

## *Chapter 9*

# **Present Status and Conservation of the Indian Rhinoceros (*Rhinoceros unicornis*)**

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### **ABSTRACT**

*The Indian rhinoceros (*Rhinoceros unicornis*), also called the “greater one-horned rhinoceros” or “Asian one-horned rhinoceros” belongs to the family Rhinocerotidae. It is a small species of rhinoceros. The Indian rhinoceros gets its common name from the fact that it has only one horn rather than two. Rhinoceros is from Greek words rhino for “nose” and ceros meaning “horn”. unicornis is from Latin words uni meaning “one” and cornis meaning “horn”). The Indian rhinoceros has one horn which it uses for defence, intimidation, digging up roots and breaking branches during feeding. This animal has unique ‘armour-plating’ appearance, and they have a prehensile upper lip, much like that of the black rhino, which assists in foraging. *Rhinoceros unicornis* is the fifth largest and also the largest of the Asian rhino species. This species is now listed as a vulnerable species.*

*Keywords: Habitat, Rhinoceros, Wallowing.*

### **Introduction**

The Indian rhinoceros (rhino) is primarily found in north-eastern India’s Assam and in protected areas in the Terai of Nepal, where populations are confined to the riverine grasslands in the foothills of the Himalayas. The preferred habitat of an Indian Rhinoceros is alluvial flood plains and areas containing tall grasslands along the foothills of the Himalayas. Rhino populations were severely depleted as they were hunted for sport and killing as agricultural pests. This pushed the species very closely to extinction in the early 20<sup>th</sup> century and by 1975 there were

only 600 individuals surviving in the world. In India, rhinos are found in Kaziranga, Orang, Pobitara, Jaldapara, Dudhwa. Thanks to rigorous conservation efforts, their numbers have increased dramatically since 1975. By 2012, conservation efforts saw the population grow to over 3,000 in the Terai Arc Landscape of India and Nepal, and the grasslands of Assam and north Bengal in north-east India.

### **Systematic Position**

Phylum:	Chordata
Sub phylum:	Vertebrata
Super class:	Tetrapoda
Class:	Mammalia
Subclass:	Theria
Infra class:	Eutheria
Order:	Perissodactyla
Family:	Rhinocerotidae
Genus:	<i>Rhinoceros</i>
Species:	<i>unicornis</i>

### **External Morphology and Physical Features**

#### **Size and Weight**

Male Indian rhinos weight approximately 2,200 kg (nearly 4,840 pounds) and range in height from 170–186 cm (67–73 inches) and are 368–380 cm (145–150 inches) long. Females are smaller, weighing only 1,600 kg (3527 pounds) and standing 148–173 cm (58–68 inches) tall. Female Indian rhinos are 310–340 cm (122–134 inches) long. The average height is about 170 cm (5ft. 8 in.) with a girth of 335 cm (11 ft). While a fully grown male rhino weighs around 2000–2500 kg, a female weighs around 1600 kg.

#### **Skin Colour**

They have an ashy grey, hairless, knobby, leathery, hard and thick skin which develops thick folds, resembling armour plating. Several prominent folds of skin protect the neck. The skin has a maximum thickness of four cm; the subcutaneous fat is 2.5 cm thick and well supplied with blood, which helps in thermoregulation, so that the animal is able to regulate its own body temperature in varying weather conditions. Between the folds, around the stomach, the inner legs and the facial area, the skin is rather soft and thin.

#### **Hairs**

Hairs found only at the tip of the tail, around the ears and eyelids.

#### **The Horn**

A single horn sits on top of their snout, and their upper lip is semi-prehensile. The horn of the Indian rhinoceros is typically 20–61cm long, and weight up to

65 kg. The horn can grow upto 45 cm (85 inches). It has the same horn structure as the hooves of horse and re-grows if broken off. It is made from a substance called keratin and is, therefore, very strong.

### **Other Sense Organs**

The Indian rhinoceros has relatively poor eyesight, relying more on hearing and smell to detect what is going on around them. The ears of the Indian rhinoceros possess a relatively wide rotational range to detect sounds and an excellent sense of smell to readily alert them to the presence of predators.

### **Teeth**

Although their horn may not be as long as other well-known species of rhino, Greater one-horned rhinos have very long lower incisor teeth that can be used in fighting and to inflict deep wounds. In males they can grow up to 8 cm long.

### **Food and Feeding**

Greater one-horned rhinos is herbivorous (they are primarily grazers) animal and eat on an average 1 per cent of their body weight daily, and are known to swim for their food. They sustain themselves on a purely plant based diet and feed on densely vegetated subtropical forest for fruits, flowers, buds, leaves and branches of trees and shrubs, grass, submerged and floating aquatic plants and agricultural crops, berries and roots which they dig up from ground using their horn.

### **Social Behaviour and Territorial Behaviour**

Greater one-horned rhinos are usually solitary creatures, except when sub-adult or adult males gather at wallows or to graze and females with small calves. Males have loosely defined territories where they live alone, and which they defend aggressively, but may overlap with other territories. The territories change according to food availability in relation to the current season. The female moves in and out of these territories as they like. If food is abundant within an area, it is not unusual to see several animals all grazing close together.

### **Forest Paths and Scent-marking**

They tend to use the same path, which are marked by a scent gland on the bottom of their feet. 'Middens' (rhino dung heaps) serve as communication points and mark territorial boundaries. Several animals often defecate at the same spot. Such a dung heap can become up to five metres wide and one metre high. After defecating, greater one-horned rhinos scratch their hind feet in the dung and continue to walk, they "transport" their own smell around the paths, thus establishing a scent-marked trail that is claimed by the rhino in question.

### **Wallowing**

Mud wallows can be places where several individuals meet, as a kind of social gathering. Afterwards, they separate again. By covering their skin in mud, this aids thermoregulation by preventing overheating, and also suffocates any ticks or parasites that are embedded on the surface of the skin.

## **Sounds**

Rhinoceros can communicate with 12 different, sounds, of which frequently used are snorts, honks and roars.

## **Running Speed**

It can run 40-42 km/hr as fast as and are very agile, despite their bulky shape and size while it can run at speeds of up to 55 km/hr for short periods of time. It is also an excellent swimmer.

## **Swimming**

They are very good swimmers and can dive and feed under water, seemingly enjoying the cool, wet elements of the surrounding lakes and riverines of their habitats.

## **Longevity**

Greater one-horned rhinos lives on an average upto 30–45 years in the wild; while the longevity record for those in captivity is 40–50 years.

## **Breeding**

### **Sexual Maturity**

Breeding takes place at all times of the year. The Indian rhinoceros is solitary animal and only comes together with other Indian rhinos to mate. Females starts breeding when 4–5 years old, and males are usually sexually mature when 7–10 years old. A female will leave a gap of around 3–4 years between calves.

### **Gestation Period**

This is between 15-16 months.

## **Birth**

The female Indian rhinoceros gives birth to a single calf after a gestation period that is over a year long. Just as female is ready to give birth, the female will find a solitary, quiet space to calve. The calf remains with its mother for the first year and a half of its life, before being rejected. At birth, a greater one-horned rhino calf is around 105 cm long and weighs as much as 58–70 kg.

### **Parental Care/Maternal Calves**

A calf drinks on average 20–30 litres of milk per day and grows by 1–2 kg daily. They start nibbling/feeding on roughage at the age of 3–5 months and continue to suck up to the age of 20 months in some cases.

## **Habit and Habitat**

Greater one-horned rhinos are semi-aquatic, solitary and are often seen to take up residence in swamps, forests and riversides, tropical and sub tropical grassland, savannas, deserts and shrub land.

## **Distribution**

This animal is found in India and Nepal and particularly in the foothills of the Himalayas. In the past, greater one-horned rhinos roamed freely in the alluvial floodplains, tall grassland and forests alongside the Brahmaputra, Ganges and Indus River valley. Today the species is restricted to small habitats in Indo-Nepal terai, North Bengal, and Assam.

## **Population Status**

Today, the Indian rhinoceros is a vulnerable animal and has been pushed into only a small fraction of its historical territory by human hunters and deforestation. There are around 3,000 Indian rhinoceros individuals left in the wild, two thirds of which are believed to be in the Assam region of India(4). In 2014, 2,544 were recorded in Assam (Kaziranga National Park, Chitwan National Park) alone, an increase by 27 per cent since 2006, although in early 1900s, Assam had about 200 rhinos only.

Population status in India: Kaziranga National Park [March 2012]–2290 rhinos, Pabitora Wildlife Sanctuary [March 2012] –93, Orang National Park [March 2012] –100, Manas Tiger Reserve [March 2012] –22 (translocated from Pabitora and Kaziranga since 2006). Currently 2,619 rhinoceros were recorded in wild whereas 158 Indian Rhino were recorded in captivity (At the end of 2006).

## **Reasons for Depletion and Threat**

Today, the need for land by the growing human population is a threat to the species. Many of the protected areas where rhinos have now reached the limit of the number of individuals they can support. This animal is now facing several threats due to illegal hunting, poaching, loss of habitat, etc. Some of these are as follows:

### **Hunting and Poaching**

Humans are the biggest threat to the Indian rhinoceros as they have been hunted to the brink of extinction for their horns as they are used in Asia as medicine for fever and pain. Historically, the Indian rhinoceros had a vast range across northern India but today that range has been drastically reduced due to excessive hunting. In the early 19th century, the greater one-horned rhino was almost hunted to extinction, rhinos were hunted for sport by both Europeans and Asians and also killed as agricultural pests in tea plantations. The remaining animals were only found in protected reserves, where under the monitoring of certain organisations, populations are currently being brought back from the edge of extinction.

### **Illegal Wildlife Trade**

Despite protections and bans on international trade of rhino horn, extensive illegal trade persists throughout Asia. Although there is no scientific proof of its medicinal value, the horn is used in traditional Asian medicines, primarily for the treatment of a variety of ailments including epilepsy, fevers and strokes. Asian rhino horn is believed to be more effective than African horn.

## **Habitat Destruction**

The enormous reduction in the range of rhinos was mainly caused by the disappearance of alluvial plain grasslands and deforestation. As Greater one-horned rhinos live in areas with very fertile soil, humans use the same land for farming purposes. Today, the need for land by growing human population is a threat to the species. Many of the protected areas with rhinos have reached the limited number of individual they can support. This leads to human-rhino conflict as rhinos leave the boundaries of the protected areas to forage in the surrounding villages. Rhinos, mainly females, reportedly kill several people each year in India and Nepal.

## **Predation**

Due to its large size, the Indian rhino's only real predator in the wild are large wild cats such as tigers that will prey on the Indian rhino calves and weak individuals. **Protection in the wild:** With strict protection from Indian and Nepalese wildlife authorities, greater one-horned rhino numbers have recovered from under 200 last century to around 3,333 today. However, poaching has remained high and the success is precarious without continued and increased support for conservation efforts in India and Nepal.

## **Measures taken for Conservation**

The Indian and Nepalese governments have taken major steps towards Indian Rhinoceros conservation with the help of the World Wildlife Fund (WWF). The Kaziranga National Park and Manas National Park in Assam, Pobitora reserve forest in Assam (having the highest Indian rhino density in the world), Orang National park of Assam, Laokhowa reserve forest of Assam having a very small population and Royal Chitwan National Park in Nepal are homes for this animal. The Indian state of Assam is home to the largest population of greater-one horned rhinos, with more than 90 per cent in Kaziranga National Park.

## **World Wildlife Fund Programme: Translocation**

WWF continues to play an active role in establishing new rhino populations by moving them from one protected area to another, a process called translocation. The rhinos are moved to protected areas within the Eastern Himalayas, particularly in India's Kaziranga and North Bank Landscapes. Several rhinos have already been moved from the Pabitora and Kaziranga reserves to Manas National Park, a World Heritage Site, in order to establish a new rhino population. WWF is a key partner to the Indian state government of Assam on this mission. In September 2012, a rhino monitoring team of Forest Department staff and WWF-India researchers were delighted to see a new born rhino calf trailing its mother in a remote section of Manas National Park in the northeast corner of India. Born to a rhino that was translocated in January 2012, the calf is a cause for celebration among conservationists. It indicates that translocated rhinos like this female are adapting well to their new home.

## **Tackling Illegal Wildlife Trade**

WWF and TRAFFIC, the wildlife trade monitoring network, work to stop trafficking of rhino horn by funding antipoaching patrols and supporting intelligence

networks in strategic locations to prevent rhinos from entering black markets in Asia. The South Asia Wildlife Enforcement Network (SAWEN) is now also working for this so that regional governments are able to combine information and resources. This includes early warning systems, investing in effective legislation, and improving enforcement of policies and laws.

### **Monitoring and Protection**

WWF supports national park staff and rangers with equipment and training in order to protect rhinos from poaching and track other illegal activities such as logging. They also invest in improving rhino monitoring to collect data and measure progress towards achieving rhino conservation goals, assess the reproductive health and growth rate of populations, and make the right decisions to keep rhino numbers growing at a rate of more than 5 per cent.

### **Restoring Landscapes**

As rhino populations increase, they need additional space to live and breed. WWF and partners restore rhino habitat in Nepal to increase rhino numbers and improve connectivity between protected areas. Chitwan National Park's population of greater one-horned rhinos is the second largest population of this species in the world, after India's Kaziranga National Park. In Kaziranga National Park, WWF works to secure habitat corridors so that rhinos have access to higher areas outside of the park during annual floods which inundate the park.

### **Working with Local Communities**

The protected areas of India and Nepal, where rhinos reside, are surrounded by dense human populations. It is vital to ensure that communities that live around rhino reserves are sympathetic to, and benefit from, the rhinos in their midst. WWF supports several projects to improve local livelihoods, like the successful community-run "Marmelous juice factory" in Khata, Nepal. They help to decrease conflict between people and rhinos by encouraging farmers to plant unpalatable species like menthe (mint) that generates money for the communities and supports community-based antipoaching operations.

### **Strengthening Law Enforcement**

WWF partners with national governments to strengthen wildlife laws and their enforcement, and fund antipoaching equipment and operations in protected areas. In response to a poaching spike in Nepal in 2006, WWF increased the number of security posts from eight to twenty. We also engaged ex-Army and police to patrol vulnerable points outside protected areas. Local youth volunteered to guard individual rhinos through the night. WWF relayed the information collected by these allies to key government departments so they could take action where needed. The number of rhinos poached in and around Chitwan in 2007 fell to only one. WWF expanded the operation to protect the diminishing rhino population in Bardia National Park, the second-largest stronghold for rhinos in Nepal. In 2011, Nepal celebrated a landmark year where zero rhinos were poached.

## Conservation Challenges

For years, rhinos have been widely slaughtered for their horn, a prized ingredient in traditional Asian medicines. Destruction of their habitat over the years, has brought the rhinos to the brink of extinction. The great one-horned rhino could once be found from Pakistan all the way through India, Nepal, Bangladesh, Bhutan and Myanmar. By the turn of the century, this species had vanished from much of its range, and today only about 3000 survive in India and Nepal. Throughout their range, their habitat continues to dwindle fast due to conversion of grassland habitats into agricultural fields and other human pressures. The threat of poaching continues to be ever-present.

## WWF-India's Future Programme

Conserving the rhinos and their habitat is imperative. WWF has been working on rhino conservation for over four decades. The big programme initiated by WWF is the "Indian Rhino Vision 2020" (IRV 2020). The vision of the programme is to increase the total rhino population in Assam to about 3000 by the year 2020 and just as significantly ensure that these rhinos are distributed over at least seven protected areas to provide long-term viability of an Assam meta population of the species. This will be achieved by translocating the rhinos from two-source populations (Kaziranga and Pobitara) into 3 or 4 target Protected Areas (Manas, Laokhowa, Burachapori, Kochpora, Dibrusaikhowa and, possibly, Orang).

## Other Challenges

The Forest Department faces a major challenge as lack of equipment, finance, political will and shortage of staff makes it difficult to implement conservation work at the grass root level. Two serious on the ground problems include, containing poaching and loss of habitat due to encroachments.

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