

Situated in the northeastern state of Assam, the national park of Kaziranga attracts a sizeable number of tourists every year - local as well as overseas. A world heritage site, this park offers the visitor stunning glimpses of the magnificent Indian one-horned rhinoceros, the Asiatic wild water buffalo, the Asian elephant and tiger, and a number of birds. Perhaps for the first time, Kaziranga comes in for scrutiny in such form. Its history, flora, fauna, conservation status are discussed in detail, supplemented by attractive visual references. Written in extremely readable language, this book is bound to be of interest, to the reader in general and to conservationists and tourists, in particular.

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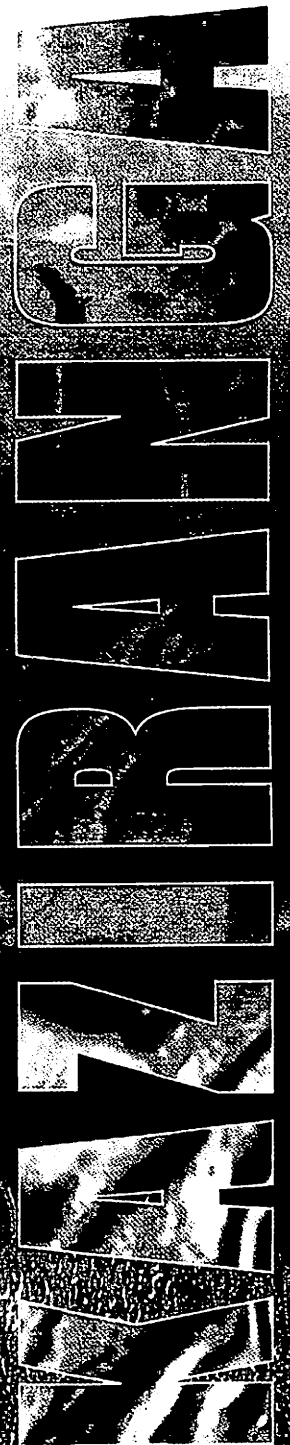
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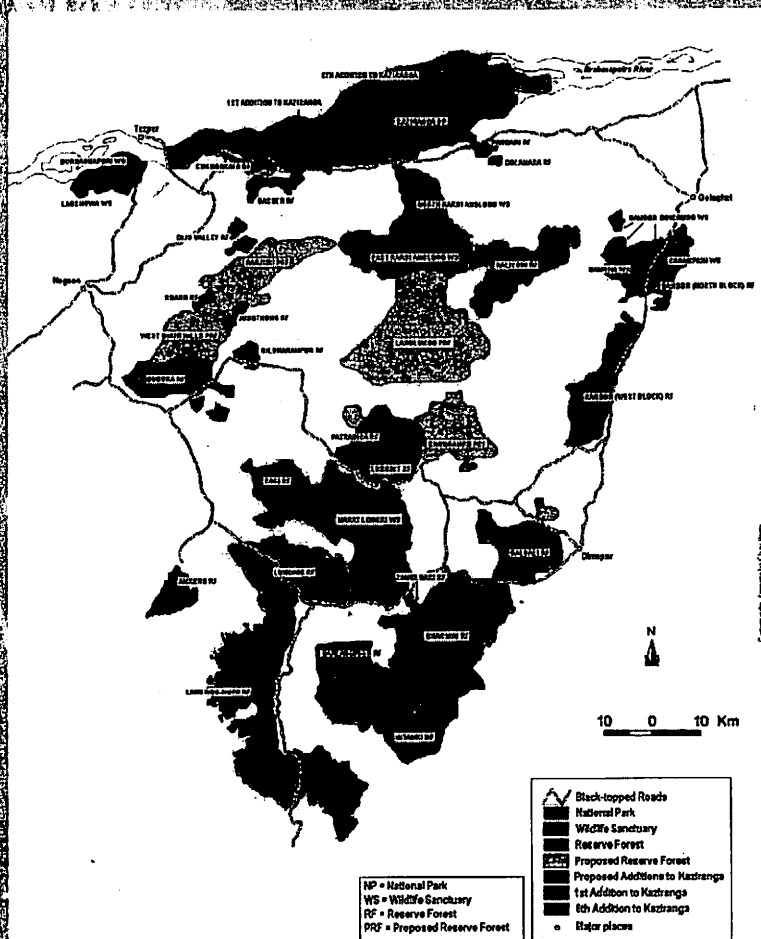
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INTRODUCTION



It was way back in 1908 when the dwindling rhino-population caught the attention of the British administrators, that a small area on the floodplains of the Brahmaputra river was declared a reserved forest. It is believed that Lady Curzon was instrumental in getting Kaziranga declared a reserve forest, the preliminary notification [announcing the intention of the Government] of which was issued on 1st June 1905. The wife of the then Viceroy of India, Lord Curzon had visited the area to see the rhino but was not lucky enough to have a closer look. However, three-toed footprints were enough to convince her of the existence of this interesting beast. It is also believed that on her return she persuaded her husband to take steps for the preservation of the rhino that was fast disappearing due to poaching. Lord Curzon's role in preservation of the Indian lion in Gir forest, is well-known (he refused to shoot when he heard that their population had dwindled and urged the Nawab of Junagadh to give them stricter protection).

In 1916, Kaziranga was upgraded to a game sanctuary and in 1950, to a wildlife sanctuary. In 1974, it was declared the first national park of Assam. In 1985, it was included in the UNESCO's list of World Heritage Sites. Sprawling over three districts, Golaghat, Nagaon, and Sonitpur, the park covers an area of 472.5 sq km, which includes the original notified area of 428.7 sq km and the first addition of 43.8 sq km, which was included in 1996. An area of 376 sq km was proposed in 1999 as the sixth addition but

is yet to materialise owing to a case filed by some settlers in the Gauhati High Court which prevented further eviction of people living there. Very soon, it will become the 28th Tiger Reserve and consequently be entitled to greater funding and support from the government.

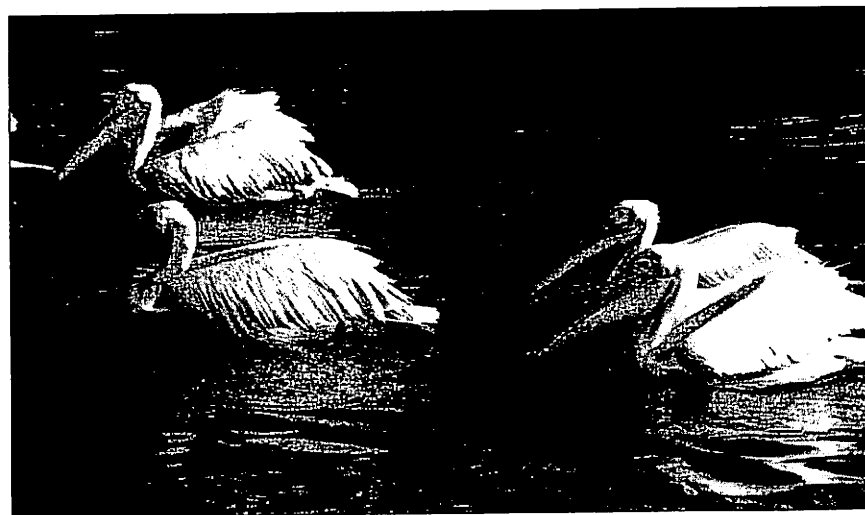
The river Brahmaputra flows along the northern boundary of the park (See Box 1) while the hills of Karbi Plateau lie towards the south. The park stretches about 50 km (as the crow flies) along the south bank of the Brahmaputra from near Bokakhat in the east to Jakhalabandha in the west, and if the sixth addition is taken into account, that is up to Kalia-Bhamora bridge in the west, the distance comes up to about 80 km -- the sixth addition also includes a few islands.

Box1 : The river Brahmaputra is the lifeline of the state of Assam. About 60 per cent of the state is the valley of this river. Originating in south-west Tibet, China, it flows for about 2900 km to reach the Bay of Bengal. The width of this river varies from about 1.5 km near the bridge at Guwahati to more than 8 km at places. During monsoon, the Brahmaputra river carries immense quantity of water laden with silt and submerges most of the *chars / chapories*. It is one of the largest 'braided' rivers in the world and innumerable sandy and grassy islets (*chars / chapories*) dot its bed in winter. Floods and erosion are a feature of this river. For Kaziranga, its erosion is a major problem but for the survival of the ecosystem, which is dominated by grassland and wetland, the annual flood is a blessing in disguise. The



flood water replenishes the wetlands and allows grassland to flourish.

The Diffolu is the main river that drains the interior of the park. The Diffolu originates in the Karbi Plateau and cuts the park into two while flowing towards west before merging into the Brahmaputra. Mori Diffolu and Deopani are the other noteworthy rivers. There are a large number of *beels* (oxbow-lakes created by changes in the water channels and depressions) scattered all over. Some noteworthy ones are Ahotguri, Amoraguri, Bahu, Bhaisamari, Bimoli, Boka, Borbeel (Baguri), Borbeel



(Arimora), Dafflong (Baguri), Dafflong (Kohora), Dunga, Gondarmari, Goroimari, Jhalki, Kaporkata, Kathpora, Kilakili, Koladuar, Mihi, Mona, Morphuloni, Natun, Phalihamari, Roumari, Sapekati, Sohola, and Ubhata.



The climate of the area is the tropical 'monsoon' type with a hot wet woodland and some wetlands while the sixth addition comprises of the summer and a cool dry winter. Winter rains are also not uncommon. water area of the Brahmaputra river with wide sandy *chapories*, often with Annual rainfall varies from 2000 to 2900 mm. The temperature generally grass.

ranges from 7°C in winter (minimum) to 35°C in summer (maximum). A feature of the winter months is the dense fog, especially during night and early morning.

Kaziranga is the largest grassland area left in north-eastern India. The tall grass and reeds, also called the elephant-grass or the wet savanna, grassland, grow up to a height of over five metres during rainy season. *Erianthus ravannae* (Ekra), *Phragmites karka* (Khagori), *Arundo donax* (Nal), *Imperata cylindrica* (Ulu kher) and *Saccharum* spp. (Kher) are the main species. *Alpinia allughas* (Tora), a herb, grows abundantly all over the grassland, especially in the damp areas. Overall, about 65 per cent of the original Kaziranga National Park area is grassland. Of the remaining, about 7-8 per cent is waterbodies such as *beels* and channels while the rest is woodland. Small patches of mixed deciduous woodland with *Albizia procera* (Koroi), *Lagerstroemia flos-reginae* (Ajhar), *L. parviflora* (Chida), *Bombax ceiba* (Simul or silk cotton), *Dillenia pentagyna* (Oxy), *D. indica* (Ou-tenga), and *Zizyphus mauritania* (Bogori) are scattered over the grassland. A fine patch of semi-evergreen forest with *Artocarpus chaplasha* (Cham kothal), *Terminalia myriocarpa* (Hollock), *Tetrameles nudiflora* (Bhelu), *Dillenia scabrella* (Banji-ou), *Ficus* spp., and other species is found in Kanchanjuri area towards southwest. Canebrakes are also common in the woodland. *Barringtonia acutangula* (Hijal) grows in the waterlogged area. The first addition was mostly grassland with small patches of

The park is divided into four 'ranges' for administrative convenience. These are Kaziranga (Kohora), Western (Baguri), Eastern (Agoratoli), and Burhapahar. The park headquarters are at Bokakhat.

For administration and management, the Kaziranga national park has been divided into four ranges. These are, Agoratoli, Kaziranga, Baguri and Burhapahar. The Agoratoli range covers the eastern part of the park and includes places like Sohola *beel*, Koladuar pelecany, Debeswari *chapori*, etc. The Kaziranga range covers the central part of the park covering areas such as Mihimukh - where the popular elephant ride for tourists take place, Hulalpat, Arimora and also Panbari reserve forest. The headquarters of this range are at Kohora. The Baguri range controls the western areas of the original park including Kanchanjuri, Dunga, Gotonga and Diffolumukh. This range has the highest density of rhinoceros. The Burhapahar range covers the 1st Addition area and the Kukurakata reserve forest. The range office is at Ghorakati.

Location: 26°34'-45'N, 93°06'- 93°36'E [with 6th Addition, it is: 26°34'-46'N, 92°52'- 93°36'E].

Topography: Mostly floodplains at the edge of a plateau.

Elevation: 67-80m above the mean sea level.

Slope: East to west and south to north-west.

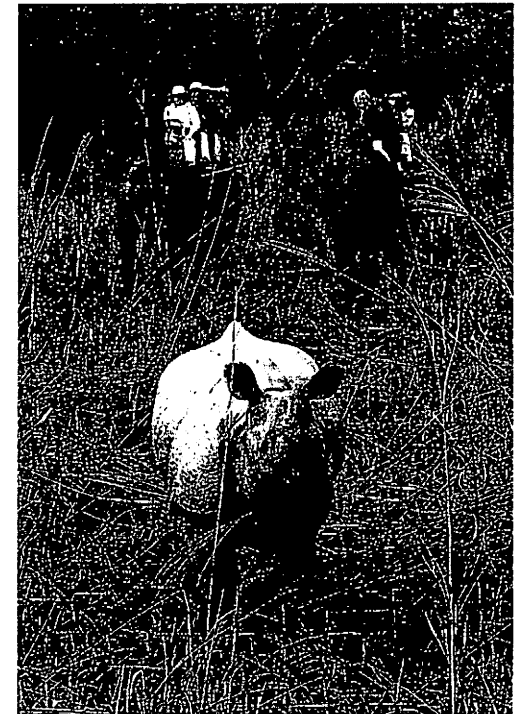


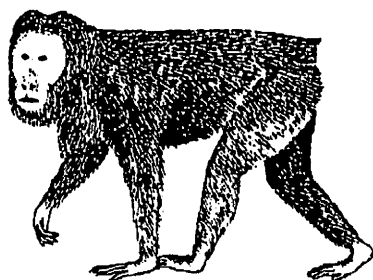
The animal that has made Kaziranga world famous and which is also most endangered is the Indian one-horned rhinoceros*. About 60 per cent of the world population of this species is concentrated in this park. At one time the species had a distribution range that covered most of the north Indian plain from Peshawar (now in Pakistan) in the west to Arunachal Pradesh in the east. There are unconfirmed reports of sightings from upper Myanmar. The first signs of the Indian rhinoceros was a seal bearing its figure, discovered during Mohenjo Daro excavations. There were also fossil records from Lake Kaneval in Gujarat dating back to 8000-1200BC. In 1398, Timur Beg hunted it on the 'frontiers of Kashmir' while the Mogul emperor Babur shot it on the banks of the Indus in 1519. Akbar, the third of the great Moguls (1542-1605), recorded the appearance of rhinos near Sambhal in Uttar Pradesh while his son Jahangir mentioned them in his memoirs as inhabiting Aligarh. During the sixteenth century the rhino existed in most parts of the Gangetic plains. However, by the turn of the 19th century the species was found mostly in the terai grasslands at the base of the Himalaya and in the Brahmaputra valley. The disappearance of the rhino from most of northern India was due to habitat destruction and climatic changes, although hunting had also played a role in some localities. There are examples of 97 animals killed in a single month by a Rana, Prime Minister of Nepal while the Maharaja of Cooch Behar had once shot five rhinos before lunch!

* Scientific names of mammals given in Appendix 2

Presently, the species is confined to a few pockets in Nepal, northern West Bengal, Assam and Uttar Pradesh (where they have been reintroduced to the Dudhwa National Park) with stragglers in Arunachal Pradesh and occasional wanderers in Bhutan, northern Bangladesh and Bihar. Throughout its range it is the most endangered animal, under perennial threat from poachers. The renowned naturalist, the late E.P.Gee (1964) believed that 'only about a dozen rhinos were left' (perhaps a few dozens!) in around 1908 in Kaziranga. The first census, by using direct-count method from elephant-back, was carried out in 1966 when 366 animals were counted. Today more than 1500 rhinos can be found (see box 3.)

Kaziranga is perhaps the greatest conservation success in India, if not Asia. There are locations where, from a single watch-tower, one can see more than thirty rhinos (e.g., Dunga in Baguri Range). Despite this success, the growth rate had shown alarming decline till 1993, from 48.7 per year (growth rate) between 1966 and 1972 to only 9.3 between 1984 and 1993. This was because poaching was at its peak





Stump-tailed Macaque

during that period. The situation, however, improved subsequently and the growth rate was at its best during 1993-1999, 64.7 per cent. The important question is whether Kaziranga can or should sustain such a large single population of rhinos. In

the long run some rhinos may have to be relocated. This was discussed in the Asian Rhino specialist group meeting; though the Assam government has no immediate plans, relocation is very much on the agenda. With improved situation, Laokhowa and Manas will be taken up as priority sites.

The rhino is hunted mainly for its horn. It is not a true horn but compressed hair and other fibrous keratins. It has been used in Oriental medicine since time immemorial. The main user countries are China, Taiwan, South Korea, Japan, Thailand and Singapore. It is also used in traditional Tibetan medicine. It is mainly used as an anti-pyretic and also as an aphrodisiac. In Yemen and also to some extent Oman, the horn is in demand for its use as dagger handle, locally called *jambiyas*, which is regarded as a status symbol.

The poaching which was usually restricted to less than 10 rhinos per year in the 1970s suddenly took a phenomenal turn in the 1980s with an average of 30 rhinos per year (see box 3). Poaching may go undetected especially when the carcass is buried after the animal is killed in a pit. Poaching recorded its highest figures in the 1980s. In 1986 45 animals



perished. However, the all-time high figure was recorded in 1992 with 49 rhinos falling to poachers. Altogether more than 650 animals were slaughtered between 1965 and 2002. However, poaching has been controlled to a great extent since 1998, with the average coming down to five rhinos per year (lowest since 1980). A sharp rise in the price of the rhino-horn (often costs more than a few lakh Indian rupees per kilo in south-east Asian markets; retail price in Taipei occasionally crosses one million rupees!), increase in demand in east and south-east Asian markets and easy availability of fire-arms were the main reasons behind the spurt in poaching. Because of the lure of large monetary rewards poachers do not hesitate to risk their own lives. Every year a few poachers lose their lives in encounters with forest department personnel. Yet the assault continues. The maximum number of poachers killed in a single year was 12 in 1994.



Oriental or Indian Pied Hornbill

This is the front line in a war to protect India's natural heritage from commercial exploitation.

There are five species of rhino in the world of which the Indian rhino is the second largest, after the African white. Out of the five species, two are in Africa and three in South-East Asia. The African species are the Black rhino (*Diceros bicornis*) and the white rhino (*Ceratotherium simum*). While the Asian species are the Indian rhino, the Javan rhino (*Rhinoceros sondaicus*) and the Sumatran rhino (*Dicerorhinus Sumatrensis*). The Indian rhino is also the second largest land mammal in Asia after the elephant. A full grown male may attain a height of more than six feet at shoulder and weigh up to 2500 kg. A female starts breeding at the age of five years and the inter-birth interval is three years. Usually a single calf is born. The normal length of a horn is 15-20 cm but there are many records of horns which are more than 30 cm. There is a specimen at the Natural History Museum (formerly British Museum of Natural History) which is 60 cm long! Although primarily a grassland-dweller, it often enters forest to transit or rest. In the grassland, it favours short grass along *beels* (marshes) and during the hot hours of the day, rests in wet muddy wallows. This also ensures protection against external parasites, and against flies, which try to

Box 2

Estimates of rhinoceros population in Kaziranga

Year of census	Number or rhinos
1966	366
1972	658
1978	939
1984	1080
1991	1060 (+60)
1993	1164
1999	1552



lay their eggs between the folds of the rhino's skin. An interesting feature of the rhino is its habit of depositing its dung at certain fixed places known as middens. However, it is not necessarily the same animal using the site but could be any one passing through the area. The rhino is generally a solitary animal although up to eight have been observed wallowing together.

Box 3

Poaching of rhinoceros in Kaziranga

Year	Number or rhinos
1974	3
1975	5
1976	1
1977	0
1978	3
1979	2
1980	11
1981	24
1982	25
1983	37
1984	28
1985	44
1986	45
1987	23
1988	24
1989	44
1990	35
1991	23
1992	49
1993	40
1994	14
1995	27
1996	26
1997	12
1998	8
1999	4
2000	4
2001	8
2002	4
2003	0 (upto 30-11-2003)