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THE EXTINCT, RARE AND THREATENED GAME OF THE HIMALAYAS AND THE SIWALIK RANGES

By

Ajit Kumar Mukherjee

Zoological Survey of India

Calcutta.

(WITH EIGHT ILLUSTRATED MAPS)

INTRODUCTION

India is a reputed *Shikar* land for big game. In this vast country there are some 500 different species of mammals and 1200 species of birds, of which 45 are considered as important

game animals (Mammals) and 80 game birds. These are distributed in wooded riverain plains of Indus, Ganga and Brahamaputra, and in the Peninsular hills and the undulating plains connecting them, but the greatest variety of animal life is exhibited in the Great Northern Mountains, which run more or less in parallel series—the Siwaliks, the Great Himalayas, Ladakh, Kailas and Karakoram ranges—running west to east. The loftiest and the longest range is the Himalayas which spreads over a length of some 2400 kilometres and is limited by the course of the Indus in the west and the Brahamaputra in the east ; the average breadth is about 200 kilometres. In these mountain tiers of extraordinary grandeur, climate varies from tropical at the base to alpine and arctic at the top. Some peaks record the first seven highest points on earth which are capped with eternal snows, exposed to the scorch of sun and are lashed by blizzards ; there optimum living conditions are lacking. The biota on the mountain has therefore been restricted to seasonal altitudinal drift of snow line varying from 2438-5486 metres, with exceptions of a few specialized types that thrive on snow expanse above the tree line. The true Indian fauna is found in the *Tarai*, the forest belt on the foot-hills of the southern slopes of the Himalayas, whereas other Himalayan forest sub-regions exhibit specialized high-altitude animal life more or less distinct from the rest of India. Such main vertical climatic and forest zonal types are as follows :

(i) *Tropical wet and moist evergreen.*

Comprising a belt of thick evergreen forest at the foothills and the southern slopes of the Siwalik and the Himalayas, known as Tarai and Duars. The altitude of this is almost the same as the plains or a little higher (150-300 metres). Annual mean temperature ranges from 18° – 44° C, and rainfall ranges from 140-250 cm. The forest is mainly composed of Sal (*Shorea robusta*), Sisoo (*Dalbergia* sp.) and *Salmalia* sp., bamboos, canes, creepers, palms and tall grass and at places becomes impenetrable due to tangled undergrowth. The belt is well watered, drained by descending rivers which slow down and deposit silt. Such forests are the abode of Rhinoceros, Wild buffalo, Elephants, Tigers, Swampdeer, etc.

(ii) *Subtropical pine and wet forest.*

Comprising Pine-clad hill slopes between 915-2286 metres. The forest trees are of good height mainly represented by *Pinus longifolia,* bamboo occasionally present and some climber and epiphytes. Mean annual temperature ranges from 10°-21° C. and annual rainfall 94-130 cm. Such forests shelter several species of pheasants, Goral, Takin, Cat-bear or panda etc.

(iii) *Temperate forest.*

It consists of dry and moist temperate forest within altitudinal range of 1525-3658 metres extending from Kashmir to Assam and records a mean annual temperature ranging from 5° to 18° C. and rainfall from 75 cm. to 85 cm. The forests consist of conifers, oak and xerophytic shrubs at different altitudes. Dominant conifer species are *Abies, Cedrus, Picea, Acer, Prunus* etc., and oak, such as Kharsu oak (*Quercus semecarpifolia*) are found in Western Himalayas and Bank oak (*Q. incana*) are represented in the Central Himalayas. In the wet temperate forests of the eastern Himalayas, the forests are evergreen. The important plants are *Rhododendron arboreum, Quercus spp. Viburnum* sp. *etc.* In these types of forests are found the Markhor, the Thar, the Serow and the Hangul, Musk deer etc.

(iv) *Alpine forests.*

The zone ranging between 2895-3810 metres is comprised of stunted trees of conifers, *viz. Abies* sp., Himalayan larch (*Larix griffithii*), thickets of *Rhododendron* sp., *Betulah* sp., etc., terminating in xerophytic scrub jungle and grassland. Snow fall is in the major part of the year. In this zone are found typical high altitudinal forms such as, the Snow-leopard, Himalayan black bear, Yak, etc..

The Himalayan species can be broadly classified into five faunal types. That is to say that the characteristic elements represented in those regions pertain to the habitats afforded in

the ranges covered. Such faunal types are defined as follows :—

(i) Palæarctic—belonging to the fauna of the cold temperate and subtropical regions of the Northern Hemisphere ; such examples are Ibex, Musk-deer etc.

(ii) Palæo-xeromontane—belonging to the fauna of the arid sunny slopes of low and high mountains, mainly the Western Himalayas. Such examples are, the Markhor, Hangul, etc.

(iii) Palæomontane—belonging to the fauna of the alpine or snow zones of the high mountains. Such examples are the Himalayan Thar, Snow-leopards.

(iv) Tibetan—belonging to the fauna of Tibetan high Plateaux but also ranging in palaearctic high mountains. Such examples are the Bharal or blue sheep, Yak, Great Tibetan sheep, etc.

(v) Oriental—belonging to the fauna of South Asia (India) and southeast Asia (Malayasia) but also ascend to certain heights of the Himalayas. Such examples are the Serow (Malayasian), the Mishmi Takin (Malayasian), the barking deer (Indian).

In the Himalayas and Siwalik, the majority of the game species are thriving moderately in a natural balance, but the status of some species have been threatened by direct and indirect interference of modern man as a consequence of which a few have deteriorated to the vanishing point and a few have vanished. A list of the threatened, rare (vanishing) and vanished (extinct) species that have been dealt with in this paper is given below :—

Class Mammalia	*Status*
Order Carnivora	
Family Felidæ	
1. *Panthera uncia* Schreber (Snow leopard or Ounce) ...	Threatened

Order Perissodactyla

Family Rhinocerotidæ

2. *Rhinoceros unicornis* Linnæus
(Great Indian one-horned Rhino) Threatened

Order Artiodactyla

Family Suidæ

3. *Sus salvanius* Hodgson
(Pygmy hog) Rare

Family Cervidæ

Sub family Moschinæ

4. *Moschus moschiferus* Linnæus
(Musk deer) ... ... Threatened

Sub family Cervinæ

5. *Cervus elaphus hanglu* Wagner
(Hangul or Kashmir stag) ... Threatened

6. *Cervus elaphus wallichi* Cuvier
(Shou) ... ... Rare

Family Bovidæ

Sub family Bovinæ

7. *Bos grunniens* Linnæus
(Wild yak) ... ... Threatened

Sub family Caprinæ

8. *Capra falconeri* Wagner
(Markhor) ... ... Threatened

Class Aves ... ... *Status*

Order Anseriformes

Family Anatidæ

9. *Rhodonessa caryophyllacea* (Latham)
(Pink headed duck) ... Extinct

10. *Cairina scutulata* (S. Muller)
(White-winged wood duck) ... Rare

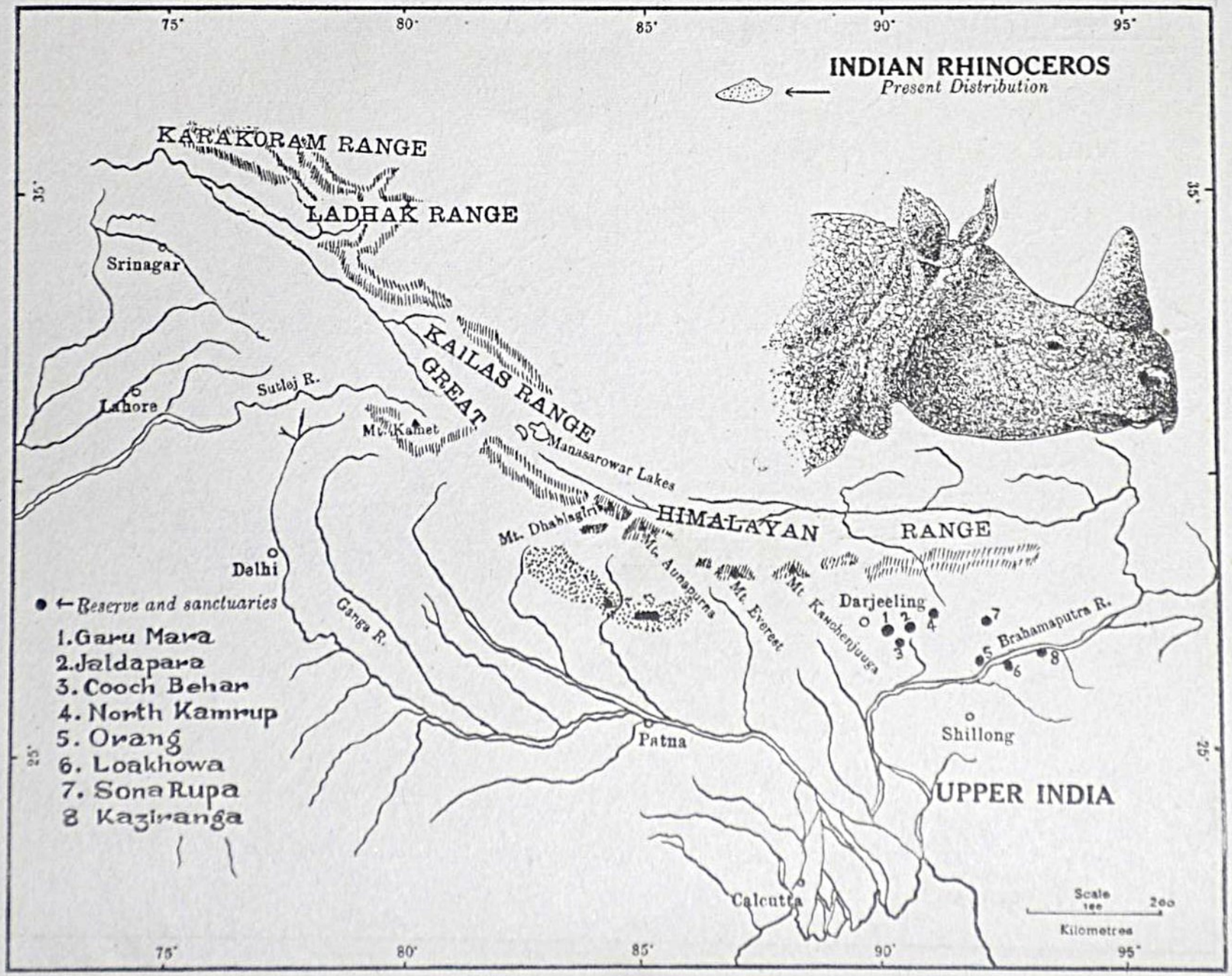
Order Galliformes

Family Phasianidæ

11. *Ophrysia superciliosa* (J. E. Gray)
(Mountain quail) ... ... Extinct

The above list includes only two extinct species of birds. Circumstances under which they have become extinct are ill-defined, and a hypothetical explanation has been put forward that the Himalayas are recent from geological point of view and that it supported many survivors 'relicts' of the pleistocene age, of the palæarctic region. The Pink-headed duck was a vestige of an early tertiary fauna which had modified its habit from marine or inland sea littoral environment to fresh water pools of the Siwalik foothills and Gangetic plain under forced circumstances. It got trapped in its present habitat due to geological changes in India during the Tertiary time. Recent cultivation of a great part of Tarai and frequent intrusion in their breeding area have acted adversely against the species ; perhaps the species could not stand the rigors and got exterminated. The Mountain Quail, another Palæarctic relict was discovered quite late (1845). Perhaps the few examples collected represent the last survivors of the declining species. The factors that had worked against the species, bringing it to extinction, are not yet known.

The object of this publication is to render information to the public, sportsmen and others interested in the subject of wildlife, regarding our vanishing game. Its present status, conservation, economy, etc. have been dealt in a general way, with an expectation of goodwill and cooperation to protect our threatened and fast vanishing game.


INDIAN RHINOCEROS
Present Distribution
KARAKORAM RANGE
LADHAK RANGE
KAILAS RANGE
GREAT
HIMALAYAN
RANGE
Srinagar
Lahore
Sutlej R.
Mt. Kamet
Mansarowar Lakes
Mt. Dhaulagiri
Mt. Annapurna
Mt. Everest
Mt. Kanchenjunga
Delhi
Ganga R.
Darjeeling
Brahamaputra R.
Patna
Shillong
Calcutta
UPPER INDIA
Scale
Kilometres
← Reserve and sanctuaries
1. Garu Mara
2. Jaldapara
3. Cooch Behar
4. North Kamrup
5. Orang
6. Loakhowa
7. Sona Rupa
8 Kaziranga
75°
80°
85°
90°
95°
35°
25°

predation, resulting in depletion of the population and a set back in fur trade.

THE GREAT INDIAN RHINOCEROS

Rhinoceros unicornis Linnæus

(PLATE NO. 2)

The Great Indian Rhinoceros locally known as *Gor* (Assamese), *Gondar* (Bengali), *Genda* (Hindi, Nepali), is a slaty coloured, thick-folded and tubercle skinned, single-horned relict, which some five hundred years ago inhabited the grass-land valleys and the plains of Indus, Ganga and Brahamaputra. This is the second largest land mammal of Asia which may reach 183 cm. (6 ft.) at the shoulder and 427 cm. (14 ft.) in length, and the horn which is composed of agglutinated hairs may attain a length of 65 cm. (2 ft.). The horn is highly prized in China and South East Asian countries due to the prevalent superstition that it has an aphrodisiac property and that a horn cup serves to make poison innocuous. These properties have attracted attention of the public. Noblemen, kings and emperors from time immemorial engaged state hunters for killing the animals to procure the horn and other by-products such as skin, blood, flesh etc. The result of this senseless hunting has completely wiped out their population from their extensive habitat except for some remote strongholds which are officially protected now.

In the Himalayan foothills the stronghold of the Rhinoceros is in Nepal. About fifty years back it ranged almost throughout the Tarai forest of Nepal, the area roughly limited by Sarda river valley in the west and Kosi river valley in the east. The animal was numerous in suitable grass patches in Gandak valley (Chitawan), Rapti river valley, Bagmati river valley, Churia-Ghati water-sheds, Jaleswar, Hanuman Nagar forests. The total population of the animal in Nepal was estimated to be about 1100 in 1910. Since then the number is decreasing at an alarming rate and according to Shri E.P. Gee,[1] in 1959 there

[1]Gee, E. P. 1959. Report on a Survey of the Rhinoceros Area of Nepal *Oryx*, *5* (2).

were about 300 rhinos in the state, mostly concentrated in the Rapti valley region ; and even this number has further been reduced to 125 in 1961 !

In Uttar Pradesh state the animal used to occur some 50 years back in Rohilkhand (Pilibhit) and it occasionally roamed in the marshy grass jungles and in cultivations in the Nepal border districts *viz.* Kheri, Gonda and Gorakhpur. Even now it accidentally strolls in the eastern districts adjoining the Indo-Nepal border ; such animals perhaps straggle there from south-east Nepal.

In Bihar it was not uncommon in Champaran and Saharsa districts about a hundred years back. The animal has disappeared totally from the state now. By chance it may straggle to northern Champaran district from eastern Nepal or may accidentally be washed down by the Kosi river during monsoon.

In the state of West Bengal, the animal was quite common some 30 years back in Jalpaiguri and riparian forests of the Buxa Division, and some one hundred years back it occurred in the grass jungles of the Rajmahal hills. There is a considerable shrinkage in its habitat and it is now confined east to Tista river in Jalpaiguri and Cooch Bihar districts where some 50 individuals are protected in three official sanctuaries, *viz.* Jaldapara, Garu Mara and Cooch Bihar.

In Assam rhino was very common along the foothills of the eastern Himalayas and in the grass jungles all along the Brahamaputra, with a few stray individuals in Tirap frontier Division, F.W.T. Pollock[2] in 1879 related that the animal was plentiful in Goalpara, Darrang and Nowgong districts, and Shebbeare[3] in 1930-32 estimated that along the foothills for about 330 miles from north Bengal to Sibsagar, there were about 220 specimens. Shri A. J. W. Milroy[4] in 1934 described two rhino sanctuaries, Monas and Kaziranga, which contained a very fine stock and one rhino refuge in Balipara Political area.

[2]Pollock, F. W. T. 1879. Sports in British Burmah, Assam and the Cassyah and Jyntiah Hills. 2 vols., London. p. 95.
[3]Quoted from Hobley, C. W. 1932. The rhinoceros. Jour. Soc. Preservation Fauna Empire, n. s,, pt. 17, pp 20-21.
[4]Milroy, A. J. W. 1934. The preservation of wildlife in India. No. 3. Assam. J. Bombay Nat. Hist. Soc. vol. 37 (1), pp. 99-101.

Shri E. P. Gee[5] estimated about 330 rhinos in the whole of Assam. There are five state sanctuaries, *viz.* North Kamrup, Orang, Laokowa, Sone Rupa and Kaziranga of which the last mentioned sanctuary is the largest (approx. 200 sq. km.) and contains about 260 individuals.

The rhino inhabits two types of forests, *viz.* (i) Dense moist forest and low hill slopes of Tarai and Duars (ii) Tall grass land and mixed forest. The tropical forest at the base of the Himalayas is scattered partly on low hill slopes and partly on plains at the foot of the hills. The streams that emerge out from the hills form puddles of water due to over-flowing during the monsoon. Thus bogland and stagnant pools are formed and maintained which are covered with reeds ; and also tall grass patches grow at places. In such conditions the rhino lives in Nepal Tarai in a 30-40 milies long strip near Hataura (south central Nepal).

The other habitat of the rhino is the tall grassland and mixed forest in the districts of Darrang, Nowgong, Sibsagar and North Lakhimpur districts, situated in Brahamaputra valley. The grasses which serve as fodder and provide cover for the animal grow in plains in extensive patches along the Brahama-putra river course. These grasses are the different species of Kush, *Saccharum* sp., Nal, *Phragmites* sp., Ekra, *Erianthus* sp., and Elephant-grass, *Erianthus elephantinus* etc....The latter some-times attains a height of 5 metres or more. These conditions are typified in Kaziranga, Loakhowa and Orang sanctuaries. The North Kamrup sanctuary which is about 200 sq. km., harbours some 25 rhinos. They live under somewhat different conditions. The country is more or less undulating and drier than the habitat of the rhino in Nepal Tarai and Kaziranga, and has an extensive grass jungle intersected by rivers and forest blocks mainly composed of trees such as Hollock, *Terminalia, Myriocarpa*, Gondroi, *Cinnamomum* sp., Nahor, *Mesua ferrea,* Jhok, *Bischofia* sp., Badam, *Sterculia alata* and *Acacia* sp. etc.

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[5]Gee, E. P. 958. Four rare Indian animals, *Oryx*, Vol. *4* (6), p. 354.

The rhino is a solitary animal ; bull generally loiters singly, and the female is accompanied by the calf. There is no fixed time for its breeding and generally a single calf is born. The gestation period is about 18 months. The animal in natural habitat may survive over 50 years and sometimes a century. It is herbivorous and generally feeds during the morning and evening hours and at a particular spot drops the dung which piles up and forms a large mound. It is harmless in disposition but when it feels cornered, may charge with its tusk.

The lucrative business of the rhino horn and other products is the chief threat to the status of the species. The animal has suffered badly in the hands of poachers who are tempted to butcher them for a handsome return—the horn fetches a price half its weight in gold ! About a century back, the Government of India became conscious of the seriousness of the situation and thereafter promulgated official orders for conserving the species. This resulted in organized poaching on a large scale with the result that many of the areas except those pockets that exist as sanctuaries today, became completely denuded. A further tightening up by rigid rules, (The Bengal Rhino Preservation Act. of 1931 ; the Assam Rhino Preservation Act of 1953 etc.) and strict management of sanctuaries have saved the animal from extinction. But sometimes alarming attacks by the poaching gangs were made and as many as 72 animals were killed in 1954 in Nepal Tarai. Inspite of state vigilance the act was repeated and another 500 animals were estimated to be killed in 1957 in the Rapti valley.

Other than the direct action of man against the animal, factors such as flood, transmission of disease from domestic cattle, land acquisition pressure for agriculture and the role of predators such as tigers and crocodiles against young rhinos affect adversely the population to certain extent. The animal may thrive better by effective management and control of such factors.