

100 tigers,
2,000 one-horned rhinos,
1,800 wild buffalo...

Kaziranga National

Park is

India's

Grassland Kingdom



Each of Kaziranga's 1,300 elephants downs an average 300 pounds of forage and 50 gallons of water a day—more than the park can provide at times. Upland forest reserves are vital for these and other species, but expanding human settlement could sever access.







The rhino charged. A park guard, riding with the *Geographic* team, tried a warning shot, but his rifle jammed. A rhino can run 25 miles an hour, and cars can get rammed—or worse. The driver of this one managed to speed away.

By Douglas H. Chadwick
Photographs by Steve Winter

An Indian one-horned rhino

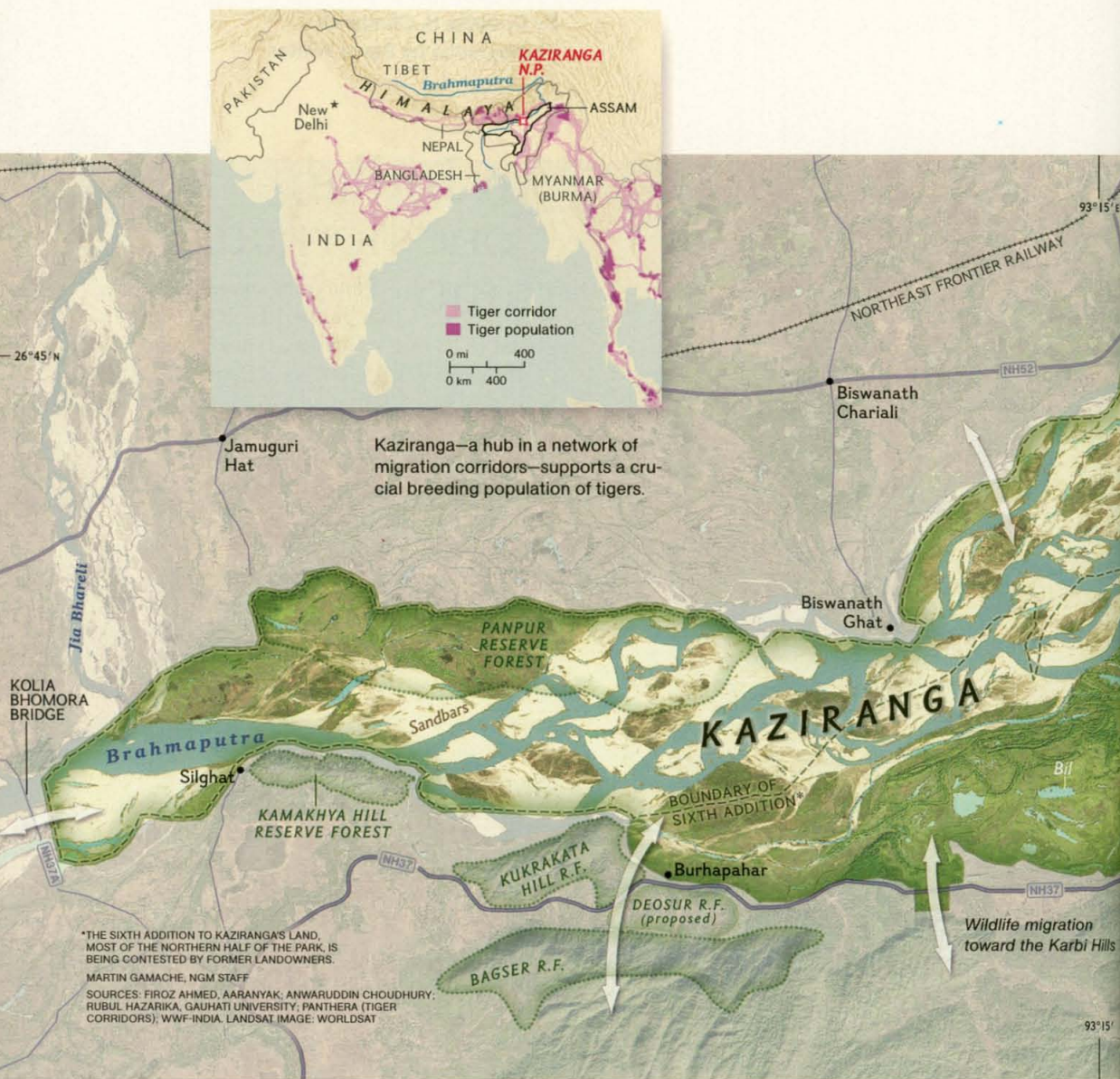
—*Rhinoceros unicornis*, the kind that looks like it has shields bolted to its butt—weighs as much as an SUV. Only Africa's white rhino is larger. Only the Sumatran rhino (population 350 or fewer) and Javan rhino (50 or fewer) are more imperiled. Once common from Pakistan to Myanmar, *R. unicornis* is represented today by fewer than 2,700 animals. A quarter are confined to ten little reserves in northern India and neighboring Nepal. Virtually all the rest—about 2,000 at the latest count—live in Kaziranga National Park, a 332-square-mile reserve that takes in 50 miles of the Brahmaputra River with its sand islands, a few areas to the north, and a much larger portion of the floodplain to the south. Excluding the river, that's an average of 11 ancient, armored, irritable unicorns for every square mile of the park.

Fewer than 200 were left in the north Indian state of Assam a century ago. Agriculture had taken over most of the fertile river valleys that the species depends on, and the survivors were under relentless assault by trophy hunters and poachers. Kaziranga was set aside in 1908 primarily to save the rhinos. It held maybe a dozen. But the reserve was expanded over the years, given national park status in 1974, and named a World Heritage site in 1985. During the late 1990s it grew again, doubling in size (although legal issues remain to be settled). Now Asia's premier rhino sanctuary and a reservoir for seeding other reserves, Kaziranga is the key to *R. unicornis*'s future.

A thundering conservation success story, the park also harbors almost 1,300 wild elephants; 1,800 Asiatic wild water buffalo, the largest remaining population anywhere; perhaps 9,000 hog deer; 800 barasinghs, or swamp deer (it's a

Douglas Chadwick and Steve Winter last worked as a team tracking snow leopards in Central Asia for the June 2008 issue. Both are regular contributors.





main enclave of this vanishing species); scores of elk-like sambars; and hundreds of wild hogs.

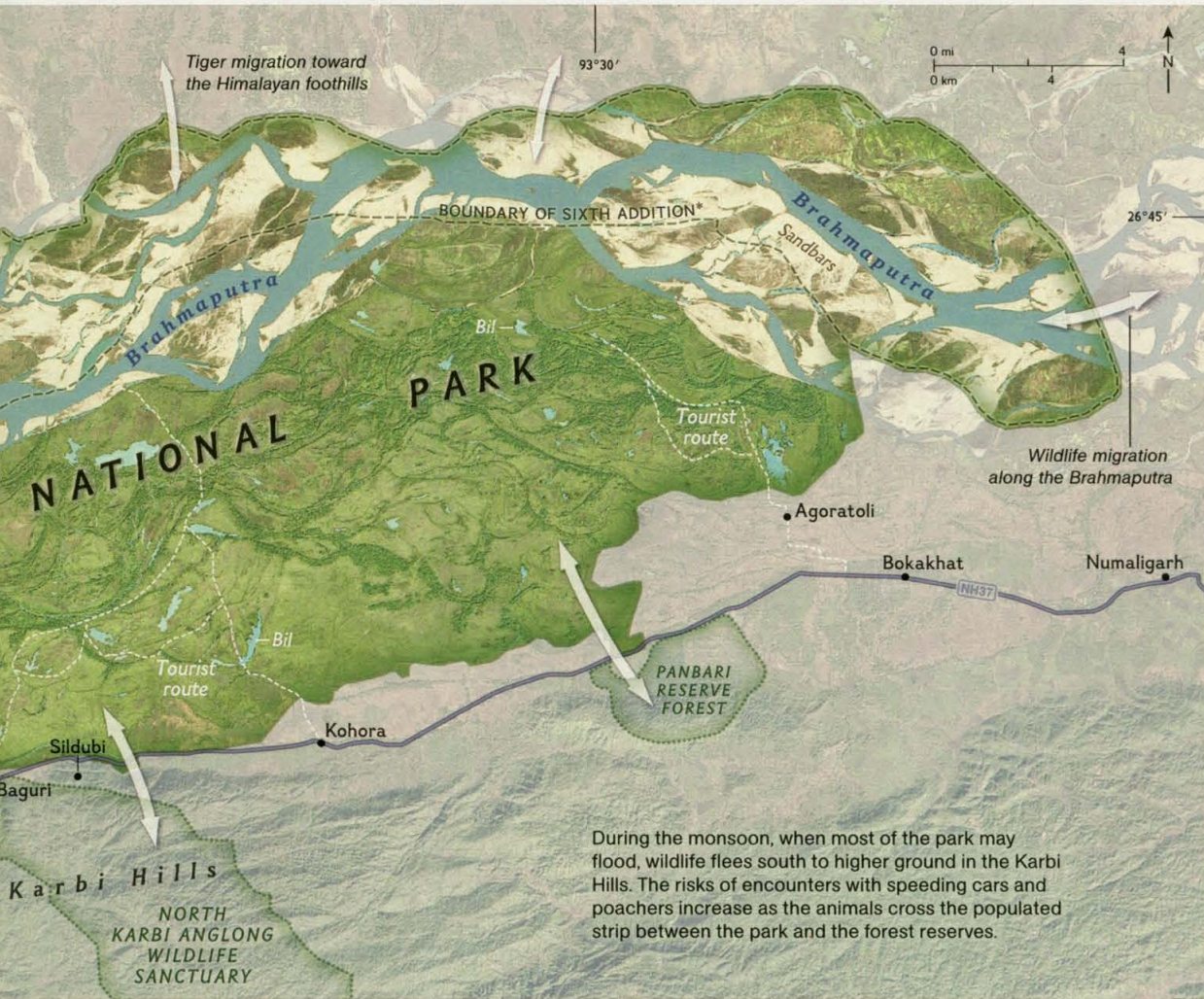
That's millions of pounds of prey. Yet neither wolves nor Indian wild dogs roam here. The resident sloth bears dine on termites and vegetation, while leopards favor the surrounding hillside forests for hunting. When the hog deer snort in alarm or the buffalo all swing their crescent-horned heads to stare toward the same patch of grass, what's coming is most likely striped and orange with paws the size of plates.

It was the deer's suddenly raised tails that

tipped me off: tiger time. One had moved into the opening around a drying lake just a stone's throw from me, but I couldn't find it. I was looking too low to the ground. The first thing I saw were legs. Then I was staring at a cat that loomed over the tallest deer, weighed 500 pounds, and looked made of flames. Then the hunter and the hunted vanished, leaving me to stare again into the sun-dappled stalks that had framed the tiger's silhouette for just a moment.

In the face of widespread deforestation and poaching, coupled with weak protection at many

A river's riches Pouring from the Himalaya, the Brahmaputra leaps its banks yearly, depositing nutrient-laden silt that grows towering grasses, which support megatons of wild grazers. But such fertility is a magnet for agriculture, making natural floodplain habitats like Kaziranga's extremely rare today.



During the monsoon, when most of the park may flood, wildlife flees south to higher ground in the Karbi Hills. The risks of encounters with speeding cars and poachers increase as the animals cross the populated strip between the park and the forest reserves.


reserves, the majority of India's tigers have disappeared over the past 25 years. Yet they seem to be thriving within Kaziranga. The official estimate is now 90 to a hundred, composing what may be the densest concentration in the world today.

What's so right about the park that it can pack this many big animals into a modest-size area? The answer flows from the river. Beginning high in Tibet, the Brahmaputra runs east for about 700 miles, draining the north side of the Himalaya before making a U-turn to continue 500 miles

through India and Bangladesh. When the summer monsoon adds torrential rains to the watershed, the river spills out over the valley. By the time the surge recedes, it will have coated the floodplain with a fresh layer of nutrient-charged silt. Sedges and a variety of tallgrasses arise from the muck in luxuriant profusion. Their specialty is converting sunlight into nonwoody tissues loaded with starch; that is, into vast fields of high-energy food—fields that grow 20 feet high.

We think of forests as the places in the subtropics with the most wildlife and the greatest



A photograph of a rhinoceros in a dense forest. The rhino is seen from behind, and there is a visible bloody wound on its back. The ground is muddy and covered with fallen leaves and twigs. The background is filled with lush green foliage and trees.

What bloodied this rhino? Maybe a clash with a male rival, maybe a courting session with the departing female in the background. The park harbors three-quarters of the world's Indian one-horned rhinos—11 per square mile. The crowding could lead to more battles and more wounds, which are a frequent sight.



Tourists atop elephants are safe from rhinos—and well positioned for a trek through Kaziranga. Swamp deer graze in an area of new growth stimulated by a fire set by park staff (right). Burns keep the grassland fertile and prevent woody plants from encroaching on the savanna.

need for conservation. But the tallgrass habitats of alluvial plains are richer in large native animals and far more rare. The park has meadows of naturally short grasses too, and the throngs of creatures visible on those open savannas rival scenes from the most famous African parks.

On slightly higher ground, trees such as Indian lilac form airy forest canopies roped with vines. Rhesus macaques troop past the buttressed trunks. Parakeets and great hornbills decorate the branches. Cup your ears, and the voices of hundreds of other bird species swell from the shadows like a distant crowd cheering.

Overflow channels that have become shallow lakes, periodically recharged with water and fish by the floods, pattern the landscape. Migratory waterbirds, from bar-headed geese to ruddy shelducks, crowd into Kaziranga wetlands over the winter with spot-billed pelicans and black-necked storks. While rare Pallas's fish-eagles scoop prey from ponds, or *bils*, otters on the

hunt sometimes arc from the water like dolphins. I even saw seven-foot-long Ganges River dolphins rising from the surface in the Brahmaputra. Endangered over most of their range, these mammals appear to be holding their own along the park's length of the river, free from fishing pressures and entangling nets.

BUDHESWAR KONWAR, my guide, stopped our open-topped jeep so he could move another aquatic creature—an Indian tent turtle—off a back road on a hot afternoon. The rest of us got out to stretch and watch. When I turned to check in the opposite direction, the view was terrible. “Rhino!” Close and churning toward us.

These organic tanks can sprint at more than 25 miles an hour. Visitors (Kaziranga hosts about 70,000 Indian tourists and 4,000 foreign tourists annually) must have an armed park guard travel with them, and the requirement is not an idle formality. We didn't have time to



My guide had made a rule: “No allowed for scared.” I was breaking it as the rhino butted our rig up onto two wheels.

leap in the vehicle and race away, so Ajit Hazarika fired a round. It was a snap shot but perfectly placed. The bullet kicked up a stinging spray of dirt inches from the attacker’s front foot. Combined with the crack of the rifle, it was enough to make the rhino veer aside two seconds from us.

Ten minutes later we were driving through forest along a raised dirt track when a rhino fresh from a wallow climbed onto the road, followed by an equally muddy juvenile two-thirds her size. Walking in leaf-softened light on the red blossoms fallen from a silk-cotton tree, the pair slowed and exchanged a sniff. A second subadult appeared behind. All three then dropped out of sight down the other side.

We drove on after waiting a bit, only to discover mother rhino charging through the trees on a course aimed to collide with ours. No chance to back up, no hope of accelerating out of trouble on the rough track. Hazarika, in the passenger

seat, couldn’t even get off a shot before the earth-glazed female clobbered the jeep, which she far outweighed. His door caved in. I realized the rhino was shoving us toward the road’s edge and butting our rig up onto two wheels, and I’d better get ready to jump before she rolled us.

Unlike African rhinos, Indian rhinos don’t gore an enemy with the spike on their heads. They bite with large, sharp lower incisors. The female’s teeth were gouging deep grooves into the jeep’s steel. Damn.

Konwar had laid down a rule for Kaziranga—“No allowed for scared.” I was breaking it while he gunned the engine, fighting for traction. At last the vehicle leveled out and skidded free. But she instantly gave chase, and it was still touch and go in a cloud of dust for several hundred feet.

Our destination was a site where the tracks of two tigers had been seen around a fresh rhino carcass. Tigers claim as many as 15 percent of the rhino calves in Kaziranga. This carcass spoke of



Shouting villagers chase elephants from private land near the park border. The elephants were bound for Kaziranga's rich natural pastures from forested range outside the park. Keeping babies in the middle to protect them, the herd evaded mobs all day, escaping into the reserve after dark.





Villagers honor a fallen elephant with incense and prayers, reflecting the Hindu belief that these pachyderms are sacred. This animal was shot—an illegal act—while it was raiding a rice field near the park. It died of its wounds a few days later.





Suspects in a rhino-poaching deal are blindfolded for interrogation at the Baguri ranger station; they were later released. At right, a female rhino was killed by a pair of tigers while she was having difficulty birthing a calf. Park staff removed her horn after she died to prevent poachers from taking it.

tigers taking down an adult—a risky enterprise rarely reported.

The most serious threat to rhinos still comes from predatory humans, just as it did a century ago. Which is why Kaziranga has nearly 600 guards in the field, stationed between the unruly big animals and the poachers. Squads operate out of 130 camps, some built of concrete, the rest of logs and thatch, all standing on stilts. Guards mark the posts to show the levels of floods; some years, it's a post on the upper story. The men move in pairs or trios on foot and elephant-back—or by boat. Afternoon patrols finish after dark. The guards wake to begin another sortie long before dawn, pausing first at a humble shrine to the goddess Kakoma to ask once again for safe passage. When the moon grows big, teams stay out all night.

The mission never ceases. People caught taking fish from the river or bils have their nets confiscated and are subject to fines. Cattle and

goats grazing inside the park have to be shooed home to village pastures. More often, guards are called on to drive wildlife from the villages and fields back to Kaziranga.

That's all routine work compared with dealing with armed men stalking rhinos. The animals' horns—made of agglutinated keratin fibers, the same substance as in hooves and hair—are prized for dagger handles in the Middle East and valued even more highly throughout Asia for their purported medicinal powers. With a single horn fetching over \$30,000 on the black market, this is a lethal commodity.

From 1985 through 2005, illegal hunters shot 447 Kaziranga rhinos and several guards; guards killed 90 poachers and arrested 663. The number of rhinos poached annually dropped below nine starting in 1998—then in 2007 it rose to 18. By the fifth week of 2008, when I arrived, five more had been felled. One was a calf, slaughtered for a tiny nub of horn. The wounded mother's horn



Kaziranga has nearly 600 guards in the field, stationed between the unruly big animals and the poachers.

was hacked off her face while she was still alive. It took her two days to die.

A series of arrests squelched the flurry of rhino poaching, although judging by past experience, more bad guys will show up sooner or later. But the park has another major problem—one nobody can suppress.

Kaziranga depends upon a much larger landscape to maintain its spectacular wildlife. In times of heavy flood, when the land vanishes beneath the Brahmaputra's brown currents, wildlife flees the reserve. It always has. Yet wherever the animals go these days, they encounter a rising flood of humankind. You can get lost in the tallgrass right up to Kaziranga's southern edge, but just beyond you're among kids, dogs, chickens, milk goats, and miles of rice fields. A little farther on, you might reach a shed where a listless cow lies oozing fluids from the tiger wound on her neck, while Nijara Nath tells of discovering the cat at night in the cattle pen by

the house. When crops begin to ripen, her husband, Indeswar, spends many nights at the edge of their field trying to scare away vegetarians, from dainty-hoofed deer to rhinos that pothole a paddy with every step. The Naths don't resent the park—Indeswar's cousin makes good wages cooking at a tourist lodge—but they wish that the bureaucracy supposed to compensate folks for wildlife damage worked more efficiently. "Some years we have a big loss, some years small," Indeswar said, "but there is a loss every year."

DEVELOPMENT CROWDS even closer on the park's north side. From high in a lookout tower at a camp there, I could see only tame life—dairy herds of domestic buffalo and cattle—feeding across wetlands inside the park. Since livestock grazed in this area before it was appended to the reserve in the 1990s, authorities allow the practice to continue. But the area as a whole experiences more elephant conflicts than almost any place in



Amid tallgrass the coat of a tiger becomes a cloak of invisibility, the camouflage raising the odds for a successful kill. Tigers in the park hunt, with no competition, millions of pounds of deer, buffalo, and wild hog.



Assam, for it lies on a migratory route of herds following the last tatters of forest between Kaziranga and the Himalayan foothills to the north.

During high water, animals also migrate southward toward the Karbi Hills. Five small but absolutely vital habitat bridges were recently added to the park to ease the journey. Along the way the animals confront National Highway 37, Assam's main east-west transportation route. Guards set up a slalom course of barriers to slow truck traffic at the most heavily used crossing sites. Nevertheless, elephants, rhinos, pythons, and deer on the move become roadkill most every year. A proposal to widen the route to four lanes has had India's conservation community in a sweat.

"If Highway 37 is made a freeway, it's a death knell for Kaziranga," declared Asad Rahmani, director of the Bombay Natural History Society. Officials are considering backing off the four-lane plan in favor of upgrading a parallel road north of the river. "We still need to control the encroachment of other development," he said. "The government should buy land for more corridors before Kaziranga becomes cut off."

Even if links to the Karbi Hills are strengthened, what of the hills themselves? And the uplands sloping toward the Himalaya? Woodcutters, stone-quarry operators, herders, and squatters populate more of the state's forest reserves in those places every year, changing a continuous tree cover into a weedy patchwork of cutover, eroding slopes. It helps that India has declared a Kaziranga-Karbi Anglong Elephant Reserve that extends far to the south and a Kaziranga Tiger Reserve that reaches many miles north. But they are little more than hopeful lines on a map at this stage, and the nonpark portions keep filling with land-hungry people.

The challenge is to connect the remnants as much as possible. If the obstacles start to look overwhelming, think about the dedicated guards at lonely outposts and about Budheswar Konwar and the rhino-country rule. Remember? No allowed for scared. □

■ **Society Grant** This project was funded in part by your National Geographic Society membership.