



Giant fruit bats.



Rhinoceros unicornis in Chitwan.

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Wild is beautiful. Lashkar, S. Devi

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ONE-HORNED RHINOCEROS

(*RHINOCEROS UNICORNIS*)

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Wild life forms one of the important animal resources, the country of Nepal has. Among the various animals available in Nepal, the rhinoceros occupies a special place because the species of big one-horned rhinoceros is, in particular, limited only to Nepal and India.

In prehistoric days, rhinoceros was found in many parts of the world, viz., Europe, North America and North Eastern Asia but now it is confined only to South Africa and South Eastern Asia. There are two types of rhinoceroses : one having two horns and the other with only one horn.

There are two species of African and three species of Asiatic rhinoceroses. African rhinoceroses are represented by two species : White Rhinoceros, *Rhinoceros (Diceros) simus* and Black Rhinoceros, *Rhinoceros (Diceros) bicornis*. Asian species are : Javan rhinoceros, *Rhinoceros sondaicus*, Sumatran rhinoceros, *Rhinoceros (Dicerorhinus) sumatrensis*, and Indian Rhinoceros, *Rhinoceros unicornis*. Javan rhinoceros is also a one-horned species while Sumatran rhinoceros is two-horned.

Javan Rhinoceros is smaller in size than the Indian rhinoceros, about 1.68 m. at the shoulder. The pattern of skin also differs. The horn of Javan rhinoceros is smaller. Javan rhinoceros was found earlier in South-Eastern Asia occurring in Sunderban and other parts of eastern Bengal, Sikkim, Assam, Burma, Malaya Peninsula and Java.

Rhinoceros unicornis, which ranged over the whole of Indian peninsula, is now limited only to Assam and Nepal. Rhinoceroses in Nepal are now found only in two areas, i.e., Chitwan and Nawalpur. The greatest concentration is in Sourdha area, the second highest concentration is in Surung-Sukhibar and Khorla-Mohan areas on the Western parts of the Royal Chitwan National Park.

The word 'rhinoceros' is derived from the greek word *rhino*, nose ; *keros*, horn. It is a mammal belonging to Perisodactyla, i.e., odd-toed

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animals. It belongs to the family Rhinocerotidae. The rhino is a huge animal and is considered to be in weight the second largest land animal next to the elephant. It has a thick skin which is scantily haired. It has short stumpy legs and a massive head. Each of the fore and hind limbs are provided with three toes encased in a horny sheath or hoof. Each foot has a rubbery pad. The muzzle extends in the form of an elongated and pointed upper lip which overhangs the lower lip. The teeth are of different patterns and in different forms. In the African species, the incisors and canines are well developed.

The horn of a rhino is epidermal in origin. It is situated on the thickened boss. The horn is formed by agglutinated bristles. Its recorded length is 60 cm. An African rhino has two horns. The first horn is much larger while the rear one is smaller and is situated on the frontal bone behind the front horn. Among the Asian species, as already mentioned there is only one horn. Horns are defensive in functions and help the animal in digging the sand. Its horn does not contain any bone and is mainly a well consolidated mass of hair. It is considered to be of exceptional medicinal qualities, especially as an antidote for poison. Drinking cups are made from rhino's horn and are mounted with gold and silver. Such special types of cups are used by dignitaries on ceremonial occasions. It is said that the horn will detect poison in the drinking cup by sweating it. The powder of the rhino is regarded to be a strong aphrodisiac. It is very costly. A rhino's horn costs about Rs. 500 in Mombasa while it costs in the Orient about Rs. 15,000. There is a great demand for rhinoceros' horns for medicinal purposes in China.

According to a recent estimate by Bose (1980), a Rhino's horn is sold at Rs. 10,000 within the state and it fetches any where Rs. 40,000-50,000. The cost is exorbitant in west Asia and South Asian countries where one horn is worth 1,00,000-1,50,000 rupees (Indian).

The skin of a rhino is thick, rough and loose. It is, especially thick around the edges of each shield. The rhino is, therefore, also called an iron plated animal. The whole body has various thick folds of overlapping skin. About the neck there are large folds. A fold dangles between the shoulder and fore legs and another fold lies from the hinder part of the back to the thigh.

There are, in fact, a number of deep folds around the neck and three on the body, one in front of the shoulders which is continued across the back, another behind the shoulders and the third in front of the thighs; the latter two folds extend across the back. The skin on the sides of the body is thickly studded with rounded tubercles. There are many sided scale-like scutes on the skin of limbs. The hinder fold is somewhat soft and can easily be penetrated by a hunting knife or a rifle bullet. The tail is slender and flat and possesses a tuft of hair at the sides.

Although the eye-sight of a rhino is not very sharp, its sense of smell and hearing are very keen. It is a herbivorous animal and feeds

on foliage and shrubs. A rhino was kept in captivity for several years in Jawalakhel Zoo near Kathmandu. The diet given to it also included about two pounds of rice, molasses, flour and gram all mixed up two times a day—once at 9 'O clock in the morning and second at 5 'O clock in the evening. It survived on this diet for several years.

Rhinoceroses throng National parks of Nepal for food from January to May when grass keeps on growing but from May onwards they move down to river sides for aquatic plants or cultivated fields. Rhinos are notorious for making night sorties across the Rapti river on cultivated crops. Males usually live singly or in pairs.

The rhino's meat tastes somewhat like pork though it has a strong rather leathery taste. Rhino drinks once in 24 hours. Its breeding season is not regular. Its mating period is also not known. When the calf is about 2 years old, mating takes place. At the time of courtship the calf is generally driven away by the male. Intermittent association of a male with an oestrus cow occurs for 3 to 4 days before mating takes place. During this sort of courtship-behaviour the calf may rejoin the mother for short periods. Generally adult males avoid mating with a cow that has a calf. An adult male lives singly but a cow and its calf remain in association and close communication till the calf becomes 3 years old. Delivery takes place in seclusion and the cow remains in thick forests several days before actual delivery. The young calves become easy prey to tigers. Adult males also fight together. The gestation period is 18-19 months. A newly born child weighs about 75-120 lb. and follows its mother immediately after delivery. Mother nourishes the calf for 3-5 years. The female adult is 1.52-1.82 m. in height. The male is larger in height and may weigh about 2 tons.

A rhino can run as fast as a horse for a short distance. It is tracked down to its hiding place with the help of an elephant. Sometimes, a hunter stalks a rhino to its drinking place and surprises it to wallowing shoulder deep in mud hold. It is very easy to beat the animal with a line of elephants. Hunters are stationed at intervals along the edge of the jungle to shoot at it, when it comes out of the cover. Hunters use steel tipped bullets for killing a rhino.

A rhinoceros is quite a harmless animal but when provoked or badly confused it may turn and charge. It fights furiously. A rhino lives in giant grass plains and usually frequents a swampy region where grass grows upto the height of 4.57-6.0 m. It usually follows well known runways. It likes to wallow in mud to get rid of ticks and also rolls in dust holes for the same purpose. It is said that a little tick bird often seen in rhino's back is its great friend as it picks up ticks from rhino's body. The bird also gives a warning against approaching enemies. However, hunters also locate rhinos by the noise of tick birds.

Rhinos rest in the hottest part of the day and feed early in the morning and evening and sometimes feed at night. Upreti and Pelnick (1973) are of the opinion that National park rhinos are mostly seen early in the morning and in late evening. In hot season about 40 percent of them remain inside deep forest rather than stay in wallows.

Upreti and Pelnick (1973) gave important details about rhinos. The behaviour and ecology of a rhinoceros has been studied by Laurie (1975). The behaviour of rhinos is very interesting. A rhino bobs its head up and down, grazes and moves its head from side to side. Aggressive behaviour is also noted, especially among adult cows and bulls. When they come face to face with other rhinos they adopt a head up posture and bellow quite often until the other rhino runs away. Alternatively when the first gets nearer a low-open mouth posture is evident. The side corners of the mouth are pulled back and the teeth are shown.

A peculiar habit of defecating on old dung piles is also noted among rhinos. Fresh dung stimulates the calves to defecate also and following their mothers always defecate. For the purpose of defecating, a rhino reaches a dung pile sniffs at it, swivels around its hindquarters lifts its tail and defecates. Urination also takes place generally while walking and feeding or during or after encounters, on leaving wallow or passing across any boundary or on watching any other male urinating. Thus old dung-piles are important for communication among rhinos.

Among rhinos several types of behaviour have been noted by Laurie (1975). According to him, exchanging greetings is a common among calves, rhinos and sub-adults who are strongest to each other. A rhino approaches another one slowly for greetings with its nose stretched out. Then they join noses followed by a bout of sparring with the horn circling the others snout and clashing audibly and muzzling of the side of one's face with the other's mouth. During muzzling a biting posture is evident.

Among the mammals the rhinoceros is a rare animal which is in danger of being extinct. It is, therefore being protected by law. The indiscriminate destruction of large tracts of forests in the Terai has adversely affected its habitat. Rhinos have also been subjected to human encroachment as forests land has been reclaimed for human settlement and agriculture. The following table shows the population of rhinoceroses in Nepal.

The Estimate of Rhino Population in Nepal.

Year	Number of Rhinos	Authority
1950	800	William (1960)
1957	400	Stracy
1959	300	Gee and Stracy
1966	100	Spillest
1968	81 or 108 (?)	Not known
1973	120	Upreti and Pelnick
1974	250-300	Laurie
1980	300	Easimate of National Parks and wildlife office

The statistical data from different sources show that between 1950-1960 there was a sharp decline in the rhino population. Between 1960-1970 the population remained more or less constant. But since 1970 the

population has been increasing. Laurie (1974) estimated an increase of 2.7 percent per year, if poaching is controlled. Upreti and Pelnick (1973) are also of the opinion that the rhino population may increase if poaching is checked and the habitat is not allowed to deteriorate further.

The establishment of Royal National Chitwan Park in the year 1973 has saved these animals from extinction. After the establishment of park office poaching has been considerably reduced. The incentive of prize money given to informants has helped in reducing poaching cases. However, poachers would often shot dead those rhinos who happened to stray into cultivated fields adjacent to the park. Every year there are instances of poaching in Royal Chitwan National Park.

However, measures for preserving rhinos must be rigorously implemented. Clandestine poaching should be effectively checked. Destruction of their natural habitat as a result of the excessive use of DDT, forest clearance and road and urban development must be stopped. The misuse of land should be checked as owing to soil erosion flood and drought, the habitat is adversely affected.

The deterioration of rhinos' habitat is also attributed to the excessive grazing of domestic cattle in places that are normally frequented by rhinos. The interaction of human beings should be completely checked in or near the habitat area. It has been seen that earlier, villagers were burning foliage and thus reducing 4.57 m. high elephant grass to 0.30 m turf. The elephant grass is very important as a rhino in Chitwan mainly depends on grass for its food.

According to Laurie (1975) rhinos mainly feed on *Saccharum phragmites* and shows a preference for *Imperata*. They also eat charred stalks and new shoots of 29 species of grasses and bushes around wallows and along river beds. It is believed that all of them are eaten by animals. Rhinoceroses prefer *Cyperus* sp. in wet areas and *Cynodon dactylon* in dry areas. Thus for effective preservation of rhinos in Nepal it is essential that they should be protected from poachers and the destruction of their habitat must be stopped.

According to a report in India, Rhino's natural habitat is being depleted even deep inside sanctuaries.

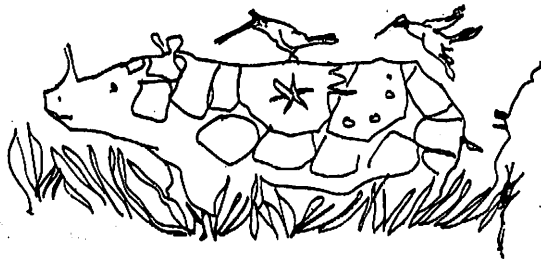
Encroachment by pasturing domestic animals must be effectively checked. Forests should be properly managed to provide an ideal habitat for the rhino to live and to thrive in. The tall reeds of elephant grasses should be effectively protected for the food and cover of the animal. The belief that a rhino's horn is not aphrodisiac is recently gaining ground in Nepal. Wide publicity should be given in support of this belief so that poaching can automatically come to a stop.

For the conservation program, anti-poaching radio network should be fixed in the National parks so that such aids may help Nepal forest guards in preserving rhinoceroses and other wildlife in our Royal Chitwan National Park. The effective use of anti-poaching radio network is already known in which case many poachers have been detected, caught, fined and imprisoned for their poaching activities in Assam Kaziranga

National Park of India. Thus by adopting important measures the rhinos which is one of the unique treasures of Nepal can be preserved and the future generation will have the privilege of seeing one of the most irascible, the toughest and perhaps the clumsiest mammals on earth.

In Nepal, many legends and beliefs are attached to Rhino. Kiran Shamster has given an interesting note. According to him, "The flesh and the blood of rhino is considered pure and highly acceptable to *Manes* to whom high cast Hindus and most Gorkhas offer libation of its blood after entering the disembowelled body. On ordinary *Shradh** days the libation of water and milk is poured from a cup carved from its horn. The urine is considered antiseptic, it is hung in a vessel at the principal door as a charm against ghosts, evil spirits and diseases".

Bose (1980) reports that a disease named rinderpest is responsible for large number of mortality in rhinos. This disease spreads so fast that no sooner is one cow cured another succumbs. Another cause attributed to the mortality of Rhinoceros is a parasitic inedible plant called *Micanea* which has over-grown in Kaziranga (India).



HIMALAYAN MUSK DEER (*MOSCHUS MOSCHIFEROUS*)

Rabi Bista*

The Himalayan Musk Deer belongs to the family Cervidae, i.e., a deer tribe the male of which usually possesses antlers. This family cervidae is divided into two subfamilies :

(1) *Moschinae* which includes only the musk deer (without antlers) and (2) *Cervinae* which comprises all other deer.

Flerov (1952) describes three species of musk deer :

(1) *Moschus moschiferous* (2) *Moschus sibiricus* and (3) *Moschus berezavksi*. *Moschus moschiferous* has been distinguished into two races :

(a) *Moschus moschiferous moschiferous* and (b) *Moschus moschiferous sibiricus*. Various races occur in central and North-Eastern Asia and the Himalayan form is the most common. Earlier it was widespread from Pakistan through Nepal to Bhutan and northern Burma and extended into parts of Tibet and South China.

In Nepal, the Himalayan Musk deer is found in Rara, Langtang and Sagarmatha National Parks and also in Bajhang, Doti, Tibrikot, Markhor lekh, Dhorpatan, Manang, Jatapokhari, Talpejung, Chipuwa, Arun valley and Olanchungola.

The Himalayan Musk Deer is a very little studied cervid. Some of the important authors who have described musk deer are the following : Allen (1940), Flerov (1952), Jamwal (1972) Mc Neelay (1973), Hollway (1973), Green (1978), Bista *et al* (1979).

The Himalayan Musk deer is included in the list of protected animals in the Red Data Book (IUCN, 1974).

The musk deer is also called *Kastura* or *Kasturi mriga* and it differs from all true deer and their allies in possessing a gall bladder and an

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Mr. Bista has very deeply studied the wildlife of Nepal. His studies on the musk deer domestication and musk extractions have enriched this valuable article.