Natural History and Economic Botany of Nepal

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Chapter VII

Wildlife

Wildlife in Nepal is both very varied and fascinating. The first person to bring this very rich wildlife of this country to the notice of the scientific community was Sir Brian Hodgson, the British Resident in Kathmandu during the years 1820 to 1822, and again, from 1824 to 1843. He published more than 100 papers which deal with birds, reptiles and mammals of Nepal. Although the erstwhile Rana regime put restrictions on his movements outside the capital, he employed *Shikaris* (professional hunters) to collect animals for him. Hodgson's collection, most of which went to the British Museum, included '9,512 specimens of birds, 903 mammals, and 84 reptiles...he contributed articles which contained descriptions of thirty-nine new genera and species'[1]. His primary interest was, however, in the field of ornithology and he has to his credit '563 species of birds, of which no less than 150 were new to the avi-fauna of the Indian Empire'.[2]

Zoo-geography

Prater[3] divides Nepal into three faunal zones: cis-Gangetic or Indian, the central or trans-Gangetic (Himalayan), and the northern, which is nearly Palearctic. The Palearctic region is sub-divided by Wallace into the Mediterranean, West Chinese and Indo-Chinese sub-regions. According to Caughley[4] (1969),

1. Swan, L. and Leviton, A. E. 1962. *Op. cit.* pp. 127-29.
2. Ripley, Dillon S. 1950. 'Peerless Nepal. A Naturalist's Paradise.' *National Geographic,* Vol. xc. No. 1. p. 1.
3. Prater, S. H. 1928. *In Percival Landon's Nepal.* p. 279.
4. Caughley, Graeme. 1969. *Wildlife and Recreation in the Trisuli Watershed and other Areas in Nepal.* HMG/FAO/UNDP/(mimeo.)

the mammalian fauna of the Himalayan zone in Nepal has three peculiarities:

(*a*) The Himalayan zone separates the regions occupied by the oriental fauna (India and North East Asia) and the Holarctic fauna (North America and Eurasia, excluding south East Asia) but neither contributes many species to the fauna of the Himalayan zone.

(*b*) An endemic Himalayan fauna has not been developed.

(*c*) The number of mammalian species in the Himalayas of Central Nepal is lower than that to its east and west.

Lack of endemism in the Himalayan fauna is due to its recent origin. Furthermore, there are distributional gaps. Red deer which is present in Kashmir and Bhutan is absent in Nepal. Similarly, the Himalayan Marmot (*Marmota bobak*), which lives at altitudes 3,962 m to 5,486 m, occurs in west Nepal and Sikkim, but it is absent in the intervening region. Several hoofed mammals — Ibex(*Capra ibex*, Markhor Wild Goat)and Urial, which occur in west Himalayas in parts of Kashmir, Ladakh and Kumaon are absent in Nepal. Interestingly, such gaps exist in plants also, a thing which is ascribed to 'natural Zoogeographic features probably dating back to the Pleistocene'.

In the sub-alpine regions, reduction in the mammalian fauna is quite significant. The most common mammals which are seen in this part are: the *jharal* or the Himalayan Tahr and the mouse hare. In the scrub forest musk deer is common. Above the timber line, Lynx (*Felis lyns*), wolf (*Canis lupus*), Brown bear (*Melursus ursinus*), Snow leopard (*Panthera uncia*), Blue sheep (*Pseudois nayaur*), and Tibetan sheep (*Ovis ammon*) are the big animals.

Nepal lies at the cross-roads of the diverse faunal elements. The fauna of the wet zone of the Himalayas are 'fundamentally related to species in Western China'.[1] The high altitude palobatid frog (*Scutiger sikkimensis*) and the lizard (*Japalura* sp.) found in wetter Himalayas have their counterparts in West China also. The Mediterranean elements (*Agama*, *Phrynocephalus*, *Alsophylax*, etc.) do not extend into West China but often extend into Tibet. It is, however, emphasized that 'this Himalayan-Mediterranean fauna is a minority conflux of species among the

1. Swan, L. and Leviton, A. E. 1962. *Op. cit.* pp. 127-29.

far more numerous Panoriential-Indian, Indo-Chinese and Himalayan amphibians and reptiles'.

Nepal is a paradise for ornithologists. Ripley, who collected data from both in the western and eastern parts of the country, from the flat Terai to the Mahabharat range, found the Spiny babbler (*Acanthoptila nepalensis*), 'a bird which had not been reported for 106 years'. Though he collected many different kinds of birds — sparrows, finches, magpies, partridges, black-throated thrushes, bush larks, Darjeeling woodpeckers, and many kinds of warblers, he failed to find the mountain quail (*Ophrysia superciliosa*), once reported from Nepal but now a lost species. He observed that as 'the hill forests are steadily and inexorably retreating, game animals and birds are disappearing'.[1]

Avian Zoo-geography

In Nepal, some uniqueness is seen in the distribution of the birds also, and there are specialized areas in which birds live. These have been designated as follows[2]:

1. Lowland Zone (sub-region of Oriental):
   Unique areas: Far Western Terai, Far Eastern Lowland.
2. Midland Zone (Unique areas): Baitadi-Darchula
   Rara-Ringmo, Mai Valley.
3. Himalayan Zone.
4. Trans-Himalayan Zone.

'The birds inhabiting the lowlands (Terai, Bhabar, Churiya and Mahabharat to about 900 m) are similar to those in the Indian plains.' Some of these birds are: Crested Larks (*Gabrida cristata*), Finch Larks (*Eremopterix grisea*), Parakeets (*Psittacidae*), Rollers (*Coraciidae*), Bee eaters (*Meropidae*) and Muniya (*Plocidae*) are found throughout the lowlands and they are also common in Jhapa and Kailali. Some of the lowland species travel up the valley and thus extend their range inward. 'The swamp partridge (*Francolinus gularis*) is only found in the grassland of Suklaphanta. The Giant Flying Squirrels (*Ratufa bicolor*)[3] is found only in S. E.

1. Ripley, Dillon S. 1950. *Op. cit.* p. 4.

2. Fleming, R. L. Jr. 1971. 'Avain Zoogeography of Nepal.' *Jour. Nepal. Geographical Society.* 4 : 28-31.

3. Not a bird, it belongs to the *Rodentia.*

Nepal and is an extension of the one found commonly in south East Asia.'

In the Mahabharat Lekh, wherever forests have been spared, Babblers, Laughing Thrushes, Sibias and Yuhinas are found. 'Many forest birds of this zone are related to Indo-Chinese forms. Indian types predominate in cultivated sections.'

In the Trans-Himalayan area, 'in Rara and Ringmo are found high altitude west Himalayan birds'. Two birds — Missel Thrushes (*Turdus viscivorus*), White-necked Nuthatches (*Sitta leucopsis*) are confined to a narrow area of Rara-Ringmo.

Birds of the sub-alpine and alpine regions show uniformity in distribution. Both Yellow and Red Billed choughs, snow pigeons, blue Grandal (*Grandala coelicolor*), are common above the tree line. In the Trans-Himalayan zone, which is arid, one sees 'Turkestan Hill Pigeons (*Columba rupestris*), Tibetan Snow Finches (*Montitrnigilla adansis*) and Brown Accentors (*Prumela fulvescens*). As in the case of plants, eastern Nepal is a zone of transition between Indo-Chinese and other faunal zones. Arun River, Singalila range and Arun-Dudh Kosi all have been regarded as providing the principal barriers for the westward migration of birds. The distributional limit of some of the eastern species has now been extended to farther west. Fleming Jr. (1971) disagrees with Swan in regarding Singalila as a faunal barrier and that many eastern species extend into Central Nepal and so do the western ones. Citing the specific case of pheasants, he says: 'The west Himalayan *Chir* pheasant (*Catreus wallichii*) and the Koklas Pheasant (*Pucrasia macrolopha*) both occur as far east as the Kali Gandaki and Pokhara. An easterly pheasant, the Blood Pheasant (*Ithaginis cruentus*) has been seen as far west as Mansalu (K. B. Sakya and J. Blower *pers. comm.*), but are uncommon in Thak. Thus in considering a bird species, a dividing "break" would appear to occur more frequently in Central Nepal than elsewhere in the country.'

Another interesting feature of the avifauna is that of subspeciation. In general, birds are darker in the east than in the west. There are some birds 'which fit the three zone category'. Taking again the specific example of the pheasants, the common Kalij pheasant (*Lophura leucomelana*) has white crest and rump in Doti, a black crest and white rump in Kathmandu and a black crest and rump in Illam. This pattern is repeated in other birds as well: Red-Headed Laughing Thrush (*Garrulux erythroce-*

phalum), the Nepal Parrotbill (*Paradoxornis nepalensis*) and Leaf warbler (*Phylloscopus pulcher*).

Bird Migration

There is seasonal migration of the birds due to adverse climatic conditions during certain parts of the year. Some species, such as the Wall Creepers, mainly follow the snow line which in the Himalayas fluctuates between 4,572 m and 5,486 m in summer, to 2,438 m to 2,743 m during winter. There are others, such as, Lammergeiers and Bar-Headed Geese which have been seen flying high over the Everest region at incredible heights of 7,315 m to 7,620 m. There are claims of having observed birds (geese) at 8,839 m. Wagtails herald the migrating season in the Kathmandu Valley; White and Yellow headed ones are seen quite commonly. Hodgson's Pied wagtail (*Motacilla alboides*), though not so frequent, can be observed in March. In the paddy fields, the Pond Heron is an ubiquitous bird. Occasionally, Chestnut Bittern may also be seen and the White Breasted Kingfisher is also a very common bird. In Kathmandu Valley, one of the commonest sunbirds is the Yellow-backed sunbird. The male shows bright plumage only in the breeding season. The birds hang upside-down and avidly suck at the nectar of *Hoya lanceolata*.

Ducks, teals, geese, and other water birds, which visit India during winter months return north after collecting a lot of fat. They go as far north as Siberia — a journey covering several thousand miles. They follow fixed migration routes — usually following a river system — Kosi in the east, Bagmati and Narayani in the central and Karnali in the western part of the country.

A number of birds breed in the Himalayas, Golden Thrush, for example, but most spend their time in the warmer southern plains of India.

The woods around Kathmandu have a large bird population — thrushes, barbets, orioles, finches, warblers, babblers, magpies, doves and pheasants. The Spiny babbler (*Acanthoptila nepalensis*) is quite common in secondary scrub forest of *Gaultheria*, *Symplocos*, *Myrsine* and *Camellia*. The bird is reported to be abundant[1] on Sankhu ridge (1,981 m) and Tokha (1,524-1,828 m). Pairs are found from March to May.

1. Proud, Desireé (Mrs.). 1959. 'Notes on the Spiny Babbler. *Acanthoptila* in the Nepal Valley.' *Bomb. Nat. Hist. Soc.* August, 1959.

The Great Himalayan Barbet (*Megalaima virens*), is a bird of middle altitude — between 914 m to 2,743 m. This strikingly coloured bird, mainly blue and green but with splashes of red, has been collected from wide geographical areas, such as Nuwakot and Baitadi. It is locally known as *Himali Neuli.*

Thick-billed flower Peckers appear in the Kathmandu Valley in September. This is one of the smallest birds of Nepal. Some birds are now not seen as commonly as they used to be in the past. The Black-throated Thrush (*Turdus ruficollis*), eaten as a delicacy, is not seen that commonly. Similarly, the Demoiselle Crane (*Anthropoides virgo*) which arrive in October on their way to the Terai are also not seen in large flocks now.[1]

The Tibetan skylarks are seen late in January over wheat fields. The rock pigeons are also seen at this time of the year hovering over the fields. The magpie robin, with its beautiful plumage and sweet voice, can be seen in the ravines.

In the forests around Kathmandu, bulbuls, barbets, babblers, warblers, fly-catchers, tits and the finches are commonly found. Occasionally, one comes across the hawk eagle flying gracefully over *Schima-Pinus* forest.

Besides Fleming, Scully (1879), Smythies (1950), Proud (1955), Rand with Fleming (1957, 1961, 1964), Ripley (1950, 1953, 1961) and Biswas (1962, 1963) have contributed greatly to the ornithology of Nepal.

Bird Ecology

The ecology of Red-billed Blue Magpies, locally known as 'Lampuchre' has been discussed by Fleming, Jr.[2] These are common birds in the midland, in western and central parts of the country, but scarce towards east. With its long white tail and bright plumage, it is quite a distinctive bird; it is omnivorous and often robs other birds' nests. The Red-billed species lives at lower altitudes, while the Yellow-billed one, which is really another variety, can only be found higher up in the oak forests. Both species do not occupy the same niche.

Similarly the flycatchers feed exclusively upon insects which are caught on the wing. Fleming Jr. reports no less than 21

1. *Newsletter.* Nepal Nature Conservation Society. No. 8. Feb. 1972.

2. Fleming, R. L. Jr. 1973. *The General Ecology, Flora and Fauna of Midland Nepal.* US/AID. Kathmandu. p. 105.

species of this bird in the Kathmandu Valley but they are 'separated altitudinally'. No two flycatcher species are found eating the same types of insects within the same altitude.

Another example is afforded by the spotted forktails, which inhabit the streams. They emit the same call as the Whistling Thrush, a thing which is advantageous to them because a screech can be heard over the roar of the stream.

Interestingly, many of the birds found in the oak-rhododendron forests in Nepal are also found in other parts of South East Asia, 'eastwards through Sikkim, Bhutan, NEFA, and the mountains of Western China and northern Indo-China'. The most conspicuous birds in the oak-rhododendron forest are those belonging to the family Timaliidae, to which the laughing thrushes and babblers belong. The Slender-billed Scimitar Babbler can be seen among bamboo clumps digging out insects with its long scimitar-like beak. Its westerly distribution extends to Pokhara but this is a species known to occur mostly 'in Western China, west through Bhutan, and Sikkim to the Mai Valley of Nepal'. The Black-capped Sibia is another 'secretive bird of oak-rhododendron forests, whose loud ringing call can be heard almost constantly from early morning till dusk'.

Fleming Jr. has reported the 'Rediscovery' of the Yellow-Vented Flowerpecker in Nepal, the first to be made after Hodgson noted it in the early 1880's. He saw 'several individuals in *Acacia* trees with mistletoe along the Tamur River south-west of Dhankuta'.[1] According to him, this bird is rather 'unusual' for Nepal, but common in Thailand.

Fleming Sr.[2] besides reporting 'Two New Records' — the white-rumped Spinetail Swift (*Chaetura sylvatica*) and Kashmir Red-breasted Flycatcher (*Muscicapa subruba*), has made this observation about bird migration in eastern Nepal:

> 'The Kosi barrage has become a veritable bird paradise. The silt from up river above the dam, to the distress of irrigation authorities, has created shallows and mud flats which attract many migrating birds. Three years ago in March we estimated that in the week we were there some 35,000 ducks migrated north-

1. *Newsletter*. Nepal Nature Conservation Society. No. 22.

2. Fleming, R. L. Sr. 1974. *Newsletter*. Nepal Nature Conservation Society. No. 23.

ward. The canal banks and pools of water from the Kosi to Chatra also are well populated with bird life. A group of British ornithologists saw in this barrage, in the first week of February five thousand ducks, Gaylag Geese, Falcated Teal, numbers of Caspian Terns, Spoonbills and many waders.'

Khatri[1] has listed a number of birds from Baitadi. The list includes: Common Myna, Jungle Myna, House and Jungle Crow, Red Vented Bulbul, Red Whiskered Bulbul, Paradise Flycatcher, Robin Dayal, Yellow Cheeked Tit, Chestnut-bellied Nuthatch, Velvet-fronted Nuthatch, Fire-breasted Flowerpecker, Purple Sunbird, White-eye, Black Drongo, Gray Shrike, Common Swallow, Red-rumped Swallow, Green Bee-eater, Hoopoe, Spotted Owlet, Great Horned Owl, Koel (Cuckoo), Red-ringed Parakeet, Bengal Green pigeon, Blue Rock Pigeon, Red Jungle Fowl, Kalij Pheasant, Gray Partridge and Chukor, which is very popular as a fighting bird in Kathmandu. In the oak forest at Garhi was seen the Himalayan Pied Woodpecker.[2]

Cuckoo or the *Koeli* is a bird very familiar to everyone in Nepal. The bird arrives in late spring when *kaphal* (*Myrica esculenta*) berries begin to ripe. The call which sounds like the note '*Kaphal pako*', is emitted by the male only. It escapes the duties of parenthood by transplanting its eggs in the nests of several other birds.

The eggs, small in size, are left unnoticed by the rightful owners, who feed the young birds as if they were their own. Very soon the young Cuckoo bird becomes strong enough to fly away and able to fend for itself. This is a case of 'social parasitism, to which often babblers and thrushes also become victims'.

Locally there is another bird which is also known as *Koeli*. This is a small black shiny bird found throughout the central hilly regions and the low-lands. It is also called 'Brain Fever' bird because of the incessant call which it gives throughout day and night, somewhat monotonous and irritating. One is too familiar with the notes '*ko-ho, ko-ho, ko-ho*'. The *Koeli* also puts its eggs in the nest of a crow, who sometimes becomes suspicious and 'builds a new nest on the top of the old one thus sealing off the eggs below'.[3]

Another example of social parasitism is the Honeyguide, a bird

1. Khatri, H. S. *Ibid.*
2. Personal observation.
3. Fleming Jr. 1973. *Op. cit.* p. 47.

more common in the east than west. More recently, these have been studied by Ted Cronin of the Arun Valley Wildlife Expedition. These birds derive their names from their peculiar habit of guiding their 'helpers' — man or Honey Badger — to a beehive, which it cannot feed upon by itself. But once the honeycomb is exposed, it feeds upon nectar, larvae and wax. The bird is known to possess wax-digesting bacteria in its intestines, a case of remarkable adaptation.[1]

The pheasants are well represented in Nepal. From the lowland of the Terai to the alpine regions one or the other species can be encountered. In the Terai jungles, the Red Jungle fowl is a common bird, living very close to the roadside. It has a plumage of striking red and yellow, while the female is drab coloured. They feed in the wheat fields during winter.

The most common pheasant of the midland is the White-crested *Kalij* pheasant, *Lophura hamiltonii*. The bird is marked by conical silvery grey feathers on the chest and abdomen. *Chir* pheasant (*Catreus wallichii*) is found in the western parts in difficult precipitous terrain among tall grass, scrub and in oak forest.

At higher altitudes, the Monal or Crimson Horned pheasant (*Tragopan satyra*) and *Danphe* (*Lophophorus impejanus*), which is the National Bird of Nepal, are found. The *Danphe*, a 'many splendoured bird' and 'ornithologist's delight' is given complete protection by the Bhotiyas and the Sherpas, but is much sought after by the hunters. Both the pheasants have now been put under the Protected List.

The *Danphe* has a brilliant metallic green bronze and blue colour with a prominent green crest. The tail is short and square cut and hence it cannot fly too far. It is seen gliding over trees. It principally inhabits land over 2,743 m up to tree line, i.e. 3,657 m to 3,962 m.

The *Monal* inhabits *Rhododendron-Arundinaria* forest. The male is crimson bronze with white spots. They move so fast that they have been called 'animal projectiles'.

Bird life in the Everest region is richer than animal life. A number of birds migrate regularly across the high Himalayas. Among the migrants recorded by Wollaston in course of the Mount Everest Reconnaissance Expedition (1921) were: Temminck's

1. *Ibid.* p. 43.

Stint (*Calidris temminckii*), Pintail Snipe (*Gallinago stenura*), House Martin (*Delichon urbica*), Blyth's pipit (*Anthus godlewski*) and Hodgson's pipit (*A. roseatus*) all at a height of 5,181 m beside the glaciers on the Tibetan side of the Himalayan range.

Swan[1] has reported 'the most incredible feat of bird flight at 4,876 m of Bar-Headed Goose (*Anser idicus*)'. The birds in thousands regularly fly across the mountains to the shores of the Tsangpo River and the salt lakes in Tibet. A number of wildfowl species winter in India and go north during summer months: ruddy sheldrake (*Tadorna ferruginea*), common teals (*Annas crecca*), pin tails (*A. acuta*), gradwalls (*A. streppa*), pigeon (*A. penlope*), etc. To Everest climbers, red billed choughs are familiar sight; these have been recorded as high as 8,229 m. The Tibetan Raven (*Corvus Corax tibetanus*) constantly accompany man and his beasts. Snow cocks are seen at 5,791 m. Crested Grebes, Pochards, White Cormorants are also common at these heights.

National Parks and Wildlife Reserves

Nepal has proposed four National Parks and five Wildlife Reserves covering an area of more than 3,884 sq. m. A National Park is defined as 'an area of land of unusual ecological and or scenic interest set aside by Government, wherein fauna and flora are protected as far as possible in their wild state for their scientific, educational and recreational value, and for the benefit of the Nation, and Mankind as a whole'.

The oldest National Park in the world is that of Yellowstone, which was established a little over 100 years ago. There are now well over 2,000 National Parks in the world spreading from New Zealand to North America. These cover every type of habitat from desert to lush tropical forests and mountains to the sea coast. From the standpoint of fauna and flora, these are areas of great interest to the naturalists. These are also important from the standpoint of protecting natural environment and giving protection to endangered species. They help maintain the scenic beauty which at least in some parts of Nepal is unparalleled in the world. National Parks and Wildlife Reserves attract large number of tourists, thus becoming an important source of foreign exchange. They also offer opportunity for research in scientific

1. Swan, Lawrence W. 1970. *Goose of the Himalayas*. Natural History. pp. 68-75.

studies on living forms and their habitat and thus help acquire knowledge in the scientific management of the natural resources.

Many of the wild animals of Nepal are endangered;[1] three wild animals have already become extinct: Blackbuck, Wild Yak and Pygmy Hog. Those that have already become rare or endangered are: Rhinoceros, Tiger, Elephant, Buffalo, Clouded Leopard, Snow Leopard, Great Tibetan Sheep, Musk Deer, Swamp Deer, Gaur (Indian Bison), Red Panda, Wild Dog and Four Horned Antelope.[2] Animals fairly common are: Sambar, Chital, Hog-Deer, Blue Bull, Sloth Bear, Blue Sheep, Himalayan Tahr, Serow, Goral, Mouse Hare, Himalayan Marmot, Himalayan Bear, Leopard, Wild Boar, Barking Deer, Rhesus and Langur Monkey.

In the last decade, the country has witnessed some encouraging trends in the field of conservation of natural resources — forests, water, wild animals and birds. During the Rana regime, large-scale hunting was restricted to once a year, when the Prime Minister went on his winter safari to the warm valleys of the Terai. Though the toll was heavy, poaching was limited. Foreign dignitaries — dukes, viceroys, princes visited the famed forests of the Nepal Terai for big game hunting. On these occasions, the big game animals — particularly tiger and rhino were killed in large numbers. Though rhinoceros had been given protection since the time of Jung Bahadur (1845), the members of the ruling class not only hunted it but at times made profit by selling these to animal collectors. It is reported that between 1900 and 1950, in the five big *shikars*, 200 rhinos were killed and taking into account those killed illegally or about whom there are no records, the number would exceed 1,000.

The fall of the Rana regime, however, at the end of 1950 let the door open to destruction of forests, both in the hills and the Terai, a process which has its effect on wildlife also. The break-down of law and order in certain parts of the country and a succession of governments, more than contributed towards the depletion of wildlife in Nepal. In the Chitwan valley — the home of the one-horned rhinoceros — the results were devastating; from 1950 to 1968, the rhino population decreased by 88 per cent and over the

1. *Nepal's National Parks and Wildlife Reserves*. 1974. National Parks Wildlife Conservation Project. FAO/UNDP/HMG.

2. See List of protected animals.

same period — rhino habitat contracted by 70 per cent — chiefly as a result of grazing and burning of elephant grass. Willan[1] estimated that in 1950, rhino population stood at 800, which was reduced to 300 by 1959, a figure arrived at by E. P. Gee, when he undertook a mission for the IUCN and in the next decade, the population was reduced to less than hundred.[2]

Royal Chitwan National Park

The Royal Chitwan National Park, gazetted on September 20, 1973, covers an area of 540 sq. km. The habitat consists of open grassy lands as well as forest, an area varying in altitude from 76 m to 452 m. The Park touches India towards south-west and Mohan Khola and Narayani river in the west. The Park area extends towards the east upto the Rapti river. The open grassy lands and water-logged areas (*ghols*) constitute the main habitat of the rhino population in Chitwan.

Wildlife

The most important wildlife in the Park is of course the rhinoceros (*Rhinoceros unicornis*). The animals are mostly concentrated in the north-east corner and western end of the Park. They are seen during certain periods of the day — mostly in the morning and evening. Upreti and Pelnick[3] carried out aerial census of rhinos and estimated their population at 120, a figure which was later raised by Laurie (1973) to more than 200.[4]

Nepalese rhinos eat exclusively grass, in contrast to the African species, which eat scrub. The ideal habitat for the rhino is swamp land covered by tall elephant grass. Grazing is extensive. According to informed sources, large herds of domestic cattles graze in the rhino sanctuary each day which besides destroying the rhino habitat, also become a source of danger for introducing 'foot and mouth' disease.

Between 1950 and 1960, there was a sharp decline in the rhino population and between 1960 and 1970, it has remained more or

1. Willan, R. G. M. 1967. 'Forestry in Nepal.' *The Report of the Chief Conservator* (mimeo.).

2. Gee, E. P. 1964. *The Wildlife of India.* Collins.

3. Upreti, B. N. and Pelnick. 1973. *Report on the Chitwan National Park.* (mimeo.).

4. Laurie, Andrew. 1975. *Ecology and Behaviour of Rhinoceros. Newsletter.* Nepal Nature Conservation Society. No. 28.

less steady, but now they are increasing in number. In the last decade, the annual natality was 18. Upreti and Pelnick have come to the conclusion that if the incidence of poaching is curbed, there is good chance of increasing the rhino population in Chitwan, assuming that the habitat does not deteriorate further. Poaching has been reduced since the Park office was established and as a result of the prize money being offered to the informants. Still, there remains the problem of animals straying into cultivated fields, where they are shot by the poachers. Upreti and Pelnick's studies revealed that in the National Park rhinos are mostly seen in the early morning and in the late evening and in the hot season — a number of them (40 per cent) take shelter in the deep forest, rather than stay in the wallows.

Some other behavioural patterns of rhinos include: bobbing its head up and down or grazing and sweeping the head rapidly from side to side. 'Adult cows and bulls show aggressive behaviour.' When they do contact other rhinos, they adopt a head-up posture and may snort repeatedly. Flight is a common reaction of the other individual. Alternatively, as the first gets nearer, a head-low open mouth posture is taken up. The corners of mouth are pulled back and teeth displayed. A high pitched bleating vocalisation is repeated alternately with the honk, and the head-on position is maintained at the risk of turning the rump which is vulnerable then to slashes from the tusks.

'Thus attack or flight are the main methods of defence.'

Rhinos have the peculiar habit of defecating on old dung piles. Fresh dung is a stimulus to defecate. Calves invariably defecate after their mothers. When defecating, rhinos approach a dungpile, sniff at it, swivel around their hindquarters, lift their tails and defecate.

Urination, which occurs in squirts takes place

(*a*) during or after encounters with another rhino, elephant or man, especially while walking away;
(*b*) on leaving a wallow or going across any kind of boundary such as the forest or grassland;
(*c*) on seeing other male urinate;
(*d*) while walking/feeding.

Scent marking is less effective than in the dry plains of Africa.

Thus the behaviour pattern which scent marks the tracks is less developed in the Indian rhino than its African black counterpart. Therefore, the use of old dungpiles becomes an important factor in the communication system of the rhinos.

Adult males prefer to live alone, but cow and calf remain in constant communication and association, until the latter becomes more than 3 years old. Mating takes place when the calf is about two years old and the calf is usually driven away by the male at the time of courtship. Intermittent association of a male with an oestrus cow for three or four days before mating is normal and during this time, the calf may rejoin the female for short periods. Adult males normally avoid cow with calf.

Laurie's Report indicates that young calves become easy prey to tigers and deaths have also occurred as a result of injuries sustained in mutual fights among adult males. He estimates a population increase of 2.7 per cent per year and with poaching under control, the population is likely to show a slow increase.

He has recorded the calfing interval of 3.8 years. Rhinos in Chitwan do not have regular breeding season and 'birth normally takes place in seclusion. The cow disappears into thick forest for a period of several days before birth'.

Laurie has also studied the food habit of the animals. They feed mainly upon *Saccharum-Phragmities*, but show a preference to *Imperata*. They feed upon the charred stalks and visit the same area for eating the new shoots. 'Of the 29 common species of grasses and rushes around the wallows and along river beds, all seem to be eaten by animals. The preferred species are: *Cyperus sp.* (in wet areas) and *Cynodon dactylon* (in dry areas).'

Behaviour

Among the rhinos, variety of behavioural patterns have been observed. 'Greetings are common between calves and approaching strange rhinos and between sub-adults. A slow approach with nose stretched forward is usual. Noses are touched and there may follow a bout of sparring with one's horn circling the other's snout and clashing audibly and muzzling of the side of one's face with other's mouth. During muzzling, the mouth is often open and attempts at biting may occur.'

Though there is no shortage of food, rhinos invade cultivated fields because of encroachment of their 'home area'. They move

into the fields after dark and return with the daybreak to the forest.

Other Wildlife in Royal Chitwan National Park

Besides rhino, there are other animals in the Park: tiger, leopard, Himalayan black bear, sloth bear, Sambar, spotted deer, hog deer, barking deer, wild boar, porcupine, Jungle Cat, Rhesus and Langur monkeys, jackals, Gangetic Dolphin and crocodile. Bison is a rare bovine species, which inhabits the foothill region and is seldom found above 4,876 m. About this animal Prater says that with its huge head deep massive body and sturdy limbs, the Gaur is the embodiment of vigour and strength. 'In Chitwan they seem to be shy and elusive because of persecution by human beings.'

In National Park itself, the animal is quite rare, though some have been sighted near the foothills. It is quite likely that the animal is on the verge of extinction from the country.

The Pygmy Hog (*Sus salvanius*)

The Pygmy Hog, which once inhabited a large part of the foothills of Nepal and India has now almost disappeared. There are reports that this animal has been sighted in Kanchanpur. They are near relatives of the wild boar but barely exceed 25 cm in height. They live in herds of 5 to 20, and being nocturnal, are not seen easily. When forest fires break out in early summer, they come out. This is one animal whose status remains to be ascertained.

Tiger (*Panthera tigris*)

Morphological Characteristics

The tiger is a richly coloured and heavily striped animal. Tigers of Sukla Phanta are well built and larger than that of Royal National Park (Chitwan). The record is 3.3 m in length and 0.91 m in height at shoulder.

Tiger entered the IUCN Red Book in 1970 as an endangered and rare species, whose number in the sub-continent India, Bangladesh and Nepal, was put at 2,000. In Nepal any estimate of the tigers would be nothing but a guess. The main concentration of tiger, however, is in the Terai districts of Nepal as is shown in Table 20.

TABLE 20

DISTRIBUTION OF TIGERS IN NEPAL

Area	*Estimated Number of Tigers*
Kanchanpur	15-25
Bardiya	40-50
Nawalpur/Chitwan	20-30
Rest (Scattered)	1-20

Source : Mishra and Poppleton (1970), Operation Tiger (Typescript).

Behaviour and Habitat

Tigers prefer grasslands, swamps, while leopards are forest dwellers. They are intolerant of heat and so seek shade at mid-day and lie in water to keep cool. Having kept itself cryptically hidden among tall grass during the day, it emerges in the evening to stalk its prey, lying in ambush along the paths which run through forest or banks of rivers. The tiger's food habit is diverse: wild boar, chital, barasingha, *nilgai* and even fish, if nothing else is available. They drag the prey if it is too large to be taken in a single meal. Tigers do not mind putrefied meat and return to the same kill even though it is several days old.

No man-eating tiger has yet been reported from Sukla Phanta. The female species around Rani Tal, the biggest of them all, has defied the hunters thus far. Tigers of Sukla Phanta do not prey upon the cattle, which shows that deer and antelopes are in plenty.

Operation Tiger

The World Wildlife Fund has made an initial commitment of US dollars 132,192 under 'Operation Tiger' for the Kingdom of Nepal. This would involve proposed Royal Karnali Wildlife Reserve, Sukla Phanta Wildlife Reserve and the Royal Chitwan National Park.

A number of factors have contributed towards the drastic reduction in the tiger population of Nepal. The opening up of the forested areas of the Terai for resettlement after eradication of malaria led to large-scale killing of the animals by the poachers, as well as under licence from the government. As Mishra and Poppleton rightly point out: It needs to be emphasized that prior to 1970, when tiger shooting was banned, these animals could be legally hunted for a paltry sum of Rs. 500. The vast

road development programme was another contributory factor in the reduction of tiger population. Uncontrolled grazing has also brought about the destruction of the habitat. Development of roads and other means of communication and the introduction of modern weapons combined with a big demand for tiger skin in western countries, reduced the tiger population to a minimum. The preceding history of settlements in the Terai is also the history of decline of tigers in Nepal. Thus in the last two decades the tiger, once a common animal of Nepal, has been confined to a few isolated pockets.

Besides the reduction in habitat, poachers have taken a heavy toll of the animals by using insecticides.

Bardiya Wildlife Reserve

Besides Sukla Phanta, by far the largest concentration of the tigers is in the Royal Karnali Wildlife Reserve — an area covering 468 sq. km in Bardiya District. Mishra and Poppleton say in their Report: 'Except for Sukla Phanta, Bardiya probably has the maximum density of tigers in Nepal. Fresh signs of tiger were frequently seen in most parts of the area, particularly near Danwa Tal. For the last five years, this area has been closed for shooting, which extends from the foothills to the Churiya, and is criss-crossed by a number of rivers and streams.'

Besides tigers, other animals seen in the area are:

Elephants:	(7-9), which are part of a migratory herd that move in and out of the Reserve.
Leopard:	Common near agricultural land, mostly preying upon domestic stock.
Deer:	Four species — Chital, Sambar, Barking deer and Hog deer.
Swamp deer:	Once reported but is no longer seen.
Antelopes:	Blue bulls are common.
Blackbuck:	Non-existent now, though as recently as in 1973, a few were killed.
Four-horned antelope:	Very rare.
Serow:	Known to occur along the Churiya ridge.
Gangetic dolphin:	Rare

Gavial: Common in the Karnali gorge

Lesser animals: Boar, rhesus monkey, langur and jackals.

Future prospects for this Reserve are somewhat uncertain. The East-west Highway would cut through the Reserve, which no doubt, would disturb the habitat. Another factor is the proposed Karnali dam, which would bring into the area thousands of people. The dam site actually lies 20 miles north of the boundary, but still it is too close to the Reserve. Major irrigation channels are supposed to pass through the Reserve which would no doubt adversely affect animals, including crocodile.

Wild Animals of the Lowlands

Common Rhesus Monkeys (*Macaca mulatta*)

Monkeys are found everywhere, in the plains as well as in the hills. In the Kathmandu Valley, they are principally found in two localities at Swayambhu Nath and Pashupati Nath. Among the troops a distinct hierarchy is found. Only males are dominant. Another monkey, *Macaca assamensis* is also known to occur in the country and though the two species inter-breed freely in captivity, whether they do so in nature is yet to be ascertained. The Assamese Macaque is distinguished from the Rhesus by the absence of orange red hue on its loin and rumps. Monkeys eat almost anything; in the spring they are seen foraging flowers of the silk-cotton tree.

Entellus Monkey (*Presbytis entellus*)

These are long tailed slender with greyish white coat and a black face, hands and feet. The tail may be more than three feet long.

They seldom come near human habitation as the rhesus monkeys do. They inhabit a wide area from the plains to an altitude of 3,048 m. At night, they take shelter in trees and during the day descend to the edge of villages to feed upon crops, such as potato. They live in troops of 5-6 but old males stray out of the troop. They keep a close company of the spotted deers and give warning signals whenever a predator — leopard or tiger — appears in the area.

Bishop carried out research on the common langur monkeys

at Malemchi (Helumbu). They usually moved between 2,438 m to 3,657 m and lived in a mixed oak-rhododendron and hemlock forest. In one troop there were 31 animals, who spent most of their time on trees and came down only at feeding time. Langurs preferred oak fruits (acorns) and during winter were seen feeding upon *Ilex* berries. They consumed a lot of foliage — mostly hemlock and for days went without water.

Indian Elephant (*Elephas maximus*)

The Indian elephant is smaller than its African counterpart and has a maximum height of 3 m. They are found in the forests of Terai but their number seems to have dwindled considerably. There are scattered herds in Jhapa, Thori and Bardiya. In the far west there is regular migration of elephants between the forests of Kanchanpur and those in the adjoining forests of Uttar Pradesh (India). There are reports of the herd moving as far as the Corbett National Park. The size of the herd varies yearly and there are indications that some of the animals migrate regularly to India. They are known to inflict fatal injuries upon human beings.

Blackbuck (*Antilope cervicapra*) **Krishna sar**

'This animal,' according to Prater,[1] 'is the only representative of the genus *Antelope* in India.' In grace and elegance, it is hardly matched by anyone else. It inhabits open scrub land and avoids forest. In Nepal, in the past there were large herds in the west in the districts of Banke-Bardiya, and Kailali-Kanchanpur and though it is listed as one of the animals in the Sukla Phanta Sanctuary, no one seems to have seen it in the past few years. Few animals are reported in Dhaka Block. In Banke district, 'the main blackbuck areas were Khajura and Bhoj Bhagwanpur and in Bardiya, Mainapokhar,' these regions being 'typical blackbuck country, thorny scrub jungles or open grasslands covered with thorny shrubs and bushes'. Blackbuck habitats have been irreversibly destroyed. 'As recent as last year some blackbucks were sighted at Mainapokhar but according to unconfirmed reports, these were shot by poachers'[2] and in all

1. Prater, S. H. 1965. *The Book of the Indian Animals*. p. 270.

2. Singh, S. 'Black Buck — Already a Legend.' *Newsletter* No. 23. Nepal Nature Conservation Society, April, 1974.

likelihood, blackbuck is already a lost animal, having suffered the same fate as the Pygmy hog.[1]

Blue Bull, Nilgai (*Boselaphus tragocamelus*)

At one time this animal having a superficial resemblance with the horse, was distributed widely throughout the Terai, and caused much trouble to the farmers, who could not kill it because of religious taboo. But the animals are now shot for meat, which is turned into *sukuti* (smoked and dried meat). In Sukla Phanta Reserve there are still small herds of blue bull which include 10-20 individuals. Only males have horns and a greyish coat. They prefer open country to forest, feeding upon *Zizyphus* and other small trees. *Nilgai*, which is an antelope, deposit their droppings at the same spot, which may be a means of reassembling scattered members of a herd.[2]

In India *Nilgai* used to occur in vast herds in *Khadar* of the river plains, but these were hunted in large numbers by the members of the Diplomatic Corps of New Delhi, and eventually led to their virtual extinction from these parts.[3]

Swamp Deer (*Cervus duvauceli*)

Of the deer found in Nepal, this is 'one of Nepal's rare and endangered animal species'. It is now confined in a small area in the Sukla Phanta, where a sizeable herd of about 1,000 is known to exist.[4] The coat is woolly varying in colour from brown to yellow. It is much prized for its antlers, and for this reason alone, it is still poached.

In Sukla Phanta, in two days of aerial survey, 575 and 349 deer were seen. In 1968/1969, Peter Byrne[5] counted 1,250 animals in the central and southern areas of the Reserve, and this represented the largest number of swamp deer left in any areas in Asia today, 'the Central Indian herds being considerably reduced and the remainder being only scattered group in north U. P. and some areas of Kanchanpur, Kailali and Bardiya'. In Kanha National

1. Some animals have recently been sighted in Bardiya.

2. Prater, S. H. *Op. cit.* p. 273.

3. Dang, Hari. 1969. *The Endangered Animals.* Seminar. November 1969. Conservation. p. 25.

4. Schaaf, Dietrich. 1975. 'Barasingha or Swamp Deer (*Cervus duvauceli*) of Nepal.' *Newsletter.* Nepal Nature Conservation Society. No. 28.

5. Byrne, Peter. 1970. Report No. 7 (Typescript) UNDP.

Park, there is a population of about 200 which belongs to a different race (*Cervus duvauceli branderi*).

Bhatt and Shrestha[1] who visited Sukla Phanta in January 1973, have provided the information that the swamp deer population is distributed in three sites:

(*i*) near Mahakali River west,
(*ii*) Singpur beyond the bridge over Bahamana,
(*iii*) Sundari-Phanta.

It is obvious that the swamp deer population is a migratory one, but rarely do the deer come out of the Reserve for grazing.

The habitat is typical grassland, which is a bio-edaphic complex. The fires are either natural or started deliberately. In the burnt grassland *Khar* (*Imperata arundinacea*) becomes dominant. In many places, one comes across *dhap*, the local name for water-logged areas. In such places more characteristic species are: *Saccharum spontaneum*, *Vetiveria zizanioides*, *Eulaliopsis binata* and *Heteron contortus*. These grasses are characteristic of water-logged or clayey soils. *Dhak* or *palas* (*Butea frondosa*), which is gregarious in some places, is also indicative of clayey water-logged soils. Due to heavy fires, regeneration of the tree species is difficult. 'Like barasingha, these grasses can no longer be found in suitable abundance anywhere else.'

Wild Buffalo (*Bubalus bubalis*)

The wild buffalo (*arana*) male has scimitar like horns, which may have a spread of nearly 2.4 m. 'Wild buffalo,' according to Prater, 'is the boldest and most savage of the species', but those in Kosi Tappu are reported to be shy and elusive. They do, however, move long distances during night for crop raiding in the villages. During these excursions the stray bulls come frequently in contact with the domestic animals.[2] The possibility remains that at least some of the individuals in the area may be feral.

Wild buffalo was distributed over much wider area in the whole

1. Bhatt, Dibya Deo and Shrestha, Tej Kumar. 'The Environment of Sukla Phanta.' Tribhuvan University Press.

2. Upreti, Biswa N. 1975. 'The Last Home of Wild Buffalo — Kosi Tappu.' *Newsletter*. Nepal Nature Conservation Society. No. 28.

of the Indian sub-continent, but not more than 1,500 are reportedly left now; of these, 700 are in the Kaziranga Sanctuary in Assam.

In Nepal, a small herd of about 40 animals is known to be present in the Kosi flood plain (Tappu), not far from Biratnagar town. As late as in 1966, there were no less than 100 animals, but a sharp decline in the population set in because of encroachment upon their habitat, and due to over-grazing, poaching and disease (rinderpest). The floods of 1968 also destroyed much of the Wildlife in Tappu.[1] Habitat encroachment and floods threaten the existence of wild buffalo.

Besides the wild buffalo, hog deer, blue bull, wild boar and jackals have also been reported from the Tappu. There are reports of tigers but this needs confirmation.

Plans are now under way to establish a wildlife reserve covering 90 sq. km. This would involve acquiring land which is now under agriculture.[2]

The Gaur, Gaurigai (*Bos gaurus*)

Gaur or the Indian Bison is found in the foothill region and the hill (Churiya) upto about 1,542 m. Its main habitat is in the Rapti valley, not inside the Park[3] area but on the Someswar range. The animals occur in small numbers, though a herd of 14 was seen in the hills near the Harda Khola.[4]

Gaur (*Bovidae*) usually graze in the early morning and in the evening and take shelter in the shade of the forest during the day. They are powerful animals and magnificent in build. The animal is now a rare and endangered species.

Gangetic Dolphin (*Plantanista gangetica*) **sush**

There are reports about sighting dolphin in the waters of the Narayani River in the Rapti Valley. The Gangetic dolphin has a short neck and fusiform body, which is larger in the males than in the females. The length varies between 2.28 m to 2.58 m.

1. Upreti, Biswa N. *Newsletter No.* 28. Nepal Nature Conservation Society. Feb. 1975.

2. Gupta, Ram Bilas and Mishra, Hemant 1973. *The Asiatic Buffalo of Kosi Tappu Region: An Interim Report.* National Parks and Wildlife Office.

3. Visitors to the National Park on rare occasions are charged by these animals.

4. *Newsletter.* Nepal Nature Conservation Society. No. 24. June 1974.

Females are usually larger than the males. They feed mostly on crustaceans and cat fish living in the river bottom.

Bats

Many different kinds of bats are reported from the country. The Flying Fox (*Pteropus sp.*) is common around Kathmandu and can be seen roosting during the day on trees. In the evening they fly out in search of food — mostly fruits, both cultivated and wild.

Others like the Great Horse Shoe Bat (*Rhinolophus luctus*), Brown leaf Bat (*Rhinolophus feerum equinnus*), Large leaf Bat (*Rhinolophus macrotis*), etc. have all been recorded.

In the Arun Valley, two Himalayan Bats — the Great Himalayan Leafnosed Bat (*Hipposideros armiger*) and the Great Eastern Horseshoe Bat (*Rhinolophus luctus*) have been found. In the case of the Leafnosed Bat, the nose is in the form of a leaf which is lined with hairs. The nose is an organ of perception.

Bats are remarkably adapted to see in the dark. This is due to the presence of some sort of a 'Radar system' in these animals. They send out signals, which are reflected back by objects and picked by ears especially adapted for this purpose.

Mount Everest National Park

The Mount Everest National Park, covering some 1,243 sq. km of area, was first announced by Prince Gyanendra to the World Wildlife Congress held in Bonn in September 1973. It was also proposed to include this natural area of 'certain uniqueness' into UNESCO's World Heritage List. Besides Mount Everest, the highest mountain in the world, the proposed National Park would include the Sherpa homeland, which from the ethnographic view point has attracted the anthropologists and laymen alike. Apart from Pokhara-Jomsom trail, trekking to Solokhumbu is increasing yearly.

The proposed National Park will include the villages of Namche Bazar, Khumjung, Kunde, Pangboche, Dingboche, Phorse, etc. and it will, therefore, be desirable to 'integrate forestry and agricultural requirements of the Sherpas'.[1]

Vegetation

The vegetation of the area is made up of blue pine, rhododendron

1. Mishra, Hemant R. 1973. *Mount Everest National Park.*

and birch. The deep hill sides of Bhote Kosi, Imja Khola and Dudh Kosi are covered with blue pine, fir (*Abies spectabilis*) and Juniper (*Juniperus recurva*) at altitudes of 2,743 m to 3,657 m.

Birch and rhododendron forests (*Rhododendron campanulatum* and *R. campylocarpum*) occur between 3,352 m and 3,962 m 'extending further upwards along the upper slopes'.

Juniper-rhododendron scrub (*Juniperus wallichiana, Rhododendron anthopogon, R. lepidotum*) occur between 3,992 m to 4,693 m.

Along the river beds, *Myricaria rosea, Hippophe thibetans*, and *Salix sp.* are found. *Rhododendron nivale* grows at a height of 5,181 m.

Wildlife

The proposed National Park will have varied animal life. The Himalayan bear is found in the forests at a height of 3,657 m. Snow leopard occurs mostly above 2,743 m and preys upon blue sheep (*Pseudois nayaur*). Other animals are: Flying squirrel, mouse hare, jharal (Himalayan Tahr, *Hemitragus jemlahicus*), goral, musk deer, serow, wild boar, Rhesus Monkey, Grey Langur, Red Panda, jungle cat and wild dog (*Coun alpinus*). A number of mammals — Yak, pika (*Ochotona roylei*), wolves, foxes (*Vulpes vulpes*), and sheep 'wander above 6096 m to an approximate maximum of 6553 m'.

Langtang National Park

A National Park has been proposed in the Langtang/Gosainkund area, covering roughly 1,294 sq. km. The Park[1] would include such peaks as Jugal Himal (7,083 m) and Langtang Lirung (7,253 m). It will be the biggest National Park in the country of a varying topography from low river valleys to the high alpine country, with an average elevation of 9,144 m. There are also wide climatic variations within the area; the south facing slopes of Helumbu receive high precipitation, while the Upper Langtang is comparatively dry; here the winter temperatures may go down to 4-8°C. The snowline in this part of the Himalayas generally stays at 4,876 m-5,486 m.

The Park boundaries include part of the divide separating the large river systems of east and central Nepal. They will extend up the Trisuli River, 'excluding villages and cultivation along valley bottom eastwards to the Nepal-Tibet border, *Phurbi Chyachu*

1. Fox, J. 1973. Langtang National Park (Typescript). National Park and Wildlife Conservation Project, UNDP/HMG.

and *Nosem Dhara*, and from the southern flanks of the Gosainkund Langtang massif northwards to the border'.[1]

The park will also include all of the Langtang Valley, 'the heart of the park on which administrative and touristic development would be centred, the Gosainkund plateau, with its sacred lakes, and the ranges of high snow peaks lying north and south of the Langtang Valley'.

Langtang-Gosainkund area is a bewildering and bewitching country, very rugged with the razor sharp mountain tops, which send out spurs in a parallel fashion on either side. One has to fly through this part of the country to see the rocky moraines, snowy peaks, glaciers, deeply forested hill sides, *kharkas* (small hamlets) and, of course, the farms, which look like a flight of stairs.[2]

Vegetation

In the Park area distinct vegetational zones are met: subtropical, temperate, sub-alpine and alpine. At higher altitudes mainly cushion plants and scrubs are found. At lower altitudes in moist habitats, especially along courses of stream, generally below 1,524 m, Lower Temperate Mixed Broadleaved forests are found. At about 2,438 m *kharsu* oak is predominant. Higher up, between 2,438 m-3,048 m, in moist north-west facing slopes, alder, maple, beam (*Sorbus cuspidata*) are the characteristic species belonging to the Upper Temperate Mixed Broadleaved Forest. At these altitudes, in the more exposed sites, are found small stands of hemlock, which merge at the upper limit with *Abies*. In the drier slopes and at much lower altitudes are few stands of *Chir* pine, which often occur in association with *Quercus incana* — *Quercus lanuginosa*. Other constituents of the oak forests are: *Rhododendron arboreum* and *Lyonia ovalifolia*. In the moister sites, these are associated with blue pine also.

Spruce (*Picea smithiana*) occurs scattered between 2,133 m and 2,895 m 'in small steep valley tributary to the Bhote Kosi between Langtang and Linde Khola'. This occurs in association with blue pine or hemlock, the latter festooned with lichens, epiphytic ferns and orchids, such as *Pleione humilis*.

1. National Park Proposed: 'Twenty Questions and Answers. National Parks and Wildlife Conservation Project.' Kathmandu (Mimeogrpahed).

2. Bhatt, D. D. 1974. 'Langtang National Park.' *Newsletter*. Nepal Nature Conservation Society.

Extensive fir (*Abies spectabilis*) forests occur between 3,048 m and 3,505 m. *Rhododendron barbatum* occurs as an undershrub. Larch (*Larix potanini*) is another species which is found in the Langtang valley, but it never forms extensive forests. It occurs scattered up to 3,810 m, some being found near Kyangchin cheese factory.

Birch (*Betula utilis*) occurs extensively on the southern aspects of the Langtang valley — often extending to 4,267 m.

Two kinds of junipers are common in the Valley: *Juniperus recurva*, a tree 6-9 m high and occurring isolated and the common dwarf spreading *J. squamata*, growing among the boulders.

In the Langtang Valley — both 'Moist Alpine Scrub' and 'Dry Alpine Scrub' are met, the latter, however, being found only in the upper reaches of the Valley. The characteristic vegetation of 'Moist Alpine Scrub' includes: *R. anthopogon*, *R. lepidotum*, *J. recurva*, *Lonicera obovata*, *Potentilla fructicosa* and *Salix daltoniana*. In the meadows, *Iris kumaonsis* grows extensively. The spiny *Papilionate-Caragana gerardiana* is ubiquitous in the drier parts along with *Hippophae thibetana* in the old moraines.

Spiny dwarf bushes are characteristic of high dry Himalayan valleys. In Langtang, *Rosa sericea* is found in association with *Cotoneaster macrophylla* and *Berberis spp.* Of course, primulas, poppys and gentians are the commonest flowers. In late spring *Potentilla fructicosa*, *Potentilla aureata*, *Fragaria nubicola ex laciata*, *Primula atrodentata*, *Potentilla micropetala*, *Primula denticulata*, *Fritillaria cirrhosa*, *Meconopsis discigera* and *Clematis montana* are in flower. The whole ground is covered with *Rhododendron setosum* and in some places with *R. anthopogon*. *Euphorbia sikkimensis*, a poisonous plant, flowers in the open meadows. On the south side of the Langtang River, there are extensive forests of birch and at Kripanesa, where the Khampas have been resettled,[1] thick stands of hemolck interspersed with fir are met.

Wildlife[2]

At lower altitudes, the natural vegetation has been much disturbed, a thing which has its effect upon wildlife also. In the Langtang Valley itself, a variety of wildlife is reported. It includes the Snow Leopard (*Panthera uncia*), perhaps now becoming rare, Musk Deer, Himalayan Tahr, Serow (*Capricornis sum-*

1. They have since vacated.

2. Fox, Joseph L. 1974. 'An Ecological Survey of the Proposed Langtang National Park.' (mimeo.).

atraensis), Goral, Barking Deer and Leopard. In the bamboo forest, the Red Panda (*Ailurus fulgens*), is commonly sighted. There is a possibility that the Great Tibetan Sheep may be 'discovered' in the Park. Its normal habitat is an area lying at altitudes of of 3,900 m to 5,300 m. In the Park itself, Tahr is the commonest animal but it is seldom seen below 3,352 m and higher up it may live near the timber line, which lies at about 5,181 m. There is some winter migration down the valley from summer feeding grounds above Langshisha. According to J. Fox, 'Tahr living far up the Langtang Valley spend the summer and possibly all winter well above the tree line, as compared to those Tahr inhabiting the precipitous slopes above deep river valleys, where descent into forest is an easy matter. Males migrate down in search of females during mating period. In the Langtang Valley, the total population of Tahr has been estimated at 100 or more, with an additional group of about 30 in Upper Helambu.'

Serow (*Thar*)

This animal, a goat antelope, is found at elevations below 3,352 m, where plenty of thick jungle and brush afford cover. Caughley reports locating it in dense bamboo jungle of Mailung Khola, where 'it reaches medium density'.

The serow is sighted in the fir forest of Upper Bhote Kosi, Lude Khola and other side of Ganesh Himal. The animal is secretive and usually leads a solitary life. It is hunted, to some extent, both for skin and meat.

Musk Deer (*Moschus moschiferus*)

Musk deer primarily inhabits rhododendron-juniper and birch forest at higher altitudes between 3,657 m and 4,267 m. There is some winter migration. Due to increased demand for musk, poaching of this animal is heavy. Local inhabitants, who do not kill the animals, report increased activity of the poachers, who lay traps spreading across miles and miles of territory.[1] Dogs are used for tracking the animals. As the musk deer has the peculiar habit of dropping faecal matter at the same place, it gives a clue to the poachers. The usual method of trapping is to construct a low fence of branches some 1 m in height extending across a hillside for a

1. Blower, John. 1974. 'Poaching of Musk Deer. *Newsletter*. Nepal Nature Conservation Society. No. 22.

distance of up to about 914 m. Small gaps are left in the fence at intervals of 18 m to 45 m in which are set rope nooses attached to small saplings which are bent over and secured to a trigger mechanism incorporated in a platform of sticks. An animal passing through the gap actuates the trigger mechanism, thus releasing the sapling which draws the noose tight either around its neck or legs, depending on the way in which the snare has been set. It is then held until it either dies of strangulation or the owner of the trapline finds and despatches it. This system of trapping is particularly destructive and wasteful, since it is indiscriminate and kills both males and young, although it is only the mature male which carries musk.

Musk is purchased from the poachers by traders in Kathmandu, Jumla, Pokhara and other centres at about Rs. 400 per *tola* (about 12 grams). It is then sold to the exporters at a price three times this. Single deer may yield 36-48 gm of musk and so it is obvious that the profits from this illicit trade are substantial. There is some smuggling of musk from across the border (Tibet), where it is commonly obtained on a barter basis (12-24 gm of musk = wrist watch).

Wild Sheep

Blue Sheep (*Pseudois nayur*) has not been sighted but it may be found within the Park area.

Wolf (*Chougu, Canis lupus*)

These occur in packs or singly on ridges above the Upper Bhote Kosi and in the Gosainkund region.

Leopard (*Panthera pardus*)

It is found over a large area right up to the timber line. The animal is trapped by the local inhabitants by stone traps. Besides domestic animals, it preys upon musk deer, barking deer, Goral, sheep and goat.

Trapping of Leopard

Traps are regularly employed for capturing leopards which become a menace to livestock and poultry. Leopard is lured into a trap with two compartments each fitted with a trap door. A goat is kept tied in the inside compartment and when the animal enters the cage, it touches a wooden stick, which makes both the doors shut simultaneously.

Leopards eat a variety of food — deers, dogs, monkeys, porcupines, birds, reptiles, rodents, crabs, etc. Their chief natural enemy is tiger.

The Cat-Bear or Red Panda (*Ailurus fulgens*)

The Red Panda, locally called *Bhaloo Biralo* (*Wah donka* in Tibetan), belongs to the sub-family Procyonidae of the Carnivores. It has a cat-like white face with a chestnut red furry coat. It is distributed in Nepal eastward to Sikkim and southern China. It inhabits bamboo and fir forests and is one of the animals which a visitor to Langtang comes across commonly. In feeding habits, it eats besides the bamboo shoots, small birds, rats and mice. It is also reported to catch fish, for which its claws come in handy.

The Red Panda has been over-exploited by the poachers who find a ready market for this animal, which when kept in captivity, is a nice pet. In Nepal, it has now been put on the protected list.

Snow leopard, listed animal, is hardly seen, though there is a possibility that it occurs in Mailung Khola. Its main prey is blue sheep which, according to one source, 'are sometimes seen on the Chinese side of Chilme Khola (Janjink) and may therefore occasionally stray into the Nepal side of the Valley'.

Wild boar is a common animal in the forest and scrub, and it causes much damage to crops, including potatoes, the principal crop of the area.

Both Assam Rhesus monkeys, and Langur monkeys have been recorded.

Barking deer is the commonest animal. It is a hardy, adaptable species, inhabiting both forest and scrub land.

Goral, often called *goral thar*, is another common mammal. It is a goat-antelope living in the forest and scrub, coming out in the clearings in the morning and evening.

Mouse Hare, Rock Rabbit (*Ochotona roylei*)

This animal is common at elevations between 3,350 m and 4,900 m. It is the size of a water vole with a round whiskered face. It is mostly found at about 3,657 m during summer. It changes its coat — dark brown to grey.

Martens (*Martes sp.*), weasels, civets and Orange Bellied Squirrels (*Lokharke*) are common in the forest area, between 914 m

and 2,743 m. They are nocturnal animals and are found in the Shivpuri range.

Flying squirrel, locally called *udne musa* (*Petaurista albiventer*) is an inhabitant of oak-rhododendron forest, eating mostly nuts and fruits.

There are no reports of fish, but snakes and ambhibia have been recorded. Bamboo Viper (*Trimeresurus gramineus*), and frogs (*Rana polunini*) have been reported from Langtang.

Bird Life

The Park has a rich bird life. Besides the 40 species of birds recorded by Polunin, who came with the Tilman expedition in 1949, Fox has added 181 species. Along the river courses and streams, Red-start is common. Himalayan choughs, wild crows, Wagtails and Snow pigeons are the birds which are quite common in upper Langtang.

Ungulates

In the Nepal Himalayas, Ungulates (grazing animals) can be found right up to the snowline. One of the most important animals in these parts is the Himalayan Tahr, locally known as *jharal* (*Hemitragus jemlahicus*). Of the other animals, the Great Tibetan Sheep or *Nayan* is rare, but the *Jharal* 'an evolutionary link between the sheep and goat' is still fairly common.[1]

Jharals are excellent climbers and can be seen grazing in precipitous cliffs. During the cold season, they descend as low as 2,133 m and it is during this period that they are hunted. Their feet are well adapted to climb; their soft hoof pads, callused hocks and breast help them 'to traverse near vertical cliff faces and leap from one narrow ledge to another to outdistance their hunter or predator unwilling to risk a thousand feet (305 m) tumble'.

Tahrs are gregarious animals. Observers have recorded herds upto 20 individuals in Khumbu at an altitude of 3,962 m in October.[2]

Jharals have short and close set horns which may reach 17 inches in exceptional specimens. The meat of the female Tahr

1. Mishra, Hemant and Weber, Will. 'The Grazing Animals of the Himalayas.' *The Rising Nepal*. August 30, 1974.

2. Fleming, R. L. 1974. 'A Note on the Himalayan Tahr in the Khumbu.' *Newsletter*. Nepal Nature Conservation Society. No. 22.

is excellent but that of male is musky or goaty. The animal is poached heavily.

Blue Sheep (*Pseudois nayaur*)

Blue sheep shows resemblance to both sheep (*Ovis*) and goat (*Capra*), which is found 'at altitudes of 15000 ft (4572 m) to 19,000 ft. (5791 m)'.[1] It inhabits remote and barren areas beyond the main Himalayan range, above the treeline. In Nepal they have been recorded from many places — on the western and southern flanks of Dhaulagiri, along the upper reaches of the Arun river, Jumla, Humla and Langtang. Sizable herds are known to occur in Shey Gompa in Dolpo district and in Dhorpatan area, where private parties arrange hunts.

The animal gets its name from slaty blue colour of the males in winter. At close quarters they look like sheep. According to Schaller, 'they seem to avoid woody terrain, being usually found above thickets of juniper, birch and stunted trees that make the timberline — at altitudes above 3,500 m and upward at least 5,000 m'.[2]

Schaller watched 48 individuals in the Upper Kung Chun valley, and noted that they move up the mountain when herdsmen become active in the Valley below. The 'Courtship Displays' comprised curling of lip, low stretching, kicking, stretching and penis into mouth. 'Aggressive Displays' included broad-side display, horning, vegetation, jerking and lunging, head shake, jumping, butting and chasing. Males of sheep (*Ovis*) and goat (*Capra*) behave differently when they meet their opponents. Sheep run at each other sometimes from a distance, producing quite an impact. Goats, on the other hand, stand bolt upright, then lunge forward against the horns of the adversary. In this respect, Blue Sheep resemble goats.

Blue sheep feed upon dead vegetation and also on grasses, such as *Festuca*, *Trisetum* and *Panthonia*. They are also seen feeding upon legumes (*Thermopsis barbata*) and various shrubs: *Berberis*, *Cotoneaster* and *Ephedra*.

The herd at Shey Gompa are tame as they have received complete protection from the Lamas. Around Shey Gompa, a country of rolling hills, 'animals occur in groups of 20-30'. The proposed

1. Burrard, G. 1925. *Big Game Hunting in the Himalayas and Tibet.* Herbert Jenkins. London. p. 80.

2. Schaller, George B. 1973. *Jour. Bomb. Nat. Hist. Soc.* 69 (3): 523-537.

Shey Gompa Wildlife Reserve would provide further safeguard to these animals. In other parts, however, there is need to regulate hunting and curb the activities of poachers.

The Great Tibetan Sheep (*Ovis ammon hodgsoni*)

This animal reportedly occurs in eastern Dolpo. It is also known as Macro Polo's Sheep in some parts, and is a true sheep. It had a much wider distribution in the past, having been observed by J. D. Hooker along Nepal-Sikkim border.

Of the animals found below the treeline, is the Yellow-throated Himalayan Marten (*Martes flavigula*). It hunts squirrels, mice, hares, pheasants and partridges and, occasionally, even small deer. It varies its diet and when need arises, does not hesitate to eat snakes, lizards and insects. It is essentially an animal of the temperate forest and usually hunts alone.

Himalayan Striped Squirrel (*Callosciurus macclellandi*)

Himalayan Striped Squirrel is a small mammal—about 5 inches in length from nose to the base of the tail. It has a distinctive black-brown coat with stripes on its back. It inhabits temperate forests and feeds largely upon berries, particularly of *Ribes*.

An interesting aquatic animal—the Web-footed Water Shrew, known previously from West China and Sikkim has also been discovered in the Arun Valley area. This small rat-sized animal is highly specialized for aquatic life in the fast flowing streams. The body shape closely resembles that of the otter; there are suction cups on the bottom of the feet for gripping wet slippery rocks and the nose and feet are supplied with highly sensitive hairs which help the sightless animal find its prey of aquatic insects. It is reportedly found at 2,130 m in one of the tributaries of the Arun Valley.

The Scaly Ant Eater, Pangolin, Salik (*Manis pentadactyla*)

An odd looking animal, 'the Chinese Pangolin', which has a long cylindrical body covered with scales (in fact greatly flattened hairs) is found in the Langtang Valley as well as in eastern parts of the country. It is captured or killed by smoking the hole or flooding it with water and is frequently brought to Kathmandu by people from the eastern hilly districts. It lives in burrows, which it digs with sharp claws. It can climb trees well and is

nocturnal. When sensing danger, its whole body curls into a ball-like shape. Its food consists of vegetative shoots and ants, which it digs out from the ant hills. It does not survive long in captivity. Decoction of these animals is used as an aphrodisiac. Pangolin meat is edible, and is supposed to be of medicinal value. Chiefly, leopards prey upon it.

Tourism

Langtang National Park is an area of rich natural beauty, unparalled for alpine flowers. The Valley has an average altitude of 3,048 m, dry and mountainous with extensive pastures. The area is of considerable religious importance also, for there are many sacred lakes here — the Gosainkund — which is the largest of the three, looks like a green jade at about 4,380 m. The lake is sacred to all the Hindus, who visit it by hundreds every year — particularly during the months of August and September. In fact, the Gosainkund itself would be an ideal spot for the tourists once trekking facilities are improved.

Trekking

There are many ways to travel into Langtang Valley — trekking, flying by STOL and helicopter. It has lately become increasingly popular. A trek to Langtang and back, usually takes about two weeks. One could take either of the two routes — an easterly route, which is the more difficult of the two because of the high pass of *Ganja La* (5,119 m) and more easier western route by way of Trisuli, a town about 77 km away from Kathmandu, and connected with the latter by a motorable road. From Trisuli, the trek goes north. The first big village is Syabrubesi, which is reached after three days of hard walk from Trisuli. The village lies at the confluence of two rivers — Langtang and Bhote Kosi, which then become Trisuli River. From Syabrubesi, the path leads through steep grassy slopes, until at 2,438 m, a Sherpa village is reached. From here, the trek is less steep. The principal settlement is in Upper Langtang — at Langtang Village. It has about 30 houses, including an old monastery. Situated at a height of 3,352 m, the people are Bhotiya Tamangs, whose main occupation is agriculture and animal husbandry. The establishment of a cheese factory has helped the local people economically. A little way down is the new Khampa settlement at Tcherpa Nesa.

The Khampas live in neat wooden houses, the insides of which remind a visitor that the inhabitants are culturally distinct from the local Bhotiyas. Their population does not exceed 100, mostly males. Khampa is a nondescript word, used freely for Tibetan nomadic tribes, some of whom at least in the past, indulged in highway robbery. In the wake of the disturbances in Tibet in the late fifties, some groups entered Nepal to seek refuge. The group now at Tcherpa Nesa originally lived in Manang and it is only in 1971 that they moved into Langtang and settled down to farm.

The establishment of the National Parks and Wildlife Conservation office has created a sense of awareness among local population for nature conservation, but with a large herd of yak and sheep and an increasing pressure upon the local forest for firewood and timber, the future of the Park is uncertain. Excessive grazing by sheep has created the problem of sheet erosion and the fact that the authorities across the northern border do not allow livestock to enter their territory, the pressure on the local grazing grounds has become all the more serious.

Game Animals

The forests of the Terai and *duns* shelter some of the finest game animals. During the Rana regime, the ruling family possessed *carte blanche* authority to shoot wild animals. And how effective they were in using this prerogative is evident from the following account of *shikar*: 'In one hunting expedition, Jung Bahadur killed 21 elephants, 31 tigers, 7 stags, 1 rhinoceros, 1 boa constrictor, 11 wild buffaloes, 10 boars, 1 crocodile, 4 bears, 20 deer, 6 pheasants and 3 leopards.'[1]

Three successive generations of the British monarchs have shot in the Nepal Terai. King Edward VII, when he visited Nawalpur in 1886, bagged 23 tigers, 1 leopard and 1 bear. His son, King George V, shot 'in one day in Chitwan' 10 tigers, 1 rhino and 1 bear, in 1911. The Duke of Windsor, Prince of Wales, visited Bhikana-thori (Nawalpur) in 1921. At the end of *shikar*, he was presented by Maharaja Chandra Shumsher the following birds and animals—'all destined for the London Zoological Gardens'.[2]

1. Jung, Padam. *Life of Jung Bahadur*, as quoted by D. D. Bhatt in 'Wildlife in Nepal and its Preservation.' *Vasudha*. 1958. 1 ; p. 12.

2. Ellison, Bernard. 1925. *H. R. H. The Prince of Wales's Sport in India*. London, Heinemann.

MAMMALS AND VERTEBRATES

1 Baby elephant
2 Rhino calf
2 Leopard cats
2 Himalayan black bears
1 Leopard (Black)
1 Tiger
1 Tibetan fox
1 Mountain fox
2 Sambhurs
1 Thar
1 Unicorn sheep
3 Musk deer
1 Four-horned sheep
1 One-horned Tibetan Shawl Goat
2 Tibetan Mastiff
4 Tibetan Mastiff Pups
1 Monitor
1 Python
4 Nepali Kalij
1 White-crested Kalij pheasant
4 Monal pheasants
4 Cheer pheasants
2 Koklass pheasants
4 Chukor partridges, Swamp partridges
2 Green pigeons
10 Bronze-winged doves
3 Great Indian Adjutants
1 Hawk
Pea fowl

In the course of the *shikar*, the Prince shot 17 tigers, 10 rhinos, 2 leopards, 1 bear, 7 jungle fowls, 2 partridges, 15 snipe, 1 peacock, and a hamadryad — all during a period of 8 days.

Royal Hunts

The Royal Hunts (a thing of the past) were quite a spectacle. Scores of elephants were employed to ring the animal after it had succumbed to the bait—a buffalo. Expert *shikaris* went on probing rides through the dense jungle and once they had located the animal, word was sent to the camp. The tiger preferred to lie down in the sun after it had feasted on the bait. The process of ringing the tiger 'started with erecting a wall of white cloth about 4 or 5 ft. (1.2-1.5 m) high; then the trained elephants go into the ring and move around in the bushes and thickets. Once the tiger is disturbed, it always makes an angry growl. Thus we finally know that the tiger is in our ring and everyone becomes alert. Seldom are we unlucky enough not to locate it'.[1]

Ellison's[2] account of a Royal Hunt is interesting:

1. Shah, M. B. B. 1967. *A Handbook of Big Game Hunting*. Katl mandu.
2. Ellison, Bernard. 1925. *Op. cit.* p. 10.

'. . . . Again and again he is driven out only to such cover in the long grass away from the guns. A *shikari* climbs a tree and pelts him with stones. The manoeuvre succeeds and once again we get a half length view of the tiger as he makes a spring at his tormentor in the treetop. The ring closes in upon him but with a roar he dives into long grass: another roar and he shows quite near the Royal *howdha*. A moment's suspense and HRH fires, and a second afterwards two more shots ring out. The Prince has hit the tiger who though mortally wounded, has plenty to go in him and charges to the opposite side and is buried once more in the heavy cover. The ring closes in; a shot rings out and the tiger rolls over dead.'

Trapping of Wild Elephants

Wild elephants were once distributed over a much more wider region; in the middle of the last century, they were regularly captured by 'lasso' method in the neighbourhood of Hetauda. The wild elephants came all the way from the east (Morang) and entered one of the valleys leading into Makwanpur. After making sure that the herd had moved into the valley, the latter was sealed at the two ends. A large posse of army was deployed to drive these into a valley and incessant firing and beating of drums were employed to frighten the wild elephants, which were ultimately lassoed. With the help of expert domesticated elephants, the captured animals were tired out 'by running and pulling against the ropes, as an angler lets a large fish play and run off with the line — before he attempts to land him'.

Jung Bahadur was very interested in the capturing of wild elephants, a fact which is given credence when one goes through the account of Oldfield:

'. . . shortly before sunset, as I was sitting outside my tent smoking a cheroot with General Ranudate Singh, Jung returned to camp, bringing with him in triumph a fine female elephant, which he had caught after we left him. He had come upon a small herd of them, but only succeeded in separating and securing this one. The lasso having been well secured round her throat, one end of the long rope was fastened to one large tame elephant, who went before, leading the way, while the other was, in the same way, fastened to another large tame elephant (Jung's own

on which he was seated), who followed in order to administer a push or prod with his tusks as a reminder in case the newly captured one jibbed or objected to go on.'[1]

It seems that the method of capturing the wild elephants through driving them in a valley, firing volleys at them to force them up the valley and the use of domesticated elephants—whose expert *mahouts* threw ropes around the necks of the wild beasts—all unique to Nepal, are a thing of the past now. There are a few elephants which enter the territory in the east and west, but there is no sizable population of elephants in the country.

Principal National Parks/Wildlife Reserves and the wild animals which can be viewed here have been given in Table 21.

TABLE 21

Park/Wildlife Reserve	*Area*	*Wildlife*
1. Royal Chitwan National Park	533 sq. km	Rhino, Tiger, Leopard, Sambar, Barking Deer, Bison, Sloth Bear, *Chauka*, Spotted Deer, Wild boar, Crocodile, Gangetic Dolphin.
2. Thakur Dwara (Bardiya)	363 sq. km	Tiger, Sambar, Spotted Deer, Leopard, Laghuna, Barking Deer, Blue Bull, Blackbuck, Crocodile.
3. Sukla Phanta (Kanchanpur)	155 sq. km	Tiger, Leopard, Elephant, Swamp Deer, Spotted Deer, Sambar, Laghuna, Barking Deer, Blue Bull, Wild boar, Porcupine, Rhesus monkey, Langur monkey, Blackbuck (?), Pigmy hog (?).
4. Langtang (Proposed)	1,294 sq. km	Musk deer, Goral, Jharal (Tahr), Serow, Red Panda, Yak, Snow Leopard, Wild Sheep.

(Contd.)

1. Oldfield, H. Ambrose. *Sketches in Nepal*. Cosmo Publications, Delhi (Reprint).

TABLE 21 (*Contd.*)

5.	Kosi Tappu	31 sq. km	Wild buffalo, Tiger, Hog Deer, Spotted Deer, Blue bull, Wild boar, jackals.
6.	Mt. Everest National Partk (Proposed)	1,243 sq. km	Snow leopard, Black bear, Red Panda, Wolf, Weasel, Marten, Pika Mouse, Himalayan Tahr, Blue Sheep, Goral, Serow, Musk Deer.
7.	Lake Rara (Proposed)	104 sq. km	Leopard, Himalayan bear.
8.	Shey Gompa	413 sq. km	Blue Sheep.

In Nepal, the following animals and birds have been given protection and their hunting is completely prohibited:

Animals

1. Rhinoceros (*Gainda*)
2. Wild elephant (*Jungali Hathi*)
3. Wild buffalo (*Arna*)
4. Clouded Leopard (*Dhaunse Chitwa*)
5. Snow leopard (*Hiun Chitwa*)
6. Musk deer (*Kasturi mriga*)
7. Wild yak (*Junglee Chauri gai*)
8. Bison (*Gauri Gai*)
9. Blackbuck (*Krishna saar*)
10. Four-Horned Antelope (*Chauki, Chauka*)
11. Swamp deer (*Barasinga*)
12. Great Tibetan Sheep (*Nayan*)
13. Chiru or the Tibetan antelope (*Pantholops hodgsom*)
14. Brown bear (*Rato bhalu*)
15. Gangetic Dolphin (*Shosh*)
16. Red Panda (*Hokarpa* or *Habri*)
17. Pygmy hog (*Sano bandel*)
18. Hispid hare
19. Scaly anteater (*Salik*)

Birds

1. Impeyan pheasant (*Danphe*)
2. Crimson-horned pheasant (*Monal*)
3. Lesser Florican (*Phakras, Sypheotides indica*)
4. Great Hornbill (*Dhanesh, Tokus birostris*)