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Coexistence and Conflict: Exploring the Dynamics of Human-Elephant Interactions in Kheroni, West Karbi Anglong, Assam

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ABSTRACT

Elephant, which is recognized as the National Heritage Animal of India, holds considerable cultural, ecological and religious significance in the country. However, the existence of wild elephants in human-dominated landscapes often creates situations where the needs of local communities and wildlife come into conflict. This is particularly apparent in Kheroni, a biologically rich landscape of West Karbi Anglong, Assam, where people and elephants share spaces for survival. For many local residents in the study site, encounters with elephants are not simply occasional incidents but experiences that can affect their agricultural activities, livelihoods, property, and everyday lives. In this respect, the present study examines the nature and changing dynamics of human–elephant conflicts in the region. It attempts to understand why such conflicts occur, how they affect the lives of local people, and how communities respond to the recurring presence of elephants. This study underscore changes in land use, agricultural expansion, habitat fragmentation and the gradual overlap between human settlements and elephant movement areas as important factors in understanding these interactions. The study emphasizes the importance of elephants in the region's ecological landscape and the need to protect their habitats. The relationship between humans and elephants in Kheroni cannot be understood only through the incidents of damage and loss; it also requires an understanding of the circumstances that bring them into shared spaces. The study therefore highlights the need for a balanced approach that considers both local livelihood concerns and elephant conservation, with greater attention to community participation and practical measures for peaceful coexistence.

Keywords: Human–elephant conflict, human–wildlife interaction, coexistence, rural livelihoods, community-based-conservation.

Introduction

Human-elephant conflict (HEC) has emerged as one of the major environmental and socio-economic challenges in many parts of India, particularly in the regions where human settlements and agricultural activities overlap with natural elephant habitats. HEC may be defined as a complex ecological and socio-economic phenomenon arising from the overlapping use of landscapes by humans and wild elephants, resulting in adverse interactions that negatively affect human livelihoods, safety and well-being, as well as elephant survival and conservation. According to International Union for Conservation of Nature (ICUN), human wildlife conflict occurs when interactions between people and wildlife have negative consequences for either humans or wildlife, affecting people's livelihoods, safety and well-being as well as wildlife conservation. It reflects the growing challenges of maintaining ecological balance and peaceful coexistence between human communities and wildlife. "Human-wildlife conflict arises when the behaviour of wild animal species poses a direct and recurring threat to the lifelihood or safety of a community and, in response, persecution of the species ensues" (Zimmermann et. al 2009). Conflict between elephants and people results when elephants feed on crops, destroy farms or homes, or injure or kill people, and when people retaliate against these losses (Sukumar, 1994).

Assam is one of the important habitats for Asian elephants in India, supporting a substantial population of wild elephants across its forests, grasslands and agricultural landscapes. Around 20% of India's elephant population is found in Assam (Talukdar & Barman, 2003). As per the report of elephant population estimation 2024 by the Assam Forest Department, there are 5,828 elephants in the state. Out of these, Amreng Reserve Forest, which comes under Southern Forest Range, Kheroni accounts for a total of 72 elephants. Asian elephants (*Elephas maximus*) are ecologically important mammals that play a vital role in maintaining forest ecosystems through seed dispersal, vegetation modification and nutrient cycling (Pandey et al., 2026). However, habitat degradation, fragmentation of forest areas, expansion of agricultural land, infrastructure development and increasing human encroachment into elephant habitats have intensified interactions between elephants and human populations, often resulting in conflict (Choudhury, 1999).

The state's diverse ecological environment, particularly the forested landscapes of the Karbi Anglong region, provides important habitats and movement corridors for elephants. However, the coexistence of human communities and elephants in these landscapes is becoming increasingly challenging due to changes in land-use patterns, habitat disturbance and competition for natural resources. Research conducted in Assam indicates that habitat loss and declining forest

cover are important factors associated with the expansion of human-elephant conflict (Bhuyan & Kar 2018). Similarly, another study highlighted the relationship between habitat destruction, food scarcity and human-elephant conflict in the Karbi Anglong district (Sarma et al., 2020).

Studies on Human-wildlife conflict in Kaziranga Tiger Reserve observe that lack of corridors and habitat contiguity for wildlife dispersal will have serious implications for long-term conservation of wide-ranging species like tigers and Indian elephants" ("Kaziranga Facing Twin Threats," 2018). The National Tiger Conservation Authority (NTCA) has blamed "the stone mining/quarrying and stone crushers established in the intervening area between Kaziranga and Karbi Anglong hills for "destruction of wildlife corridors and vital wildlife habitat which is essential for long ranging species like Indian elephants and tigers" some animals, like elephants, use both flood plains of Kaziranga and hills of Karbi Anglong for seasonal needs and the free movement of wild elephants is essential." (District Survey Report of West Karbi Anglong, Hamren, September 2024. P. 101)

Human-elephant conflict, however, should not be understood merely as a struggle between humans and wildlife. It is a complex ecological, economic and social phenomenon shaped by habitat conditions, land-use changes, livelihood patterns, traditional knowledge, institutional responses and local attitudes towards conservation. While elephants are often perceived as destructive animals by affected communities, their conservation is essential for maintaining ecological balance and protecting biodiversity. This creates a challenging situation in which the interests of wildlife conservation and human development must be carefully balanced. Understanding the perspectives of local communities is therefore essential for developing effective and socially acceptable conservation strategies (Nath et al., 2022).

Elephants are protected under the Schedule I of the Indian Wildlife Protection Act (1972), which is the highest level of protection accorded to any species in the country (Choudhury, 2004). The elephant is also listed as an "endangered" species by the IUCN (Ibid). In order to conserve elephants, the Government of India has launched a major conservation intiative known as Project Elephant (PE) whose main objectives are to ensure the long-term survival of wild and captive elephants. The project focuses on protecting and restoring elephant habitats to sustain viable populations while implementing measures to mitigate human elephant conflicts and promote coexistence (Pandey et al., 2026). Since PE was started in 1992, the idea of a "landscape approach" to elephant conservation has been highlighted because of the wide ranging behaviour of elephants. Considering this, the concept of Elephant Reserves (ER) was introduced, which serves as a management unit and includes forests and

regions well outside of Protected Areas (PAs) (Ibid.).

The concept of coexistence offers an important framework for understanding and addressing human-elephant conflict. It emphasizes the possibility of maintaining a sustainable relationship between humans and elephants through habitat conservation, community participation, effective conflict-management mechanisms and appropriate institutional support. However, achieving coexistence requires more than simply protecting elephant populations. It also involves recognizing the economic losses, psychological stress and social challenges experienced by communities living alongside elephants. Measures such as early-warning systems, compensation for crop and property damage, protection of elephant corridors, community-based monitoring and awareness programmes can contribute to reducing conflict and promoting peaceful coexistence (Saikia et al., 2023)

Area of Study:

Kheroni is situated in West Karbi Anglong district, with its headquarters at Hamren and was formerly a part of the undivided Karbi Anglong district. It was formed as a separate administrative district on 25th of January 2016 vide Notification No. GAG(B)27/2005/260-A. The district is located between 25°33′ N and 26°09′ N latitudes and 92°08′ E and 93°04′ E longitudes. Covering an area of approximately 3,035 sq. km, West Karbi Anglong forms part of the Karbi Anglong Autonomous Council and is administered under the provisions of the Sixth Schedule to the Constitution of India. The district shares its boundaries with Dima Hasao in the east, Hojai, Morigaon and Nagaon districts of Assam towards the north, and the neighbouring state of Meghalaya towards the south. Kheroni is located in a biologically rich landscape characterised by forests, hills, streams and agricultural ecosystems which support diverse plant, animal and bird life. The Amreng Reserve Forest with a total area of 62.74 sq. km is also located in this region. The region's biodiversity is valuable not only for maintaining ecological stability but also for supporting the livelihoods and cultural traditions of local communities. Besides, several sacred landscapes of the Karbi locally called 'than' can also be located in the region. Therefore, sustainable resource management, habitat protection and community participation are essential for conserving the natural biodiversity of Kheroni for future generations. Besides this, Kheroni is also located near the Dhansiri - Lungding Elephant Reserve, which encompasses reserve forest and Protected Areas in Karbi-Anglong East, Karbi – Anglong West, Nagaon South and North Cachar Hills Forest Division. Dhansiri-Lungding Elephant Reserve has an area of 2,740 sq. km which is a contiguous habitat with the Northern boundary bordering Kaziranga-Karbi Anglong Elephant Reserve in Assam and Eastern boundary bordering Intanki Elephant Reserve of Nagaland.

The area is inhabited by different communities such as Karbi, Garo, Nepali, as well as Hindi speaking non-native people. Agriculture being the backbone of the district, a large majority of the local communities in the region also depends on agriculture which is supplemented by other activities such as fishing and collecting forest products. Therefore, crop damage and damage of property were the most common form of human–elephant conflict in this region which affects their major source of livelihood. Some of the major crops cultivated in the region include rice, wheat, mustard and sugarcane. Apart from this the study site also witnesses sizeable homestead gardens where crops such as maize, pumpkin, jackfruit, banana and vegetables are grown. The proximity of human settlements and agricultural activities to elephant habitats makes the area vulnerable to human-elephant interactions. For local communities, particularly those dependent on agriculture and natural resources, the presence of wild elephants create serious challenges to their livelihoods and everyday activities. Crop-raiding, property damage and the fear of unexpected encounters with elephants can influence people's perceptions, attitudes and responses towards wildlife conservation (Nath et al., 2009). Similar patterns of conflict have been documented in different parts of Assam.

Methods:

This paper is designed from a case-study approach emphasizing on Kheroni and adjoining elephant-use landscapes. A mixed-methods approach combining field observations, semi-structured interviews with affected residents and relevant stakeholders, and the analysis of secondary sources, including forest department records, government reports, published research, and available information on land-use change has been adopted for this study. The findings framework focuses on identifying recurring patterns of crop damage, threats to life and property, community adaptation strategies, and the effectiveness of existing conflict-management mechanisms.

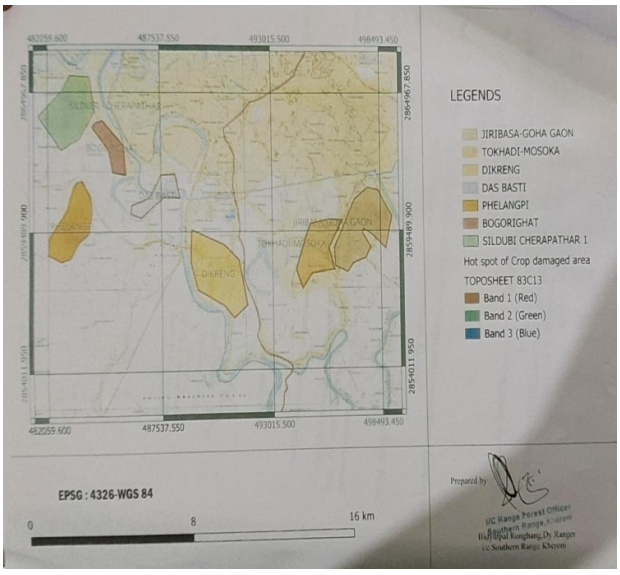
Objectives of the study:

Although HEC has been studied in different parts of Assam and Karbi Anglong, a focused investigation of the experiences, perceptions, livelihood impacts and coexistence strategies of communities in Kheroni remain underexplored. Keeping in view that it can provide valuable local-level insights into the dynamics of HEC, the present study aims to:

1. Understand the major causes of HEC in the study area.
2. Assess the impact of HEC on agriculture, property, livestock, and human life.
3. Investigate traditional and contemporary methods of conflict mitigation.
4. Assess existing mitigation and compensation mechanisms.

Discussion:

According to a study by Bibhab Kumar Talukdar and Rathin Barman "a continuous belt of dense evergreen forest in Assam is now being fragmented. Patches of evergreen forest are gradually being converted to secondary forest and degraded in many areas. Karbi-Anglong and North Cachar Hills have been identified as the worst affected areas. Such degradation and fragmentation have led to the loss of prime elephant habitat in Assam and have become the main factors contributing to the current intense man-elephant conflict" (Talukdar & Barman 2003). Areas where human-elephant interactions are frequent are near highly fragmented forests, agricultural fields, and encroached elephant corridors. Human expansion into elephant ranges has disrupted their migratory routes, often forcing them to enter human settlements in search of food and water, further escalating conflict (Habib et al., 2025). Developmental activities such as establishment of brick industries along the traditional elephant movement routes and fragmentation of Amreng Reserve Forest for human settlements and agricultural purposes have resulted in the aggravation of the conflict. According to the official record available at Forest Range Office Kheroni, between 2000 and 2025, around 106 humans have lost their lives as a result of HEC in the study area, highlighting the severity of the problem and its implications for local communities. Although some cases of elephant deaths due to electrocution has been reported but no case of poaching has been reported so far in the study area. According to local residents elephants emerge from the forest in search of food in the nearby agricultural regions due to scarcity of food in the forest. This causes confrontations between people and elephants, which affects agriculture and results in human casualties. Information shared by both forest officials and local communities shows that Human-elephant conflict and crop raiding in the study area peaks from October to February, coinciding with the harvesting of paddy. As observed by other studies on HEC, crop raiding usually takes place from late evening to early morning. Major affected areas in the study area are Jiribisa-Gohagaon, Tokhadi-Mosoka, Dikreng, Das Basti, Phelangpi, Bogorighat, Sildubi-Cherapathar 1. Therefore, these areas have been locally mapped as 'Hot Zones' by the local Forest Department. The illustration given below shows the details of major affected areas as well as hot spot of crop damaged area.



(Figure 1: The above illustration which specifies the hotspot of elephant activities and crop damaged area has been collected from the Forest Range Office, Southern Range, Kheroni.)

Moreover, a significant part of the study area comes under the Professional Grazing Reserve (PGR) and Village Grazing Reserve (VGR) which have seen encroachment and are continued to be inhabited mostly by non-native inhabitants. Such encroachment of spaces meant for animals are one of the leading causes of man animal conflict in the area of study. Such encroachment of designated spaces is giving rise not only to man-animal conflict but man-man conflict i.e. native vs non-native as well in the area of study.

Mitigation Measures:

Beating tins, shouting, brandishing fires, and bursting firecrackers are the most common methods used for warding off elephants. Most studies of best practice in human-wildlife conflict mitigation advocate the need to empower local communities and encourage them to take responsibility for preventive action (Zimmermann et al., 2009). "Community-based conservation has been projected as the most practical approach to stem biodiversity loss in developing countries. Since CBC is 'people-centered' and experience with it is relatively new, it is important to know the views of the local communities regarding implemented policies and programmes" (Mehta & Kellert 1998).

As informed by the Forest Officials of the Southern Range, Kheroni under whose jurisdiction the Amreng Reserved Forest falls, Anti-depredation squads were formed in conflict prone villages to incentivise communities to join hands with the Forest Department to respond to elephants together. However, the searchlights and firecrackers the squads used to drive elephants away possibly created a 'landscape of fear', forcing elephants to stray into more dangerous situations.

In an effort to address the increasing incidence of human-elephant conflict in the study area, the authorities have initiated the 'Gaja Mitra' scheme, a community based support system where the local Forest Department has installed artificial intelligence-powered cameras in the areas identified as elephant hot zones to detect the movement of elephants and alert the nearby villages in real time. Under this scheme, the local authorities have formed a team of eight members of the affected villages and were imparted proper training to develop understanding of elephant behaviour, enhance community preparedness for potential encounters, and develop protective measures for crops. The scheme was initially introduced by the Government of Assam **to** address the increasing incidence of human-elephant conflict in eight conflict prone districts which includes- Baksa, Biswanath, Goalpara, Golaghat, Jorhat, Nagaon Sonitpur, and Udalguri. The initiative seeks to promote coexistence between wild elephants and local communities through a range of measures, including the protection and restoration of elephant habitats, real-time monitoring of elephant movements, and enhanced community awareness and participation. By strengthening local involvement in conflict mitigation and improving the monitoring of elephant movements, the programme aims to

reduce the risks posed to both human livelihoods and elephant populations. Elephant watch towers are also constructed in the major traditional elephant movement routes as a measure to develop early warning system in the study area. Kunki elephants are also occasionally used to ward off wild elephants.

In order to address the economic and social consequences of Human elephant conflict, authorities have initiated compensation mechanism for supporting the communities affected by elephant-related incidents. Such mechanism reduces the economic burden and provides relief to the affected communities. Compensation is generally provided for different categories of losses which include human casualties and injuries, crop damage, property damage, livestock losses etc. compensations are provided as per the Ministry of Environment, Forest and Climate Change (MoEF&CC) guidelines. The compensation processes generally involves reporting the incident to the concerned Forest department, verification of the damage by the authority, assessment of the loss and subsequent disbursement of financial assistance as per government norms. However, many affected residents of the study area have expressed dissatisfaction over the compensation mechanism because according to them, the ex-gratia provided in case of crop damage are inadequate in relation to actual loss, the compensation processes is too lengthy, and the final disbursement of ex-gratia compensation is often considerably delayed.

Conclusion:

Similar to the studies on human elephant conflict in other parts of the state, the above discussions demonstrate the complex relationship between human livelihoods, ecological changes, and wildlife conservation in Kheroni, West Karbi Anglong, Assam. The study shows that human elephant conflict in Kheroni occurs mainly due to ecological conditions along with other anthropogenic factors such as destruction of forests through logging, encroachment, slash-and-burn shifting cultivation. The increasing frequency of encounters between humans and elephants reflects the growing pressure on the forest ecosystem and the overlapping spatial requirements of human settlements, agricultural activities and elephant habitats. The situation is further aggravated by delays in the disbursement of ex-gratia compensation and inadequate financial assistance. This study also emphasized that protection and restoration of elephant habitats and traditional movement routes must be protected in order to protect elephants and reduce human elephant conflict for maintaining the long-term demographic and genetic viability of elephant populations in the region. Sustainable coexistence between humans and elephants in the study site requires balancing ecological conservation with the livelihood security and safety of local communities. Therefore, the paper also emphasized that strengthening community participation and incorporating local ecological knowledge into conservation planning are essential for reconciling elephant

conservation with the socioeconomic security of communities inhabiting conflict-prone landscapes.

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