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House Crow: Intelligent Villain or Misunderstood Genius?

House crows are intelligent, adaptable, and deeply social creatures exhibiting a remarkable range of cognitive abilities. Long woven into folklore and symbolism these birds are known for their capacity to form bonds and recognize human faces. **Asad R. Rahmani's** narrative sets one thinking: is the house crow an intelligent villain or misunderstood genius.

Kaziranga, the Pride of India

A.J.T. Johnsingh and **Naveen Pandey** have explored Kaziranga's pristine wilderness more than a dozen times, drawn by its sweeping grasslands and captivating forests teeming with biodiversity. But, each time they left they carried with them the hope that the magnificent Kaziranga Tiger Reserve – with its awe-inspiring landscapes, charismatic species, and extraordinary people – would continue to inspire generations for years to come.



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Dew Flowers of India

The dew flowers are usually nestled in the undergrowth, spread across grasslands and plateaus, or peeking out along coastal belts and agricultural fields. Many species bloom only briefly during the rainy season, while others persist year-round. **Mayur Nandikar** highlights the traits, habitats, and origins of these delicate, short-lived blossoms – beautiful and fleeting, much like dew itself.

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Kaziranga, the Pride of India

Text: A.J.T. Johnsingh and Naveen Pandey

Dr Johnsingh and I frequented Kaziranga's pristine forests over a dozen times spanning over a decade between 2013-23. During our last visit in 2023, as we set to return from the forest, he asked me to park the safari vehicle under a massive Bischofia janavica tree by the side of a wetland where a herd of elephants were relishing the submerged vegetation while half a dozen rhinos grazed by the side of the wetland. Two otters were feeding on fish while a black-necked stork kept splashing water around. It was at that moment Dr Johnsingh expressed his desire to pay tribute to the most sacred forest by penning an article together. We spent an hour cramped in our safari vehicle, jotting down notes and thoughts together from all our visits. The first draft of this article came as a handwritten note. That moment - setting sun, elephants coming out of the wetland, rhinos and wild buffalos approaching the wetland and two of us sitting in silence as hundreds of waterbirds flew over us conversing loudly - will remain inked forever in my thoughts. Dr Johnsingh enriched the notes further by citing relevant examples from other PAs to provide a broader narrative to our story. I miss him so much. This article is a tribute to Kaziranga and to the man who loved everything in a forest! – Dr Naveen Pandey

The evening sun hung low, a fiery red orb in a cloudless sky, sinking slowly behind the blue silhouette of the Karbi-Anglong Hills. It was January 23, 2023, and we were driving through the Burhapahar Range on a dusty road skirting

a lagoon of the mighty Brahmaputra. Along the way, we glimpsed sambar, rhinos, and a herd of buffaloes scattered across the dry lagoon bed. But suddenly, all attention turned to a large animal striding swiftly along the road ahead, kicking up a plume of dust. It was a tiger.



We urged our driver to follow. The tiger moved with purpose before veering left, vanishing into a dense thicket along the lagoon's edge. In that fleeting moment, we could see it was a large, healthy male. Parking at a safe distance, we waited in silence, hoping it might return to the road. But instead, an adult wild buffalo charged out, snorting furiously as it plunged into the same thicket – only to re-emerge and disappear into the forest. The tiger was gone. In Kaziranga, tiger sightings are rare. The vast swamps, tall elephant grasses, and the expansive riverbanks offer excellent cover, making these big cats elusive.

Kaziranga Tiger Reserve, a jewel in Assam's crown and a treasure of India, spans roughly 1,300 square kilometres of Brahmaputra floodplain. Originally protected as a 430-square-kilometer sanctuary, it has since expanded to include vast grasslands, cool semi-evergreen forests, and numerous flood-linked lagoons. As you explore its wild terrain, it's easy to imagine a time when much of India's floodplains – stretching from the Ganges to the Brahmaputra – were cloaked in similar grasslands, teeming with wildlife.

But the post-independence eradication of malaria in the 1950s opened these fertile lands to human settlement. What followed was a rapid conversion of floodplain habitats to agriculture and villages – leading to the disappearance of

countless species and landscapes. Today, Kaziranga is the largest remaining expanse of protected Gangetic-Brahmaputra floodplain habitat.

Kaziranga's grasslands are vital for a wide array of ungulates – from the diminutive hog deer to the majestic elephant. Tall grass species include *Arundo donax*, *Erianthus ravennae*, *Imperata cylindrica*, *Neyraudia curvipes*, *Saccharum elephantinum*, and *Phragmites karka*. Moist meadows support short grasses like *Cynodon dactylon*, *Cenchrus ciliaris*, *Hemarthria compressa*, *Microstegium ciliatum*, and *Paspalum distichum*.

Yet, these crucial habitats are under threat – not from humans, but from invasive plants. Inedible species like *Tamarix aphylla* and *Lagerstroemia parviflora* encroach upon grasslands. *Bombax ceiba* is regenerating profusely, while *Albizia procera*, once dominant, is disappearing. *Mikania micrantha*, a choking vine, strangles forage species such as *Ziziphus mauritiana*, while *Ipomoea cornea* overtakes marshy habitats. Still, the grasslands harbour vulnerable rare birds like the swamp francolin and the Critically Endangered Bengal florican.

Kaziranga's cool forests are equally captivating. Dense patches of cane *Calamus tenuis* provide elephants with their favourite snack. Other remarkable flora includes *Bridelia retusa* and *Bridelia scandens*, *Chukrasia tabularis*, *Duabanga grandiflora*, and *Dillenia indica* – whose fruits are savoured by elephants and used in Assamese kitchens. Trees like *Dysoxylum binectariferum* attract hornbills, and *Elaeocarpus floribundus* yields fruits pickled by locals.

These forests are alive with the songs and calls of babblers, bee-eaters, birds of prey, bulbuls, drongos, flycatchers, hornbills, pittas, owls, and owlets. Barking deer and sambar occasionally



emerge from the shadows. Sohola Beel, in the Agoratoli Range, is a prime spot for waterbird enthusiasts.

Declared a UNESCO World Heritage Site in 1985, Kaziranga marked 100 years of successful biodiversity conservation in 2005 and was designated a Tiger Reserve in 2007. It has recorded over 500 bird species and was in August 2022 named India's Best Wildlife Destination by *Outlook Traveller*. More than 180 anti-poaching camps, manned by over a thousand personnel, are spread across the reserve. Patrols use an 800 km network of trails and waterways, aided by 10 speedboats and six mechanized rescue boats during floods.

The floodplains of Kaziranga are hydrologically dynamic, and during the flood season, the survival of several mammal species – such as elephants and tigers – depends on their access to the Karbi-Anglong hills. Historically, these hills were contiguous with the southern side of the Kaziranga Tiger Reserve, forming the once-undivided Kaziranga landscape. However, this continuity was disrupted by the development of NH-37 (now NH-715) and the settlements that have grown on either side of the highway, particularly to the south.

Over the years, heavy traffic on this route has claimed the lives of numerous animals, including

a tiger and a swamp deer, and injured a rhino. To mitigate this loss, nine wildlife corridors have been identified as critical. Of these, the Panbari, Haldhibari, Kanchanjuri, Hatidandi, and Deosur corridors are heavily used by large mammals. The local community – key stakeholders in Kaziranga's conservation success – has played a vital role in minimizing wildlife casualties. They have rescued distressed animals, helped control vehicle speed during floods, and patrolled the fringe areas around their villages.

Since 2022, sensor cameras have been installed along the highway – from the Panbari corridor to the western subdivision boundary near Burhapahar – to regulate vehicle speed effectively. To help mammals escape the floodwaters, which typically last for a few days, the Reserve management has constructed numerous high mounds, where animals can take refuge until the waters recede.

Unfortunately, incidents of wild herbivores being chased and fatally wounded by free-ranging dogs are alarmingly on the rise in villages near these corridors. On a more positive note, the annual flood rejuvenates the Reserve's ecosystem by replenishing soil nutrients, removing the invasive weed *Eichhornia crassipes*, and bringing a fresh influx of fish into the Reserve's beels and adjacent landscapes.



NAVEEN PANDEY

Wetland infested with invasive species



A tusker debarking a silk cotton tree in Kaziranga Tiger Reserve

Early one morning, we spotted a herd of swamp deer *Cervus duvauceli ranjitsinbii* resting in a meadow. They appeared unbothered by our approaching vehicle. Although it was heartening to witness such a large herd up close, it was also sobering to consider their dwindling numbers. Once numbering in the thousands across the alluvial floodplains, this subspecies now survives in only a few protected areas: Suklaphanta Reserve in Nepal, Dudhwa Tiger Reserve (including Kishanpur Wildlife Sanctuary) in Uttar Pradesh, Jhilmil Jheel Conservation Reserve in Uttarakhand, and Kaziranga Tiger Reserve. The total global population is just over 3,000 – approximately 2,000 in Suklaphanta, 1,000 each in Dudhwa and Kaziranga, and about 150 in Jhilmil Jheel. Conservation efforts are underway in Manas, where the population is being bolstered through translocation and protection.

The herd we observed included several stags with velvet antlers at various stages of growth, indicating that the breeding season had ended. A substantial number of fawns suggested successful reproduction. The deer flapped their large ears to fend off insects, and their presence in the meadow

suggested they had likely spent the night there. This behaviour, known as yarding, is an anti-predator strategy that helps them avoid tiger predation. Tigers, Kaziranga's apex predators, hunt by stealth. To successfully ambush a swamp deer, a tiger must approach very closely. In a yarded group, the deer can detect the predator's approach, triggering alarm calls and coordinated defensive behaviour, often thwarting the tiger's hunt.

The most important ungulate prey for tigers in Kaziranga is the hog deer. This species, which feeds on tender grasses in moist habitats, has lost much of its historical range. While it still persists in pockets within protected areas such as Corbett Tiger Reserve (where numbers are declining even in prime habitats like Dhikala chaur due to jackal predation), Suklaphanta, Bardia, and Chitwan National Parks in Nepal, Dudhwa Tiger Reserve, and Jaldapara Wildlife Sanctuary in West Bengal, the largest remaining population is in Kaziranga.

It is estimated that Kaziranga holds between 40,000 to 50,000 hog deer. Unfortunately, many perish during floods due to their small size and limited mobility. Their habit of roaming through grasslands and forests makes them particularly



A.L. JOHNSINGH

Several species of plants grow from rhino dung pile, *Cleome pentandra* is one such species

vulnerable to tiger predation. On the evening of January 20, 2023, as dusk settled, we returned from the forest via the Turtuani-Munamari road east of Sohola beel. Along the way, we observed numerous hog deer preparing to yard in open areas for the night – behaviour also seen in chital, a species absent in Kaziranga.

Unexpected encounters with wild buffaloes – known for their strength and aggression – can be startling, even from the safety of a vehicle. These animals, the ancestors of domestic buffaloes, are grassland dwellers and have become extremely rare. The peninsular variety, once widespread in eastern and central India, has declined to fewer than 50 individuals in Chhattisgarh and Maharashtra, on either side of the Indravati River.

Kaziranga Tiger Reserve, with nearly 3,000 wild buffaloes, holds about 90% of the global population of this endangered species. Although currently safeguarded from habitat loss and poaching, the species has previously faced the threat of hybridization. In the past, wild buffaloes interbred with domestic buffaloes kept in camps on Brahmaputra islands. This issue has since been addressed by a High Court order in 2022 banning such camps. Before this intervention, wild bulls would drive off domestic bulls and mate with

domestic cows, which often eloped into the wild, leading to gradual hybridization. Despite their formidable size – comparable to the gaur – wild buffaloes are occasionally preyed upon by tigers, particularly the agile and powerful adult males.

The Indian subcontinent was once home to three species of rhinoceros – the Indian, Javan, and Sumatran. Today, only the Indian rhinoceros *Rhinoceros unicornis* survives in Nepal and India. Kaziranga Tiger Reserve harbors close to 80 percent of the global population of around 3,000 individuals.

What amazed us during our visit was the rhino's ability to consume a wide variety of plant species – many of which are considered unpalatable to other herbivores. A quick analysis of rhino dung reveals a diverse diet that includes *Amaranthus spinosus*, *Cleome speciosa* (with its striking pink flowers), *Heliotropium indicum*, *Polygonum barbatum*, *Solanum surattense*, and *Xanthium strumarium*.

Although poachers have historically killed a few rhinos each year for their horns – reportedly fetching up to USD \$400,000 per kilogram on the black market – Kaziranga's rhino population now enjoys a relatively secure future. This is largely thanks to the unparalleled dedication of the Reserve's forest guards, who patrol these predator-

rich landscapes even at night. Remarkably, 2022 was celebrated as a year with zero rhino poaching.

To bolster rhino numbers across India, WWF-India launched Rhino Vision 2020, aiming to increase the population to 3,000 individuals – a goal now achieved through the unwavering commitment of frontline staff.

Kaziranga is home to an estimated 1,000 elephants. Encouragingly, this number does not seem to have exceeded the Reserve's carrying capacity, as evidenced by the survival of *Bombax ceiba* (silk cotton trees), whose bark is a favourite food of elephants. While many trees show signs of debarking, they have not been completely destroyed – a stark contrast to Rajaji Tiger Reserve, where most of the once-abundant silk cotton trees have been killed by elephant activity.

Tigers in Kaziranga engage in a behaviour where they stand on their hind legs and claw at trees with soft bark using their forelegs. This serves dual purposes: scent marking (via interdigital glands) and claw sharpening – vital for taking down large prey such as sambar and buffalo. Due to a high density of prey, Kaziranga boasts one of the world's highest tiger densities – over 12 tigers per square kilometre. The tree most frequently used for clawing is *Bischofia javanica*, which is similarly used across tiger habitats from Periyar in the Western Ghats to Nandhaur in the Himalayan foothills of Uttarakhand.

Among Kaziranga's most pressing challenges are the unchecked, often unethical developments along NH-37 and the conspicuous absence of bee hives, despite hundreds of suitable trees. This may be linked to the increasing use of pesticides in the adjacent tea gardens along the Karbi-Anglong foothills. Promoting organic tea cultivation could help reverse this trend.

Another serious threat is the rampant spread of *Ipomoea carnea*, an invasive aquatic plant that chokes water bodies and threatens aquatic biodiversity. This species must be aggressively controlled – not just in Kaziranga, but across the country.

Climate change, too, looms large. Ramesh Gogoi, a Karmashree awardee who served as Range Forest Officer (1987–1990) and later as



Majestic and monogamous, the Great hornbill is one of Asia's largest and most iconic hornbill species

Divisional Forest Officer from 2020, noted that Kaziranga's grasslands have grown drier and the average height of grasses has diminished over the decades. To restore ecological balance, efforts should be made to plant thousands of *Albizia procera* saplings (aged 3–4 years) at the onset of the monsoon amid tall grasses, increasing their chances of survival. Given the species' prolific seed production, developing large nurseries should be straightforward.

To reduce pressure on forest resources, firewood and fodder plantations should be established on vacant lands in surrounding villages. Recommended species include *Acacia auriculiformis*, *Casuarina equisetifolia*, and *Dalbergia sissoo* for timber and fuelwood, and *Ficus*



NAVEEN PANDEY

Most gibbon species are endangered making conservation vital to their survival



NAVEEN PANDEY

Water monitors are semiaquatic creatures that spend a significant amount of time in the water

auriculata and *Morus alba* for fodder. Community participation in this initiative will be key.

Kaziranga must remain the ‘Noah’s Ark’ of the Brahmaputra floodplain. Dr Sonali Ghosh, Kaziranga’s first female Field Director, has inherited one of the most challenging conservation roles in the country. With wetlands threatened by siltation, invasive *Eichhornia crassipes* smothering water bodies, encroachment and political inaction choking wildlife corridors, and the future of the Karbi Hills hanging in the balance, her leadership will be under close watch by the conservation community. Her ability to meet these challenges head-on will define Kaziranga’s trajectory in the years to come.

On the morning of January 24, 2023, we observed a tusker – identifiable by the missing

tip of his tail, likely lost in a fight – approach a silk cotton tree. Standing perpendicular to the trunk, he used the pointed tip of his right tusk (his left was broken) to pierce the bark. Then, using the tip of his trunk, he peeled off strips of bark and ate them. The winter sun cast a warm, golden hue over the tall grass, and through the hazy sky, the blue outline of the Karbi-Anglong Hills shimmered faintly in the distance.

The tusker fed calmly for about ten minutes, seemingly unbothered by our presence just 15 metres away. As we left the spot, we carried with us the hope that the magnificent Kaziranga Tiger Reserve – with its awe-inspiring landscapes, charismatic species, and extraordinary people – will continue to inspire generations for years to come. 🐘



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