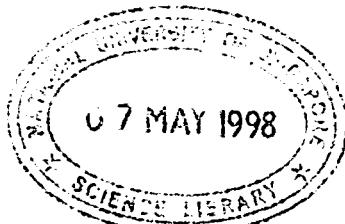

Beacham's Guide to International Endangered Species



Volume 1

**Mammals Listed
1970 to July 1997**

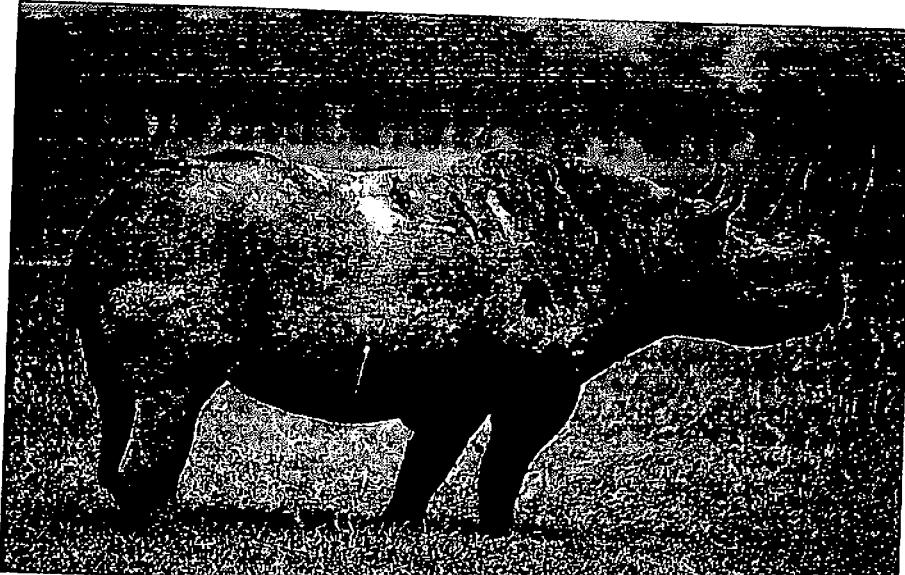
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Rhinoceros

Family: *Rhinocerotidae*



Black Rhinoceros (*Diceros bicornis*)

Rick Weyerhaeuser

General Characteristics of the *Rhinocerotidae*

There are five surviving species of rhinoceros whose ancestors were abundant from 40 million years ago until the last Ice Age 15 million years ago. The Sumatran rhino has changed little from its ancient ancestors of 40 million years, as has the more primitive Javan rhino that has changed little from its 10 million-year-old ancestors. The two African rhinos, white and black, evolved from the same stock about 3 million years ago.

Rhinoceros means "nose horn." The horns are made of a hairlike substance that grows from the rhino's skin; unlike other horned animals, the rhino horn has no bony core but is made of keratin fibers. Like hair, the horn keeps growing, as much as 2 inches a year.

Rhinos have poor vision and are unable to detect motionless objects a hundred feet away. Because the eyes are located on the side of the head, a rhino must turn its head side to side in order to see straight ahead. Its hearing, however, is quite good, as is its sense of smell.

Food and Water

All rhinos are herbivores that require a large intake of plant material to sustain their size. They are able to survive on high fiber foods but they prefer leafy materials. Although the African rhinos have lost their front teeth, they have broad lips that facilitate grazing on short grass. Black rhinos and Indian rhinos have a prehensile upper lip that further assists in food gathering. Javan and Sumatran rhinos are browsers rather than grazers, eating the leaves and shoots of saplings. Javan, Sumatran and African black rhinos also feed on some fruits. When water supplies are plentiful, rhinos drink every day, but they can endure periods of 4-5 days with no water during droughts.

In cool weather rhinos feed and rest alternately, for a few hours at a time, day and night. With the approach of the hot dry weather, the rest period near the middle of the day becomes more of a fixed point, until at the height of the dry season the animals are feeding in the cool of morning and evening, and dozing through the rest of the day. They feed more during the night at this time of year, to make up for lost time during the heat of the day.

Much of their resting time is spent wallowing to keep cool. Rhinoceros need water for drinking and wallowing at least every two to four days, and if their feeding areas are dry, they will walk up to six miles from their home range to find it. When there is no water for wallowing or grooming purposes, they will roll in dust, presumably to keep their skin clear of ticks and other parasites.

Mating

Male rhinos become sexually mature at 7 to 8 years; females at 4 to 5 years. Females may breed soon after becoming sexually mature but males do not breed until they establish territory or dominant status, which may take 2 to 3 years after maturity. Females produce one young, rarely two, but may bear additional young from 2 to 4 years after pregnancy. Rhinos breed and bear young year round, but African rhinos tend to mate during the rainy season. The young rhino usually remains with its mother until the birth of the next offspring, at which time the juveniles may form groups. Mature females who are not pregnant may form groups or may join a group of juveniles. Adult males are solitary except during breeding season when they may form a temporary relationship with a female in heat.

Male Asian rhinos and black rhinos are very aggressive, fighting each other as well as intruders. Males sometimes fight viciously. African rhinos fight with their front horns, while the

of white rhinos will stand rump to rump, facing out in different directions in a posture of self defense.

Threats

Because of their size and toughness of their skin, rhinos have not been much threatened by natural predators; human predation has long reduced populations as a result of demand for rhino parts, especially the horns and tusks, and because of a decrease in their natural habitat. When Europeans introduced guns into Africa during the nineteenth century, rhinos were killed in great numbers, and by the end of the nineteenth century the white rhino was on the brink of extinction. The black rhino was extirpated in the Cape soon after the arrival of white settlers, remained steady throughout its range elsewhere in Africa, but declined rapidly in East, Central and West Africa during the 1970s because of the dramatic increase in the value of horns in India, China and countries in the far east. People in these countries believe that the horn is an aphrodisiac, a fever-reducing agent, and a cure for headaches, and for skin, heart and liver disease. The hooves, blood and urine are also used for medicinal purposes. Men in North Yemen consider daggers made from rhino horns a status symbol, and the production of oil in Yemen, which brought wealth to many people in that nation, resulted in the deaths of thousands of rhinos. During an eight year period, 8,000 rhino horns were imported in North Yemen.

The world population of rhinos is dangerously low for all species except the black rhino, which numbers about 15,000 individuals. The white rhino, which was on the verge of extinction, was repopulated through the Natal Parks Board conservation program and worldwide attention brought by international conservation organizations. The Sumatran rhino numbers only 150 animals and the Javan rhino has been reduced to 50 individuals. The population of the Indian rhino is about 1,500 animals.

Northern White Rhinoceros

Ceratotherium simum cottoni



Ron Singer, USFWS

Status	Endangered
Listed	June 2, 1970
Family	Rhinocerotidae (Rhinoceros)
Description	Gray with a massive head, a shoulder hump, and a long neck. Open, perennial grasslands.
Habitat	Open, perennial grasslands.
Food	Short grasses and roots.
Reproduction	1 or 2 young every 2 to 3 years; gestation is about 16 months.
Threats	Habitat destruction, hunting.
Range	Republic of Congo and Sudan.

Description

After the elephant, the white rhinoceros, *Ceratotherium simum*, is the largest mammal in the world. Males stand 5 to 6.5 feet tall at the shoulder, weigh 3 tons or more, and have a head and body length of 12 to 14 feet. There are two races, or subspecies of this rhino, one in the northern grasslands of Africa, *C. s. cottoni*, and one in the south, *C. s. simum*. These animals are geographically quite distinct, but very similar physiologically. Both subspecies are tank-like creatures with a massive head that is hump near the ground

comfortably at ground level, and the square-ended, wide muzzle enables it to remove a full mouthful of grass with each bite.

Despite its name, this species is gray in color, "white" is probably a corruption of the Dutch *wijd*, or "wide," which would adequately describe the animal's broad muzzle. For this reason, the common name preferred today is square-lipped rhinoceros.

White rhinos have a pair of horns, with the front one being longer. Lengths average 37 to 79 inches for *C. s. simum*, and 37 to 40 inches for *C. s. cottoni*. Females' horns are longer and thinner than those of the males.

C. simum was discovered and described in South Africa in 1817, by Burchell. It was not discovered in Uganda until 1907. It is generally considered as being one species with two races. *C. s. cottoni* was not discovered until 1907.

Behavior

Rhinoceroses communicate with many sounds, and each of the five species of Rhinoceros have their own distinguishing noises. The northern white rhinoceros will make a husky panting sound when meeting another at a distance. Males and females court with wailing noises. Calves call to their mothers with whines and loud squeals when alarmed. The threat calls given by dominant males to intruders into their territories begin with a low growl, which is replaced by a fierce bellow as the threat becomes more intense. The most frequent signals used by this species are based on scent, conveyed by urine-spraying and dung-piles.

In spite of its huge size, the northern white rhinoceros, unless provoked, is normally an inoffensive animal that is easy to approach and to kill. It is generally found in herds of about a dozen. This species is territorial. Mothers are also very protective and defensive against any danger to their calf. Dominant males hold feeding territories from which they exclude all other adult males. These feeding territories will later become breeding territories, within which they will defend a mate. Breeding males occupy a solitary territory of 200-650 acres, which they mark with dungheaps and strong urine, which they spray frequently while patrolling.

she leaves his territory he will not follow her into another. He attempts to confine her within his territory until she is receptive for mating. Subordinate males are permitted to enter and even reside in the territory but they are not permitted contact with females or the right to mark the territory. If the subordinate male breaks the rules and is confronted by the dominant male, he will stand defensively making loud shrieks, but he will not contest the territory holder's authority. Northern white rhinos rarely fight, but they often indulge in trials of strength, wrestling with their horns, or charging each other with their shoulders to settle disputes and to confirm their social position. If a territory-holding male is found in another male's territory, he will take the submissive role of a subordinate male unless he is close enough to his own territory to exert his dominance by backing steadily toward home. If a subordinate male challenges the territory holder and wins, the territory holder will leave and go to another territory where he becomes the subordinate male or challenges that territory holder for rights to the territory.

Females also have feeding territories, although theirs are much larger than those of the males. They may move through male territory without being challenged. Courtship in this species is a slow and cautious ritual, taking between five and twenty days to complete.

The northern white rhinoceros breeds year round, with peaks at times when there is a flush green grass. This occurs between February and June in northern Africa. The gestation period is about sixteen months. Calves are able to walk with the mother 2-3 days after birth, usually running in front of

chases the previous calf away. By this time, it is two years old and fully weaned. Sexual maturity is reached at about six or seven years of age.

The northern white rhinoceros grazes on short grasses. It requires large quantities of food and it depends on permanent water. The horn is sometimes used for digging, when the grass is too short to graze and the animals have to turn their attention to roots as their main source of food.

Habitat

The northern white rhinoceros inhabits open, perennial grasslands on the plains of Africa.

Distribution

The southern race of this species, *C. s. simum*, was brought to the brink of extinction decades ago, but has recently recovered; the northern population, the northern white rhinoceros, has not fared so well and exists in only a fraction of its former territory. The living races are now restricted to two regions separated from each other by more than 2,000 miles.

The southern white rhinoceros was once widespread throughout Africa. Its range extended south of the Sahara wherever suitable savannah country could be found. Fossils indicate that it ranged to Morocco and Algeria, north of the present Sahara.

Until the latter part of the nineteenth century the northern white rhinoceros was

range and numbers have drastically declined. Today, this subspecies is extinct everywhere except in The Sudan and Republic of Congo (formerly Zaire), where a few hundred individuals survive.

Threats

The northern white rhinoceros numbers have declined rapidly over the years due to habitat destruction and hunting. This species has been hunted mainly for its valued horns. These threats still persist despite legal protection. Even those animals protected in reserves face the threat of illegal poaching.

It is possible that the decline is also partly due to changes in vegetation during drought when weaker animals were unable to recolonize in the face of competition from more efficient animals which could move more freely to exploit such food and water as was available. Its territorial behavior and rather slow rate of breeding make it a poor colonist, very slow to expand its range at the best of times.

Conservation and Recovery

The only way for the northern white rhinoceros to recover is in reserves where poaching can be kept to a minimum. In the Garamba National Park, in Republic of Congo (formerly Zaire), this animal is protected in every way possible, although poachers still manage to find ways to get their valued horns.

The southern white rhinoceros, once on

to 2,000 animals. The Umfolozi Game Reserve, however, is not large enough to sustain a larger population, and excess individuals are exported to zoos or sold to safari companies to be used as game animals.

Black Rhinoceros

Diceros bicornis



Rick Weyherhauser

Status	Endangered
Listed	July 14, 1980
Family	Rhinocerotidae (Rhinoceros)
Description	Short neck is gray in color; its muzzle has an upper pointed lip.
Habitat	Arid thorn-scrub country.
Food	Leaves and twigs, fruits, grass, green clover and other herbs.
Reproduction	Single young every 2 to 5 years.
Threats	Habitat destruction; hunting for valued horns.
Range	Tanzania, Zimbabwe, Zambia, South Africa, Namibia, Central African Republic, Mozambique, Cameroon, Sudan, Somalia, Angola, Malawi, Rwanda, Botswana, Ethiopia, Chad

Description

The black rhinoceros, *Diceros bicornis*, stands 4.9 to 5.6 feet tall at the shoulder, weighs about 1.5 to 1.75 tons, and has a head and body length of 10 to 12 feet. It has a short neck, and despite its name, it is gray in color. Its muzzle has an upper lip that is pointed and its tip is prehensile. The pointed lip and short neck distinguish this species from a brown

Behavior

The black rhinoceros has a very aggressive temperament and has been known to charge vehicles and even campfires without provocation. It is the most aggressive rhinoceros species.

Adults are generally found alone, but they may be found in groups of up to five animals. Mothers can usually be found with

against rivals. Mothers are also very protective, and defensive, against any danger to their calf.

Rhinoceroses communicate with many sounds, and each of the 5 species make some distinguishing noises. The black rhinoceros snorts, snarls threateningly, and roars. Fighting rhinos grunt and scream. Males and females court with whistling noises. Calves and their mothers communicate with a variety of squeals. Adults approaching water-holes where others are already wallowing make a puffing or gasping sound which may serve to avoid conflicts by giving the group an early warning of their approach. The most frequent signals used by the black rhinoceros are based on scent.

The black rhinoceros does not appear to have a particular breeding season. Every two to five years, the female rhino, called a cow, bears a single young. The gestation period is about twelve to eighteen months. The newborn calf weighs between 55 to 88 pounds. On the calf's nose are two smooth, flat plates where its horns will grow. The calf stays with its mother for as long as two years, often departing shortly before its mother bears another calf, but sometimes remaining after its sibling is born. Sexual maturity is reached at about six or seven years of age.

The life expectancy of the black rhinoceros is not known, but in zoos they can live up to 40 years. In the wild, they may live up to 60 years.

The black rhinoceros uses its "hooked" lip for stripping leaves and twigs from bushes and shrubs. It will also pick up fallen fruits from the ground as well as take those which it can reach from trees, and it is able to feed on grass which is long enough to be twisted

During the rainy season, the black rhinoceros ranges freely, feeding over a wide area. When the dry weather comes, it stays within three miles of permanent water. It needs to drink once a day or more, if possible.

The black rhinoceros has become largely nocturnal in most parts of its range, probably as the result of natural selection, which has eliminated the more diurnal individuals which were the most likely to be shot.

The black rhinoceros feeds at dawn, at dusk, and at night. When the noonday sun beats down, the animals lie in the shade or roll in the dust of dry riverbeds. When water holes are nearby, they cool off by wallowing in mud. The coating of mud or dust on their skin helps keep off insects and protects the large animals from the sun.

Habitat

The black rhinoceros is normally associated with arid thorn-scrub country in Africa. In Kenya, it can also be found in the high forests of Mount Kenya and the Aberdare Range, sometimes existing at an altitude of more than 10,000 feet above sea-level. This habitat provides plenty of browsing food, as well as cover in the thick brush. It avoids open grassland.

Distribution

The black rhinoceros was once widespread throughout Africa. Its range extended from Cape Province and southwestern Angola to eastern Africa, including Somalia,

the southern edge of the Sahara Desert and the northern limits of the dense rain forests of the Congo and Nigeria, as far as Lake Chad and Cameroon. Within this region there were areas where this species was absent.

Today, the black rhinoceros exists in a fraction of this territory. National Parks and other sanctuaries provide refuge and protection for this species. The largest number of black rhinoceros can be found in Tanzania. They also occur in varying numbers in Zimbabwe, Zambia, South Africa, Namibia, Central African Republic, Mozambique, Cameroon, Sudan, Somalia, Angola, Malawi, Rwanda, Botswana, Ethiopia, and Chad. The total population of black rhinos is estimated at 15,000 animals, by far the largest and most widespread of the extant rhino species.

Threats

The black rhinoceros numbers have declined rapidly over the years due to habitat destruction and hunting. In many areas these animals were exterminated by European settlers systematically to make room for human expansion, and because they were thought of as a nuisance, and sometimes dangerous. This species has also been threatened by hunting in the past, mainly for their valued horns. These threats still persist despite legal protection. Even those animals protected in reserves face the threat of illegal poaching.

the reserves and parks of Africa these animals are protected in every way possible, although poachers still manage to find ways to get their valued horns.

Conservation and Recovery

Sumatran Rhinoceros

Didermocerus sumatrensis



Bruce W. Bunting

Description

The sumatran rhinoceros, *Didermocerus sumatrensis*, is the world's smallest and oldest rhinoceros, and it is the only Asian species with two horns. The front horn of the Sumatran rhinoceros is the larger of the two, being about 15 to 20 inches long on adult males. The hind horn is much smaller, about 2 to 3 inches long.

It appears to be missing, which may account for earlier reports of one-horned specimens. Both sexes carry horns, but those on females are about one-third the size of the male's.

The Sumatran rhinoceros measures only 3 to 5 feet tall at the shoulder, weighs about one ton, and has a head and body length of 8 to 9 feet. The skin folds on this animal are rather loose and wrinkled, giving it a somewhat

Status	Endangered
Listed	June 2, 1970
Family	Rhinocerotidae (Rhinoceros)
Description	Asian rhinoceros with two horns, measuring 3 to 5 feet tall at the shoulder, weighing about one ton, skin is relatively thin and smooth, with bristle-like hairs.
Habitat	Forested hill country, often at a considerable height, near water.
Food	Leaves, twigs, bamboo shoots, wild mangoes, and figs; lichens or fungus off rotting trees, and occasionally grazes on tall grass.
Reproduction	Single young; gestation period is guessed to be 7 to 18 months.
Threats	Habitat destruction; hunting.
Range	Burma, Indonesia (Sumatra and Borneo), and Malaysia

over the back. Also, the skin itself is relatively thin and smooth, with bristle-like hairs. Immature animals have a covering of hair, which appears to vary in density according to geographical locality, but which seems to diminish as the animals mature. Other rhinos are nearly hairless, except for tufts at the tips of their ears and at the ends of their tails. The Sumatran rhinoceros has a prehensile upper lip, distinguishing it as a browser. This species also has acute senses of smell and hearing.

Two subspecies of *D. sumatrensis* are recognized, the "typical" race, *D. s. sumatrensis*, being restricted to Sumatra and Borneo, and the race *D. s. lasiotis* (usually known as either Chittagong or hairy-eared) living on the mainland. The latter is reputed to be somewhat larger than the island race, and to have paler and somewhat longer hair, a shorter and more fully tufted tail, and a more strongly developed fringe on the edges of its ears.

The Sumatran rhino is the only surviving member of the family *Dicerorhininae*, which included the extinct Woolly rhino, and it has changed little from its ancestors that lived 40 million years ago.

The Sumatran rhinoceros is also known as a two-horned Asian rhinoceros, and a hairy-eared rhinoceros.

Behavior

The Sumatran rhinoceros has been seen swimming from island to island. They are also strong climbers, able to go through the thickest bush and up slopes too steep for a

distinguishing noises. The Sumatran rhinoceros has a more varied repertoire of voices than the other rhino species. A thorough study has not been made of the meaning of any sounds which it makes.

What little is known about the breeding of this species comes from captive births in zoos. The gestation period is guessed to be anywhere from seven to eighteen months, resulting in the birth of one offspring. Sumatran rhino calves are born with a long dense coat of hair that becomes sparse and bristly in older adults. Males are assumed to begin breeding by 10 years, with 80% of them participating in the breeding pool in a given year. Females may begin reproduction at 6 years, with pregnancy intervals of 4 to 5 years. When the sex ratio is 1:1, this rhino is a polygamous mammal. The Sumatra rhino may live to 32 years.

The Sumatran rhinoceros browses on leaves, twigs, bamboo shoots, and fruits, such as wild mangoes and figs. This species has been seen eating lichens or fungus off a rotting tree, and occasionally grazing on tall grass. As they grow older, and their teeth become more worn, individuals may choose to feed on thinner twigs, making up their diet with fruit.

Individuals spend the hot part of the day and the middle of the night wallowing or concealed in a sheltered place, emerging in the evening and again in the early morning, usually covered in mud, to feed.

Habitat

The Sumatran rhinoceros favors forested

Distribution

At one time, the Sumatran rhinoceros was distributed over a wide region, extending from parts of East Pakistan and Assam, throughout Burma, much of Thailand, Cambodia, Laos and Vietnam, Malaya, Sumatra, and Borneo, basically covering entire southeast Asia. On the two big islands, Sumatra and Borneo, its fossil remains have been found in prehistoric human sites far from its present limited haunts.

As of 1985, the Sumatran rhinoceros survives in limited numbers in Burma, Indonesia, and Malaysia. There is no recent estimate of the populations in Laos, Vietnam or Thailand, but there is no reason to suppose that even a single individual survived in any of those countries.

The 1996 population estimate is that 400 Sumatran rhinos survive on the Malay peninsula and on the islands of Sumatra and Borneo. It is the Borneo population of 70 individuals that most interests scientists. DNA studies indicate that this population is different from other Sumatran rhino populations, suggesting that they have been isolated for thousands of years.

Threats

The Sumatran rhinoceros numbers have declined rapidly over the years due mainly to hunting, but habitat destruction has also been a factor. This species was forced out of its hillside forest habitat and hunted mercilessly for its horns, and the rest of its body, since the typical Chinese apothecary shop uses the

the remaining population thus multiplied. During the last 100 years this multiplication has even further accelerated, the fate of the species being fully sealed in most areas by the introduction of more sophisticated weapons. Deforestation and agricultural clearing have forced the Sumatran rhinoceros out of its native areas.

Conservation and Recovery

The best, and most likely the only way for the Sumatran rhinoceros to recover is in carefully guarded reserves where poaching can be kept to a minimum. The social and political conditions over most of its range make poaching difficult to stop. In Indonesia, the government sponsors an active anti-poaching program, but it must be combined with education so that citizens will assist anti-poaching patrols. Poaching can also be reduced if logging companies in Sumatra will discourage poaching in their logging concessions.

All efforts to captive breed Sumatran rhinos have failed. Of the 39 animals that have been captured, 21 have died and not a single calf has been produced.

Sanctuaries for 50 Sumatran rhinos have been established in Malaysia and Sabah. The 40 square mile sanctuary in Way Kambas National Park in eastern Sumatra has a breeding complex with 10 natural enclosures. The rhinos now in zoos will be moved to this sanctuary during 1997.

Javan Rhinoceros

Rhinoceros sondaicus



Art Wolfe

Status	Endangered
Listed	June 2, 1970
Family	Rhinocerotidae (<i>Rhinoceros</i>)
Description	Body is covered with a dark gray, granular, scaly, thickly folded skin. Sparse forests.
Habitat	Trees and shrubs, bamboo leaves, and fruits.
Food	Trees and shrubs, bamboo leaves, and fruits.
Reproduction	Sexual maturity of females is believed to be 3 years.
Threats	Slow reproductive rate; hunting; overpopulation by humans.
Range	Island of Java

Description

The Javan rhinoceros, *Rhinoceros sondaicus*, stands 6 feet tall at the shoulder, weighs about 3,500 pounds, and has a head and body length of 11.5 feet. It is covered with a dark gray, granular, scaly skin that is thickly folded to look like armor plating. Its muzzle has an upper lip that is pointed and its tip is prehensile. The pointed lip distinguishes this species as a browser. This animal has poor eyesight, but a sharp sense of smell and hearing.

The Javan rhinoceros is very similar in appearance to its close cousin the great Indian

not have horns; and the male's horn is normally less than half the length of its Indian relatives. The skin folds also differ; the Javan rhinoceros has an additional fold in front of the shoulder. Also, the skin structure lacks the "rivets" of the Indian rhino, instead it is marked overall with a pattern of scale-like disks. The tail on the Javan rhinoceros stands out more prominently from the hindquarters through lack of a deep fold across the rump.

The Javan rhinoceros was once considered to be the same species as the great Indian rhinoceros. It was not until the early 1800's that they were distinguished as separate species. This was formalized in 1822 with the

Behavior

Very little is known about the Javan rhinoceros, except that they are good climbers. They are difficult to observe in the dense cover where they live.

These rhinoceroses may look awkward, but they are surprisingly nimble and quick. They can jump, twist, and turn quickly. Thick, spongy pads cushion the animals' feet as they move. This enables them to protect themselves in the thick scrub they live in.

The Javan rhinoceros does not use dung piles as territorial markers as other rhinoceros species do but relies entirely on urine scent. The urine is orange-red in color, and may be used as some sort of communication method.

The only account of the reproductive biology of the Javan rhinoceros, in *National Geographic* for June 1985, gives the age for sexual maturity of females as three years, and for males as "about twice that". The rut is said to occur sporadically and non-seasonally, accompanied by "frightful roaring and aggressive behavior by bulls". Gestation is given as 16 months, and the cow is said to remain with the calf for about two years.

The Javan rhinoceros is a browser that feeds on a variety of trees and shrubs, bending saplings over until it can reach the leaves at the crown, often grasping them with its prehensile upper lip. It will also feed from low-hanging branches and from bushes. The Javan rhinoceros is known to eat bamboo leaves and fruits of various kinds. Sometimes they push over trees up to 6 inches in diameter to get at the foliage and possibly the fruit.

Habitat

The Javan rhinoceros has been found in forested hill country at over 6,500 feet above sea level. Today, it exists solely in the sparse forests of the mountainous parts of the Udjung Kulon Reserve on the island of Java.

Distribution

The range of the Javan rhinoceros once extended throughout most of southeast Asia, from the Brahmaputra River valley in Assam, India and Bengal eastward to the southern border of China. They also existed on the islands of Java and Sumatra.

Today, only 50 or so animals exist on the western part of the island of Java, in the Udjung Kulon Reserve.

Threats

The Javan rhinoceros numbers have declined rapidly over the years due to hunting and people-pressure for space. During the last 100 years the human population of Java has increased more than tenfold, with the result that agricultural expansion has deprived the animal of much of its natural habitat, forcing it to retreat into more inaccessible areas, where the remnant has been persistently hunted for its horn. Also, in the mid-eighteenth century the Javan rhinoceros were so numerous that they caused serious damage to crops, inspiring the government of the time to offer a high bounty to hunters who would kill them: 526 were accounted for

The slow reproductive rate accounts for this species' slow recovery, if their recovery actually happens.

Conservation and Recovery

The only way for the Javan rhinoceros to recover is in the Udjung Kulon Reserve in western Java. In this reserve these animals are protected in every way possible. There is little hope that this small remnant population will maintain itself; few young have been observed.

Indian Rhinoceros

Rhinoceros unicornis



Bruce Bunting

Description

The Indian rhinoceros, *Rhinoceros unicornis*, stands at least 6 feet tall at the shoulder and may measure as much as 14 feet in length. The species weighs 2 tons or more. It has a thick hide with several loose folds especially on its neck, behind its forequarters, and in front of its hindquarters. It seems to be encased in armor. It possesses convex tuber-

containing a pair of sharp incisors that have developed into tusks.

This species is also known as the Great Indian one-horned rhinoceros.

Behavior

Despite its intimidating appearance, the species is normally shy and inoffensive, rarely

Status	Endangered
Listed	December 2, 1970
Family	Rhinocerotidae (Rhinoceros)
Description	Large headed; with a small eye, thick hide with loose folds on its neck, behind its forequarters, and in front of its hindquarters.
Habitat	Plains of humid, subtropical climate.
Food	Grasses, shoots, reeds and water hyacinth.
Reproduction	Single calf every 3 or 4 years.
Threats	Alteration of natural habitat; hunting for valued horns.
Range	India, Assam, Bangladesh, Bhutan, Uttar Pradesh, Nepal, Pakistan

species is quick and nimble, charging at speeds of up to 30 miles per hour. In addition, it can twist, jump, and turn quickly. They possess a keen sense of hearing and smell, often finding trails by smell. Individuals communicate with each other by snorting, snarling, and roaring. Courting is accompanied by whistling noises.

Indian rhinos establish territories differently than other rhino species. Males are not dominant or subordinate, but are strong or weak with a continuum between them. Strong males urinates a backward jet and are the only males who copulate. They establish home ranges of up to 2.3 square miles, but the range may overlap with other strong males. Neighboring males do not compete, but strange males entering a territory will be viciously attacked. Receptive females entering a territory may be attacked by the male and noisily chased for more than a mile as part of the courtship ritual.

The reason that Indian rhinos establish territories differently from other species is because of habitat and food variances. Indian rhinos occur in flood plain habitats and the location of food sources changes in unpredictable ways, which discourages localized territories. Furthermore, the vegetation is so dense that individuals in close proximity may be isolated from each other, even within the same territory, making territorial disputes impractical.

Females give birth every 3 or 4 years. One calf is born. The youth will stay with its mother until she is ready to birth again. At this time, the offspring will wander off on its own.

The Indian rhinoceros feeds on grasses, shoots, and reeds in the early morning and

In an adaptation to its diet, the upper lip is semi-prehensile which allows the species to feed on tall grasses; slender twigs can be folded out of the way to allow for grazing on short fresh grass. It will also eat bamboo shoots and water hyacinth.

The Indian rhinoceros is active during the day, normally feeding in the early morning and evening. The remainder of the day and night is spent resting and wallowing in mud, especially during hot weather. Wallowing may alleviate insect attacks which occur regularly in swamps.

Habitat

The Indian rhinoceros inhabits the flood plains of a humid subtropical climate. The dominant vegetation of this area are broadleaf deciduous shrubs. It is never far from water as it requires daily bathing. It wallows in water and mud.

Distribution

The genus *Rhinoceros* was one time widely represented by a number of living species. Many fossil records indicate that the genus existed in the Pleistocene Ice Ages. During this time, it seems to have ranged throughout Eurasia from Europe to Taiwan and Japan.

The Indian rhinoceros once inhabited the Ganges, from the Indus Valley west to Assam. Presently it ranges only over northern India, Pakistan, Assam, Bangladesh, Uttar Pradesh, Bhutan and Nepal. It occurs in Dudhwa National Park, Royal Chitwan Na-

The Indian rhino is restricted to 8 reserves in India and Nepal where populations are estimated at 1,500 individuals. Small isolated populations may still exist in remote areas of the natural range but this is suspected and not confirmed.

Threats

The Indian rhinoceros has been victim to increasing pressure on its native habitat by increasing human populations and alteration of this natural habitat. The species once ranged over the northern part of India and Nepal from Peshawar and Kashmir in the west, along the Himalayan foothills as far as the frontier with Burma. In the south, the range may have been limited to the plain of the Ganges River system although this is not known for certain.

Much of these lands have been converted to agricultural use. The Indian rhinoceros retreated to the hills and to the remotest and most inaccessible parts of their range. Recently, hunting has accelerated the decline of its already reduced numbers. A century ago, the Government of Bengal offered a bounty for each individual shot, which indicates the abundance of the species at that time. The Nepalese people built raised platforms of bamboo on the fields of the Terai. During harvesting time, they beat gongs and rang bells to scare the rhinos away.

Conservation and Recovery

Conservation efforts for the Indian rhino

much reduced. Sanctuaries in the upper Brahmaputra valley and Bengal were set aside for the rhino and its protection. Yet, this did not stop the many gangs of illegal hunters poaching the animal over the years. A lucrative trade has evolved around the horns of the rhino.

Tapirs

Family: *Tapiridae*



Asian Tapir (*Tapirus indicus*)

Rich Block

General Characteristics of the *Tapiridae*

Tapirs evolved in the Eocene epoch, about the time horses were also evolving. The ancient tapirs were very similar to modern ones, featuring the torpedolike design that enables them to move swiftly through dense underbrush, but such early tapirs as *Heptodon* had no proboscis — that is they lack the long, supple nose of the modern tapir. Tapirs evolved to their basic form in the northern hemisphere, then in the Pleistocene epoch they invaded South America. Today, there are four species of tapir still in existence: one lives in Southeast Asia (the Asian tapir,