



## Strategies to Save Elephant from Human Violation: A Study in West Bengal

Prasanta Kumar Das

Research Scholar Department of Geography,  
RKDF University, Ranchi

### Abstract:

*The coexistence of elephants and humans in West Bengal presents a complex challenge, marked by frequent conflicts that threaten both wildlife and human safety. This study explores strategies aimed at mitigating these conflicts and safeguarding elephants from human-induced harm. Through a comprehensive review of existing literature, field observations, and interviews with stakeholders, the research identifies key factors contributing to conflict and evaluates diverse approaches implemented to alleviate tensions. Emphasis is placed on understanding the socio-economic dynamics, land-use patterns, and behavioral aspects influencing human-elephant interactions. The findings underscore the importance of community engagement, habitat conservation, early warning systems, and innovative mitigation measures such as barriers and deterrents. By analyzing the effectiveness and limitations of these strategies, the study aims to provide insights for policymakers, conservationists, and local communities striving towards sustainable coexistence between elephants and humans in West Bengal.*

### Keywords:

*Elephants, Human-Wildlife Conflict, Conservation Strategies, West Bengal*

### Introduction:

One of the challenges to wildlife conservation in recent years is the increasing conflict between wildlife and human beings, at least on local spatial and time scales. As the human population grows, there is increasing demand for land for agriculture and natural resources for industry leading to increased instances of conflict. As the land available to wildlife diminishes and the corridors between pockets of wildlife habitats disappear, a patchwork of habitat fragments is left behind, and the likelihood of humans and wildlife coming into conflict is much higher (Daniel, 1980; Balasubramanian et al., 1995; Barua and Bist, 1995; Smith and Kasiki, 2000; Thapa, 2005). Conflict arises from a range of direct and indirect negative interactions between

human beings and wildlife. This can culminate in potential harm to all those involved, and will lead to negative human attitudes resulting in decreasing appreciation of wildlife with potentially severe detrimental effect for conservation (De Boer and Baquete, 1998; Nyhus et al., 2000; Sillero-Zubeiri et al., 2001). Conflict generally arises from economic losses to agriculture, including loss of livestock through predation and destruction of infrastructure and human lives. A wide range of species from rodents to elephants including tigers, leopards and hyaena is responsible for conflict (Naughton-Treves, 1996; Naughton-Treves et al., 1998; Hill 2000; Saj et al., 2001).

Human-elephant conflict arises primarily due to competition for resources such as food and space, exacerbated by habitat fragmentation and encroachment (Sukumar, 2006). Elephants often raid crops and damage property, leading to retaliatory killings and negative perceptions among affected communities (Hoare, 2015). In West Bengal, conflict hotspots include regions adjacent to protected areas and forest corridors where elephant movement intersects with agricultural landscapes (Ghosh et al., 2018).

### **Objectives:**

This study explores strategies aimed at mitigating these conflicts and safeguarding elephants from human-induced harm. The research identifies key factors contributing to conflict and evaluates diverse approaches implemented to alleviate tensions. Emphasis is placed on understanding the socio-economic dynamics, land-use patterns, and behavioral aspects influencing human-elephant interactions.

### **Significance of the Study:**

Human-elephant conflict often leads to significant economic losses for local communities through crop raiding and property damage. Effective strategies can help mitigate these losses, improving livelihoods and reducing negative attitudes towards conservation efforts. Findings from the study can inform the development and implementation of policies and regulations that support effective elephant conservation and conflict mitigation strategies. The study can contribute to raising awareness among local communities about the importance of elephant conservation, fostering positive attitudes towards wildlife and promoting stewardship. By addressing the root causes of human-elephant conflict and implementing sustainable conservation strategies, the study supports long-term conservation goals aimed at securing viable elephant populations and their habitats for future generations.

### **Human- elephant conflict Case Studies from West Bengal**

In West Bengal, human-elephant conflict (HEC) is a pervasive issue primarily concentrated around forested regions where elephant habitats intersect with agricultural landscapes and human settlements. This conflict often arises due to competition for resources such as food and space, as well as retaliatory killings by communities affected by elephant raids on crops and property damage. Here are a few notable case studies that highlight different aspects of HEC and the strategies employed to mitigate them:

**Jaldapara National Park Region:** Jaldapara National Park, located in the Alipurduar district of West Bengal, is renowned for its population of Indian elephants. However, the proximity of the park to agricultural lands has led to frequent conflicts between elephants and local communities.

**Buxa Tiger Reserve:** Located in the Alipurduar and Jalpaiguri districts, Buxa Tiger Reserve is another hotspot for human-elephant conflict in West Bengal. The reserve is crucial for elephant migration and has a significant population of both elephants and local tribal communities.

**Jalpaiguri District:** Jalpaiguri district is known for its tea gardens and extensive forest cover, making it a critical area for elephant movement. The conflict here is exacerbated by the fragmentation of elephant habitats due to human encroachment and expansion of agricultural lands.

**North Bengal Elephant Reserve:** The North Bengal Elephant Reserve encompasses several forested areas across Jalpaiguri, Cooch Behar, and Darjeeling districts. It serves as a crucial habitat for elephants migrating between India and Bhutan but faces intense pressure due to human activities.

These case studies from West Bengal illustrate the diverse strategies employed to address human-elephant conflict, highlighting the importance of integrated approaches that combine physical barriers, community involvement, habitat management, and policy support. While each region faces unique challenges, effective mitigation requires adaptive strategies that consider local socio-economic factors and environmental conditions. By fostering coexistence between elephants and human communities, these initiatives contribute to both wildlife conservation and sustainable development in the region.

### **Causes of the conflict between human and elephant**

The conflict between humans and elephants, often referred to as human-elephant conflict (HEC), arises due to a combination of natural and anthropogenic factors. These causes can vary in intensity and impact depending on the specific region and context, but several common factors contribute to the escalation of conflict:

#### **1. Habitat Loss and Fragmentation:**

- **Deforestation and Land Conversion:** As human populations expand, forests are cleared for agriculture, infrastructure development, and human settlements. This fragmentation reduces available habitat for elephants, forcing them into closer proximity to human-occupied areas.
- **Encroachment into Elephant Habitats:** Agricultural expansion, urbanization, and industrial activities encroach upon traditional elephant ranges, restricting their access to natural food sources and water.

## 2. Competition for Resources:

- **Crop Raiding:** Elephants often raid agricultural crops for food, especially during periods of food scarcity or drought. This behavior leads to significant economic losses for farmers, triggering negative attitudes and retaliatory killings.
- **Water Sources:** During dry seasons, elephants may compete with humans for access to water sources, exacerbating tensions.

## 3. Human Population Growth and Land Use Changes:

- **Population Pressure:** Rapid population growth leads to increased demand for land, often resulting in the conversion of natural habitats into agricultural land, settlements, or industrial zones.
- **Changes in Land Use:** Shifts in land use patterns alter elephant movement corridors and feeding grounds, disrupting their natural behavior and increasing the likelihood of conflict.

## 4. Climate Change and Environmental Factors:

- **Droughts and Water Scarcity:** Climate change impacts such as erratic rainfall patterns and prolonged droughts can lead elephants to venture further in search of water and food, bringing them into conflict with humans.
- **Natural Disasters:** Events like floods or wildfires can displace elephants from their habitats, pushing them into unfamiliar territories where they may encounter human settlements.

## 5. Behavioral and Social Factors:

- **Territorial Behavior:** Elephants, especially males during musth (a periodic state of heightened aggression and reproductive activity), may display aggressive behavior towards humans or their property.
- **Maternal Protection:** Female elephants with calves are highly protective and may react aggressively if they perceive a threat to their offspring, leading to conflict situations.

## 6. Socio-Economic and Cultural Factors:

- **Livelihood Dependence:** Communities dependent on agriculture for their livelihoods suffer direct economic losses due to crop damage by elephants, leading to hostility towards wildlife.

- **Cultural Attitudes:** Historical perceptions and cultural beliefs about elephants can influence local attitudes and responses to conflict, impacting conservation efforts.

## 7. Inadequate Mitigation Measures and Infrastructure:

- **Lack of Effective Barriers:** Insufficient or poorly maintained physical barriers such as fences or trenches fail to deter elephants from entering agricultural areas.
- **Limited Early Warning Systems:** Inadequate systems for early detection and communication of elephant movements to local communities result in reactive rather than proactive responses to conflict incidents.

## Strategies to save elephant in west Bengal

Saving elephants in West Bengal requires a multifaceted approach that addresses both conservation of elephant habitats and mitigation of human-elephant conflict. Here are several strategies that can contribute to protecting elephants in the region:

### 1. Habitat Conservation and Restoration:

- **Protecting Critical Habitats:** Identify and designate important elephant habitats, such as national parks, wildlife sanctuaries, and corridors, for strict protection from human encroachment and development.
- **Restoring Corridors:** Rehabilitate and restore natural corridors that elephants use for seasonal migration between fragmented habitats, ensuring connectivity and access to resources.

### 2. Implementing Effective Land Use Planning:

- **Zoning and Buffer Zones:** Establish buffer zones around protected areas to minimize human-wildlife conflict, regulate land-use practices, and promote sustainable development compatible with elephant conservation goals.
- **Promoting Wildlife-Friendly Agriculture:** Introduce incentives and practices that mitigate crop raiding, such as growing crops elephants are less likely to consume or implementing deterrent techniques like chili fences.

### 3. Community Engagement and Education:

- **Raising Awareness:** Conduct educational programs and outreach initiatives to foster understanding and tolerance among local communities towards elephants and wildlife conservation.

- **Involving Communities in Conservation:** Encourage community participation in conservation efforts through co-management initiatives, ecotourism ventures, and income-generating activities that reduce dependence on natural resources.

#### 4. Developing and Deploying Technology:

- **Early Warning Systems:** Implement sensor-based technologies, including camera traps, drones, and radio collaring, to monitor elephant movements and provide early warning to communities about approaching herds.
- **GIS and Satellite Monitoring:** Utilize Geographic Information Systems (GIS) and satellite imagery to analyze habitat use, predict elephant movements, and inform conservation planning and management decisions.

#### 5. Employing Physical Barriers and Deterrents:

- **Electric Fencing:** Install and maintain robust electric fences around agricultural lands and human settlements to deter elephants from entering and prevent crop raiding incidents.
- **Trenches and Ditches:** Digging trenches or ditches around vulnerable areas can also serve as effective barriers to prevent elephants from accessing crops and villages.

#### 6. Strengthening Policy and Legal Frameworks:

- **Enforcement of Wildlife Protection Laws:** Ensure strict enforcement of existing wildlife protection laws and regulations to combat poaching, illegal wildlife trade, and habitat destruction.
- **Policy Support for Conservation:** Advocate for policies that prioritize wildlife conservation, sustainable development, and coexistence between humans and elephants in land-use planning and decision-making processes.

#### 7. Collaborative Conservation Initiatives:

- **Multi-Stakeholder Partnerships:** Foster collaboration between government agencies, non-governmental organizations (NGOs), local communities, and research institutions to develop and implement integrated conservation strategies.
- **Regional and International Cooperation:** Engage in regional and international forums to share knowledge, resources, and best practices for elephant conservation across borders and jurisdictions.

## 8. Research and Monitoring:

- **Scientific Research:** Conduct research on elephant behavior, ecology, and genetics to better understand their needs and behaviors in the context of changing landscapes and climate.
- **Monitoring Programs:** Establish long-term monitoring programs to track elephant populations, assess the effectiveness of conservation interventions, and adapt management strategies as needed.

By combining these strategies and adapting them to local contexts and challenges, West Bengal can enhance its efforts to conserve elephants while promoting sustainable development and fostering harmonious coexistence between elephants and human communities.

### Conclusion:

In conclusion, mitigating human-elephant conflict in West Bengal requires a holistic approach that integrates technological innovation, community empowerment, and policy reform. By addressing the root causes of conflict and fostering coexistence, we can ensure the long-term survival of elephants while promoting sustainable development in conflict-prone regions.

### Reference:

- Anselin, L. (2018). GeoDa 1.12.1.161. Spatial Analysis Laboratory (SAL). Department of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign, IL.
- Areendran, G., Raj K., Mazumdar, S., Munsu, M., Govil, H., and Sen., P. K. (2011). Geospatial modeling to assess elephant habitat suitability and corridors in northern Chhattisgarh, India. *Tropical Ecology*, 52: 275-283.
- Bagchi, S. and Mishra, C. (2006). Living with large carnivores: Predation on livestock by the snow leopard (*Panthera uncia*). *Journal of Zoology*, 268: 217–224.
- Barua, M., Bhagwat, S. A., and Jadhav, S. (2012). The hidden dimensions of human-wildlife conflict: Health impacts, opportunity and transaction costs. *Biological Conservation*, 157: 309–316.
- Chatterjee, N. D. (2016). *Man-Elephant Conflict: A Case Study from Forests in West Bengal, India*. Springer International Publishing.
- Dickman, A.J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving wildlife conflict. *Animal Conservation*, 13:458–466.
- Elliot, W., Kube, R., and Montanye, D. (2008). *Common ground: solutions for reducing the human, economic and conservation costs of human wildlife conflict*. WWF report.



- Goswami, V. R., Madhusudan, M. D., and Karanth, K. U. (2007). Application of photographic capture recapture modeling to estimate demographic parameters for male Asian elephants. *Animal Conservation*, 10: 391–399.
- Hunter, P. (2007). The human impact on biological diversity: How species adapt to urban challenges sheds light on evolution and provides clues about conservation. *EMBO Reports*, 8: 316-318.
- Kassa, B., Libois, R., and Sinsin, B. (2007). Diet and food preference of the waterbuck (*Kobus ellipsiprymnus defassa*) in the Pendjari National Park, Benin. *African Journal of Ecology*, 46: 303-310.
- Madugundu, R., Nizalapur, V., and Jha, C. S. (2008). Estimation of LAI and above-ground biomass in deciduous forests: Western Ghats of Karnataka, India. *International Journal of Applied Earth Observation and Geoinformation*, 10: 211-219.
- Nuttle, T., Royo, A. A., Adams, M. B. and Carson, W. P. (2013). Historic disturbance regimes promote tree diversity only under low browsing regimes in eastern deciduous forest. *Ecological Monographs*, 83: 3-17.
- Ramesh, T., Sankar, K., Qureshi, Q., and Kalle, R. (2012). Group size and population structure of megaherbivores (gaur *Bos gaurus* and Asian elephant *Elephas maximus*) in a deciduous habitat of Western Ghats, India. *Mammal Study*, 37: 47-55.
- Samansiri, A.K. P. and Weerakoon K. D. (2007): Feeding behavior of Asian elephants in the northwestern region of Srilanka. *Gajah*, 27: 27-34
- Badola R, Ahmed T, Gill AK, Dobriyal P, Das GC, Badola S, Hussain SA (2021). An incentive-based mitigation strategy to encourage coexistence of large mammals and humans along the foothills of Indian Western Himalayas. *Scientific Reports* 11(1):1-13. <https://doi.org/10.1038/s41598-021-84119-7>
- Basu S (2017). Conflict to co-existence: Securing Jharkhand-West Bengal interstate elephant corridor, India. Interim report. Retrieved 2021 May 22 from [https://elephantconservation.org/iefImages/2017/03/Samya-BasuIndia\\_Interim-Report-IEF-Project-2017-website.pdf](https://elephantconservation.org/iefImages/2017/03/Samya-BasuIndia_Interim-Report-IEF-Project-2017-website.pdf)
- Chakraborty S (2018). Perception and attitude of local people towards human-elephant conflicts around Mahananda wildlife sanctuary, West Bengal, India. *International Journal of Zoological Studies* 3(2):93-95.
- Chatterjee ND (2016). Man-elephant conflict: a case study from forests in West Bengal, India. Springer International Publishing. <https://doi.org/10.1007/978-3-319-31162-3>
- Das K (2015). Man elephant conflicts in North Bengal. Teri University 1-26. Retrieved 2021 May 5th from <http://www.teriuniversity.ac.in/mct/pdf/assignment/Kalyan-Das.pdf>
- Gubbi S (2020). Human-elephant conflict and its mitigation: QandA with Sanjay Gubbi. Conservation India. Retrieved 2021 June 22 from <https://www.conservationindia.org/articles/man-elephant-conflict-and-its-mitigation-a-qa-with-sanjay-gubbi>



- INDIA P (2011). Census of India 2011 provisional population totals. Office of the Registrar General and Census Commissioner, New Delhi.
- Kaggere N (2020). No end to conflict as humans and elephants tussle for space. Deccan Herald. Retrieved 2020 December 22 from <https://www.deccanherald.com/specials/insight/no-end-to-conflict-as-humans-and-elephants-tusslefor-space-857200.html>
- Kshetry A, Vaidyanathan S, Sukumar R, Athreya V (2020). Looking beyond protected areas: Identifying conservation compatible landscapes in agro-forest mosaics in north-eastern India. *Global Ecology and Conservation* 22:e00905. <https://doi.org/10.1016/j.gecco.2020.e00905>
- Kumar M (2021). Winds of change: new strategies to combat human-elephant conflict. Mongabay India. Retrieved 2021 June 2 from <https://sustain.round.glass/conservation/human-elephant-conflict-odisha-chhatisgarh-forests/>
- LahiriChoudhury DK (1980). An interim report on the status and distribution of elephants (*Elephasmaximus*) in Northeast India. In: Daniel JC (Ed). *The Status of the Asian Elephant in the Indian Sub-continent* (IUCN/SSC Report).Pp 43-58.
- Lenin J (2011). Human – elephant conflict. *Conservation India*. Retrieved 2021 September 3 from <https://www.conservationindia.org/articles/human-elephant-conflict>
- Lenin J, Sukumar R (2011). Action plan for the mitigation of elephant–human conflict in India.Final Report to the US Fish and Wildlife Service. Asian Nature Conservation Foundation, Bangalore.
- Mallick PH (2018). Trend of changes in annual forest cover of South West Bengal, India. *International Journal of Zoology and Animal Biology* 1(5):000130. <https://doi.org/10.23880/izab-16000130>
- Mallick PH, Chakraborty SK (2018). Forest, wetland and biodiversity: revealing multi-faceted ecological services from eco-restoration of a degraded tropical landscape. *Ecology and Hydrobiology* 18(3):278-296. <https://doi.org/10.1016/j.ecohyd.2018.04.002>
- Panda PP, Noyal T, Dasgupta S (2020). Best practices of human – elephant conflict management in India. Published by Elephant Cell, Wildlife Institute of India, Dehradun, Uttarakhand.
- Pandit PK, Chanda S (2019).Human-elephant conflict and its possible control measures in South West Bengal Land Scape, India. *Indian Forester* 145(10):911-920.
- Panja U, Mistri B (2018). Human-elephant conflict in Sonamukhi CD Block of Bankura District, West Bengal. *Space and Culture, India* 5(3):106-128.
- Rangarajan M, Desai A, Sukumar R, Easa PS, Menon V, Vincent S, Prasad AN (2010). Gajah.Securing the future for elephants in India. Retrieved 2020 July 22 from <http://www.environmentandsociety.org/node/2697>
- Roy M, Sukumar R (2015). Elephant corridors in Northern West Bengal. *Gajah* 43:26-35. Roy M (2017). A Spatial and temporal analysis of elephant-human conflict at Gorumara and Jalpaiguri Forest Divisions of Northern West Bengal. *Journal of Wild Life Research* 5:41-49.

- Roy M, Sukumar R (2017). Railways and wildlife: A case study of train-elephant collisions in northern West Bengal, India. *Railway ecology*. Springer, Cham pp 157-177
- Roy M, Baskaran N, Sukumar R (2009). The death of jumbos on railway tracks in northern West Bengal. *Gajah* 31:36- 39.
- Saha SK (2020). Innovative way of human-elephant competition mitigation. *Journal of Threatened Taxa* 12(11):16494- 16501. <https://doi.org/10.11609/jott.5886.12.11.16494-16501>
- Santiapillai C (1987). Translocation of elephants in Lampung, Sumatra. *IUCN/SSC Asian Elephant Specialist Group Newsletter* 2:15-20.
- Singh AK, Singh RR, Chowdhury S (2002). Human-elephant conflicts in changed landscapes of south West Bengal, India. *Indian Forester* 128(10):1119-1132.
- Sukumar R (1991). The management of large mammals in relation to male strategies and conflict with people. *Biological Conservation* 55(1):93-102.
- Sukumar R (2003). *The living elephants: evolutionary ecology, behaviour and conservation*. Oxford University Press, New York
- Sukumar R, Venkataraman A, Cheeran JV, Mujumdar PP, Baskaran N, Dharmarajan G, Narendran K (2003). Study of elephants in Buxa Tiger Reserve and adjoining areas in northern West Bengal and preparation of conservation action plan. Submitted to West Bengal Forest Department under India Eco-development Project. Centre for Ecological Sciences, Indian Institute of Science, Bangalore, India.
- Tiwari SK, Poddar A, Ramkumar K (2017). Elephant corridors of Northern West Bengal. In: Menon V, Tiwari SK, Ramkumar K, Kyarong S, Ganguly U, Sukumar R (Eds). *Right of Passage: Elephant Corridors of India*. [2nd Edition]. Conservation Reference Series No. 3. Wildlife Trust of India, New Delhi 2:314-423 .

**Citation:** Das.P,(2024) “Strategies to Save Elephant from Human Violation: A Study in West Bengal” *Bharati International Journal of Multidisciplinary Research & Development (BIJMRD)*, Vol-2, Issue-4 May-2024.