



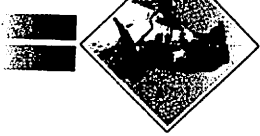
Photo courtesy : Ritu Raj Konwar

Enchanting Kaziranga

A J T Johnsingh

One late evening, we came across three armed guards patrolling through the grassland, about four kilometres away from their camp. To walk at such a time of the day calls for an extra amount of dedication, courage, skill in jungle craft and motivation from senior officers. It is these people who silently fight in the forefront of the conservation battle today, facing the dangers that threaten the wildlife and its habitat.

It was early February 1989, and I was in Kaziranga National Park (NP) in northeast India with colleagues from Wildlife Institute of India, to conduct a short course in wildlife conservation for forest officers. During one exercise, some of us were in the watch-tower overlooking the Donga beel, a large pond, in Bagori Range. In and around the large water body, we saw several species of wildlife. Under the warm and pleasant early noon February sun, several cormorants, darters and grey pelicans were hunting in the water, which seemed to be full of fish, particularly chitol, some even bigger than the pelicans! A dozen greater one-horned rhinoceros, at least 30 Asiatic wild buffaloes, and large number hog deer and swamp deer (*Cervus duvauceli duvauceli*) were grazing on the sprouting green grass on the water's edge. It was around 1100 hours when some movement in the tall grass about 500 m from



us, caused by a reddish animal, much bigger than a hog deer, attracted my attention. I focused the binoculars on the animal, and found a tiger stalking a group of hog deer which was about 50 m from the edge of the tall grass. The tiger crawled for about 10 m to a clump of short grass, crouched and waited. Nevertheless, one doe noticed the tiger, raised her tail in alarm, stamped her forefoot, and probably gave an alarm call. The entire group ran away. I expected the tiger to make a quick run for the fleeing deer, which were in the open area. Instead, the cat abruptly got up and walked back into the tall grass.

In the early nineteenth century, when the area in and around the present day Kaziranga NP was opened up to outsiders, it was an unspoiled wilderness, teeming with elephants, rhinos, wild buffaloes and tigers. Every year during the monsoon swelling waters of Brahmaputra River, in the absence of National Highway 37 built on raised earthen mound, lapped the foothills of Karbi - Anglong hills and in the process forced most of the large mammals living between the river and the hills to the safety of the highlands. Gradually, large tracts of forests were cleared for raising tea plantations. Grasslands on the fertile and alluvial river banks were burnt, ploughed and planted with rice. This was also a period of intensified oil exploration, and the first refinery was established at Digboi in 1891. The British Royalty also indulged in their

in 1908. In 1916, a small portion of the present day Kaziranga NP was declared a Game Sanctuary. Gradually, more areas were added, and in January 1974, 430 km² of rhino, elephant tiger habitat was declared National Park.

Kaziranga NP ranges over two districts, Nagaon and Golaghat. Extending from the south bank of the Brahmaputra River, the Park runs for about 30 km parallel to the Difaloo River, which forms the southern boundary and runs almost parallel to the National Highway No. 37 and the foothills of Karbi Anglong (Mikir) Hills. Kaziranga is almost flat, with a gentle, rather imperceptible slope from east to west. The soil has heavy deposits of silt sands and alluvial deposits from the Brahmaputra River and numerous other rivers that flow through the Park. Flood waters entrapped at some places have formed beels. Some of these beels have silted up, giving way to swamps and marshes. Three distinctive vegetation types, alluvial grasslands, alluvial woodlands with dense patches of cane, and tropical semi-evergreen forests with cane, can easily be identified. Grasslands form about 66%, woodlands 28%, and water bodies 6% of the Park. The great expanses of tall, coarse grasslands are burnt every winter to keep the encroachment of woodlands at bay, and to promote sprouting of protein-rich tender grasses, which constitute the main food for the numerous ungulates.

The star attraction of Kaziranga NP is undoubtedly the rhinoceros

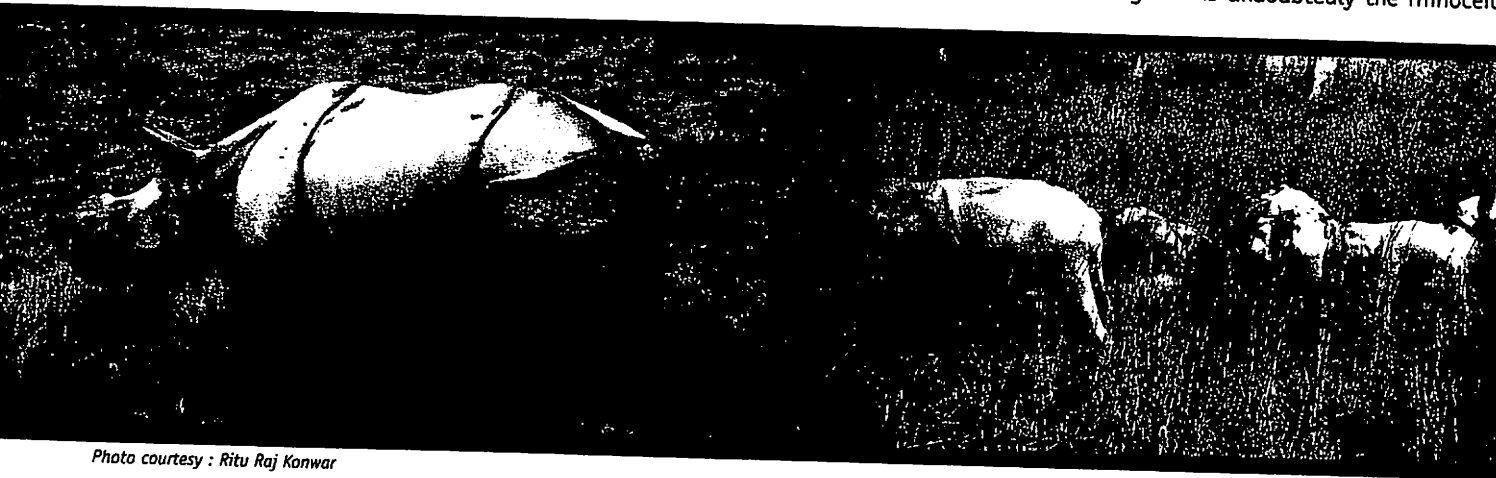


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favourite pastime of big game hunting, along with their Indian counterparts, with reckless abandon. All these pressures naturally led to a drastic decline of wildlife all over Assam, and it is even reported that around the turn of the 20th Century, only about a dozen rhinos survived in the present day Kaziranga NP. However, even in those days, the British realized the values of present day Kaziranga NP, and in the year 1905, the preliminary notification declaring the Government's intention to make Kaziranga a Reserve Forest, was published. This was followed by the formal declaration

Nearly 1500 of these endangered grassland-dependent species are found in the Park. Although other protected areas such as Manas Tiger Reserve (TR) in Assam, Jaldapara Wildlife Sanctuary (WLS) in West Bengal, and Chitwan NP in Nepal, also have rhinos, Kaziranga NP has nearly 70% of the world's population of this endangered species. Kaziranga NP is also one of the strongholds of the Asiatic elephant whose population is reported to be around 900. During the rains from May to August, most of these elephants migrate to the adjoining Karbi Hills, and return to the Park with the onset of winter.

The other major attraction of Kaziranga is the wild buffalo, another grassland-dependent species, whose number in the Park is around 2000. In the past, the buffalo had a much wider distribution in India, being found in Orissa, Madhya Pradesh, West Bengal, Assam, Meghalaya, Tripura and Arunachal Pradesh. Now it is extinct in Orissa, West Bengal and Tripura, and less than a hundred struggles for survival in the recently created Indravati TR in Madhya Pradesh. Populations in Arunachal Pradesh and Meghalaya also don't have a bright future. The survival of this species seems to be secure only in Manas and Kaziranga.

Wild buffaloes in Kaziranga faced the problem of habitat destruction, hunting, disease, and genetic swamping by domestic buffaloes. Fortunately, the first two threats are not that serious now, but the other two still loom large over the future of the buffaloes. All along the islands (chapanis) of the Brahmaputra River, there are several domestic buffalo camps known as khutis. Wild bulls from the Park enter herds of domestic buffaloes and impregnate the cows. The wild ones in such encounters also kill domestic bulls of the khutis. Sometimes the female buffaloes from khutis escape into the Park, and live with the wild herds, resulting in the gradual genetic adulteration of the true wild herds. Such contact with domestic herds also leads to incidents of disease such as rinderpest and foot-and-mouth disease. To study this problem in depth, and to formulate some strategies for managing wild buffaloes, the Assam Forest Department in collaboration with Dr. P.K.Mathur and Dr. Parag Muley of Wildlife Institute of India has taken up a research project to identify the herds of pure wild buffaloes in Assam using electrophoretic studies.

In addition to these larger mammals, the Park also has Gangetic dolphin in the



Photo courtesy : Ritu Raj Konwar

Brahmaputra River. There could be a population of 4000 wild pig, which grow into magnificent specimens, 600 swamp deer (the largest population in eastern India) and 5000-8000 hog deer. Both the deer species are grassland dependent. Sambar, barking deer and gaur are reported to occur in the wooded areas. The woodlands of Kaziranga NP are also reported to harbour king cobra, another endangered species. Assamese and rhesus macaques, capped langur and hoolock gibbon are the four species of primates found in the Park. Little over fifty tigers live in the Park, preying on the unwary of the prey species. Sloth bear, Himalayan black bear, jungle cat, leopard cat and fishing cat are also said to occur. Jackals are absent. Leopards, although rare in the Park, are frequently spotted in the surrounding tea gardens.

The beels, streams and rivers of the Park serve as breeding reservoirs for numerous commercially important fish species, which replenish the stock of the Brahmaputra River during the annual floods. A large number of otters, may be all the three species of India, Eurasian, smooth-coated and small-clawed otters live in these water bodies.

We found Kaziranga an exciting place for watching birds. About 500 bird species are reported from the Park. We saw large flocks of bar-headed geese, several lesser adjutant, black-necked and Asian open-billed storks in and around the water bodies. Pallas's fish eagles and grey-headed fish eagles flew over the aquatic bodies looking for unwary prey. Noteworthy terrestrial birds were the swamp francolin (an endangered species), red jungle fowl and kalij pheasant. Large flocks of noisy red-breasted parakeets attracted the attention of the visitors. Kaziranga is also home to the Bengal florican, another critically endangered species wholly dependent on undisturbed terai grasslands for its survival. The frequent sighting of fishing eagles, whose numbers have plummeted in other parts of their range due to scarcity of fish and increased levels of pesticide use, indicate the productive nature and the yet unspoiled status of the Park.

Kaziranga has two perennial problems, one is the annual flood and the other is rhino poaching. Incidents of heavy floods during the last two years (1987-88) indicate that this problem may grow more serious in the future, and this increase is attributed to deforestation in the Arunachal Pradesh Himalaya and the consequent silting up of the Brahmaputra riverbed. Damage caused by floods to wildlife during 1988 was particularly serious, in spite of the valiant efforts taken by Mr. R.N. Sonowal, DFO of the Park, and his dedicated team. Hundreds of animals perished in the flood waters and the most adversely affected species were hog deer and swamp deer. Forty eight rhinos also perished in the flood. During floods, animals migrate to the higher areas south and west of the Park, where they fall easy prey to the poachers. One measure taken by the Park management to help the animals during the floods, is building up of flood shelter mounds of earth at various places in the Park.



One kilogram of rhino horn fetches around Rs. 80,000 in the smuggler's market and a big horn could weigh about one kilogram. This has led to the merciless killing of rhinos for the supposedly aphrodisiac properties of its horn. The Park has nearly 300-armed guards who do their best to control poaching. Yet, poaching is serious during floods, when mobility of the guards is hampered, and when rhinos stray beyond the southern and western boundaries of the Park.

To give better protection to animals, the Assam Forest Department has an ambitious programme to enlarge the Park to 940 km² by adding six islands on the Brahmaputra River and by creating several corridors between the Park and the Karbi Hills. This inclusion would add the stretch of Brahmaputra adjacent to the Park, nearly 40 km² of potential rhino area in the west, and 33 km² of the Karbi Hills close to the southern boundary. If the Park is enlarged, the hands of the Forest Department would be considerably strengthened, as they then would have control over the stretch of Brahmaputra River adjacent to the Park, where the poachers come in the disguise of fishermen. The Park personnel will also be able to protect the animals when they migrate to the Karbi Hills during the floods. The corridors between the Park and the Karbi Hills would also ensure the migration of elephants and other species such as the gaur and black bear and dispersal of excess tigers from the Park.

Unfortunately, the Forest Department faces several problems to achieve this goal. The main hurdle is the lack of motivation from the Assam Government. For example, in 1974, the Central Government gave an assistance of Rs. 4, 50,000 to the Assam Government, to enable them to acquire control over the 33 km² of Karbi Hills, which are under the control of the Karbi Anglong

District Council. The money was paid to the Council way back in 1974, and it is now willing to return the money along with the accumulated interest. For political reasons, the Assam Government is not in a position to force the District Council to allow the Forest Department to take control over the area. To overcome this stalemate, the support of the Central Government and conservation agencies is urgently needed. Whatever additions are to be made should be done soon, otherwise with the ever-growing pressures, the task would become impossible, and Kaziranga would become an island surrounded by a hostile country of tea gardens, poachers and encroachers.

One late evening, while driving back to the forest bungalow, we came across three armed guards patrolling through the grassland. We were told that they were about four kilometres away from their camp. As wildlifers, we all know how dangerous it is, even while armed, to walk along a trail through tall grass inhabited by elephant, buffalo and rhino at such a late hour. To walk at such a time of the day calls for an extra amount of dedication, courage, skill in jungle craft and motivation from senior officers, who possibly set an example by frequently leading such patrol parties. It is these people who silently fight in the forefront of the conservation battle today, facing the dangers that threaten the wildlife and its habitat. It is relatively easy to declare an area a Sanctuary or a National Park, but it is increasingly becoming apparent that it is very difficult to protect the values of an area so constituted. The morale of these guards, who often spend months together in remote areas away from their families, and frequently get outnumbered and 'out-gunned' by poachers, should always be kept high.

Long-term conservation of Kaziranga NP depends upon several factors. Some of the

key factors are the political stability in State; a change in the lifestyle of people the Arunachal Pradesh Himalaya, from jhuming to settled farming, which would enable the mountains to revegetate, and to reduce siltation in the river beds; and the continued commitment of the wildlife office to protect Kaziranga. What is urgently needed now is to increase the area of the Kaziranga NP to the desired size of 940 km², however challenging a task it may be.

Postscript

Years passed by, and I could visit Kaziranga again in February 2002. I observed the elephants during the month of February largely feed on the tender shoots of the cane, and debarking, a sign of stress in an elephant habitat, was very rare in the Park. On one occasion we walked a short distance along Brahmaputra river bed, and saw the tracks of a large bear possibly of Himalayan black bear, tiger, wild buffalo, rhino and elephants, and realised that such exciting riverbeds are exceedingly rare on Mother Earth. I wondered what the bear will be



eating in the Park as the only edible fruit I saw was of *Zizyphus mauritiana* the fruits of which were as big as a small lemon indicating the productivity of the land. The bear could also be scavenging on the tiger kills. I saluted the brave bear (during my short stay I had seen tracks in two different places), which manage to survive even in the alluvial floodplain habitat with a high density of tigers but scattered trees where therefore the chances of scurrying up the trees when confronted by a tiger are less. Although we drove around for 120 km, criss-crossing the entire stretch of the Park, there was not a single sighting of barking deer, sambar and gaur (however, during a later trip in August 2002 along the cane-laden riverine tracts I could see ten sambar and two barking deer).

Mr. N. K. Vasu of the Indian Forest Service and the Director of the Park, briefed us about the problems of the Park: invasion of grasslands by thorny exotic *Mimosa invisa* which was brought to the tea gardens to enrich the soil, siltation of *beels*, and lack of funds, with the Assam Government having to fill up nearly 100 vacancies of frontline staff. Mr. Vasu, who has the fitness and courage to walk across Kaziranga NP with his staff, however, was exceedingly proud of the dedication of his staff, including 60 temporary staff that was paid only meagre wages. The frontline staff man nearly 130 anti-poaching camps. He said that the staff is so dedicated to Kaziranga NP, that even a threat that they may be transferred from the Park if they do not work properly, makes them cry.

The DNA-fingerprinting research and morphometric studies done by the Institute shows that the buffaloes inhabiting the National Park and the islands on Brahmaputra river along the northern boundary (swamp buffaloes) are genetically and morphologically different from the buffaloes along the southern boundary (river buffaloes) which are similar to domestic buffaloes. Every effort, therefore, should be made to safeguard the swamp buffaloes from genetic swamping by river buffaloes.

Since the publication of the earlier version of this article, due to the continued dedicated efforts of the Park management, new areas have been added to Kaziranga NP. These areas are the six islands on the Brahmaputra River, four corridors between the Park

and the Karbi Hills in the south, and one between Kamakhya Reserve Forest and the Park in the west. As a result the area under the direct control of Kaziranga NP is now around 860 km². Human settlements in this conservation area, which are inimical to wildlife, are slowly being amiably resettled outside. The valiant and dedicated guards, by killing several poachers every year and sometimes sacrificing their own lives, keep rhino poachers at bay. In July 2002 the total number of poachers killed stood at 60. By monitoring rhino trails or dhandis, where poachers dig pits to trap rhinos, the guards have brought down the incidents of rhino poaching significantly: between 1981 and 1996 on an average 31 rhinos were killed but in 1997-2001 the average number of rhinos killed was seven. But walking in the tall grass habitat in Kaziranga NP leads to encounters with rhinos and buffaloes making the guards vulnerable either to death or injuries. In July 2002 the number of guards seriously injured and therefore became unfit for active service stood at 60. This battle against poaching immensely benefits the prey species and tiger. As a result, as found by Dr. Ullas Karanth by his camera trap studies, Kaziranga NP supports a density of 18-20 tigers/100 km², the highest recorded in the entire range of the tiger.

Rightly, conservation attention has now shifted to the Karbi Hills, an area of 15,000 km². There is a proposal to enlarge the existing Garampani Wildlife Sanctuary east of Kaziranga NP to ca. 150 km² and establish the 250 km² Karbi Anglong (West and East) Wildlife Sanctuary. This will lay the foundation for creating a mega conservation unit stretching from Kaziranga NP to Intanki WLS in Nagaland. Nevertheless, conservation can succeed in Kaziranga NP and the adjoining Karbi Hills, only when Assam and the adjoining Nagaland, treasure troves of biological diversity, do not slip into an anarchy of insurgency. The primary effort to secure the future of these biodiversity-rich areas should be to speedily and amicably solve the problem of millions of illegal Bangladeshi immigrants, who will otherwise eventually destroy the wildlife splendour of protected areas like Kaziranga NP forever. We should not allow the dedication and sacrifice of hundreds of frontline staff, who have significantly contributed to securing Kaziranga NP the status of a World Heritage Site in 1985, to go in vain.

Dr. A. J. T. Johnsingh, Dean, Wildlife Institute of India, Dehradun since March 1985, is the first Indian to study on a free ranging mammal, dholes or Asiatic wild dogs (Cuon alpinus). He has wide range experiences on Asian elephant (Elephas maximus), Asiatic lion (Panthera leo persica), ibex (Capra ibex sibirica), goral (Nemorhaedus goral), Nilgiri tahr (Hemitragus hylocrius), Sloth bear (Melurus ursinus) and tiger (Panthera tigris) etc. He represents the World Conservation Union (IUCN) in their Asian elephant, Cat, Canid, Bear and Caprinae Specialist groups. Mahseer conservation is one of his passions. He has published 69 scientific papers and written 74 popular articles on conservation.

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