VOLUME 12 ISSUE 1 2026

ISSN 2454 – 3055

INTERNATIONAL JOURNAL OF ZOOLOGICAL INVESTIGATIONS

Forum for Biological and Environmental Sciences

Published by Saran Publications, India

International Journal of Zoological Investigations Vol. 12, No. 1, 287-295 (2026)

International Journal of Zoological Investigations

Contents available at Journals Home Page: www.ijzi.net

Editor-in-Chief: Prof. Ajai Kumar Srivastav

Published by: Saran Publications, Gorakhpur, India

ISSN: 2454-3055

Escalating Human–Elephant Conflict in the Bandipur Landscape: Evidence from Farmer Perceptions

Srinivas Adarsh, Gowda Bharat and Lingaraju H.G.*

Department of Environmental Sciences, JSS Academy of Higher Education and Research, Mysuru, Karnataka, India

**Corresponding Author*

Received: 26th December, 2025; **Accepted:** 1st February, 2026; **Published online:** 5th February, 2026

https://doi.org/10.33745/ijzi.2026.v12i01.028

Abstract: Human-elephant conflict (HEC) has risen across South Asia, as agricultural expansion and habitat fragmentation push elephants and rural communities to share landscapes. This study looks at farmers' opinions, conflict experiences, and attitudes toward mitigation measures in villages near the Omkar Range in Bandipur National Park, Karnataka, India. Field surveys were conducted in 12 forest-edge settlements from July to August 2025, utilizing structured questionnaires administered through face-to-face interviews with 120 respondents. The survey collected data on socio-demographic variables, landholding and cropping patterns, the frequency and nature of elephant encounters, the extent of damage, mitigation methods, compensation mechanisms, and community attitudes towards elephants and conservation. The results show that HEC is common and growing in the study area, with 70.8% of respondents reporting an increase in conflict over the last five years. Crop raiding was the most common type of conflict, with 56.6% of households reporting more than 50% seasonal crop loss and 26.7% witnessing total crop failure. Elephant intrusions happened mostly at night and during the wet season, with agricultural fields serving as the principal battle zone. Traditional deterrence techniques, such as firecrackers, noise, and night guarding, were extensively used but viewed as useless and temporary. Compensation measures were considered as insufficient, with 82.5% of impacted farmers reporting no compensation and 90% dissatisfied with current procedures. Despite substantial economic losses and safety risks, community attitudes toward elephants remained largely tolerant, reflecting cultural acceptance and coexistence values. The study highlights the urgent need for integrated, landscape-level mitigation strategies that strengthen compensation systems, improve physical barriers, enhance early-warning mechanisms, and promote community participation to sustain long-term coexistence between humans and elephants in conflict-prone regions.

Keywords: Coexistence, Human-elephant conflict, Conservation, *Elephas maximus*, Encounters, Endangered, Intrusions, Mitigation, Tolerance

Citation: Srinivas Adarsh, Gowda Bharat and Lingaraju H.G.: Escalating human–elephant conflict in the Bandipur Landscape: Evidence from farmer perceptions. Intern. J. Zool. Invest. 12(1): 287-295, 2026.

https://doi.org/10.33745/ijzi.2026.v12i01.028

Introduction

Human–elephant conflict (HEC) has intensified in recent decades as expanding human settlements and agricultural expansion increasingly fragment elephant habitats, bringing Asian elephants

(*Elephas maximus*) into closer and more frequent contact with people (Gunawansa *et al.*, 2023a). Rising human populations accelerate the conversion of forests into farms and other land uses, which heightens the likelihood of encounters and, consequently, conflict (Naha *et al.*, 2019). Understanding the underlying causes, spatial patterns, extent, and impacts of HEC is essential for shaping effective, long-term conservation strategies (Zimmermann *et al.*, 2020; Montgomery *et al.*, 2022;). This growing body of knowledge is critical not only for mitigating conflict but also for ensuring the coexistence of local communities and elephants in shared landscapes.

Across Asia, the escalating clash between humans and elephants has become a major conservation concern and is one of the leading causes of the Asian elephant's endangered status at the global level (LaDue *et al.*, 2021). Among the most severe expressions of this conflict is elephant crop raiding, which directly threatens the food security, safety, and livelihoods of rural communities that depend heavily on agriculture (Nyumba *et al.*, 2020; Gunawansa *et al.*, 2023a). At the same time, elephants face increasing risks due to habitat loss, fragmentation, and degradation driven largely by agricultural expansion, along with illegal poaching for ivory, hides, or calves (Western and Mose, 2023). Direct confrontations between people and elephants often result in injuries or fatalities on both sides, making this one of the most challenging dimensions of HEC (Ram *et al.*, 2021). As these incidents accumulate, they influence public attitudes, eroding local support for conservation initiatives and diminishing tolerance toward elephants (Majumder, 2022). In India, where HEC is predominantly linked to agriculture-based disputes, conflict mitigation strategies frequently prioritize human interests, reflecting a broader tendency toward human-centered approaches in managing shared landscapes (Gopalan and Radhakrishna, 2022).

This study looks at farmers' perceptions of human-elephant conflict (HEC) in the Bandipur forest region, focusing on their demographics, conflict experiences, and attitudes toward current and proposed mitigation strategies. In addition to documenting their socioeconomic features, the study investigates how landholding size, crop variety, reliance on forest-edge farming, and primary livelihood activities influence vulnerability to elephant intrusions. It also assesses farmers' willingness to pursue alternative and sustainable approaches to conflict resolution, as well as their perceptions of the efficacy of current interventions such as crop guarding, electric fence, compensation programs, and community-based initiatives.

Materials and Methods

Bandipur National Park, in the Chamarajanagar district of Karnataka, India, covers 868.63 km^2. It was established as a tiger reserve under Project Tiger in 1973 (Jayaprakash and Hickey, 2019), and it has been a part of the Nilgiri Biosphere Reserve since 1986. In 1931, the Maharaja of Mysore established the Venugopala Wildlife Park, a 90 km^2 forest near Gundlupet, which eventually grew to around 800 km^2 with the establishment of the Bandipur Tiger Reserve in 1973 (Reddy *et al.*, 2016).Bandipur is ecologically linked to several significant protected areas, including Rajiv Gandhi National Park (Nagarahole) to the northwest, Wayanad Wildlife Sanctuary (Kerala) to the southwest, and Mudumalai Wildlife Sanctuary (Tamil Nadu) to the southeast. Together, they constitute the Nilgiri Biosphere Reserve, one of South India's largest contiguous wildlife areas.

The park has an estimated 1,116 elephants—potentially up to 1,289—with an elephant density of around 0.96 km^{-2}. Its elevation spans from 680 to 1,455 meters, with an annual rainfall of 714 to 1,270 mm. The Kabini River is a natural boundary between Bandipur and Nagarahole National Parks. The park's northern edge is home to over 200 human settlements, resulting in large areas of human-wildlife interaction. Administratively, Bandipur is separated into eleven forest ranges.The reserve is traversed by two important highways: NH-181, which connects Coimbatore (Tamil Nadu) to Gundlupet (Karnataka), and NH-

766, which connects Kozhikode (Kerala) to Kollegal. Both highways pass through the Bandipur Tiger Reserve's main section, increasing human-wildlife interactions.

In July and August 2025, field surveys were undertaken in 12 villages along the northern, western, and eastern edges of Bandipur National Park's Omkar Range. Face-to-face interviews were conducted with necessary permissions during household and field visits, using a standardized questionnaire that included both open- and closed-ended questions. The survey aims to document farmers' perceptions of conflict, existing preventive strategies, and the underlying causes of human-elephant conflict (HEC). Respondents were also asked about the activities they had advised to the Forest Department, which allowed for an assessment of their tolerance for crop raiding and projected elephant hazards. Additional observations included attitudes that expressed fear, aversion, or negative emotions toward elephants.

The questionnaire was divided into six organized components meant to provide a thorough picture of farmers' experiences and attitudes on human-elephant conflict. It gathered demographic data such as gender, age, family size, and educational background, followed by socioeconomic information such as occupation, annual income, landholding size, and the distance between each respondent's village and Bandipur National Park. The questionnaire also asked respondents about their previous and recent encounters with elephants, including the frequency and nature of interactions. It also investigated the specific types of conflict encountered, such as crop loss, property damage, and associated hazards. Questions about compensation systems and community involvement evaluated access to relief, participation in local mitigation efforts, and perceived benefits. Finally, the tool includes both open- and closed-ended questions designed to elicit views, emotional responses, and suggestions about elephant intrusions and conservation efforts. All interviews were performed in Kannada, and responses were recorded using pre-designed survey forms.

Results and Discussion

Socio-Demographic Characteristics of Respondents

The poll has 120 respondents from 12 periphery settlements near Bandipur National Park's Omkar Range. The sample was largely male (89.2%, n=107), with ages ranging from 18 to >65 years, with the 35-44 age group accounting for the highest proportion (25.8%).

A significant proportion of families were medium-sized (4-5 members, or 71%). Education levels varied: 40% just attended primary school, while 3% had no formal education. The vast majority (68%) had lived in the village for at least three generations. Agriculture was the primary occupation for 96% of respondents, with over 56% earning less than ₹10,000 per month, highlighting financial vulnerability.

The average landholding was 3.25 acres, with 50% owning 2-4 acres. Rainfed land accounted for 51%, while 41% was irrigated. Farmers grew 21 crops, the most common of which were ragi, banana, tomato, jowar, rice, ginger, cotton, and coconut. Respondents identified ragi, banana, tomato, and jowar as the crops most frequently destroyed by elephants. Paddy, beetroot, cabbage, and green gram were the least impacted.

Patterns of Elephant Encounters

Elephant interactions were prevalent throughout the study area, with 52.5% of respondents reporting sightings in the last week and 30.8% in the last month. The majority of these encounters (90.8%) took place on croplands, demonstrating that agricultural fields were the predominant interface between humans and elephants. Encounters also followed specific time patterns. The majority of crop-raiding incidences happened at night (66.7%), with the rainy season (70%) emerging as the greatest period for elephant presence near settlements. Furthermore, 55% of respondents reported seeing elephants while

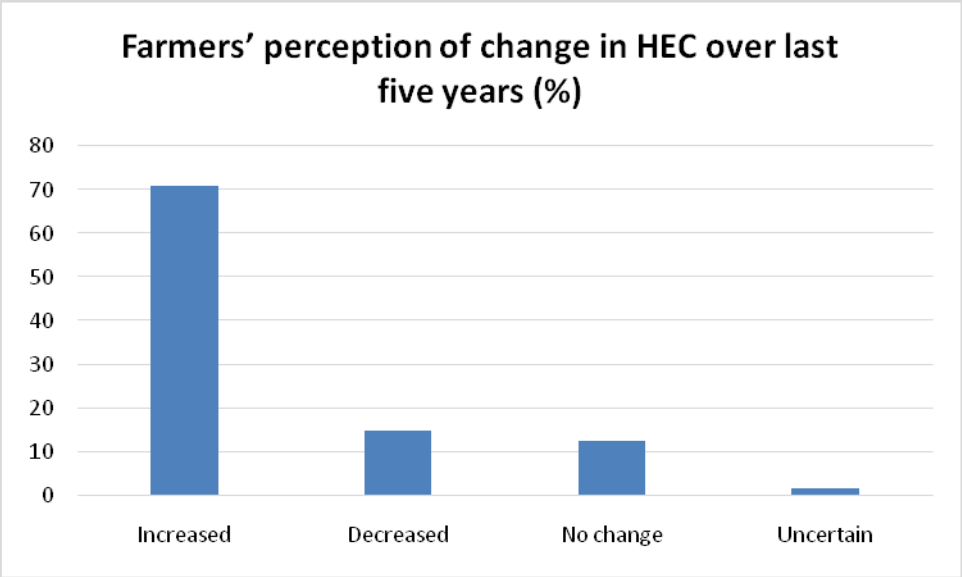

Fig. 1: Farmers' perception of change in HEC over five years.

actively working on their farms, emphasizing the increased risk during ordinary agricultural activities.

Group composition varied greatly. More than half of the sightings (51.7%) were of small groups of 1-5 elephants, with 25% involving medium-sized herds of 5-15 individuals. Solitary elephants, often adult tuskers, accounted for 14% of encounters, with only a small minority of respondents reporting bigger groups of more than fifteen elephants.

Perceived Trends in Human–Elephant Conflict

The majority of respondents indicated that the conflict between humans and elephants has gotten worse in recent years. A significant 70.8% stated that crop-raiding incidences had increased over the last five years, while 12.5% saw no change, only 15% thought conflict levels had decreased and 1.7% replied as Uncertain (Fig. 1). This communal view of intensifying conflict emphasizes the growing impact on agricultural livelihoods and shows that existing mitigation efforts have not kept up with the increasing frequency of elephant intrusions.

Extent of Crop and Property Damage

Crop damage from elephant invasions was widespread and severe throughout the examined villages. More than half of the respondents (56.6%) reported losing more than 50% of their seasonal crop yield, with 5.8% experiencing complete crop loss. Only a small percentage (5.8%) reported minimal harm. These losses had a direct impact on food security and financial stability, as most households relied significantly on agriculture for both subsistence and livelihood.

The economic pressure caused by periodic damage prompted many farmers to change their agricultural practices. A high number (74.1%) reported changing their crop selections, planting schedules, or farming intensity as a result of frequent elephant invasions, with some even considering abandoning farming altogether. Aside from crops, elephants damaged fencing structures, irrigation pipes, gates, and water/supply lines, adding financial difficulties to already impoverished people.

Human Safety Risks

In addition to destroying crops and property, elephants posed significant threats to human safety throughout the study region. Half of the respondents (50%) reported being chased or forcefully approached by elephants at some point,

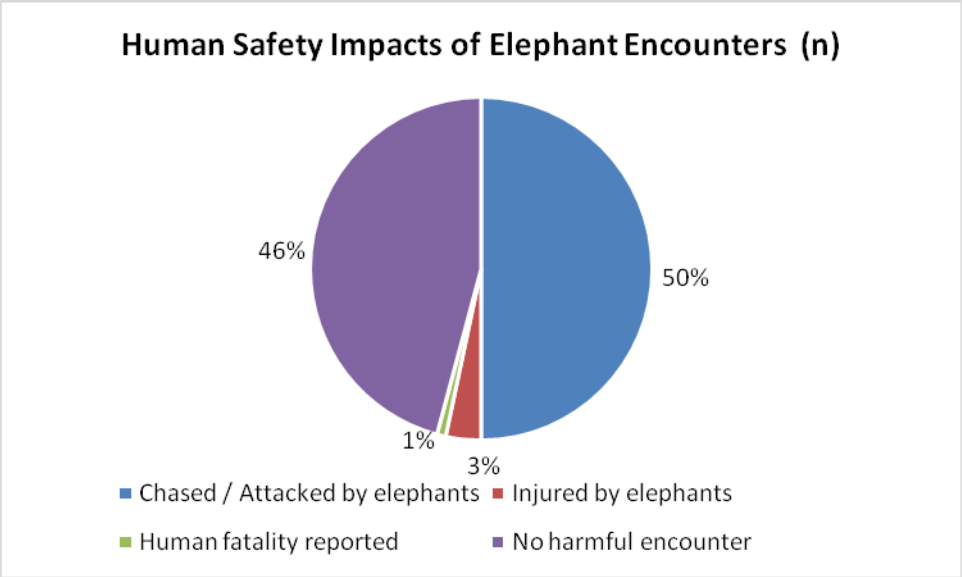

Fig. 2: Human safety impacts of elephant encounters.

indicating that risky encounters occur often during normal agricultural tasks (Fig. 2). The survey found one human fatality in the tested communities, and 3.3% of respondents reported injuries from direct elephant conflicts. These findings highlight the enormous physical danger that farmers confront when guarding their fields, especially at night and during peak agricultural seasons.

Mitigation Measures Used by Farmers

Farmers utilized a variety of traditional strategies to keep elephants away from agriculture, with a focus on simple, low-cost procedures. The most common way was to use firecrackers (29.1%), followed by screaming or drumming to create noise (20.8%). Other typical strategies for scaring elephants away during nocturnal raids included setting fires (17.5%) and using torches (15%). A lesser proportion of respondents used watchtowers or active night guarding, however, these options required significant labor and were not practical for all homes.

Despite their extensive use, respondents regularly stated that these deterrents gave only momentary or limited respite, and elephants frequently returned after being driven away. Some farmers reported that loud noises occasionally escalated elephant hostility, raising safety concerns. The recurrence of crop losses despite rigorous guarding efforts suggests that present community-level mitigation techniques are insufficient to address the magnitude and frequency of elephant intrusions.

Compensation and Institutional Support

The compensation methods for elephant-related losses were commonly viewed as ineffective by the questioned households. Despite multiple applications, 82.5% of respondents reported receiving no compensation for crop or property damage. 90% of respondents were dissatisfied with the present compensation methods, citing delays in evaluation, insufficient proof of crop loss, and compensation levels that did not match actual market values. These perspectives reveal a significant institutional gap, since inadequate compensation methods aggravate economic vulnerability while decreasing community faith in forest management authorities.

Community Participation and Attitudes Toward Elephants

Despite the occurrence of conflict, opinions toward elephants were not always negative. The

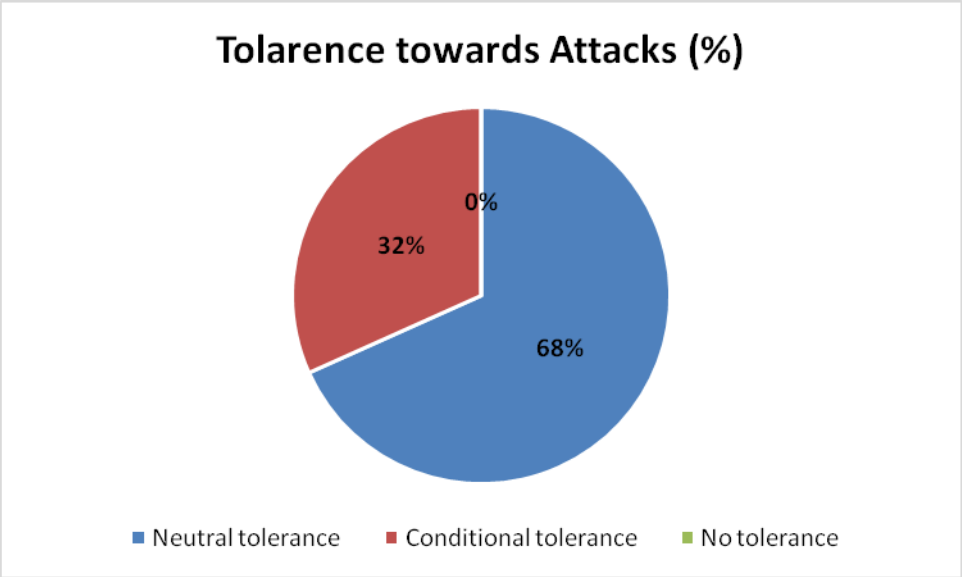

Fig. 3: Levels of tolerance toward elephants among respondents.

majority of respondents (68.3%) indicated neutral tolerance toward elephants (Fig. 3), while 31.6% claimed conditional positive tolerance, meaning that they were willing to coexist with elephants if crop damage was minimized. Notably, none of the respondents proposed the removal or elimination of elephants, indicating a deep cultural regard for animals and acceptance of elephants as part of the local ecosystem.

However, participation in conservation efforts has remained modest. More than half of the respondents (56.6%) said they had not taken part in any elephant conservation activities, and 67% said they had received no direct benefits from conservation programs in the region. When asked about the potential or perceived benefits of living near elephants, 55 per cent said there were none, while smaller groups mentioned contributions like community development (24 per cent), personal satisfaction from conservation (23%), and limited ecotourism or conservation-related financial gains (5%).

These findings imply that, while communities continue to tolerate elephants, a lack of visible benefits, combined with repeating agricultural losses and insufficient compensation, may undermine long-term community support for conservation efforts.

This study shows that human-elephant conflict (HEC) in the Omkar Range of Bandipur is widespread and increasing, which is consistent with trends in India and South Asia where agricultural expansion and habitat fragmentation exacerbate interactions between elephants and rural communities (Borah *et al.*, 2022; Anoop *et al.*, 2023; Gunawansa *et al.*, 2023b). The high levels of crop destruction and numerous nocturnal raids observed here are similar to trends documented in Eastern and Southern India, when elephants preferentially target croplands at periods of low human activity and peak crop availability (Naha *et al.*, 2020; Sengupta *et al.*, 2020).

Conflict is concentrated along the park boundary, which is consistent with findings from North Bengal, Odisha, and Sri Lanka, where compressed movement corridors and expanding human settlements direct elephants to farmlands (Naha *et al.*, 2019; Prakash *et al.*, 2020; Tripathy *et al.*, 2022). Seasonal raiding peaks during the rainy season correspond to broader regional observations and may be exacerbated by climate-driven shifts in vegetation and rainfall patterns

(Choudhury *et al.*, 2022). The prevalence of family groupings in crop-raiding events is consistent with conflict dynamics across South Asia, however, the contribution of lone bulls—also documented in this study—remains significant given their link with high-damage episodes (Sukumar, 2020; Dash *et al.*, 2025).

Socioeconomic vulnerability is a significant factor in determining conflict severity. Households relying on small-scale agriculture reported large economic losses, consistent with research in Assam and Sri Lanka that demonstrate marginal farmers incur disproportionate costs of HEC (Kumar *et al.*, 2018; Borah *et al.*, 2022). Farmers in this region, like those in Nepal and Odisha, reported changes in cropping patterns as well as increased worry and stress, highlighting the broader social and psychological effects of living in conflict-prone areas (Gurung *et al.*, 2020; Rathore *et al.*, 2023).

Despite the severity of the losses, attitudes toward elephants remained somewhat tolerant, a trend seen in Kerala and portions of Northeast India where cultural values promote coexistence (Rohini *et al.*, 2018; Dash *et al.*, 2025). However, widespread unhappiness with compensation systems echoes complaints from other Indian states, where delays, insufficient valuations, and procedural barriers undermine trust in management authority (Sengupta *et al.*, 2020; Borah *et al.*, 2022). Bulte and Rondeau (2005) underline that persistent uncompensated losses can diminish tolerance over time.

Current mitigation techniques, which mostly include firecrackers, noise, and night guards, provide only short-term protection while increasing risk exposure. Similar limits have been noted in India and Sri Lanka, where traditional approaches frequently fail to prevent elephants (Nair *et al.*, 2019; Das *et al.*, 2022). Elephants' cognitive plasticity and learning capacity are expected to diminish the long-term effectiveness of predictable deterrents (Mumby and Plotnik, 2018). Physical barriers, such as solar fence, have potential when properly maintained, but their performance elsewhere suggests that ongoing community participation and institutional support are required for success (Das *et al.*, 2022).

The findings lend support to proposals for comprehensive mitigation efforts at the landscape level. Priority activities identified in recent national assessments include strengthening compensation mechanisms, repairing degraded ecosystems, safeguarding corridors, and creating community-based early warning networks. Promoting elephant-resistant crops and changing cropping cycles may further minimize vulnerability (Singh and Sharma, 2019), while GPS-based monitoring and mobile alarm systems can improve readiness in high-risk areas (Patel *et al.*, 2022).

Overall, HEC in Bandipur mirrors broader regional factors, emphasizing the need for comprehensive interventions that combine ecological restoration, institutional improvement, and community participation. To maintain current levels of tolerance, farmers must reduce their economic burden while supporting coexistence-oriented management based on an understanding of elephant behaviour, landscape dynamics, and local livelihoods.

Conclusion

This study demonstrates that human-elephant conflict in the Omkar Range of Bandipur National Park is severe and expanding, owing to the confluence of agricultural expansion, seasonal crop availability, and elephant migration through fragmented landscapes. High crop loss, frequent nocturnal attacks, and direct dangers to human safety underline the tremendous issues that rural households must face. Despite these challenges, community sentiments remain reasonably forgiving; nonetheless, prolonged economic losses and inadequate compensating institutions threaten to weaken this tolerance over time.

The limited effectiveness of typical barriers highlights the importance of diverse, long-term interventions. Immediate priorities include strengthening compensation mechanisms,

improving physical barriers, and promoting community-based early warning systems. Similarly, landscape-scale interventions; such as protecting elephant corridors, rehabilitating degraded habitats, and encouraging less appealing crop varieties; are crucial for minimizing elephants' dependency on croplands. Integrating local knowledge with technical tools and fostering meaningful community participation will be critical to improve the sustainability of mitigation measures. Finally, achieving coexistence in Bandipur requires coordinated action from forest managers, policymakers, and local residents. Future initiatives that address both the ecological and socioeconomic aspects of conflict can reduce livelihood threats while also maintaining one of India's most important elephant populations.

Ethical Statement

No animal or microbes have been used or sacrificed for this study, hence Ethical Approval not required.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

References

Anoop NR, Krishnan S and Ganesh T. (2023) Elephants in the farm: Changing temporal and seasonal patterns of human–elephant interactions in a forest–agriculture matrix in the Western Ghats, India. Front Conserv Sci. 4: 1142325.

Anoop NR, Senthil N and Radhakrishna S. (2022) Plastic ingestion in Asian elephants in the forested landscapes of South India. J Hazardous Materials Adv. 7: 100120.

Baishya HK, Dey S, Sarmah A, Sharma A, Gogoi S and Aziz T. (2012) Use of chilli fences to deter Asian elephants: A pilot study. Gajah 36: 13-18.

Barua M, Bhagwat SA and Jadhav S. (2013) The hidden dimensions of human–wildlife conflict: Health impacts, opportunity and transaction costs. Biol Conserv. 157: 309-316.

Baruch-Mordo S, Webb CT, Breck SW and Wilson KR. (2013) Use of patch selection models as a decision support tool to evaluate mitigation strategies of human–wildlife conflict. Biol Conserv. 160: 263-271.

Bi Y, Roy A, Bhavsar D, Xu J, Wang M and Wang T. (2016) Kamala tree as an indicator of the presence of Asian elephants during the dry season in the Shivalik landscape of northwestern India. Ecol Indicators 71: 239-247.

Borah BC, Bhattacharya A, Sarkar P and Choudhury P. (2022) People's perception on human–elephant conflict in Rani-Garbhanga Reserve Forest of Assam, India. Geo Journal 87(5): 4127-4141.

Brooks J, Waylen KA and Mulder MB. (2013) Assessing community-based conservation projects: A systematic review and multilevel analysis of attitudinal, behavioral, ecological, and economic outcomes. Environ Evid. 2: 2.

Bulte EH and Rondeau D. (2005) Why compensating wildlife damages may be bad for conservation. J Wildlife Managem. 69(1): 14-19.

Choudhury A, Gupta S and Roy R. (2022) Climate change and human–elephant conflict: A review of recent trends in South Asia. Biodivers Conserv. 31(2): 267-282.

Das G, Selvan K, Lahkar B and Gopi GV. (2022) Effectiveness of physical barriers in mitigating human–elephant negative interactions in North-East India. Front Conserv Sci. 3: 956568.

Dash SK, Ghosh S, Das R, Das D, Nandy S, Das T and Sonker G. (2025) Human–elephant conflict: Attitudes of local people toward elephants and the conflict management authority in a shared landscape of India. Human Dimensions Wildlife 30(3): 304-319.

Gopalan A and Radhakrishna NS. (2022) Moving from coexistence to conflict: A political ecology perspective on human–rhesus macaque conflict in Himachal Pradesh, India. In: Moving from coexistence to conflict: Human–wildlife interactions in a changing world, (eds.) Gopalan A. and Radhakrishna N. S., Springer, pp. 45-62.

Gunawansa TD, Herath S and Abeygunawardhana T. (2023a) Greenery change and its impact on human–elephant conflict in Sri Lanka: A model-based assessment using Sentinel-2 imagery. Geocarto Int. 38(1): 1-18.

Gunawansa TD, Perera K, Apan A and Hettiarachchi NK. (2023b) The human–elephant conflict in Sri Lanka: History and present status. Biodivers Conserv. 32(10): 3025-3052.

Gurung M, Karki J and Mahato P. (2020) Community-based approaches to mitigating human–elephant conflict in Nepal. Ecol Soc. 25(1): 11.

Jayaprakash LG and Hickey GM. (2019) Mistaking the map for the territory: What does the history of Bannerghatta National Park, India, tell us about the study of institutions? Soc Natural Resources 32(12): 1433-1450.

Kumar D, Singh R and Pandey A. (2018) The socioeconomic impact of human–elephant conflict: A case study of Assam. J Environ Managem. 222: 75-85.

LaDue CA, Vandercone RPG, Kiso WK and Freeman EW. (2021) Mortality patterns of Asian elephants in a region of human–elephant conflict. J Wildlife Managem. 85(4): 794-802.

Majumder R. (2022) Human–elephant conflict in West Bengal, India: Present status and mitigation measures. European J Wildlife Res. 68(3): 33.

Montgomery DR, Biklé A, Archuleta R, Brown P and Jordan J. (2022) Soil health and nutrient density: Preliminary comparison of regenerative and conventional farming. PeerJ. 10: e12848.

Mumby HS and Plotnik JM. (2018) Taking the elephants' perspective: Remembering elephant behavior, cognition and ecology in human–elephant conflict mitigation. Front Ecol Evol. 6: 122.

Naha D, Dash SK, Chettri A, Roy A and Sathyakumar S. (2020) Elephants in the neighborhood: Patterns of crop-raiding by Asian elephants within a fragmented landscape of Eastern India. PeerJ. 8: e9399.

Naha D, Sathyakumar S, Dash SK, Chettri A and Rawat GS. (2019) Assessment and prediction of spatial patterns of human–elephant conflicts in changing land cover scenarios of a human-dominated landscape in North Bengal. PLoS One 14(2): e0210580.

Nyumba TO, Wilson K, Derrick CJ and Mukherjee N. (2020) Assessing impacts of human–elephant conflict on human wellbeing: An empirical analysis of communities living with elephants around Maasai Mara National Reserve, Kenya. PLoS One 15(9): e0239545.

Patel S, Shah R and Kumar R. (2022) GPS and mobile technology for managing human–elephant conflict: A technological review. Anim Conserv. 25(2): 143-151.

Ram AK, Yadav NK, Thapa GJ and Aryal A. (2021) Landscape predictors of human–elephant conflict in the Chure region of Nepal. J Environ Managem. 286: 112183.

Rathore P, Mehta S and Shah N. (2023) Psychological stress in rural communities affected by human–elephant conflict. J Rural Mental Health 37(1): 33-47.

Sengupta A, Binoy VV and Radhakrishna S. (2020) Human–elephant conflict in Kerala, India: A rapid appraisal using compensation records. Human Ecol. 48(1): 101-109.

Shameer TT, Routray P, Udhayan A, Ranjan N, Ganesan MG, Manimozhi A and Vasanthakumari D. (2024) Understanding the patterns and predictors of human–elephant conflict in Tamil Nadu, India. European J Wildlife Res. 70(5): 95.

Sukumar R. (2020) Elephant behavior and crop raiding: Understanding the patterns of conflict. J Zool. 295(2): 165-172.

Tripathy BR, Liu X and Ranga V. (2022) Demographic circumstances and people's sentiments towards elephants in the human–elephant conflict hotspot villages of Keonjhar Forest Division in Eastern India. Diversity 14(5): 311.

Vasudev D, Thapliyal S and Gupta N. (2023) Habitat restoration as a long-term solution to human–elephant conflict. Conserv Biol. 37(4): 849-858.

Western D, Mose VN, Maitumo D and Mburu C. (2023) Cascading effects of elephant–human interactions and the decline of apex predators on African savanna plant communities. Ecosphere 14(5): e4512.

Zimmermann A, McQuinn B and Macdonald DW. (2020) Levels of conflict over wildlife: Understanding and addressing the right problem. Conserv Sci Practice 2(8): e259.