *Mustela* spp., Orange-bellied Squirrel *Dremomys lokriah* and Himalayan Palm Civet *Paguma larvata*. The Himalayan Pit Viper *Gloydius himalayanus* and other herpetofauna found in this IBA need further study.

LAND USE

- ☐ Agriculture
- ☐ Fisheries and aquaculture
- ☐ Forestry
- ☐ Military
- ☐ Tourism and recreation

CONSERVATION ISSUES

- ☐ Landslides and gully formation due to road construction and maintenance activities
- ☐ Poaching of wildlife
- ☐ Stray dogs
- ☐ River pollution
- ☐ Uncontrolled tourism

Subsistence farming of wheat, barley and maize is practised while potato, cabbage and cardamom are grown as cash crops. Some amount of cattle rearing is practiced with stall-fed hybrid milch cows and the rest grazed in forest areas. Farm trials of exotic Lilies, Angora Rabbits and improved livestock breeds are conducted here by the government. Handloom cottage industry for making blankets, rugs and carpets provides alternative employment.

As the area is near the international border with China, there is heavy army deployment. Their role so far has been limited to border security, but now they have to be given a major role in the protection of the area's biodiversity in collaboration with the State Forest Department and local communities. The State Forest Department lacks manpower and infrastructure to patrol these areas.

SK-02

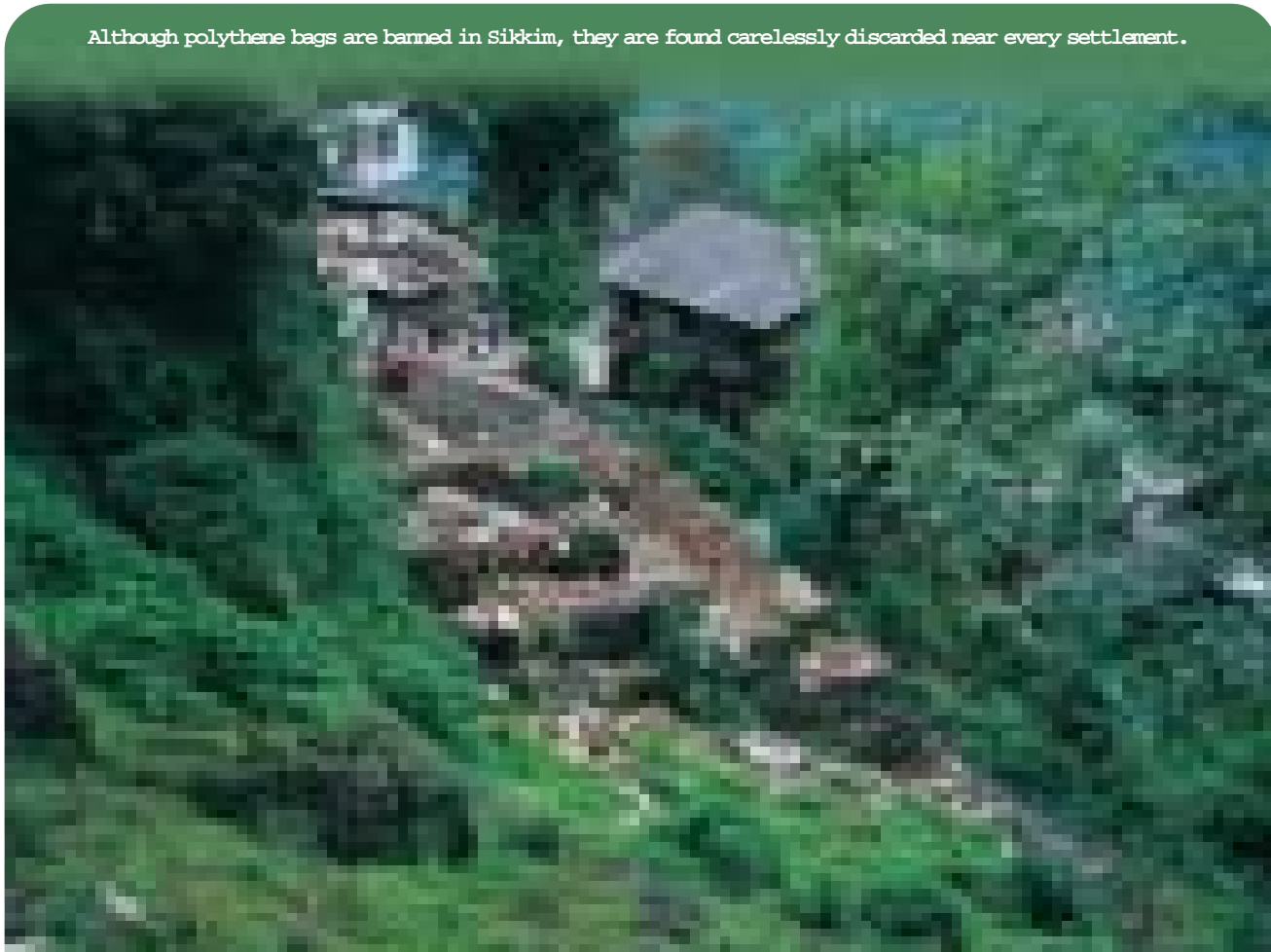


Photo: Asad R. Rahmani

Constant heavy traffic on the roads in this IBA and faulty practices of road construction often using dynamite are responsible for many landslips and slides causing much loss of vegetation cover, besides destabilizing the landscape.

Road maintenance workers of the Border Roads Organisation often depend on easily available fuel wood around their shifting camps instead of kerosene that has to be purchased. There are also reports of poaching of wildlife from such areas.

So far there is no efficient system of waste disposal from the cantonments such as Pegong or the villages and townships between Lachung and Tsunghang and garbage is more often disposed off the hillside into the Lachung river. More non-biodegradable waste is noticeable nowadays with increase in tourism pressure and the change from tinned milk products to cartons and tetrapacks.

KEY CONTRIBUTOR

Usha Lachungpa

KEY REFERENCES

- BirdLife International (undated) *Important Bird Areas (IBAs) in Asia: Project briefing book*. BirdLife International, Cambridge, U.K., unpublished.
- Ganguli-Lachungpa, U. (2002) Eurasian Eagle-Owl *Bubo bubo tibetanus* Bianchi at 2100 m in North Sikkim. *J. Bombay Nat. Hist. Soc.* 99 (2): 305-306.
- Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the World: Priorities for Biodiversity Conservation*. BirdLife Conservation Series No. 7. BirdLife International, Cambridge, U.K.

**FAMBONG LHO WLS - HIMALAYAN ZOOLOGICAL PARK -
RATEY CHU RESERVE FOREST COMPLEX**



IBA Site Code	: IN-SK-03
State	: Sikkim
District	: East Sikkim
Coordinates	: 27° 18' 41" N, 88° 32' 01" E
Ownership	: State Forest Department
Area	: 5,176 + 205 + ha
Altitude	: 1,375 – 2,650m
Rainfall	: Not Available
Temperature	: Not Available
Biogeographic Zone	: Himalaya
Habitats	: Subtropical Broadleaf Hill Forest, Subtropical Pine Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas); A3 (Biome-7: Sino-Himalayan Temperate Forest, Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: Wildlife Sanctuary, established in 1984

GENERAL DESCRIPTION

Fambong Lho Wildlife Sanctuary is located in East Sikkim on a mountain range opposite Gangtok, the capital of Sikkim. The highest point of the Sanctuary is the Tinjurey Peak (2,750 m), which is connected by mountainous ridges to Fambong Lho Peak and Ragorathai Peak. The Sanctuary is girdled with a number of growing villages.

The word 'Fambong Lho' seems to have come from the Lepcha word *Hambomloh* for the local avocado trees *Machilus edulis* and *M. odoratissima*. The Himalayan Zoological Park above Gangtok is adjacent to the Sanctuary, separated by the Rani Khola (river). Both the Fambong Lho and the Gangtok ranges form part of the catchment of the Rani Khola (Anon. 2002) and are contiguous with the Ratey Chu Reserve Forest.

The main vegetation of this IBA includes Oak *Quercus lamellosa* and 'Katus' *Castanopsis hystrix*. *Rhododendron arboreum* interspersed with *Lyonia ovalifolia* are seen gregariously on high hills and saddles. The IBA is also home to a large number of wild orchids, mosses, ferns and *Lycopodium* spp. (Anon. 2002).



Vulnerable Beautiful Nuthatch *Sitta formosa* is one of the rare birds seen here.

Photo: Ketil Knudsen/Peter Lobo

AVIFAUNA

Over 281 species of birds have been reported from this area, opposite the bustling township of Gangtok (Anon. 2002). Of these, the Oriental White-backed Vulture *Gyps bengalensis* not seen since the slaughterhouse at Gangtok was shifted to south to Rangpo almost a decade ago. The Rufous-necked Hornbill *Aceros nipalensis* reported by Ali (1962) from Gangtok has not been sighted lately. The Beautiful Nuthatch *Sitta formosa* is a globally threatened is still found, while the Rusty-bellied Shortwing *Brachypteryx hyperythra* was remarkably easily netted and ringed both in Fambong Lho and Himalayan Zoological Park in the 2001 BNHS Bird-Banding Programme. The Red-breasted Hill-Partridge *Arborophila mandellii* was reported by Ali (1962) from Gangtok but not heard or sighted recently unlike the commoner Hill Partridge *Arborophila torqueola*. The Hoary-throated Barwing *Actinodura nipalensis* and the White-naped Yuhina *Yuhina bakeri* are restricted range species reported from this IBA (Anon 2002).

In this Eastern Himalayas Endemic Bird Area, four out of 21 restricted range species, at least five out of 48 Biome-5 species, 49 out of 112 Biome-7 species, 38 out of 96 Biome-8 species and three out of 19 Biome-9 species are found (U. Lachungpa pers. comm. 2003).

Other bird species include the biome-restricted Mountain Imperial Pigeon *Ducula badia*, Slaty-headed Parakeet *Psittacula himalayana*, Red-winged crested Cuckoo *Calamator coromandus*, Large Green-billed Malkoha *Phaenicophaeus tristis*, Blue-naped Pitta *Pitta nipalensis*, Orange-bellied Chloropsis *Chloropsis hardwickii*, Brown Dipper *Cinclus pallasii*, and Spotted Forktail *Enicurus maculatus*. The Nepal House Martin *Delichon nipalensis* nests under school roofs while the Common Swallow annually returns to nest in four shops in the heart of Gangtok (U. Lachungpa pers. comm. 2003).

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>
Vulnerable	
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Beautiful Nuthatch	<i>Sitta formosa</i>

Endemic Bird Area 130: Eastern Himalayas	
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
White-naped Yuhina	<i>Yuhina bakeri</i>
Biome-7: Sino-Himalayan Temperate Forest	
Common Hill-Partridge	<i>Arborophila torqueola</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophciata</i>
Long-tailed Thrush	<i>Zoothera dixonii</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Chestnut Thrush	<i>Turdus rubrocanus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-browed Bush-Robin	<i>Tarsiger indicus</i>
Rufous-breasted Bush-Robin	<i>Tarsiger hyperythrus</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Slender-billed Scimitar-Babbler	<i>Xiphirhynchus superciliaris</i>
Greater Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Green Shrike-Babbler	<i>Pteruthius xanthochlorus</i>
Bar-throated Minla	<i>Minla strigula</i>
Red-tailed Minla	<i>Minla ignotincta</i>
Gold-breasted Tit-Babbler	<i>Alcippe chrysotis</i>
Rufous Sibia	<i>Heterophasia capistrata</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Myzornis	<i>Myzornis pyrrhoura</i>
Brown Parrotbill	<i>Paradoxornis unicolor</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Ferruginous Flycatcher	<i>Muscicapa ferruginea</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophciata</i>
Slaty-backed Flycatcher	<i>Ficedula hodgsonii</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Sapphire Flycatcher	<i>Ficedula sapphira</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Green-backed Tit	<i>Parus monticolus</i>
Yellow-browed Tit	<i>Sylviparus modestus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Blanford's Rosefinch	<i>Carpodacus rubescens</i>
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
Scarlet Finch	<i>Haematospiza sipahi</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Spotted-winged Grosbeak	<i>Mycerobas melanozanthos</i>

Biome-8: Sino-Himalayan Subtropical Forest	
Slaty-headed Parakeet	<i>Psittacula himalayana</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Blue-naped Pitta	<i>Pitta nipalensis</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Striated Bulbul	<i>Pycnonotus striatus</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
White-throated Bulbul	<i>Alophoixus flaveolus</i>
Rufous-bellied Bulbul	<i>Hypsipetes mcclllandii</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Orange-bellied Chloropsis	<i>Chloropsis hardwickii</i>
Blue-headed Rock-Thrush	<i>Monticola cinclorhynchus</i>
Lesser Long-billed Thrush	<i>Zoothera marginata</i>
Tickell's Thrush	<i>Turdus unicolor</i>
Grey-winged Blackbird	<i>Turdus boulboul</i>
White-tailed Robin	<i>Myiomela leucurum</i>
Blue-fronted Robin	<i>Cinclidium frontale</i>
Slaty-backed Forktail	<i>Enicurus schistaceus</i>
Purple Cochoa	<i>Cochoa purpurea</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogenys</i>
Rufous-capped Babbler	<i>Stachyris ruficeps</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Cutia	<i>Cutia nipalensis</i>
Rusty-fronted Barwing	<i>Actinodura egeertoni</i>
Blue-winged Minla	<i>Minla cyanouroptera</i>
Nepal Tit-Babbler	<i>Alcippe nipalensis</i>
Striated Yuhina	<i>Yuhina castaniceps</i>
Black-chinned Yuhina	<i>Yuhina nigrimenta</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
White-gorgeted Flycatcher	<i>Ficedula monileger</i>
Small Niltava	<i>Niltava macgrigorae</i>
Red-headed Tit	<i>Aegithalos concinnus</i>
Black-spotted Yellow Tit	<i>Parus spilonotus</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>
Streaked Spiderhunter	<i>Arachnothera magna</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>

OTHER KEY FAUNA

Over 50 species of mammals have been reported from the Sanctuary. Important ones are the Chinese Pangolin *Manis pentadactyla*, Red Panda *Ailurus fulgens* Leopard-Cat *Prionailurus bengalensis*, Asiatic Black Bear *Ursus thibetanus* and Hodgson's Flying Squirrel *Petaurista magnificus* (Anon. 2002). Glass Snake/Lizard *Ophiosaurus gracilis* has also been seen here (U. Lachungpa pers. comm. 2002).

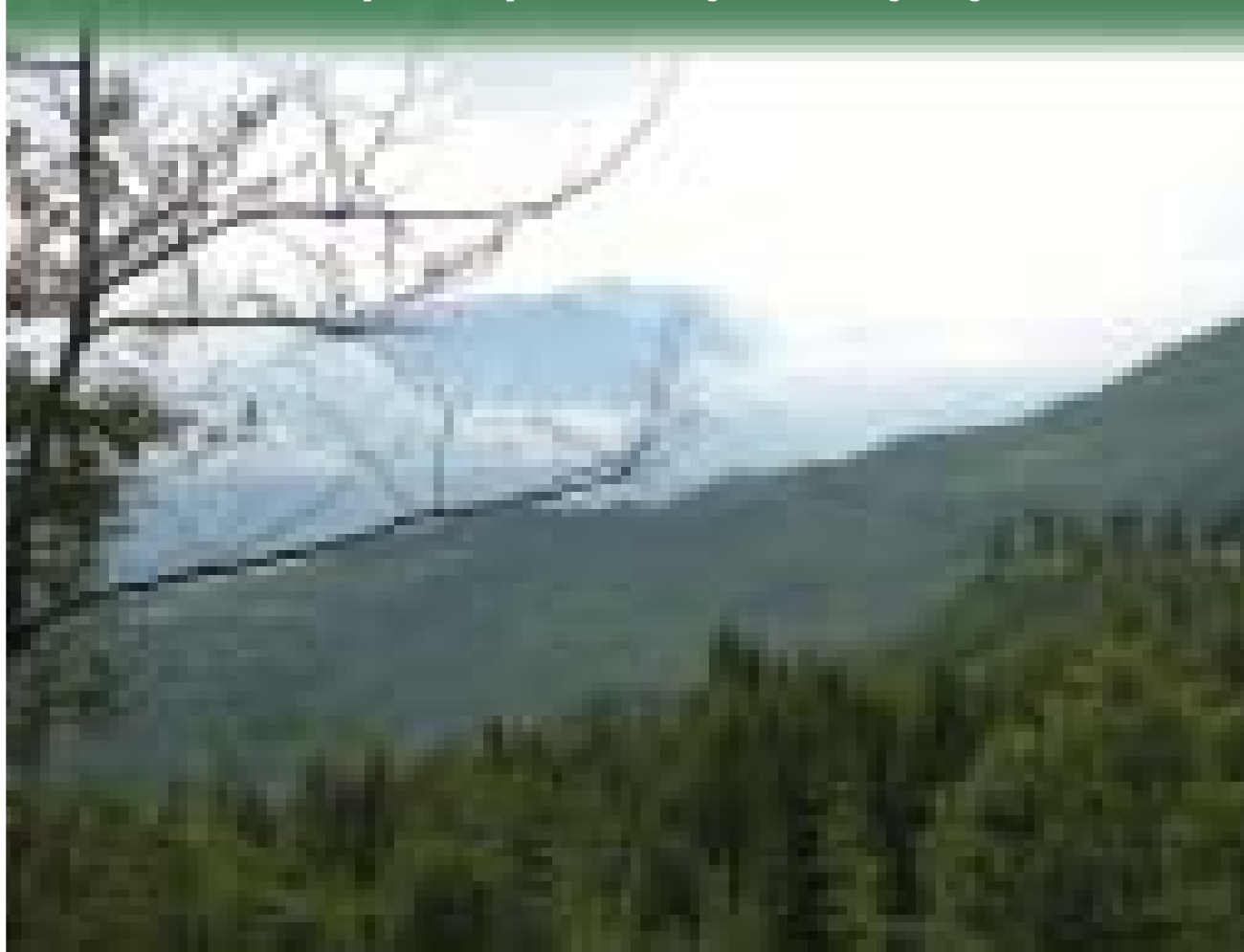
LAND USE

- ☐ Nature conservation and research
- ☐ Tourism and recreation
- ☐ Watershed management

THREATS AND CONSERVATION ISSUES

- ☐ Grazing
- ☐ Plantations
- ☐ Deforestation

More than 280 species are reported from Fambong Lho WLS and neighboring areas.



SK-03

Photo: M. Zafar-ul-Isalam

The Sanctuary is one of the rare protected areas declared on public demand. The State Forest Department received a request from the people in its surrounding villages. They were concerned about the increasing deforestation and overgrazing in their catchment area, which would affect their future.

The area was originally used intensively for cattle grazing and the soil in the Golitar area had been compacted over a large area. Ground vegetation in some areas was poor and Oaks were lopped for fodder. Most of the old Oaks are now gone. Large cardamom plantations which had encroached on the fringes of the Sanctuary have now been removed. There are also thick stands of the exotic conifer *Cryptomeria japonica* planted by the Forest Department before declaring the area as a wildlife sanctuary (Anon. 2002). A large campus of the G. B. Pant Institute for Himalayan Environment and Development has come up at the edge of the Sanctuary, encouraging more commercial investors.

Eco-development Committees have been formed in villages surrounding the Sanctuary. In less than three years the 'Smriti Van' or Memorial Forest concept of the State Forest Department has been adopted successfully through various NGOs in a large degraded forest area adjoining the 205 ha Himalayan Zoological Park at Bulbuley enhancing the forest contiguity with Ratey Chu. This has greatly helped the water regime, benefiting the state capital, Gangtok.

KEY CONTRIBUTOR

Usha Lachungpa

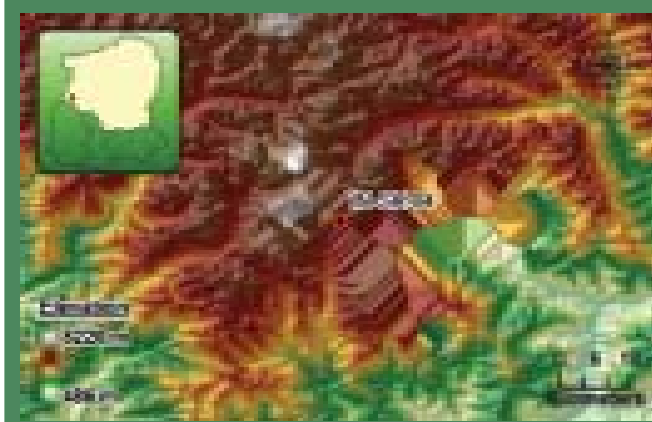
KEY REFERENCES

Anonymous (2002) *An Introduction to the Fauna of Fambong Lho Wildlife Sanctuary East Sikkim*. Unpublished Report of the Department of Forests, Environment and Wildlife, Government of Sikkim, Sikkim, India.

Ali, S. (1962) *Birds of Sikkim*. Oxford University Press, Madras.

SK-04

KHANGCHENDZONGA NATIONAL PARK AND BIOSPHERE RESERVE



IBA Site Code	: IN-SK-04
State	: Sikkim
District	: North and West Sikkim
Coordinates	: 27° 37' 51" N, 88° 12' 10" E
Ownership	: State Forest Department
Area	: 28,500 ha
Altitude	: 1,300–8,598 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zones	: Trans-Himalaya/ Himalaya
Habitats	: Subtropical Broadleaf Hill Forest, Himalayan Moist Forest, Himalayan Dry Temperate Forest and Alpine Moist Scrub

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: National Park, established in 1977

GENERAL DESCRIPTION

The Khangchendzonga National Park (KNP) is a part of Khangchendzonga Biosphere Reserve (KBR). The KNP/KBR complex situated in North and West Sikkim districts is the biggest IBA in Sikkim, occupying nearly 40% of the State. It lies entirely along the Sikkim-Nepal border and includes the Khangchendzonga Range from the South Lhonak Glacier in trans-Himalayan Sikkim down to Barsey Rhododendron Sanctuary in the South Sikkim. This IBA stretches eastwards up to Tsunghang in North Sikkim with the Tista river flowing south from the Tso Lhamo cold desert forming its eastern boundary for most part.

The Rathong-Rangit valleys in the southern part of this IBA are a trekkers paradise with flora from lowland subtropical forests to alpine meadows and snowcapped peaks and glaciers. This IBA has the world's third highest (and India's highest) peak Mt. Khangchendzonga (8,598 m) and is hence the highest altitude wildlife protected area in India. Most of the core area of this IBA is permanently snowbound with a large number of peaks which are climbers' delights, while the peripheral areas including buffer zones and habitation are more important wildlife habitats.

The area is a spectacular wilderness, with snowy peaks towering above some fine forests that remain virtually undisturbed (Khacher 1980). The Park must rank as one of the most important protected areas in the entire Himalayas (Rodgers and Panwar 1988). Khangchendzonga is considered to be the finest example of an independent mountain having its own glacial system radiating from its several summits. It also boasts some of the most magnificent snow and ice scenery in the world (Smythe 1930).

AVIFAUNA

Some important birding habitats here are Dentam-Uttarey-Chitrey-Chewabhanjyang, the Rathong Chu Valley along the Yoksum-Dzongri-Goecha La trekking trail, Tashiding, Rabdentse, Dubdi, Khecheopalri all in West Sikkim; Tholung Valley in Dzongu, Tsunghang-Menshithang-Lachen-Thangu, the Muguthang-Green Lake route including the Zemu Glacier-Zemu Chu Valley, all in North Sikkim.

Due to the size and altitude elevations in this IBA, birds recorded are from at least four biomes. Thus this IBA has at least 127 bird species of conservation concern including seven globally

threatened and restricted range species, 24 species of Biome-5, 67 of Biome-7, 26 of Biome-8 and three listed in Biome-9.

Birds like Lesser Kestrel *Falco naumanni* have been recorded from northern Trans-Himalayan part of the IBA while Baer's Pochard *Aythya baeri* has been sighted in Lake Khecheopalri along with wintering Mergansers *Mergus merganser* and Little Grebe *Tachybaptus ruficollis* (Ganguli-Lachungpa 1991), Mallard *Anas platyrhynchos*, Common Teal *Anas crecca* and Tufted Pochard *Aythya fuligula*.

The Osprey *Pandion haliaetus*, protected under Schedule-I of the Indian Wildlife (Protection) Act 1972, was killed at Yoksum while fishing in the State Forest Department's fishpond (Ganguli-Lachungpa 1990). Black-necked Crane *Grus nigricollis* has been recorded from the Muguthang area of Lhonak Valley IBA contiguous to the north (Ganguli-Lachungpa 1998). A large loose flock of dark eagles (unidentified) was videographed, during a trek to Dzongri in December 1999, flying southwards along with Himalayan Griffon *Gyps himalayensis* and Lammergeier or Bearded Vulture *Gypaetus barbatus* (U. Lachungpa pers. comm. 2003).

Local Lepcha people at Tholung report a unique phenomenon of congregations of either Ashy Wood-Pigeon *Columba pulchricollis* or Common Wood-Pigeon *Columba palumbus* near the Tholung hot-springs (a day's trek from jeepable road) in summer (Chumden Nangpa pers. comm. 2000), an annual event that has got disrupted due to development of the area for tourism (U. Lachungpa pers. comm. 2003).

High altitude lakes at Kishong La are important stopover sites not only for migratory waterfowl but also for resident breeding birds like Brahminy Shelduck *Tadorna ferruginea* {ducklings collected from here in 1986 survived for around five years at Gangtok's Deer Park enclosure at Tashiling Secretariat (C. B. Bhujel pers. comm. 2000)}.

Vulnerable

Baer's Pochard	<i>Aythya baeri</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Lesser Kestrel	<i>Falco naumanni</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>

Endemic Bird Area-130: Eastern Himalayas

Hoary-throated Barwing	<i>Actinodura nipalensis</i>
White-naped Yuhina	<i>Yuhina bakeri</i>
Black-browed Leaf-Warbler	<i>Phylloscopus cantator</i>

B biome-5: Eurasian High Montane (Alpine and Tibetan)

Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Tibetan Snowcock	<i>Tetraogallus tibetanus</i>
Tibetan Partridge	<i>Perdix hodgsoniae</i>
Solitary Snipe	<i>Gallinago solitaria</i>
Snow Pigeon	<i>Columba leuconota</i>
Long-billed Calandra-Lark	<i>Melanocorypha maxima</i>
Rosy Pipit	<i>Anthus roseatus</i>
Grey-backed Shrike	<i>Lanius tephronotus</i>
Alpine Accentor	<i>Prunella collaris</i>
Altai Accentor	<i>Prunella himalayana</i>
Robin Accentor	<i>Prunella rubeculoides</i>
Plain-backed Thrush	<i>Zoothera mollissima</i>
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
Grandala	<i>Grandala coelicolor</i>
Smoky Warbler	<i>Phylloscopus fulgiventor</i>
Tickell's Warbler	<i>Phylloscopus affinis</i>
Wallcreeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Black-headed Mountain-Finch	<i>Leucosticte brandti</i>
Streaked Great Rosefinch	<i>Carpodacus rubicilloides</i>
Common Great Rosefinch	<i>Carpodacus rubicilla</i>
Red-fronted Rosefinch	<i>Carpodacus puniceus</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>

B biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Blood Pheasant	<i>Ithaginis cruentus</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Himalayan Monal	<i>Lophophorus impejanus</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Yellow-rumped Honeyguide	<i>Indicator xanthonotus</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophiota</i>
Maroon-backed Accentor	<i>Prunella immaculata</i>
Long-tailed Thrush	<i>Zoothera dixonii</i>
Greater Long-billed Thrush	<i>Zoothera monticola</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-browed Bush-Robin	<i>Tarsiger indicus</i>
Rufous-breasted Bush-Robin	<i>Tarsiger hyperythrus</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Scaly Laughingthrush	<i>Garrulax subunicolor</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Slender-billed Scimitar-Babbler	<i>Xiphirhynchus superciliosus</i>
Greater Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Green Shrike-Babbler	<i>Pteruthius xanthochlorus</i>
Bar-throated Minla	<i>Minla strigula</i>
Red-tailed Minla	<i>Minla ignotincta</i>

B biome-7: Sino-Himalayan Temperate Forest

Gold-breasted Tit-Babbler	<i>Alcippe chrysotis</i>
White-browed Tit-Babbler	<i>Alcippe vinipectus</i>
Rufous Sibia	<i>Heterophasia capistrata</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Myzornis	<i>Myzornis pyrrhura</i>
Brown Parrotbill	<i>Paradoxornis unicolor</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Chestnut-crowned Bush-Warbler	<i>Cettia major</i>
Aberrant Bush-Warbler	<i>Cettia flavolivacea</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Orange-barred Leaf-Warbler	<i>Phylloscopus pulcher</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Grey-cheeked Flycatcher-Warbler	<i>Seicercus poliogenys</i>
Slaty-backed Flycatcher	<i>Ficedula hodgsonii</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophiota</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
Green-backed Tit	<i>Parus monticolus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Rusty-flanked Tree-Creeper	<i>Certhia nipalensis</i>
Yellow-bellied Flower-pecker	<i>Dicaeum melanoxanthum</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Tibetan Siskin	<i>Serinus tibetanus</i>
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
Scarlet Finch	<i>Haematospiza sipahi</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Collared Grosbeak	<i>Mycerobas affinis</i>
White-winged Grosbeak	<i>Mycerobas carripes</i>
Gold-naped Black Finch	<i>Pyrrhoptectes epauletta</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>
Slaty-headed Parakeet	<i>Psittacula himalayana</i>
Golden-throated Barbets	<i>Megalaima franklinii</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Grey-winged Blackbird	<i>Turdus boulboul</i>
White-tailed Robin	<i>Miomela leucurum</i>
Green Cochoa	<i>Cochoa viridis</i>
Grey-sided Laughingthrush	<i>Garrulax caeruleus</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogenys</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Cutia	<i>Cutia nipalensis</i>
Rufous-bellied Shrike-Babbler	<i>Pteruthius rufiventer</i>
Rusty-fronted Barwing	<i>Actinodura egertoni</i>
Blue-winged Minla	<i>Minla cyanouroptera</i>
Yellow-throated Tit-Babbler	<i>Alcippe cinerea</i>
Nepal Tit-Babbler	<i>Alcippe nipalensis</i>
Black-chinned Yuhina	<i>Yuhina nigrimenta</i>

Biome-7: Sino-Himalayan Temperate Forest

Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
Black-faced Flycatcher-Warbler	<i>Abroscopus schisticeps</i>
Small Niltava	<i>Niltava macgrigoriae</i>
Red-headed Tit	<i>Aegithalos concinnus</i>
Black-spotted Yellow Tit	<i>Parus spilonotus</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>
Lesser Necklaced Laughingthrush	<i>Garrulax monileger</i>
Greater Necklaced Laughingthrush	<i>Garrulax pectoralis</i>
Sultan Tit	<i>Melanochlora sultanea</i>

OTHER KEY FAUNA

Given the size and altitudinal range of this IBA, most of the representative species of wildlife in Sikkim, barring those found on the Tibetan plateau such as Tibetan Wild Ass *Equus hemionus kiang* and some found east of the Tista river such as Takin *Budorcas taxicolor*, could be found here. Around 19 mammals protected under Schedule-I of the Indian Wildlife (Protection) Act, 1972 including Bharal *Pseudois nayaur*, Himalayan Tahr *Hemitragus jemlahicus*, Tibetan Wolf *Canis lupus*, Python *Python molurus*, beetles and butterflies, also protected species, are reported; but there have been no systematic surveys other than sporadic collection trips of the Zoological Survey of India in the past two decades.

LAND USE

- ☐ Forestry and Wildlife Management
- ☐ Military deployment
- ☐ Road maintenance
- ☐ Nature conservation and research
- ☐ Tourism/recreation/mountaineering expeditions

THREATS AND CONSERVATION ISSUES

- ☐ Accumulation of non-biodegradable garbage along trekking/mountaineering trails
- ☐ Stray dogs around tourism and army camps
- ☐ Road construction and maintenance
- ☐ Collection of wild medicinal plants
- ☐ Spread of disease to wildlife
- ☐ Cattle grazing, poaching/snaring of wildlife
- ☐ Military deployment, ammunitions depot
- ☐ Hydroelectric power projects by NHPC

Threats to this IBA are similar to those in Barsey Rhododendron Sanctuary to the south, namely, shepherds' activities, firewood and fodder collection, cattle incursions from Nepal and landslides with resultant habitat degradation. In addition, there is tremendous pressure of tourism in the form of trekkers and hikers especially along the trekking trails.

The Himalayan Mountaineering Institute, Darjeeling has been holding regular courses in the core area of the IBA at the Khangchendzonga Base Camp since its inception over four decades ago. Just this activity has been responsible for large-scale removal of Rhododendron and Junipers for fuel wood, especially for the porters. Recently, this activity is being monitored with the help of a local NGO, the Khangchendzonga Conservation Committee (KCC) based at Yoksum (Sonam Uden *pers. comm.* 2003). The KCC has also been successful in projecting the entire Rathong Chu Valley as a sacred landscape for biodiversity conservation. A hydroelectric project here was scrapped keeping these sentiments

in mind. Under the National Biodiversity Strategy and Action Plan (NBSAP) exercise, a separate action plan was devised for this area (Sandeep Tambe *pers. comm.* 2003).

Park infrastructure and staffing is insufficient. This was amply demonstrated when the KCC apprehended two Russian poachers in August 2001 on an illegal insect collection expedition inside the National Park (Sonam Uden *pers. comm.* 2003).

Lack of coordination between the Tourism Department and the State Forest Department and uncontrolled flow of tourists into the western part of the IBA, garbage management, wild harvesting of medicinal plants and plants used for burning as incense, stray dogs around army and tourist campsites, damage due to graziers' camps in forests including incursions of yak herders from Nepal into the IBA were some of the important issues addressed in the Sikkim State BSAP exercise (Anon. 2003). The State Forest Department has also facilitated Joint Forest Management and Ecodevelopment Committees in the villages fringing the IBA.

In the northern part of the IBA, the impact of road construction and maintenance labour force of the Border Roads Organization, construction of an alternative road through the National Park for military exigencies and resultant damage to the hitherto pristine habitat, excessive use of dynamite in these fragile Himalayan zones and resultant permanent landslide zones, encroachment by the labourers, poaching of birds and other wildlife and habitat degradation, and part of the National Park being occupied by the military for use as an ammunitions depot are some of the issues of concern. New hydroelectric power projects are planned or underway in an effort to harness the entire potential of the Tista River Valley.

Mountaineering expeditions to Green Lake in the northern part of the IBA have left large amounts of non-biodegradable litter along the trail (Gut Lepcha *pers. comm.* 2001). This, coupled with wild harvesting of Junipers and Rhododendron, medicinal plants including the capless mushroom *Cordyceps sinensis* ('Caterpillar-fungus'), has opened up good forest areas. Veterinary staff at the Angora Rabbit breeding centre at Rabom, North Sikkim have reported occasional instances of Goral with skin disease coming out of the forest to die in the area (Passang Bhutia *pers. comm.* 2002). It is evident that much research input is required in this IBA which is the most famous wildlife protected area in Sikkim about which perhaps the least is known as far as its recent biodiversity status is concerned.

KEY CONTRIBUTORS

Sandeep Tambe and Usha Lachungpa

KEY REFERENCES

Anonymous (2003) Sikkim State Biodiversity Strategy and Action Plan. Department of Forests, Environment and Wildlife, Govt. of Sikkim. Pp. 104 (in press).

Ganguli-Lachungpa, U. (1990) Osprey *Pandion haliaetus* in Sikkim. *J. Bombay Nat. Hist. Soc.* 87 (2): 291

Ganguli-Lachungpa, U. (1991) Occurrence of Blacknecked grebe *Podiceps nigriceps* Brehm, Little grebe *P. ruficollis* and Goosander *Mergus merganser* Linn in west Sikkim. *J. Bombay Nat. Hist. Soc.* 88 (2): 280

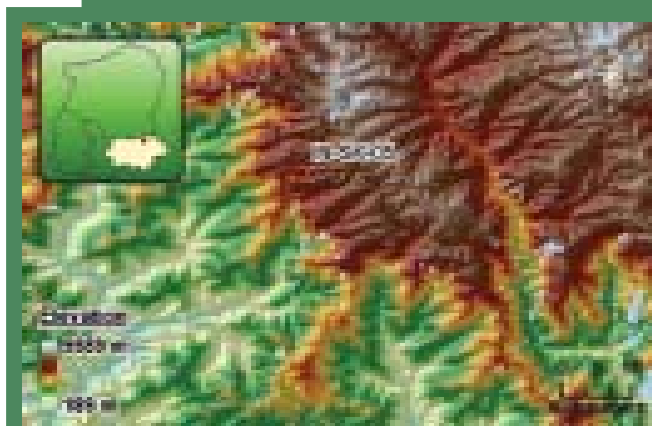
Ganguli-Lachungpa, U. (1998): Attempted breeding of Blacknecked crane *Grus nigricollis* Przevalski in north Sikkim. *J. Bombay nat. Hist. Soc.* 95(2): 341

Khacher, L. (1980) Khangchendzonga. *WWF-India Newsletter* 33: 8-10.

Rodgers, W. A. and Panwar, H. S. (1988) *Planning a Protected Area Network in India*. 2 vol. Wildlife Institute of India, Dehradun

Smythe, F. S. (1930) *The Kangchenjunga adventure*. Victor Gollanz, London. Pp. 18-23.

KYONGNOSLA ALPINE SANCTUARY- TSOMGO- TAMZE-CHOLA COMPLEX



IBA Site Code	: IN-SK-05
State	: Sikkim
District	: East Sikkim
Coordinates	: 27° 22' 33" N, 88° 44' 13" E
Ownership	: State Forest Department
Area	: 3,100 ha
Altitude	: 375 – 2,750 m
Rainfall	: Not Available
Temperature	: Not Available
Biogeographic Zone	: Himalaya
Habitats	: Subtropical Broadleaf Hill Forest, Alpine Moist Pasture

IBA CRITERIA: A1 (Threatened Species), A2 (Eastern Himalayas Endemic Bird Area 130), A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest)

PROTECTION STATUS: Wildlife Sanctuary, established in 1984

GENERAL DESCRIPTION

Kyongnosla and Tsomgo lie on the Gangtok-Natu La highway in East Sikkim. The Sanctuary has dense bamboo thickets and typical temperate vegetation with Rhododendron - Silver Fir – Juniper forest and ground flora like Aconites, Potentilla, Aster, Iris, ground orchids and wild strawberries. There are steep cliffs that are snowbound throughout the year, as also open areas used by livestock in summer, until a recent ban by the government on grazing in forest areas. This IBA is a popular tourist destination barely 40 km from the State capital, Gangtok.

AVIFAUNA

More than 230 species of birds have been identified (U. Lachungpa *pers. comm.* 2003). Outside Khangchendzonga National Park, this is the site where the State Bird of Sikkim, the Blood Pheasant *Ithaginis cruentus*, is found, probably in significant numbers.

Among the globally threatened species of this site, the most prominent one would be the Wood Snipe *Gallinago nemoricola*, as it possibly breeds here (U. Lachungpa *pers. comm.* 2003). Satyr Tragopan *Tragopan satyra* at the upper limit of its range, and Himalayan Monal *Lophophorus impejanus*, the former considered as Near Threatened (BirdLife International 2001), are also residents.

The Snow Pigeon *Columba leuconota* come down here in winter. Other species of interest are the Fire-tailed Sunbird *Aethopyga ignicauda* and Gold-naped Black Finch *Pyrrhoplectes epauletta*, birds of temperate forest. Golden Eagle *Aquila chrysaetos* and Greater Spotted Eagle *Aquila clanga*, Brown-headed Gull *Larus brunnecephalus* with Tufted Pochard *Aythya fuligula* were seen occasionally in Tsomgo Lake during the winter Asian Waterfowl Census (AWC). Pallas's Fish-Eagle *Haliaeetus leucoryphus* was once seen in the forest patch below Tamzey during a survey for Red Panda in 1998 (U. Lachungpa *pers. comm.* 2003).

The site is located in the Eastern Himalayas Endemic Bird Area (EBA-130) where 21 species have been listed of which only one species, the Hoary-throated Barwing *Actinodura nipalensis*, has been found till now but more are likely to occur.

Perhaps the most important reason for selection of this site as an IBA is the presence of large number of biome restricted species of three biome types. Although, this site lies chiefly in Biome-7 (Sino-Himalayan Temperate Forest), birds of Biome-5 (Eurasian High

Montane-Alpine and Tibetan) and Biome-8 (Sino-Himalayan Subtropical Forest) are also seen, mainly due to their altitudinal movement. In winter, birds of Biome-5 move down, so we see species such as Rosy Pipit *Anthus roseus*, Snow Pigeon *Columba leuconota*, Alpine Accentor *Prunella collaris* and others in this site. Thirteen out of 48 species of this biome have been seen in this IBA. Expectedly, the largest number of biome restricted species is from Biome-7: 35 out of 112 species but more are likely to be present. As the boundary between Biome-7 and Biome-8 is very diffuse (like all other biomes), some species are likely to be present in both the biomes. Till now, U. Lachungpa (*pers. comm.* 2003) has been able to locate only two biome restricted species, Grey-winged Blackbird *Turdus boulboul* and Black-spotted Yellow-Tit *Parus siltonotus*, of Biome-8 in this IBA. However, considering the long list of Biome-8 birds (95 species) and the extent of good habitat available, more species are likely to be found here.

Vulnerable	
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Near Threatened	
Satyr Tragopan	<i>Tragopan satyra</i>
Endemic Bird Area 130: Eastern Himalayas	
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
Biome- 5: Eurasian High Montane (Alpine and Tibetan)	
Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Brown-headed Gull	<i>Larus brunnecephalus</i>
Snow Pigeon	<i>Columba leuconota</i>
Rosy Pipit	<i>Anthus roseatus</i>
Alpine Accentor	<i>Prunella collaris</i>
Plain-backed Thrush	<i>Zoothera mollissima</i>
Kessler's Thrush	<i>Turdus kessleri</i>
Wallcreeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Black-headed Mountain-Finch	<i>Leucosticte brandti</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>
Grandala	<i>Grandala coelicolor</i>

Biome-7: Sino-Himalayan Temperate Forest	
Blood Pheasant	<i>Ithaginis cruentus</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Himalayan Monal	<i>Lophophorus impejanus</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Rufous-breasted Accentor	<i>Prunella strophiatea</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Himalayan Rubythroat	<i>Luscinia pectoralis</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-browed Bush-Robin	<i>Tarsiger indicus</i>
Rufous-breasted Bush-Robin	<i>Tarsiger hyperythrus</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Spotted Laughingthrush	<i>Garrulax ocellatus</i>
Scaly Laughingthrush	<i>Garrulax subunicolor</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Green Shrike-Babbler	<i>Pteruthius xanthochlorus</i>
Bar-throated Minla	<i>Minla strigula</i>
Great Parrotbill	<i>Conostoma oemodium</i>
Brown Parrotbill	<i>Paradoxornis unicolor</i>
Fulvous-fronted Parrotbill	<i>Paradoxornis fulvifrons</i>
Yellow-bellied Bush-Warbler	<i>Cettia acanthizoides</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Rusty-flanked Tree-Creeper	<i>Certhia nipalensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Tibetan Siskin	<i>Carduelis thibetana</i>
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
White-winged Grosbeak	<i>Mycerobas carnipes</i>
Gold-naped Black Finch	<i>Pyrrhoptectes epauletta</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>
Biome-8: Sino-Himalayan Subtropical Forest	
Grey-winged Blackbird	<i>Turdus boulboul</i>
Black-spotted Yellow Tit	<i>Parus spilonotus</i>

OTHER KEY FAUNA

Takin *Budorcas taxicolor*, Red or Hill Fox *Vulpes vulpes*, Goral *Nemorhaedus goral*, Musk Deer *Moschus chrysogaster*, Yellow-Throated Marten *Martes flavigula*, Asiatic Black Bear *Ursus thibetanus*, Mouse-Hare *Ochotona roylei* and Siberian Weasel



Photo: Otto Fflischer

Some of the Himalayan Marmots *Marmota himalayana* rescued from North Sikkim were released here.

Mustela sibirica have been recorded from this IBA. Some of the Himalayan Marmots *Marmota himalayana* rescued from North Sikkim and released in the Sanctuary were re-sighted after eight years (Ganguli-Lachungpa and Sharma 2002). So far, no herpetofauna survey has been conducted in this IBA (U. Lachungpa pers. comm. 2003).

LAND USE

- ☐ Forestry
- ☐ Military
- ☐ Nature conservation and research

THREATS AND CONSERVATION ISSUES

- ☐ Frequent and regular change of army units
- ☐ Pollution of wetlands especially by camps of Army and GREF
- ☐ Pollution due to uncontrolled tourism activities
- ☐ Heavy traffic
- ☐ Disturbance to wildlife from stray dogs
- ☐ Infrastructure (Transmission /Road lines)
- ☐ Poaching

Part of the Sanctuary has faced logging operations by the Forest Department in the past. Also, much of the tree cover was removed from the area during the time when the Natu La trade route to Lhasa, Tibet was open. The areas towards Tsomgo Lake were also degraded by grazing and annual collection of medicinal herbs, but more due to uncontrolled tourism activities since the area was opened almost a decade ago. Due to deployment of non-native personnel including road maintenance labour force and army camps along the Gangtok-Natu La-Zuluk-Rongli route, there have been poaching incidences of Blood Pheasant (the State Bird) and Himalayan Monal from this IBA, and often traps were encountered during surveys or feathers found outside field kitchens (U. Lachungpa pers. comm. 2003).

Due to heavy human use, including vehicular traffic, both tourist and military, important wetlands, lakes and watershed areas are constantly in danger of being polluted. Almost a decade ago, an epidemic of the jaundice hit the State capital Gangtok and was suspected to be a result of contamination due to a military settlement at the source of the River Ratey Chu, source of Gangtok's water supply. The area lies on the eastern periphery of this IBA (U. Lachungpa pers. comm. 2003). The Brahminy Shelduck *Tadorna ferruginea*, Tufted Pochard *Aythya fuligula* and Wigeon *Anas penelope* are now seldom seen at Tsomgo Lake due to uncontrolled numbers of tourists wandering around its periphery and continuous traffic.

Like in other IBAs of Sikkim, stray and feral dogs are a menace, proliferating around camp kitchens. There have been instances of human casualties due to these dogs. There have also been instances of Asiatic Black Bear raiding ration depots in this region (U. Lachungpa pers. comm. 2003). A proposal for re-opening of the Natu La trade route is under consideration.

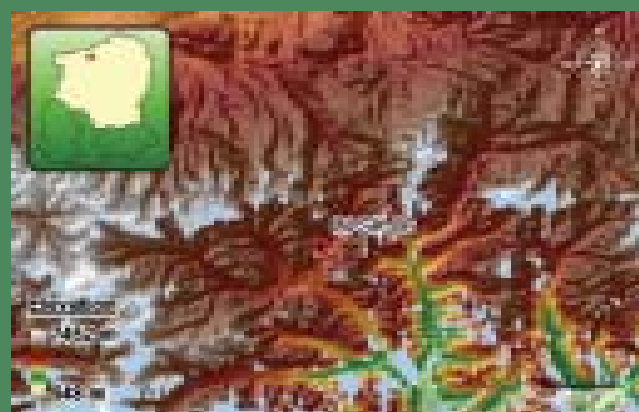
KEY CONTRIBUTOR

Usha Lachungpa

KEY REFERENCES

BirdLife International (2001) *Threatened Birds of Asia: The BirdLife International Red Data Book*. BirdLife International, Cambridge, UK.
 Ganguli-Lachungpa, U. and Sharma, B. K. (2002) Himalayan marmot *Marmota bobak* (Muller) resighted after eight years at Kyongnosla Alpine Sanctuary, East Sikkim *J. Bombay Nat. Hist. Soc.* 99 (2): 288.
 Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the World: Priorities for Biodiversity Conservation*. BirdLife Conservation Series No. 7. BirdLife International, Cambridge, U.K.

LHONAK VALLEY



IBA Site Code	: IN-SK-06
State	: Sikkim
District	: North Sikkim
Coordinates	: 27° 55' 23" N, 88° 24' 55" E
Ownership	: State Forest Department
Area	: c. 5,000 ha
Altitude	: 4,260 – 7,459m
Rainfall	: Nil
Temperature	: -30 °C to 30 °C
Biogeographic Zone	: Trans-Himalaya
Habitats	: Alpine Moist Pasture, Alpine Arid Pasture

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area-133: Tibetan Plateau), A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Lhonak Valley is a Trans-Himalayan grassland in the exposed river valley of Goma Chu in northwest Sikkim, with boggy marshes, glacial lakes, barren scree slopes and glaciers. It is accessible from Thangu via the high 5,900 m pass, the Lungnak La. Snowfall makes the Valley inaccessible in winter. Goma Chu originates in North and South Lhonak glaciers and runs across the Valley to join Zema Chu. Zemu glacier is at the southern end of the Valley, as is the Green Lake. This Valley is the only known breeding area in the Eastern Himalayas of the Black-necked Crane *Grus nigricollis* (Ganguli-Lachungpa 1998).

Lakes and marshes here are used as stopover sites for migratory waterbirds (Ganguli-Lachungpa 2002) and support populations of the Sikkim Snow Toad *Scutigera* sp.

Vegetation is typical cold desert, with xerophytic species such as *Ephedra gerardiana*, herbs, grasses and sedges, aquatic weeds and many medicinal and commercially valuable plants such as *Picrorhiza kurroa* and *Meconopsis horridula*.

AVIFAUNA

Lhonak Valley is the famed flyway of migratory waterfowl (Ali 1962). Many Vulnerable and Biome-5 restricted species breed here such as the Tibetan Snowcock *Tetraogallus tibetanus*, Black-

necked Crane (unsuccessful nesting attempt at Tebleh Tso, Muguthang), the Tibetan Sandgrouse *Syrrhaptes tibetanus*, the Gldenstdt's Redstart *Phoenicurus erythrogaster*, the Hume's Groundpecker *Pseudopodoces humilis*. Lesser Kestrel *Falco naumanni* has been infrequently recorded from this valley during the course of the Alpine Grassland Ecology Project of BNHS from 2000-2003 (U. Lachungpa pers. comm. 2003).

Vulnerable	
Lesser Kestrel	<i>Falco naumanni</i>
Black-necked Crane	<i>Grus nigricollis</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Near Threatened	
Giant Babax	<i>Babax waddelli</i>
Endemic Bird Area-133: Tibetan Plateau	
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>
Biome- 5: Eurasian High Montane (Alpine and Tibetan)	
Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Tibetan Snowcock	<i>Tetraogallus tibetanus</i>
Tibetan Partridge	<i>Perdix hodgsoniae</i>
Ibisbill	<i>Ibidorhyncha struthersii</i>
Tibetan Sandgrouse	<i>Syrrhaptes tibetanus</i>
Snow Pigeon	<i>Columba leuconota</i>
Hume's Short-toed Lark	<i>Calandrella acutirostris</i>
Robin Accentor	<i>Prunella rubeculoides</i>
Guldenstadt's Redstart	<i>Phoenicurus erythrogaster</i>
Wallcreeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Black-headed Mountain-Finch	<i>Leucosticte brandii</i>
Hume's Groundpecker	<i>Pseudopodoces humilis</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>

OTHER KEY FAUNA

Mammalian fauna includes Snow Leopard *Uncia uncia*, Blue Sheep *Pseudois nayaur*, Tibetan Wolf *Canis lupus chanco*, Tibetan Fox *Vulpes vulpes*, Siberian Weasel *Mustela sibirica*, Woolly Hare *Lepus oiostolus* and Himalayan Marmot *Marmota himalayana*.

Lhonak Valley is important habitat for Tibetan Snowcock *Tetraogallus tibetanus*.

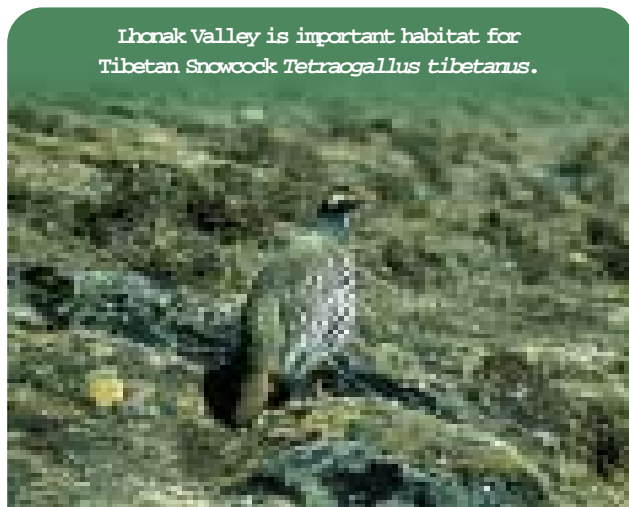


Photo: Otto Fflister

SK-06

Sikkim Snow Toad *Scutiger* sp., perhaps the highest altitude amphibian, is found in almost all lakes and waterbodies of the Goma Chu Valley.

LAND USE

- ☐ Forestry operation
- ☐ Military deployment
- ☐ GREF work
- ☐ Nature conservation and research
- ☐ Tourism/recreation/mountaineering expeditions

THREATS AND CONSERVATION ISSUES

- ☐ Accumulation of non-biodegradable garbage
- ☐ Stray dogs around army camps
- ☐ Spread of disease to wildlife
- ☐ Collection of wild medicinal plants
- ☐ Poaching/snaring of wildlife

Overuse of Tchopta-Lungnak La- Muguthang trail and habitat by pack animals (horses, yaks) of Assam Rifles has been reported during the Sikkim Biodiversity Strategy and Action Plan exercise of the State Forest Department. Besides large numbers of horses on the trail to ferry rations across the *La* (La = Pass), the attendant hazards of harvesting/collection of commercially valuable medicinal plants such *Picrorhiza kurrooa*, *Nardostachys grandiflora* and poaching of Blue Sheep and Himalayan Marmot by the travellers have been reported (Anon. 2003)

The military has a permanent station here with many outposts, as there have been incidents of Tibetan refugees coming in over the passes. As a result of past airdrops, till date, one can see broken jerry cans and sacks of coir padding littering the landscape.

The valley is home to seven families of nomadic Tibetan graziers or *Dokpas* who graze yak in a rotational system governed by traditional laws. Perhaps due to the outside sheep brought into the

Valley for food for the military, a disease has killed off the entire local sheep population, and according to the local Animal Husbandry authorities, the disease may still persist in wild snails found in the marshes and wetlands of the region. Hence, there is every possibility of the disease spreading to the wild ungulates in this IBA (U. Lachungpa *pers. comm.* 2003.).

On finishing their duration, usually over a year or two, in this difficult region, the military personnel leave their pet dogs behind. These 'pet' dogs survive by scavenging kitchen and mess wastes. They have multiplied over the years and have now taken to roaming in packs on the plateau in Tso Lhamo, Lhonak and Lashar, hanging around army camps during mealtimes, preying upon wildlife and have even been seen swimming in the glacial lakes after Brahminy Shelduck chicks. Of late, they have taken to preying upon domestic livestock of the *Dokpas*. In order to protect the wildlife of this site, these free-roaming 'pet' dogs need to be eliminated without further delay.

KEY CONTRIBUTOR

Usha Lachungpa

KEY REFERENCES

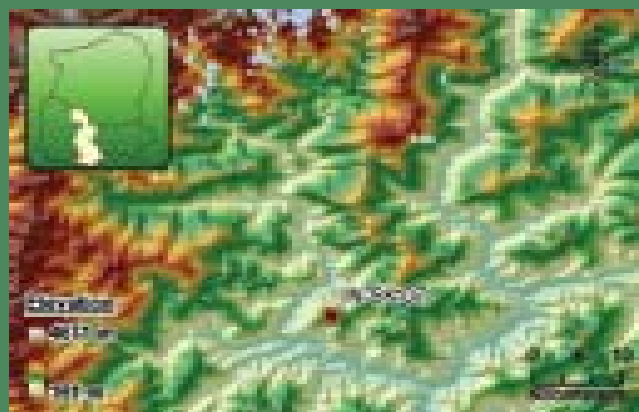
- Ali, S. (1962). *The Birds of Sikkim*. Oxford University Press, Madras.
- Anonymous (2003) Sikkim State Biodiversity Strategy and Action Plan. Department of Forests, Environment and Wildlife, Govt. of Sikkim. Pp. 104.
- Ganguli-Lachungpa, U. (1998) Attempted breeding of Black-necked crane *Grus nigricollis* Przevalski in north Sikkim. *J. Bombay Nat. Hist. Soc.* 95(2): 341.
- Ganguli-Lachungpa, U. (2002) Avifauna of trans-Himalayan and alpine grasslands in Sikkim, India. In: *Birds of Wetlands and Grasslands: Proceedings of the Salim Ali Centenary Seminar, 1996* (eds. Rahmani, A. R. and Ugra, G.). Bombay Natural History Society, Mumbai. pp 196-207.

A large number of domestic yaks graze in this valley.



Photo: Asad R. Rahmani

LOWLAND FORESTS OF SOUTH SIKKIM (MELLI-BAGUWA-KITAM, JORETHANG-NAMCHI, SOMBAREY)



IBA Site Code	: IN-SK-07
State	: Sikkim
District	: South and West Sikkim
Coordinates	: 27° 09' 16" N, 88° 19' 48" E
Ownership	: State Forest Department
Area	: c. 2,000 ha
Altitude	: 400 – 1,000 m
Rainfall	: Not Available
Temperature	: Not Available
Biogeographic Zone	: Himalaya
Habitats	: Tropical Moist Deciduous Forest, Tropical Secondary Scrub

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas);
A3 (Biome-9: Indo-Chinese Tropical Moist Forests)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Much of the South District of Sikkim is populated with townships, villages and agriculture holdings. The lowland forests of Sikkim lie at the southern end of the South District, bound to the south by the Great Rangit river, extending roughly from the foothills of the outer Himalayas to an altitude of about 1,000 m. This IBA includes the river valleys of Ramam, Rangit, Great Rangit and Tista and adjoins the Maenam-Tendong (an IBA) to its north.

Various species of orchids, *Rhaphidophora*, wild banana, screwpines, nettles and giant bamboo are characteristic of this site. The Rangit Valley Sal *Shorea robusta* shows a unique association with the Chir Pine *Pinus roxburghii* (Bejoy Gurung pers. comm. 2003). In patches of protected forest, it is possible to see Sal being slowly dominated by Pine. Such patches are relatively poor in bird life (U. Lachungpa pers. comm. 2003).

AVIFAUNA

Despite being the lowest altitude IBA in Sikkim, this site has records of birds restricted to biomes 9, 8, 7 as well as 5, perhaps due to seasonal altitudinal migration as well as the telescoping effect of the Sikkim Himalaya, where in a distance of c. 100 km, habitats ranging from lowland subtropical forests to high cold desert can be seen (Ali 1962). Hence, as many as 14 globally threatened and restricted range species and at least four Biome-5

species, 15 Biome-7 species, 33 Biome-8 species and seven Biome-9 species have been recorded from this IBA.

The lowland forests of Sikkim are home to several species identified as Near Threatened by BirdLife International (2001): Great Pied Hornbill *Buceros bicornis* now restricted to few sightings over tea estates, Red-breasted Partridge *Arborophila mandelli* (not recorded recently) and Ward's Trogon *Harpactes wardi*. The Nepal Wren-Babbler *Pnoepyga immaculata* could also occur here. During a survey conducted here in 1996, no potential habitat was found for the Rufous-necked Hornbill *Aceros nipalensis*.

Biome-5 species like Ibisbill *Ibidorhyncha struthersii* are regularly recorded in winter on the banks of the Great Rangit river; Wallcreeper *Tichodroma muraria* recorded from Trans-Himalayan Lhonak Valley (at Green Lake) and other high altitude sites is also recorded from this IBA. The Collared Falconet *Microhierax caerulescens* was found breeding in 1996 very close to human habitation, hawking dragonflies around the Fisheries Department pond at Baguwa but cleverly avoiding the mist-nets set around it. Ward's Trogon was sighted at Baguwa and Jorethang in October 1996 (Ganguli-Lachungpa 1996). All these records make this IBA a very interesting bird watching and conservation area.

Poaching is one of the major problems of this IBA.



Photo: Usha Lachungpa

Critically Endangered

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>

Vulnerable

Red-breasted Hill-Partridge	<i>Arborophila mandelli</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Slender-billed Babbler	<i>Turdoides longirostris</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Hodgson's Prinia	<i>Prinia cinereocapilla</i>
Beautiful Nuthatch	<i>Sitta formosa</i>

Endemic Bird Area 130: Eastern Himalayas

Ward's Trogon	<i>Harpactes wardi</i>
Rufous-throated Wren-Babbler	<i>Spelaeornis caudatus</i>
Wedge-billed Wren-Babbler	<i>Sphenocichla humei</i>
Black-browed Leaf-Warbler	<i>Phylloscopus cantator</i>
White-naped Yuhina	<i>Yuhina bakeri</i>

Biome-5: Eurasian High Montane (Alpine and Tibetan)

Ibisbill	<i>Ibidorhyncha struthersii</i>
Grey-backed Shrike	<i>Lanius tephronotus</i>
Hodgson's Redstart	<i>Phoenicurus hodgsoni</i>
Wallcreeper	<i>Tichodroma muraria</i>

Biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Grey-bellied Tesia	<i>Tesia cyaniventer</i>
Aberrant Bush-Warbler	<i>Cettia flavolivacea</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophitata</i>
Ultramarine Flycatcher	<i>Ficedula superciliaris</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Sapphire Flycatcher	<i>Ficedula sapphira</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Fire-capped Tit	<i>Cephalopyrus flammiceps</i>
Yellow-bellied Flowerpecker	<i>Dicaeummelanoxanthum</i>

Biome-8: Sino-Himalayan Subtropical Forest

Rufous-throated Hill-Partridge	<i>Arborophila rufogularis</i>
Elwes's Crane	<i>Porzana bicolor</i>
Slaty-headed Parakeet	<i>Psittacula himalayana</i>
Hodgson's Frogmouth	<i>Batrachostomus hodgsoni</i>
Blyth's Kingfisher	<i>Alcedo hercules</i>
Golden-throated Barbet	<i>Megalaima franklinii</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Blue-naped Pitta	<i>Pitta nipalensis</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Striated Bulbul	<i>Pycnonotus striatus</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
White-throated Bulbul	<i>Alophoixus flaveolus</i>
Orange-bellied Chloropsis	<i>Chloropsis hardwickii</i>
Slaty-backed Forktail	<i>Enicurus schistaceus</i>
Grey-sided Laughingthrush	<i>Garrulax caerulatus</i>
Red-faced Liocichla	<i>Liocichla phoenicea</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogenys</i>
White-hooded Babbler	<i>Gampsorhynchus rufulus</i>
Blue-winged Minla	<i>Minla cyanouroptera</i>
Rufous-backed Sibia	<i>Heterophasia annectans</i>
Black-chinned Yuhina	<i>Yuhina nigrimenta</i>
Grey-headed Parrotbill	<i>Paradoxornis gularis</i>
Lesser Rufous-headed Parrotbill	<i>Paradoxornis atosuperciliaris</i>
Greater Rufous-headed Parrotbill	<i>Paradoxornis ruficeps</i>
Slaty-bellied Tesia	<i>Tesia olivea</i>
Small Niltava	<i>Niltava macgrigoriae</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>
Black-browed Treepie	<i>Dendrocitta frontalis</i>

Biome-9: Indo-Chinese Tropical Moist Forest

Himalayan Golden-backed Woodpecker	<i>Dinopium shorii</i>
Pale-headed Woodpecker	<i>Gecinulus grantia</i>
Black-backed Forktail	<i>Enicurus immaculatus</i>
Greater Necklaced Laughingthrush	<i>Garrulax pectoralis</i>
Sultan Tit	<i>Melanochlora sultanea</i>
Crow-billed Drongo	<i>Dicrurus annectans</i>

OTHER KEY FAUNA

The lowland fauna includes Golden Jackal *Canis aureus*, Leopard Cat *Prionailurus bengalensis*, Himalayan Crestless Porcupine *Hystrix brachyura*, Assamese Macaque *Macaca assamensis*, Barking Deer *Muntiacus muntjak*, Tree Shrew *Tupaia belangeri*, squirrels, fruit bats, a host of butterflies and other invertebrates, riverine fish (over 40 species), Indian Rock Python *Python molurus*, geckos, freshwater frogs and toads.

LAND USE

- ☐ Agriculture
- ☐ Forestry
- ☐ Nature conservation and research
- ☐ Watershed management
- ☐ Urban / Industrial / Transport

THREATS AND CONSERVATION ISSUES

- ☐ Forest fires
- ☐ Disturbance to birds
- ☐ Spread of weeds and exotic snails
- ☐ Urbanization and effects
- ☐ Use of biocides for agriculture

The lowland forests of Sikkim have not yet been included in the Protected Area Network of the State. However a representative area of the Kitam Reserve Forest was proposed to be notified as a Bird Sanctuary (Sandeep Tambe *pers. comm.* 2003).

Population-wise, the entire South District of Sikkim is second largest after the East District. There are 144 inhabited revenue blocks. This area has been experiencing frequent occurrences of forest fire and was selected as a case study for watershed analysis (Sandeep Tambe *pers. comm.* 2003).

Habitat loss and fragmentation: The original forest as seen on the Survey of India map of more than 20 years ago, all along the course of the Rivers Tista and Great Rangit, is today a very narrow forest belt fragmented for the most part. Lowland forested areas between Jorethang and Melli are comprised of the Reserve Forests of Majhitar, Kitam and Melli-Ralu-Sumbuk. A metalled road runs right through carrying heavy vehicular traffic. The major townships of Jorethang, Melli and Rangpo are all along this route. The area has also been set aside as the industrial development zone with a range of establishments from a small glass factory to the Manipal University complex, beer factories and LPG bottling plant. New hydroelectric projects have also been taken up in this zone.

Timber poaching from across the state border was reported by local people as the principal cause of lack of old large trees especially Teak *Tectona grandis*. In-depth study and long term monitoring of the lowland forests, especially the vanishing Sal forest belt of Sikkim is urgently required.

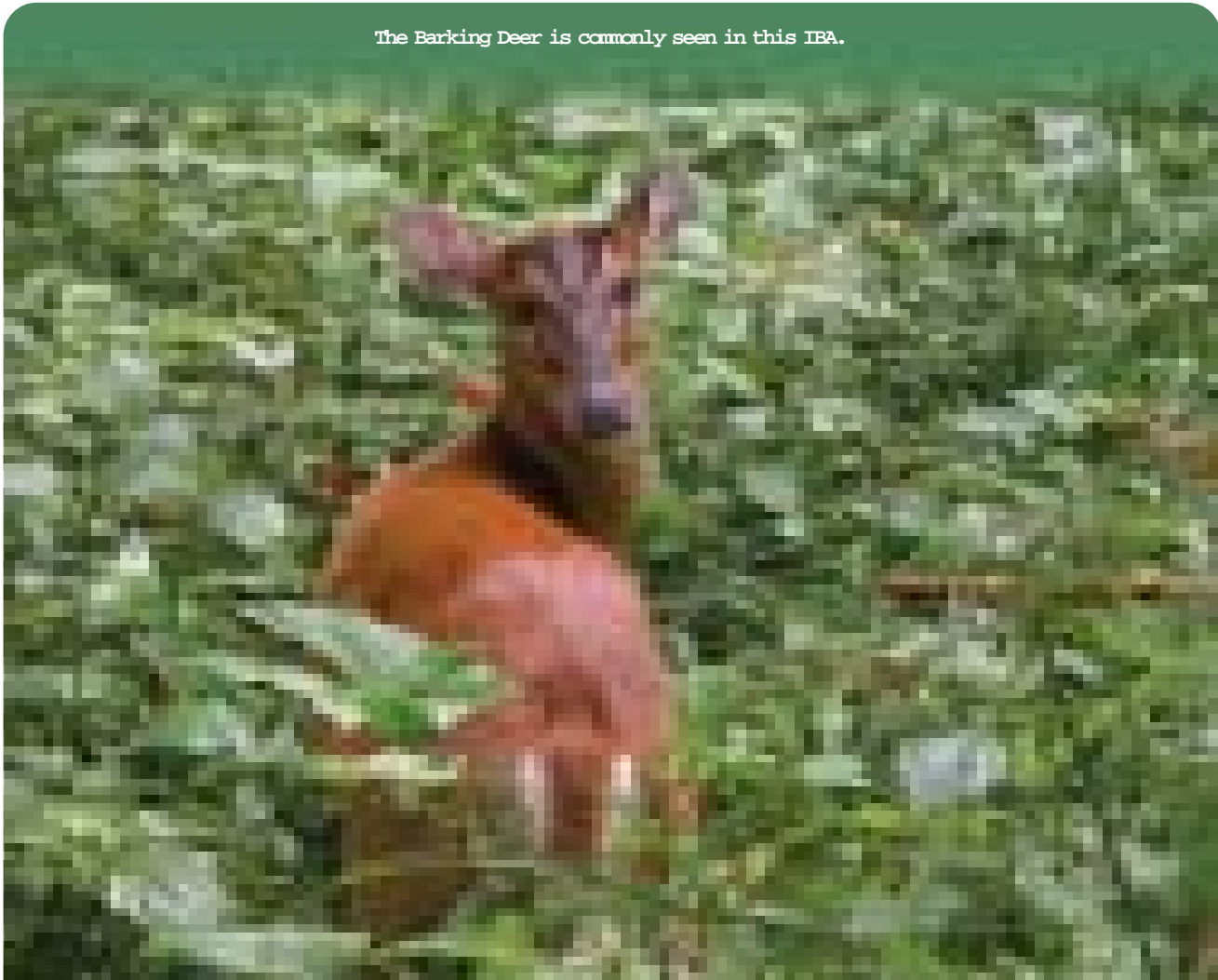
Livestock grazing: Cattle were grazed in almost all forest areas till a ban on grazing in reserve forests was instituted in 2002. Spread of weeds like *Lantana*, *Mikania* and *Eupatorium* is noticeable in many areas. In recent years, the spread of an accidentally introduced exotic species of snail has been reported to be causing crop damage. Use of biocides in agriculture is being phased out by the State government in an effort to become an 'organic state'.

Dynamiting and poisoning of water for fish: People reported this all along the Ramam Khola and at Manpur below Kitam.

There is evidence of forest fires in parts of Kitam where several scorched Chir Pines can be seen.

In addition to the above-mentioned biotic pressures, Kitam forest also has the problem of succession of the natural Sal stands by the Chir Pine *Pinus roxburghi* which is fire resistant. There was a clear shortage of bird life in the Pine stands as compared to Sal

The Barking Deer is commonly seen in this IBA.



SK-07

Photo: M. Zaifur-ul-Islam

patches though the exact quantification has not been done. Since this IBA is used more like a thoroughfare even by bird watchers passing through to more popular birding, trekking or tourism destinations in higher altitudes, there is a real lack of ecological information from this zone. Sightings of Kaleej Pheasant very close to human habitation or along the Melli-Jorethang road are no longer common (Ganguli-Lachungpa 1996). Indian Peafowl in Kitam introduced from Punjab over three decades ago by the State Forest Department (S. T. Bhutia *pers. comm.* 2003) seem to be thriving and villagers sometimes complain of crop depredation. Study is also needed to check for genetic dilution in Red Junglefowl near villages in this IBA.

KEY CONTRIBUTORS

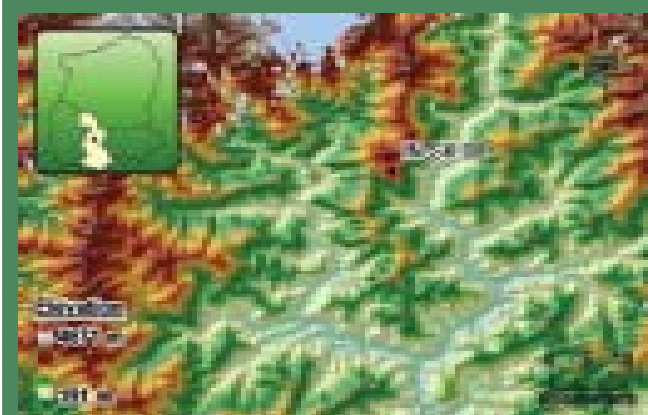
Usha Lachungpa and Sandeep Tambe

KEY REFERENCES

- Ali, S. (1962) *The Birds of Sikkim*. Oxford University Press, Madras.
- BirdLife International (2001) *Threatened Birds of Asia: The BirdLife International Red Data Book*. BirdLife International, Cambridge, UK.
- Ganguli-Lachungpa, U. (1996) *Baseline Bird Survey in Proposed Kitam Wildlife Sanctuary and other low-land forests of South Sikkim*. Report submitted to Oriental Bird Club (Unpublished).

SK-08

MAENAM WILDLIFE SANCTUARY –TENDONG RF



IBA Site Code	: IN-SK-08
State	: Sikkim
District	: South Sikkim
Coordinates	: 27° 18' 50" N, 88° 23' 35" E
Ownership	: State Forest Department
Area	: 3,539 ha
Altitude	: 2,100 – 3,300 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Subtropical Dry Evergreen Forest, Subtropical Broadleaf Hill Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area-130: Eastern Himalayas); A3 (Biome-7: Sino-Himalayan Temperate Forest, Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: Wildlife Sanctuary, established in 1987 and Tendong Reserve Forest, not officially protected

GENERAL DESCRIPTION

Maenam Wildlife Sanctuary is located on the Maenam-Tendong ridge which runs north-south bisecting Sikkim longitudinally and is drained by the Tista river to the East and Rangit river in the West. The altitudinal gradient of 2,100 m - 3,300 m provides for a range of microclimates and floral diversity from subtropical forests to stabilized scree slopes. These diverse forest types in turn shelter a wide range of faunal elements. The Sanctuary has tremendous watershed value, being the only source of perennial water on this ridge. The South District headquarters, Namchi, situated 30 km due south totally depends on the water piped from the Burmelly stream originating from within the Sanctuary precincts. The adjoining town of Ravangla also depends on the Sanctuary for potable water.

“Maenam-la” translates to the “Treasury of Medicines”, being a rich trove of medicinal plants. There is also a historical Buddhist monastery, the Maenam Gompa, at the top of the ridge. Interestingly, despite the disturbance from nearby urban areas, Maenam harbours a rich bird diversity (Anon. 2001).

The entire stretch of forest along Temi-Tarku-Damthang-Tendong-Bhanjyang- Ravangla-Maenam and further north linking with Karjee-Labdang forests of the Khangchendzonga Biosphere Reserve is virtually contiguous, planted in a few places with the exotic *Cryptomeria japonica* trees. Tea plantations of the State Government occupy a part of Temi.

AVIFAUNA

There are several villages fringing this IBA due to which the habitat is open in several places. This open habitat coupled with patches of dense forest provides ideal bird habitats in the IBA. The Hodgson’s Frogmouth *Batrachostomus hodgsoni* was observed in Pabong area (Ganguli-Lachungpa and Lucksom 1998).

The site lies in the Eastern Himalayas Endemic Bird Area (EBA-130), in which Stattersfield *et al.* (1998) have listed 21 restricted range species. Eight of these have been seen here (U. Lachungpa *pers. comm.* 2003).

This mid-altitude IBA falls mainly in Sino-Himalayan Temperate Forest (Biome-7). BirdLife International (undated) has listed 112 species in this biome, of which 53 are found here. The higher reaches of this IBA, above 3,000 m show some birds of Biome-5 (Eurasian High Montane - Alpine and Tibetan) where 48 species are listed and seven are seen in this site. At lower reaches, Biome-7 merges with Biome-8 (Sino-Himalayan Subtropical Forest) where 95 species are listed. Almost half of them (42 species) have been found here. Some areas of this IBA, especially in the valleys also show some faunal elements of Biome-9 (Indo-Chinese Tropical Moist Forest). Four species of this biome are also found here. They are Grey Peacock Pheasant *Polyplectron bicalcaratum* (unconfirmed), Pale-headed Woodpecker *Gecinulus grantia*, Greater Necklaced Laughingthrush *Garrulax pectoralis* and Sultan Tit *Melanochlora sultanea*. The list of other biome species is too long to be mentioned here.

This IBA has habitat contiguity with the Khangchendzonga Biosphere Reserve (U. Lachungpa *pers. comm.* 2003), therefore, both these IBAs together form a large habitat for the bird life of this small state. The site fulfils three IBA criteria: A1 (Threatened Species), A2 (EBA-130: Eastern Himalayas) and A3 (Biome-restricted species).

Vulnerable	
Greater Spotted Eagle	<i>Aquila clanga</i>
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Blyth’s Tragopan	<i>Tragopan blythii</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Endemic Bird Area-130: Eastern Himalayas	
Rufous-throated Wren-Babbler	<i>Spelaeornis caudatus</i>
Wedge-billed Wren-Babbler	<i>Sphenocichla humei</i>
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
White-naped Yuhina	<i>Yuhina bakeri</i>
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>

Biome-7: Sino-Himalayan Temperate Forest

Common Hill-Partridge	<i>Arborophila torqueola</i>
Satyr Tragopan	<i>Tragopan satyra</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophciata</i>
Maroon-backed Accentor	<i>Prunella immaculata</i>
Long-tailed Thrush	<i>Zoothera dixonii</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Chestnut Thrush	<i>Turdus rubrocanus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Scaly Laughingthrush	<i>Garrulax subunicolor</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Slender-billed Scimitar-Babbler	<i>Xiphirhynchus superciliaris</i>
Greater Scaly-breasted Wren-Babbler	<i>Pnoepyga albiventer</i>
Spotted Wren-Babbler	<i>Spelaeoris formosus</i>
Bar-throated Minla	<i>Minla strigula</i>
Red-tailed Minla	<i>Minla ignotincta</i>
Gold-breasted Tit-Babbler	<i>Alcippe chrysotis</i>
White-browed Tit-Babbler	<i>Alcippe vinipectus</i>
Rufous Sibia	<i>Heterophasia capistrata</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Myzornis	<i>Myzornis pyrrhoura</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Grey-bellied Tesia	<i>Tesia cyaniventer</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophciata</i>
Slaty-backed Flycatcher	<i>Ficedula hodgsonii</i>
Ultramarine Flycatcher	<i>Ficedula superciliaris</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Sapphire Flycatcher	<i>Ficedula sapphira</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
Rufous-fronted Tit	<i>Aegithalos iouschistos</i>
Brown Crested Tit	<i>Parus dichrous</i>
Green-backed Tit	<i>Parus monticolus</i>
Yellow-browed Tit	<i>Sylviparus modestus</i>
White-tailed Nuthatch	<i>Sitta himalayensis</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Tibetan Siskin	<i>Serinus thibetanus</i>
Blanford's Rosefinch	<i>Carpodacus rubescens</i>
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>
Pink-browed Rosefinch	<i>Carpodacus rodochrous</i>
Scarlet Finch	<i>Haematospiza sipahi</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Gold-naped Black Finch	<i>Pyrrhoptes epauletta</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>

Biome-8: Sino-Himalayan Subtropical Forest

Rufous-throated Hill-Partridge	<i>Arborophila rufogularis</i>
Slaty-headed Parakeet	<i>Psittacula himalayana</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Blue-naped Pitta	<i>Pitta nipalensis</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Striated Bulbul	<i>Pycnonotus striatus</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
White-throated Bulbul	<i>Alophoixus flaveolus</i>
Rufous-bellied Bulbul	<i>Hypsipetes mccllellandii</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Orange-bellied Chloropsis	<i>Chloropsis hardwickii</i>
Blue-headed Rock-Thrush	<i>Monticola cinclorhynchus</i>
Tickell's Thrush	<i>Turdus unicolor</i>
Grey-winged Blackbird	<i>Turdus bouboul</i>
White-tailed Robin	<i>Myiomela leucurum</i>
Blue-fronted Robin	<i>Cinclidium frontale</i>
Slaty-backed Forktail	<i>Enicurus schistaceus</i>
Purple Cochoa	<i>Cochoa purpurea</i>
Green Cochoa	<i>Cochoa viridis</i>
Blue-winged Laughingthrush	<i>Garrulax squamatus</i>
Red-faced Liocichla	<i>Liocichla phoenicea</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogenys</i>
Rufous-capped Babbler	<i>Stachyris ruficeps</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Cutia	<i>Cutia nipalensis</i>
Rufous-bellied Shrike-Babbler	<i>Pteruthius rufiventer</i>
Rusty-fronted Barwing	<i>Actinodura egertoni</i>
Blue-winged Minla	<i>Minla cyanouroptera</i>
Striated Yuhina	<i>Yuhina castaniceps</i>
Black-chinned Yuhina	<i>Yuhina nigrimenta</i>
Lesser Rufous-headed Parrotbill	<i>Paradoxornis atosuperciliaris</i>
Slaty-bellied Tesia	<i>Tesia olivea</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
White-gorgeted Flycatcher	<i>Ficedula monileger</i>
Small Niltava	<i>Niltava macgrigoriae</i>
Red-headed Tit	<i>Aegithalos concinnus</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>
Streaked Spiderhunter	<i>Arachnothera magna</i>
Maroon Oriole	<i>Oriolus traillii</i>
Grey Treepie	<i>Dendrocitta formosae</i>

OTHER KEY FAUNA

Fauna includes Red Panda *Ailurus fulgens*, Leopard *Panthera pardus*, Asiatic Black Bear *Ursus thibetanus*, Serow *Nemorhaedus sumatraensis*, Goral *Nemorhaedus goral*, Barking Deer *Muntiacus muntjak*, Mouse Hare *Ochotona roylei*, Particoloured Flying Squirrel *Hylopetes alboniger*, Hoary-bellied Himalayan Squirrel *Callosciurus pygerythrus*, Orange-bellied Himalayan Squirrel *Dremomys lokriah*, Yellow-throated Marten *Martes flavigula*, Assamese Macaque *Macaca assamensis* and Himalayan Crestless Porcupine *Hystrix brachyura*.

LAND USE

- ☐ Nature conservation and research
- ☐ Tourism and recreation
- ☐ Watershed management

THREATS AND CONSERVATION ISSUES

- ☐ Disturbance to birds
- ☐ Recreation and tourism
- ☐ Erosion
- ☐ Illegal felling of trees
- ☐ Poaching

A collaborative biodiversity survey was carried out by World Pheasant Association (WPA)-India and the State Forest Department in 1996 (Ahmed and Ganguli-Lachungpa 1996), prior to which Dipankar Ghosh carried out a short study on Satyr Tragopan through WPA (U. Lachungpa *pers. comm.* 2003). The Sanctuary and surrounding villages were also covered during the National Biodiversity Strategy and Action Plan (NBSAP: a project of the Ministry of Environment and Forests/Kalpavriksh) exercise carried out by the State Forest Department. In addition, formation of Eco-development Committees and ‘Pani’ (Water) Panchayats in villages around Maenam WLS was also facilitated by the State Forest Department (Sandeep Tambe *pers. comm.* 2003). In 2002, the State Government declared a State Biodiversity Park at Damthang, Tendong comprising 250 ha (S. B. S. Bhadauria *pers. comm.* 2003).

Erosion, landslides and landslips, snow, weeds, wind, poaching, destruction of habitat due to illegal felling and collection of non-timber forest fruits (food of the Asiatic Black Bear, Barking Deer and monkeys) and encroachment in the form of cardamom cultivations are some of the issues affecting the Sanctuary (Anon. 2001).

Domestic cattle compete with wild herbivores for fodder and water, and spread disease, while the attendant migratory graziers within the sanctuary cause immense damage to the habitat. Twenty-five permanent cattle-sheds from within the Sanctuary were removed in a phased manner between 2000 and 2002. These cattle-sheds,

with their domestic dogs, their incessant demand for firewood, lopping of trees for fodder, and cutting of poles for construction, used to cause grave damage to the biodiversity of this Sanctuary. The land formerly occupied by these cattle-sheds gradually changed into man-made meadows. Other than grass, unpalatable weeds such as *Rumex nepalensis* have also sprung up. Grazing by stray cattle belonging to the adjoining villages is still a major problem (Anon. 2001).

Uncontrolled tourism causes damage to vegetation and change in the behavioral pattern of wild animals in general. Recreational tourism within the Sanctuary is picking up and the magnificent mountain views are a great attraction for tourists. Religious pilgrimages to *Bhale-Dhunga* and the Buddhist monastery are quite popular amongst the local community. Problems of garbage and noise pollution, vandalism and other tourism generated pressures need to be addressed.

KEY CONTRIBUTORS

Usha Lachungpa and Sandeep Tambe

KEY REFERENCES

Ahmed, A. and Ganguli-Lachungpa, U. (1996) Report on Biodiversity Survey of Maenam WLS. Unpublished report to Oriental Bird Club, U.K.

Anonymous (2001) Management Plan of Maenam Wildlife Sanctuary (unpublished). State Forest Department, Government of Sikkim, Deorali, Gangtok.

BirdLife International (undated) *Important Bird Areas (IBAs) in Asia: Project briefing book*. BirdLife International, Cambridge, U.K., unpublished.

Ganguli-Lachungpa, U. and Lucksom S. Z. (1998) Sighting of Hodgson’s Frogmouth *Batrachostomus hodgsoni hodgsoni* (G.R. Gray) from Sikkim. *J. Bombay Nat. Hist. Soc.* 95 (3): 506.

Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the World: Priorities for Biodiversity Conservation*. BirdLife Conservation Series No. 7. BirdLife International, Cambridge, U.K.

PANGOLAKHA WILDLIFE SANCTUARY-ZULUK-BEDANG TSO – NATU LA COMPLEX



IBA Site Code	: IN-SK-09
State	: Sikkim
District	: East Sikkim
Coordinates	: 27° 20' 28" N, 88° 46' 42" E
Ownership	: State Forest Department
Area	: 12,400 ha
Altitude	: 1,300 - >4,000m
Rainfall	: Not Available
Temperature	: Not Available
Biogeographic Zones	: Himalaya
Habitats	: Subtropical Pine Forest, Subtropical Broadleaf Hill Forest, Alpine Moist Pasture

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas; Endemic Bird Area 133: Southern Tibet), A3 (Biome-5: Eurasian High Montane, Biome-7: Sino-Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: Wildlife Sanctuary, established in 2002

GENERAL DESCRIPTION

The Pangolakha Range, extending below the Chola Range, separates Sikkim from Bhutan. Hathichirey (the place where elephants can penetrate) forms the tri-junction between Bhutan, Sikkim and West Bengal where further down the forest continues as the Neora Valley National Park (an IBA in West Bengal). The Sanctuary has typical alpine-temperate-subtropical vegetation with high altitude lakes around Jelep La. Rhododendron, Silver Fir, Juniper forest and associated ground flora, moss-filled oak forests with dense bamboo thickets form ideal habitat for the Red Panda *Ailurus fulgens*, the State Animal.

AVIFAUNA

The mountain passes of Natu La and Jelep La (La = Pass) form the routes for migratory waterbirds many of which stop over at the various wetlands in the area, especially Bedang Tso Lake. The Himalayan Monal *Lophophorus impejanus* (locally called as *Feydong*) used to be found here (Chezung Lachungpa *pers. comm.* 1996), hence the name Bedang Tso. Sometimes there is mass migration of birds of prey such as Red Kites *Milvus milvus* and unidentified eagles (U. Lachungpa *pers. comm.* 2003). The Sherathang marshes are one area where the Brahminy Shelduck *Tadorna ferruginea* breeds.

Some birds of this complex are Eurasian Woodcock *Scolopax rusticola* and Wood Snipe *Gallinago nemoricola*, a globally threatened species (BirdLife International 2001) occasionally seen

Pangolakha and nearby areas are important habitat for the Alpine Accentor of Biome-5.



Photo: Otto Pfister

on the banks of the Bedang Tso. Hill Pigeons *Columba rupestris* are seen on smoking chimneys of local houses in snowy winters. The Snow Pigeon *Columba leuconota*, Snow Partridge *Lerwa lerwa*, Himalayan Monal and Gold-naped Black Finch *Pyrrhoplectes epauleta* are common on the alpine slopes. The Pallas's Fish-Eagle *Haliaeetus leucoryphus* was once seen in the forest patch over the Pangolakha range in 1994. Large Cormorant *Phalacrocorax carbo* and Bar-headed Geese *Anser indicus* were sighted at Bedang Tso in 1992 (U. Lachungpa *pers. comm.* 2003).

The Tibetan Eared Pheasant *Crossoptilon harmani*, a Near Threatened species, has been reported from Kupup (near Bedang Tso) below the Jelep La (U. Lachungpa *pers. comm.* 2003). This area falls under Pangolakha Wildlife Sanctuary and is adjacent to the Chumbi Valley of Tibet. This pheasant is one of the two endemic birds in Southern Tibet (EBA-133). It is reported from the edge of mixed Broadleaf Coniferous forest; Rhododendron, Juniper and deciduous scrub and grassland (Stattersfield *et al.* 1998). Another Near Threatened species found in this IBA is the Giant Babax *Babax waddelli*.

Due to great altitudinal variation from 1300 m to above 4,000 m, three biomes occur in this IBA: Biome-5: Eurasian High Montane (Alpine and Tibetan), from above 3,600 m; Biome-7: Sino-Himalayan Temperate Forest, between 1,800 m and 3,600 m; and, Biome-8: Sino-Himalayan Subtropical Forest, occurring between c. 1,000 m to 2,000 m (BirdLife International, undated). In Biome-5, 48 species are found, out of which 11 are found at this site. Similarly, 112 species are representative of Biome-7 and in this site are found 14 species (U. Lachungpa *pers. comm.* 2003). At lower altitude, in Biome-8, only two species out of 95 are reported from this IBA. It is likely that with more detailed surveys, more biome restricted species would be found.

Vulnerable	
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Slender-billed Babbler	<i>Turdoides longirostris</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Hodgson's Prinia	<i>Prinia cinereocapilla</i>

Near Threatened	
Ward's Trogon	<i>Harpactes wardi</i>
Endemic Bird Area 130: Eastern Himalayas	
Ward's Trogon	<i>Harpactes wardi</i>
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>
Biome-5: Eurasian High Montane (Alpine and Tibetan)	
Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Solitary Snipe	<i>Gallinago solitaria</i>
Rosy Pipit	<i>Anthus roseatus</i>
Alpine Accentor	<i>Prunella collaris</i>
Altai Accentor	<i>Prunella himalayana</i>
Grandala	<i>Grandala coelicolor</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Red-fronted Rosefinch	<i>Carpodacus puniceus</i>
Rufous-necked Snowfinch	<i>Pyrgilauda tuficollis</i>
Plain-backed Snowfinch	<i>Pyrgilauda blanfordi</i>
Biome-7: Sino-Himalayan Temperate Forest	
Common Hill-Partridge	<i>Arborophila torqueola</i>
Rufous-breasted Accentor	<i>Prunella strophiaata</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Himalayan Rubythroat	<i>Luscinia pectoralis</i>
Myzornis	<i>Myzornis pyrrhoura</i>
Great Parrotbill	<i>Conostoma oemodium</i>
Aberrant Bush-Warbler	<i>Cettia flavolivacea</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Blanford's Rosefinch	<i>Carpodacus rubescens</i>
Dark-breasted Rosefinch	<i>Carpodacus nipalensis</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
White-winged Grosbeak	<i>Mycerobas carnipes</i>
Gold-naped Black Finch	<i>Pyrrhoptectes epauletta</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>

OTHER KEY FAUNA

Fauna includes Tiger *Panthera tigris*, Leopard *Panthera pardus*, Takin *Budorcas taxicolor*, Red Fox *Vulpes vulpes*, Hill Fox *V. montana*, Goral *Nemorhaedus goral*, Serow *N. sumatraensis*, Musk Deer *Moschus chrysogaster*, Yellow-Throated Marten *Martes flavigula*, Asiatic Black Bear *Ursus thibetanus*, Red Panda *Ailurus fulgens*, Mouse-Hare *Ochotona roylei* and Himalayan Weasel *Mustela sibirica*. There are chances of occurrence of Himalayan Salamander *Tylototriton verrucosus* in addition to other herpetofauna. Lower altitude waterbodies are home to several hillstream fish while in the upper reaches, the exotic Brown Trout has been introduced in the alpine lakes.

LAND USE

- ☐ Forestry
- ☐ Military
- ☐ Nature conservation and research
- ☐ Water /Watershed Management

THREATS AND CONSERVATION ISSUES

- ☐ Frequent and regular change of army units
- ☐ Pollution of wetlands especially by camps of Army and GREF
- ☐ Heavy military traffic via Zuluk
- ☐ Disturbance to wildlife from stray dogs
- ☐ Grazing in forests

As the area is at high altitude bordering Tibet, it is manned by the Indian Army who occupy the area in short shifts of about six months to a year. Any biodiversity sensitization programme is hence short-lived.

Most camps are around or near waterbodies with resultant pollution, especially of non-biodegradable garbage and spread of stray dogs around these settlements. In addition to preying on wildlife such as Brahminy Shelduck *Tadorna ferruginea*, there have been reports of human casualties due to these dogs (U. Lachungpa *pers. comm.* 2003)

The forest here is used by some yak graziers and is the route that the Tiger and Takin have followed into Sikkim (Ganguli-Lachungpa 1998, 2000). There are sporadic incidents of Tiger attacking small herds of domestic yaks. Due to army camps along the Gangtok-Natu La-Zuluk-Rongli route, there have been cases of poaching of wildlife (U. Lachungpa *pers. comm.* 2003).

The State Forest Department has set up Eco-Development Committees (EDCs) around all wildlife protected areas. In this IBA an EDC has been set up in the village of Gnathang. These conservation issues have also been addressed in the National Biodiversity Strategy and Action Plan process for the Sikkim State.

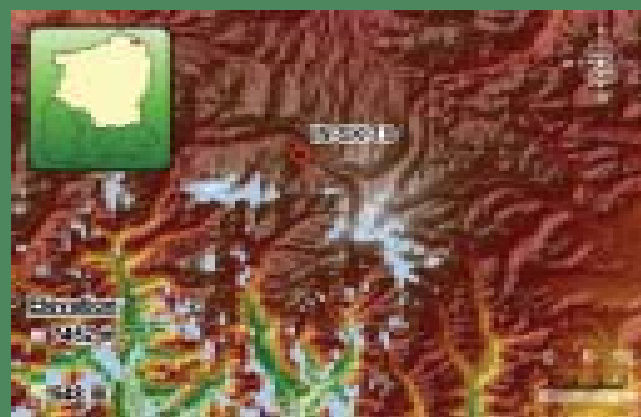
KEY CONTRIBUTOR

Usha Lachungpa

KEY REFERENCES

- BirdLife International (undated) *Important Bird Areas (IBAs) in Asia: Project briefing book*. BirdLife International, Cambridge, U.K., unpublished.
- BirdLife International (2001) *Threatened Birds of Asia: The BirdLife International Red Data Book*. BirdLife International, Cambridge, U.K.
- Ganguli-Lachungpa, U. (1998) On the occurrence of the Tiger *Panthera tigris* in Sikkim. *J. Bombay Nat. Hist. Soc.* 95 (1): 109
- Ganguli-Lachungpa, U. (2000) Takin *Budorcas taxicolor* at Menla Reserve Forest (3050m), East Sikkim: a westward range extension and observations of unusual behaviour. *J. Bombay Nat. Hist. Soc.* 97 (2): 272-274
- Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the World – Priorities for Biodiversity Conservation*. BirdLife International, Cambridge, UK.

TSO LHAMO PLATEAU-LASHAR-SEBU LA-YUMESAMDONG COMPLEX



IBA Site Code	: IN-SK-10
State	: Sikkim
District	: North Sikkim
Coordinates	: 28° 01' 43" N, 88° 45' 17" E
Ownership	: State Forest Department
Area	: c.50,000 ha
Altitude	: 4,500 – 7,000m
Rainfall	: Not available
Temperature	: -20 °C to 25 °C
Biogeographic Zone	: Trans-Himalaya
Habitats	: Alpine Arid Pasture and Alpine Dry Scrub

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas; Endemic Bird Area 133: Tibetan Plateau); A3 (Biome-5: Eurasian High Montane; Biome-7: Sino-Himalayan Temperate Forest)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Tso Lhamo Plateau, Lashar, Sebu La and Yumesamdong complex is typical cold desert on Tibetan Plateau and trans-Himalayan facies, with high snow mountains and glaciers, lakes and geothermal springs and vast valleys with grasses, sedges, cushionoid vegetation, lichens and associated fauna. In this Reserve Forest on the international border with Tibet (China), heavy military deployment has caused a network of roads on the plateau with military establishment mostly near glacial lakes of Gyam Tsona and Tso Lhamo. The area has a short growing season from May to October with peak in July-August when most of the birds breed. This eco-region has not yet been included in the protected area network of the State and is perhaps the most threatened as it contains many endangered species (protected under Schedules I and II of the Indian Wildlife (Protection) Act 1972, such as the Tibetan Wild Ass or Kiang *Equus kiang*, Nayan *Ovis ammon* and Black-necked Crane *Grus nigricollis*).

This IBA seeks to link the Tso Lhamo Plateau with the Lashar, Sebu La Yumesamdong section, reaching southwards to touch the Sino-Himalayan Temperate Forests below Yumesamdong and around Thangu in North Sikkim.

AVIFAUNA

A total of around 227 birds have been recorded from this c. 500 sq. km area, including four globally threatened species, three Restricted Range species and 93 Biome-restricted species (Ganguli-Lachungpa and Rahmani 2003). One of these, *Babax waddelli*, is reported only from extreme northeast Sikkim from 2,700-4,400 m in the Tibetan Plateau facies (EBA-133) in *Hippophae* thickets. It is found in dense deciduous scrub above tree-line and edge of coniferous forest (Stattersfield *et al.* 1998). It is reported as 'locally common' (Ali and Ripley 1987).

This site in the Eastern Himalayas Endemic Bird Area is the highest altitude eco-region in Sikkim spanning two biomes, Sino-Himalayan Temperate Forest (Biome-7) and Eurasian High Montane (Alpine and Tibetan) (Biome-5) as described by BirdLife International (undated).

Of the 48 Biome-5 (Eurasian High Montane - Alpine and Tibetan) species, 35 occur here and of the 112 Biome-7 (Sino-Himalayan Temperate Forest) species, at least 12 are from here. More are likely to be found after detailed investigations.

The important breeding bird species recorded here are Tibetan Snowcock *Tetraogallus tibetanus*, Black-necked Crane *Grus nigricollis*, Brahminy Shelduck *Tadorna ferruginea*, Common Redshank *Tringa totanus*, Tibetan Sandgrouse *Syrhaptes tibetanus*, Snow Pigeon *Columba leuconota*, Robin Accentor *Prunella rubeculoides*, Guldenstadt's Redstart *Phoenicurus erythrogaster*, Plain Mountain Finch *Leucosticte nemoricola*, Black-headed Mountain Finch *Leucosticte brandti*, Mandelli's Snowfinch *Pyrgilauda taczanowskii*, Tibetan Snowfinch *Montifringilla adamsi*, Plain-backed Snowfinch *Pyrgilauda blanfordi*, Rufous-necked Snowfinch *Pyrgilauda ruficollis*, Hume's Groundpecker *Pseudopodoces humilis*, Yellow-billed Cough *Pyrhocorax graculus*, Lesser Sand Plover *Charadrius mongolus*, Golden Eagle *Aquila chrysaetos* and Little Owl *Athene noctua*.

Some of the non-breeding birds are Lesser Kestrel *Falco naumanni*, Bar-headed Goose *Anser indicus* and Common Hoopoe *Upupa epops*. A pair of Brown-headed Gull *Larus brunnecephalus* was sighted on Lake Tso Lhamo in May 2003 (U. Lachungpa *pers. comm.* 2003).

The Vulnerable Lesser Kestrel *Falco naumanni* is seen in this IBA.



Photo: Valeri Woesikkin

Vulnerable

Greater Spotted Eagle	<i>Aquila clanga</i>
Lesser Kestrel	<i>Falco naumanni</i>
Black-necked Crane	<i>Grus nigricollis</i>
Wood Snipe	<i>Gallinago nemoricola</i>

Endemic Bird Area-130: Eastern Himalayas

Hoary-throated Barwing	<i>Actinodura nipalensis</i>
Broad-billed Flycatcher-Warbler	<i>Tickellia hodgsoni</i>
Giant Babax	<i>Babax waddelli</i>

Bicome-5: Eurasian High Montane (Alpine and Tibetan)

Himalayan Griffon	<i>Gyps himalayensis</i>
Snow Partridge	<i>Lerwa lerwa</i>
Tibetan Snowcock	<i>Tetraogallus tibetanus</i>
Tibetan Partridge	<i>Perdix hodgsoniae</i>
Solitary Snipe	<i>Gallinago solitaria</i>
Ibisbill	<i>Ibidorhyncha struthersii</i>
Brown-headed Gull	<i>Larus brunnicephalus</i>
Tibetan Sandgrouse	<i>Syrrhaptes tibetanus</i>
Snow Pigeon	<i>Columba leuconota</i>
Long-billed Calandra Lark	<i>Melanocorypha maxima</i>
Hume's Short-toed Lark	<i>Calandrella acutirostris</i>
Rosy Pipit	<i>Anthus roseatus</i>
Grey-backed Shrike	<i>Lanius tephronotus</i>
Alpine Accentor	<i>Prunella collaris</i>
Altai Accentor	<i>Prunella himalayana</i>
Robin Accentor	<i>Prunella rubeculoides</i>
Brown Accentor	<i>Prunella fulvescens</i>
Plain-backed Thrush	<i>Zoothera mollissima</i>
Guldenstadt's Redstart	<i>Phoenicurus erythrogaster</i>
Grandala	<i>Grandala coelicolor</i>
Smoky Warbler	<i>Phylloscopus fulgiventis</i>
Tickell's Warbler	<i>Phylloscopus affinis</i>
Wallcreeper	<i>Tichodroma muraria</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Black-headed Mountain-Finch	<i>Leucosticte brandti</i>
Beautiful Rosefinch	<i>Carpodacus pulcherrimus</i>
Red-mantled Rosefinch	<i>Carpodacus rhodochlamys</i>
Streaked Great Rosefinch	<i>Carpodacus rubicilloides</i>
Red-fronted Rosefinch	<i>Carpodacus puniceus</i>
Tibetan Snowfinch	<i>Montifringilla adamsi</i>
Mandelli's Snowfinch	<i>Pyrgilauda taczanowskii</i>
Rufous-necked Snowfinch	<i>Pyrgilauda ruficollis</i>
Plain-backed Snowfinch	<i>Pyrgilauda blanfordi</i>
Hume's Groundpecker	<i>Pseudopodoces humilis</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>
Blood Pheasant	<i>Ithaginis cruentus</i>

Tibetan Wolf *Canis lupus* is an important mammal that needs protection.



Photo: Otto Pflister

Bicome-7: Sino-Himalayan Temperate Forest

Himalayan Monal	<i>Lophophorus impejanus</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
Rufous-breasted Accentor	<i>Prunella strophiatea</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Orange-barred Leaf-Warbler	<i>Phylloscopus pulcher</i>
Grey-faced Leaf-Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>
White-browed Rosefinch	<i>Carpodacus thura</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Collared Grosbeak	<i>Mycerobas affinis</i>
White-winged Grosbeak	<i>Mycerobas carinipes</i>

OTHER KEY FAUNA

The larger mammals show local migration in search of food and shelter, while strictly resident animals are generally burrow-dwelling and spend the severe winter hibernating.

Important fauna include Kiang, Nayan, Tibetan Gazelle *Procapra picticaudata*, Blue Sheep *Pseudois nayaur*, Brown Bear *Ursus arctos*, Snow Leopard *Uncia uncia*, Lynx *Lynx lynx*, Red Fox *Vulpes vulpes* and Wolf *Canis lupus*, all nine species protected under Schedule I of the Indian Wild Life (Protection) Act 1972. The Snow Leopard and Nayan are globally threatened. Smaller animals include Woolly Hare *Lepus oiostolus*, Himalayan Marmot *Marmota himalayana*, Himalayan Mouse-Hare *Ochotona roylei*, Voles *Alticola* spp., and Long-eared Bat *Plecotus auritus*. Sikkim Snow Toads *Scutigera sikkimensis* and *S. boulengeri* inhabit almost all the wetlands in the area. Interestingly, Snow Toads are found in the brackish lake Gyam Tsona, the freshwater glacial lake Tso Lhamo and also in thermally active areas like Lake Gurudongmar and the Yumesamdong hot springs found in this IBA.

LAND USE

- ☐ Forestry
- ☐ Military
- ☐ Nature conservation and research
- ☐ Tourism / recreation

THREATS AND CONSERVATION ISSUES

- ☐ Military overuse especially near lakes
- ☐ Extensive road network by GREF
- ☐ Poaching
- ☐ Feral dogs
- ☐ Grazing

The entire IBA is located on the international border with Tibet (China); hence there is massive military deployment for security reasons in the form of manpower and heavy machinery including

vehicles. Of necessity, most camps are located near water sources, often above them. As a result there is every chance of polluting the water bodies that form the source of Sikkim's lifeline, River Tista. These lakes are stopover sites for migratory waterfowl.

Diversion of the Mirdo spring feeding Lake Gyam Tsona in 1999 has caused the 54 ha lake to dry up into a small pond. This lake was the best in Sikkim for waterfowl and over 200 Northern Pintails *Anas acuta* and other species have been counted here (Ganguli-Lachungpa 2002) in the past. Nowhere else in Sikkim has this number been recorded.

The Garrison Road Engineering Force (GREF) and the Border Roads Organisation (BRO) deploy a large non-native labour force to maintain the extensive road network on the plateau. The labourers maintain shifting camps almost throughout the year. In addition to permanently disrupting the fragile ecology of these alpine grasslands and nesting sites of most of the ground and hole nesting birds, there have been instances of snaring of wildlife and collection of medicinal plants as well as removal of the slow growing *Juniper* and *Rhododendron* bushes for fuel wood.

In addition, both the military and GREF/BRO are responsible for the large population of c. 250 stray and feral dogs which can now be seen roaming in small packs over the plateau preying upon Brahminy Shelduck chicks, Himalayan Marmots, Woolly Hare, Voles and other animals. The Tibetan Mastiff, once used as livestock guardian by the yak and sheep herding nomadic graziers (*Dokpas*), is now extinct from Sikkim (Ganguli-Lachungpa and Rahmani 2002).

A series of minefields laid along the international border are also a cause for concern as their loose fencing needs constant maintenance. Minefield casualties of endangered species of wildlife such as Kiang, Nayan and Tibetan Gazelle, though common are not viewed very sympathetically so far. Surprisingly, a male Guldenstadt's Redstart (Biome-5) was found dead, trapped by its leg in the barbed wire strand of one such fence in May 2003.

These minefields further limit the grazing areas available to the wild herbivores and domestic livestock. They, as a result, put pressure on the sparse grasses and vegetation of the area as well as ground nester birds such as Horned Larks, hole and burrow nesting Snowfinches and also disturb Black-necked Crane feeding areas like Yum Tso. The wild herbivores are trans-border migrants, but their movement is restricted due to military deployment. There is a livestock population of c. 1,000 yaks and 2,000 sheep that are grazed by the nomadic *Dokpas*.

A new pressure is slowly surfacing with the area being opened up for tourism especially to Gurudongmar Tso (Lake), with its attendant problems of garbage and vehicular diesel pollution.

The State Forest Department has formed Joint Forest Management Committees (JFMC) at Lachen, Thangu and Lachung but there is a need for a Trans-Himalayan JFMC especially for this IBA.

Medicinal Plants Conservation initiatives of the State Forest Department have just begun and there is a vision to develop, over a period of time, home herbal gardens, medicinal plant farms and Tibetan *Amji* training centres attached to monastery schools. Medicinal Plant Conservation Areas and Medicinal Plant Development Areas are also planned to reduce pressure on the wilderness areas and to provide alternative livelihoods to the tribal people dependent on this IBA.

Alpine Grassland Ecology Project of BNHS was initiated in this IBA since June 2000 with the objective of formulating a conservation strategy for the alpine grasslands. The National Biodiversity Strategy and Action Plan (NBSAP) project of the Ministry of Environment and Forests, Government of India and Kalpavriksh (an NGO) was also initiated during the same period (Anon. 2003), working to resolve some of the above complex issues specific to this special eco-region of Sikkim.

KEY CONTRIBUTORS

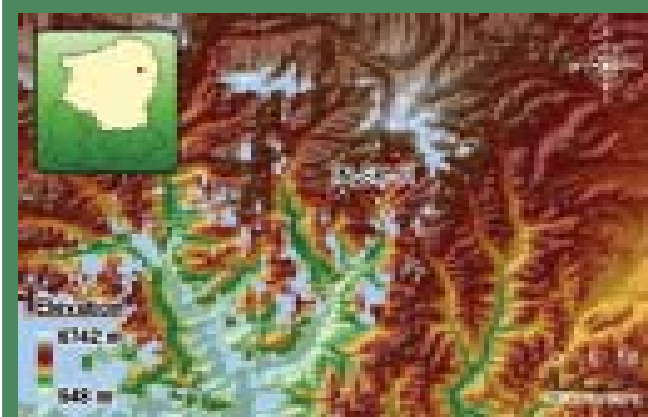
Tim Inskipp and Usha Lachungpa

REFERENCES

- Ali, S. and Ripley, S. D. (1987) *Compact Handbook of the Birds of India and Pakistan* (Second Edition). Oxford University Press, Delhi.
- Anonymous (2003) Sikkim State Biodiversity Strategy and Action Plan. Department of Forests, Environment and Wildlife, Govt. of Sikkim. Pp. 104.
- BirdLife International (undated) *Important Bird Areas (IBAs) in Asia: Project briefing book*. BirdLife International, Cambridge, U.K., unpublished.
- Ganguli-Lachungpa, U. (2002) Avifauna of Trans-Himalayan and alpine grasslands in Sikkim, India. In: *Birds of Wetlands and Grasslands: Proceedings of the Salim Ali Centenary Seminar, 1996* (eds. Rahmani, A. R. and Ugra, G.). Bombay Natural History Society, Mumbai. Pp. 196-207.
- Ganguli-Lachungpa, U. and Rahmani, A. R. (2002) Development of Conservation Strategy for the Alpine Grasslands of Sikkim. Annual Report combined 2000-2002. Bombay Natural History Society, Mumbai, Unpublished. Pp. 53.
- Ganguli-Lachungpa, U. and Rahmani, A. R. (2003) Development of Conservation Strategy for the Alpine Grasslands of Sikkim. Annual Report 2003. Bombay Natural History Society, Mumbai, Unpublished. Pp. 106.
- Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the World: Priorities for Biodiversity Conservation*. BirdLife International, Cambridge, UK.

SK-11

YUMTHANG-SHINGBA RHODODENDRON WILDLIFE SANCTUARY



IBA Site Code	: IN-SK-11
State	: Sikkim
District	: North Sikkim
Coordinates	: 27° 50' 28" N, 88° 44' 21" E
Ownership	: State Forest Department
Area	: 43,000 ha
Altitude	: 3,234 - 3,700 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Trans-Himalaya
Habitats	: Himalayan Moist Temperate, Subtropical Broadleaf Hill Forest, Subtropical Pine Forest, Alpine Moist Scrub, Alpine Moist Pasture

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A3 (Biome-5: Eurasian High Montane, Biome-7: Sino-Himalayan Temperate Forest, Biome-8: Sino-Himalayan Subtropical Forest)

PROTECTION STATUS: Wildlife Sanctuary, established in 1984

GENERAL DESCRIPTION

Straddling the Yumthang river, the Sanctuary which lies beyond the frontier village of Lachung in North Sikkim, is characterized by Temperate Silver Fir - Rhododendron forest at the head of the narrow Lachung Valley surrounded by towering snowy mountains. Rhododendron trees laden with trailing lichens provide good habitat for avifauna and flora. Shingba Rhododendron Sanctuary is home to the endemic *Rhododendron niveum*, the State Tree. Yumthang meadows adjacent to Yumthang-Lachung river provide shingle beds for Ibisbill *Ibidorhyncha struthersii*, meadows for Yak and feeding areas for wagtails, pipits, larks, Grandala *Grandala coelicolor* and other species.

Abies densa, *Picea*, *Rhododendron*, *Juniperus*, *Acer* spp. and ground flora such as *Primula*, *Potentilla*, *Aconitum* spp. and other alpine herbs are seen. The earlier dense stands of firs and rhododendron were worked for timber and removed for firewood. After the area was declared protected, much of the fallen material was left as such providing good habitat for wildlife. Today young firs inside the protected area show good natural regeneration.

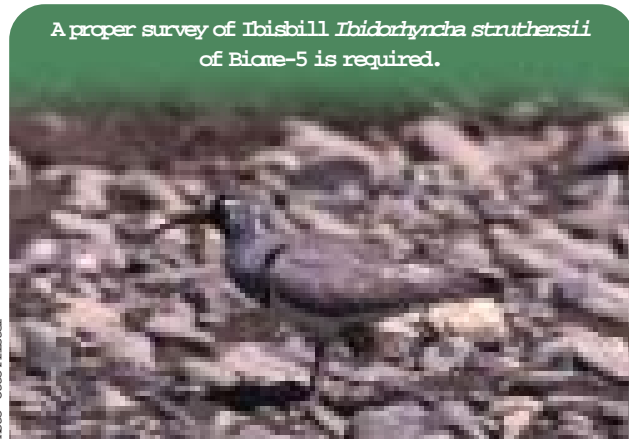
AVIFAUNA

Not much information is available on the general bird life of this site, except for opportunistic observations. The globally threatened Wood Snipe *Gallinago nemoricola* is occasionally seen in the Rhododendron-Fir forest of Shingba, and Ibisbill breeds on the

shingle beds of the Yumthang Chu in small numbers, usually not more than two pairs. Grandala, a local altitudinal migrant, is seen sometimes in apparently all-female flocks. Blood Pheasant *Ithaginis cruentus* and Himalayan Monal *Lophophorus impejanus* breed in the higher reaches of the Sanctuary while the Himalayan Griffon *Gyps himalayensis* is a resident of the cold desert. Gould's Shortwing *Brachypteryx stellata*, Rufous-bellied Crested Tit *Parus rubidiventris* and the restricted range Hoary-throated Barwing *Actinodura nipalensis* are common in forest patches. The Fire-tailed Sunbird *Aethopyga ignicauda* is conspicuous when Rhododendrons are in bloom. Rufous-bellied Eagle *Hieraaetus kienerii* was sighted in Yumthang in June 1984. Jungle Crows are now resident at this altitude of c. 4,000 m with increasing tourist pressure (U. Lachungpa *pers. comm.* 2003).

This IBA lies at the interface of Biome-5 (Eurasian High Montane: Alpine and Tibetan) and Biome-7 (Sino-Himalayan Temperate Forest). Therefore, species of both biomes are represented. It has alpine meadows and scrubs, so we get Tibetan Partridge *Perdix hodgsoniae*, Tibetan Snowcock *Tetraogallus tibetanus* and Hume's Short-toed Lark *Calandrella acutirostris*, while at slightly lower altitude where Montane Broadleaf Evergreen and Mixed Broadleaf-Coniferous Forest are found, species representing Biome-7 predominate.

BirdLife International (undated) has listed 48 species in Biome-5, out of which 19 have been seen in this IBA. The Biome-7 has a long list of 112 species, of which 19 are found here. Looking at the intact habitat and the fact that no one has conducted detailed study on the avifauna of this site, more species of this biome are likely to be found here. Interestingly, two species of Biome-8 (Sino-Himalayan Subtropical Forest) have also been reported from this site: Short-billed Minivet *Pericrocotus brevirostris* and Rufous-chinned Laughingthrush *Garrulax rufogularis* (U. Ganguli-Lachungpa, *pers. comm.* 2002). This is not unusual as there is a very diffuse borderline between biomes, and secondly, birds of the Himalayas, like any mountain region in the world, show seasonal altitudinal movements.



A proper survey of Ibisbill *Ibidorhyncha struthersii* of Biome-5 is required.

Photo: Otto Pflieger

Vulnerable	
Wood Snipe	<i>Gallinago nemoricola</i>
Endemic Bird Area 130: Eastern Himalayas	
Hoary -throated Barwing	<i>Actinodura nipalensis</i>

Biome-5: Eurasian High Montane (Alpine and Tibetan)

Snow Partridge	<i>Lerwa lerwa</i>
Tibetan Snowcock	<i>Tetraogallus tibetanus</i>
Tibetan Partridge	<i>Perdix hodgsoniae</i>
Ibisbill	<i>Ibidorhyncha struthersii</i>
Snow Pigeon	<i>Columba leuconota</i>
Long-billed Calandra-Lark	<i>Melanocorypha maxima</i>
Hume's Short-toed Lark	<i>Calandrella acutirostris</i>
Rosy Pipit	<i>Anthus roseatus</i>
Grey-backed Shrike	<i>Lanius tephronotus</i>
Altai Accentor	<i>Prunella himalayana</i>
Robin Accentor	<i>Prunella rubeculoides</i>
Guldenstadt's Redstart	<i>Phoenicurus erythrogaster</i>
Grandala	<i>Grandala coelicolor</i>
Smoky Warbler	<i>Phylloscopus fuligiventer</i>
Hodgson's Mountain-Finch	<i>Leucosticte nemoricola</i>
Black-headed Mountain-Finch	<i>Leucosticte brandtii</i>
Common Great Rosefinch	<i>Carpodacus rubicilla</i>
Hume's Groundpecker	<i>Pseudopodoces humilis</i>
Yellow-billed Chough	<i>Pyrrhocorax graculus</i>

Biome-7: Sino-Himalayan Temperate Forest

Blood Pheasant	<i>Ithaginis cruentus</i>
Himalayan Monal	<i>Lophophorus impejanus</i>
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Nepal House-Martin	<i>Delichon nipalensis</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
White-throated Redstart	<i>Phoenicurus schisticeps</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Orange-barred Leaf-Warbler	<i>Phylloscopus pulcher</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Orange-gorgeted Flycatcher	<i>Ficedula strophiate</i>
Rufous-bellied Crested Tit	<i>Parus rubidiventris</i>
Brown Crested Tit	<i>Parus dichrous</i>
Yellow-browed Tit	<i>Sylviparus modestus</i>
Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Spotted-winged Grosbeak	<i>Mycerobas melanozanthos</i>
Gold-naped Black Finch	<i>Pyrrhoptectes epauletta</i>

Biome-8: Sino-Himalayan Sub-tropical Forest

Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>

OTHER KEY FAUNA

Notable mammals include Red Panda *Ailurus fulgens*, Musk Deer *Moschus chrysogaster*, Yellow-throated Marten *Martes flavigula*, Himalayan Weasel *Mustela sibirica*, Himalayan Mouse-Hare *Ochotona roylei*, Long-eared Bat *Plecotus auritus*, Himalayan (Nepal) Langur *Semnopithecus schistaceus* and other typical temperate species. The enigmatic Caterpillar-Fungus *Cordyceps sinensis* which is a highly prized species found in very restricted patches at the upper limits of the Sanctuary, but yet to be recognized as a forest produce by the State Forest Department. In the river, the exotic fish Brown Trout *Salmo trutta* was introduced by the State Forest Department in the 1980s, while suitable sheltered waterbodies harbour the Sikkim Snow Toad *Scutigter* sp. (Anon. 2003).

LAND USE

- ☐ Military
- ☐ Nature conservation and research

THREATS AND CONSERVATION ISSUES

- ☐ Military and Police use
- ☐ Forest grazing
- ☐ Tourism/Recreation/mountaineering expeditions
- ☐ Poaching

Collection of Junipers and dwarf Rhododendron for incense The Lachung-Yumthang Valley lies along the western flanks of the Chumbi Valley of Tibet. Hence this IBA has considerable military presence and a small but significant State Police presence. The North Sikkim Highway bifurcates at the low altitude township of Tsungthang, 25 km away and continues right up to Zadong at Yumesamdong for c. 50 km. This was also the old trade route to Tibet across the Dongkia La. There is a need for constant maintenance of this road due to considerable traffic and in fact the Yumthang 'meadows' were created as a result of past timber barter across the border and the more recent removal of the Fir forest to make the road. The State Forest Department had also attempted timber extraction from this region in the 1980s.

Presence of stray dogs around army camps is noticeable. As more Lachungpa tribals look forward to alternative livelihoods like tourism, livestock, mostly cows and horses are often let loose and some virtually abandoned. Yaks however are herded as they still fetch good returns (Anon. 2003). These graze in the Shingba-Yumthang-Yumesamdong region during summer, migrating to 'tree forests' in lower altitudes in winter. This is in sharp contrast to the Dokpa yak herders in the Tso Lhamo IBA who migrate to higher wind-blown apparently barren pastures in winter (Ganguli-Lachungpa and Rahmani 2003).

The military and the local mountaineering institute use the area for their exercises which often take them to areas not normally accessible to casual visitors. During a recent tourist expedition, Musk Deer traps in the form of live Rhododendron bushes worked into hedges were found in the higher reaches of the Yumthang valley (U. Lachungpa pers. comm. 2002) and during a recent Japanese botanical expedition, porters found and collected *Cordyceps sinensis* (Til Bahadur Subba pers. comm. 2003 to U. Ganguli-Lachungpa). Tourism is a booming industry in the state and the Yumthang-Lachung package sees up to 200 vehicles per day plying in this small IBA during summer when the rhododendrons are in bloom or during winter when there is snowfall. The fallout of this enterprise in the form of garbage and vandalism, noise pollution, deforestation due to increased demand for firewood, disturbance by picnickers to breeding birds like Ibisbill, wagtails and pipits is already apparent and needs to be addressed.

Collection of wild edible and medicinal plants and plants with religious significance had always been a traditional activity but commercial harvesting of the same has been banned for five years by the State Forest Department (Anon. 2003). The Forest Department has also established Eco-Development Committees (EDCs) in Lachung village, 'Smriti Van' a 'Memorial Forest' fenced plot for tree plantation at Yumthang, and further seeks to establish medicinal plant conservation and development areas in this IBA.

KEY CONTRIBUTOR

Usha Lachungpa

KEY REFERENCES

- Anonymous (2003) Sikkim State Biodiversity Strategy and Action Plan. Department of Forests, Environment and Wildlife, Govt. of Sikkim. Pp. 104.
- BirdLife International (undated) *Important Bird Areas (IBAs) in Asia: Project briefing book*. BirdLife International, Cambridge, U.K., unpublished.
- Ganguli-Lachungpa, U. and Rahmani, A. R. (2003) Development of Conservation Strategy for the Alpine Grasslands of Sikkim. Annual Report 2003. Bombay Natural History Society, Mumbai, Unpublished. Pp. 106.

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