EXTINCT AND VANISHING BIRDS AND MAMMALS OF INDIA

INDIAN MUSEUM
CALCUTTA

EXTINCT AND VANISHING BIRDS AND MAMMALS OF INDIA

By

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FOREWORD

The publication programme of the Indian Museum envisages the issue of a series of research Monographs on specialised subjects covered by the different Sections of the Museum. It is a happy augury that the first of the series, the present Monograph, relates to one of the most interesting zoological problems of to-day, viz., the fast disappearing wild life of India. This monograph on 'The Extinct and Vanishing Birds and Mammals of India' by Shri Ajit Kumar Mukherjee, Zoologist, Zoological Survey of India, is, therefore, a very welcome publication which, it is hoped, will be appreciated by the world of scholars and the general public.

Shri Mukherjee has compiled all the information on his subject so far available and scattered in various journals and brochures, and incorporated his first-hand knowledge about a number of species from the expeditions he undertook in many regions of India. Except perhaps for the work of Mr. S. D. Ripley published years ago on 'Vanishing and Extinct Birds species of India' in the Journal of the Bombay Natural History Society, no systematic work comprehending various Indian birds and mammals which are vanishing or are already extinct, has been attempted so far. The present well-documented and illustrated work, therefore, will undoubtedly contribute towards the study of the Indian species in the wider study of the vanishing animals of the world, as has been attempted by Mr. John Leigh-Pemberton in his monumental work on 'Vanishing Wild Animals of the World', and the Indian Museum has great pleasure in presenting it before the public as the first of the series of Monographs under its publication project.

A. K. BHATTACHARYYA
Director

PREFACE

The beasts and birds are the beauty of the jungle but as mechanical civilization advances resulting in industrialisation, jungles are cleared, long trees are felled and savannah turned into barren land. This results in a gradual depletion of wild life. The ferocious lion, the hunting leopard, deer, antilope, rhinoceroses and other animals along with the multi-coloured birds that add to the life, beauty and the varied richness of the jungle disappear. The wanton massacre of wild life abetted by the use of modern weapons by the civilized man brings to an end this beautiful creation of nature, to which we must cry a halt at some stage. On the other hand, it devolves on man himself to adopt measures to preserve his fellow beings of the animal world, and set up sanctuaries to nurture and cherish them.

In the past, due to lack of proper care and random shooting by the *shikaris* in India—and this land was considered the second best *shikar* paradise of the world—some of the wild life have disappeared and some are precariously in the process. From my experience during the last two decades, I have been able to collect some data about such species which either have disappeared or are threatened with extinction.

I am inspired to a great extent by the contribution of Francis Harper, Philip Street, Lee Merriam Talbot, E. P. Gee and many other naturalists, both Indian as well as foreign, who have taken particular interest in studying this interesting subject and advocating justice to the cause of wild life preservation. I would like to offer tribute to them.

I am sure, those who are interested in the wild life of India will find this book to be of some value.

Dr. M. L. Roonwal, Director, Zoological Survey of India (retired in 1965) had been very generous to give much valuable information on the status of certain animals. His persuasion and encouragement helped me a great deal to prepare this scientific manuscript. I express my indebtedness to him.

For the coloured illustrations, drawings and maps, I am indebted to Sri D. D. Khanra and Sri D. Pyne.

I am grateful to Shri A. K. Bhattacharyya, Director, Indian Museum, for encouraging me all through and readily agreeing to publish it in the Indian Museum's publication series. Finally, to Shri Amal Sarkar, Publication Superintendent, Indian Museum, my hearty thanks are due as one who shaped the paper to the final form in which it is presented here.

AUTHOR

INTRODUCTION

PROPAGATION of a living individual is the law of nature. This is necessary in order that it can survive and carry forward the species. But if it were allowed to continue indefinitely, a stage would reach when it would flood the whole world with its own kind. Actually this never takes place. The reason is that it maintains its balance in which several factors come into play, *e.g.*, presence of natural enemies, diseases, weather hazards, shortage of food, etc. This is markedly manifest in the case of insects and animals but in the case of man, although the same factors operate yet they are not so effective. They are unable in maintaining a balanced level of the population on account of man's extraordinary intelligence which enables him to protect himself and this he does by throwing a challenge to nature. Scientific advancements in all spheres of life have helped him to establish himself and control the factors which are inimical to his existence. The result is that while the population should stand at some particular level determined by several cross factors working against each other, actually it appears that there is a tendency to an increase. Man lives at the expense of animate and inanimate objects that surround him. One important effect of this is reflected in the gradual reduction and even extinction of wild life. Conversion of forest area into agricultural fields is forcing wild life to live a shrunken existence. Indiscriminate hunting by man is also responsible for the disappearance of certain animals about which we are now voicing our concern and are trying to find ways and means as to how to preserve them. This alarming reduction of wild life to-day has forced the Government to take measures of saving them by establishing sanctuaries in which these animals can thrive and multiply.

It is within our scope to mention the extinction of animals that has been brought about also by natural processes, such as, geological changes or competition among contemporaries. By excavating fossils some light has been thrown on the past animal history. The remains of extinct creatures of the Tertiary period, discovered in the Siwalik Hills and other parts of India, give a glimpse of the wonderful wealth of wild life that we possessed in the past. Mastodons and some eleven species of elephants have been recorded only from the Siwaliks. Along with them lived the Siwalik bison, buffalo, ox, tamarau, as well as the recent African elements such as the hippopotamus, giraffe, chimpanzee, etc. Rhinoceroses of various kinds

and the magnificent four-horned ruminant, *Sivatherium,* also lived there. Such species had arisen and disappeared in the past. There was a total eclipse to some forms which left no descendants, while some forms evolved into others, and some escaped by chance and are still thriving to-day maintaining their primitive characters. These are known as 'relicts' or 'living fossils'. Many animals living to-day are seasoned or conditioned forms that have undergone rigors of geological upheavals. They might be endemic or orginally lived in altogether different country, but, under pressure of adversities of climate and other factors, they had ventured for a new home. In India[1] we have some forms which migrated from other countries not many years ago, geologically speaking, as for example, the lion and the *cheeta* from Africa, and the tiger from northern Asia. Thus we have now an accumulation from different parts of the world, a wild life of varied kinds composed of some 500 species of mammals and 1200 species of birds which we are proud of.

During the period of approximately 2000 years, the world has lost by way of extinction about 160 known forms of mammals and 88 forms of birds and this has been done mostly by man's interference with the process of nature. But for all practical purposes, India has lost only three species of birds and one form of mammal. The reason is that conservation of animals was the creed of man in this country in the past. The history bears testimony to the fact that *Abhayāraṇya* or Sanctuaries where birds and wild animals were protected, were the creation of Asoka (c.) 250 B.C. Here birds and beasts freely roamed about without any fear of man. All temples were protected places as far as deer and other small types of animals were concerned. But sooner or later this solicitude for wild life gradually disappeared and to-day we are faced with threatened extinction of a number of them.

During the past two hundred years it appears that two species of birds, and fifteen species of mammals have been seriously threatened to-day. How striking it is when we consider the extent of total extinction of a large number of animals that has taken place in this world, and when this is compared with India, as has already been stated, this number seems insignificant. Only three species of birds have been recorded to have vanished from this country. Such threatened or vanishing and extinct species have been discussed below.

[1] India=Indian sub-region of the Oriental region. The border lines as drawn in the plates are approximate.

Pink-Headed Duck

II. EXTINCT AND VANISHING BIRDS

THE PINK-HEADED DUCK

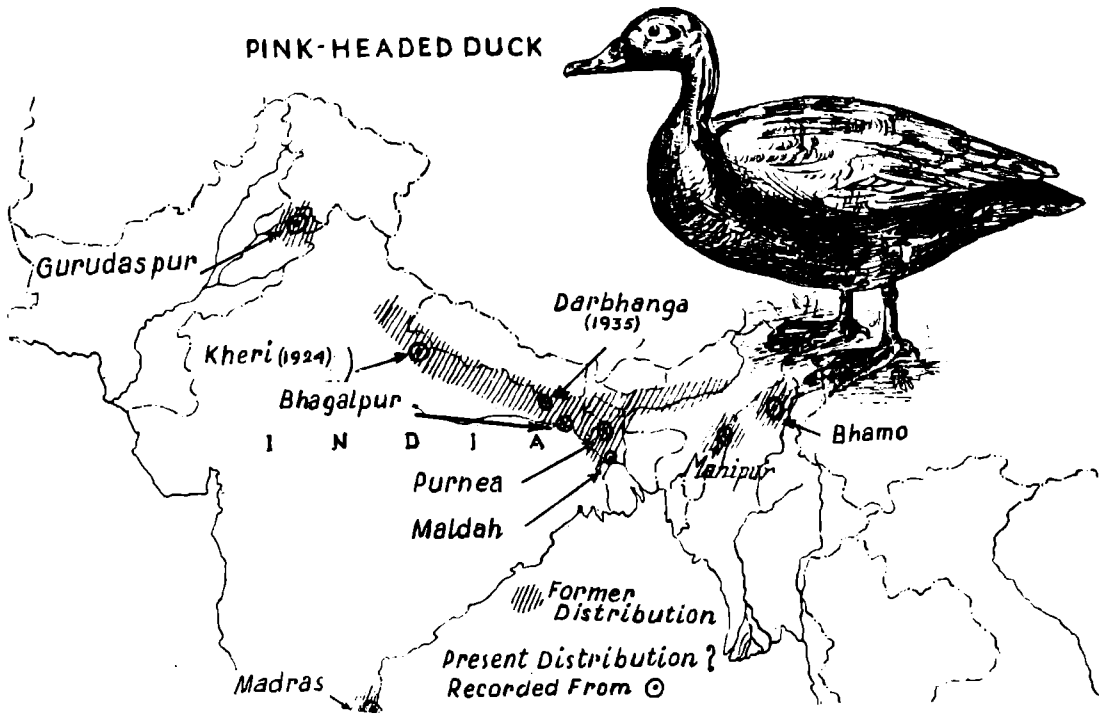
Rhodonessa caryophyllacea (Latham)

1790. *Anas caryophyllacea* Latham, *Index Orn.*, 2, p. 866, India.
Local names: Bengali: *Saknal*; Hindi: *Lal-sira, Gulab Sir*; Nepali: *Damrar, Dumar.*

Distinguishing characters: The pink-headed duck has the character of two different groups of water fowls. It is like a pochard in body-proportions, tracheae, plumage patterns etc., on the one hand, and on the other it has feet like a dabbling duck adopted to terrestrial existence. In field it can readily be identified by its rose-pink head and neck and dark brown upper- and under-surface. Females are duller than males. This bird is generally confused with the red-crested pochard which has a definite reddish and golden orange head in males and greyish brown in females. Young birds have the head and neck rose-white.

Size: Almost the size of a spot-bill duck. Length of wing 250-282 mm., tail 106-131 mm., and tarsus about 40 mm., weight ca. 1 lb. 12 oz. to 2 lbs. 3 oz. (ca. 800-1000 gms.).

Distribution: The present distribution of this non-migratory species is not precisely known and the species is believed to be extinct or nearly so, and no authentic records since 1930 are available. In the earlier part of the 20th century, it ranged in northern and eastern India from Uttar Pradesh to Assam and Manipur and extralimitally to Burma through the forested foothills of the Himalayas and its adjoining forest tracts in the plains. The centre of its restricted distribution is the Tarai of north Bihar. Stray records of bird from the Punjab and as far as south as Madras are also available.



The information contained in this article is based on the literature available to the author in India.

Habits, etc.: The pink-headed duck is resident of the forest of the *tarai* and the *duars*, living in thick cover of reeds and tall grasses in marshes, near about standing pools of water. The bird is uncommon and solitary and shy and was reported to occur in pairs during the breeding season. It is a surface feeder and is also reported to swim and dive. Its food comprises of all types of aquatic organisms which included vegetative as well as animal matter. The flight is light and easy and fast when suspicious. The call is a whizzy whistle like a Mallard but soft, sometimes with two syllables "wugh-ah". The females has a low quack.

Breeding habits: Sexual display, as observed in males in captivity resembles that of the Mallards, the head being drawn in between shoulders with the head feathers puffed out and, at times, the neck is lifted and stretched upwards for the call. Nesting is reported in April and lying in June and July in Purneah. The nests are generally built in tufts of tall grass of *Ekra* and elephant-grass (*Andropogon* sp.) near about solitary marshy ponds, which are simple but well formed made of grass and weed supplemented with a few feathers but no special lining. These nests are almost circular with a diameter of approximately 22 cm. and depth of about 10 to 12 cm. Egg clutch varies from 5 to 10 and eggs are smooth, spherical and ivory white and on an average 46×42 mm. in size.

The bird was found to breed in North Bengal (Malda District) and in North Bihar (Bhagalpur and Darbhanga District).

Status: There is no recent information of the availability of the species from anywhere of its range of its distribution during the last 25 years. The last record is by C.M. Inglis is 1935 from Darbhanga District (Bihar). In captivity it thrived till 1945.[1]

[1] H. G. Deignan in a *litt.* to Sálim Ali says: "Sir David Ezra showed me a living male in his aviaries in Calcutta in 1945."—[Ali, S. 1960. The pink-headed duck. *Wildfowl Trust 11th Annual Report 1958-1959*, p. 58].

White-Winged Wood Duck

THE WHITE-WINGED WOOD DUCK

Cairina scutulata (S. Muller)

1842. *Anas scutulata* S. Muller, *Verh. Nat. Landen Volkenk.*, p. 159., Java.
Local names: Assamese: *Chinaha, Rajdeohans*; Cachari: *Hagrani, Daophatontu.*

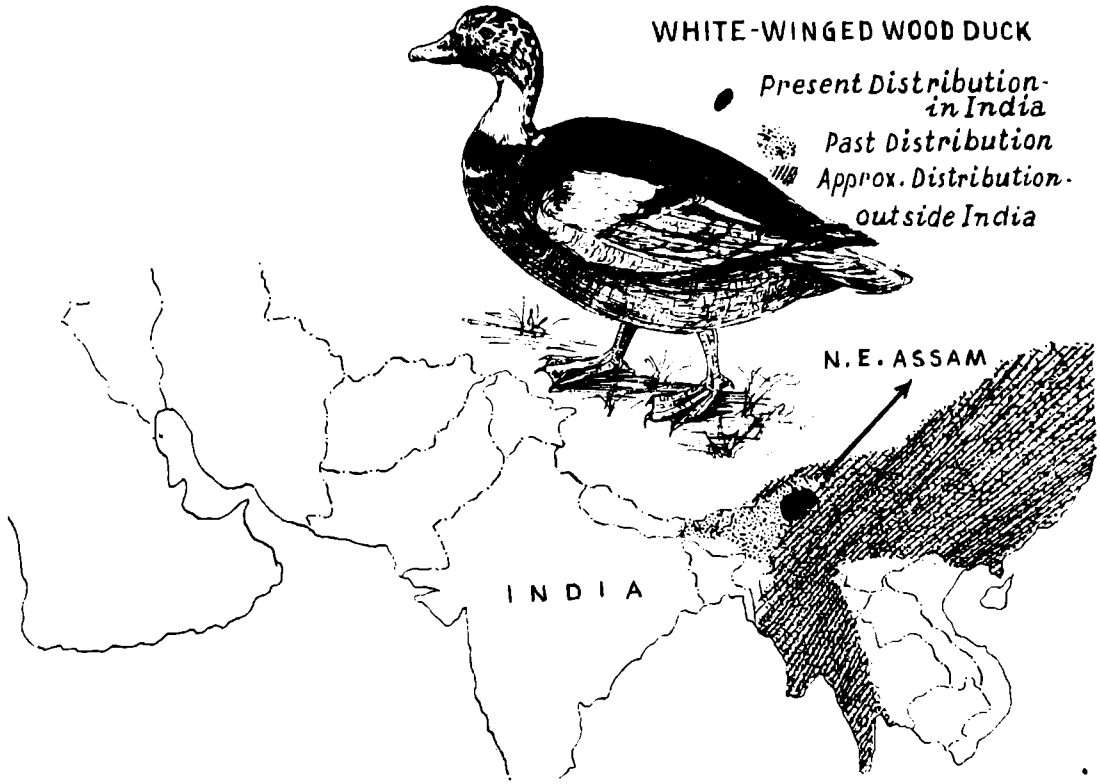
Distinguishing characters: It is almost the size of a *nukta* or comb duck and resembles the last in having spotted white and black head and neck but differs in having the lower parts chestnut brown instead of white and there is the absence of a comb. The conspicuous white patch on the upper wing-coverts and the blue grey on the median-coverts easily differentiate it from other ducks. The female does not differ from the male in the pattern and coloration except in the gloss of plumage.

Size: Males: Comparatively larger and heavier than the females, wings 363-401 mm.; weight about 3.4-4.3 kgs. Females: wings 305-366 mm.; weight about 2.2-3.1 kgs.

Distribution: Ranges from Assam, through Burma and Tenasserim to Malay peninsula, the Greater Sunda Islands (Indonesia) and Indo-China.[1]

Within Indian limits it ranges from the western districts of Assam (Goalpara, Kamrup, Darrang and Nowgong) to the eastern boundary of Lakhimpur District and also extends south to Cachar. It is also recorded from Lohit Frontier Division, the Mishmi Hills and Manipur.

Habits: It is a resident and non-migratory



[1] Existence doubtful now.

species, and inhabits practically inaccessible dense swamp virgin forest areas which are studded with *beels*, pools, sluggish creeks, etc. It may be found single or in pairs and sometimes in small parties of four or five. During the day it remains in shade of trees, perching on a branch or swimming. It avoids the heat of the sun. Its activities increase during the evening, night and early morning; it is a night feeder. Aquatic organisms like fishes, frogs, insects, crustaceans, snails, etc., water-plants and sometimes cultivated grains are its food. It is a good diver and a fisher. Its call is an unmistakable long drawn "honk" audible from a distance.

Breeding: Holes and hollows of trees are preferred for nesting. Sometimes a deserted nest or a simple nest of a tangle mass of rubbish and sticks is prepared on forks of branches. Breeding is from May till August and eggs are large, pearly white and fine-keeled. It has not been known to breed in captivity in India.

Status: The species was common in eastern Assam in the late and early parts of the 19th and 20th centuries. Within three or four decades the population has deteriorated to such an extent that now one comes across it very rarely. Recent records of stray individuals as reported by Gee[1] (1958) are: A pair from Tezu and Brahamakund, Lohit Frontier Division, in 1947; three birds from Dum Dooma area in 1958; two pairs from Ranga Reserve Forest in 1958. The situation is rather alarming. Rigid conservation of the bird in a suitable place in the Lakhimpur District may stop the species from being wiped out from India.

[1] Gee, E. P. 1958. The present status of the white-winged wood duck, *Cairina scululata* (S. Muller), *J. Bombay Nat. Hist. Soc.* 55, pp. 569-575.

THE MOUNTAIN QUAIL

Ophrysia superciliosa (J. E. Gray)

1846. *Rollulus superciliosus* J. E. Gray, *Knowsley Menagerie., Aves*, 1, p. 8, pl. 16., India—Mussoorie, Uttar Pradesh.
Local name: Nepali: *Sanokalotitra.*

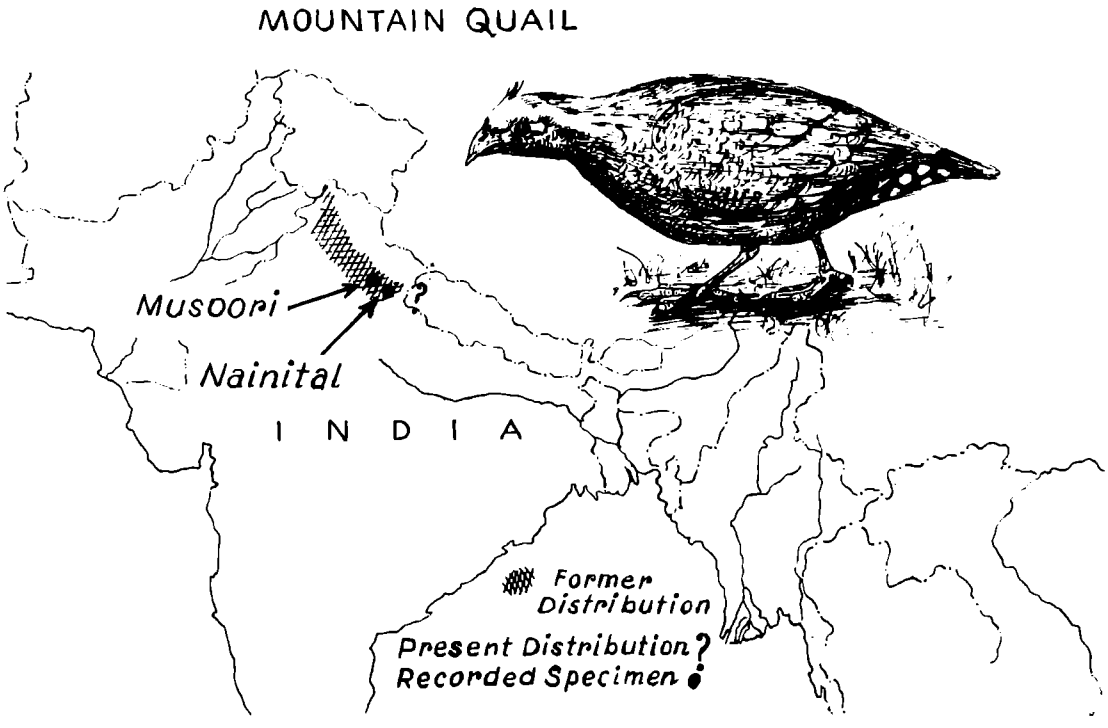
Distinguishing characters: The mountain quail is rather larger than the Common Grey Quail, differing from the latter in having a bigger tail. It is related on the one hand to the blood-pheasants (*Ethaginis*) in appearance, and on the other to the spurfowls (*Galloperdix*) in its habits, etc.

Coloration: Cock: Slaty grey above and below, tinged with olive; head black streaked with white, and with broad white supercilium. Upper and undertail coverts long, the latter black spotted with white; bill coral red; tarsus dull red. Hen: Cinnamon brown with black markings on nape and back; face pinkish grey with a white spot both in front and behind the eyes and a small white eye-brow. Young male is like female.

Size: Length about 10 inches (25 cm.). Wing rather short, average length about 90 mm.; tail about 75 mm. long.

Distribution: It is known from the Western Himalayas (Mussoorie and Nainital) at 5000-7000 ft. (*ca.* 1524-2134 metres) in grassland and bush. No recent information is available.

Habits and habitats: The bird is an inhabitant of very long grass and is a skulker. To flush it out is difficult unless dogs are employed and it refuses to fly. Once flushed, it runs among the long high grass for a short distance and settles down in bushes. According to Mackinnon its flight is slow heavy and short. The bird has been reported in conveys of 6-10 individuals, or in pairs or single. The food is probably grass seeds, insects etc. Its whistle, a short quail-like note, is peculiar, unlike any other bird. Since all the specimens were collected during the winter, Hume thought that the birds were migratory, breeding in south-east Tibet but its small wings and its non-flying habits



suggest that it is not migratory but a resident of the Himalayas.

Status : This bird is known only for about 30 years since its first description by J. E. Gray in 1846. Major G. Carwithen recorded it last from Nainital in 1876. Perhaps less than a dozen specimens are on record in world museums. Some records of collections are: Knowsley collection, 1846, India, 2 examples; Kenneth Mackinnon, 1865, Budraj and Benog, 6000 ft. Mussoorie, 2 examples; Capt. Hutton and party 1867, Jerepani, 5500 ft. Mussoorie, 5 examples; Major G. Carwithen, 1876, Sherkadanda, 7000 ft. Nainital, one example. No recent valid information is available although Ripley[1] reported that recently a specimen was shot in eastern Kumaon near a village Lohaghat; this needs confirmation. For all practical purposes the birds may be considered as extinct.

[1] Ripley, S. D. 1952. Vanishing and extinct bird species of India. *J. Bombay Nat. Hist. Soc. 50*, p. 903.

Great Indian Bustard

THE GREAT INDIAN BUSTARD

Choriotis nigriceps (Vigors)

1831. *Otis nigriceps* Vigors. *Proc. Comm. Zool. Soc. Lond.*, London, p. 35, Himalayas.
Local names: Gujrati: *Ghorar*; Hindi: *Sohun, Hukua, Dharm-chiriya*; Madhya Pradesh: *Bherar*; Punjabi: *Tugdar*; Tamil: *Kanal-nyle*; Telegu: *Batmeka.*

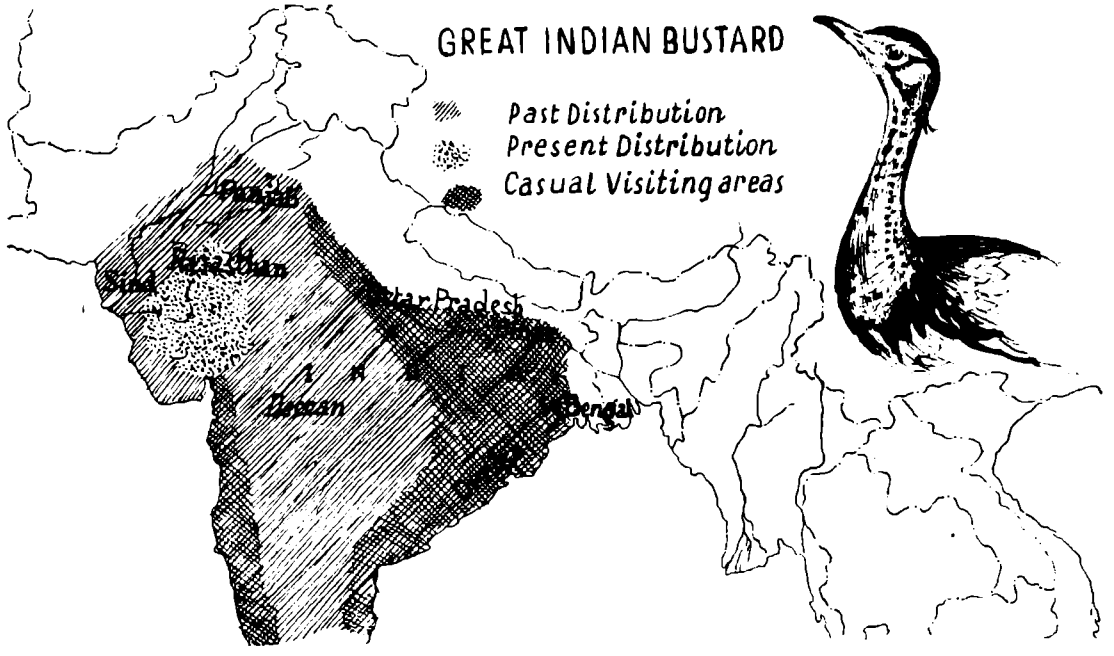
Distinguishing characters: This is the largest Indian game bird, its near relatives being represented by several species in Africa and one in Australia. It is a reminiscent of an young ostrich having a heavy body, long neck and long bare running legs. The plumage is dull brown above, finely vermiculated and white below. The crown is black; neck white and with a black gorget on the lower breast. Females are like males but are smaller.

Size: It is about the size of a vulture; when standing, it has a height little over one metre and wing-span about 2.6 metres (8 ft.). Wing-length. Males: average, about 700 mm.; females about 500 mm.; Weight: Adult males 9-19 kgs. (20-40 lbs.); females 6-8 kgs. (14-18 lbs.).

Distribution: The bird is confined to the arid and semi-arid tracts of India and West Pakistan. It is a resident in Maharashtra, Punjab, Gujrat, and Sind and straggles over a wide area in Madhya Pradesh, Uttar Pradesh, Bihar, West Bengal, Orissa and Malabar coast and Ceylon in the South.

Habits and breeding: It is essentially a bird residing in wide open, dry scrubby plains and waste, broken undulating lands which are interspersed with thorny bushes, tall grass and cultivated patches. It is normally solitary but flocks of usually 3 or 4 and sometimes as many as 25 to 30 individuals are also met with.

The cock, which is polygamous, acquires a small harem during the breeding season. Sexual display by males is exhibited by lifting its head



Remark: The 'casual visiting area' as indicated in the map is of late 19th century.

high up and putting out the feathers of its neck and breast, the neck sac being extended to touch the ground, and expanding its tail and turning it on its back.

During non-breeding time, the sexes segregate themselves. When approached, it walks from one cover to another and suddenly takes off, flying low but fast with continuous beat of wing without gliding. The call during the breeding season is low, moaning, deep resonant. When alarmed, it produces a short grunt 'hook' of low key. Chicks utter a sharp whistle when disturbed.

It is omnivorous, feeding on all types of animal food, specially arthropods, lizards, and vegetable food such as wild berries, grass seeds, cultivated grains, etc.

It breeds from July to September in grass-field or open waste where there are shrubs and grass covers. Usually a single olive or olive brown egg is laid. The female does all the incubation and takes care of the young ones.

Status : During the past fifty years, this magnificient bird has been persecuted so much that from many areas it has been exterminated. Large droves as described in the past are seldom seen. Stray individuals may accidentally be met with in Rajasthan, Gujarat, and the Bombay State. No specimens have been recorded from Andhra Pradesh since 1924, although flocks of 20-30 individuals were not an uncommon sight there. Rigid protection is highly desirable especially in certain districts of Saurashtra and West Rajasthan where isolated birds are reported to be still available.

THE TWO-BARRED OR JERDON'S COURSER

Cursorius bitorquatus (Blyth)

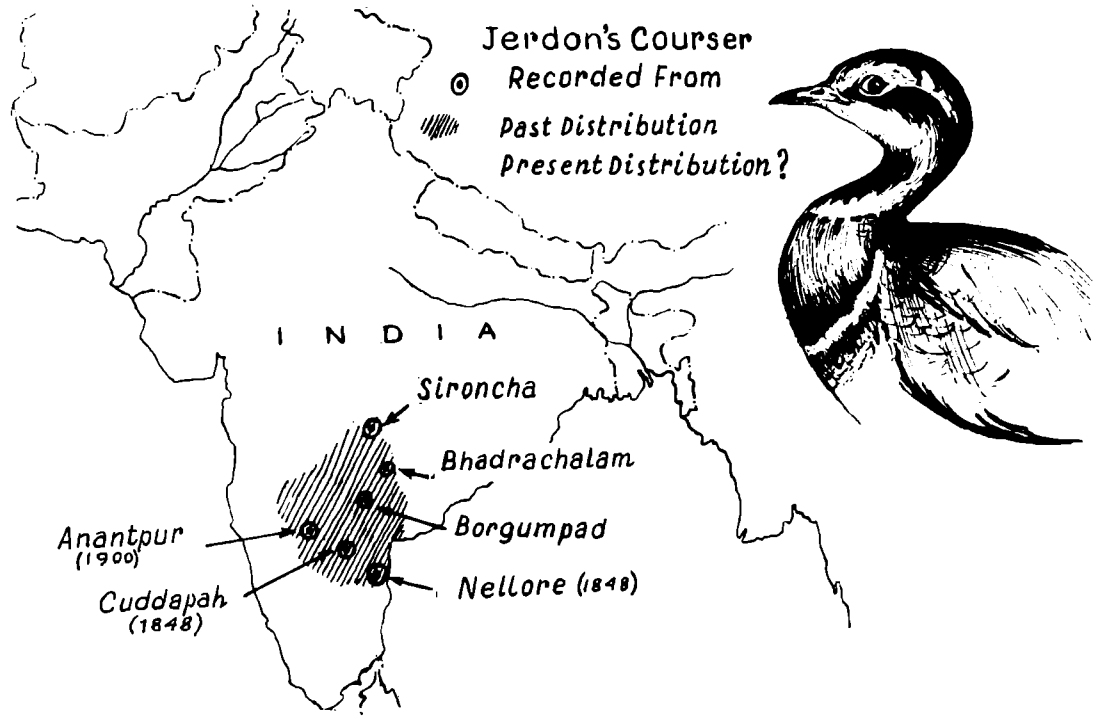
1848. *Macrotarsius bitorquatus* 'Jerdon' Blyth, J. *Asiat. Soc. Bengal*, Calcutta, 17, p. 254. Eastern Ghats of Indian peninsula.
Local name: Telugu: *Adava-ucuta-titti.*

Distinguishing characters: A light brown lapwing-like bird or like its cousin the Indian courser, differentiated from the latter by two white bands across the upper and lower breast and by comparatively a small and straight bill. Upper plumage is light brown, breast and flanks chestnut and lower abdomen grey. A prominent broad white supercilium runs from lores to nape. Legs are long with no hind toe, signifying adaptation for running.

Size: More or less like a partridge. Wings 161-168, tail 64-65, tarsus 68 and culmen 18-19 mm. in length.

Distribution: The bird once inhabited the forest country of the Eastern Ghats from the Godavari valley in the north to Madras in the south. Jerdon[1] in 1848 discovered it in Nellore and Cuddapah (Andhra State) and Blanford in 1898 obtained it in Sironcha, Bhadrachalam (north of the Godavari river in the late 19th century). Since then it was reported from Borgumpad in Hyderabad District and Madras. The bird was last seen (not collected) by H. Campbell in 1900 near Anantapur after which it has mysteriously disappeared. No specimen since 1871 has been collected.

Habits, habitats etc.: This courser, unlike its plains relatives in Africa, frequented light forested areas and scrub or deciduous bush jungles. It was observed in pairs throughout the year and sought to run for safety either by running on foot into thick cover or took to wing to escape. Jerdon[1] recorded that it had a plaintive cry. Eggs are said to be like those of the Indian courser, which are bright yellow obliterated by black patches and spots. A pair of eggs was found laid on bare ground in thin scrub jungle.



[1] Jerdon, T. C. 1864. Birds of India, 3, p. 629, Calcutta.

III. EXTINCT AND VANISHING MAMMALS

THE NILGIRI LANGUR

Presbitis johni (Fischer)

1829. *Cercopithecus johnii* Fischer, *Syn. Mamm.* 25, Tellicherry, South India.
Local names: Tamil: *Manthi*; Malayalam: *Karing*; *Korangu*; Toda: *Turuni*, *Kodam*.

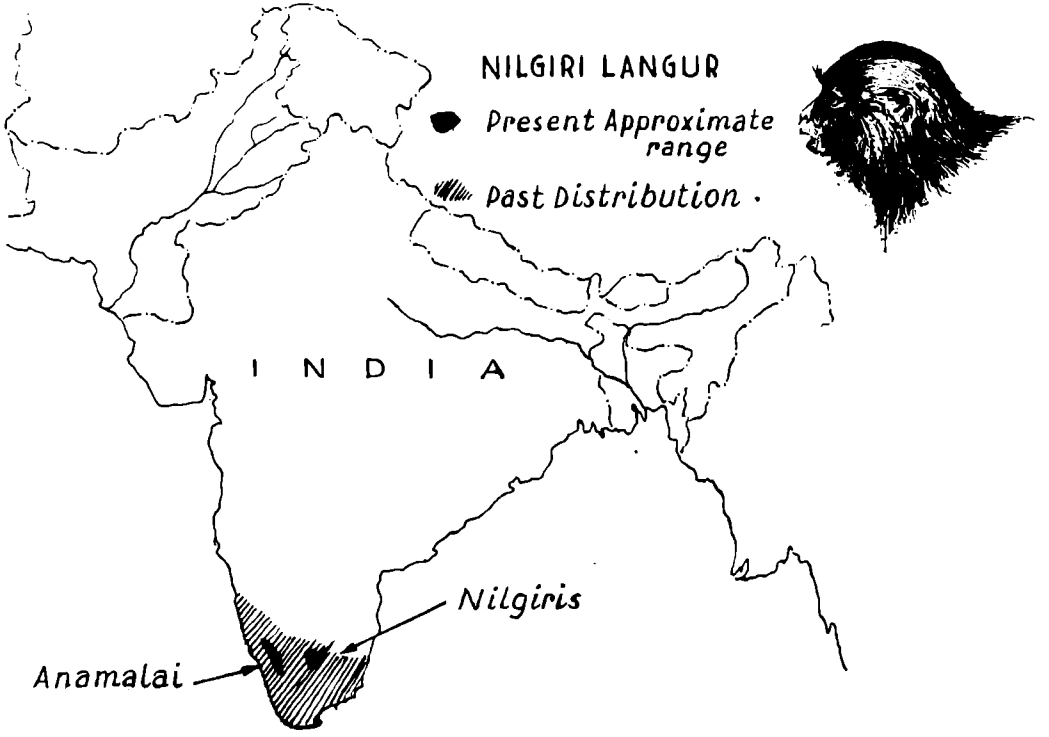
Distinguishing characters: The Nilgiri langur has a black or blackish brown attractive coat and a yellowish brown head. The head hair is longer but not radiating.

Size: Total head and body length is about 80 cm. Female is smaller than the male, tail is almost the length of head and body or slightly small.

Distribution: South Indian hill ranges from Western Ghats to Cape Comorin, Nilgiri, Anaimalais, Palni and adjacent ranges.

Habits: It is an inhabitant of dense forest and prefers *sholas*. It usually lives above 900 metres and moves about in small troupes of 5-10 individuals. Its diet comprises of forest fruits, leaves, flowers etc., and it sometimes invades orchards and cultivations.

Status and economy: The Nilgiri Langur has been persecuted for its fine fur and by some tribals, for food, medicine and superstitious cure etc. Every organ is valuable to tribals including blood. As it has been hunted beyond its thriving limits, it has disappeared from several areas during the last fifty years. Rigid protection for the last ten years has helped it to establish again in protected forests.



Indian Lion

THE ASIATIC LION

Panthera leo persica (Meyer)

1826. *Felis leo persicus*, Meyer, *Diss. inaug. genre Felium*, p. 6, Persia.
Local names: Bengali: *Singha*; Brahui: *Rastar*; Gujrati: *Untia-bagh* (camel-tiger); Hindi: *Sher, babar-sher, singh*; Kathiwari: *Sawah*; Kashmiri: *Suh* (male), *siming* (female).

Distinguishing characters: Basic colour: Body-hairs are pale or dark tawny (pale yellowish brown) all over, frequently speckled with black; tall-tuft and blackish outside of ears. A well-developed mane is present in adult males, but absent in young males and in females. Tail is tufted at tip; a tuft of hair is found on elbows. The Asiatic race differs from the African one as follows: on the average the former is smaller with mane scantier but with fuller coat of body-hairs and longer tail-tuft and elbow-tufts; its skull also differs in certain respects. Cubs are spotted or striped.

Size: Length (with tail): About 9½ feet (285 cm.). Height: About 3 feet (105 cm.). Length of hairs of mane: 10-12 inches (25-30 cm.). Males are larger and heavier than females.

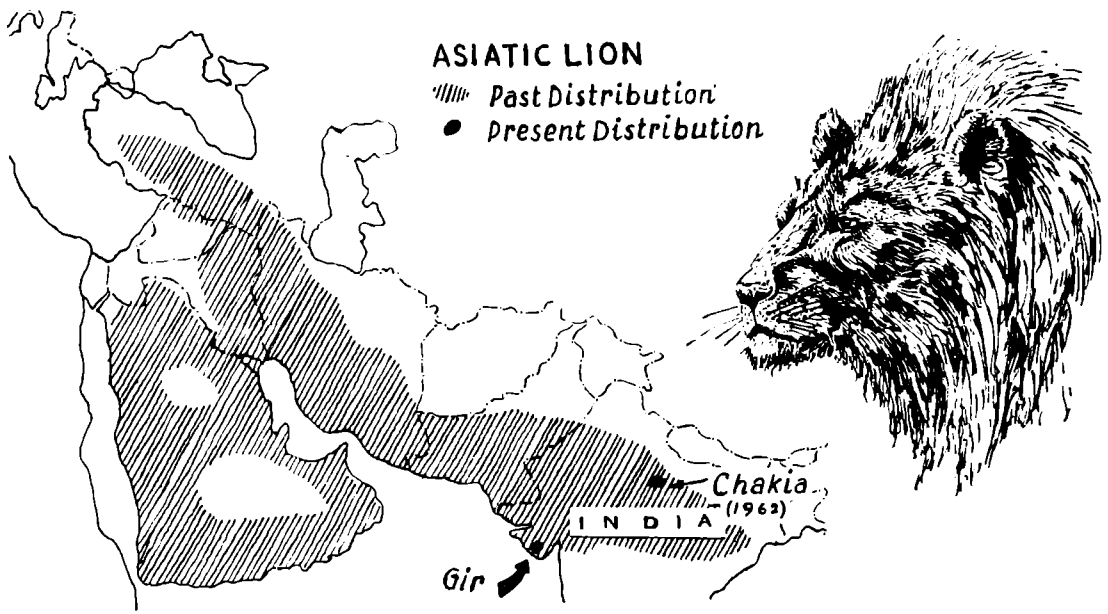
Races: Two main races are known: *Panthera leo leo* (Linnaeus), the African race and *P. leo persica* (Meyer), the Asiatic race.

Distribution: Panthera leo leo: practically throughout Africa.

Panthera leo persica: Practically extinct from Asia, except from a few hundred square miles of the Gir Forest in Kathiawar in India.

Habits: It likes more open and drier country than the tiger. Also, unlike the tiger, it is gregarious, and is often found in small groups resting under the shade of trees in day-time. It usually hunts at night. Its roars are heard throughout the night, and especially at dusk.

The Gir Forest in Kathiawar, now their only home in India, and indeed in Asia, is an area of about 500 sq. miles of rugged, open country with mixed deciduous and thorny scrub forest of stunted *trees* (teak, banyan, *palas, jambul* and *bhor*) and paches of bamboos, together with an undergrowth of thorny bushes of dense acacias, euphorbias, *Zizyphus*, etc. and grasses. Its food, in the Gir Forest, consists of game, *e.g.*, deer, antelope, wild



boar, foxes, monkeys, etc., as well as cattle. It hunts singly as well as in troops.

Breeding : It has no definite breeding season, but usually mates in October and November ; the young ones are born in January and February. The period of gestation is about 116 days. The minimum interval after which a female produces young is 18-24 months. A female first gives birth when she is about 2½-3 years old. Litter-size is usually 2, sometimes up to 5. Unlike the tiger, the lion stays with the female for a long period after the young are born.

Status : About the year 1880 it was common all over central and northern India (north to Hariana in the Punjab, west to Sind and east to Palamau in Bihar) and in Western Asia. But it soon declined in numbers and by 1890 it was already on the verge of extinction, in India only a few heads being left in the Gir Forest (Kathiawar) and in Rajasthan ; it was still fairly common in Iraq and South West Iran. By 1913 barely dozen heads were left in Asia (in the Gir Forest), but stringent protection has revived their numbers and census carried out by Wynter-Blyth[1] (1959) suggested the presence of about 290 lions in the Gir Forest.

In historic times, the lion extended in the west even to South-East Europe.

[1] Wynter-Blyth, M.A., 1956. The Gir Forest and its lions. *J. Bombay Nat. Hist. Soc.* 53 (4), p. 529.

Remarks :

A new home for the lion was created in Chakia (Chandraprabha Sanctuary) near Varanasi (Uttar Pradesh) in 1957 when a lion with two lioness were released but they properly established themselves in 1962 and in May 1963 the strength increased to seven.

THE SNOW LEOPARD OR OUNCE

Panthera unica (Schreber)

1776. *Felis unica* Schreber, *Saugeth.* 3: pl. 100 (1776) & text, p. 386, 586 (1777).
Local names: Kumaon: *Burhel haye, Burhal*; Garwali: *Burhel he*; Bhotia: *Zig, Ikar, Sachak*; Lepcha: *Pahle.*

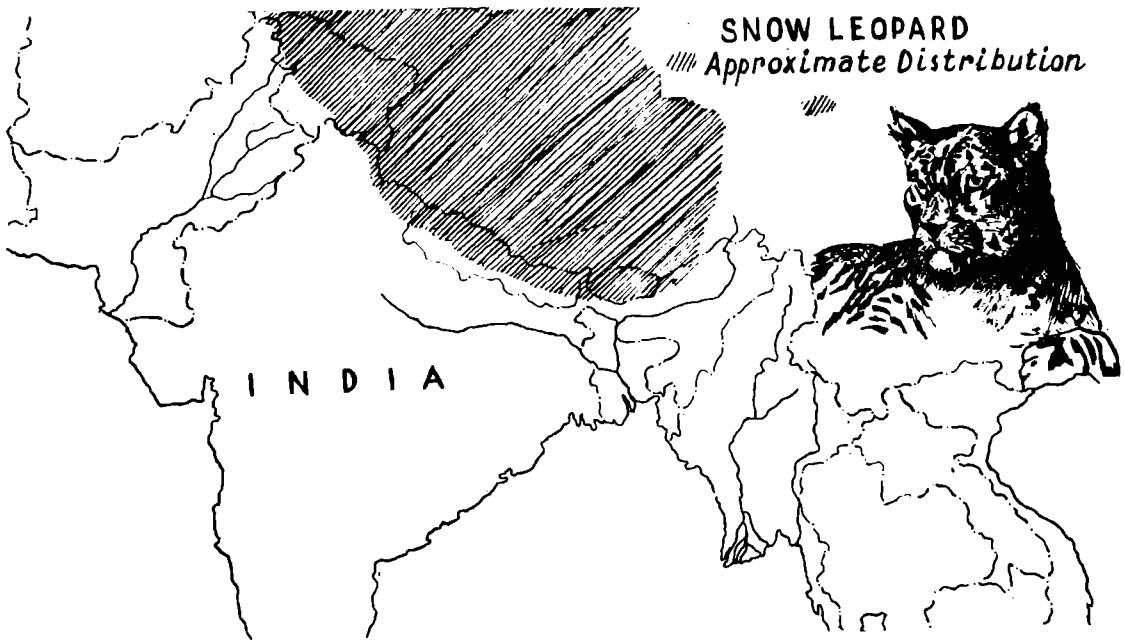
Distinguishing characters: The snow leopard is smaller than the Indian panther having a short face and head, longish thick fur and comparatively longer bushy tail. The colour of the coat is whitish creamy to grey above and pure white below. There are solid black spots on the head and shoulder and rosettes on the body.

Size: The total length of the animal varies from 200-230 cm.; tail 90 cm.

Distribution: The species extends almost throughout the Himalayas and other connected mountaineous ranges of Central Asia, Altai and Tibet. Within Indian limits, its distribution is confined from Kashmir to Sikkim.

Habits: The snow leopard inhabits snow covered rocky mountains above the tree line between 2000-4000 metres, migrating up and down with climatic variations. It is nocturnal and attacks game as large as markhor, ibex, bharal, but normally it feeds on musk deer, hares, marmots, rodents and birds and also takes to cattle lifting.

Status and economy: One hundred years back, the snow leopard was as common as leopards of the plains, but due to great demand for its attractive coat in the present century, it has suffered serious depletion. Its coat makes fashionable ladies' dresses, men's jacket, hand-bags, hand-gloves, cushion-covers, lining etc. It has been persecuted and trapped to a great extent in Kashmir where the animal was described as abundant. Trade in fur was regular and in appreciable volume even before thirty years. These factors show a grim picture of the status of the species. Since its fur can be readily sold there has been an unbalanced human predation, resulting in depletion of the population and a set-back in the fur-trade.



THE INDIAN CHEETA (OR INDIAN HUNTING LEOPARD)

Acinonyx jubatus venaticus (Griffith)

1821. *Felis venatica* Griffith, *Vert. Anim Carnivora*, p. 93, India.
Local names: Bengali: *Kendua-bagh*; Canarese: *Chirch, Sivungi*; Gond: *Chitra*; Hindi: *Cheeta, Jaggar*; Telegu: *Chita-puli*.

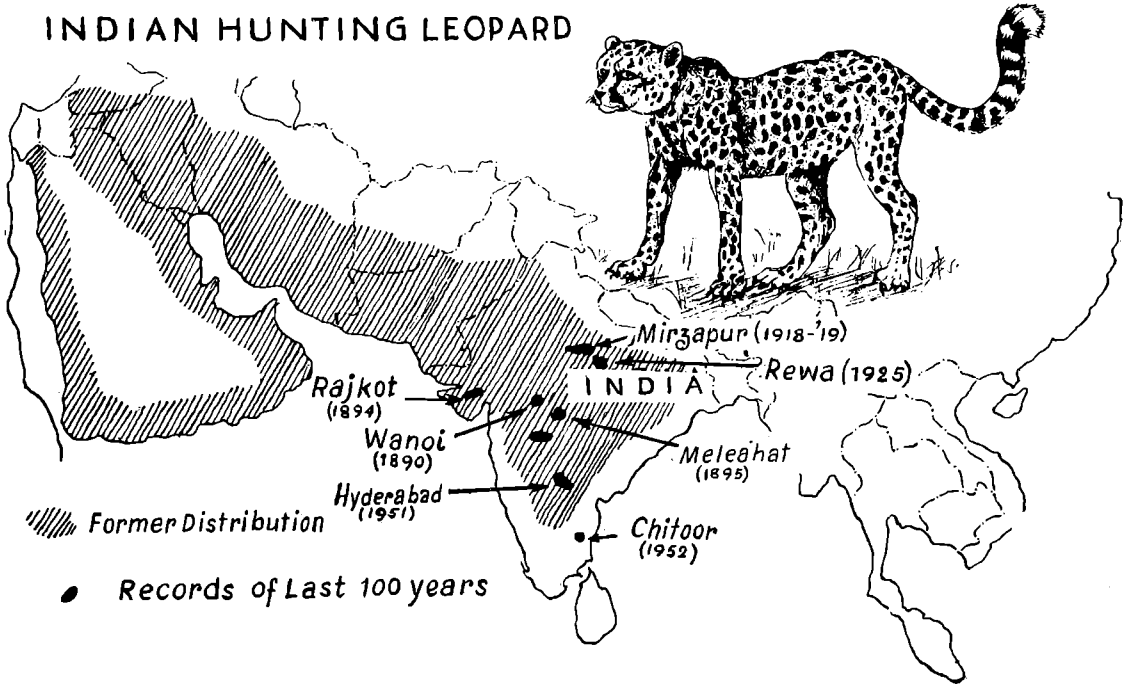
Distinguishing characters: It is a long-legged, slender-bodied, short-headed "leopard-like" cat with a tail exceeding half the length of head and body. It is distinguished from other members of the cat family by the absence of claw-sheaths.

Colour: Upper parts of head and body and outer surface of limbs varying from tawny to bright ruddy fawn; whole of underpart from chin to tip of tail buffish white; a conspicuous black stripe extending from eye to upper lip on each side; upper coat with closely-set solid black spots, quite different from the black rosette markings in leopards. Cubs are with a coat of long grey hair apparently without any spots but in the underfur traces of spots are present and there are black stripes down the nose.

Size: Average length, including tail, about 7 feet (210 cm.) and height about 2½ feet (75 cm.).

Races: There are several races of the species of which a single one is represented in India and West Asia.

Distribution: During the 19th century, the Indian Cheeta ranged from Bengal to the Punjab and to the Deccan in Peninsular India. Relatively recent records of heads collected from India are from Meleghat (M.P.), 3 examples in 1890; Wanoi (M.P.), a single example, 1895; Rajkot, a female and 4 cubs, 1894; and Mirzapur District (U.P.), 2 examples in 1918-1919; Finn[1] (1929) mentions 4 examples from Rewa district (M.P.) in 1925. Talbot[2] mentions a definite report in 1951 when 3 were shot in one night and followed by



[1] Finn. F. 1929. Sterndale's Mammalia of India, p. 97, Calcutta.
[2] Talbot, L. M. 1960. A look at threatened species. *Oryx*, 5, p. 255.

Hunting Leopard (Cheeta)

the sighting of a pair in Hyderabad. The last record of the Cheeta is by Kirkpatrick[3] who saw one specimen in April 1952 at Chitoor District (Madras State).

The extra-Indian distribution of the species is chiefly the arid or semi-arid tracts of south, east and north Africa, and southwest Asia, practically similar to that of the lion. In India, its range almost overlaps that of the blackbuck.

Habits: Its favourite haunts are low, isolated rocky hills near the plains from where, taking an advantageous position from a height, it stalks its prey which are mostly antelopes and deer. It hunts generally in pairs or sometimes in families. It creeps within range like a panther, taking advantage of cover, and charges with terrific speed like a hound and, with a final rush, runs down the quarry, inflicting fatal injuries by its forefoot, and then fastens on the victim's throat. Its speed, for a short distance, exceeds that of any beast of prey and if it fails to get its quarry in the first spurt, the chase is abandoned.

Breeding: Practically nothing is known about its breeding habits in India. In the African race the period of gestation is stated to be about three months and the litter-size is two to four.

Status: For all practical purposes the Cheeta may be considered as extinct in India. The species seen to-day in captivity are all from Africa.

For centuries, the Cheetas have been tamed and trained for sports by princes and noblemen in India and other countries. The tamed animal remains in good temper and behaves faithfully. The general method of hunting with the Cheeta is to take the animal blind-folded in a cart to the scene of the hunt and to unhood it within a reasonable distance of a herd of antelopes or deer.

[3] Kirkpatrick, K. M. 1952. A record of the Cheetah in Chitoor District. *J. Bombay Nat. Hist. Soc. 50*, p. 931

THE INDIAN WILD ASS

Equus hemionus khur Lesson

1827. *Equus khur* Lesson, *Mammalogie*, p. 347. The Rann of Cutch, India.
Local names: Hindi: *Ghor-khar*; Persian: *Ghour, Kerdecht.*

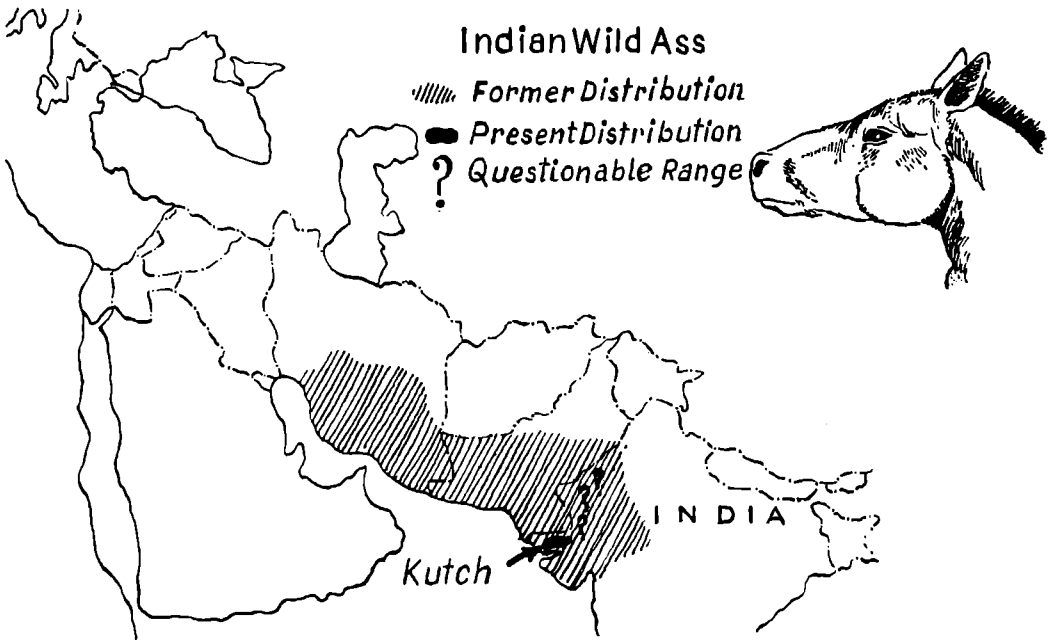
Distinguishing characters: The wild ass is a sandy grey to chestnut coloured equine resembling a mule. The mane and tail are dark brown. The mane is short and erect and continues as a dark brown stripe along the back sumberging with the tail, which is bushy. The muzzle, legs, and underparts are white.

Size: The height of the ass at shoulder varies from 110 cm. to 120 cm.

Distribution: West India (Rann of Kutch) and straggles to North-Western Thar desert (Bikaner). Its presence in South-Eastern Persia and Baluchistan is doubtful now.

Habits: The ass is generally found in small and large parties of 2-30 individuals. It grazes throughout night in grass covered expanses known as *bets*. It swiftly moves about from place to place in search of food maintaining at an average speed of 50 km. per hour. Mating takes place during rainy season and foal is born after 11 months.

Status: The Indian wild ass had an extensive continuous distribution from Persia to India about two hundred years back. Its occurrence in the desert of Balchuistan and West Thar in the late part of the 19th century is remembered by the old inhabitants of those areas. With the increasing population and greater intensity of land use, the wild ass population of Rann of Kutch, which only survives, became isolated and the species has disappeared from the rest of the area of its former distribution. There are 800 and odd numbers thriving now:[1] During the Second World War these animals were captured to breed super mules for the army, and in consequence, contagious diseases from the domestic stock prevailed among the wild stock, and a good number were affected. If this animal remains unmolested, it would help to preserve the second wild representative of the horse family.



[1] E. P. Gee in 1962 estimated 860 wild asses in India and another ten in W. Pakistan. [Gee, E. P. 1964. The wild life of India (London) p. 78].

THE RHINOCEROSES

The few living species of rhinoceroses are the remnants of once flourishing family of animals which roamed all over the world in past geological times. Today, they are confined to the Old World and constitute a single genus *Rhinoceros* (split into two by some authorities) comprising two species in Africa and three in southern Asia.

The rhinoceroses are huge, ungainly creatures, with a thick, blackish skin which is folded into characteristic shields or folds and is practically naked or at most with a few scattered hairs. They possess one or two medianally placed horns on the snout. The horn is not bony but is composed of closely matted horny fibre formed from the skin; it has no connection with the skull-bones although there is a slight enlargement of the nasal bone to serve as a support for it.

The three south Asian species are described below:

THE GREAT ONE-HORNED OR INDIAN RHINOCEROS

Rhinoceros unicornis Linnaeus

1766. *Rhinoceros unicornis* Linnaeus, *Syst. Nat.*, I, p. 104.
Local names: Hindi: *Gainda*; Bengali: *Gandar.*

Distinguishing characters: Its skin is blackish grey throughout and devoid of hairs except on tail and ears; on sides it is studded with convex tubercles 1-2.5 cm. in diameter. Female has a sharper and longer median horn, the horn in male being blunted and shortened by frequent combats.

Size: Length (to tip of tail): About 13 feet (3.9 metres). Height: 5-6 feet (1.5-1.8 metres). Weight: Mature male about 3,650 lbs. (or 1647 kgs.). Mature female about 3,540 lbs. or 1,577 kgs.). Length of medium horn (along curve): usually 37-40 cm. rarely up to 60 cm.

Distribution: It is confined today to the Eastern Terai area of North India, e.g., Chaitwan area in East Nepal and in isolated patches in Assam, *e.g.*, Sibsagar District and the Balipara Frontier tract.

Habits: It is believed to be gradually solitary but occasionally it is found to graze in groups. It prefers swamp and grasslands but is also found in thin jungles along low hills. Usually, it feeds on grass. In Nepal, it is believed to have special places for dropping excreta where, as a consequence, dung-heaps accumulate. This habit, however, is not confirmed by recent observers in Assam—such dung-heaps are found all along "rhino routes" in a jungle and any rhino passing that way may use them. The animal is not fierce by nature; it does not charge at sight except when the female is with her calf. Usually, it allows visitors on elephant back to approach within about 10 metres. Occasionally, it charges human beings if approached too close. The tiger seems to avoid the rhino; the deer and the buffalo appreciate this fact and often graze in company of the rhino, evidently for protection. The only sound normally produced is a peculiar grunt which is repeated frequently when excited; while courting, the female (both sexes?) 'whistle'. In quicksands and in shallow pits, the rhino is helpless and has to be helped out. When caught, it may utter deafening cries.

Breeding: Breeds all the year round. Gestation period, 18-19 months; said to be 12 months in Nepal, but this needs confirmation. Litter size: One calf born about October. Life-span about 50-70 years.

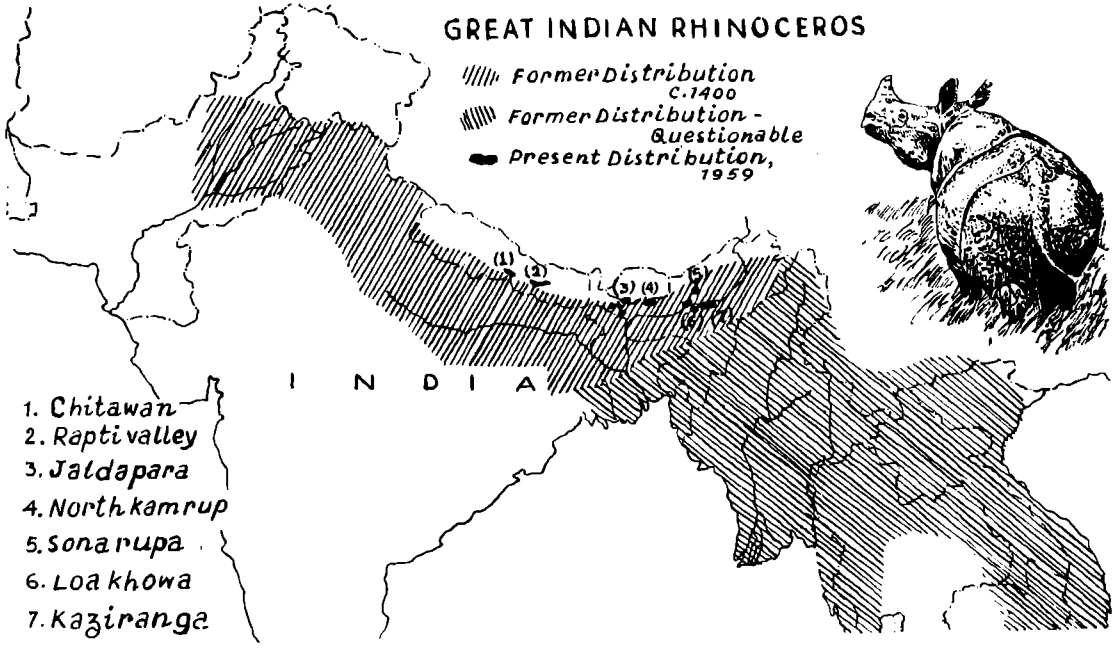
In Assam, it generally mates in the spring, i.e., end-February to end-April, but also in other months. Copulation occurs as in buffaloes, the male riding on the female, and may last about an hour and a half or longer; after this, the male climbs down and the pair starts grazing together. During courting, the pair runs and plays about together, the female passing urine frequently and making a whistling sound; the male snorts. The newly born calf measures thus: Length (with tail): 112 cm.; height 55 cm.

Status: In 1906, it was nearly extinct, having been reduced to barely a few dozen heads in Assam. But protection in the Kaziranga, Sona-Rupa and Manas sanctuaries in Assam and the

Remark: The Zoogeographical maps of the Asian lion and Rhinoceroses have been partly adapted from L. M. Talbot's article, 'A look at the threatened species, *Oryx*, 5, (4 & 5).

Jaldapara sanctuary in northern Bengal has helped their preservation and quite a few hundred heads now exist. In historical times, it extended west to the Punjab. It is believed to have existed till 1850 upto the northern end of the Rajmahal Hills. In the days of the Emperor Babar it was common, in the Punjab as far west as Peshawar. Semi-fossilised remains have been found in the Banda District of North-West Frontier Province (West Pakistan) and near Madras in the south. Thin bones have been found in the Harappa remains in the Punjab variously estimated to be from 4500-1500 B.C. In the Mahenjodaro remains of Sind which is believed to be contemporaneous with Harappa civilisation, no rhinoceros remains have been found. Estimates of the existing numbers in 1960 are as follows: West Bengal (Jaldapara) 45; Assam (Kaziranga) 260; other places 60-70.

General remarks: Its flesh, blood and horn and urine are in great demand by oriental peoples for offering libations; the horn is believed to possess medicinal properties, it weighs about 2-2½ lbs. (906 gms. to 1000 gms.) and may fetch Rs. 1,000-2,000.



Indian Rhinoceros

THE SMALLER ONE-HORNED RHINOCEROS

Rhinoceros sondaicus Desmarest

822. *Rhinoceros sondaicus* Desmarest, *Desm. Mamm.*, 2; p. 399, Java.
Local names: Hindi: *Gainda*; Nagar: *Kunda*; Burmese: *Kyeng, Kyantsheng*; Malay: *Badak.*

Distinguishing characters: Its skin is dusky grey and naked or almost so, not tubercular but divided by craks into small, polygonal, scale-like discs throughout. Its body-surface is divided into several folds. A median horn on snout is present in male, but it is generally wanting in female.

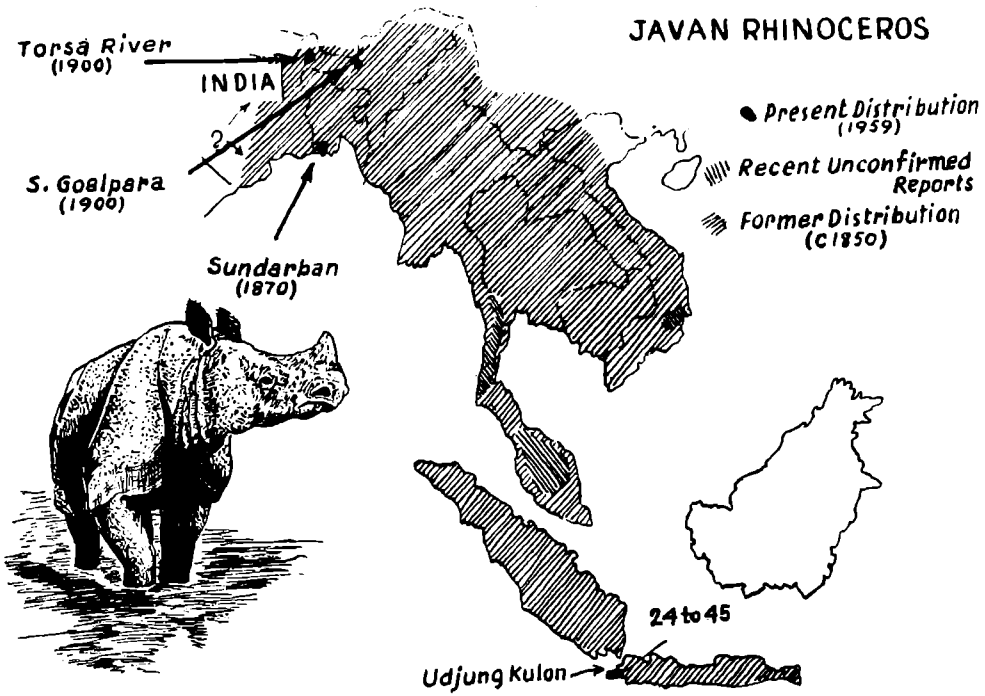
Size: Length: 10-11 feet (300-350 cm.). Height: About 5 feet to 5 feet 10 inches (150-175cm.). Length of median horn: About 8-10.7 inches (20-26 cm.).

Distribution: Today confined to the Malay Peninsula and Java (and possibly Sumatra), where it survives in small numbers under protection. A few specimens may still survive in the sub-Himalayan game sanctuaries of Manas and Sona Rupa in Northern Assam — but this requires confirmation.

Habits: It inhabits tree-forests rather than grass-lands, prefering forested hill-country upto about 7000 ft. (21,000 metres) elevation above sea-level. It feeds by browsing on leaves of all kinds of forest trees and shrubs, and the habit is believed to have assisted its wide geographical distribution as compared to *Rhinoceros unicornis* which is a grass feeder.

Breeding: Breeding season and gestation period is not known. Litter size is also not known, probably one.

Status: The last recorded specimen from Assam was from Manipur, 1874, and from Bengal in 1864, from Chittagong. About 1890 it was more widely distributed, occuring in Eastern India (the Sundarbans in lower Bengal; Eastern Bengal; Sikkim Terai and Assam) and thence *via* Burma and the Malay Peninsula to Sumatra, Java and Borneo.



THE ASIATIC TWO-HORNED RHINOCEROS

Rhinoceros sumatrensis Fischer

1814. *Rhinoceros sumatrensis* Fischer, Zoogn. 3 : p. 301, Sumatra.
Local names: Burmese: *Keyeng, Keyentsheng*; Malay: *Badak.*

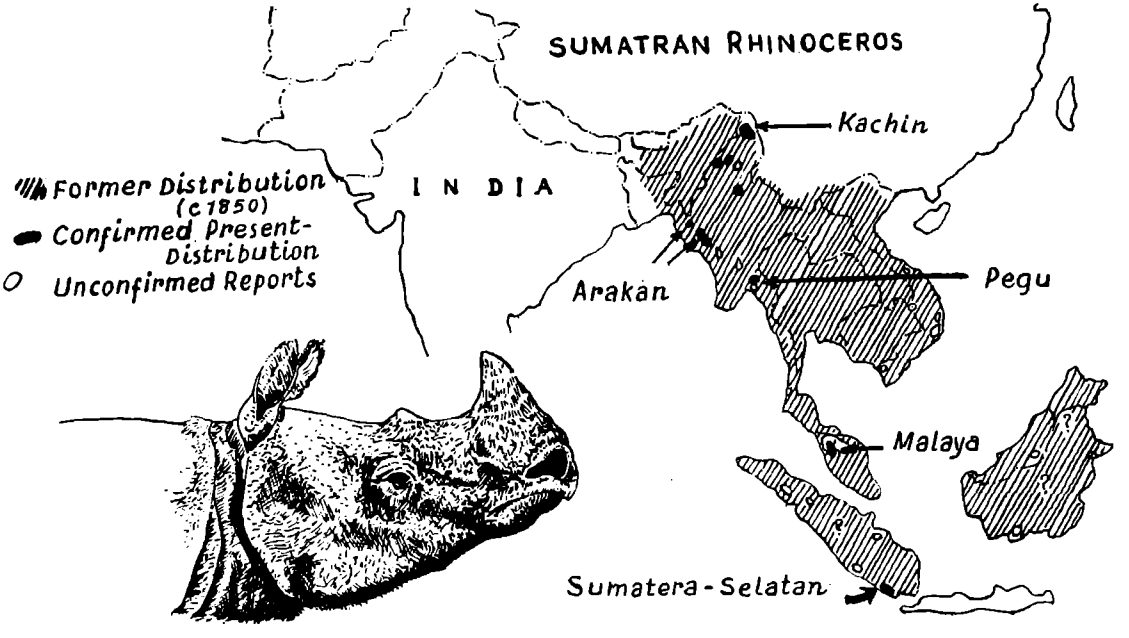
Distinguishing characters: Its skin varies from earthy brown to almost black; body-hairs are brown or black. It is is the smallest and the most hairy of the living rhinoceroses. Its body is thinly clothed with short hairs; ear and tail considerably hairy. Skin granular; folds present, though less marked than in the other two species. There are two medinally placed horns on snout; anterior horn longer and curved backwards.

Size: Length: About 8 feet (240 cm.). Height: About 3 feet 8 inches to 4 feet 6 inches (110-135 cm.). Weight: About 2000 lbs. (908 kgs.). Length of anterior horn (along curve): about 32 inches (80 cm.).

Distribution: It is found in small numbers in scattered patches in Central and Lower Burma, e.g., in Myitkina District, the Arakan Hills, the Pegu Yomas, Katha District and Lower Tenasserim. It is also found in small numbers in the Malay Peninsula, Sumatra, Java and Borneo. A few specimens possibly survive in Assam and Chittagong hills.

Habits: It prefers well-wooded forests; ascending upto 4,000 feet above sea-level. It feeds by browsing on leaves of trees and shrubs. It loves shade and vicinity of water and bathes in streams at night and in hot hours of the day. It has a habit of wallowing in mud, like buffaloes and pigs. Its tracks leading off from the "wallows" appear like large tunnels are hollowed out through forest by the rhinos. The "wallows" are usually visited singly or sometimes in pairs, the cow and the bull together. It descends to lower country in the monsoon rains and in winter. It is usually shy and timid but can be tamed easily. As in *R. unicornis*, it is said to have the habit of passing its excreta in the same spot, thus resulting in excreta heaps. Cubs stay with mother for a long time.

Breeding: Breeding season is not precisely known. Gestation period is also not known but one record gives it as 7 months. Litter size: Probably one.



Status: About 80 years ago it inhabited Assam, Bhutan and northern Bengal in India. To-day practically it is exterminated from India, though a few specimens may still survive in the sub-Himalayan sanctuaries of Manas and Sona Rupa in Northern Assam—this, however, requires confirmation. There is also a possibility of small number of isolated population in the Indian Lushai Hills and the Chittagong Hill tracts in East Pakistan.

Remark: Under Asiatic 'two horned rhinoceros' the nominate race *Rhinoceros sumatrensis sumatrensis* Fischer and the Chittagong or Hairy-eared rhinoceros, *Rhinoceros sumatrensis lasiotis* Buckland are included. The latter is represented within the Indian limits.

THE WILD YAK

Bos grunniens mutus (Przewalski)

1883. *Poëphagus mutus* Przewalski, *Third Journey in C. Asia*, p. 191. Alpine region of W. Part of Nan Shan, Northern Kansu, China.
Local names: Tibetan: *Dong, Brong-dong*; Hindi: *Banchour, Chamri gai.*

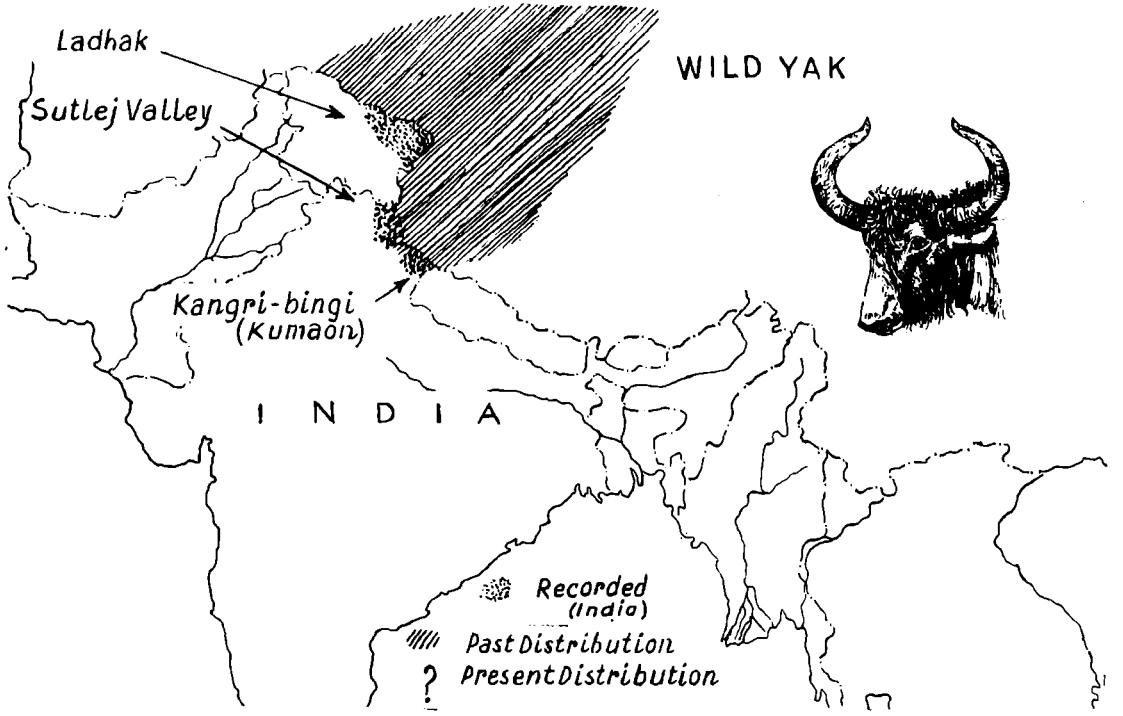
Distinguishing characters: The wild yak is a blackish brown, massive hairy animal closely allied to the bisons. Its flank, chest, shoulder, thigh and the lower half of the tail have tufts of elongated hair. The head is carried low with long massive and gracefully curved and smooth black horns. There is a conspicuous hump. There is no dewlap and the limbs are short and stout and terminate in large massive hoofs.

Size: The bull is about 170 cm. at shoulder and horns measure 70 cm. approximately.

Distribution: It inhabits high, desolate and rugged snow-covered mountains and valleys of Tibet and adjoining western Indian borders (Changchen-mo valley in Ladakh, Sultej valley and Kangri-Bingi pass of Kumaon hills).

Habits: The wild yak lives between 4270-7100 metres almost throughout the year facing in winter the bleakest situation in the inhospitable barren plateau where practically no vegetation exists. It lives in small herds but when there is sprouting grass in the spring, large herds are formed which compose of both sexes and of all ages. Its food consists of tufts of grass, shrubs, salt-encrusted earth and frozen snow when water is not available, and it may undergo starvation in the absence of food, during the cold when any weak and old ones who fail in the struggle are eliminated by nature. The herd generally moves in a single file over difficult ridges. The rutting season is in autumn and the young are produced in April-May.

Status and economy: The wild yaks skin has good commercial potentialities. Many articles of commerce such as saddles, saddle-dirth, bridle reins, whips, boots, etc., are made out of the



skin due to its durability. Wool is used for rope and clothing purposes. The tail is used as a flywhisk or a fan in religious offerings and ceremonies. The animal provides fat and meat for the nomads and its heart and blood are used by Mongols for medicinal purposes. The species has thereby suffered depletion so much so that wild yak has disappeared from most of its regular tracts,[1] and perhaps it now exists in very remote and inaccessible areas. The wild yak has been practically replaced by its domesticated cousin and it serves the nomads principally as a beast of burden.[2]

[1] Lydekker remarked, 'In Ladak the great district for *yak* is the Chang-Chenmo valley and the dreary regions between this and the Upper Indus; but these animals are yearly becoming scarcer'.

[2] 'The semi-domesticated *yak* of the elevated plateau of Rupshu are very large and generally, if not always, as dark-coloured as their wild hindred' [Lydekker, R. 1900. *The Great and small game of India, Burma and Tibet.* (London), p. 68].

THE MARKHOR

Capra falconeri falconeri (Wagner)

1839. *Aegoceros (Capra) falconeri* Wagner, *Munch. Gelehrt. Anz.* 9: p. 430, Kashmir.
Local names: North and east Kashmir, *Raphoche* (male), *Rawache* (female); Punjab and Jammu: *Markhor.*

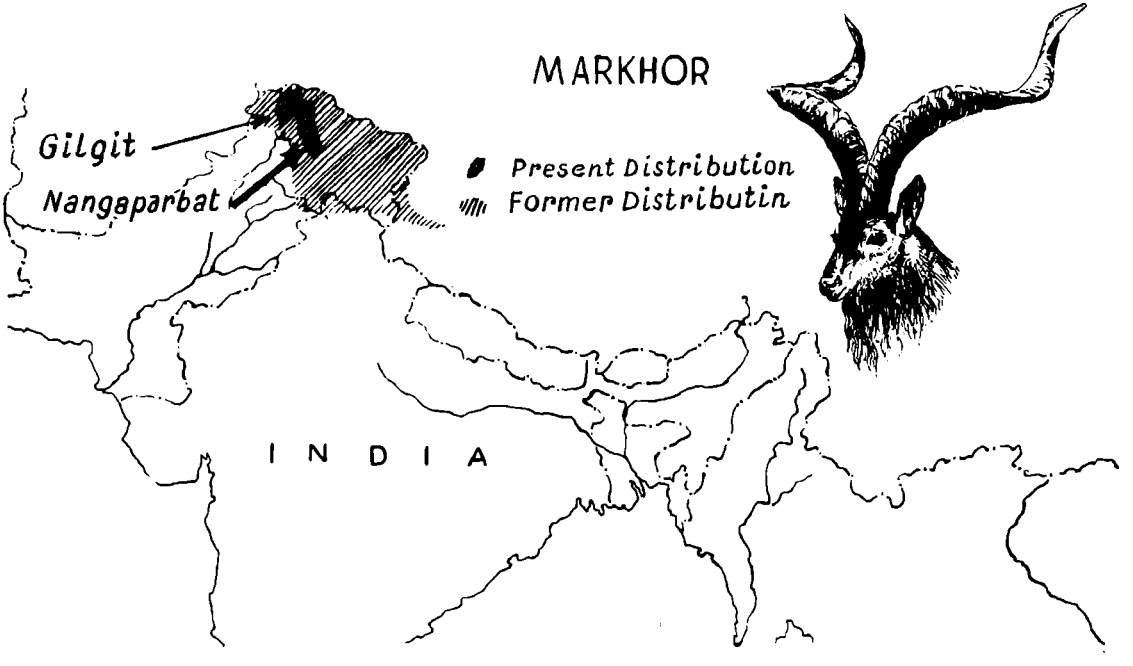
Distinguishing characters: The markhor, meaning a snake eater, is a long silky haired, thick-coated large and heavy animal. The male has a long black beard, shaggy grey mane and magnificent large spiral horns. The female has short twisted horns and some have scanty beard. The winter coat of male varies from rusty iron grey to reddish brown.

Size: Height at shoulder of males 90-100 cm., horns measure 165 cm.; females are half the size of males.

Distribution: The Himalayas from the valley of Kashmir westwards and Hindukush.

Habits: In the Himalayan and Pir Panjal ranges, the markhor inhabits dense pine and birch forests and in Suleman range it lives on the barren and bare slopes. In general, it inhabits difficult, steep, percipitous and high rocky cliffs for the most part of the year and rarely goes higher than snowline. In winter, it descends to lower valleys. The animals generally occur in small and large herds, 4-40 in number, but old males generally keep aloof and join herds between October and December when the rut takes place. In May and June one or two young are born.

Status: Markhor is the finest of the Kashmiri sports. It used to roam about some fifty years back in large herds in the tributaries of Astor river and Harmosh Nullahs, and in the Pir Panjal areas. Although the animal is gifted with the agility in climbing the most difficult and dangerous cliffs in order to avoid predators, man by use of modern long range telescopic fire-arms has been able to reach it. Markhor population has seriously been affected due to rentless poaching by nomads, modern sportsman and the increasing human population that has penetrated in the land of markhor where the domestic cattle has been let loose. This has given a chance to introduce contagious diseases. Preservation of the species is therefore, open to challange in the vast and rugged teritory which the species occupies.



THE NILGIRI THAR

Hemitragus hylocrius (Ogilby)

1837. *Kemas hylocrius* Ogilby, *Proc. Zool Soc.* p. 81. Nilgiri Hills.
Local names: Malayalam: *Mulla-atu*; Tamil: *Warri-adu*; Canarese: *Kard-ardu*.

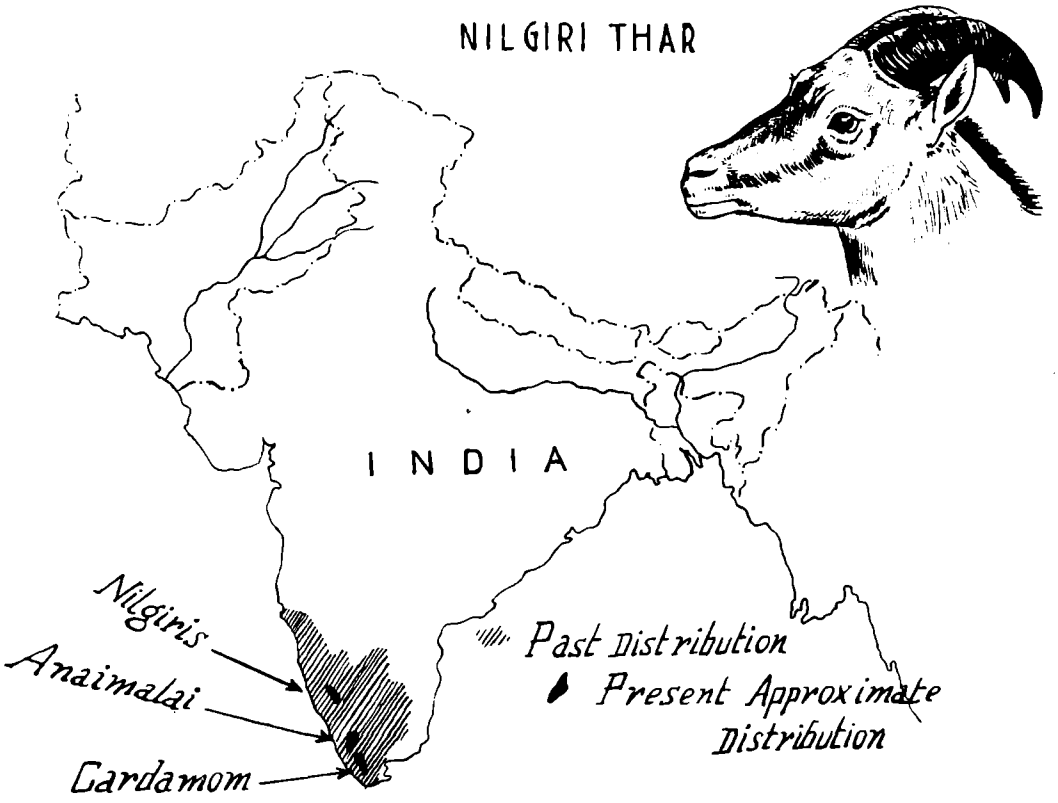
Distinguishing characters: The Nilgiri Thar is a dark brown, short bodied wild goat. It has a short crisp coat and a short mane on neck and shoulder, and a single pair of teats.

Size: Height at shoulder is in average 100 cm. and horns measure 35-44 cm.

Distribution: Nilgiris, Anaimalais, and Western Ghats.

Habits: The Nilgiri Thar is usually met with at altitudes of 1000 to 1220 metres and haunts crags and scraps and grazes on patches of grass in early morning and evening. It is alert and agile and to escape from danger it climbs the most difficult ridges. There is no final breeding season and usually two kids are born.

Status: The Thar has many predators like the panther, tiger and wild dog, but the greatest danger has been brought about by man. It has been shot excessively and as such its number has considerably reduced. The young and females are hunted specially for their excellent meat. During the later part of the 19th century its population as estimated was about 1500 in the Nilgiris when half a dozen to half a hundred heads were occasionally met with but some ten years back the population was reduced to about 400. Since then, special care has been extended to protect this interesting species which is a Himalayan element represented in South India. This form helps in tracing the earth's history and its climatic conditions prevailing during that period.



THE KASHMIR STAG (HANGUL OR "BARASINGHA")

Cervus elaphus hanglu Wagner

1844. *Cervus hanglu* Wagner, *Schreb. Saugeth Suppl.*, 4, p. 352 (f.n.). Kashmir.
Local names: Hindi: *Barasinga*; Kashmiri: *Hangal, Honglu* (Male), *Minyamar* (female).

Distinguishing characters: It is a representative of the European Red Deer and Wapti of North America. It is little smaller and less robust than the Sambar and bears magnificient 10 to 16 pointed spreading antlers with the browtine curved upward. It tail is short, less than one-third of head-length. Breeding stags acquire long shaggy fur in foreneck in winter.

Colour: In winter its coat is light to dark brown, dingy white on lips, chin underpart and buttocks; upper surface of tail black, with a small white rump-patch not extending much above tail and divided by a broad median strip. And in summer its coat lighter, most of the underparts whitish; hinds show traces of spotting on flanks and back.

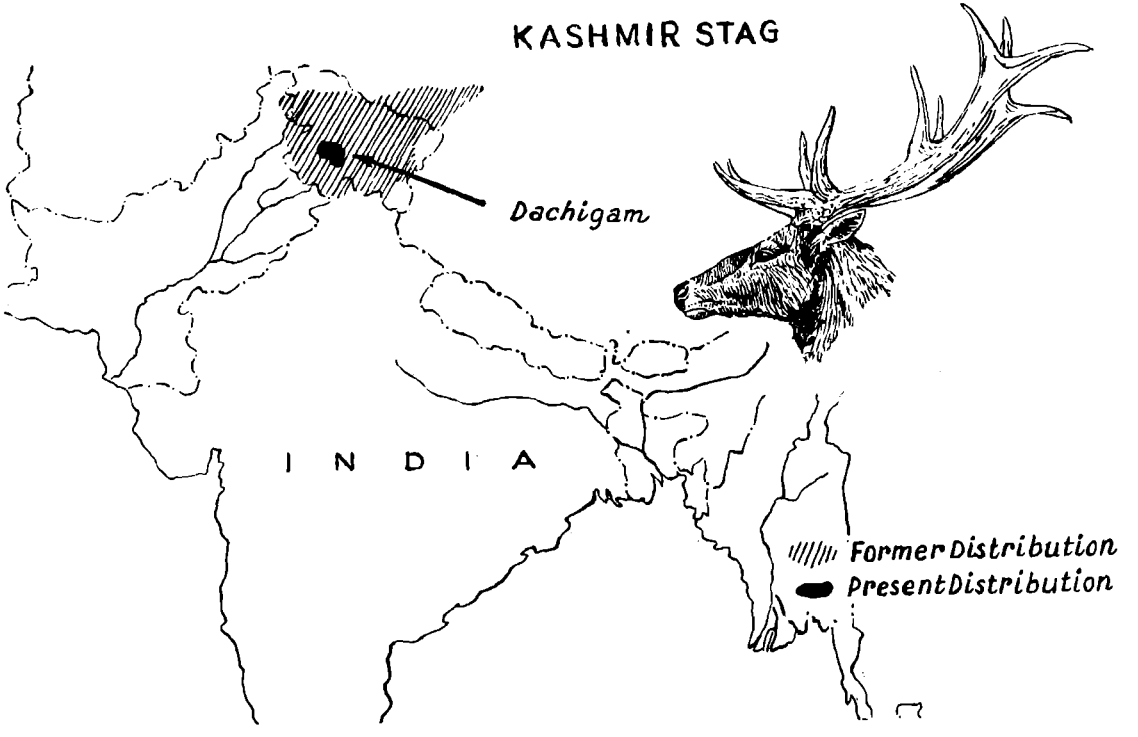
Fawns retain their light spots till the third or fourth year.

Size: Height of full grown stags is 48-50 inches (110-130 cm.). Average length of horns in outside curve, 40 inches (90 cm.). Weight: About 400 lbs. (181 kgs.).

Races: There are several races extending from the nearctic to the palaearctic regions. Only two races are represented in the Indian region, *viz.*, the Hangul (*Cervus elaphus hanglu* Wagner) in Kashmir and the Shou (*Cervus elaphus wallichi* Cuvier) in the Chumbi Valley Tibet and Bhutan.

Distribution: At present, it is restricted to the northern and the adjacent eastern valleys of Kashmir. Previously it was widespread in Kashmir within the natural barriers formed by the northern and eastern mountain ranges and limited in south-west and north-west by Pir Panjal Range and Kishenganga Valley.

Habits: The Hanguls have a migratory habit.



The territory includes the birch forests in the mountain terrain at about 9000-13000 feet (2785-4000 metres) above the village Aru in summer and in winter. When the snow starts, the campus is shifted south and westward to lower level pine valleys (about 5000-8000 ft. or 1550-2480 metres) starting about 35 km. east of Srinagar. They feed on sprouting grass and budding larches, wandering a great deal from one glade to another. The stags are solitary in winter; in summer they are found with their harems of hinds composed of 10-20 individuals or more. The hinds and young ones live in a family group.

Breeding: The stags commence to call usually in the mornings and evenings towards the end of September when new antlers get hardened and challanges take place following the pairing. With the fall of the winter-snow by November, the old stags desert their hinds. The antlers are shed between March and April. Gestation takes about six months. The litter size is not known; fawns are born in April.

Status: Before 1947, the Hangul was common in the Kashmir Valley and about 2000 heads were believed to exist in the Maharaja's preserve. This number was seriously reduced to 250 heads by 1954, as estimated by the State Game Warden, which revealed a precarious situation. A sanctuary for its protection was established at Dachigam (the present winter range of stags) which is an area of about 54 sq. km. situated at an elevation of 2013 metres. The census carried out by Gee[1] in 1957-58 revealed a marked improvement in population which was about 550 heads, but unfortunately during the recent years this number has been alarmingly reduced again.

[1] Gee, E. P. 1958. Four rare Indian animals. *Oryx*, *4*, (6), p. 357.

THE SHOU

Cervus elaphus wallichi Cuvier

1823. *Cervus wallichii* G. Cuvier, *Oss. Foss.* ed. 2, (4): p. 505, Nepal.

Tibetan: *Shou.*

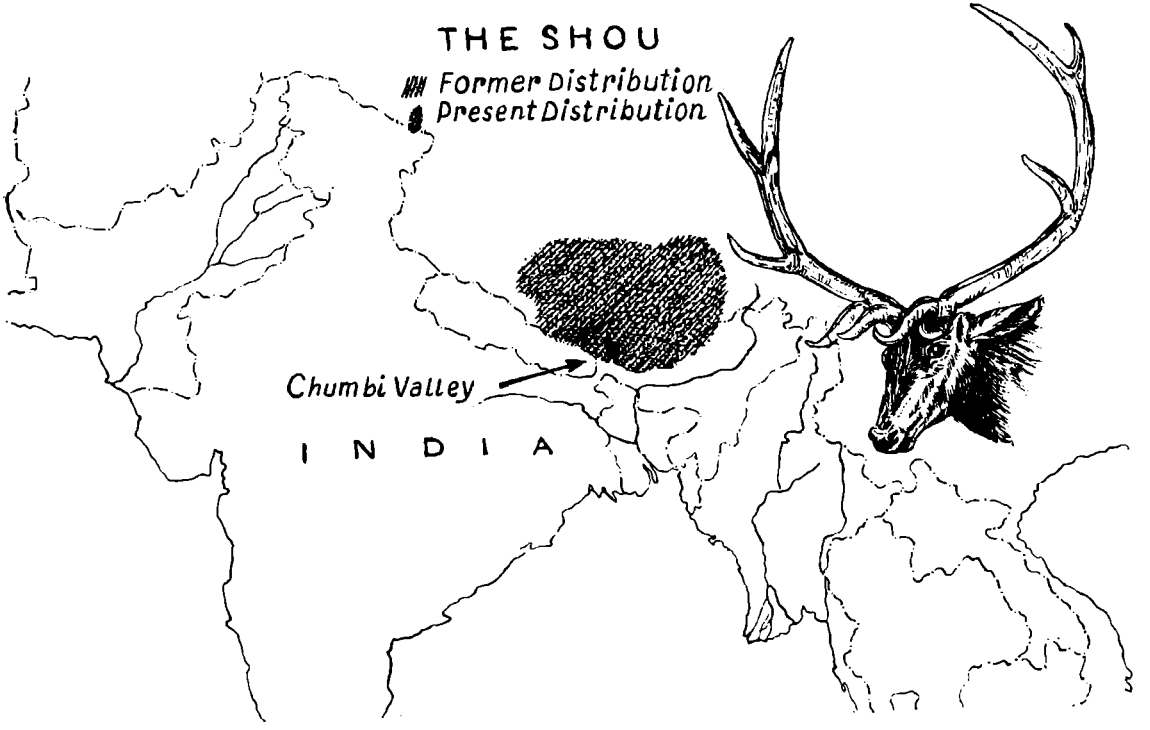
Distinguishing characters: From the Kashmir Hangul the Shou differs in being larger and heavier. It has longer and massive five pointed antlers the brow-tine of which is less constantly longer than the second and closer to the burr. Terminal fork is placed at right angles to the axis of the head. The stag has a rufous brown coat above with a large light rump patch.

Size: The stag stands at 140-150 cm. at shoulder. The antler measures 58 inches (152 cm. approximately).

Distribution: Tibet, Sikkim (Chumbi Valley), North-eastern Nepal, Bhutan.

Habits: It inhabits the rhododendron forests at elevations between 3000-4000 metres.

Status: It is really a rare animal within our limits. It was first described from Nepal. Lydekker thought that the type probably came from Manassarowar lake. No authentic report has been recorded for the last 100 years.



BROW-ANTLERED DEER (THAMIN OR ELD'S DEER)

Cervus eldi eldi M'Clelland

1842. *Cervus eldi* M'Clelland, *Calcutta J. nat. Hist.*, Calcutta 2, p. 417. "The valley of Munipore" [Manipur, E. India].
Local names: Burmese: *Thameng*; Manipuri: *Sangai, Shangai*; Thailand: *La-ong, La-mang.*

Distinguishing character: It differs from all other species of deer by having a distinctive bow-shaped antler, like a prostrate letter 'C'; beam at terimination simple forked and cylindrical. Its coat is coarse and sparse; stags develop a mane.

Colour: Males with winter coat are brown, changing to chestnut or black; females are fawn-coloured, and the young are brown and spotted.

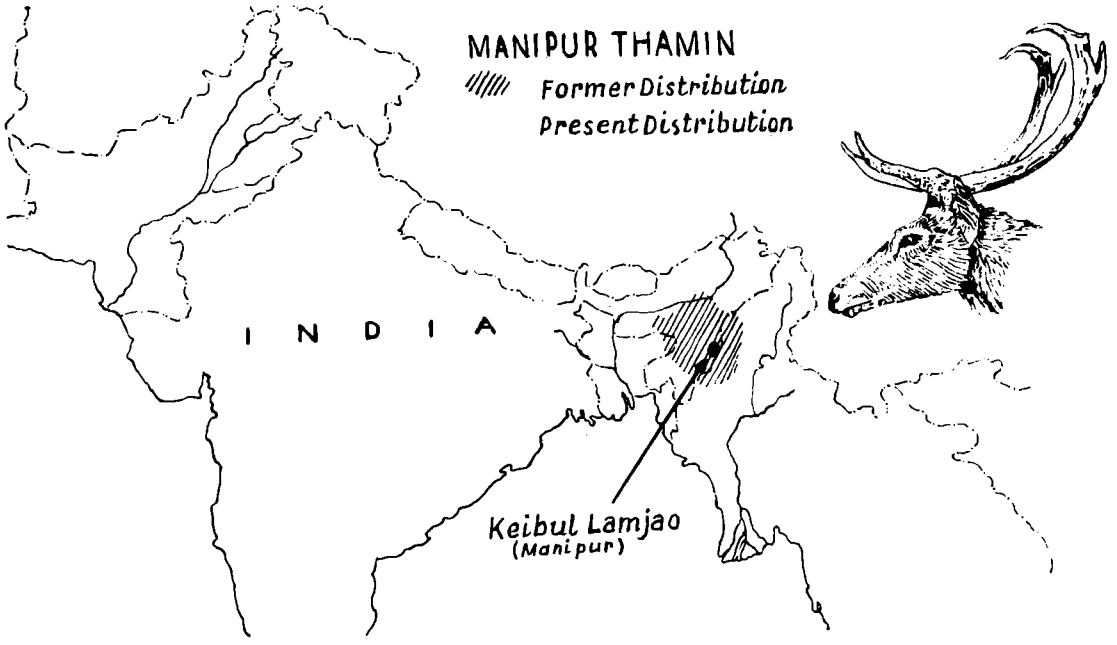
Size: Stags are about 4 ft. (120 cm.) high at withers; weight 210-245 lbs. (95-111 kgs.). Antlers may reach 42 inches (107 cm.) in length. Hinds are smaller.

Races: Three races are known, *viz.* (i) the Manipur race, (*Cervus eldi eldi* M'Clelland, confined to Manipur. (ii) the Burmese race, *Cervus eldi thamin* (Thomas): Upper and Lower Burma and parts of Thailand. (iii) the Thailand race, *Cervus eldi siamensis* Lyddekkar: Thailand, Indo-China and Hainan.

The Manipur race is readily distinguished from the other two in having hairless, hard, horny hind pasterns. This is a special adaptation to prevent the pasterns from sinking in swamp where the deer lives. In the other two races, which live in dry, undulating country, the pasterns are hairy.

Distribution: It was once found in almost all the swamps of the Manipur valley but now confined to only the southern portion of the Logtak Lake of that valley.

Habits: This fine deer lives on floating swamps which are composed of tall reeds and grasses and other hydrophytes which grow on a mat of humus. These "swamps" float on the lake with four-fifths of their part submerged and one-fifth above the surface of water. The deer are gregarious and move in small herds of four to seven, sometimes more; while running, they unlike other deer, proceed on their hind-legs, keeping the body almost vertical. They avoid hills and heavy forests. During the day, they hide in bushes and reeds, and



are active during the night, evenings and early mornings. They feed on wild rice, grass and other marsh plants. They have remarkable speed and sharp sight.

Breeding: They rut in spring (February to April). The stags have horns at their best by the end of December after which they join the hinds and remain with them till early June. The old stags then desert the herd, sometimes accompained by one or two hinds. Antlers are shed late in June. The fawn which is normally one, is born in October-November, and generally remains with the hind till its second year when the stags acquire their horn. Generally it takes seven years to acquire full development of antlers.

Status: The deer was a common game in Manipur but has become rare during the recent past and is now confined to a small (approximately 26 sq. km.) floating swamp area in the southern part of the Logtak Lake known as Keibul Lanjao. Estimates made in 1960 showed the presence of only 100 heads.[1] The animal is being protected in the area has been declared as a sanctuary.

The horns are used by the Chinese for medicinal purpose and are high-priced. The deer thus attracts the attention of poachers.

[1] Gee, E. P. 1964, *The Wild life of India* (London), p. 133.

THE HIMALAYAN MUSK DEER

Moschus moschiferus moschiferus Linnaeus

1758. *Moschus moschiferus* Linnaeus, *Syst. Nat.* 10 ed. 1 : p. 66 "Tartary approaching China".
Local names : Hindi : *Mushk, Kastura* ; Bengali : *Kasturi mriga* ; Kashmiri : *Raos, Rons.*

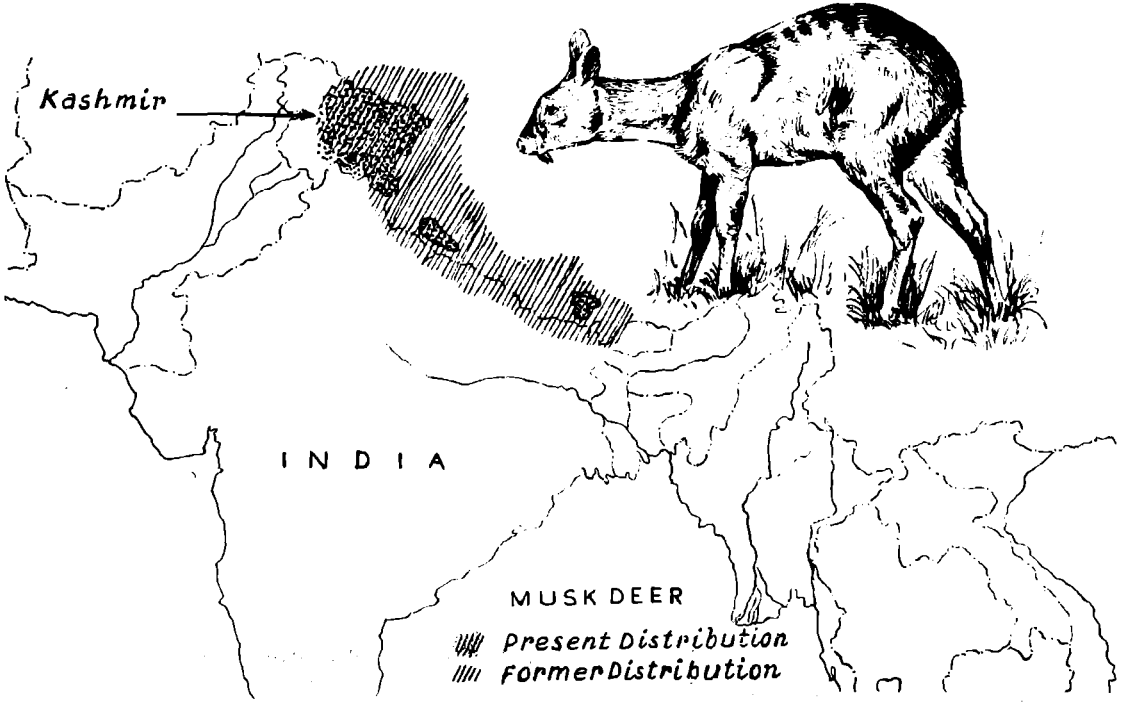
Distinguishing characters : The musk deer is of primitive origin combining some characters of antilopes and deer. It is hornless and has no face glands, and possesses a gall bladder. The male has a developed large canine and a globular musk gland (pod) situated beneath the skin of the abdomen. It has thick hind limbs which help it to progress by bounds. The hairs of the coat are course, thick and brittle having a shade of sepia-brown to golden-red.

Size : It is a small deer of about 50 cm. high at shoulder.

Distribution: It is widely distributed in central and north-eastern Asia, Kashmir, Nepal and Sikkim.

Habits : The musk deer inhabits the dry temperate and alpine forests (*ca.* 2500-3810 metres) in different ecological successions. It is generally met with in birch forests and keeps to thick cover. It is unsocial and is met with singly or in pairs, concealing itself in a self scraped-out shallow, feeding during dusk and dawn. It pairs during the severest period of cold in January and the young are born in June. Usually a single fawn is born.

Economy and status : The commercial importance of the animal is well known from time immemorial for the value of musk (a crumbly paste) produced by the male during the rut. The musk gland while secreting has a pungent urinary odour and when dry it emits a pleasant scent. The scent is used in perfumery and in medicine and is, therefore, much valued (The cost of 100 grams is about Rs. 300-400 in Calcutta). Besides musk, the hide makes excellent buck-skin and the tubular leg-bones are utilized as arrow heads by nomads. The deer are trapped in hundreds by drive to noose method. They have also a curiosity and an apparent love for music. Some hunters, therefore, play



their flute to attract them and this performance helps them to shoot the deer easily. Due to ruthless persecution of this deer in Kashmir, Himachal Pradesh, and Uttar Pradesh, its population has reached to such a low level that it should be considered to be standing at fencing.[1] Its survival inspite of vigorous persecution is perhaps, that musk collectors are not interested in the doe.

[1] Philip Street remarked, 'The musk hunters pursue the deer with such determination and skill that the annual toll approaches 100,000. How much longer the species carstand this enormous drain on its number we do not know.' [Street, p. 1961. *Vanishing animals* (London), p. 145].

THE PIGMY HOG

Sus salvanius Hodgson

1847. *Sus salvanius* Hodgson, *J. Asiat. Soc. Bengal*, 16. p. 423, Calcutta. Sikkim Terai.
Local names: Nepalese: *Sano-banel, Chota suvar.*

Distinguishing characters: It is the diminutive form of the wild boar and the smallest pig known. Its upper tusks are short; ears and tail are naked and short; snout shorter than in the large wild pigs; coat coarse and scanty; teats in three pairs instead of four as in other species of Indian pigs; fourth toe present; jaw shorter; teeth 40.

Colour: Adult brown to blackish brown. Young striped brown, with underparts white.

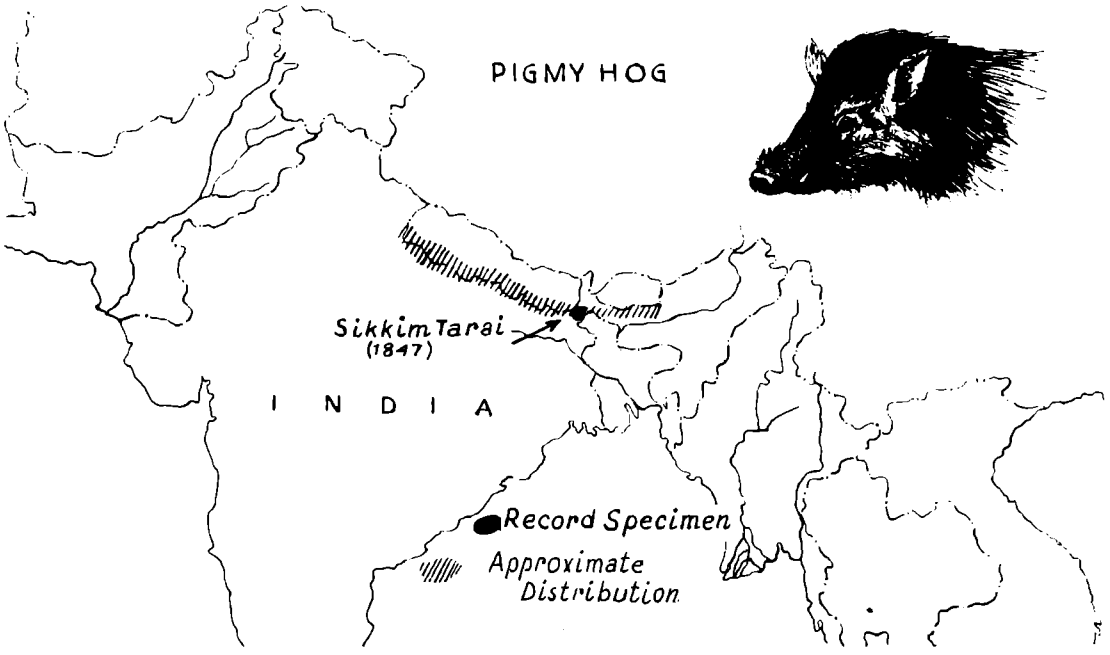
Size: Average height about 12 inches (30 cm.); length from muzzle to tail about 26 inches (66 cm.); length of tail a little over one inch (3 cm.). Weight ranges from 7-10, (3.5-4.5 kgs.) rarely 12 lbs. (6 kgs. approx.).

Distribution: Himalayan Terai, from Nepal to Assam.

Habits: It is found in tall grass jungles of the *sal* forests of the Terai. It moves in small herds comprised of 5-20 individuals, and is purely nocturnal, hiding during the day. Old tuskers bravely defend their families when charged and are constantly with the herd. The animal is seldom seen, partly due to its scarcity and partly to the speed with which the females and young retreat.

The food is chiefly roots and bulbs, but occasionally eggs, young birds, insects, lizards, etc., are also eaten.

Breeding: Very little is known of its breeding. Pairing takes place twice a year and the litter consists of 3-4 young ones.



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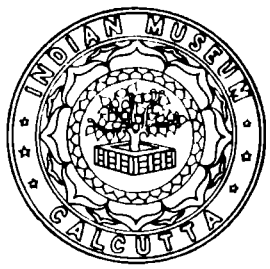
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