

## THE TALE OF COEXISTENCE OF HUMANS AND GIBBONS IN BAREKURI: HARMONY, CHALLENGES AND PROSPECTS

*Prodakshina Singha*

### ABSTRACT

*Western Hoolock Gibbons, redlisted as a 'critically endangered' species by the International Union for Conservation of Nature (IUCN) is a rare treat to the eye but not in Barekuri where one could easily take a look at this rare arboreal species. Surrounded by woodlands, the villages of Barekuri are a thriving habitat of Hoolock Gibbons sharing space with locals; the amicable symbiotic relationship between these tailless frugivorous apes and the Moran communities of the village has altogether changed the age-old notion of Man v/s Wild to Man and Wild. Nevertheless, the Baghjan tragedy and the politics involved thereafter disturbed the peaceful coexistence, resulting in the dwindling of their populations with no goodwill action from the government, administration and forest department has pushed this endangered species to the brink of extinction. Adequate conservation measures incorporating local ecological knowledge the need for this rare primate to thrive and a 'bottom-up' framework to strike a balance between development and the environment.*

**Keywords :** Ecology, Politics, Hoolock Gibbons, communities, coexistence.

## Introduction

Having a rich history and cultural heritage endowed with picturesque landscapes and favourable physiographic, ecological and climatic conditions, the Northeastern region of India is unique in providing a plenitude of habitats to various primates. Northeast comes under the Indo-Burma Region, one of the four Biodiversity Hotspots in India as the forests of the region host some of the most unique species in the world and are known for their diverse faunal nature. One such rare species is the Hoolock Gibbon, a 'critically endangered' species (IUCN, 2020). The forests of the Northeast region are the home to the two ape species of the gibbon family: Eastern Hoolock Gibbons (*Hoolock leuconedys*) and Western Hoolock Gibbons (*Hoolock hoolock*) inhabiting different ranges in India. Prominently, Western Hoolock Gibbons has wider ranges than the eastern ones as unlike the latter it is found in almost all the Northeastern states - Assam, Arunachal Pradesh, Meghalaya, Nagaland, Mizoram and Manipur, although restricted between the south of the Brahmaputra river and east of the Dibang river (Choudhury, 2001). In Assam, the protected areas where the tree-dwelling apes are found are Dihing-Patkai National Park, Bherjan-Borajan Padumani Wildlife Sanctuary and the Hollongapar Gibbon Wildlife Sanctuary; the Hollongapar Sanctuary in Jorhat district of Assam is famous being the first ever protected areas named after a primate species and solely dedicated to the protection of 23 families of Gibbons currently dwelling. Apart from the protected or specific conservation areas having great potential for long-term conservation of this species, the villages of Barekuri are home to Western Hoolock Gibbons. The villages of Barekuri share contiguity with the Bherjan forests which is why Western Hoolock Gibbons are found in these villages and are known for their peaceful co-existing with humans playing the role of local conservationists with little government support (Chodhury, 2009).

### Barekuri: A home to the endangered species

Barekuri, a cluster of 21 small hamlets is located approximately 7 km away from the commercial town, Tinsukia in the eastern part of Assam. Barekuri's ancient name was 'Hollongaguri'; this name was believed to be derived from the

‘Hollong’ tree found in large numbers in the area. Barekuri is a historically, socio-culturally and environmentally rich area. The village is inhabited mostly by Moran communities engaged mainly in primary activities like agriculture, fishing, handloom, bamboo weaving etc. The primary source of attraction in the area is the Western Hoolock Gibbons easily seen wandering in the woodlands of the villages in Barekuri. Differed by their colours where male Gibbons have coal black while female Gibbons have pale, brown-blonde fur, these tree-dwelling apes in Barekuri are a treat in the eyes of tourists. A few centuries ago, the landscape of Barekuri in the upper Brahmaputra valley was abundantly a lush contiguous forest which is now a cluster of 21 villages, a home to humans as well as Western Hoolock Gibbons. Biswas et.al (2023) in their study conducted in the 6 villages of Barekuri namely Purani Motapung Village, Nau Motapung Village, Dighalhaku, Torajan, Lesenka and Borgaon found a total of 9 groups of Western Hoolock Gibbons. The Gibbons of Barekuri are notably exceptional in the sense that they bear a cordial relationship with the locals. Singing mostly in unison, the pair soulfully utters ‘*Hook hookhook-on*’ sitting and stretching from one branch to another of lofty Hollong and bamboo trees, the emotive calls echoing across long distances and breaking the silence of the forest indicate delimitation of their territory, repelling rivals, guarding their trees against other species or strengthening their bonds with their mates (Bhattacharya,2023) Being frugivorous by nature, the diet of the species requires 51% to 65% of fruits fulfilled either by locals who call them and they physically respond to their namecalling by climbing down from the treetops to have the local fruits offered like bananas, oranges, guavas, and mangoes and sometimes the Gibbons get themselves fed on their own on the ripe fruits grown specifically for them while also snacking on leaves and new shoots in the forests and orchards. Almost all the houses have small tea gardens, adjacent bamboo groves to their backyards and different kinds of trees, and orchards in their homestead farm, the tea garden harbouring tall canopy trees and fruit trees abound are favourable to the species. The tea plantations of Barekuri support diverse groups from native plants to mammals, birds, and reptiles as it has been managed agro-ecologically by

the Moran communities so far. Tea agro systems via adopting traditional practices or incorporating organic farming, and native shade trees and thereby maintaining habitat diversity within monocultures practised by the villagers have become complimentary spaces for conservation outside Protected Areas for the primates.

### **Symbiotic Living: Field notes from Lesenka on the Moran community-Hoolock Gibbon Harmony**

In the early winter morning sun in November last year, I ventured with my cousin to the picturesque Lesenka village in Barekuri, nestled in the heart of Tinsukia. Guided by the familiarity of my cousin in the serene village, we visited the abode of Dipti Bora, an ASHA worker, known to my cousin's mother. As we approached Dipti's residence, the air was filled with the vibrant greenery of Assam's rural landscape. Dipti welcomed us warmly radiating a sense of community and connection. We sat down for a conversation that unearthed a unique narrative relating the coexistence of Hoolock Gibbons and the Moran community in Barekuri, spanning time immemorial. Dipti shared insights into the harmonious relationship between her community and the Gibbons disclosing that these primates were not merely wild creatures but integral members of their village life, affectionately referred to by adorable pet names that reflected the precious bond between the locals and these rare species. An hour later Dipti's husband kindly offered to guide us to a site near their residence where lofty trees adorned the landscape with their vibrant green warmth. As we wandered through the village, Dipti's husband shared stories of the wildlife; he spoke of a family of Gibbon, four in number that is the gem of the area. Traversing through the lush path, we then reached a designated spot and soon Dipti's husband called up the playful nicknames amidst the greens and just within a minute the Gibbons swung into view elegantly slanting from the heights of the trees, taking away the bananas, quickly ascending the canopy and having the fruit in peace. Their acrobatic movements coupled with their distinctive 'hook-koo' sounds created a captivating spectacle. Witnessed the harmonious relationship that had developed over generations, where the community

not only desisted from cutting down trees but actively embraced a role as conservator to safeguard the surrounding ecosystem. Returning to Dipti's abode, Dipti continues to describe the common practice of feeding the Hoolock Gibbons, a ritual that went beyond mere sustenance to depict a shared existence and mutual respect.

The conversation took a poignant turn as Dipti recounted the aftermath of the Baghjan Disaster, an event that not only affected humans but also left a scar on the Gibbon population; with a heavy heart, she described the sorrow felt by her community as they mourned the loss of a female Gibbon, affectionately named as '*Kolia*'. Despite being a keeper of a rich biodiversity hotspot, Dipti lamented the lack of development in Barekuri by the state. She emphasized the need for sustainable initiatives to preserve the natural habitat of the Hoolock Gibbons, a sentiment echoed by the community's old and youth alike. Dipti spoke of their collective aspiration to develop ecotourism in the area, an endeavour that could simultaneously promote conservation as well as open up economic opportunities for the locals, especially the youths. As we departed from Barekuri, Dipti's words lingered painting a vivid picture of a community united in its commitment to both its humans and primates; the shared responsibility to safeguard nature and biodiversity and the possibilities of boosting conservation that arise when communities become stewards of their natural heritage.

### **A bond of coexistence and tolerance: Moran communities and the Hoolock Gibbons**

Primates have an integral association with local livelihoods and human cultures primarily in areas where both humans and primates share proximity of ecological space (Kappeler & Schaik, 2006). In the Chinese culture since the era of the Zhou dynasty, Gibbons occupy a significant place and are known by the name 'gentleman'. Liu Zongyuan's notable work 'Essays on the Hateful Monkey Breed' portrayed Gibbons in good light as well-mannered while Macaques as inferior and greedy. The Western Hoolock Gibbons have inhabited the villages of

Barekuri for decades, some even say centuries; existing side by side with humans. The Moran communities have along heritage of co-existence with the Gibbons. The primates occupy an important place in the historical and socio-cultural belief of the Moran communities who are simple, kind, nature conscious and have deep reverence towards the rare species. The villagers care, concerned and respect the species because they consider the Gibbons as an 'integral part of their families' (Kalita, 2018) The Gibbons occupy a significant place in the local culture and even one can find references to them in the old folk songs and stories in Barekuri. The Forest song or '*Bonoriyageet*' as it is locally referred occupies a prime position in the culture of Moran communities of Barekuri which depicts reverence towards nature, wildlife, society and culture.

The Moran communities have great tolerance towards the primates. John Bowlby, an English Psychologist in his 'attachment theory' gives insights about the universal phenomena of attachment between humans and animals characterized by love, care, sympathy and trust. The villagers solemnly barred the felling of one of the prime roosting trees of Gibbons, namely *Dipterocarpus retusus* commonly known as 'Hollong'. Even some of the locals owning tea gardens barred themselves from spraying pesticides and herbicides in the tea plantations and are ready to take the economic loss rather than harm the primates or '*Holous*' as they are locally referred to. Such is the level of tolerance of the Moran communities in Barekuri towards the primates. The higher the sense of tolerance, the higher the biodiversity conservation and vice-versa. The tolerance has a history behind it; keeping with the age-old local oral history, it is believed that some centuries ago the forests of Barekuri were inhabited by the people of the 'warlike' Moran community who were hunter-gatherers and intolerant to animals and rigidly atheists. Later, a spiritual augur, Shri. Astrobhuj Gukhai preached Hinduism widely in the area and it is believed that under his influence the people left their hunter-gathering lifestyle and transformed their occupation to agriculture. Another local history narrates stories of cordial coexistence between the humans and the Gibbons a few decades ago when there were no clocks in the village, the emotive call of the

Gibbons used to bean alarm for the school-going students in the morning. Nevertheless, the first physical interaction between humans and Gibbons is believed to have occurred in the early 2000s in one of the villages of Barekuri-Purani Motapung whena young, lone male Gibbon advanced towards an elderly man of the village and the latter affectionately took care until the Gibbon grew-up. Two decades ago, the co-existence was not as strong as today, although the locals didn't harm the Gibbons and their habitat. They were fearful to go close; they used to tie bananas in bamboo groves so that the Gibbons could take them from a distance. The fear has vanished today and locals feed the Gibbons by hand which has become the centre of attention for many tourists who wish to have a look at the Gibbons through a closer lens.

### **Bridging Generations: Role of Youth in Human-Wildlife Coexistence**

The growing human population and the need for settlement into earlier barren unconcernedareas, deep into the wild has resulted in the loss and displacement of wildlife and, the destruction of their natural habitat to make space for human and their greed (Blackwell et.al, 2016). Cases of human-induced mortality of wild species emanating from the justification in the name of self-defence and retaliationhave been increased consequently leading to gradual extinction andposing a threat to the ecosystem (Agarwal & Redford, 2006). The conflicts disrupt the local economies and, the mortality of endangered species thereby harming the developmental efforts in the developing world.Amid such emerging conflicts, the need for Human-Wildlife coexistence stands crucial. Human-Wildlife coexistence denotes the coordinated interplay of the bond between humans and wild creatures in an environment; living harmoniously cutting down the risk of crop raiding, predatory moves, and harm to property and thus promoting an environment of acceptance, tolerance, awareness and reciprocity (Gross et.al, 2021; Konig et.al, 2020; Glikman et.al, 2021). The Moran communities in Barekuri since the past generations; the initiatives led by the youths of the community need to be applauded in striking the balance of coexistence. Coexistence is not static but rather a dynamic

process encompassing talks, negotiation, and willful reciprocity among diverse groups of people carried out consistently. The youthful stewards in a region can be seen with the ultimate possession of traditional ecological knowledge, which holds significance on grounds of crucial understanding of the local surroundings, enhancing the efforts of conservation while encouraging economic ventures sustainably. The case of Barekuri aptly exemplifies the youthful stewards towards maintaining the intrinsic value of ecology and wildlife. The Barekuri Development Committee, the Barekuri Youth Association has taken significant strides in promoting awareness about the Hoolock Gibbons and the importance of biodiversity conservation. The culmination of these efforts is the annual celebration of International Gibbons Day in October in the past few years in Torajan-Denka Public Ground, Barekuri. This annual event evolved into a grand spectacle, attracting not only local villagers but also renowned environmentalist Jadav Payeng as well as local and foreign visitors. The celebration witnessed speeches on the critical need for the conservation of this rare species and the overall biodiversity of the region. In a poignant moment during the festivities, a book titled "*Kolia: Smiritigrantha*" in the local language dedicated to the memory of a beloved female Hoolock Gibbon was unveiled, symbolising the deep connection of coexistence and depicting the potential for a symbiotic relationship between humans and wildlife. The book narrated stories, poems and the shared history between the villagers and the Hoolock Gibbons, fostering a deeper understanding of the bond that exists. Informed by the local knowledge and circumstances, the youths of Barekuri are leading holistic conservation efforts; the villagers recognising the significance of preserving the gibbons' natural habitat had collectively decided to protect the towering trees that served as the primate's abode. This symbiotic relationship between the community and these arboreal species depicts a testament to the fine balance between humans and the preservation of biodiversity. The practice of giving playful nicknames to the Gibbons, the conscious collective decision to refrain from tree-cutting for the Gibbons to roam freely and the vision of developing ecotourism portrays the efforts of the community committed to conservation and sustainable development. Amidst

the colossal loss of biodiversity and the subsequent extinction, the conservation efforts led by the Moran communities of Barekuri for the IUCN red-listed endangered species are commendable. Barekuri, in a true sense, epitomizes the co-existing symbiotic relationship between humans and Gibbons in Barekuri and the local ecological knowledge and practices can well contribute to conserving an endangered species like the Western Hoolock Gibbons.

### **Challenges of spiralling extractivist: The Baghjan Tragedy and the dreadful impact on Coexistence**

The colonial rule in India was largely accompanied by the exploitation of forests and natural resources for the development of various kinds of industries, railway tracks, roads etc for vested purposes. The British had an instrumental understanding of forests; forests were seen as a hub of a commercial entity and the colonial concept of nature was that of a 'Revenue Maximiser'. Even after India gained independence, it did not put a halt to these capitalist expansionist processes at the cost of the environment and its well-being. Since 1991, with the liberalization of the Indian economy, the trend towards modernization and its accompanying prospects of economic development has been heightened. The diversion of forests and grazing grounds by the state and the corporations for commercial exploitation does much more harm than good to our planet Earth. Contemporary state practices are by the neo-liberal capitalism and amendments in the acts like the Environmental Impact Assessment (EIA) 2020 are proof of it. Such amendments in the legal system are a bane to environmental sustainability but a boon to economic development; exemplifying 'economic development' overweights 'environment'. Northeast India is quite rich in natural gas and oil in addition to abundance in biodiversity; oil was first discovered by the British in 1867 in the Digboi area in the Tinsukia district of Assam. Since then, in many areas crude oil was discovered, thus beginning the golden era of Assam glorifying development and inducing environmental destruction. In Assam, one of the major companies working for exploration, and drilling operations of the reserves of

petroleum is the Oil India Limited (OIL). Following the economic reforms in the early 1990s, there has been a tremendous increase in building oil rigs and oil pumps without obtaininga proper mandate from the locals who might be affected. The continued explorationspose serious ecological, and climate crises besides creating acute health problems and livelihood crisesamong the local people.

Barekuri is suitable for tea plantations and the surrounding areas nearby are rich in oil and coal; eminent economic aspirations underlie amid forests, and as such the ongoing wrath of extractivism looms large. The region which includes Dibrusaihkhaw National Park, Maguri Motapung Beel and the surrounding villages suffered serious devastation from oil spills and the clearing of trees for accessing roads to the oil drilling sites, exploration and production activities. In the early decades of the 20<sup>th</sup> century during colonial rule in Assam, tea plantations exacerbated the deforestation and fragmentation of the habitats of many mammalian species. Nevertheless, Barekuri was still imbued with two dozen of the ape species before the blowout. The minimal population of Western Hoolock Gibbons suffered a huge blow following the Baghjang as leak. The oil leakage through pipes and the fire aftermath created huge havoc and disrupted the local ecosystem like Barekuri. The oil spills on agricultural lands, burning of houses of the villagers and the death of many domesticated animals as well as endangered species like Western Hoolock Gibbons, dwindling the population of the ‘acrobats of the forests’ thus causing a grave biodiversity-related crisis in the history of Assam. The condensed oil too has coated crops, leaves and trees including betel nuts, bananas, tea gardens and bamboo posing a serious threat to the endangered Western Hoolock Gibbon population and their habitats inBarekuri. In October2020 the death of a pregnant Hoolock Gibbon in Barekuri was reported. The medical treatment revealedthe death due to liver and lung ailments which was very obvious; the death in thepost-blowoutmonths is proof that the oil spill with gas absorbed by the trees and leaves all across the villages in the surrounding areas resulted in the untimely death of domesticated animals and this endangered species in the village as they feed on the leaves and fruits in the trees coated with harmful ingredients. Since the blowout,

each year 2-3 Gibbons died due to diseases like Tuberculosis, and lung diseases as revealed by wildlife experts. The death of the tailless apes in Barekuri left the villagers grieve-stricken. The Baghjan fire caused irreparable damage to the region's ecology and negatively impacted the livelihood of local communities and animals that rely on wetlands and forests (Gogoi et.al, 2022).

The Baghjan tragedy unveiled the bureaucratic lethargy, the corporate negligent attitude, the lack of goodwill of the state and the prioritization of 'development' over 'environment' (Isfaq& Vardhan, 2020) The irony here is that the MoEFCC whose primary concerns are implementation of policies and programmes relating to the conservation of the country's natural resources including its lakes and rivers, its biodiversity, forests and wildlife, ensuring the welfare of animals and the prevention and abatement of pollution is contributing to pollution by approving ECs to industries, making amendments inhibiting the welfare of humans as well as the animals by giving a 'free pass' in the hands of industries for carrying out their projects. The regulatory authorities, ministries, and expert committees seem to be in hand-in-hand gloves with operating industries and pay no heed to improving the deteriorating ecological situation, thus posing a severe threat to the endangered species in a local ecosystem like Barekuri. The negligent political and administrative will has made these tail-less monkeys once abound in Barekuri dwindling in numbers at a rapid rate.

### **Prospects for an eco-sensitive future**

The menace of ecological deterioration and biodiversity destruction in general and the protection of the rare and endangered ape species Hoolock Gibbons in Barekuri, in particular, has to be dealt with at the earliest to ensure an eco-sensitive future. The country's national policies like Northeastern Hydro Carbon Vision 2012, the New Exploration Licensing Policy and the recent amendment to EIA in 2020 enabled extensive environmental destruction and biodiversity loss. Rare species like Western Hoolock Gibbons are dwindling in numbers due to such policies creating havoc as we all witnessed in May 2020 in Baghjan. Even though the fire was

doused after 159 days, the danger lingered for months; the sound of a blowout, the smell of oil, earthquake-like feeling impacted the health of humans and animals in the area. The company was bound to provide compensation to the people who lost their property, but the question here arises - Was the temporary monetary benefits levied as compensation, sufficient? How will it undo the disastrous impact the tragedy caused to the thriving ecosystem? How will it bring back the glorious ecology of the region and its essence it had in the pre-contamination phase? The need is that the anti-environmental and anti-wildlife policies should be scrapped and an efficient regulatory framework coupled with complete adherence to the environmental laws and scrapping of the detrimental amendments is one of the ways forward for a sustainable planet where both humans and animals could coexist harmoniously.

The exclusionist model leading alienation of local communities which are the hub of sustainable conservation practices has been detrimental to the environment. In several regions, local communities are leading conservation efforts deeply informed by their local circumstances. Since they have strong ties at ground level and have a better understanding of their ecosystem and its dynamics, hence can well contribute their insights to informed management and conservation-related decisions. The urgent need is to evolve a mechanism in Forests and Wildlife governance taking into account the local communities as key participants in the planning, monitoring and decision-making process, management and assessment to ensure long-term conservation of biodiversity existing in varied altitudinal variations. To conserve the existing populations of Gibbons in Barekuri, utmost priority should be given to protecting the forest fragments, restoring them, preventing further degradation, afforestation and building corridors to connect the tree canopies and all this is not possible with the top-down framework. The government must incorporate local communities and their local ecological knowledge system as a complementary mechanism of action and accordingly devise a 'Hoolock Gibbon Project' which will provide guidelines and data to undertake area-specific action plans and conservation efforts.

Unlike any protected sanctuary where there is aloofness between animals and humans, Barekuri is the epitome of a harmonious relationship between humans and animals. This has become a tourist draw. Ecotourism, an important aspect of tourism has three key principles- ecology, locals and tourists it has a huge potential in a village like Barekuri but it remains far away from satisfactory. In the words of The International Ecotourism Society, '*Ecotourism is the responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education*'. Ecotourism has the potential to yield social and economic benefits, uplifting the poverty of the villagers via increasing employment opportunities thus improving the standard of living of locals and having positive impacts on the environment as well (Seba, 2012) Few steps have been initiated by tourism management teams in Barekuri comprising of local youths who guide tourists for sightseeing; making arrangements for local guest houses, providing authentic meals, showcasing local culture, practices through programmes and even ensuring a clean and green, pollution-free spaces to attract more tourists. But the Baghjan blowout was a huge blow to the possibilities of Ecotourism in the area. However, the revival of the possibilities was observed with the celebration of International Gibbon Day in Barekuri to generate awareness of the 'Acrobats of the Forest' which imminent personalities attended and the event successfully ended with a proposal to establish 'Hoolock Gibbon Research Centre' in the upcoming years. If ecotourism can be developed effectively with the local resources and governmental support in hand, Barekuri will soon be a classic example for many other local communities residing in areas rich in biodiversity to develop economy and ecology hand in hand.

### **Conclusion**

The case of Barekuri, a thriving home to the IUCN-listed 'critically endangered' species in the Post-Baghjan tragedy well portrays the inextricable connection between ecology and politics. Although, indeed, many times the political context in ecology is not vibrant still it has its presence more or less. The ecological

trajectory is influenced by the political circumstances, the giant public-private partnership has put the environment at stake as revealed in the Baghjan tragedy and its aftermath havoc. In the recent past, 'Project Tiger', 'Project Elephant', 'Project Rhino' and other projects have been launched for the protection and holistic conservation of flagship species, so initiatives also need to be taken in the case of primates like 'Project Primate' for the future survival of this rare species. It is to be remembered that our planet Earth not only belongs to just one species, that is humans but all other species who cohabit on this planet; living in consonance with the other organisms would help humans to sustain in the most pristine manner. The people in power democratically should take the lead in accommodating local ecological knowledge in advancing the condition of Barekuri and surrounding ecologically sensitive areas whose uniqueness lies in the familial amicable relation between the Moran communities and the Western Hoolock Gibbons.

### **References:**

1. Bhattacharya, K. B. June 07, 2019. Communities join hands to keep alive Hoolock Gibbon's song. Retrieved from: <https://india.mongabay.com/2019/06/communities-join-hands-to-keep-alive-the-hoolock-gibbons-song/>
2. Bhattacharya, M. 2022. *Sultans of the Swing: Hoolock Gibbons Rule the Canopy*. Retrieved from: <https://roundglasssustain.com/species/hoolock-gibbons-canopy-hollongapar>.
3. Blackwell et.al. 2016. No single solution: application of behavioural principles in mitigating human-wildlife conflict. *Animal Behaviour*, pp. 245-254 Retrieved from: <https://doi.org/10.1016/j.anbehav.2016.07.013>
4. Biswas et.al. 2023. Demography and Group Dynamics of Western Hoolock Gibbons in a Community Conserved Village Population in Upper Assam, India in S. Cheyne., C. Thompson., P. Fan., H. Chatterjee (Eds.), *Gibbon Conservation in the Anthropocene*. pp. 131-146. Cambridge University Press.

5. Bovenkerk, B. &Keulartz, J. 2021. *Animals in our Midst: The Challenges of co-existing with animals in the Anthropocene*. Springer.
6. Chetry et.al. 2023. Challenges and prospects in the conservation of Hoolock Gibbons in S. Cheyne., C. Thompson., P. Fan., H. Chatterjee (Eds.), *Gibbon Conservation in the Anthropocene*. pp. 131-146. Cambridge University Press.
7. Cheyne, S., Thompson, C., Fan, P., Chatterjee, H., 2023. *Challenges and prospects in the conservation of Hoolock Gibbons* in S. Cheyne., C. Thompson., P. Fan., H. Chatterjee (Eds.), *Gibbon Conservation in the Anthropocene*. pp. 131-146. Cambridge University Press
8. Choudhury, A. 1990. Population dynamics of Hollock Gibbons (Hylobates hoolock) in Assam, India. *American Journal of Primatology*, pp.37-41. Retrieved from: <https://pubmed.ncbi.nlm.nih.gov/31963996/>
9. Choudhury, A. 1991. Ecology of the Hoolock Gibbon (Hylobates hoolock), a lesser ape in the tropical forests of northeastern India. *Journal of Tropical Ecology*, pp. 147-153. Retrieved from: <https://www.jstor.org/stable/2559687>.
10. Choudhury, A. 2001. Primates in northeast India: An overview of their distribution and conservation status, *ENVIS Bulletin: Wildlife and Protected Areas*, pp. 92-101. Retrieved from: [https://www.researchgate.net/publication/265405344\\_Primates\\_in\\_Northeast\\_India\\_An\\_Overview\\_of\\_their\\_Distribution\\_and\\_Conservation\\_Status](https://www.researchgate.net/publication/265405344_Primates_in_Northeast_India_An_Overview_of_their_Distribution_and_Conservation_Status).
11. Choudhury, A. 2009. The Hoolock Gibbon (Hoolock hoolock) in Tinsukia and Dibrugarh Districts of Assam, India. *Asian Primates Journal*, pp. 24-30. Retrieved from: <http://static1.1.sqspcdn.com/static/f/1200343/18198340/1337026358920/APJ1.2.Hoolock.pdf?token=ads8kUqUBMM1eOV53gCHZlvoKzA%3D>.
12. Corbet, G.B. & Hill, J.E. 1992. *The mammals of the Indomalayan Region: a systematic review*. Oxford: Oxford University Press. Retrieved from: <https://www.cambridge.org/core/journals/oryx/article/mammals-of-the-indomalayan-region-a-systematic-review-by-g-b-corbet-and-j-e-hill>

oxford-university-press-oxford-and-natural-history-museum-london-1992-isbn-019-854693-9-488-pp-hb-6000/F81AC3C9AC1801894072B69512C3C5D8.

13. Geleta, M. 2015. *Conservation Links and Gaps between Scientific Knowledge and Indigenous People*. Department of Biology, Wollega University, Ethiopia. pp. 162-167. Retrieved from: [https://www.researchgate.net/publication/323736215\\_Conservation\\_Links\\_and\\_Gaps\\_between\\_Scientific\\_Knowledge\\_and\\_Indigenous\\_People](https://www.researchgate.net/publication/323736215_Conservation_Links_and_Gaps_between_Scientific_Knowledge_and_Indigenous_People).
14. Glikman et.al. 2021. Coexisting with different human-wildlife coexistence perspectives. *Front. Conserv. Sci.* 2. Retrieved from : <https://www.frontiersin.org/articles/10.3389/fcosc.2021.703174>.
15. Gogoi, S., Chetia, A. & Baruah, B. 2022. Baghjan Fire: A Case Study of the '2020 Assam gas and oil leak' at Baghjan Oil Field, Tinsukia, Assam. *International Journal of Mechanical Engineering*, Vol7, Special Issues. 5,pp.507-515. Retrieved from: [https://kalaharijournals.com/resources/Special\\_Issue\\_April\\_May\\_69.pdf](https://kalaharijournals.com/resources/Special_Issue_April_May_69.pdf)
16. Gross et.al. 2021, A Future for All: The Need for Human-Wildlife Coexistence. World Wide Fund for Nature & United Nations Environment Programme (UNEP).
17. Hill, J. & Gale, T. 2009. *Ecotourism and Environmental Sustainability: Principles and Practice*. Ashgate Publishing Limited, England.
18. Isfaq, S. & Vardhan, R. 2020. The Tragedy of Baghjan- Willful Disregard of Environmental Wellbeing: An analysis of the Legal Implications Stemming from the Disaster. *Indian Journal of Law and Justice*, Vol. 11, No. 1 (Part 1),pp. 264-283. Retrieved from:<https://ir.nbu.ac.in/bitstream/123456789/3985/1/IJLJ%20-%20Vol.%2011%20No.%201%20%28Part%20I%29%20Article%20No%2017.pdf>.
19. IUCN. 2020. The IUCN Red List of Threatened Species. Version 2020 Retrieved from: <https://www.iucnredlist.org/>.

20. Kalita, U. September 22, 2018. Hoolock Gibbons feels quite at home in this Assam village. Retrieved from: <https://www.thehindu.com/sci-tech/energy-and-environment/hoolock-gibbons-feel-quite-at-home-in-this-assam-village/article24993870.ece>.
21. Kapoor, M.& Dinesh, K. June 04, 2020. How Malleable Laws, Pliant Panels Helped OIL Secure Clearance to Drill in Biodiverse Area. Retrieved from: <https://thewire.in/environment/how-malleable-laws-pliant-panels-helped-oil-secure-clearance-to-drill-in-biodiverse-area>.
22. Kappeler, P. & Schaik, C. 2006. *Cooperation in Primates and Humans: Mechanisms and Evolution*. Springer.
23. Konig et.al. 2020. Human-wildlife coexistence in a changing world. *Conserv. Biol.* 34(4), pp. 786–794. Retrieved from :<https://doi.org/10.1111/cobi.13513>.
24. Maweu, M.J. 2011. Indigenous Ecological Knowledge and Modern Western Ecological Knowledge: Complementary, not Contradictory. *Thought and Practice: A Journal of the Philosophical Association of Kenya*. Retrieved from: <https://www.ajol.info/index.php/tp/article/view/74874>.
25. Mukherjee, D. September 25, 2023. Man and Wild: The Complicated Coexistence of Humans and Hoolock Gibbons in Assam. Retrieved from: <https://roundglasssustain.com/photostories/hoolock-gibbon-assam-coexist>.
26. Parajuli, R.K. & Das, T. 2014. Indigenous Knowledge and Biodiversity: Interconnectedness for a Sustainable Development. *International Journal of Scientific & Technology Research*, Volume 2, Issue 8, pp. 220-223. Retrieved from: <https://issuu.com/ijstr.org/docs/indigenous-knowledge-and-biodiversi/1>.
27. Seba, J. 2012. *Ecotourism and Sustainable Tourism: New Perspectives and Studies*. Apple Academic Press, Newyork.

28. Sharma, N., Deka, B. & Sinha, A. 2022. Diminishing Habitats, Vanishing Species: Primates of the Threatened Tropical Lowland Rainforest Fragments in the Upper Brahmaputra Valley, Northeastern India. *Journal of Biosciences*, pp. 184-193. Retrieved from: [https://www.researchgate.net/publication/358125728\\_Diminishing\\_Habitats\\_Vanishing\\_Species\\_Primates\\_of\\_the\\_Threatened\\_Tropical\\_Lowland\\_Rainforest\\_Fragments\\_in\\_the\\_Upper\\_Brahmaputra\\_Valley\\_Northeastern\\_India](https://www.researchgate.net/publication/358125728_Diminishing_Habitats_Vanishing_Species_Primates_of_the_Threatened_Tropical_Lowland_Rainforest_Fragments_in_the_Upper_Brahmaputra_Valley_Northeastern_India).
29. Smith et. al. 2023. *Listen to the people, Hear the Gibbons song: The importance of incorporating Local people's perceptions in conservation* in S. Cheyne., C. Thompson., P. Fan., H. Chatterjee (Eds.), *Gibbon Conservation in the Anthropocene*. pp. 131-146. Cambridge University Press.
30. Srivastava, A. 1999. *Primates of Northeast India*. Megadiversity Press, Bikaner, pp.208.
31. Urbanik, J. & Johnston, C. 2017. *Humans and Animals : A Geography of Coexistence*. ABC-CLIO,LLC Imprints, California.
32. Western, D. & Wright, R. 1994. *Natural Connections: Perspectives in community-based conservation*. Island Press, California.