

FROM CONFLICT TO COEXISTENCE

The Katghora Model



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Beginning his career as a Mechanical Engineer working with railway track machines and postings in remote stations, he developed a deep appreciation for nature and the outdoors. These experiences gradually nurtured his interest in forestry and wildlife conservation. His training at CASFOS and On-the-Job Training in Katghora Forest Division, Chhattisgarh, further strengthened his commitment to biodiversity management, human-wildlife coexistence, and sustainable forest practices.



Ajay Singh Rajput



**CENTRAL ACADEMY FOR STATE FOREST SERVICE
COIMBATORE**

2025

alarms, WhatsApp alert groups, drone surveillance, and GPS-collared elephants, the approach combines local knowledge with modern science. At the same time, ecotourism, alternative livelihoods, and compensation mechanisms provide communities with hope and support.

The lessons from Katghora underline that coexistence is possible when people and institutions work together with trust, preparedness, and compassion. No single strategy is enough; it is the integration of traditional practices, modern technology, and participatory governance that makes this model significant.

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FOREWORD

Elephants symbolize India's ecological wealth while also reflecting the challenges of coexistence between people and wildlife. Tamil Nadu, home to nearly 3,000 wild elephants, has been a leader in elephant conservation through its forest camps, scientific censuses, and large elephant landscapes.

As part of their training at CASFOS, officer trainees gain exposure to these efforts through visits to Krishnagiri, Dharmapuri, and Coimbatore, as well as field learning in Mudumalai and Anamalai Tiger Reserves. Preparation of the Wildlife Management Plan in Mudumalai further deepened their understanding of elephant behaviour, habitat use, captive management, and conservation strategies.

Mr. Ajay Singh Rajput, State Forest Service Officer Trainee (2023–25) from Chhattisgarh, has linked these learnings to his home state, where human–elephant conflict is a major concern. His blend of local experience and national exposure will add value to his forthcoming work on conflict mitigation in Chhattisgarh.

I wish him the very best and commend his effort to connect training experiences with field realities for the larger cause of conservation and community welfare.

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PREFACE

Human-Elephant Conflict (HEC) has become one of the most pressing challenges in wildlife management and conservation in central India, particularly in Chhattisgarh. With increasing elephant populations in the Hasdeo-Arand landscape and simultaneous pressures of mining, agriculture, and human settlement, the Katghora Forest Division has emerged as a hotspot of conflict.

This study is an attempt to document the history and current status of HEC in Katghora, analyze its causes and impacts, and review the measures adopted by the Forest Department and local communities for conflict mitigation. Special attention has been given to community-based initiatives like Hathi Mitra Dal, use of modern technologies such as GPS tracking, Sajag alarms, and WhatsApp alert systems, as well as habitat improvement measures for long-term solutions.

The study not only presents an overview of the present situation but also proposes future strategies for achieving a balance between conservation and livelihood needs. It is hoped that this report will serve as a useful reference for forest managers, policymakers, researchers, and all those interested in human-wildlife coexistence.

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The preparation of this case study has been a valuable learning experience, providing me with deeper insights into the challenges and strategies of forest management.

I sincerely thank the Central Academy for State Forest Service (CASFOS), Coimbatore, and its Principal, Sh. V. Thirunavukarasu, IFS, for providing the platform and academic environment to undertake this work. I am especially grateful to our Course Director, Dr. C. Vidhyasagar, IFS, for his continuous guidance and encouragement. I also extend my gratitude to all faculty members, trainers, and guest lecturers at CASFOS for enriching my knowledge and perspective on forestry and wildlife management.

My special thanks are due to Sh. Kumar Nishant, IFS, Divisional Forest Officer, Katghora, along with the field staff of Katghora Forest Division—Range Officers, Foresters, and Forest Guards—whose valuable data, field insights, and practical experiences significantly enriched this case study. I am equally thankful to the local communities and members of the Hathi Mitra Dal, whose perspectives added depth to the analysis of human–elephant conflict.

I would also like to extend my heartfelt gratitude to the Literary Committee of both batches, Librarian Dr. Muhamad Rafi Hussain and all the CASFOS staff for their constant support, cooperation, and encouragement during the preparation of this study.

With gratitude,
Ajay Singh Rajput

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CHAPTER - 1

KATGHORA FOREST DIVISION

Katghora Forest Division is situated in Korba District of Chhattisgarh. The geographical area of the division is 4325 sq. km. The jurisdiction of the division extends over Katghora, Pali, and Podi-Uroda tehsils of Korba District. It lies between latitudes 22°13' to 23°00' North and longitudes 82°08' to 82°53' East. The area is traversed in the north-south direction by the Bilaspur–Ambikapur National Highway No. 130, passing through Katghora–Pali–PodiUroda–Mundi–Chotia–Morga. Katghora is located at a distance of 80 km from Bilaspur, 31 km from Korba, and 135 km from Ambikapur, while the nearest railway station is Korba. Another important road link connects Korba to Pendra via Katghora, Jatga, and Pasan. The divisional headquarters are located at Katghora, where almost all the government offices are concentrated. Administratively, Katghora Forest Division falls under Bilaspur Forest Circle.

Administratively, the division is organized into seven ranges, namely Pali, Katghora, Chaitma, Pasan, Aitmanagar, Kendai, and Jatga. These ranges are further divided into 31 Range Assistant Circles and 121 beats, forming the basic units of field-level management. The total geographical area under the project division is 185,321.030 hectares, which is systematically distributed among the beats for effective protection, monitoring, and developmental activities.

On average, each beat covers an area of about 1,531.578 hectares, ensuring that the forest staff can supervise and manage resources efficiently.

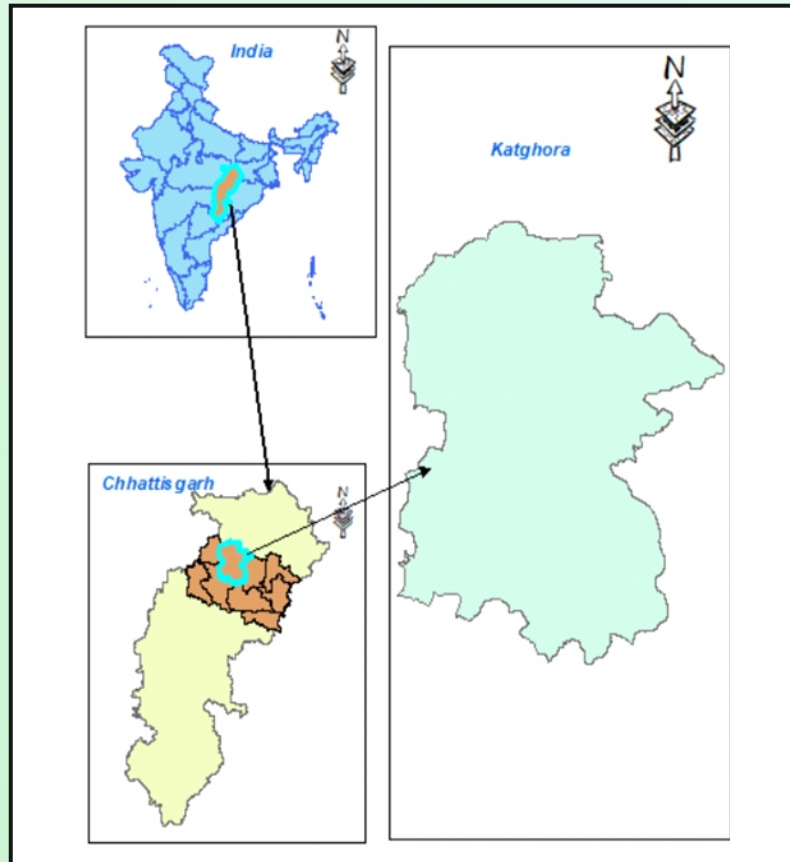


Fig .1: Katghora Division in India

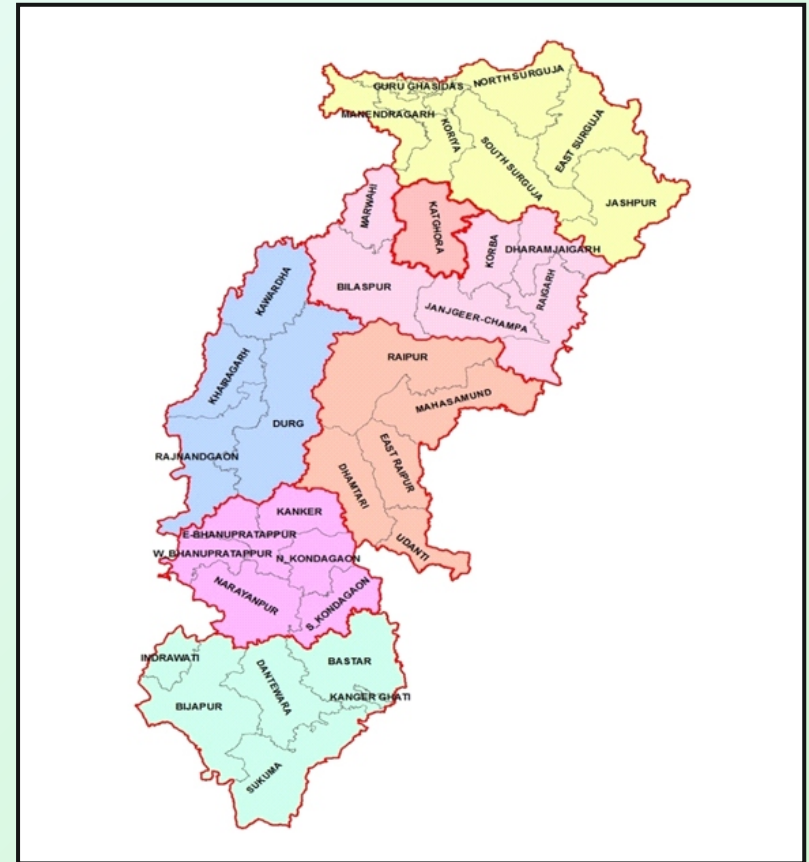


Fig .2: Katghora Division in Chhattisgarh

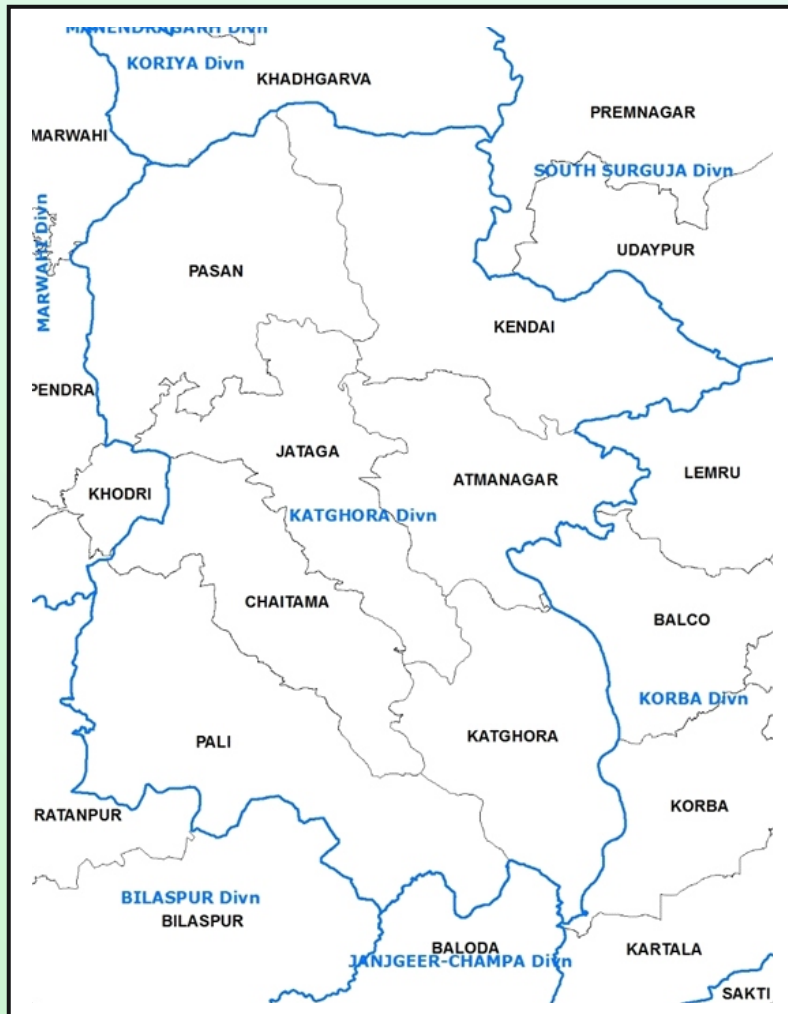


Fig.3: Range and Division Boundary of Katghora Division

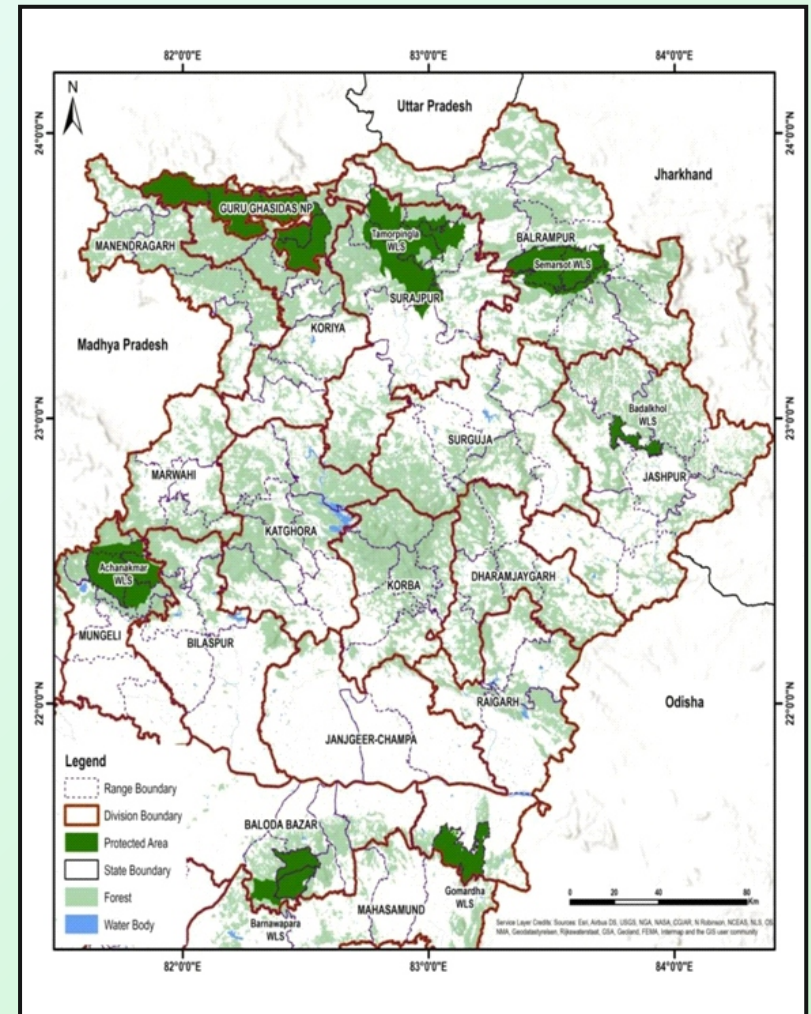


Fig. 4: Forest Administration map of Northern Chhattisgarh

1.1 Vegetation and Faunal Diversity of Katghora Forest Division

1.1.1 Plant Species Diversity

The forests of Katghora Division exhibit a wide range of species composition. According to Champion & Seth (1968), the following two major forest types occur in the division, each with distinct assemblages of trees, shrubs, climbers, and grasses.

1.1.1 (a) Northern Tropical Dry Deciduous Sal Forest [5B/C1c]

Top Canopy (Dominant Trees)

Sal (*Shorea robusta*), Saj / Indian Laurel (*Terminalia tomentosa*), Dhawra (*Anogeissus latifolia*), Bijasal (*Pterocarpus marsupium*), Mahua (*Madhuca indica* / *M. longifolia*), Harra (*Terminalia chebula*), Tendu (*Diospyros melanoxylon*), Aonla (*Phyllanthus emblica*), Char (*Buchanania lanzan*), Khair (*Acacia catechu*), Arjun (*Terminalia arjuna*)

Middle Canopy (Sub-dominant Trees/Shrubs)

Bahera (*Terminalia bellirica*), Kusum (*Schleichera oleosa*), Semal (*Bombax ceiba*), Aonla (*Phyllanthus emblica*), Jamun (*Syzygium cumini*), Haldu (*Adina cordifolia*), Peepal (*Ficus religiosa*), Palas (*Butea monosperma*), Bhera (*Clerodendrum viscosum*), Dhawra (*Anogeissus latifolia*)

Lower Storey/Underwood

Bamboo (*Dendrocalamus strictus*), Khamar (*Gmelina arborea*), Bael (*Aegle marmelos*), Lantana (*Lantana camara*),

Chironji seedlings (*Buchanania lanzan*), Randha (*Soymida febrifuga*)

Grasses

Dub grass (*Cynodon dactylon*), Kusal (*Themeda triandra*), Kans (*Saccharum spontaneum*), Munj (*Saccharum munja*), Bamboo grass (*Oplismenus compositus*), Pan grass (*Panicum maximum*), Kodo grass (*Paspalum scrobiculatum*)

Climbers

Giloy (*Tinospora cordifolia*), Mahul (*Bauhinia vahlii*), Dudhi (*Stephania japonica*), Gudvel (*Cissampelos pareira*), Shatawar (*Asparagus racemosus*), Kaunch (*Mucuna pruriens*), Musli (*Chlorophytum borivillianum*)

1.1.1 (b) Southern Tropical Dry Deciduous Mixed Forest [5A/C3]

Top Canopy (Dominant Trees)

Sal (*Shorea robusta*), Saj (*Terminalia tomentosa*), Bijasal (*Pterocarpus marsupium*), Lendia (*Lagerstroemia parviflora*), Dhaora (*Anogeissus latifolia*), Mahua (*Madhuca indica*), Harra (*Terminalia chebula*), Char (*Buchanania lanzan*), Jamun (*Syzygium cumini*), Khair (*Acacia catechu*), Arjun (*Terminalia arjuna*), Kusum (*Schleichera oleosa*), Semal (*Bombax ceiba*)

Middle Canopy (Associates)

Tendu (*Diospyros melanoxylon*), Bahera (*Terminalia bellirica*), Kusum (*Schleichera oleosa*), Semal (*Bombax ceiba*), Haldu (*Adina cordifolia*), Peepal (*Ficus religiosa*), Palas (*Butea monosperma*), Dhawra (*Anogeissus latifolia*), Dhobin (*Dalbergia*

latifolia), Khirni (*Manilkara hexandra*), Kadamba (*Neolamarckia cadamba*), Bel (*Aegle marmelos*)

Lower Storey/Underwood

Bamboo (*Dendrocalamus strictus*), Bael (*Aegle marmelos*), Lantana (*Lantana camara*), Munj (*Saccharum munja*), Kans (*Saccharum spontaneum*)

Grasses

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1.1.2 Faunal Diversity

Large Mammals

Elephant (*Elephas maximus*), Leopard (*Panthera pardus*), Indian wolf (*Canis lupus*), Golden jackal (*Canis aureus*), Sloth bear (*Melursus ursinus*), Striped hyena (*Hyaena hyaena*), Gaur (*Bos gaurus*), Sambar (*Rusa unicolor*), Chital (*Axis axis*), Wild pig (*Sus scrofa*). Tiger (*Panthera tigris*) is occasionally reported.

Small and Medium Mammals

Small Indian civet (*Viverricula indica*), Asian palm civet (*Paradoxurus hermaphrodites*), Jungle cat (*Felis chaus*), Honey

badger (*Mellivora capensis*), Smooth-coated otter (*Lutrogale perspicillata*), Black-naped hare (*Lepus nigricollis*), Indian crested porcupine (*Hystrix indica*).

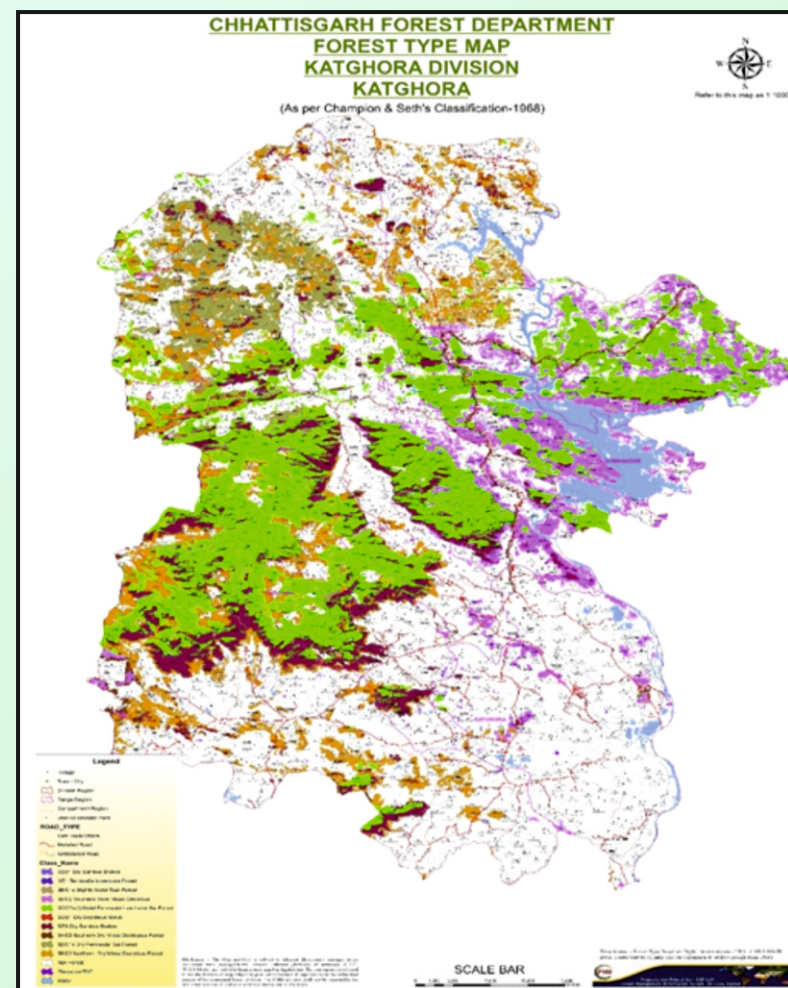


Fig. 5: Forest type in Katghora Forest Division

1.2 Joint Forest Management (JFM) in Katghora Forest Division

The Katghora Forest Division plays a vital role in participatory forest management through the Joint Forest Management (JFM) system. In this division, 263 JFM Committees are actively functioning across 7 forest ranges, covering about 177,400 hectares of forest land. Alongside these, 43 Minor Forest Produce (MFP) Committees support local livelihood through the sustainable collection and trade of tendu leaves, mahua, sal seeds, bamboo, and other NTFPs.

A large section of the population in this division belongs to Scheduled Tribes, whose traditional dependence on forests is closely integrated with conservation practices. Through JFM, local tribal communities participate directly in forest protection, afforestation, soil and water conservation, and biodiversity enhancement.

These committees not only safeguard the ecological health of the forests but also ensure livelihood security for forest-dependent people. They play a crucial role in government schemes like the National Afforestation Programme (NAP) and the Green India Mission (GIM), where local communities act as stakeholders in plantation, regeneration, and benefit-sharing.

The participatory approach of JFM in Katghora reflects a balance between conservation and community development, making it a model of sustainable forest management in Chhattisgarh.

CHAPTER - 2

HISTORY & EVOLUTION OF HUMAN-ELEPHANT CONFLICT

Historically, Chhattisgarh had a significant population of wild elephants, particularly in regions like Jashpur, with records from the Mughal period and British-era accounts such as Captain Forsyth's Highlands of Central India (1871)—noting large herds in the forests north and east of Amarkantak. These herds, numbering 200–300 individuals, would descend into farmlands during crop ripening, causing extensive damage. Though sightings declined over the 20th century due to migration to Odisha and Bihar, elephants began reappearing in the 1990s, migrating back via Jharkhand and Odisha, initially in border districts like Jashpur, Raigarh, and Korba. Presently, over 250 elephants are found across Jashpur, Surguja, Raigarh, and Korba districts, often causing severe human-elephant conflict due to habitat constraints.

In Korba's Katghora Forest Division, the problem began around 2002 when elephants entered from Jharkhand via Raigarh. Annual intrusions now affect over 50 villages, particularly from June to December, with small groups splitting off during winter for foraging due to food scarcity.

Human-Elephant Conflict (HEC) is a significant issue in the Katghora Forest Division, especially due to frequent elephant movement between northern and central Chhattisgarh via the Hasdeo-Arand landscape. Balco-Aitmanagar corridor, Balco-Katghora Corridor movement of

elephant throughout the year. One Herd of 50 Nos Living in Kendai, Pasan and Jatga Range from the year 2022. They are moving in local hills such as Barbat hills, jatadongari, Belbandhapahad in Pasan range crossing Chataniya nala and Dhobani nala.

Mining of coal in this area is very rich. Vijay West and Rani Attari are underground mining sites in the Pasan Range, while Chotia Mining is located in the Kendai Range. Near these mining areas, Ganjadongari is a main route for elephants. Due to mining activities, heavy vehicle movements during both day and night sometimes lead to conflicts.

Linear development, particularly roads, also contributes to these conflicts. The roads include:

1. NH-130 Katghora–Morga–Ambikapur
2. Katghora–Chotia–Chirmiri
3. Katghora–Jatga–Pasan–Piparia–Chirmiri

These roads intersect the elephant movement routes in the Katghora Division, and several conflicts have emerged along them due to public movement. Railway route is now under construction from Korba to Pendra Via Jatga, Pasan, Sarbahra is also great Challenge for forest Department as it crosses elephant routes in many points.

2.1 Human-Elephant Conflict in Katghora Forest Division

Human-Elephant Conflict (HEC) has become one of the most pressing challenges in wildlife management and conservation in central India, particularly in Chhattisgarh.

With increasing elephant populations in the Hasdeo-Aranya landscape and simultaneous pressures of mining, agriculture, and human settlement, the Katghora Forest Division has emerged as a major hotspot for human-elephant conflict over the past two decades.

2.1.1 Time-Phased Conflict to Coexistence Evolution

◆ Before 2000: No Conflict Period

No historical elephant presence in Katghora. Elephants' were native to Odisha and Jharkhand. No human-elephant conflict in the region. Communities were not trained or prepared for such conflicts.

◆ 2000 – 2010: First Wave of Invasion

First elephant migrations into Katghora. Crop raiding, house destruction, and first human fatalities. Forest department unprepared; villagers relied on traditional methods.

◆ 2010 – 2020: Escalation Phase

Permanent herds establish presence. High human fatalities, crop loss, and fear among villagers. Mining activity led to habitat fragmentation. Initial scientific interventions started (radio-collaring, compensation).

◆ Current Phase (2020 – 2025): Stabilization

Government and community engagement increased. Formation of Hathi Mitra Dal groups. Launch of Sajag App and other alert systems. Gaj Yatra and awareness campaigns. Reduced fatalities and improved community preparedness.

2.1.2 Future Phase (2025 Onwards): Towards Sustainable Coexistence

State-wide elephant corridor planning with interstate coordination. Drone surveillance, vibration sensors, AI-based early warning systems. Livelihood diversification to reduce dependence on forest produce. Habitat restoration and long-term conservation programs.

Phase	Period	Conflict Status	Key Characteristics	Response/ Management
Pre-Invasion Phase	Before 2000	No Conflict	No historical elephant presence	Dense, intact forests
First Wave of Invasion	2000–2010	Conflict Begins	Migrating elephants enter Katghora from Odisha	First signs of crop damage, deaths, destruction
Conflict Escalation	2010–2020	High Conflict	Permanent elephant herds establish	Mining and habitat fragmentation worsen situation
Modern Conflict Management	2020–2025	Fatalities Reduced	Hathi Mitra Dals formed	Mobile alert systems, community awareness

2.2. Elephant Movement in Katghora

Category	Details
High-Conflict Villages	Baniya, Lalpur, Rhode, Korbi, kapanawapra.
Migration Zones	Elephants' migration In Katghora Range 1. Entry Point Aitmanagar (patha Beat)-Kachar-Ringaniya-Sarbhonka-Banjari-Manikpur-Gursiyan-madai-kapanawapra-Parla-lalpurchotia. 2. Lalpur chotia-Baniya-Belbandha Pahad-Matin-Devbhatti-Jatga-Mukwamera-Telsara-Ramakchar-Udan-Sapalwa-Ratkhandi-Chaiturgarh-Jemra-Bagdara-Batra-Pali-Lafa 3. Lalpur-Podikhurda-Korbi-Fhulsar-Rhode-Semraha-Gadagoda-Belbandhapahad 4. Korbi-Salhipahad-Pali-Kumhariya 5. Gadagoda-Baniya-Kodwari-Bijadand-Adsara-Barbadpahad-Balbahara-Tarainar-Bhairapra-Kumarishani-Dhobaninala-GPM-Anupur (MP)
Seasonal Conflict	Monsoon & Harvest seasons (June–Dec), peak due to Kharif crops like rice. Very serious and Aggressive eating Behaviour of kharif crops. September- December is peak time rice matures.

Category	Details
Types of Damage	Human Causality, Serious Injury, Crop Loss, House Break-in, Animal loss, other property Loss

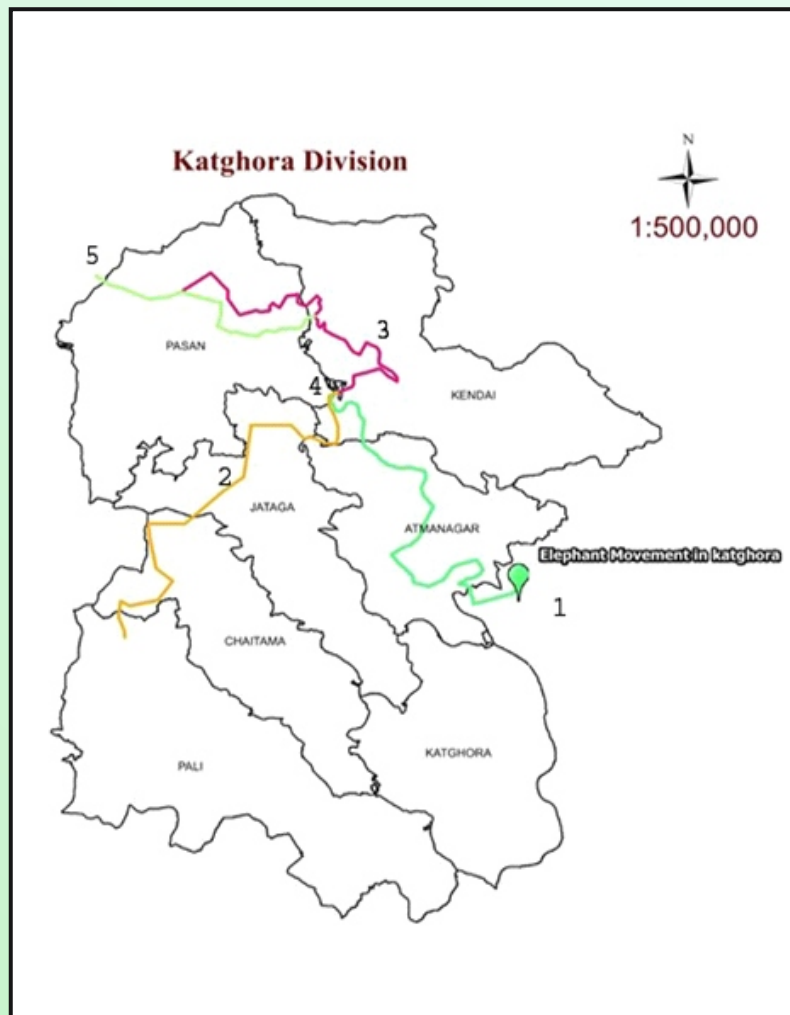


Fig. 6: Elephant Movement in Katghora Forest Division

2.3. Data on Human-Elephant Conflict (From 2001 To 2025)

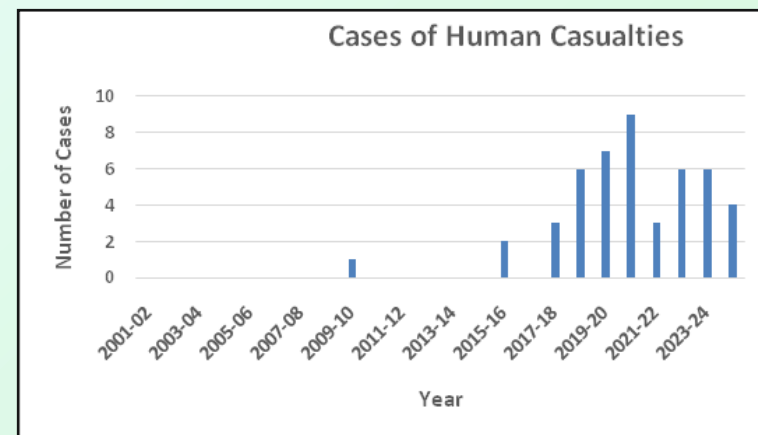


Fig. 7: Total Cases of Human Casualties

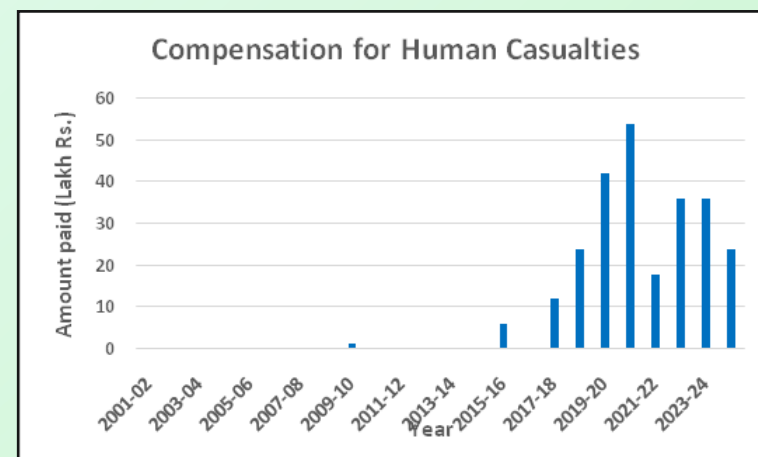


Fig. 8: Compensation paid for Human Casualties

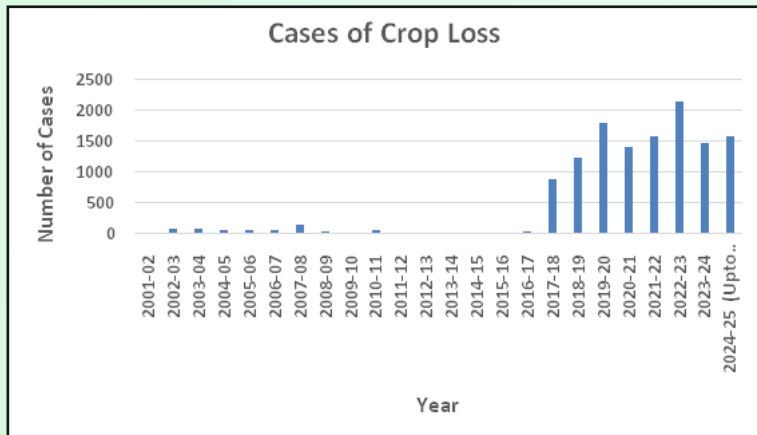


Fig. 9: Total Cases of Crop Loss

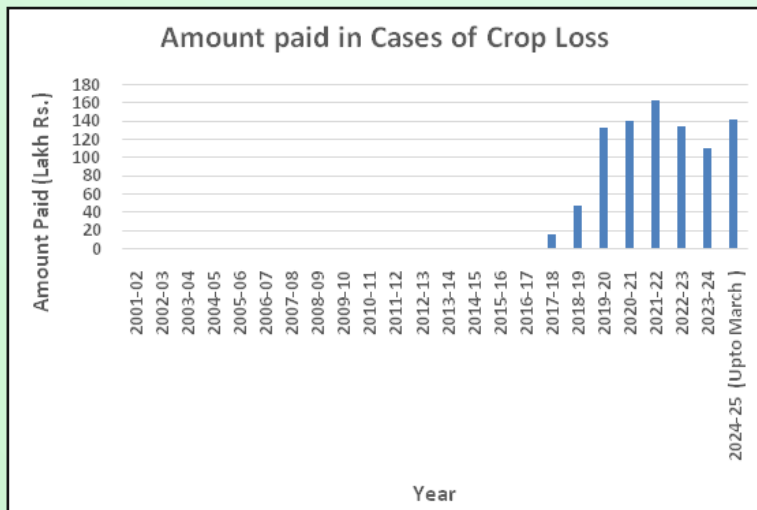


Fig. 10: Amount paid in Cases of Crop Loss



Fig. 11: Total Compensation amount paid

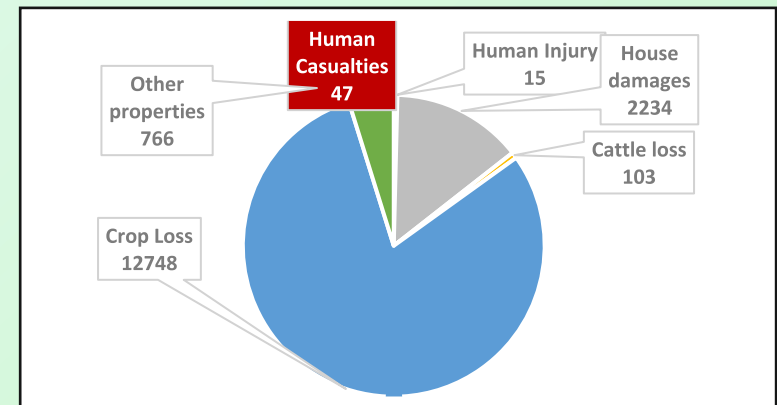


Fig. 12: Number of Cases in Katghora Forest Division

Table-1: Status of damages caused by Elephant Katghora Forest Division

Katghora Division													
human casualties/injuries, crop loss, and other property damages caused by wild elephants in the Katghora Forest Division from 2001 to March 2025													
Financial year	Human Casualties		Human Injury		House damages		Cattle loss		Crop Loss		Other properties		Total Cases
	Cases	Amount paid	Cases	Amount paid	Cases	Amount paid	Cases	Amount paid	Cases	Amount paid	Cases	Amount paid	
2001-02	0	0	0	0	0	0	0	0	18	10000	0	0	18
2002-03	0	0	0	0	0	0	0	0	75	70840	0	0	75
2003-04	0	0	0	0	0	0	0	0	69	26595	0	0	69
2004-05	0	0	0	0	0	0	0	0	61	145650	0	0	61
2005-06	0	0	0	0	14	64000	0	0	47	89500	0	0	61
2006-07	0	0	0	0	0	0	0	0	50	20835	0	0	50
2007-08	0	0	0	0	6	95000	0	0	131	87300	0	0	137
2008-09	0	0	0	0	62	142000	0	0	29	39980	0	0	91
2009-10	1	500000	0	0	7	42605	0	0	0	0	20	80942	28
2010-11	0	0	0	0	85	425200	1	8000	62	135170	0	0	148
2011-12	0	0	0	0	5	43550	0	0	12	10884	0	800	17
2012-13	0	0	0	0	61	94000	0	0	10	8300	1	0	72
2013-14	0	0	0	0	1	1500	0	0	0	0	0	0	1
2014-15	0	0	0	0	35	282050	0	0	0	0	2	4750	37
2015-16	2	600000	0	0	39	259165	0	0	18	93150	2	8500	61
2016-17	0	0	0	0	0	0	0	0	38	423840	16	43000	54
2017-18	3	1200000	0	0	4	0	1	25000	888	871777	71	742405	987
2018-19	6	2400000	4	4745	80	77742	1	40000	4224	4775200	68	547830	1403
2019-20	7	4200000	0	0	172	1598838	3	35000	1802	1341421	66	398109	2050
2020-21	9	5400000	2	90546	519	640536	0	0	1988	1408889	158	1343388	2080
2021-22	3	8000000	0	0	478	5746124	15	17088	1590	8351568	98	814708	2184
2022-23	6	3600000	6	224256	385	3803335	50	552816	2154	15447279	118	1317708	2739
2023-24	6	3600000	3	301444	150	1558528	4	80500	1481	11054660	86	740121	1730
2024-25 (upto March)	4	2400000	0	0	137	1776223	28	232440	1591	14258208	40	474155	1800
	47	24350000	15	658091	2234	21116896	103	1055333	12748	89934366	766	6414416	15913
													146496347

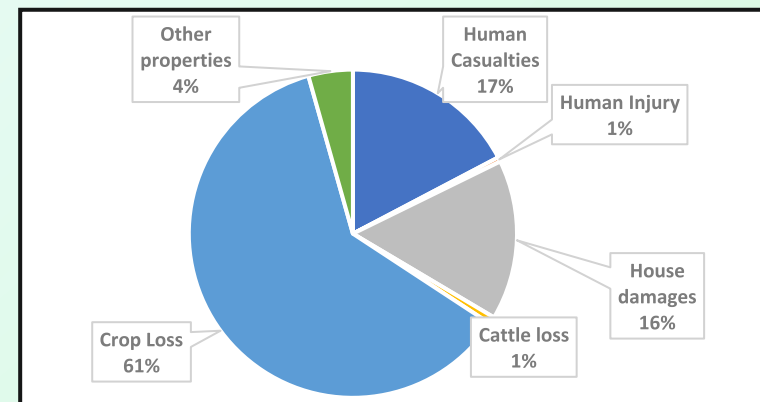


Fig.13: Total Compensation paid

2.4 Human-Elephant Conflict in Katghora Division-(2001-2025)

Human Casualties

The data from Katghora shows that human deaths due to elephants were unknown in the first decade of records (2001–2010). The first case was reported in 2009–10, marking the beginning of a new phase in conflict. Since then, casualties have become a tragic but recurring event. By 2015–16, two deaths had been recorded, and the numbers grew sharply after 2017. The last five years alone, from 2020–21 to March 2025, saw 28 deaths, more than half of all deaths reported in the last twenty-four years. Compensation for these cases reached ₹1.68 crore in this short period. This concentration of fatalities in recent years highlights both the growing presence of elephants in human spaces and the heightened risks faced by villagers.

Crop Damage

Crop raiding has been the most consistent and widespread form of conflict. In the early 2000s, cases were

relatively few and compensation was minimal – for example, only 18 cases were reported in 2001–02 with ₹10,500 paid. But after 2010, crop damage became more frequent, and by 2017–18 the problem had exploded, with over 1,200 cases in a single year. The peak came in the last five years: 8,214 cases were reported between 2020–21 and 2024–25, with compensation exceeding ₹69 crore. Every year, more than a thousand farming families have faced losses, with some years crossing two thousand cases. These figures underline how elephants have increasingly turned to standing crops—especially paddy—as a reliable food source. For farmers, repeated losses have meant food insecurity, indebtedness, and deep frustration, even though government support has increased.

House Damage

Damage to houses was rare in the first decade, but has now become another major aspect of conflict. By 2010–11, isolated incidents were reported, and by 2015–16, thirty-nine houses were destroyed. After 2017, house damage became regular and large in scale. In the last five years alone, 1,663 houses were damaged by elephants, with compensation amounting to ₹1.93 crore. Unlike crop loss, which is seasonal, house damage brings immediate hardship: families are displaced, forced to live in temporary shelters or with relatives, and often spend months rebuilding. The rise in house damage cases shows how elephant movement has shifted closer to permanent human settlements.

Overall Trend

Taken together, the data reveals a dramatic escalation of conflict in Katghora. From 2001 to 2010, conflict was mostly

limited to crops, with low compensation and little loss of life or property. From 2010 to 2017, human deaths and house damages began to appear, signalling a shift. After 2017, and especially in the last five years, the scale of conflict has multiplied many times over. Today, the majority of deaths, house damages, and crop losses are concentrated in this short recent period. Compensation too reflects this trend: nearly 70% of all payouts since 2001 have been made in just the last five years.

This steady escalation shows that what once seemed like a scattered problem of crop raiding has now become a crisis affecting lives, homes, and livelihoods. Katghora has moved from being a marginal conflict zone to a hotspot of human–elephant confrontation, demanding urgent and long-term solutions.

2.3 Causes of HEC in Katghora

Settlements in Corridors: Villages are located within traditional elephant paths (e.g., Chaal-Nagdhara, Balco-Aitmanagar corridor,). In Katghora Villages established across the division in all hills and forest. Everywhere there is people in the forest as elephant needs large area to travel for food and water this make rise in human elephant conflict.

Crop Pattern: High-yielding crops like paddy attract elephants, Paddy is easy food for them. Also, villagers keep Mahua, Rice, Kathal in the house which attracts them.

Lack of Coordination: Limited real-time communication between departments and villagers. Interdepartmental communication between Division and Ranges Also lacking.

Unplanned Chasing: People Chasing Elephant from their beat to different beat, RA circle to Another RA circle, Villagers

pushes them back to forest and Hills by Sound, Fire, Stone Pelting this make elephant more Aggressive.



Fig.14: Damages caused by Elephants in Katghora division

2.5 Human Casualties in Katghora Division

During the month of May 2025 in Katghora Forest Division, there are two tragic human-elephant conflict incidents took place, both of which underline the seriousness of the issue and the vulnerability of local communities despite the presence of advanced warning systems like Sajag.

The first incident occurred in the early morning hours of 2nd May 2025 in Kumharsiyani village, situated near Dhonari Nala. A twenty-two-year-old youth, Shri Ramlal Gond, son of Shri Ramdayal Gond, was on his way to Disha Maidan along with his sister when they encountered a lone tusker. Although he tried to escape, the elephant suddenly charged and caught him, throwing him to the ground with tremendous force. The young man died instantly at the spot. His family, villagers, and forest staff gathered immediately, and the legal formalities including the panchanama were conducted in the presence of the police. As per departmental provisions, an immediate relief amount of ₹25,000 was extended to his family, and further compensation was initiated.

The second incident happened in the evening of 29th May 2025, around 7:55 PM, in the Baninya forest area of Katghora Range. Shri Tejram Dhobi, aged thirty-eight years, a resident of Murli village in Korba district, had gone to his in-laws' village Baninya for agricultural work. While returning through the forest edge towards the fields, he suddenly came face-to-face with two elephants. His sixteen-year-old nephew, who was with him, managed to escape, but Tejram was caught and trampled by the elephant, leading to his death on the spot. The forest department and police reached the location promptly, and his body was sent for post-mortem

examination. His wife was provided with immediate assistance of ₹25,000 as per the provisions of the Forest Department.

Both of these cases illustrate the high-risk timings of human-elephant encounters, which often take place during the early morning and late evening hours when elephants are most active and villagers are engaged in daily routines. Despite the installation of the Sajag Alarm System across conflict-prone villages, these tragedies also reveal that such mechanisms can only be effective if consistently taken seriously by the community. At times villagers either ignore the alarms, forget to monitor elephant movement updates, or underestimate the danger, resulting in fatal consequences.

These incidents are sobering reminders that while technology provides support, it cannot replace the role of awareness, vigilance, and coordinated community participation. The loss of two individuals in the prime of their lives – one a 22-year-old and the other a 38-year-old – has not only left their families devastated but has also created fear among surrounding villages.

The incidents reaffirm the need for strengthening elephant corridors, ensuring timely patrolling during high-risk hours, and conducting continuous awareness programs so that the early warning systems already in place can be fully effective. Only through the combined force of technology, departmental action, and community responsibility can such losses be minimized in future.



Fig.15: Damages and casualties caused by Elephants in Katghora division

CHAPTER - 3

PREVENTIVE MEASURES & MITIGATION STRATEGIES

Human–elephant conflict (HEC) has emerged as one of the most serious challenges to both wildlife conservation and rural livelihoods in Chhattisgarh. Preventive measures and mitigation strategies are therefore essential to ensure coexistence between local communities and wild elephants while safeguarding biodiversity.

This chapter outlines an integrated approach that combines habitat management, barriers and deterrents, community-based guarding systems, and alternative livelihood opportunities such as eco-tourism and minor forest produce (MFP) processing. It also highlights the importance of timely and transparent compensation to affected families. By addressing both ecological and socio-economic dimensions, these strategies aim to reduce conflict, promote conservation awareness, and build long-term community participation in sustainable wildlife management.

3.1. Corridor Identification and Habitat Management

Under the Integrated Wildlife Management Plan, several projects are scheduled this year. Site identification and expert consultations have already been completed, and implementation will begin as soon as technical sanction is received. The plan focuses on multiple aspects of wildlife and habitat management, including:

- ◆ Conservation of soil and water
- ◆ Improvement of food and cover for wildlife
- ◆ Creation of conservation awareness among local communities
- ◆ Mitigation of human–wildlife conflict
- ◆ Preparation of biodiversity registers
- ◆ Provision of salt licks and water sources
- ◆ Fire protection and habitat improvement

Overall biodiversity improvement with special emphasis on native species. The Lemru Project in Kendai for elephant conservation and conflict mitigation.

All these initiatives are being undertaken in an integrated manner, and it is expected that they will soon bring about positive impacts on wildlife conservation, habitat sustainability, and community participation in the region.

3.2 Measures for Mitigating Human–Elephant Conflict

Evaluation and Future Adoption of Barriers for Elephant Movement Management in Katghora Division.

The Wildlife Institute of India (WII), Dehradun, under its Project Elephant: Chhattisgarh Final Report (2017–2022), conducted an extensive study on human–elephant conflict and movement patterns across various forest divisions of the state. As part of this study, Table 2 and Table 3 of the report presented a detailed list of recommended barrier types and their appropriateness in the context of Chhattisgarh. The barriers included a range of physical, biological, and

community-based measures, such as solar-powered electric fencing, elephant-proof trenches, stone walls, and bio-fencing with unpalatable plant species.

These measures were evaluated based on criteria such as terrain suitability, maintenance requirements, cost-effectiveness, community acceptance, and ecological impact. The study aimed to identify the most effective combination of barriers for minimizing human–elephant conflict while maintaining natural elephant movement corridors.

However, despite the comprehensive recommendations, the Katghora Forest Division did not implement these barriers during the project period. The division's topography, soil conditions, vegetation pattern, and elephant movement behavior differ from other parts of the state, making it essential to reassess the suitability of each barrier type for local application.

It is therefore recommended that a detailed, site-specific research and field study be undertaken in Katghora Division to evaluate the feasibility, sustainability, and long-term effectiveness of the WII-suggested barriers. Based on the findings, the most appropriate interventions – either from the existing list or through innovative local adaptations – can be adopted in future. Such an approach will ensure that conflict mitigation measures are both scientifically sound and locally relevant, promoting coexistence between humans and elephants in the region.

Table-2: List of barriers and deterrents as appropriate in Chhattisgarh context

Sl. No.	Measure	Remarks
1	Deterrent (Elephant Proof Trench)	Appropriate only for large populations in large habitats
2	Permanent Solar Fence	Appropriate only in areas where conflict is regular and elephants have fixed ranges
3	Individual Guarding	Appropriate for small farms; awareness on safe guarding practices is important
4	Community Guarding	Appropriate for settlements; requires awareness on safe guarding practices and consideration of elephant movement
5	Portable Solar-powered Fences	Appropriate for both settlements and small-scale crop fields; can be laid immediately
6	Rapid Response Teams	Useful in monitoring elephants, alerting villages, and sometimes driving elephants away from habitations
7	Mobile Phone-based Early Warning System	Useful in high conflict villages to minimize interactions between people and elephants

Table -3: Appropriateness of some of the widely used barriers in Chhattisgarh context

Sl. No.	Barrier Design	Specifications	Appropriateness
1	Elephant Proof Trench (EPT)	3m (top width) × 2m (height) × 1m (bottom width)	EPTs generally not appropriate for Chhattisgarh due to fragmented habitats, villagers' dependence, and high rainfall undermining trenches. May be considered only for large populations in large habitats.
2	Power Fence	Powered by energizer (solar-tapped), delivers 6–9 kV shock at 1/3000	Permanent fences not useful in Chhattisgarh due to shifting elephant home ranges. Temporary barriers are more appropriate, especially for settlements rather than crop fields.
3	Railway Fences	Discarded railway lines with foundation (100 cm deep, 30 cm	Unsuitable for Chhattisgarh due to high perimeter-to-area ratio and shifting ranges. May be used only to block elephants

Sl. No.	Barrier Design	Specifications	Appropriateness
		concreting), height 210 cm, span between vertical rails 350 cm, 2 horizontal rails at 90 cm spacing	from no-go zones.
4	Honey-bee Deterrents	Beehives suspended on GI strings at regular intervals	Only short-term efficacy proven. Can be experimented in limited sites. Not suitable for large-scale use. Risk of attracting sloth bears must be considered.
5	Chilli-smoking	Potent chilli smoke along forest boundary	Appropriate only for individual farms when combined with active guarding. Efficacy still unproven scientifically.
6	Solar Bijuka (Electrified Human Dummy)	Human dummy designed to give mild shock	Oversimplified approach; elephants have advanced sensory perception and unlikely to mistake dummy for real human. Not effective for long-term use.

3.3 Alternative Livelihood

Eco-tourism Initiatives in Katghora-Ecotourism in Katghora—especially through the Katghora **Eco-Tourism Development & Management Plan** (2024-25–2033-34) can be a sustainable solution to human-elephant conflict (HEC) by addressing both livelihood needs of forest-dependent communities and conservation priorities

3.3.1 Eco-cultural and Religious Tourism

Chaiturgarh Temple (Kashmir of Chhattisgarh), Hanumangarhi, and Jaleshwar Mahadev attract visitors and with some basic facility and canteen can create job and alternate income to respective FMCs.



Fig. 16: Chaiturgarh



Fig. 17: Mahamaya Temple Mahishasur Mardini



Fig. 18: Jaleshwar Mahadev



Fig. 19: Hanuman Garhi

3.3.2 Water-based Tourism

Buka Jalvihar and Golden Island Wetlands offer opportunities for Boating and Water Sports, Fountain Show, Butterfly Garden Bird Watching and Nature Trail is under proposal. It is favourite place for Wedding Photo shoot.



Fig. 20: Buka Jalvihar



Fig. 21: Golden Island

All these places are run by **Forest Management Committee** and collect entry fees and other charges such as night stay, Canteen etc.

Future Development -Handicrafts and Eco-fairs (Local crafts, festivals, and eco-fairs can generate seasonal or full-time employment)

3.3.3 Ecotourism's Role in Addressing HEC

1. **Reduced Agricultural Dependency**-By providing income alternatives (guiding, boating, fisheries), ecotourism reduces the community's economic reliance on crop farming, thereby minimizing crop-raiding conflicts with elephants.
2. **Strengthened Human-Wildlife Tolerance** Increased community engagement in conservation-linked livelihoods builds positive attitudes toward elephants, reducing retaliation or hostility.
3. **Habitat Conservation through Local Stewardship** When locals benefit from preserving forest landscapes, they become partners in protection, reducing forest degradation that pushes elephants into human spaces.

4. Reduced Illegal Activity Employment through ecotourism deters involvement in illegal logging or poaching, indirectly helping elephant populations.
5. Infrastructure for Monitoring Watch towers, eco-trails, and CCTV under the ecotourism plan can double as wildlife monitoring tools, improving elephant movement tracking and early warning systems.

3.4. MFP Collection and Processing

Donganala is medicine-making unit in Pali Range run by local self-help group. They are making various medicine under the brand name of *Chhattisgarh Herbal*.



Fig. 22: Donganala -Medicine Making Unit

KODO KUTAKI processing unit in Katghora is millet processing unit run by self-help group providing job and livelihood for local people as it is alternative to paddy and contain good nutrients.



Fig. 23: Dona Pattal Processing Unit

Dona Pattal making unit in Chhuri is also run by local SHG in Katghora Range. They will collect mahul Patta (*Bahunia vahili*).

In Katghora, local residents have been trained to produce various household and utility items such as oil-based products, shampoo, hair oil, phenyl, washing powder, laundry starch, and incense sticks using locally available resources.

3.5 Manual Compensation in Katghora

Among the important preventive and relief measures adopted in Katghora Forest Division, the manual compensation process plays a central role in addressing the impacts of human–elephant conflict. Whenever incidents such as crop damage, property loss, livestock mortality, or human casualties occur, the affected villagers inform local forest staff, generally within 24–48 hours. The forest department then carries out site verification through the Beat Guard and Range Assistant in the presence of community representatives, documenting GPS coordinates, photographs, and witness statements.

Damage assessment is conducted systematically: Crop losses are measured manually using ropes or KML files with a Panchanama prepared, property damage is valued using scheduled rates prescribed by the department, and human or cattle casualties are certified through official medical, post-mortem, or veterinary reports. Based on these findings, a claim file is prepared by the Beat Guard or Forester containing all supporting documents such as land records, photographs, Aadhaar, and bank details. This file is forwarded step by step from Beat to Range, Sub-Division, and finally to the Divisional Forest Officer, who has the authority to approve compensation. Once sanctioned, the compensation amount is drawn from the Forest Division Treasury and transferred directly to the claimant's bank account through the Direct Benefit Transfer system. Records of such cases are maintained at Range and Division levels, with monthly reports submitted to higher authorities like the CCF Bilaspur Circle and PCCF Wildlife.

Although this manual process provides much-needed relief to affected families and strengthens trust between local communities and the forest department, it still suffers from delays, lack of transparency, and the possibility of procedural lapses. Therefore, while it remains a vital preventive measure in the short term, the need for modernization through digital platforms such as e-Parihara and mobile-based reporting is strongly recognized to enhance efficiency, transparency, and accountability in the long run.

3.5.1 Compensation Amount for Losses Due to Wild Animal

Table-5: Compensation amount for Losses due to Wild Animal

Type of Loss	Compensation Amount
Human Death	₹ 6,00,000/-
Permanent Disability	₹ 2,00,000/-
Human Injury	₹ 59,100/- (Maximum, based on medical certificate)
Loss of Livestock	₹ 30,000/- (Maximum, depending on the species)
Crop Loss (Per Acre)	₹ 13,500/- (Irrigated land) ₹ 6,800/- (Unirrigated land) ₹ 18,000/- (Perennial crops)
House Damage (Maximum)	₹ 1,30,000/- (Hilly area) ₹ 1,20,000/- (Plain area)
Hut Damage	₹ 8,000/-
Animal Shed Damage	₹ 3,000/-

Applications should be submitted at the nearest Range Office

CHAPTER - 4

EARLY WARNING AND MONITORING SYSTEMS

In recent years, the Katghora Forest Division of Chhattisgarh has emerged as one of the most critical landscapes for managing Human-Elephant Conflict (HEC). Traditional methods of patrolling, community vigilance, and crowd management have been supplemented with innovative, technology-driven approaches that bring efficiency, accuracy, and speed to the field.

Modern tools such as GPS collaring, drones, WhatsApp alert groups, community response teams, Sajag siren systems, ODK-based elephant trekking apps, solar lighting, and centralized control rooms have transformed elephant management into a more scientific, proactive, and community-inclusive process.

These interventions not only enable precise monitoring of elephant movements but also enhance early-warning systems, reduce risks to frontline staff, and strengthen trust between forest officials and local communities. By combining real-time digital data, remote sensing, and participatory conservation models, Katghora Division has set an example of how technology can be effectively integrated into wildlife management.

This chapter highlights the key technological measures adopted in the division, their functioning, and their impact on promoting safer coexistence between humans and elephants.

Table-6: Elephants fitted with radio-cum satellite collars during the study period 2018–2022

S. No	Elephant ID	Gender and Age Class	Location of Collaring	Date of Collaring	Period of Monitoring (days)	Present Status (as on 31/08/2022)
1	BD1	Adult Male	Rewatpur, Balrampur FD	12/05/2018	404	Collar fell off on 20/06/2019
2	GI	Adult Female	Mainpat, Surguja FD	15/06/2018	623	Collar fell off on 28/02/2020
3	PY	Adult Male	Bansipur, Surajpur FD	28/11/2018	396	Collar fell off on 29/12/2019
4	MH	Adult Male	Bagda, Surajpur FD	03/05/2019	13	Collar fell off on 26/05/2019
5	KM	Sub-adult Male	Khond, Tamor-Pingla WLS	04/05/2019	3	Collar fell off on 07/05/2019
6	GN	Adult Male	Chaal, Dharamjaigarh FD	23/07/2019	292	Collar fell off on 10/05/2020
7	BD2	Adult Male	Duppi, Surajpur FD	29/12/2019	823*	VHF unit still working; Satellite signals stopped
8	PT	Adult Male	Kudmura, Korba FD	27/05/2020	377	Collar fell off on 08/06/2021
9	MT	Adult Male	Mohanpur, Surajpur FD	24/10/2021	158*	Collar functional
10	MAadult	Female	Sarthal, Surajpur FD	27/10/2021	7	Collar fell off on 13/11/2021

4.1 Technology-Aided Tracking GPS Collaring

Collars on matriarchs and Tuskers to predict group movements. This is done by WII and CGFD

GPS/VHF Collaring of Elephants in Chhattisgarh (up to 31/03/2022)

Elephant Identification, Home Range, and Movement Study of Ganesh (GN) By Radio collaring and GPS trekking

a) Identification of Ganesh (GN)

Ganesh (GN) is an adult tusker (>25 years) identified in July 2019 in Chhattisgarh. The elephant was selected for collaring based on age, reproductive status, and movement patterns. Identification was carried out using morphological features such as tusk characteristics, ear notches, and body marks, as per standard protocols (Natarajan et al., 2019). GN was chemically immobilized using Etorphine HCl, with Diprenorphine HCl used for reversal, and fitted with a satellite-VHF collar weighing ~15 kg. The collar was programmed to provide hourly GPS fixes, yielding fine-scale spatial data

b) Home Range Findings

The home range of Ganesh Elephant (GN) was assessed using both **Minimum Convex Polygon (MCP)** and **Kernel Density Estimation (KDE)**.

95% MCP Home Range: Covered ~823 km² across four forest divisions – Raigarh, Dharamjaigarh, Korba, and **Katghora** – extending into Sundargarh (Odisha).

Core Use Area (50% KDE Utilisation Distribution (UD): Restricted mainly to Dharamjaigarh and Chaal ranges (Dharamjaigarh FD), Raigarh range (Raigarh FD), and Kudumura & Kartala ranges (Korba FD). Elephant Ganesh exhibited significant spatial variability, with his intensive use areas concentrated around forested regions but with seasonal shifts.

c) Movement and Behavioural Study

Satellite data revealed that GN displayed “streaking behaviour”, phenomenon observed during musth periods when bulls travel rapidly over large distances, sometimes leaving their usual range. GN's movements extended temporarily into Marwahi Forest Division near Achanakmar Tiger Reserve (Madhya Pradesh), though this area was not part of his stable.

Key observations include

Seasonal ranging across dry, monsoon, and winter months, with larger excursions during musth.

Lack of significant use of protected areas, unlike other collared elephants that frequented Tamor-Pingla WLS or Semarsot WLS.

Regular overlap with human-use landscapes, increasing potential for conflict events.

d) Conservation and Management Relevance

The study of GN through radio-collaring highlighted the large and transboundary nature of elephant ranges in northern Chhattisgarh, emphasizing the need for coordinated

management across states. Understanding GN's ranging behaviour provides critical insights for:

1. Designing and protecting elephant corridors.
2. Predicting seasonal conflict zones.
3. Developing strategies for mitigating human–elephant conflict in non-protected landscapes.



Fig. 24: Home range distribution of elephant GN
(Ganesh, adulttusk)

4.2. Drones

Katghora Forest Division of Chhattisgarh has emerged as one of the most critical landscapes in the state for managing human-elephant conflict. Frequent movements of wild elephant herds across forest and village boundaries often lead to crop depredation, property damage, and even human casualties. To address these challenges, the division has adopted modern drone technology as a part of its conflict mitigation strategy.

Drones are particularly useful because they provide a real-time aerial view of dense forest areas where ground patrols face limitations. Equipped with high-resolution cameras and in some cases thermal imaging sensors, drones can detect the location and movement of elephants even in thick canopy cover or during night hours. The footage and coordinates captured are transmitted to the forest control room, where movement maps are prepared. These details are then relayed to field staff as well as to local communities through the Sajag app and siren-based early warning systems, allowing people to stay alert and avoid accidental encounters.

In addition to immediate conflict prevention, drones also help create a systematic record of elephant movement patterns. By documenting herd size, migration routes, and seasonal behaviour, the division can develop long-term management strategies such as habitat improvement, corridor protection, and targeted awareness programs in

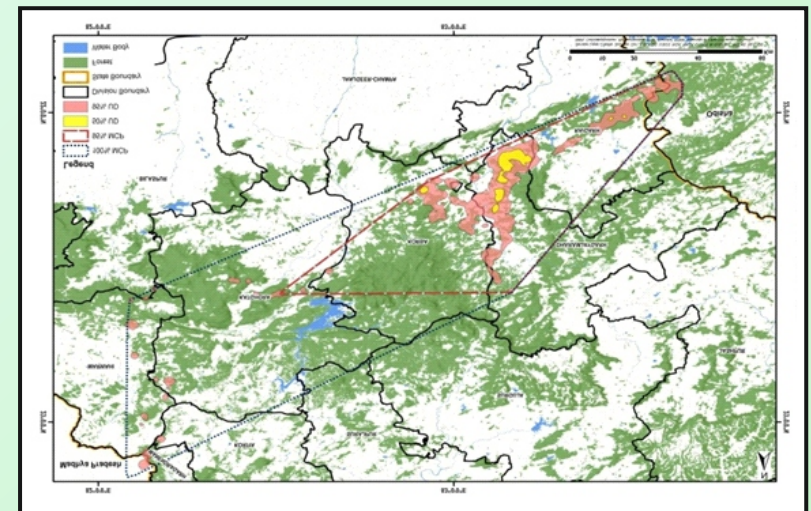


Fig. 25: Home range distribution



Fig. 26: Use of Drones in Elephant Tracking in Katghora



Fig. 27: Drone specification

vulnerable villages. The use of drones has also reduced the physical risks faced by frontline forest staff, who earlier had to depend solely on direct ground-based tracking, often in difficult terrain.

The integration of drones with community-based warning systems has made elephant management more efficient, scientific, and proactive. This innovative approach demonstrates how technology can complement traditional methods of wildlife monitoring, ensuring safety for both people and elephants. Katghora Division's drone initiative thus serves as a model for modern conflict management in forest areas of Central India.

4.3. WhatsApp Alert Groups and their Importance

In the Katghora Forest Division, WhatsApp-based alert groups have become one of the most practical and community-friendly tools for reducing human-elephant

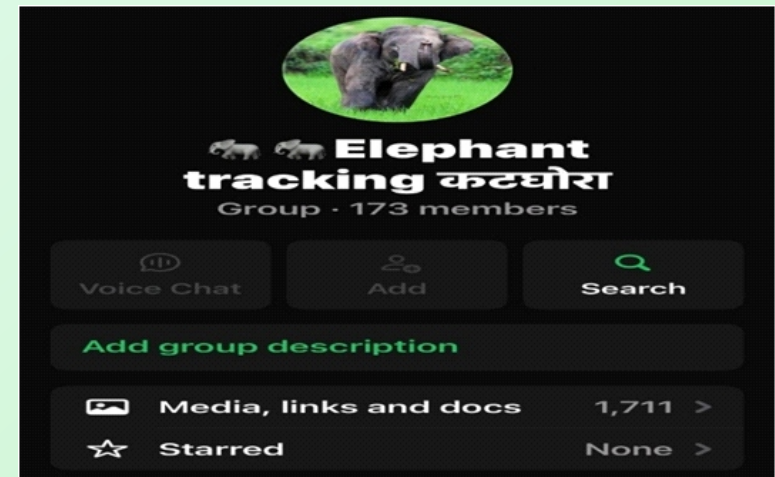


Fig. 28: Elephant tracking WhatsApp Group

conflict. These groups provide real-time updates on the location and movement of elephant herds or lone bulls, enabling villagers to stay prepared and avoid high-risk areas such as forest trails, farmlands, and water sources.

Along with live updates, precautionary messages, safety instructions, and even images or videos of elephant sightings are shared to help communities respond swiftly and safely.

The management of these groups is a collaborative effort, with forest guards, range officers, and Hathi Mitra Dal volunteers taking the lead in posting verified information. In some cases, Sarpanch or Panchayat members also participate, ensuring that warnings and instructions reach every household in the village. By combining modern mobile technology with traditional community networks, these WhatsApp groups have created an effective early-warning system that strengthens trust between the Forest Department and local people while significantly reducing surprise encounters and retaliatory incidents.

4.4. Community-Based Elephant Response Teams - *Hathi Mitradal*

Human–Elephant Conflict (HEC) is a major challenge in Katghora Forest Division, where frequent elephant movements bring risks to both people and crops. To address this, the Forest Department has established *Hathi Mitra Dal* (Elephant Friends Groups), a community-based initiative that strengthens local participation in conflict management and promotes coexistence.



Fig. 29: Hathi Mitradal (Elephant Friends Groups)

The groups use their local knowledge to monitor elephant movements and share timely warnings with villagers through WhatsApp, loudspeakers, and traditional signals like drums. This early alert system reduces surprise encounters and gives communities time to prepare. When elephants approach villages, Hathi Mitradal members help manage crowds and support forest staff during night patrolling and safe drive-back operations, using non-lethal methods such as fire, torches, and crackers.

Conflict incidents and crop damage are systematically recorded in the **ODK app by Forest staff**, with support from Hathi Mitradal members who provide field information. This joint effort ensures that data is reliable and that compensation claims can be processed quickly. Alongside this, the groups play an important role in spreading awareness through village meetings, where they explain elephant behaviour, safe practices, and ways to reduce risks.

The *Hathi Mitra Dal* initiative demonstrates the power of community involvement in conservation. By combining local vigilance with official monitoring and digital tools, it reduces conflict intensity, builds trust between villagers and the Forest Department, and contributes to the long-term protection of both people and elephants in Chhattisgarh.

4.5. Sajag Alarm

Solar-powered Sajag alarm sirens have been installed across 31 villages in the forested fringe areas. These alarms emit audible warnings when elephants approach, giving villagers time to take shelter or relocate temporarily.

The SAJAG Alarm System has been introduced as an innovative step to reduce human–elephant conflict in Chhattisgarh. SAJAG is a GPS and GSM-based early warning mechanism that enables forest staff to alert villages about the movement of elephants in real time. The system operates through a specially designed mobile application and web portal, where the Range Officer (RO) or other authorized officials can securely log in with a username and password. Once logged in, the map interface displays the locations of all villages where SAJAG sirens are installed. By simply clicking on the icon of a particular village, the siren at that location can be activated remotely from anywhere, ensuring that warnings are issued without delay.

When the siren is triggered, villagers immediately become aware of possible elephant presence nearby and can take necessary precautions, such as staying indoors during risky hours, avoiding night movement, and safeguarding their crops and property. This early warning not only reduces



Fig. 30: Sajag alarm

panic and confusion but also provides communities with valuable time to prepare and stay safe.

The importance of SAJAG in the Katghora Forest Division is particularly significant, as this region is one of the most severely affected elephant conflict zones in Chhattisgarh. With frequent incidents of crop damage and risks to human lives, the system has emerged as a critical tool for both prevention and response. By reducing the chances of sudden encounters, SAJAG minimizes the risk of injury or loss

of life and also protects elephants from accidental harm caused by retaliation.

Beyond its technological efficiency, SAJAG has also strengthened the bond of trust between forest officials and local communities. Villagers feel more secure knowing that they are not alone in facing the challenge, while the Forest Department benefits from improved coordination and quicker response times.

SAJAG is more than just a technological innovation; it is a lifesaving system that plays a vital role in mitigating human–elephant conflict.

By combining modern communication tools with community-based conservation efforts, it ensures safety for people, protection for elephants, and promotes a vision of peaceful coexistence in the forests of Katghora division.

4.6. Elephant Tracking App.- ODK Entry Android App.

In recent years, the Forest Department has introduced digital technology to strengthen the management of human–elephant conflict. One such innovation is the Elephant Tracking App, developed using Open Data Kit (ODK). This system allows real-time entry of elephant movement and conflict-related information through smartphones, ensuring accuracy, transparency, and quick response.

The app. functions on GPS-based technology, which means that whenever a forest staff member or *Hathi mitra Dal* volunteer records an observation, the exact location

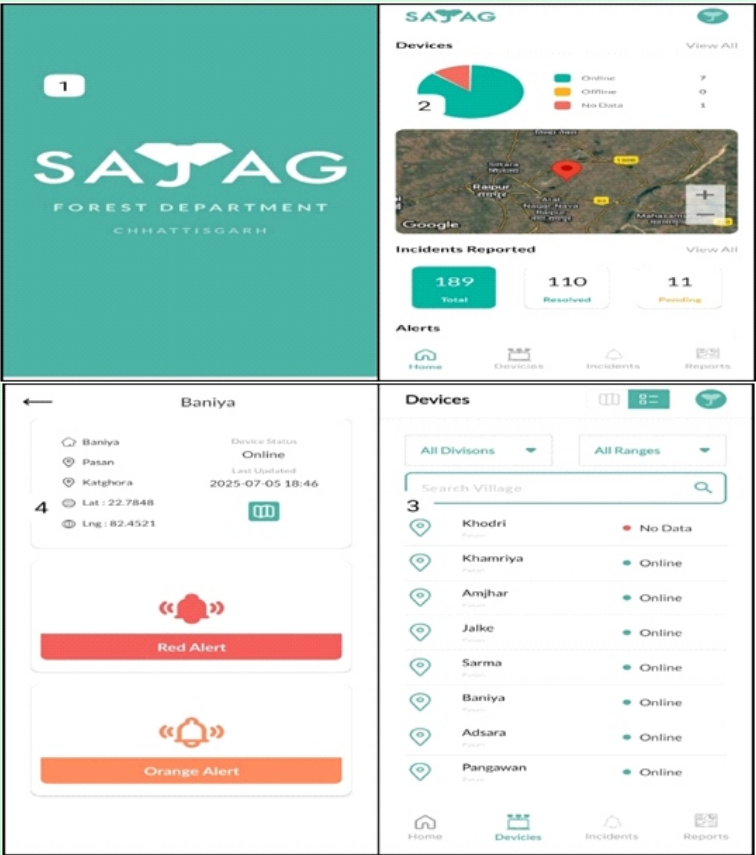


Fig. 31: Sajag alarm Android Application

coordinates are automatically captured. These entries are instantly uploaded to a central web portal or mobile dashboard, where officers at the Range, Sub-Division, and Division level can view the updates. This ensures that the elephant's movement is continuously tracked and mapped in real time.

Apart from movement tracking, the ODK app plays a crucial role in documenting conflict damages. Field staff can enter details of crop loss, house damage, or other property destruction, supported with photographs and geo-tagged data. This digital record becomes valuable evidence for processing compensation claims under the relief and rehabilitation schemes. It also minimizes errors and prevents duplication, thereby creating a more reliable database for both administration and policy-making.

Another advantage of the system is that it maintains a record of staff presence in the field. Since each entry is time-stamped and location-based, officers can verify where the staff were deployed during elephant incidents. This improves accountability, strengthens monitoring, and ensures that duties are being performed on the ground.

In conclusion, the Elephant Tracking App represents a major step forward in the use of technology for conservation management. By combining GPS tracking, real-time data entry, and digital documentation of damages, it not only helps in protecting people and crops but also ensures that elephants are tracked responsibly. For conflict-prone areas like Katghora Division, this app has become an indispensable tool, bridging the gap between field reality and administrative decision-making.

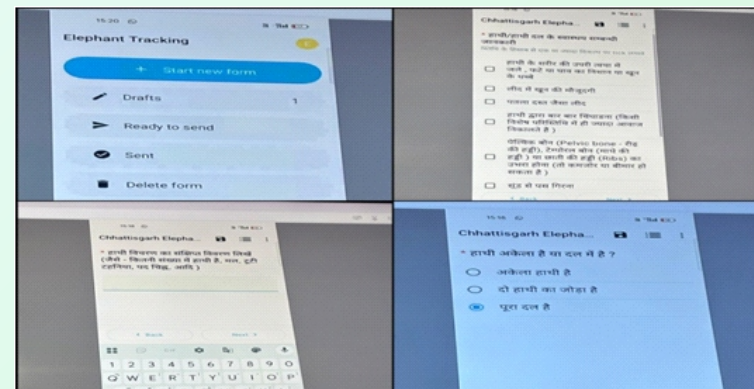


Fig. 32: Elephant Tracking Android App.

4.7. Elephant Control Room Chotia in Katghora

The Chotia Control Centre plays a central role in managing human–elephant conflict in Katghora Division. This control room functions as the nerve centre of elephant tracking, coordination, and rapid response. It ensures that elephant movements are constantly monitored, villagers are alerted in advance, and forest staff remain fully mobilized to handle emergencies.

To strengthen field operations, the Forest Department has created Hathi mitra Dals (Elephant Friends Groups), which work in close coordination with forest staff. Their duty is divided into two shifts: from 8:00 AM to 4:00 PM during the day and from 4:00 PM to 8:00 AM throughout the night. During daytime operations, two members of the Hathimitra Dal along with forest staff from different ranges—ranging from Forest Guards to Foresters and Deputy Rangers—stay active in the field. Their role is to patrol sensitive areas, monitor elephant herds, and alert nearby villages whenever elephants' approach.

The night duty is even more crucial, as most elephant movements and crop depredation incidents occur after dusk. From 4:00 PM until 8:00 AM the next morning, eight Hathimitra Dal members, supported by 2–3 forest staff, remain engaged in continuous patrolling. They are provided with two patrolling vehicles to cover maximum ground. During these night operations, inspections and field verification are conducted by gazetted officers including the Range Officer, Assistant Conservator of Forests (ACF), Sub Divisional Officer (SDO), and the Divisional Forest Officer (DFO). This hierarchical involvement ensures accountability, quick decision-making, and immediate action wherever required. The combined team not only tracks elephant movement but also responds rapidly to prevent conflict.

They trek along the paths used by elephant herds, update the control centre about their location, and spread awareness among villagers regarding safety precautions. This coordinated mechanism creates a strong line of defence, reducing human–elephant confrontations and building trust between local communities and the Forest Department.



Fig. 33: Elephant Control Room Chotia

Thus, the Chotia Control Centre, supported by the dedicated efforts of *Hathi mitra Dal* and forest officials, has emerged as a model of community participation and scientific conflict management. It stands as a proactive system where technology, manpower, and community cooperation converge to ensure the safety of both people and elephants.

4.8. Solar Lights and their Importance

In Katghora Forest Division (Korba, Chhattisgarh), the installation of solar-powered lights in elephant-prone areas has emerged as an effective infrastructure measure to reduce human–elephant conflict. These lights improve night-time visibility in forest fringes, farm paths, and water sources, thereby helping villagers detect elephant presence early and avoid sudden encounters. Since elephants generally avoid illuminated areas, solar lights also act as a natural deterrent to crop raiding and village entry. Moreover, they provide critical support to night patrol teams and *Hathi Mitra Dals* in guiding communities and monitoring elephant movement. Strategically placed at village peripheries, chowks, patrol tracks, agricultural fields, and temporary forest camps, solar lights have become an eco-friendly and community-friendly solution for ensuring safety, vigilance, and coexistence in conflict-prone landscapes.



Fig. 34: Solar-powered lights

CHAPTER - 5

AWARENESS AND CAPACITY BUILDING

In the Katghora Forest Division, awareness and capacity building have emerged as vital strategies for managing human–elephant conflict and strengthening coexistence. The Forest Department, in collaboration with FMCs, Panchayats, forest watchers, and Hathi Mitra Dals, has developed structured training and outreach programmes that engage both frontline staff and local communities.

5.1. Hathi Mitra Dal Training

Specialized capacity-building sessions are organized at division level workshops and the Surajpur Elephant Camp, where volunteers receive training from forest rangers, wildlife experts, and NGOs. The modules cover elephant ecology and behavior, conflict response techniques, use of non-lethal deterrents (torches, sirens, crackers), night patrolling safety, and mobile-based communication systems. Hathi Mitra Dal members also train in data recording and real-time coordination, enabling them to work effectively with beat guards and FMCs.

To support their activities, resources such as torches, whistles, safety gear, and mobile SIMs are distributed.

5.2. Awareness Campaigns in Villages and Schools

Alongside volunteer training, the division conducts **awareness campaigns** in elephant-affected villages and schools. Daytime programmes in government schools and Panchayat bhavans include exhibitions, wall paintings, interactive discussions, and safety training by forest staff and Hathi Mitra Dal members.

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Fig. 35: Awareness campaigns by Forest Staff in Schools and Panchayat Bhavans



Fig. 36: Awareness campaigns in Schools



Fig. 37: Road Sign Board and Alert Banner

Hathi Mitra Dal members to school children and local village people.

Night programmes involve community meetings with projector-based demonstrations, live use of Sajag alarms and WhatsApp alerts, folk street plays (*nukkad nataks*), and the distribution of awareness materials, torches, and emergency contact information. These campaigns especially target students, women, farmers, and rural youth to strengthen preparedness and reduce panic during elephant movement.

Combined efforts of structured training and local awareness have produced significant results. Timely alerts have reduced elephant entry into villages, while improved coordination between the Forest Department and communities has built trust and reduced retaliation. The involvement of FMCs in mobilizing volunteers and providing feedback has enhanced accountability.

Most importantly, these initiatives have led to youth empowerment, community ownership, and better documentation of conflict incidents, turning local people into active custodians of conservation.

The capacity-building programmes of Hathi Mitra Dal, FMCs, and village communities in Katghora - supplemented by workshops at Surajpur Elephant Camp and division-level training — demonstrate a successful community-based model. By linking scientific knowledge, local participation, and awareness education, Katghora has laid a strong foundation for long-term human-elephant coexistence.

CHAPTER - 6

HABITAT IMPROVEMENT MEASURES IN ELEPHANT CONFLICT AREAS – KATGHORA FOREST DIVISION

To address habitat degradation and reduce human-elephant conflict, multiple ecological restoration interventions are being implemented in Katghora Division:

6.1 Invasive Weed Removal *Lantana camara*, *Eupatorium*, Chind grass

These invasive species suppress native flora, degrade wildlife habitat, and reduce forage availability for herbivores. Manual uprooting and controlled herbicide application are



Fig. 38: Invasive Weed Removal

being used. Regular monitoring is planned to prevent re-invasion and promote native regeneration.



Fig. 39: Invasive Weeds Removal

6.2 Gunja Tree (*Lannea grandis*) Plantation (By Branch Cutting)

Gunja (*Lannea grandis*) is being planted through vegetative propagation (branch cuttings).

In the forested landscapes of Katghora (Korba District, Chhattisgarh), elephants (*Elephas maximus indicus*) have shown a marked preference for *Lannea grandis*, a medium-sized deciduous tree native to central India. This species has emerged as one of the favourite food sources for wild elephants, particularly due to the soft, moist, and nutrient-rich bark that the animals strip and consume

This nitrogen-fixing species improves soil quality and helps in ecological succession.



Fig. 40: Gunja Tree (*Lannea grandis*) Plantation

6.3 SMCS (Soil and Moisture Conservation Structures)

Includes contour trenches, water absorption trenches, and small check dams. Aims to improve groundwater recharge, reduce erosion, and support plantation survival. These structures are essential for water availability in lean seasons, benefiting both wildlife and plantation efforts.



Fig. 41: Soil and Moisture Conservation Structures

