

OVERVIEW OF KANCHANJUNGA² AREA, SIKKIM

GUT LEPCHA

Ecological and Wildlife Background of the Sikkim Mountains

Sikkim is a small Indian state in the Himalayas, lying between latitudes 27° 03' 47" and 28° 07' 34" North and longitudes 88° 03' 40" and 88° 57' 19" East and covering an area of 7,069sq.km. It is encircled by Nepal in the west, Bhutan and the Chumbi Valley of Tibet (China) in the east, Darjeeling-Gorkha Hill Council of West Bengal in the south, and the Tibetan Plateau of China in the north.

In the field of wildlife conservation, Sikkim has progressed a great deal with the establishment of one big national park, Kanchanjunga National Park, and five wildlife sanctuaries. The National Park is bordered by Tibet (China) and Nepal, and there is one sanctuary with the latter in the western extremities. The network of Protected Areas (PAs) covers as much as 28.87 in terms of geographical area and 43 per cent in terms of the total

forest area of the State. As per the biogeographic report, it is the best covered of the Wildlife Protected Areas (WPAs) in the country.

The Kanchanjunga (High Altitude) National Park, Sikkim

History

The Kanchanjunga National Park, which is at the apex of the high altitude national parks, is the highest in the country. Having considered the floral, faunal, ecological, and geomorphical importance and the wildlife potentials of the area, this National Park was commissioned on 27 August, 1977. Situated between elevations 1,829 to over 8,585masl, this Park is endowed with one of the most extensive high-altitude ecosystems in the world. It is probably the largest, biologically intact continuous tract of mountainous land with valleys of lush green forests, meadows, and alpine

² Known as Khangchendzonga in Sikkim



Plate 4: Bhotia children collecting Juniper leaves

Photo: Ajay Rastogi

lands reserved primarily for the conservation of native wildlife. It is home to luxuriant flora and a galaxy of magnificent fauna of rare varieties, some of which are endemic to the area.

Situation

The Kanchanjunga National Park lies within latitudes 27° 25' and 27° 55' North and longitudes 87° 59' and 88° 40' East. It is a vast area, extending from the cold desert of Lhonak Valley, to the ridges of Lachen in the North District, to the historical location of Yuksom, and extending as far as Boktok, Daphey Bhir, and the Nepalese border in Western Sikkim. The western boundary of the Park runs along the international boundary between the Indian State of Sikkim and Tibet (China) in the North and Nepal in the West of the State.

Area

Originally it covered an area of 850sq.km., and, in 1996, it was extended to 1,784sq.km. because of its ecological, faunal, floral, and zoological significance. The basic objective of bringing more areas into the National Parks is also to create diverse habitats for wild animals. With the expansion in its area, this Park alone now occu-

pies as much as 25.14 per cent of the land area of the State compared to 11.97 per cent in the past.

Status of Land

The vast expanse of the Kanchanjunga is within the government reserved forests. Except for a small village of the Tibetan community settled since 1959 in a place called Tsoka, which is now comprised of 10 houses with a total population of 90, there is no other village settlement inside the National Park. Since this small village, occupying almost 13 acres of land, is situated in an isolated pocket within the area being proposed as a tourism zone, it will have to be considered as part of the ecosystem of the Park. The only negative factor is the grazing that is taking place in a few cattle camps on the western and southern extremities of the Park. The owners have been enjoying grazing rights for many years, despite the efforts made to evict them to areas available outside the Park. There is also a statutory order of the State Government banning cattle grazing inside the Reserved Forests.

Consequent to the expansion of the area, the National Park is being demarcated into three zones - the Core, Buffer, and Tourism Zones.

Flora, Fauna, and Avifauna

Flora

The floristic wealth of the Park is rich and diverse in both composition and value. The forests are representative of a variety of plant communities which include diverse vegetational types corresponding to variations in climatic and edaphic factors. The area broadly comes under Champion and Seth's classification types sub-group 11b-northern montane temperate and group 12- himalayan moist temperate forests; sub-alpine scrub forests; and alpine scrub and pastures.

Thus, the flora of the Park can be subdivided broadly into three forest zones.

1. Temperate Broad-leaved Forests (1,829 - 2,730m)
2. Mixed Coniferous Forests (2,730 - 3,650m)
3. Alpine Scrub and Grasses (above 3,650m)

Fauna

Kanchanjunga National Park is a gene reservoir with diverse habitats. The faunal wealth is also equally rich in content. The high altitude alpine and plateau region is as rich in faunal wealth as the foothills. The Snow Leopard (*Panthera uncia*) of the alpine area is at the apex of the biological pyramid. The state animal or Red Panda (*Ailurus fulgens*), Musk Deer (*Moschus chrysogaster*), Great Tibetan Sheep (*Ovis ammon hodgsoni*), Bharal or Blue Sheep (*Pseudois nayaur*), Goral (*Nemorhaedus goral*), Serow (*Capricornis sumatraensis*), Barking Deer (*Muntiacus muntjac*), Leopard (*Panthera pardus*), Common Lesser Cat (*Felis sp*), Wild Dog (*Cuon alpinus*), Tibetan Wolf (*Canis lupus*), Mountain Fox (*Vulpes vulpes*), Tibetan Fox (*Vulpes ferrilata*), Himalayan Black Bear (*Selenorctos thibetanum*), Marmot (*Marmota fumi*), and Monkey (*Macaca sp*) are the principal animals.

Avifauna

As the State is rich in bird-life, with around 550 species and sub-species, the Kanchanjunga also harbours many forms of highest interest and rarity. The flamboyant altitude pheasants include the Monal Pheasant (*Lophophorus impejanus*), Crimson Tragopan (*Tragopan satyra*), Blood Pheasant (*Ithaginis cruentus*) (State Bird), Tibetan Snow Cock (*Tetraogallus tibetanus*), Himalayan Snow Cock (*Tetraogallus himalayensis*), and Partridge (*Francolinus sp*). The birds of prey include the Lammergeier

(*Gypaetus barbatus*), 23 species of owls—including the Forest Owl (*Bubo nipalensis*), Eagles (*Aquila spp*), Falcons (*Falco spp*), and Hawks (*Spizaetus spp*). There are snow and rock pigeons (*Columba leuconota*, *C. livia*) and many more birds in the National Park. The high altitude lakes form stopover sites for migratory waterfowl such as the Bar-headed goose (*Anser indicus*), Eastern Goosander (*Mergus merganser*), Brown-headed Gull (*Larus brunni-cephalus*), Pintail (*Anas acuta*), Grebes (*Podiceps spp*), and the most endangered crane in the world, the Black-necked Crane (*Grus nigricollis*). These lakes are also breeding sites for resident waterfowl such as the Brahminy Duck (*Tadorna tadorna*), Avocet (*Recurvirostra avosetta*), Coot (*Fulica atra*), Shovelers (*Anas clypeata*), and Pochards (*Aythya spp*).

Management Programmes

Enforcement and Anti-Poaching Operations

Enforcement is the primary aspect of management in the Kanchanjunga National Park. It is carried out by 33 Park staff. Anti-poaching operations, such as trap demolition and patrolling in the poaching prone areas, are conducted both in and out of season. In such operations, field staff are armed with guns and ammunition to contend with musk deer poachers. High altitude expeditions of senior officers of the Park and Wildlife organisation are also organised from time to time, with a view to studying the current status of the highlands consequent to increased human impact by tourists; trekkers; mountaineers; grazers; medicinal plant collectors; and, to some extent, poachers. The Park has a network of wireless communications set up in important places, and this is fully and effectively used during such outdoor activities. Musk deer poachers were active in the early eighties, but the incidence

of poaching has been greatly reduced due to the development activities taking place in the buffer villages. The poachers now have a tendency to carry out contract work which fetches a lot of money in the short term. However, an exception is made here in the case of grazers who are suspected of indulging in poaching animals in high altitude areas where they go with their cattle.

Public Participation

Local residents are actively involved in Park Programmes. Development work in the buffer villages, as well as in the Park, is implemented with the active involvement of the local people. They are also educated through media such as the radio and audio-visual programmes, which include slide film shows, wildlife literature, posters, and so on. Local schools are also involved in important Park functions. The school children are taken on nature visits to wildlife interest areas.

Staff Amenities

The successful management of the Park depends on the dedicated staff posted there, and they need to be given reasonable amenities. Park staff amenities include free accommodation, hardship allowances for those who have been posted in difficult areas, and high altitude allowances for protection duties in high altitude areas. The subordinate staff up to the level of Range Officers are provided with uniforms.

Infrastructure

Field infrastructure, such as inspection or patrolling paths to improve the primary means of communication, log huts, log bridges, wildlife hides, bunkers, and watch towers, has been built inside the Park to help provide sound and effective management.

Eco-Development Programmes

Eco-development programmes are designed to improve the socioeconomic

conditions of the people residing in the buffer villages and to elicit their active support and cooperation in the protection of the Park. The programmes include afforestation of degraded areas with fuel and fodder-yielding plants in the buffer areas, broom grass cultivation on private holdings, free distribution of horticultural plants, and fuel-saving devices for local residents and villagers.

Park Boundary Demarcation

The boundary of the National Park is about 350km in length, of which about 100km have been demarcated with boundary pillars at intervals. Demarcation has been carried out in places where there were possibilities of encroachment. Otherwise, in most places, features such as rivers and ridges in marginal forest areas are left out for public utility.

Research and Monitoring

Research and monitoring facilities provide a scientific understanding of wildlife populations and habitats, and this is essential to their proper management. Data are required on broad ecosystem components, such as hydrology, soils, vegetation, and animal numbers- repeated at regular intervals. A Wildlife Research Wing is already engaged in the study of animals and birds, their ecology, and habitats in an attempt to review and revise the existing records. A status survey of principal animals and birds has already been undertaken. Wildlife areas have been surveyed and mapped. The Park has also been equipped with monitoring equipment, e.g., darting and camera equipment.

Regulation of Tourism

Tourism in the Indian State of Sikkim is in an early stage of development. But there is tremendous scope and prospects for it. The Sikkim mountaineering experience is unique for climbers;

and so is the trekking for different age groups in good physical shape and with trekking experience in high altitude areas. Kanchanjunga National Park includes some of the best-known mountains and peaks which are a great attraction for mountaineers and trekkers from all over the world. **Adventure** tourism is slowly picking up in **this part** of the region.

Yuksom, a sleepy village that awakens only when a tourist/trekker knocks at its door is a place of attraction outside the Park in western Sikkim. Some 16,000 tourists visit this place each year and about 10,000 of them are foreign nationals. Yuksom, which has been developed to the extent services can be for the present, has a huge Wildlife Interpretation Centre for a nature interpretation programme, and is also a checkpoint for mountaineers and trekkers to the Park. The Park charges an entry fee and a fee for photography. Mountaineers also require visas. Northern Sikkim is the gateway to the northern side of the Park. Here, the main route to most of the popular mountain peaks passes through and is restricted to some visitors. A special permit is required from the Central and State Governments for adventure tourism purposes. Tourism provides a significant income to poor residents in the buffer villages.

Transboundary Grazing

Singalila Range forms the international boundary between the Indian state of Sikkim and the Kingdom of Nepal. The well-established path along the boundary from Chewabhanzyang to Paharay Megu is the traditional transit route for Nepalese and Sikkimese grazers. The path routinely follows the international boundary, except in some places where it loses height on either side and again abruptly resumes the boundary line. Grazing is intense in the transborder areas. Nearly 2,000 yaks

and cows and an equal number of sheep belonging to Sikkimese grazers are found from the temperate forests to the alpine lands. The population of cattle on the Nepal side near the border is also quite substantial. One is often astounded by their sheer numbers and the intensity of grazing taking place on the fragile ecosystem. The area is, in places, overgrazed and overexploited, leading to degradation. Patches of land subjected to intense ramming and compacting are often the sights in this zone. Green branches of rhododendrons and junipers are burned raw and cut for heating and cooking purposes, while the leafy branches are used for mats for milch cattle (cows and yaks). Small timber is also required for construction of shepherds' huts, cattle sheds, or for repairing old ones. The grazers also collect medicinal plants and rhododendron and juniper leaves for incense. Thus, substantial damage, in terms of loss of biodiversity or damage to the main vegetation, has already been caused. The hills and slopes, ridges, and gorges are bereft of vegetative cover and they look sick and diseased. It is not only the cattle that have exhausted the vegetation but the greed and avarice of human beings which are equally responsible for loss of natural resources. So, there is need for a collaborative effort between governments to control

Plate 5: *Larix griffithiana* (fruiting)



Photo: Ajay Rastogi

grazing or to restrict entry to an optimum figure of cattle consistent with the carrying capacity of the transboundary areas which are already depleted. However, there is tangible progress in this direction, with the State Government of Sikkim carrying out closure of grazing in all reserved forest areas in the State.

The Trans-Himalayan Zone

Northern Sikkim is like a typical Tibetan plateau. Chho Lhamo and Lhonak Valley encompass an area of 200sq.km. and are situated on the Indo-Chinese border in Northern Sikkim, and the rest of trans-Himalayan Sikkim consists of the State's richest areas in terms of biodiversity. Most of the endangered fauna in these areas are transborder migrants.

The Tibetan Wild Ass or Southern *Kiang* (*Equus hemionus kiang*), Nayan or the Great Tibetan Sheep (*Ovis ammon hodgsoni*), the Blue sheep or Bharal (*Pseudois nayaur*), Tibetan Antelope (*Pantholopus hodgsoni*), and Chiru or Tibetan Wolf (*Canis lupus chanco*) are the principal fauna found in this zone. Human attendance, better grass growth in summer, and water and snow which reduce forage

availability in winter are the factors that cause seasonal movements of animals. Field reports reveal that the population of Southern *Kiang* is no more than 4-40 individuals which migrate through passes such as the Sese La, Bamcho La, and Tsak La which form the international border between Sikkim and China. Trans-Himalayan Sikkim is a restricted area where no visitors and civilians, other than local inhabitants and personnel of different organisations working in the area, are permitted. Nomadic grazers, whose family units number about a dozen and who own about 990 yaks and 650 sheep, medicinal plant collectors, and defence personnel are the competing agencies with which animals in these eco-sensitive areas have to cope, and, as a result, they have to live under various forms of threat and stress on Sikkimese territory. Illegal cross-border trade in wildlife has not been reported yet. The population of transborder migrants and the status of adjoining areas in Tibet are not known. The high altitude lakes around the border, such as Chho Lhamo, Gurudongmar Tso, Gyam Tso in the Chho Lhamo plateau, and Tso Chik, Tso Sum, Tebleh Tso, Than Tso, and Ghora Tso in the Lhonak Valley, are stopover sites for many of the migratory waterfowl, in-

Plate 6: Trans-Himalayan plateau area in North Sikkim

Photo: Ajay Rastogi



cluding the world's most endangered crane, the Black-necked Crane (*Grus nigricollis*), a pair of which was reported to have unsuccessfully nested for three to four months in Tebleh Tso near Muguthang in Lhonak Valley in 1991. Three cranes were reported to have visited the same lake again in June 1996, and, after halting there for about eight to ten days, they were again on their way. Nature recognises no political boundaries. Flora and fauna live within ecological boundaries which may overlap or cross park and international borders, regardless of lines on maps or border checkpoints. In order to protect, preserve, and develop the transborder, threatened faunal migrants, and endemic flora, including valuable medicinal herbs and plants, the State Government of Sikkim is going to declare this Sikkim transborder, a biodiversity area of approximately 200sq.km., as a Cold Desert Park and prescribe special protection measures to check the elimination of flora and fauna. It will call for the establishment and collaborative management of transboundary protected areas by both the Indian and Chinese Governments for the sake of wildlife and their habitats.

Indo-Nepal-Tibet (China) Watershed

The Indo-Nepal-Tibet watershed runs south to north along the Singalila Range. It forms the international boundary between the Indian State and what else? There are several mountains and peaks located on this boundary and most of them are sacred. Mount Kanchanjunga occupies the predominant position on the boundary flanked by The Twins, Nepal Peak and Tent Peak, Pyramid Peak, and Langpo Peak on the southern side. These mountains and peaks influence the climate in the region, and the watershed areas along the boundary play a pro-

tective role in soil and water conservation. This greatly benefits the lowlands on both sides of the transboundary.

Sikkim Transboundary Trekking Route

The State Tourism and the forest departments have jointly carried out a field survey with a view to opening a new alternative route along the Singalila Range on the boundary. The entire traverse is particularly suited to long adventurous treks, which if leisurely undertaken will last for about seven to eight days. Nature trails, which of late have been popular, could be organised for both foreign and domestic trekkers in this part of the region with the permission of the governments. The already established route follows the boundary, except in some places where it falls below it on both sides. If impediments, such as the concurrence of governments on both sides for use of substantial distances on each side, are sorted out, eco-tourism in the region could develop. This alternative trekking route will not only join the alpine land dotted with lakes for pristine and unspoilt nature trails, but it will also minimise trekking impacts on other existing routes.

Kanchanjunga Biosphere Reserve

To conserve, for present and future use, the diversity and integrity of biotic communities of plants and animals within a natural ecosystem, a Kanchanjunga Biosphere Reserve, covering an area of 2,566sq.km., is being established. The objective is to safeguard the genetic diversity of species. This reserve will also be managed for research, education, and training. The Kanchanjunga Biosphere will include Kanchanjunga National Park, an area 1,784sq.km., as Core Zone I and Maenam Wildlife Sanctuary, located in southern Sikkim and covering an area

of 104sq.km., as Core Zone II. It will also have five buffer zones. Its boundary on the western extremity will run along the Singalila Range which forms the international boundary.

Discussion

The representative of WWF Nepal Programme, Mr. Mingma N. Sherpa, praised the presentation of *Mr. Gut Lepcha*. He pointed out that there seemed to be incredible opportunities for cooperation between Nepal and India in terms of promoting tourism. He asked if there had been anything done so far in that area. He also talked about the biosphere proposal of Sikkim. He pointed out that Kanchanjunga on the Nepal side was going to be declared a conservation area, which meant a low status protected area or a multiple-use concept. He suggested that it would probably be better if Nepal would also adopt the biosphere approach. It did not have the status of a National Park or a wildlife sanctuary, so it was a multiple use area; the idea being to benefit the local people of that area. Were there any benefits to or opportunities for Nepal in thinking on the lines of declaring a biosphere reserve? Probably the whole Kanchanjunga area from the mountains to the plains could be set aside as a biosphere reserve. He further added that his understanding of biosphere reserve included everything; people, landscape, and so on.

The representative from Sikkim, Mr. Gut Lepcha, pointed out that the State Tourism Department and the Forest

Department had jointly surveyed the Singalila Range to find an alternative to the trekking route. This route falls low down on the Nepal side in some areas and in some areas on the Sikkim side. It is up to the two governments to decide whether to share the route or to have a separate route along the boundary. Adventure tourism is slowly picking up in Sikkim, so the State Government is interested in opening an alternative to the trekking route which will benefit both countries, especially in terms of the upliftment of the poor living in that area. Regarding the Kanchanjunga Biosphere Reserve, it had been identified because of its richness and the State Government would soon be declaring it a biosphere reserve. The State Government would also prepare a comprehensive project. If it was established, the biodiversity area would increase on both the Nepal side and the Sikkim side. The habitat area would also increase on both sides.

Mr. E. Sharma, from Sikkim, added that the Government of Sikkim, Tourism Department, was developing a master plan for tourism focussing on eco-tourism and adventure tourism. Many exercises were already being carried out between the Forest Department and other departments in trying to come up with a master plan which would be environmentally friendly. In fact, all the tourism in Sikkim was concentrated in protected areas. Therefore, the basic philosophy of conservation would come up in the master plan.

SIKKIM

Wildlife Protected Areas in Sikkim



WEST BENGAL, INDIA

LEGEND

- National Park
- Sanctuary
- Metalled Road
- Unmetalled Road
- Main River



Source: Map of Sikkim Scale 1:150,000 Survey of India (1981).
 Data Source: Protected Areas in Sikkim, Department of Forest, State Govt. of Sikkim.

