# Human–Monkey Conflict and Community Responses in Bheemdatta and Bedkot Municipalities, Kanchanpur, Nepal

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**ABSTRACT**

Human-monkey conflict is increasing in most parts of Nepal due to rapid land-use change, habitat loss, and expanding human settlements. This study assessed the patterns, drivers, and community responses to HMC in Bheemdatta and Bedkot Municipalities of Kanchanpur District. Data on conflict types, perceived drivers, local mitigation strategies, and community attitudes towards monkeys were collected through household surveys (160 households; 80 per municipality), key informant interviews, and field observations. Most of the respondents reported frequent crop damage, food theft, property destruction, and threats to personal safety. Our results indicated that habitat degradation and food scarcity are the major drivers of HMC. Bedkot, characterized by forest-adjacent farmlands, reported higher crop losses and more frequent encounters, while Bheemdatta experienced predominantly urban-related incidents such as food snatching and household intrusion. Communities primarily relied on reactive measures (stone-throwing, guarding), which were often ineffective. Despite economic losses, cultural and religious values promoted tolerance toward monkeys, although expectations from local authorities varied across municipalities. The present study recommends community-based mitigation, improved land-use planning, and future integration of ecological and spatial data to identify conflict hotspots and guide management strategies.

## 1. INTRODUCTION

Human–wildlife conflict (HWC) is increasingly recognized as a major conservation and socio-economic challenge worldwide [1], with particularly severe and widespread impacts in South Asia, where rapid human population growth, agricultural expansion, and infrastructure development overlap with wildlife habitats [2]. Contemporary conservation science conceptualizes HWC not merely as a consequence of animal behaviour, but as an emergent property of coupled social–ecological systems, shaped by interactions between wildlife ecology, land-use change, governance structures, and human livelihoods [3, 4]. Within this framework, conflict reflects broader institutional and social dynamics rather than isolated incidents of wildlife damage.

Among various forms of HWC, human–monkey conflict (HMC) has received increasing attention due to the exceptional behavioural adaptability of rhesus macaques (*Macaca mulatta*), their reliance on high-calorie crops and anthropogenic food sources [5,6,7], and their prominent presence in human settlements [8,9]. Rhesus macaques are behavioural generalists capable of rapid learning and innovation, allowing them to exploit with high cognitive flexibility, agricultural fields, household food stores, and waste sites with high efficiency [10, 11]. Such behavioural plasticity creates feedback loops in which human tolerance and food provisioning—intentional or accidental-reinforce macaque habituation and intensify conflict over time [10,11].

In Nepal, rhesus macaques are widely distributed and occupy an important ecological and cultural position [12]. However, they are also among the most problematic wildlife species, frequently raiding crops, stealing household food, and exploiting garbage in peri-urban and rural landscapes. These interactions generate substantial economic losses, social tensions, and negative perceptions among affected communities [13,14]. HMC encompasses a wide range of impacts, including crop and property damage, disturbance to livestock, physical injuries to people, and heightened risks of zoonotic disease transmission [15,16]. Studies consistently identify maize, potatoes, and fruit crops as the most affected agricultural commodities [7]. Beyond agricultural losses, macaques damage household infrastructure and personal belongings, resulting in financial strain and psychological stress [17, 18, 19].

Importantly, the burdens of HMC are not evenly distributed. Women, elderly individuals, and smallholder farmers are disproportionately affected due to gendered divisions of labour, limited mobility, and their primary responsibility for crop guarding and household management [18,19]. This social differentiation positions HMC not only as a conservation issue but also as a concern of environmental justice, where vulnerability is shaped by socio-economic status, age, and gender [20, 21]. Cultural and religious beliefs in Nepal, where monkeys are revered as manifestations of Lord Hanuman, have historically fostered tolerance toward macaques despite recurring losses [22,23]. Cultural norms and spiritual values strongly influence local attitudes, shaping both tolerance thresholds and acceptable management practices [22,24]. However, this tolerance is increasingly eroded by rising economic hardship, health risks, and insufficient institutional support [25,12,19]. In contrast, evidence suggests that awareness of monkey behaviour, combined with education, community engagement, and responsive governance,

can enhance willingness to adopt coexistence-oriented measures [18,23].

Current mitigation measures—ranging from translocation and community-based deterrents like fencing, patrolling, noise-making, and guard animals—are often labor-intensive, costly, and only partially effective [9, 20], while firecrackers, stones, and catapults raise ethical and safety concerns [21, 26]. Previous studies highlight that interventions such as buffer crops, physical barriers, and community-based management can reduce conflict, but their effectiveness depends on local socio-cultural contexts [10, 14, 28]. In addition, fostering positive human attitudes, promoting non-lethal deterrent techniques, and strengthening collaborative management and education initiatives are essential for enhancing coexistence [29].

Despite the growing recognition of these complexities, many conflict-prone areas in Nepal still lack systematic baseline data on conflict drivers, spatial and temporal patterns, socio-economic costs, and community attitudes [18, 26, 28, 30]. This data gap constrains the design of effective, context-specific mitigation strategies and limits evidence-based conservation planning [18,23]. Addressing these gaps is particularly urgent in ecologically sensitive landscapes surrounding protected areas, where conservation objectives intersect directly with local livelihoods [18, 28]. The Far-Western region of Nepal, particularly Kanchanpur District, represents a notable HWC hotspot due to rapid urban expansion, road development, and the proliferation of temple complexes that provide consistent food subsidies and attract macaque populations [15, 31, 32]. Bheemdatta and Bedkot municipalities frequently report crop raiding, property damage, and community distress, yet systematic empirical studies remain scarce (based on local observations). Consequently, existing mitigation efforts often fail to address the intertwined ecological, behavioural, and socio-economic drivers of conflict [12, 22]. Similar human–monkey conflict patterns influenced by local attitudes and mitigation practices occur elsewhere in South Asia [33, 34].

Present study aims to generate an integrated understanding of human–monkey conflict by combining ecological impact assessment with social perception analysis at the municipal scale. Specifically, this study seeks to: (1) identify the primary drivers and impacts of HMC; (2) analyze the types and extent of damage caused by rhesus macaques; (3) examine local perceptions, attitudes, and tolerance levels; and (4) document mitigation strategies employed by communities in Bheemdatta and Bedkot municipalities.

## 2. METHODOLOGY

### 2.1 Study area

The study was conducted in Bheemdatta and Bedkot Municipalities of Kanchanpur District, Sudurpashchim Province, Nepal (Fig. 1). The area lies in the Terai region and is characterised by a subtropical climate and a mosaic of agricultural, residential, and forested landscapes.

Bheemdatta Municipality, the primary urban and administrative center of the district, is located between 28°52′–29°08′ N and 80°06′–80°15.5′ E, at elevations ranging from 222.5 m to 1,192 m, and covers an area of 171.34 km² [34]. The municipality encompasses both plains and hilly terrain and supports rural and semi-urban communities with diverse livelihoods and cultural practices. It experiences a tropical to subtropical climate, with temperatures ranging from 6.96 °C to 43 °C and an average annual rainfall of approximately 1,575 mm [35]. Rapid urban expansion and associated land-use changes in recent years have intensified interactions between humans and rhesus macaques.

Bedkot Municipality, established in 2015, lies between 28°34′–28°57′ N and 80°08′–80°15′ E, at elevations ranging from 192 m to 1,401 m, and covers an area of 158.5 km² [35,36]. The municipality includes lowland plains and the foothills of the Siwalik range and is inhabited by a mix of rural and semi-urban communities. It experiences a tropical savannah climate, with mean annual temperatures exceeding 26 °C and annual precipitation ranging from 1,800 to 2,000 mm [36, 37]. Rapid urbanization along the east–west highway, coupled with the expansion of agriculture-based settlements, has intensified human–wildlife interactions, leading to increased crop and property damage while posing challenges for biodiversity conservation.

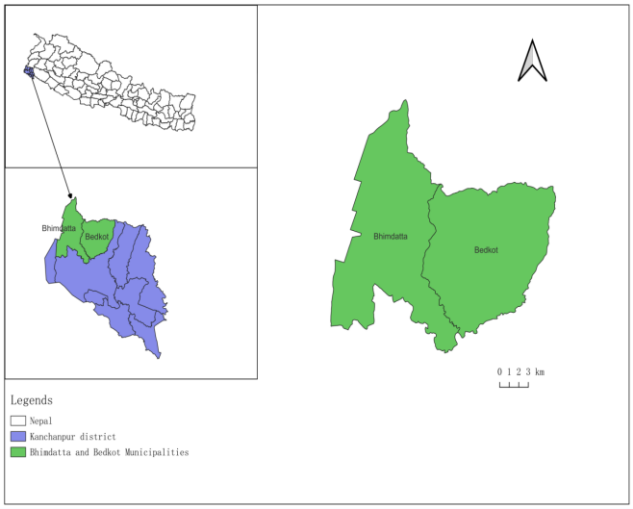


**Fig. 1:** Map showing Bheemdatta and Bedkot Municipalities, Kanchanpur District.

### 2.2 Data Collection

This study has used random sampling and mixed-method approaches, including household surveys, key informant interviews, and direct field observations, to obtain robust and representative data on human-monkey conflict in the Bheemdatta and Bedkot Municipalities.

A pre-tested structured questionnaire was administered to 160 randomly selected households (80 for each municipality) across three wards—two in Bheemdatta and one in Bedkot. The survey collected quantitative information on the frequency and intensity of monkey-related damages, causes of conflict, local perceptions, cultural attitudes, and mitigation strategies adopted by the community. Respondents represented diverse age groups, genders, and socio-economic backgrounds. The questionnaire included questions on such topics as types of damage caused by monkeys (including crop, property, physical, and psychological impacts), causes and local perceptions of the conflict, cultural and religious attitudes toward monkeys, and mitigation strategies alongside community-preferred solutions. In addition, in-depth semi-structured interviews were conducted with 16 key informants, including local leaders, experienced farmers, and school teachers, to obtain qualitative insights into historical patterns of human–monkey conflict, community coping mechanisms, and gaps in policy and institutional support. These interviews also helped assess the

effectiveness of existing mitigation strategies and the socio-cultural context of conflict management. Complementing the surveys and interviews, direct field observations were carried out during repeated visits to conflict-prone areas between April and May 2025. Observations focused on documenting locations of frequent monkey encounters, crop raids, property damage, human defensive measures such as fencing, scarecrow deployment, and guarding practices, as well as monkey behavior and movement patterns in relation to human activity. Informed consent was obtained from all participants, ensuring voluntary participation and confidentiality, and the study adhered to ethical research guidelines for human subjects.

### 2.3 Data analysis

Data from the household survey were first entered, cleaned, and ordered in Microsoft Excel before analysis. Descriptive statistics (frequencies, percentages, and means) were used to describe patterns of human-monkey conflict, damage types, community perceptions, and local response strategies. Results have been visualized with tables and bar charts. All variables were coded and analyzed using descriptive statistics and Pearson's Chi-square tests. Given that both the predictor and outcome variables are categorical in nature, the Pearson's Chi-square test was accordingly used to test associations between demographic factors (gender, age group, education level, and occupation) and respondents' attitudes towards monkeys. No parametric tests (e.g., t-tests, ANOVA) were applied since there were no continuous variables in the dataset that would call for such a test. Statistical significance was set at $p < 0.05$. Additionally, inferential analysis using Chi-square tests in IBM SPSS 20 explored associations between demographic variables (gender, age, education, and occupation) and attitudes toward monkeys, specifically regarding liking monkeys, supporting attacks on monkeys, and supporting harm to monkeys for causing damage [32].

## 3. RESULTS

### 3.1 Demographic and Socio-economic Profile of Respondents

Respondents in Bedkot and Bheemdatta Municipalities had different demographic and socio-economic backgrounds (Table 1). In Bedkot, 52.5% of respondents were male, while in Bheemdatta, 52.5% were female. Most people surveyed in Bheemdatta (61.25%) were between 31- 50 years old. In Bedkot, the age groups were more evenly distributed, with 36.84% aged 18–30 and 35% over 50. Agriculture was the main source of income in Bedkot (50%), but in Bheemdatta, more people worked in business (27.5%) and service jobs (13.8%). There were also differences in education: 41.25% of respondents in Bedkot were illiterate, while only 18.75% in Bheemdatta were. In Bheemdatta, 47.5% had completed higher secondary education or above (Table 1).

### 3.2 Causes of Human–Monkey Conflict

Food scarcity was identified as the primary driver of HMC, with over two-thirds (71.25%) of respondents in both municipalities. Habitat loss also contributed significantly, particularly in Bheemdatta, where deforestation and encroachment intensified conflict. A minority of respondents indicated that both food scarcity and habitat loss influenced HMC, highlighting resource limitation as the main underlying cause (Fig. 2).

**Table 1:** Demographic profile of respondents.

| Variables | Categories | Bedkot (%) (n = 80) | Bheem-datta (%) (n = 80) |
|---|---|---|---|
| Gender | Male | 52.50 | 47.50 |
| | Female | 47.50 | 52.50 |
| Age Group | 18–30 years | 17.50 | 25.00 |
| | 31–50 years | 47.50 | 61.25 |
| | Above 50 years | 35.00 | 13.75 |
| Occupation | Agriculture/Farming | 50.00 | 38.75 |
| | Business | 10.00 | 27.50 |
| | Service (Govt./Private) | 10.00 | 13.75 |
| | Student | 15.00 | 7.50 |
| | Others (e.g., housewives) | 15.00 | 12.50 |
| Educational Level | Illiterate | 41.25 | 18.75 |
| | Primary (up to Grade 5) | 18.75 | 13.75 |
| | Secondary (6–10) | 12.50 | 20.00 |
| | Higher Secondary & above | 27.50 | 47.50 |

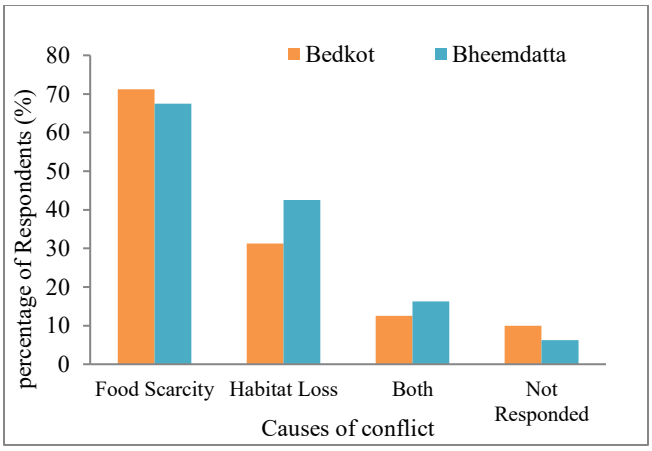


**Fig. 2:** Comparative causes of human–monkey conflict in Bedkot and Bheemdatta Municipalities (multiple responses allowed).

### 3.3 Types and Intensity of Damage

The most common effect was crop-destruction, which affected more than three-quarters (77%) of families in both municipalities. In contrast, food snatching was much more common in Bheemdatta (59%) than in Bedkot (34%), indicating closer interactions between humans and monkeys in densely populated areas. Although less common, unintentional injuries, monkey bites, and property destruction were nevertheless serious issues (Fig. 3).

The majority of respondents in Bheemdatta reported medium intensity (53.75%), nearly half (47.5%) of Bedkot respondents reported low impacts, while a larger percentage (15%) claimed severe impacts. These variations imply that, in comparison to Bedkot, conflict in Bheemdatta is both more frequent and more severe (Fig. 4).

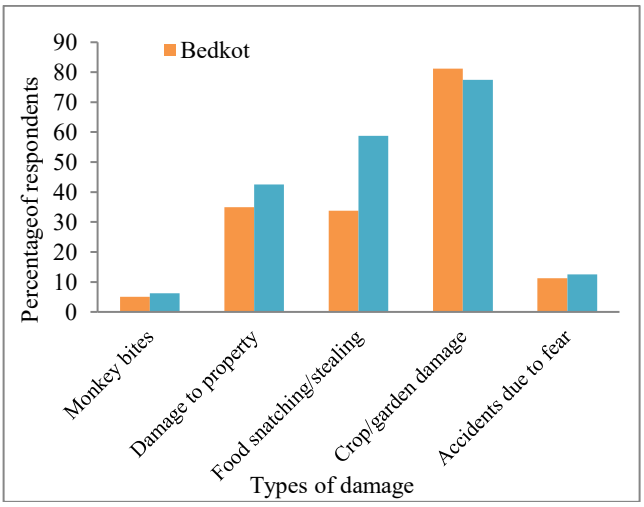


**Fig. 3:** Monkey-related damages reported by respondents in Bedkot and Bheemdatta Municipalities (Multiple responses allowed).

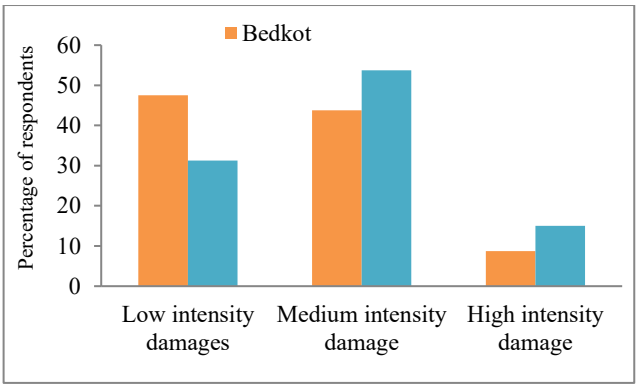


**Fig. 4:** Intensity caused by monkeys in Bedkot and Bheemdatta Municipalities.

### 3.4 Psychological Impacts and Community Attitudes

HMC put significant emotional strains on both municipalities. While the majority of responders said monkey-related disruptions were manageable, 15% said they were unbearable, indicating considerable psychological stress. Attitudes toward monkeys reflected this tension, with a slight majority of respondents (55%) disliking them and 45% favoring them. These beliefs are most likely influenced by repeated experiences of crop loss, property damage, and fear (Fig. 5 &6).

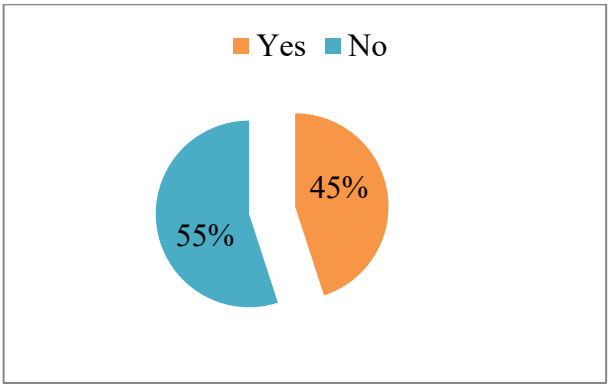


**Fig. 5:** Distribution of respondents who like or dislike monkeys.

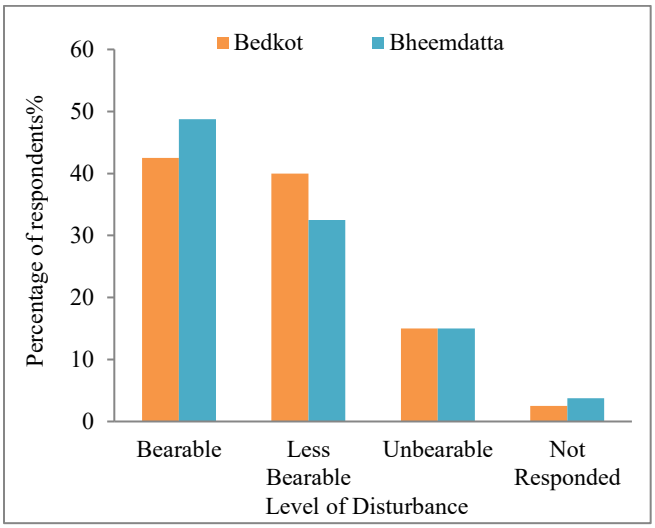


**Fig. 6:** Mental peace disturbance caused by monkeys in Bedkot and Bheemdatta Municipalities.

Tolerance toward conservation was mixed. Nearly half of respondents expressed continued support for monkey conservation even after damage occurred, though fewer maintained this support if family members were attacked (Table 2). The results revealed no significant associations between gender and any of the three attitude variables: liking monkeys ($p = 0.324$), support for attacking monkeys ($p = 0.493$), or support for harming monkeys due to damage ($p = 0.882$). Similarly, education level showed no significant association with liking monkeys ($p = .968$), support for attacking monkeys ($p = 0.453$), or support for damaging monkeys ($p = 0.356$). Occupation also did not have a significant relationship with any of the attitude variables: liking monkeys ($p = 0.645$), support for attacking monkeys ($p = 0.465$), or support for damaging monkeys ($p = 0.510$). No significant associations were found between age and either liking monkeys ($p = 0.419$) or supporting attacks on monkeys ($p = 0.118$). However, a statistically significant association was found between age and support for harming monkeys due to damage ($\chi^2 = 15.362$, $df = 4$, $p = 0.004$), indicating that attitudes toward this specific issue varied significantly across age groups.

**Table 2:** Tolerance attitudes toward monkey conservation.

| Tolerance attitude | N | Agree | Disagree | Neutral |
|---|---|---|---|---|
| I support monkey conservation even If a family member is attacked | 160 | 69 (43.12%) | 50 (31.25%) | 41 (25.25%) |
| I support monkey conservation even if damage occurred by monkey | 160 | 77 (48.12%) | 44 (27.50%) | 39 (24.37%) |

### 3.5 Local Mitigation Practices and Expectations

Residents used a variety of locally possible mitigation methods, most notably fear displays, stone-throwing, and the use of sticks. Financial and logistical restrictions made structural barriers less widespread (Fig. 7). Government-led interventions were

overwhelmingly preferred. Respondents ranked fencing and barriers (75% in Bedkot; 36.25% in Bheemdatta) and habitat restoration as priority measures. Interest in scientific approaches like sterilization was low, and compensation or awareness campaigns had little support (Fig. 8). Local governments (Bheemdatta, 58.75%; Bedkot, 56.25%) and farmers were perceived to bear the majority of conflict management responsibilities, with minimal expectation placed on NGOs or the federal government (Fig. 9).

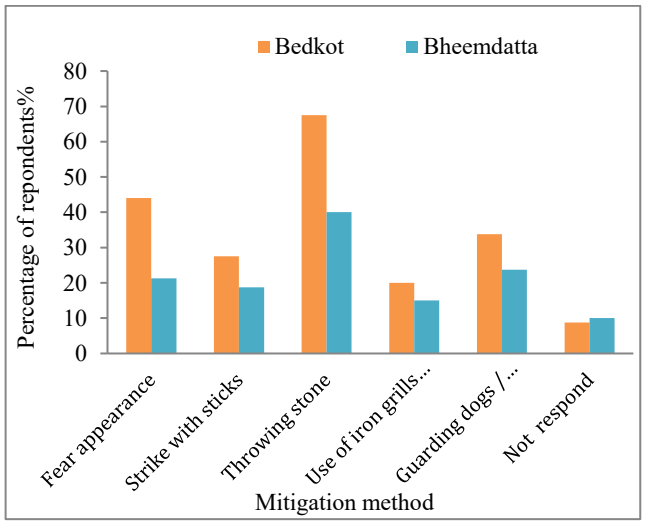


**Fig. 7:** Mitigation measures against human–monkey conflict in Bedkot and Bheemdatta Municipalities (Multiple responses allowed).

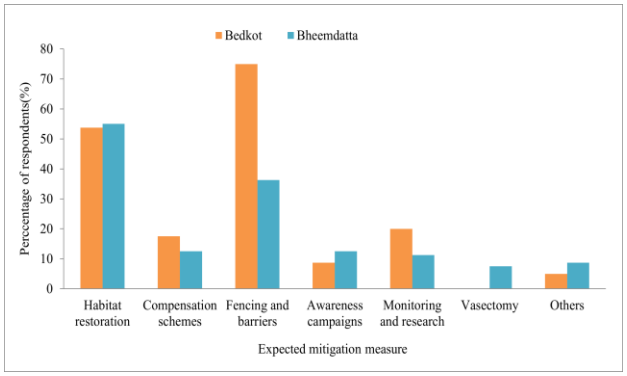


**Fig. 8:** Suggested Mitigation Measures Expected from Local Government by Respondents in Bedkot and Bheemdatta Municipalities (Multiple Responses Allowed).

### 3.6 Preferred Management Strategies

Across both municipalities, communities overwhelmingly favored non-lethal management. In Bedkot, translocation (69%) and capture–release (56%) were most supported, while Bheemdatta respondents prioritized translocation (43%) and enclosure-based capture (25%). Only a small minority supported lethal control (6% in Bedkot, 3% in Bheemdatta). These results highlight cultural and ethical values that favor coexistence and humane strategies, while also reflecting openness to innovative, community-based approaches (Fig. 10).

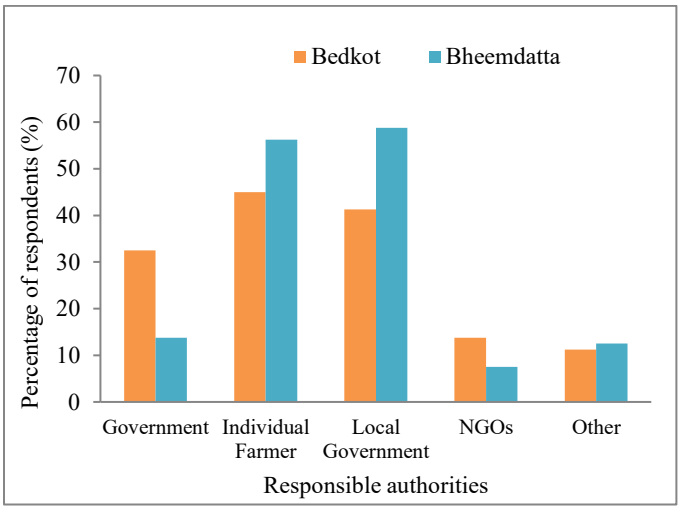


**Fig. 9:** Perceived responsible parties for managing human–monkey conflict in Bedkot and Bheemdatta Municipalities (Multiple responses allowed).

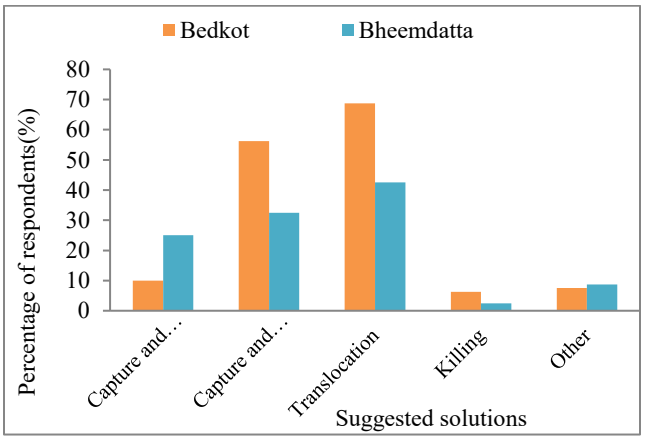


**Fig. 10**: Perceived problem monkey management strategies in Bedkot and Bheemdatta Municipalities (Multiple responses allowed).

## 4. DISCUSSION

This study provides an integrated socio-demographic, ecological, and psychological assessment of human–monkey conflict (HMC) in Bedkot and Bheemdatta Municipalities, demonstrating how variations in livelihood dependence, settlement patterns, and resource availability shape both conflict intensity and community responses. Overall, the findings confirm that HMC is not only a material challenge affecting livelihoods, but also a deeply social and emotional issue, underscoring the need for integrated management approaches that address ecological drivers alongside community needs and well-being.

Gender-disaggregated analysis indicates that both men and women face exposure to HMC, albeit in role-specific contexts: men primarily during agricultural activities and women within domestic and peri-household settings [8, 14]. Age structure further revealed heightened vulnerability among elderly populations in Bedkot, likely linked to youth outmigration, reduced physical capacity, and limited access to coping mechanisms [14, 18]. Educational disparities also shaped adaptive capacity; higher literacy levels in Bheemdatta were associated

with greater awareness and openness to alternative mitigation strategies, whereas lower educational attainment in Bedkot constrained uptake of non-traditional approaches. Together, these patterns highlight the importance of age-, gender-, and livelihood-sensitive interventions tailored to local socio-economic contexts. Similar patterns have been observed in other South and Southeast Asian contexts [39, 40, 41]

Respondents consistently reported substantial crop damage, property loss, and time-intensive field guarding. While these impacts clearly undermine household livelihoods, the study did not quantify economic losses in monetary terms. Future valuation of financial costs would provide a more precise estimate of household burden and strengthen the design of compensation mechanisms, insurance schemes, and targeted mitigation investments.

Food scarcity and habitat loss emerged as the primary drivers of HMC across both municipalities, intensifying competition for food and space and aligning with evidence from across South Asia [7, 8, 14]. Higher concern for habitat loss in Bheemdatta reflects rapid urbanization and land-use change, whereas Bedkot's predominantly agrarian landscape—though partially buffered by remaining forest patches—exposes households to frequent crop-raiding risks [12, 27]. However, this study did not incorporate ecological variables such as forest cover, habitat fragmentation, or macaque troop density, which likely influence spatial patterns of conflict. Integrating GIS-based land-use data and ecological indicators in future research would improve hotspot identification and deepen understanding of conflict dynamics.

Crop and garden destruction remained the most pervasive cost of HMC, affecting more than three-quarters of surveyed households, consistent with regional patterns where agriculture is the sector most affected by primate conflict [27, 42]. Food snatching and property damage were more prominent in Bheemdatta, reflecting increased human–monkey encounters in urban and peri-urban environments [43]. Although less frequent, monkey bites and fear-induced accidents highlight under-recognised public health risks [44, 45]. Reports of stress and anxiety—particularly among rural households with limited coping options—demonstrate the cumulative psychological toll of repeated losses.

These patterns reflect broader ecological dynamics: macaques increasingly rely on crops when natural forage is limited [22], while urban expansion accelerates habitat loss and behavioural habituation in Bheemdatta [5]. In Bedkot, remaining forest patches appear to partially buffer conflict, consistent with findings from comparable landscapes in the Western Ghats, India [8]. Together, these variations illustrate how land-use change, settlement proximity, and macaque density interact to shape conflict intensity.

The study reveals a substantial emotional burden associated with HMC, with 15% of respondents reporting unbearable stress [46]. Although many households continued to tolerate disturbances, persistent crop and property losses contributed to increasingly negative perceptions of monkeys. The near-even split between negative (55%) and positive (45%) attitudes reflects ongoing tension between cultural tolerance and lived experiences of harm [47]. Similar patterns have been documented globally, where repeated negative wildlife interactions erode support for conservation initiatives [39, 44].

While most respondents expressed continued support for conservation, this support declined sharply ollowing injuries to family members, underscoring the limits of cultural tolerance in the face of personal harm. Hindu reverence for monkeys remains influential [22, 27, 45], yet livelihood impacts increasingly challenge these norms—a trend widely observed in regions where primates hold religious significance but are perceived as agricultural pests [12, 19, 25]. Notably, most socio-demographic variables were weakly associated with conservation attitudes, suggesting that direct experience of damage outweighs background characteristics in shaping perceptions. Younger and agriculture-dependent respondents tended to express more negative views, even while recognizing monkeys' ecological and cultural importance, highlighting persistent trade-offs between conservation and livelihoods.

Although this study documented commonly used mitigation strategies, their effectiveness was not systematically evaluated. Future research should apply structured ranking or scoring systems to assess efficacy and inform evidence-based community interventions. Despite experiencing significant damage, most respondents favored non-lethal approaches combined with habitat restoration and stakeholder engagement, reflecting Nepal's cultural emphasis on compassion toward wildlife [9, 48, 49]. Households relied predominantly on fear-based deterrents such as shouting, stone-throwing, and using sticks. While these methods provide short-term relief, they may increase habituation or aggression among macaques [8, 50]. Structural interventions were less common, reflecting financial constraints and logistical barriers [50]. Respondents expressed strong expectations of government leadership, prioritizing physical barriers, capture–release, translocation, and habitat restoration—preferences consistent with findings from other South Asian contexts [22, 41, 51].

However, global evidence indicates that translocation often fails due to primates' behavioural adaptability [52]. Consequently, socially acceptable interventions must be complemented by ecological measures such as habitat enrichment, food-source management, and sustained community education to ensure long-term effectiveness [52, 53].

Taken together, these findings demonstrate that HMC in Nepal is a multidimensional challenge shaped by ecological scarcity, land-use change, cultural values, and socio-economic vulnerability. Effective mitigation requires integrated strategies that: (i) restore natural habitats and food resources to reduce crop-raiding pressure; (ii) support cost-effective community defenses while addressing financial barriers; (iii) incorporate psychological well-being into conflict assessments; and (iv) align interventions with cultural values while ensuring ecological effectiveness. Strengthened collaboration among communities, government agencies, and non-governmental organizations will be essential for translating local priorities into durable, culturally sensitive, and ecologically informed solutions.

This study has several limitations. Ecological variables such as forest cover, proximity to habitat edges, food availability, and macaque troop size were not measured, limiting spatial analysis of conflict hotspots. Economic losses were not quantified, constraining assessment of the full socio-economic burden. Additionally, mitigation effectiveness was recorded qualitatively without structured evaluation. Reliance on self-reported data may introduce recall bias and underreporting of sensitive

behaviours. Future research should integrate macaque behavioural ecology with socio-economic surveys, incorporate spatial and longitudinal designs, and evaluate mitigation outcomes over time to strengthen policy relevance and conservation impact.

## 5. CONCLUSION

Human–monkey conflict is an emerging challenge in Bheemdatta and Bedkot Municipalities, driven by rapid land-use change and shrinking natural habitats. In Bedkot, conflicts are dominated by crop losses and field destruction, while in Bheemdatta, urban interactions—property damage, food theft, and monkey intrusions into homes and markets- are more prevalent. Core drivers, including habitat loss, food scarcity, expanding human settlements, and monkeys' behavioral adaptability, are consistent across both areas. HMC imposes notable psychological burdens, particularly on subsistence farmers and vulnerable populations. Traditional deterrents, such as chasing, firecrackers, and makeshift fencing, are largely reactive and temporary, with limited government support intensifying community frustration. HMC management will require coordinated efforts involving local communities, municipal authorities, and conservation agencies. Future research should incorporate ecological data, economic valuation, and structured evaluation of mitigation strategies to provide a more comprehensive foundation for sustainable, community-based conflict mitigation.

## AUTHOR CONTRIBUTIONS

M. Joshi: Conceptualization, Methodology, Field Work, Data Curation, Analysis, Writing – Original Draft, Writing – Review & Editing; M. Bista: Conceptualization, Supervision, Writing- Review & Editing; B. Awasthi: Conceptualization, Methodology, Resources, Analysis, Supervision, Writing-Original Draft, Writing-Review & Editing. All authors contributed to the drafts and gave final approval for publication.

## ETHICAL STATEMENT

This research is original and has not been published or submitted elsewhere. Informed consent was obtained from all participants before data collection.

## DECLARATION OF CONFLICT OF INTEREST

The authors declare no competing interests.

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