Government of Bagmati Province
Ministry of Forests and Environment
Forest Research and Training Center
Godawari, Lalitpur

HUMAN-WILDLIFE CONFLICT IN BAGMATI PROVINCE

Assessing its Status, Causes and Mitigation Measures

SUBMITTED TO
Government of Bagmati Province
Ministry of Forests and Environment
Forest Research and Training Center
Godawari, Lalitpur

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कार्यकारी सारांश

मानव-वन्यजन्तु द्वन्द्व (**Human–Wildlife Conflict–HWC)** बागमती प्रदेशमा जैविक विविधता संरक्षण र स्थानीय जीविकोपार्जनका लागि प्रमुख चुनौतीको रूपमा देखा परेको छ। वन क्षेत्रको खण्डीकरण, कृषि विस्तार, पूर्वाधार विकास, बढ्दो वन्यजन्तु संख्या तथा मानव बस्ती र वन्यजन्तुको बासस्थानबीच बढ्दो अन्तरक्रियाका कारण द्वन्द्वका घटनाहरू निरन्तर वृद्धि भइरहेका छन्। यस अध्ययनले २०१५-२०२५ सम्मका आधिकारिक अभिलेख, घरधुरी सर्वेक्षण, समूह छलफल, सरोकारवालासँगको अन्तर्वार्ता, स्थलगत अवलोकन तथा **GIS** आधारित स्थानिक विश्लेषणमार्फत बागमती प्रदेशमा मानव-वन्यजन्तु द्वन्द्वको अवस्था, प्रकृति, कारण, प्रभाव तथा न्यूनीकरणका उपायहरूको विस्तृत मूल्याङ्कन गरेको छ। यस अध्ययनले बागमती प्रदेशमा देखिएको मानव—वन्यजन्तु द्वन्द्वको अवस्था, प्रकृति, तीव्रता, भौगोलिक तथा मौसमी स्वरूप, मुख्य कारण, प्रभाव र न्यूनीकरणका उपायहरूको समग्र मूल्याङ्कन गरेको छ ।

अध्ययन अवधिमा १,८३३ वटा मानव-वन्यजन्तु द्वन्द्वका घटना अभिलेख गरिएको छ, जसमा १७१ जनाको मृत्यु, १९१ जना घाइते तथा १,४७२ वटा पशुधन क्षति भएका छन्। घरधुरी सर्वेक्षणअनुसार १०० प्रतिशत कृषकले बाली क्षति तथा ८१.१ प्रतिशतले पशुधन क्षति व्यहोरेका छन्, जसले कृषि तथा पशुपालनमा आधारित समुदायहरू वन्यजन्तुजन्य जोखिमप्रति अत्यन्त संवेदनशील रहेको देखाउँछ। यसबाट मानव—वन्यजन्तु द्वन्द्व प्रदेशभर फैलिएको, निरन्तर दोहोरिने र स्थानअनुसार फरक प्रकृतिको रहेको पुष्टि भएको छ।

द्वन्द्व सिर्जना गर्ने प्रमुख वन्यजन्तुमा बाँदर, बँदेल, स्याल, चितुवा, गैँडा, हात्ती, बाघ, दुम्सी तथा मृग प्रमुख रहेका छन्। बाँदरले सबैभन्दा बढी बाली क्षति पुऱ्याउने जनावरका रूपमा पहिचान भएको छ भने चितुवा र स्यालले पशुधनमा बढी क्षति पुऱ्याएका छन्। गैँडा, हात्ती र बाघबाट हुने घटना संख्यात्मक रूपमा कम भए पनि मानव मृत्यु, घाइते तथा आर्थिक क्षतिमा यिनको प्रभाव सबैभन्दा गम्भीर रहेको छ। अध्ययनले बागमती प्रदेशमा ९२ प्रजातिका स्तनधारी वन्यजन्तु पाइने उल्लेख गर्दै जैविक विविधता संरक्षण र स्थानीय समुदायको सुरक्षाबीच सन्तुलन कायम गर्नुपर्ने आवश्यकता औँल्याएको छ।

स्थानिक विश्लेषणले चितवन जिल्ला मानव-वन्यजन्तु द्वन्द्वको सबैभन्दा उच्च जोखिमयुक्त क्षेत्र (**Hotspot)** भएको देखाएको छ। त्यसपछि मकवानपुर, धादिङ, सिन्धुली, नुवाकोट तथा रामेछाप उच्च जोखिममा रहेका छन्। नगरपालिका तहको विश्लेषणले संरक्षित क्षेत्र, वन्यजन्तु आवतजावत गर्ने मार्ग (**Wildlife Corridor)** तथा वन-कृषि सीमाक्षेत्रमा द्वन्द्व बढी केन्द्रित रहेको देखाएको छ। करिब ८४ प्रतिशत घटना वनको किनाराबाट एक किलोमिटरभित्र घटेका छन्। समयगत विश्लेषणअनुसार सन् २०२२ मा सबैभन्दा बढी द्वन्द्वका घटना अभिलेख भएका छन् भने वन्यजन्तुको गतिविधि प्रायः बिहान र साँझ बढी हुने गरेको पाइयो।

अध्ययनले मानव-वन्यजन्तु द्वन्द्वका प्रमुख कारणहरूमा वनभित्र प्राकृतिक आहारको कमी (६४.९%) वन्यजन्तुको संख्या वृद्धि (४८.६%),खेतीयोग्य जमिन बाँझो रहनु (२७%), वन क्षेत्रको खण्डीकरण, बासस्थान विनाश, मानव अतिक्रमण तथा पूर्वाधार विकासलाई मुख्य रूपमा पहिचान गरेको छ। ग्रामीण क्षेत्रमा कृषि परित्याग, वन क्षेत्रमा झाडी विस्तार, मानव बस्तीको विस्तार तथा वन स्रोतमा निर्भरता बढ्दै जानुले वन्यजन्तुलाई खेतीयोग्य जमिनतर्फ आकर्षित गरिरहेको देखिएको छ। यसले मानव-वन्यजन्तु द्वन्द्व बहुआयामिक सामाजिक तथा पारिस्थितिक कारणबाट उत्पन्न भएको स्पष्ट पार्दछ।

मानव-वन्यजन्तु द्वन्द्वले स्थानीय समुदायमा गम्भीर आर्थिक, सामाजिक तथा मनोवैज्ञानिक प्रभाव पारेको छ। बाली नष्ट हुनु, पशुधन मारिनु, घर तथा अन्य संरचनामा क्षति पुग्नु, मानव मृत्यु तथा घाइतेका घटना हुनुका साथै रातभर बाली कुरुवा बस्नुपर्ने, श्रम तथा समयको अतिरिक्त खर्च, मानसिक तनाव र असुरक्षाको भावना समेत बढेको छ। विशेषगरी कृषि तथा पशुपालनमा निर्भर विपन्न समुदायहरू यसबाट बढी प्रभावित भएका छन्।

द्वन्द्व न्यूनीकरणका लागि स्थानीय समुदायले बाली कुरुवा, कुकुरको प्रयोग, गुलेली, आवाज तथा प्रकाशको प्रयोग, तारबार, पशुधन सुरक्षित गोठमा राख्ने जस्ता परम्परागत उपाय अपनाइरहेका छन्। तर यी उपायहरू श्रमसाध्य, सीमित प्रभावकारी तथा ठूला वन्यजन्तुका लागि अपर्याप्त रहेको अध्ययनले देखाएको छ। साथै ढिलो क्षतिपूर्ति, सीमित प्राविधिक सहयोग, कमजोर संस्थागत समन्वय तथा अपर्याप्त सरकारी सहयोगले द्वन्द्व व्यवस्थापनलाई थप चुनौतीपूर्ण बनाएको छ।

अध्ययनले मानव-वन्यजन्तु द्वन्द्व न्यूनीकरणका लागि समग्र भू-परिदृश्य (**Landscape)** मा आधारित व्यवस्थापन प्रणाली अपनाउन सुझाव दिएको छ। वन्यजन्तुको प्राकृतिक आहार तथा बासस्थान सुधार, वन्यजन्तु आवतजावत मार्ग संरक्षण, प्रभावकारी विद्युतीय तथा भौतिक बार निर्माण, सुरक्षित पशुधन गोठ, प्रजाति-विशेष व्यवस्थापन, समुदायको सक्रिय सहभागिता, प्रभावकारी क्षतिपूर्ति तथा बीमा प्रणाली, जनचेतना अभिवृद्धि र दीर्घकालीन अनुगमन तथा अनुसन्धानलाई प्राथमिकता दिनुपर्ने उल्लेख गरिएको छ। साथै सरकार, स्थानीय तह, संरक्षण निकाय तथा समुदायबीच प्रभावकारी समन्वय अपरिहार्य रहेको निष्कर्ष प्रस्तुत गरिएको छ।

समग्रमा, बागमती प्रदेशमा मानव-वन्यजन्तु द्वन्द्व जैविक विविधता संरक्षण र स्थानीय समुदायको जीविकोपार्जनसँग प्रत्यक्ष सम्बन्धित जटिल समस्या हो। यसको दीर्घकालीन समाधानका लागि वैज्ञानिक व्यवस्थापन, प्रमाणमा आधारित नीति निर्माण, समुदायको सहभागिता, वन्यजन्तु बासस्थान संरक्षण तथा स्थानीय जीवनस्तर सुधारलाई एकीकृत रूपमा अघि बढाउन आवश्यक रहेको अध्ययनले निष्कर्ष निकालेको छ।

Summary

Human–Wildlife Conflict (HWC) has become one of the most pressing conservation and socio-economic challenges in Bagmati Province, Nepal. Rapid human population growth, expansion of agricultural land, habitat fragmentation, infrastructure development, and increasing wildlife populations have intensified interactions between people and wildlife. These interactions have resulted in widespread crop damage, livestock depredation, property destruction, and human casualties, threatening both rural livelihoods and biodiversity conservation. This study provides a comprehensive assessment of the status, spatial and temporal patterns, causes, impacts, and mitigation measures of HWC across Bagmati Province using official records, household surveys, focus group discussions, key informant interviews, field observations, and GIS-based spatial analyses.

The assessment analyzed officially reported conflict incidents from 2015–2025 and conducted detailed field investigations in selected hotspot districts. During the study period, approximately 1,833 human–wildlife conflict incidents were documented, including 171 human fatalities, 191 human injuries, and 1,472 livestock depredation cases. Household surveys revealed that 100% of respondents experienced crop damage, while 81.1% reported livestock losses, indicating that farming communities are highly vulnerable to wildlife-related damage. The findings demonstrate that HWC is widespread, persistent, and unevenly distributed throughout the province.

The study identified monkeys, wild boars, jackals, leopards, rhinoceroses, elephants, tigers, porcupines, and deer as the major conflict-causing wildlife species. Monkeys were considered the most problematic species due to extensive crop raiding, while leopards and jackals were primarily responsible for livestock depredation. Although rhinoceroses, elephants, and tigers were reported less frequently, they caused the greatest human casualties and economic losses. The province supports a rich diversity of wildlife, including 92 non-volant mammal species, highlighting the importance of balancing biodiversity conservation with local livelihood protection.

Spatial analysis revealed significant geographic variation in conflict intensity. Chitwan District emerged as the principal hotspot, recording the highest number of human deaths, injuries, livestock losses, and economic damages. Other districts experiencing moderate to high conflict included Makwanpur, Dhading, Sindhuli, Nuwakot, and Ramechhap. Municipality-level hotspot analysis further showed that areas adjacent to protected areas, wildlife corridors, and forest–agriculture interfaces experience the highest conflict intensity. Approximately 84% of reported incidents occurred within one kilometre of forest edges, confirming that forest fringe settlements and agricultural lands are the most vulnerable areas. Temporal analysis indicated that conflict incidents fluctuated over time, with 2022 recording the highest overall number of incidents, while wildlife encounters were reported most frequently during the morning and evening hours.

The study found that HWC is driven by a combination of ecological and socio-economic factors. Respondents identified the lack of food resources within forests (64.9%) as the leading cause of wildlife entering agricultural lands, followed by increasing wildlife populations (48.6%), land abandonment (27.0%), habitat degradation, forest fragmentation, and human encroachment. Wildlife adaptation to human-modified landscapes, expansion of settlements and infrastructure, dependence on forest resources, and changing land-use practices further increase conflict. These findings suggest that HWC cannot be addressed through a single intervention but requires integrated landscape-level management.

The impacts of HWC extend beyond direct economic losses. Crop destruction, livestock predation, property damage, and occasional human fatalities significantly reduce household income and food security, particularly among subsistence farming communities. Indirect impacts, including psychological stress, fear, reduced agricultural productivity, increased labour for guarding crops, and disruption of daily activities, further affect community well-being. Existing mitigation measures mainly rely on traditional approaches such as crop guarding, dogs, catapults, noise-making devices, fencing, and livestock confinement. However, these methods are labour-intensive and often ineffective against large mammals such as elephants and rhinoceroses. Respondents also highlighted delayed compensation, inadequate technical support, weak institutional coordination, and limited financial resources as major barriers to effective conflict management.

Based on the findings, the report recommends adopting an integrated, landscape-level human–wildlife conflict management strategy. Priority actions include restoring wildlife habitats, improving food availability within forests, protecting and reconnecting wildlife corridors, strengthening physical barriers and electric fencing, promoting predator-proof livestock shelters, implementing species-specific mitigation measures, enhancing community participation, improving compensation and insurance mechanisms, strengthening awareness and environmental education, and establishing long-term monitoring and research programmes. Improved coordination among government agencies, conservation organizations, and local communities is also essential for sustainable conflict management.

The economic and social impacts of HWC are substantial, particularly for farming communities that depend on agriculture and livestock. Communities primarily rely on traditional mitigation measures such as crop guarding, dogs, fencing, catapults, and livestock confinement; however, these approaches are often labour-intensive and insufficient against large mammals. Limited financial resources, inadequate technical support, delayed compensation, and weak institutional coordination further constrain effective conflict management. The report recommends adopting an integrated landscape-level management approach that prioritizes habitat restoration, improved food availability within forests, strengthening of physical barriers, species-specific mitigation strategies, community participation, improved compensation mechanisms, and long-term monitoring. Implementing these measures will be essential for reducing HWC, safeguarding rural livelihoods, and promoting sustainable human–wildlife coexistence across Bagmati Province.

Overall, the study concludes that human–wildlife conflict in Bagmati Province is a complex challenge resulting from the interaction of ecological change, wildlife behaviour, and human land-use practices. Sustainable coexistence between people and wildlife will require evidence-based planning, proactive conservation interventions, community engagement, and long-term investment in both biodiversity conservation and rural livelihood protection.

1. INTRODUCTION

1.1 Background

Human-wildlife conflict (HWC) has emerged as one of the most significant conservation challenges worldwide, particularly in regions where human populations and wildlife habitats increasingly overlap (König et al., 2020). Rapid population growth and associated land-use changes have intensified interactions between people and wildlife, often resulting in negative consequences for both. Expansion of settlements, infrastructure development, and increasing demand for natural resources have reduced the availability of suitable habitats for many wildlife species, forcing them to utilize human-dominated landscapes (Malle Hariohay et al., 2025, Acharya, 2024). Consequently, incidents involving crop damage, livestock depredation, property destruction, and human injuries or fatalities have become more frequent, creating substantial economic and social burdens on local communities while simultaneously threatening wildlife populations through retaliatory killings and habitat degradation (Parajuli et al., 2023).

Habitat fragmentation is a major driver of human-wildlife conflict, as roads, agricultural fields, urban expansion, and other forms of development divide once-continuous ecosystems into smaller and isolated habitat patches. Fragmented landscapes can disrupt wildlife movement, restrict access to food and water resources, and reduce opportunities for dispersal and reproduction (Poudel 2021, Kumari, 2023). Large mammals such as elephants, tigers, leopards, and bears are particularly affected because they require extensive home ranges and frequently move across human-dominated landscapes in search of resources (Selier et al., 2015). The loss of ecological connectivity often increases the likelihood of wildlife entering agricultural lands and settlements, thereby elevating the risk of conflict. Such interactions are further exacerbated when wildlife corridors are degraded or blocked, limiting the ability of animals to move safely between habitat patches (Naha et al., 2020).

Agricultural expansion represents another important factor contributing to the increasing prevalence of HWC. Conversion of forests, grasslands, and wetlands into croplands reduces natural foraging areas for wildlife and frequently places agricultural fields directly adjacent to wildlife habitats (Finegan et al., 2004). As a result, many herbivorous species, including elephants, deer, and wild boars, exploit cultivated crops as readily available food resources, causing considerable economic losses to farmers (Gordon, 2009). Similarly, carnivores such as tigers, leopards, wolves, and hyenas may prey upon livestock when natural prey populations are depleted or inaccessible. In South Asia, particularly in Nepal and India, crop raiding by elephants and livestock depredation by large carnivores are among the most common forms of conflict, generating negative attitudes toward wildlife conservation and undermining local support for protected area management (Acharya et al., 2016).

The increasing frequency and intensity of human-wildlife conflict highlight the urgent need for integrated conservation and management strategies that promote coexistence between people and wildlife (Mekonen, 2020) . Effective mitigation measures include habitat restoration, maintenance

of wildlife corridors, community-based conservation programs, compensation and insurance schemes, improved livestock husbandry practices, and the use of early-warning systems to reduce wildlife incursions into human settlements (Ronoh et al., 2022, Parajuli 2022). Furthermore, long-term monitoring and research are essential for understanding conflict patterns, identifying high-risk areas, and developing evidence-based management interventions. By addressing the underlying ecological and socioeconomic drivers of conflict, conservation practitioners and policymakers can enhance both human well-being and wildlife persistence in increasingly human-modified landscapes.

HWC has become an increasingly important conservation and socio-economic issue in Nepal, particularly in areas surrounding protected areas such as Chitwan National Park, Parsa National Park, Bardia National Park, and Shuklaphanta National Park. The recovery of several large mammal populations, including tigers, one-horned rhinoceruses, Asian elephants, and leopards, has contributed significantly to Nepal's conservation success (Acharya, 2024). However, the growing overlap between wildlife habitats and human settlements has also resulted in increased interactions between people and wildlife, often leading to adverse consequences for both (Banjara, 2018). Human fatalities and injuries caused by large mammals represent one of the most severe outcomes of HWC, particularly in buffer zones where local communities rely heavily on forests for fuelwood collection, livestock grazing, and other livelihood activities (Basnet, 2017). Such incidents not only result in the loss of life but also impose substantial economic burdens on affected households through medical expenses, loss of labor, and reduced household productivity (Bagale, 2026).

Livestock depredation and crop damage are among the most widespread forms of human–wildlife conflict in Nepal. Predators such as tigers and leopards frequently prey on domestic animals, while elephants, rhinoceruses, wild boars, and deer cause extensive damage to agricultural fields (Acharya, 2018). Beyond direct economic impacts, repeated conflict events often generate psychological stress, fear, and anxiety among community members. Residents living in conflict-prone areas may alter their daily activities, restrict movement during certain periods, or experience persistent concerns regarding personal safety and property protection (Gayo et al., 2025). Such non-material impacts are increasingly recognized as important but often overlooked dimensions of human-wildlife conflict.

Communities experiencing repeated losses may develop negative perceptions toward conservation programs and protected area management, particularly when compensation mechanisms are perceived as inadequate or delayed (Baird et al., 2009). Retaliatory killings, including poisoning, snaring, electrocution, and other forms of illegal wildlife persecution, are often directed toward species considered responsible for damages. These actions can significantly reduce local wildlife populations and undermine conservation achievements (Carter et al., 2017). In Nepal, retaliatory killings have been reported for species such as leopards, tigers, and elephants, particularly in areas with persistent conflict. Such mortality may disproportionately affect small or isolated populations, increasing their vulnerability to local extinction (Poudel 2021, Bagale 2026).

The ecological consequences of retaliatory killings extend beyond individual species and can affect broader ecosystem functioning (Acharya et al., 2016). The removal of apex predators can disrupt predator-prey dynamics, alter herbivore populations, and trigger cascading ecological effects throughout the food web (Yadav, 2021). Furthermore, negative attitudes toward wildlife conservation can reduce community participation in conservation initiatives and weaken support for protected area management. These challenges are particularly concerning for threatened and endangered species whose long-term survival depends on maintaining viable populations outside as well as within protected areas (Subedi, P. 2016, Bganjara 2018). Consequently, reducing human–wildlife conflict through effective mitigation measures, community engagement, and equitable compensation schemes remains essential for achieving both biodiversity conservation and sustainable coexistence between people and wildlife in Nepal.

1.2 Rationale

Human-wildlife conflict (HWC) has become a critical conservation and socio-economic challenge in Nepal, particularly in Bagamati Province, where rich biodiversity overlaps with densely populated agricultural landscapes. The province supports an impressive diversity of non-volant mammal species, including endangered megafauna such as tigers, rhinoceruses, and elephants, alongside a burgeoning human population heavily dependent on subsistence agriculture and forest resources. While this coexistence is a testament to Nepal's conservation success with tiger numbers nearly tripling over the past decade it has also intensified interactions between people and wildlife, leading to escalating human casualties, livestock depredation, and crop damage. Despite the growing severity of these conflicts, systematic assessments of their spatial and temporal patterns remain scarce, and official data on attacks, injuries, and fatalities are often fragmented or underreported. This study addresses these critical gaps by providing the first comprehensive, evidence-based analysis of HWC dynamics across Bagamati Province.

By mapping conflict hotspots, identifying seasonal and species-specific trends, and quantifying socio-economic impacts, the research generates essential baseline data for prioritizing high-risk areas and designing targeted mitigation strategies. The findings also offer actionable insights for improving compensation mechanisms and community-based interventions, which are vital for maintaining local tolerance toward wildlife. Ultimately, this study contributes to a paradigm shift from reactive conflict management to proactive, landscape-level planning that balances biodiversity conservation with human well-being, supporting Nepal's commitments under its National Biodiversity Strategy and Action Plan and the Kunming-Montreal Global Biodiversity Framework (K-M GBF).

1.3 Objectives

This study has the following specific objectives.

- Assess the status, nature and intensity of HWC in Bagamati Province based on the officially reported cases.
- Identify the conflict hotspot districts of Bagamati Province and prepare conflict hotspot map.
- Explore the spatial and temporal patterns of wild animal attacks on people.
- Identify the main socio-ecological causes of HWC.
- Assess HWC impacts and existing mitigation measures and community coping strategies and recommend context-specific, feasible mitigation options.

2. METHODOLOGY

2.1 Strategy of Assessment

This study was conducted in two distinct phases. The first phase was relied entirely on secondary data, specifically the officially reported cases of Human-Wildlife Conflict (HWC), to assess the overall status, nature, and intensity of conflicts within Bagamati Province. This phase involved systematic data compilation, trend analysis, and spatial mapping to identify conflict hotspot districts based on frequencyand types of incidents.

In the second phase, two identified hotspot districts were selected for detailed field-based investigation. This phase was focused on assessing the socio-ecological drivers of HWC, including land use patterns, proximity to forest areas and livelihood practices. Both qualitative and quantitative methods such as household surveys, key informant interviews, and field observations were employed to understand local perceptions and adaptive practices.

Furthermore, spatial and temporal patterns of wildlife attacks on humans and property were analyzed using GIS tools to identify high-risk areasand seasonal variations. Based on these findings, a comprehensive assessment was conducted to evaluate existing mitigation measures and their effectiveness. Finally, site-specific planning interventions was developed, including conflict-sensitive land use planning, habitat management strategies, and community-based mitigation approaches aimed at reducing human–wildlife conflict and enhancing coexistence.

2.2 Approaches

Our approaches involved a systematic process consisting of four interconnected stages to study human-wildlife conflict (HWC) on local livelihoods by analyzing perceived risks and vulnerabilities, identifying the underlying factors contributing to these perceptions, and examining residents' preferences for the future wildlife population size in the area. Additionally, geostatistical techniques were employed to map spatial clusters of risk gradients, offering a comprehensive spatial analysis of how these risks fluctuate across the landscape.

Inclusive stakeholder involvement was achieved through a combination of KIIs/FGDs and formal and informal meetings. These involved a wide range of stakeholders, including political decision-makers, government officials, academics, researchers, civil society organizations, NGOs, and media professionals, each offering unique HWC.

2.3 Study area

This study was conducted in Bagamati Province, central Nepal, one of the country's most densely populated and economically significant provinces. Bagamati Province covers approximately 20,300 km² and encompasses 13 districts which included Bhaktapur, Chitwan, Dhading, Dolakha, Kathmandu, Kavrepalanchok, Lalitpur, Makawanpur, Nuwakot, Ramechhap, Rasuwa, Sindhuli, and Sindhupalchok (Figure1). The province exhibits remarkable geographic and ecological diversity, extending from the lowland Terai and Chure regions in the south to the mid-hills and

high Himalayan landscapes in the north. Elevation ranges from less than 100 m above sea level in parts of Chitwan District to over 7,000 m in the Himalayan region of Rasuwa, resulting in diverse climatic conditions, vegetation types, and wildlife assemblages.

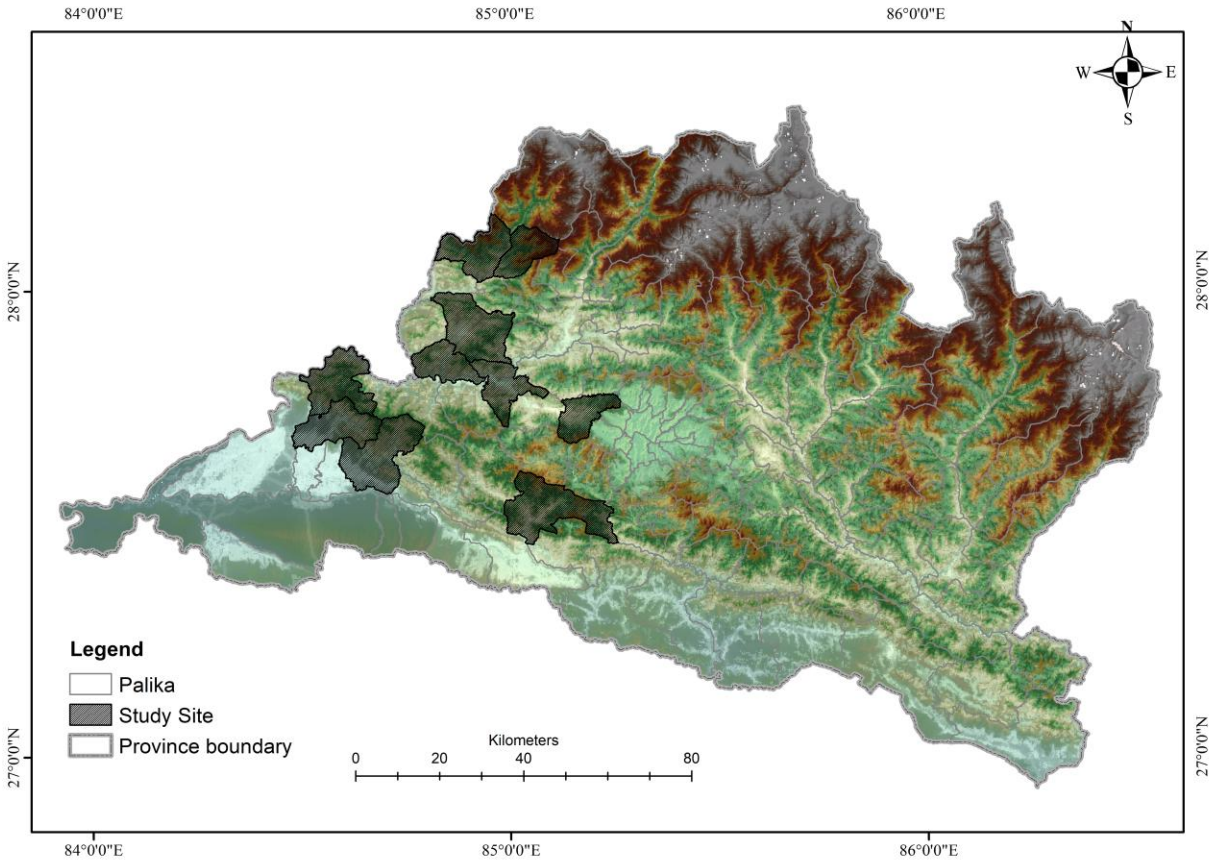

Figure 1. Location map of the study area.

Note: White polygons represent Palika (local government units), the gray hatched polygon indicates the study site (Lothar -Rapti village, Ichhya kamana -Ichhya Kamana village), Shaktikhor Kalika);Dhunibesi, Jwalamukhi, Nilkantha, Galchi, Ganga-Jamuna, Siddhalekh, Khaniyabas, Jwalamukhi) and the dashed gray line denotes the provincial boundary.

The climate of Bagamati Province varies considerably along its altitudinal gradient. The southern districts, particularly Chitwan and Makawanpur in southern part of the districts have experienced with a subtropical monsoon climate characterized by hot summers, mild winters, and annual precipitation exceeding 2,000 mm. The mid-hill districts, including Bhaktapur Kathmandu, and Lalitpur, experience a temperate climate with moderate temperatures and distinct wet and dry seasons. Most rainfall occurs during the summer monsoon season (June-September), which contributes substantially to agricultural productivity. The province supports a wide range of ecosystems, including tropical sal forests, riverine forests, mixed broadleaf forests, temperate woodlands, grasslands, and alpine habitats. These diverse habitats provide refuge for numerous

wildlife species, including tigers, leopards, Asian elephants, one-horned rhinoceroses, Himalayan black bears, wild boars, rhesus macaques, and several deer species (K.C., 2025).

Chitwan National Park, Langtang National Park, Shivapuri-Nagarjun National Park, Gaurishankar Conservation Area are the key protected areas that lie in the Bagmati province. Rapid urbanization and agricultural expansion have intensified human–wildlife conflict, particularly involving elephants, rhinos, tigers, leopards, monkeys, and wild boars. Agriculture remains the primary livelihood in many districts (Chhetri et al., 2021).

Many households living in the proximity of community forests and protected areas are heavily depends on natural resources such as fuelwood, fodder, and non-timber forest products. This dependence on land and forest resources often increases exposure to wildlife, making local communities particularly vulnerable to crop raiding, livestock depredation, property damage, and occasional attacks on humans. Consequently, Bagamati Province represents an important region for investigating patterns, drivers, and impacts of human-wildlife conflict, given its combination of high biodiversity, expanding human populations, diverse livelihoods, and rapidly changing landscapes (Rimal et al., 2024).

2.4 Methods

2.4.1 Data Collection

This study employed a mixed-methods approach integrating secondary data review, spatial analysis, and field-based information to assess the status, nature, intensity, and spatial distribution of human-wildlife conflict (HWC) in Bagamati Province, Nepal. The study covered a ten-year period from January 2015 to December 2025 and focused on documenting conflict trends, identifying hotspot areas, and understanding the impacts of wildlife on local communities.

Primary data

Primary data were collected through household survey, focus group discussions (FGDs), and direct field observations. Field visit was done in May 2026. A total of 53 respondents including individual/household interview (37) and group discussants (16) were consulted during field visit (See detail in Annex 1). The following villages and their villagers and farmers were consulted during field survey: Chitwan (N=17): Lothar (Rapti village), Ichhya kamana (Ichhya Kamana village), Shaktikhor (Kalika); Dhading (N=20): Dhunibesi, Jwalamukhi, Nilkantha, Galchi, Ganga-Jamuna (Gumdi), Siddhalekh, Khaniyabas, Jwalamukhi (Figure 1). Group discussions were held in Chitwan (Lothar, Shaktikhor) and Dhading (Nilkantha, Galchi) (Field photos are appended below) (Figure 1). The selection of districts and sites were based on the suggestions provided during the inception presentations and district level consultations at DFO offices.

Structured questionnaires (Annex 2) were used in households located in the local communities to document experiences of wildlife-related damage, economic losses, perceptions of wildlife conservation, and mitigation practices. Key informant interviews were conducted with local government representatives, community leaders, Divisional Forest Office personnel, protected area staff, conservation practitioners, and other stakeholders. Focus group discussions were

organized within selected communities to explore collective perceptions, historical trends, coping strategies, and recommendations for conflict mitigation. Additionally, field observation was undertaken to verify reported conflict locations, document evidence of wildlife activity, and assess environmental conditions associated with conflict occurrence.

Secondary data

Human–wildlife conflict (HWC) records were compiled from official government databases (e.g., Division Forest Office), conservation organizations, newspapers (2018–2024), online news portals, organizational bulletins, social media, and university theses (Annexes 3–5). Records were identified using relevant HWC-related keywords (terminology such as such as "Human-Wildlife Conflict," "Wildlife Attack," "Crop Damage," "Livestock Depredation," "Property Damage," "Human casualty," and the names of Major Wildlife Species), and information on the date, location, wildlife species, conflict type, and associated impacts was extracted whenever available.

All records were entered into a Microsoft Excel database and systematically verified to ensure accuracy. process. Duplicate records from multiple sources were identified by cross-checking dates, locations, species involved, and incident descriptions and were subsequently removed. Conflict incidents were classified into six major categories: I. Human fatalities, ii. Human injuries, iii. Livestock depredation, iv. Crop damage. Property destruction, and vi. Other wildlife-related incidents. Also, geographic coordinates were assigned to incident locations, where available to support spatial analyses.

2.4.2. Data Analysis

Descriptive statistics were used to summarize the frequency, distribution and severity of HWC incidents across the Bagamati Province. HWC status was assessed based on the number of reported incidents, affected districts, and wildlife species involved, while conflict intensity was evaluated using incident frequency, human casualties, economic losses, and recurrence. Temporal (2015-2025) and district level analyses were performed to examine annual, seasonal and spatial patterns, and the relative contribution of different wildlife species to conflicts. Inception, draft and final report were prepared after incorporating feedback from FRTC, Godawari (Annex 6).

District-level comparisons were conducted to identify geographic variation in conflict frequency and severity. The proportion of incidents attributed to different wildlife species was also calculated to determine the principal conflict-causing animals within the province. Inception, draft and final reports were submitted after incorporating feedback received from FRTC, Godawari (Annex 7).

2.4.3. Spatial Analysis and Hotspot Identification

In this study, HWC hotspot identification and maps were developed by Kernel Density Estimation in ArcGIs 10.5. Verified conflict locations were used to generate composite conflict hotspot. Additionally, spatial overlay analyses were further used to evaluate the relationship between conflict occurrence and landscape characteristics, particularly proximity to forests, protected areas, wildlife corridors, agricultural fields, and human settlements.

Areas exhibiting consistently high numbers of incidents, repeated conflict events, or elevated levels of human casualties, crop damage, livestock depredation, and property loss were classified as HWC hotspots. The resulting maps provided a spatially explicit assessment of conflict distribution and facilitated the identification of priority districts requiring targeted mitigation measures and conservation interventions. The integration of spatial and non-spatial datasets enabled a comprehensive understanding of HWC patterns and supported evidence-based management planning across Bagamati Province.

3. RESULTS

3.1. Overview of HWC in Bagmati Province

Human-wildlife conflict (HWC) is an escalating conservation and socio-economic challenge in Bagmati Province which was driven by habitat fragmentation, agricultural expansion, and increasing human-wildlife overlap. An increasing overlap between wildlife habitats and human activities has intensified interaction between people and wildlife, resulting in crop damage, livestock depredation, property damage and human casualties. This assessment integrated both primary and secondary data, and demonstrated that HWC is wide spread recurrent, and unevenly distributed with agricultural losses representing dominant form of conflict followed by livestock depredation, human injuries and fatalities.

3.1.1. Summary of Officially reported HWC Cases

Review of official records and verified secondary sources indicates that HWC remained persistent between 2015 and 2025. Approximately 1,833 conflict incidents were documented that included 171 human deaths, 191 human injuries and 1,472 livestock depredation cases (Table 1). Annual incidents ranged from 184 in 2018 to 205 in 2022, indicating an overall increasing trend of HWC in the province. Chitwan consistently recorded the highest conflict levels followed by Dhading, Makwanpur, Nuwakot and Sindhupalchok districts. Based on the field observation, household surveys further showed that crop damage affected all respondents (100%), livestock depredation affected 81.1%, whereas property damage (8.1%) and human injury (5.4%) were comparatively less frequent. Wildlife encounters were commonly reported around agricultural fields and settlements, demonstrating that conflict has expanded beyond protected areas into human-dominated landscapes.

Table 1 Summary table shows the quantitative data with highlighting the predominance record

District	Deaths	Injuries	Total Casualties	% of Total Deaths	% of Total Injuries
Chitwan	146	78	224	85.4%	46.4%
Ramechhap	1	19	20	0.6%	11.3%
Dhading	2	17	19	1.2%	10.1%
Rasuwa	2	13	15	1.2%	7.7%
Nuwakot	2	12	14	1.2%	7.1%
Dolakha	1	12	13	0.6%	7.1%
Sindhupalchok	1	11	12	0.6%	6.5%
Makwanpur	4	8	12	2.3%	4.8%
Kathmandu	3	7	10	1.8%	4.2%
Kavrepalanchok	3	6	9	1.8%	3.6%
Lalitpur	2	5	7	1.2%	3.0%
Sindhuli	1	7	8	0.6%	4.2%
Bhaktapur	2	5	7	1.2%	3.0%
Total	171	168	339	100%	100%

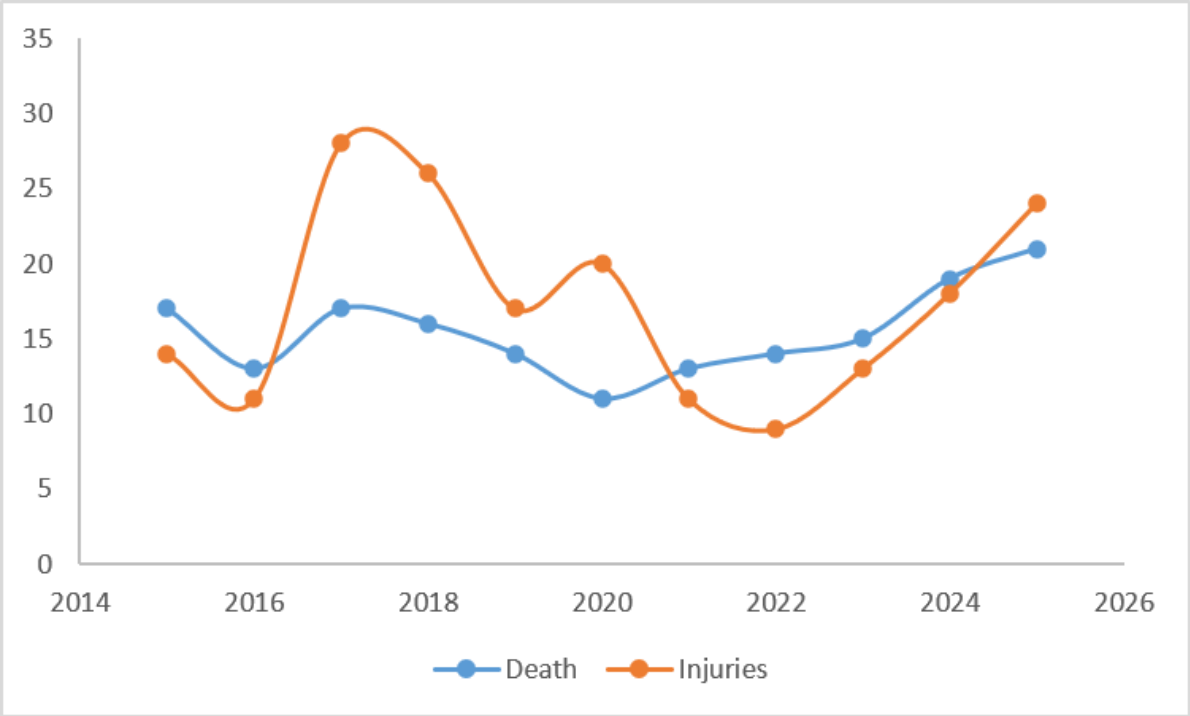

Figure 2. Estimated number of human deaths and injuries caused by human–wildlife conflict

3.1.2. Status, Nature and Intensity of HWC

HWC in Bagmati province is widespread, severe and spatially heterogeneous. Crop damage was the most dominant form of conflict type, affecting all surveyed households, with monkeys (94.6% of respondents), wild boars (responsible for 46.7% of crop-raiding incidents), deer, and porcupines identified as the principal crop-raiding species. Livestock depredation was the second most prevalent conflict type that was reported by 81.1% of households, primarily caused by leopards and jackals while chickens constituted the highest proportion of livestock losses (28.6%). Although human injuries and fatalities occurred less frequently which was concentrated mainly in Chitwan where, rhinoceroses (35%), elephants (30%), and tigers (25%) accounted for most attacks. The conflict is spatially concentrated in farmlands and forest-edge habitats, with approximately 84% of incidents occurring within 1 km of forest edges, and temporally, wildlife sightings are most common during morning and evening hours. The economic burden of HWC was considerable with Chitwan experiencing the highest annual losses, followed by Makwanpur, Lalitpur, Kathmandu, and Dhading. Local communities perceived that conflicts were primarily driven by insufficient food availability within forests (64.9%), increasing wildlife populations (48.6%), and agricultural land abandonment (27.0%) (Table 2). To reduce losses, households predominantly relied on traditional and labor-intensive mitigation measures, including guarding, dogs, and catapults. Collectively, these findings demonstrate that HWC in Bagmati Province is not only an ecological

challenge but also a significant socio-economic issue that requires integrated landscape-level planning, improved habitat management, and species-specific mitigation strategies.

Table 2: Respondents' perceptions of the major factors contributing to human–wildlife conflict in the study area.

Perceived cause of conflict	Frequency	Percentage(%)
Lack of food in forests/jungle	24	64.9
Increase in wildlife population	18	48.6
Land abandonment and reduced forest-product harvesting	10	27.0
No fear of humans (especially monkeys)	8	21.6
Habitat loss and human encroachment	6	16.2
Increased shrub/forest density	4	10.8
Old animals shifting to farmland	4	10.8
High reproductive rate of wildlife	3	8.1
Lack of barriers/fencing (e.g., concrete walls)	3	8.1
Road construction and infrastructure development	1	2.7
Illegal translocation/dumping of monkeys	2	5.4
Loss of native fruit trees	1	2.7

The conflict is concentrated primarily in agricultural landscapes, forest edges, and settlements adjoining wildlife habitats, where crop damage was reported by all surveyed households and livestock depredation by 81.1% of respondents. The is driven primarily by a insufficient food resources in forests and increasing wildlife populations. Monkeys, wild boars, jackals, and leopards are the most frequently reported conflict-causing species, with monkeys being identified as the most problematic. Spatially, the conflict is not uniform; Chitwan District emerges as the primary hotspot, experiencing the highest levels of human casualties, livestock losses, and economic damages, while other districts like Dhading, Makwanpur, and Nuwakot also face significant, though less severe, pressures. The economic impact is substantial, with communities suffering significant annual losses, and while traditional mitigation methods like guarding are common, the report highlights an urgent need for integrated, landscape-level management strategies to promote coexistence. Frequent wildlife sightings and substantial economic losses suggest that the conflict is both severe and recurrent, requiring immediate and long-term management interventions to promote human-wildlife coexistence.

The intensity of HWC varied considerably across districts and species. In Chitwan, particularly outside the protected areas, rhinoceros, elephants, wild boars, and deer were identified as the major crop-raiding species. Human injuries were predominantly caused by rhinoceros (35%), followed

by elephants (30%) and tigers (25%), highlighting the significant threat posed by large mammals to local communities.

Elephant-related conflicts were among the most severe, causing extensive crop losses and property destruction. In Chitwan, elephants damaged houses, grain storage facilities, sheds, and other infrastructure, resulting in losses exceeding NPR 375,000 for grain storage alone. Similarly, rhinoceros-related crop damage exceeded NPR 983,000, while tiger-related damages surpassed NPR 1.4 million. Seasonal patterns showed that elephant conflicts peaked during the monsoon cropping period, with approximately 32% of incidents occurring in July and 19% in June.

3.1.3 Wildlife Species Responsible for HWC

The province supports 92 non-volant mammal species, including globally threatened large mammals (Anex 7) however 19 species are responsible human-wildlife conflict which also reported in the news media too. Most species (66%) are categorized as Least Concern, whereas 34% fall within threatened or Near Threatened categories, emphasizing the province's conservation importance. Questionnaire surveys identified monkeys (94.6%) as the most problematic wildlife species, followed by jackals (67.6%), wild boars (54.1%), leopards (43.2%), porcupines (40.5%) and deer (37.8%) (Table 3). Rhinoceroses and tigers were reported less frequently because of their localized distributions but were responsible for disproportionately higher human casualties and economic losses. Crop damage was mainly caused by monkeys, wild boars, porcupines and deer, whereas leopards dominated livestock depredation. Newspaper reviews further indicated that rhinoceroses, elephants and tigers generated the highest cumulative economic impacts despite lower reporting frequency. These findings indicate that management strategies should be species-specific and tailored to the ecological behavior and spatial distribution of conflict-causing wildlife.

Table 3: Wildlife species causing conflict commonly reported by respondents during questionnaire survey (including Focal Group discussion: FGD) and field observation.

Wildlife species	Respondent responses in HH survey (%)	Respondent response responses in FGD (%)
Monkey	94.6	93.7
Jackal	67.6	75
Wild boar	54.1	93.7
Leopard	43.2	56.25
Porcupine	40.5	87.5
Deer (including Chital)	37.8	50
Rhino	21.6	25
Mongoose	13.5	
Tiger	8.1	50
Squirrel	5.4	50
Wild cat	2.7	
Yellow-throated marten	2.7	
Fox	2.7	25

Bird species	2.7
Goat (reported as crop-raiding)	2.7

- Source: Field survey, 2026

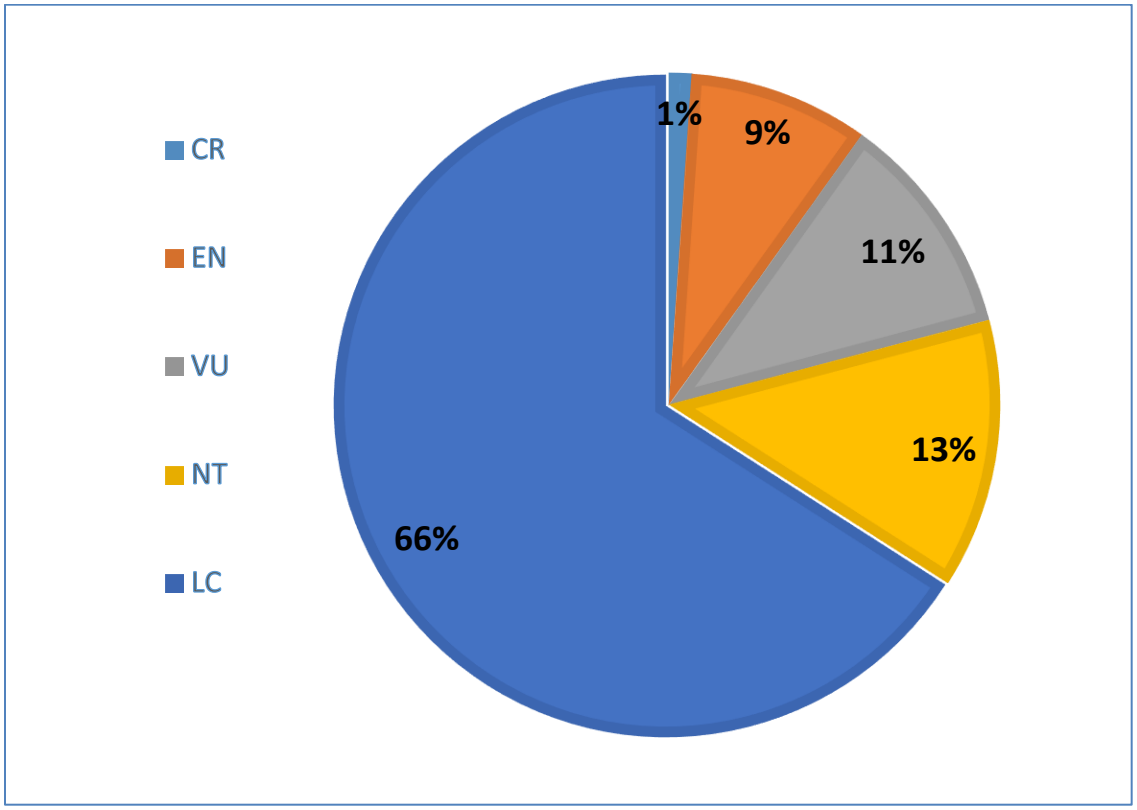

Figure 3. Proportional distribution of conservation status of non-volant mammalian species recorded in Bagamati Province, Nepal.

Other species, including mongoose, squirrels, foxes, wild cats, and yellow-throated martens, were reported by a small proportion of the respondents.

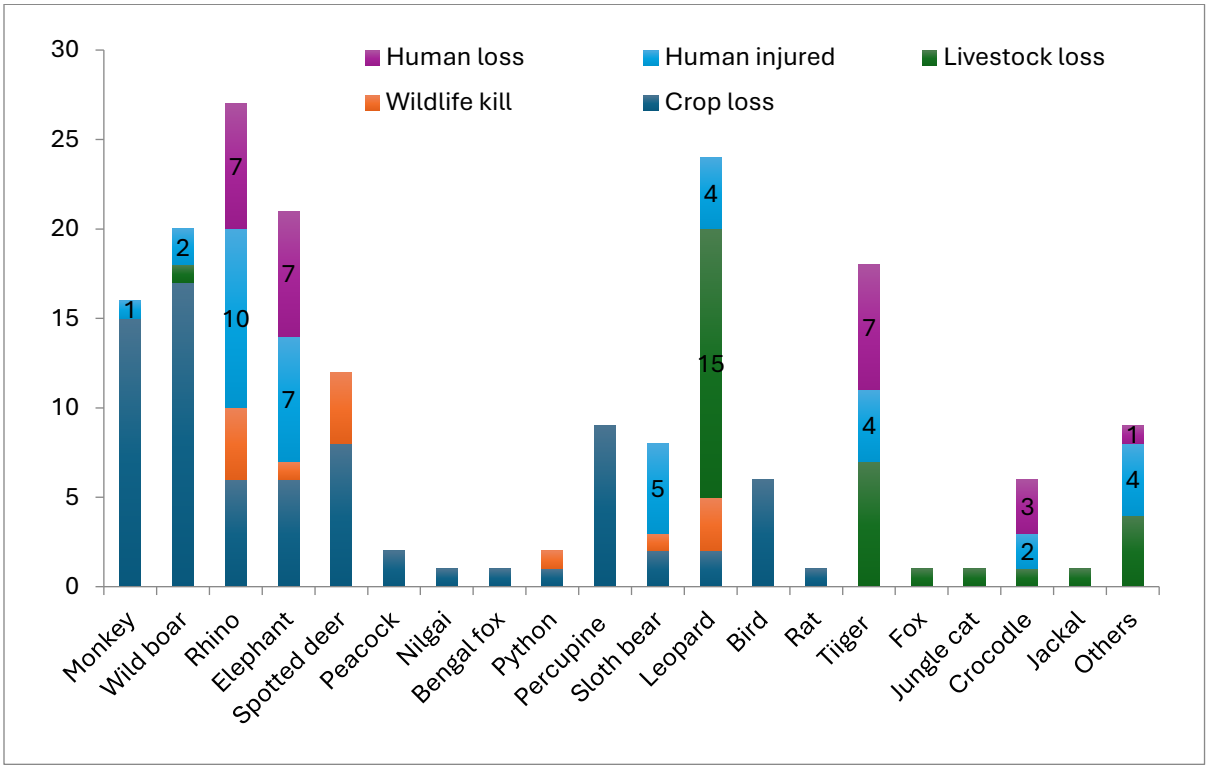

Figure 4. HWC impact accounts by species published in newspapers (2018-2024)

3.2 Spatial-Temporal Pattern of HWC

3.2.1 Spatial pattern

The spatial distribution of human–wildlife conflict (HWC) in Bagmati Province reveals marked geographic heterogeneity, reflecting differences in wildlife diversity, habitat configuration, land-use patterns, and human settlement distribution. Conflict incidents were reported from all thirteen districts, demonstrating that HWC is a province-wide issue rather than being restricted to protected areas. The findings reveal substantial spatial variation in conflict intensity, with Chitwan District consistently experiencing the highest levels of human casualties, livestock depredation, and economic losses. This pattern is unsurprising given that Chitwan contains extensive forest habitats, supports high densities of large mammals including tigers, rhinoceroses, elephants, and leopards, and is characterized by a densely populated buffer zone where communities depend heavily on agriculture and livestock husbandry.

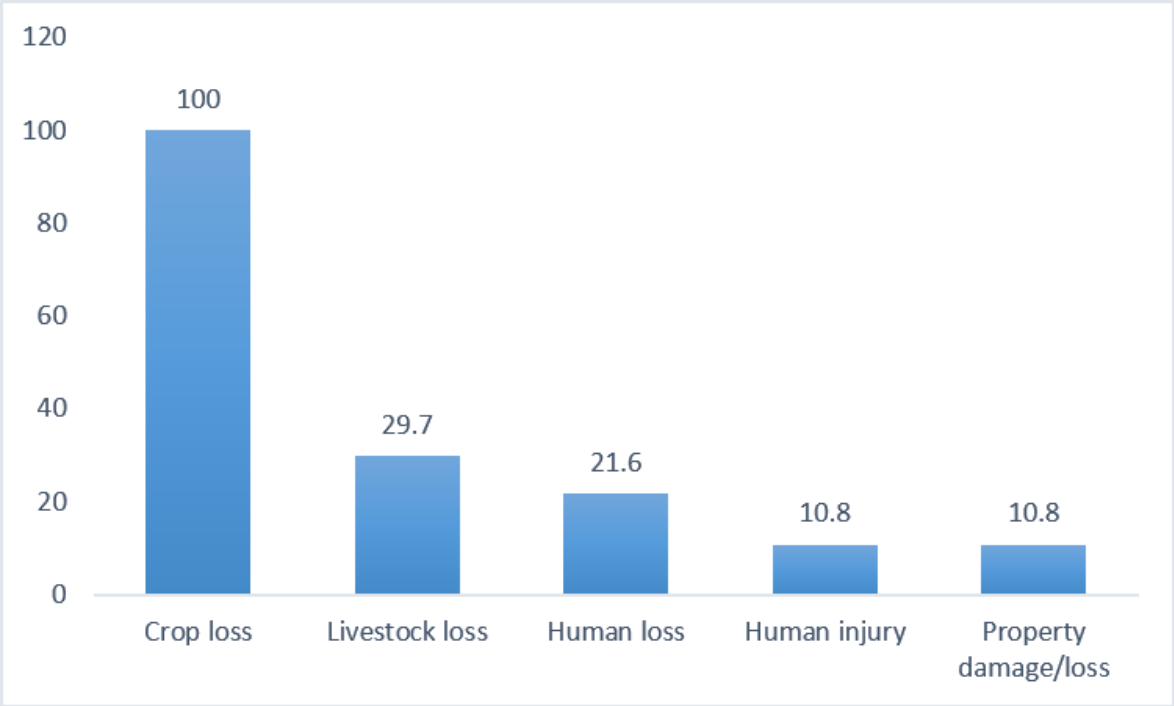

Figure 5. Types of losses experienced due to wildlife.

Farmlands were the primary locations of conflict, and crop loss was the most frequently reported consequence. Source: Field survey 2026

3.2.2 Distribution of HWC in districts

Human–wildlife conflict was documented across all districts of Bagamati Province, although its magnitude differed considerably. Chitwan emerged as the most severely affected district, recording 146 human deaths (85.4% of all fatalities), 78 human injuries, and the highest average livestock depredation (78 cases). Dhading, Makwanpur, Nuwakot, Rasuwa, Dolakha, Sindhupalchok, and Ramechhap experienced moderate conflict levels, whereas Kathmandu Valley districts reported comparatively fewer incidents, mainly involving leopards and monkeys. Human casualties resulting from wildlife attacks were highest in Chitwan District, which recorded markedly greater numbers of both deaths and injuries than all other districts. Outside Chitwan, injuries generally exceeded fatalities, with Dhading, Ramechhap, Nuwakot, and Rasuwa reporting comparatively high numbers of injured individuals. Livestock depredation was also a major consequence of wildlife conflict throughout the province. Chitwan reported the highest average number of livestock attacks (78 cases), followed by Dhading (48), Makwanpur (45), and Nuwakot (42). In contrast, Ramechhap and Rasuwa recorded the lowest numbers of livestock attacks.

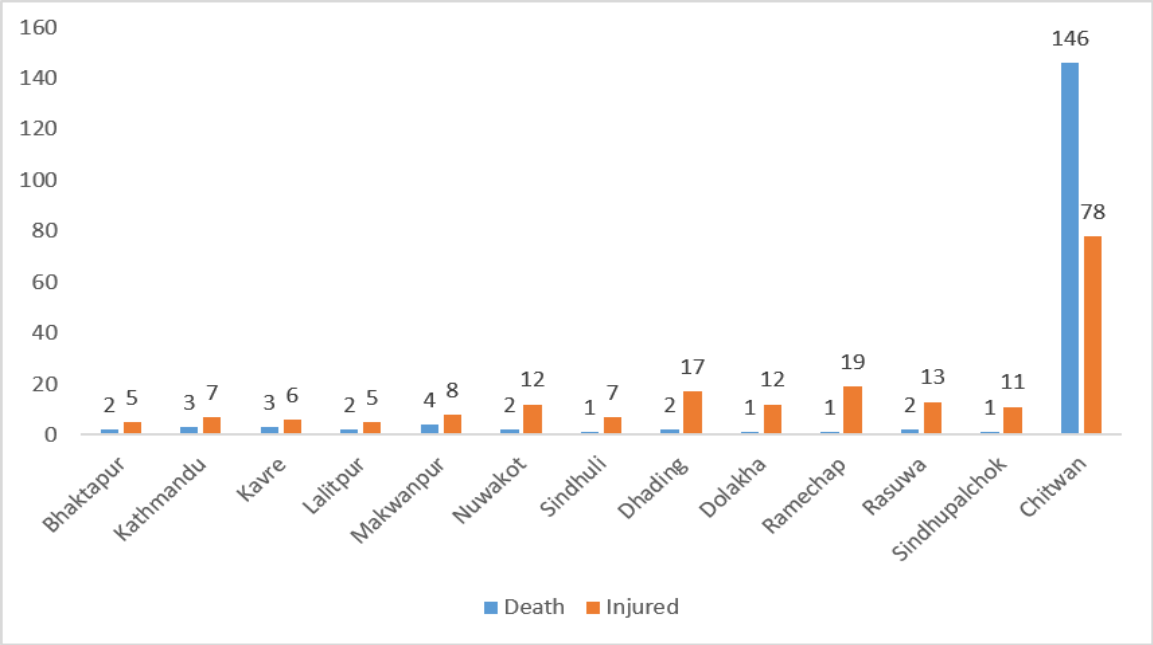

Figure 6. Human Deaths and Injuries Caused by Wildlife Attacks.

3.2.3. Habitat Distribution of Human–Wildlife Conflict

Wildlife observations were most frequently reported in habitats associated with agricultural lands and forest edges Survey respondents indicated that conflicts occurred primarily in farmlands (42.9%) and in areas near houses adjacent to farmlands (31.4%). Crop loss was the most common consequence of wildlife conflict, affecting all respondents, followed by livestock loss and livelihood-related impacts. Combinations of farmland, forest edge, and settlement areas received the highest number of responses, highlighting the importance of ecotonal habitats as conflict-prone zones. About 84% of incidents occurred within 1 km of forest edges.

Conflict occurred predominantly in agricultural landscapes adjoining forests. Household surveys showed that 42.9% of conflicts occurred directly in cultivated fields and 31.4% around houses adjacent to farmland. Approximately 84% of reported incidents occurred within one kilometre of forest edges, confirming that forest–agriculture interfaces represent the principal conflict zones

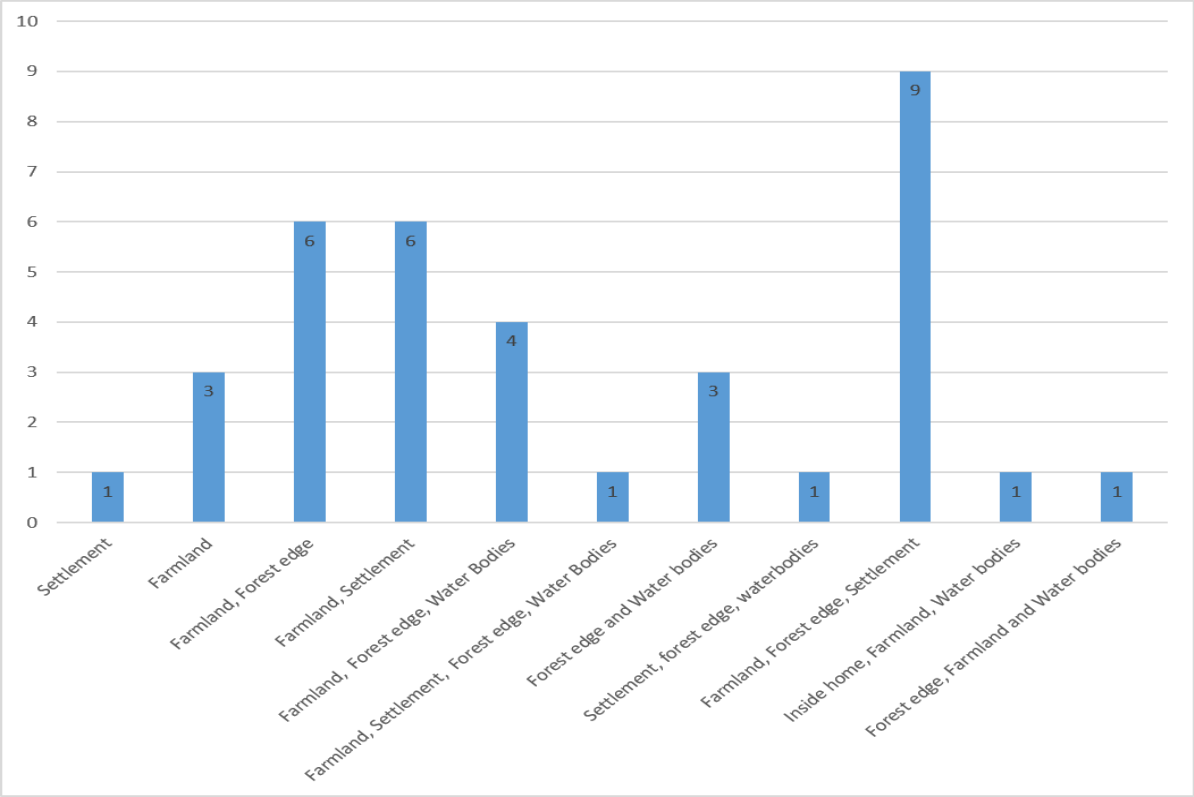

Figure 7. Frequent observed habitat types of wildlife based on the view.

Farmlands and forest-edge habitats were the most reported locations, followed by settlements and water bodies (Source: Field survey 2026).

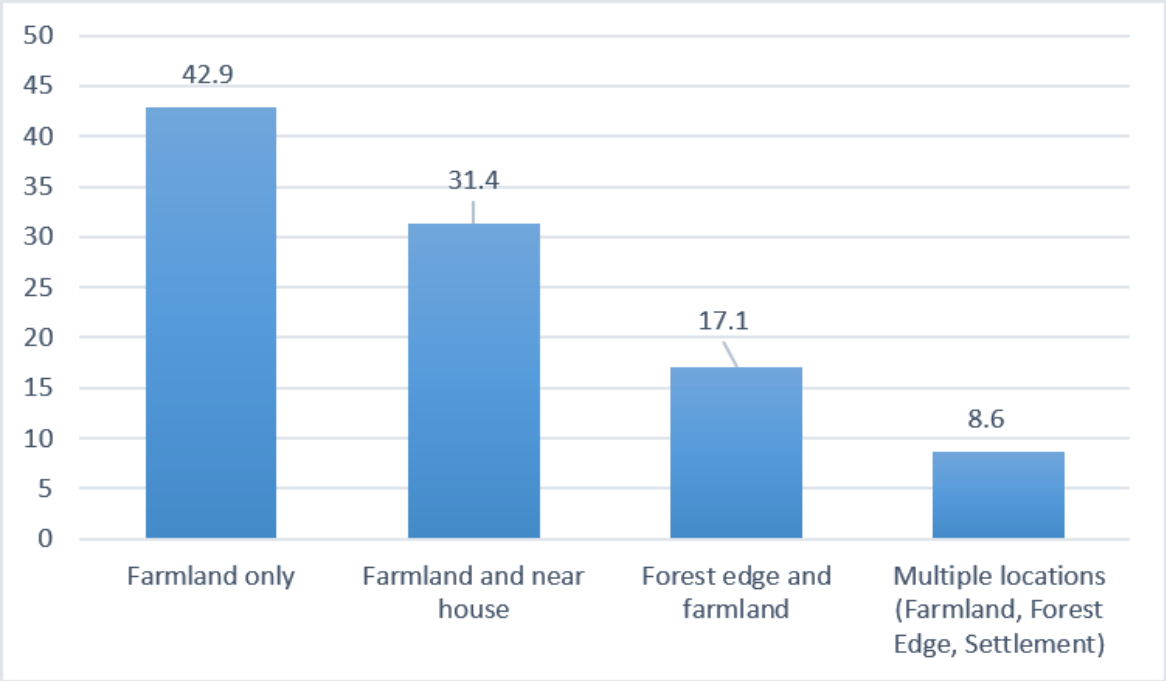

Figure 8. Human–wildlife conflict characteristics reported by respondents.

3.2.4. Spatial Distribution and hotspot of HWC

Human casualties showed pronounced spatial clustering. Chitwan represented the highest-risk landscape where rhinoceroses, elephants, and tigers caused most fatalities and injuries. Mid-hill districts generally experienced fewer deaths but relatively higher numbers of non-fatal injuries caused by leopards, bears, monkeys, and wild boars. Three broad conflict zones were identified: high-risk lowland (Chitwan), moderate-risk mid-hills, and an emerging peri-urban conflict zone in Kathmandu Valley.

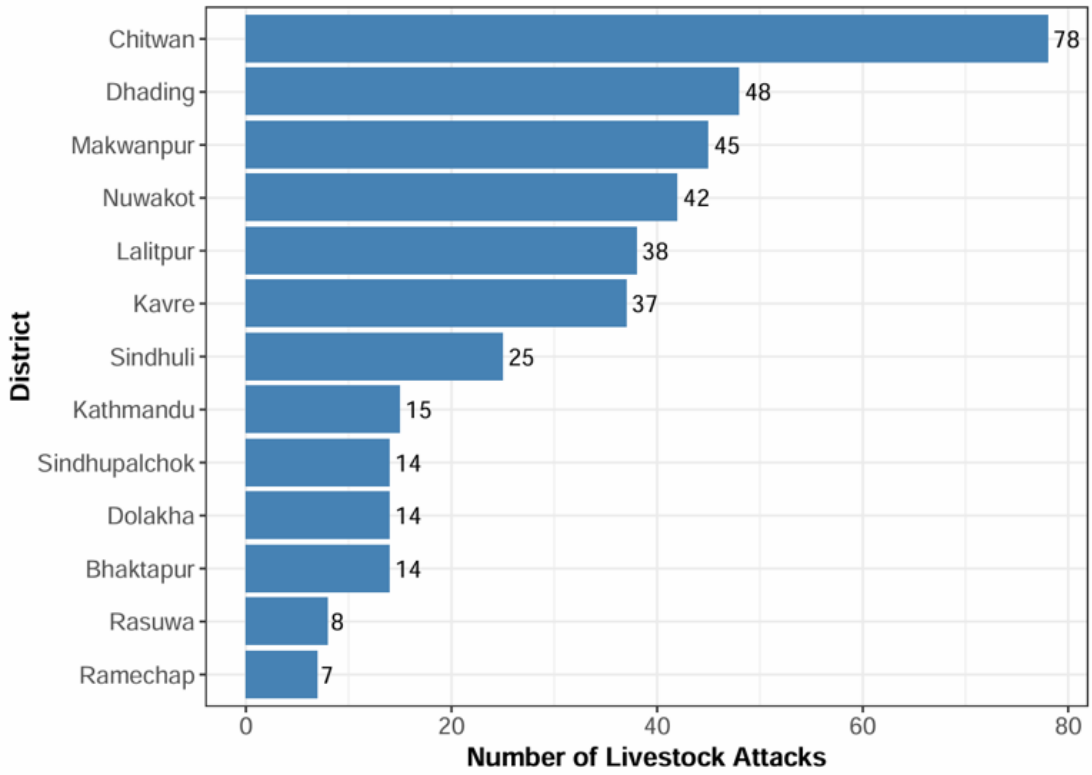

Figure 9. District-wise Average Number of Livestock Attacks by Wildlife

The Getis–Ord Gi* hotspot analysis identified significant spatial clustering of human–wildlife conflict (HWC) across Bagamati Province. Chitwan emerged as the strongest hotspot (99% confidence), indicating the highest concentration of HWC incidents. Makawanpur, Dhading, and Sindhuli were identified as significant hotspots at the 95% confidence level, while Ramechhap and the eastern part of Dolakha showed 90% confidence hotspots. In contrast, Rasuwa, Kathmandu, Bhaktapur, and Kavrepalanchok formed significant 99% confidence cold spots, with Sindhupalchok classified as a 90% confidence cold spot. These findings demonstrate that HWC is concentrated primarily in the southern and western districts adjacent to protected areas and wildlife corridors, highlighting priority areas for targeted conflict mitigation and conservation management.

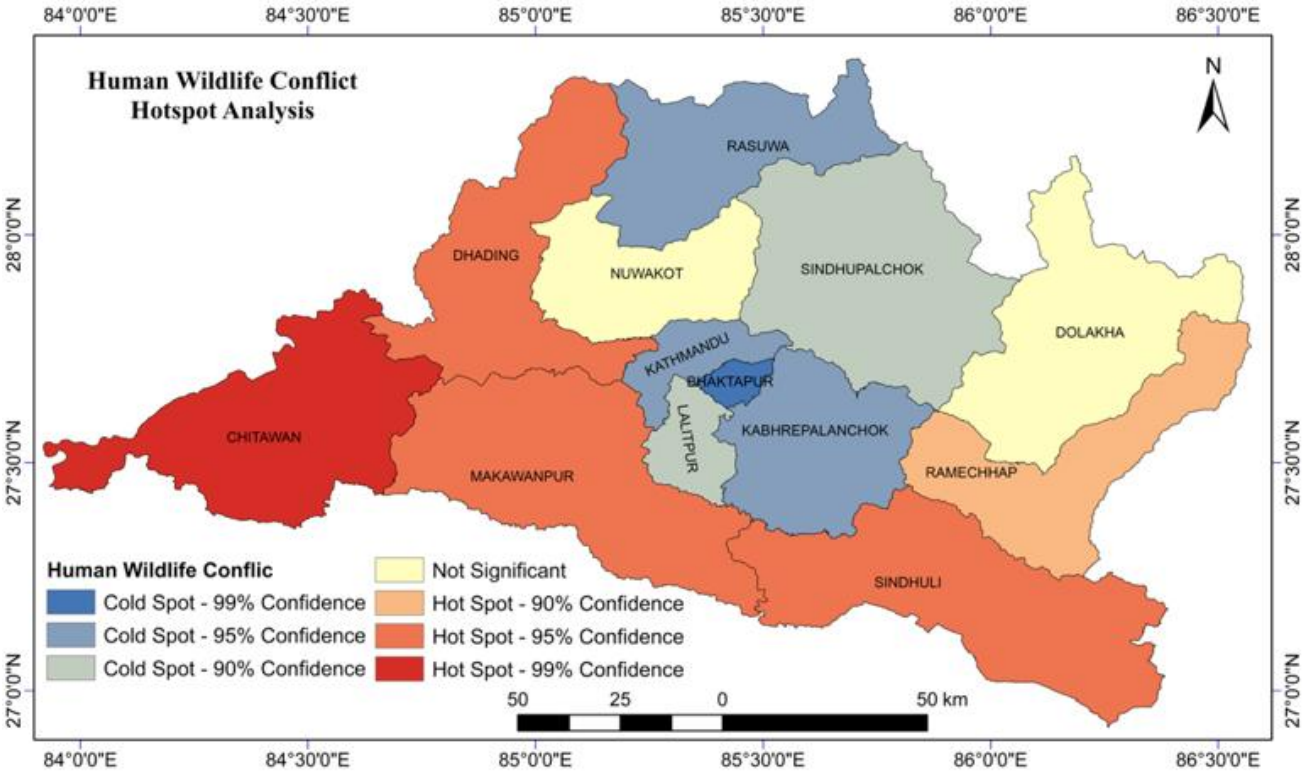

Figure 10. District-level spatial hotspot analysis of human–wildlife conflict incidents

The hotspot analysis at the municipality level revealed substantial spatial heterogeneity in human–wildlife conflict (HWC) across Bagmati Province. Significant 99% confidence hotspots were concentrated in the northern Chitwan–Makawanpur landscape, with additional 95% and 90% confidence hotspots extending into adjacent municipalities, indicating localized clusters of high HWC incidence. The strongest 99% confidence hotspots were concentrated in Thaha, Indrasarowar, Kailash, Raksirang, Manahari, Hetauda, Bakaiya which is extending into Rapti, Kalika, and Bharatpur municipalities of Chitwan. Conversely, 99%, 95%, and 90% confidence cold spots were predominantly distributed across the northern mountain districts and parts of central Bagmati, reflecting significantly lower conflict occurrence. Additional 95% and 90% confidence hotspots occurred in Galchhi, Gajuri, Benighat Rorang, Tripurasundari (Dhading), and Manthali (Ramechhap). In contrast, Gosaikunda, Uttargaya, Kalinchok, Gaurishankar, Melamchi, Panchpokhari Thangpal, and Kathmandu Metropolitan City formed significant cold spots. Overall, HWC hotspots were concentrated along protected area boundaries, forest corridors, and agricultural landscapes, whereas urban and high-elevation municipalities exhibited significantly lower conflict intensity.

Most municipalities were classified as not significant, suggesting no distinct spatial clustering. Overall, HWC is highly localized, with hotspot municipalities primarily occurring near protected areas, forest edges, and wildlife corridors, emphasizing priority locations for targeted mitigation and conservation interventions.

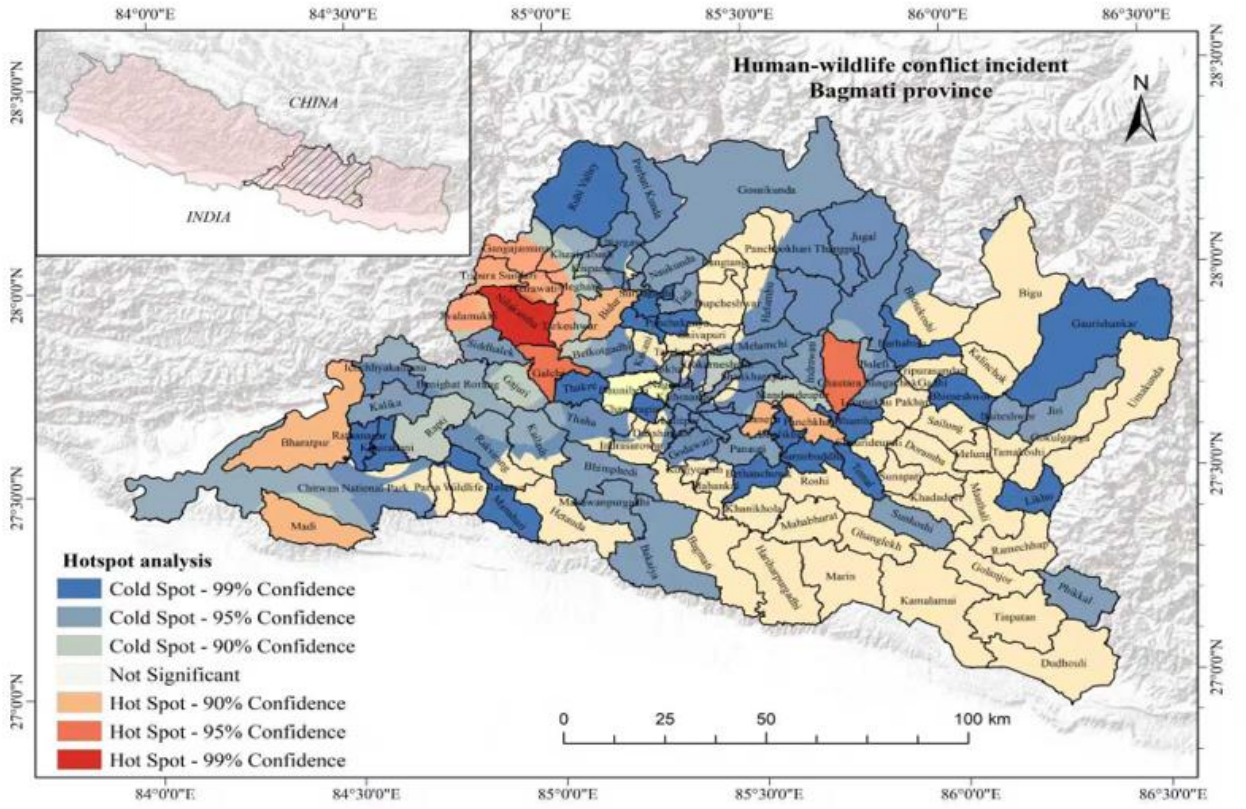

Figure 11. Municipality-level spatial hotspot analysis of human–wildlife conflict

Based on kernel density mapping, the spatial distribution of human–wildlife conflict (HWC) intensity revealed distinct municipality-level clusters across Bagmati Province. High HWC intensity (red–orange) was concentrated in Rapti, Kalika, Bharatpur, Madi (Chitwan); Hetauda, Manahari, Raksirang, Bakaiya, Bagmati, and Thaha (Makawanpur); Gajuri, Galchhi, Benighat Rorang, and Tripurasundari (Dhading); Khaniyabas (Dhading); Indrasarowar (Makawanpur); and Manthali (Ramechhap) municipalities. Moderate-intensity zones extended into municipalities of Sindhuli, Kavrepalanchok, Dolakha, and Sindhupalchok. In contrast, northern high-elevation municipalities such as Gosaikunda, Uttargaya (Rasuwa), Gaurishankar, and Bigu (Dolakha) exhibited low HWC intensity.

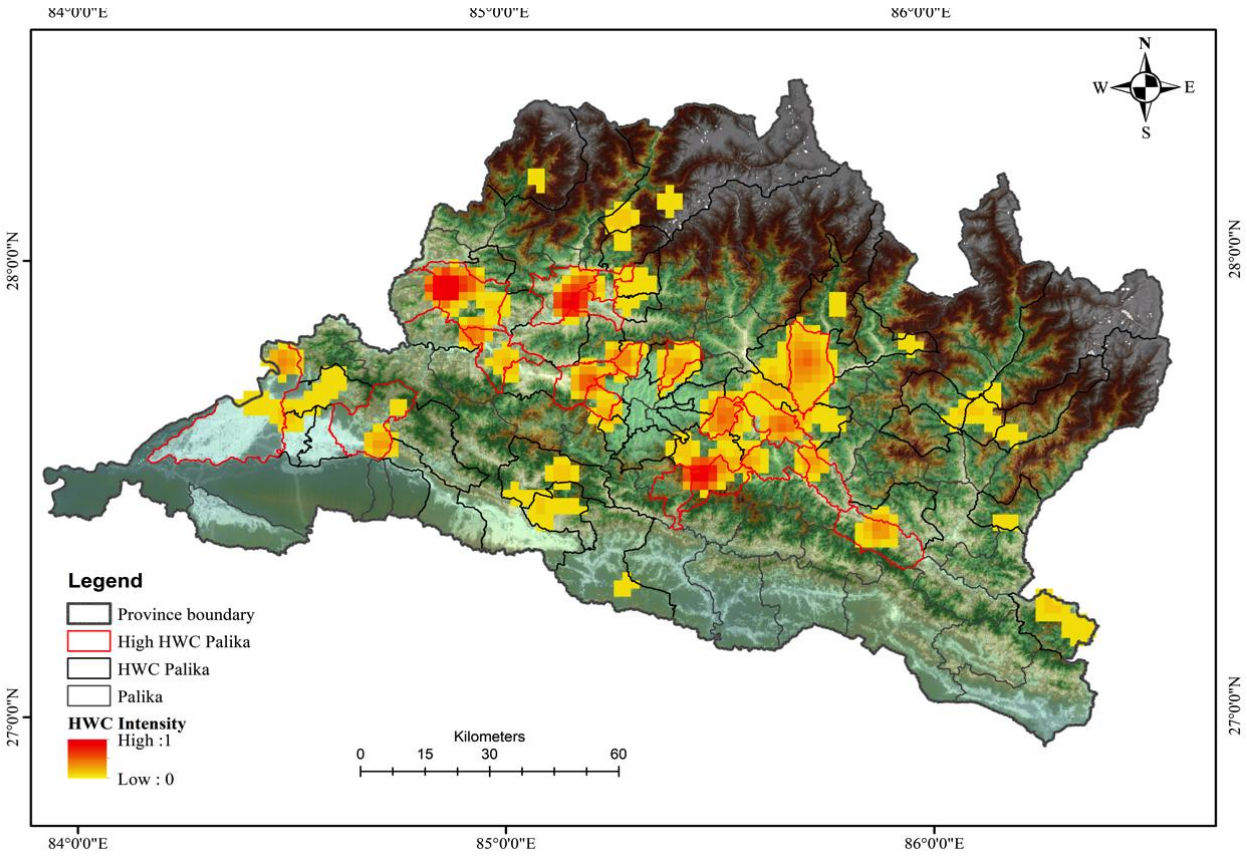

Figure 12. Spatial distribution of HWC across Palikas (Kernel Density Mapping)

3.2.3 Temporal Pattern

The results indicate fluctuating HWC intensity over time, with 2022 representing the most severe year for conflict incidents and livestock depredation, while 2016 recorded the highest human mortality and 2017 the highest number of human injuries. Human–wildlife conflict (HWC) showed marked temporal variation between 2015 and 2025. Of the 1,833 recorded HWC incidents, 2022 accounted for the highest proportion (205 incidents; 11.2%), followed by 2016 (197; 10.7%) and 2017 (191; 10.4%), whereas 2018 recorded the lowest proportion (121; 6.6%). Among 170 human fatalities, the highest occurred in 2016 (21 deaths; 12.4%), while the lowest was in 2020 (11; 6.5%). Of the 1,472 livestock losses, 2022 contributed the largest share (182; 12.4%), followed by 2023 and 2016 (152 each; 10.3%), whereas 2018 recorded the fewest (79; 5.4%). Human injuries totaled 191 cases, peaking in 2017 (28; 14.7%) and 2018 (26; 13.6%), but declining to the lowest level in 2022 (9; 4.7%) (Table 5).

Table 4: Estimated number of human-wildlife conflict incidents in Bagmati Province.

Years	HWC incidents	Human loss	Livestock loss number	Human injuries
2015	184	19	147	18
2016	197	21	152	24
2017	191	17	146	28
2018	121	16	79	26
2019	177	14	146	17
2020	130	11	99	20
2021	141	13	117	11
2022	205	14	182	9
2023	180	15	152	13
2024	173	17	142	14
2025	134	13	110	11

Among the 37 respondents, morning and evening were the most frequently reported periods for human–wildlife conflict (29.7%), followed by anytime (21.6%). Evening only and afternoon each accounted for 16.2%, while night represented 10.8%. Morning only was least reported (5.4%), indicating conflict occurs predominantly during dawn and dusk (Table 4)

Table 5: Time of day when respondents commonly observe wildlife in and around agricultural lands

Observation period	Frequency	Percentage (%)
Morning and Evening	11	29.7
Anytime	8	21.6
Evening only	6	16.2
Afternoon (including Afternoon & Evening)	6	16.2
Morning only	2	5.4
Night (including Night & Evening combinations)	4	10.8
Total	37	100

3.3 Socio-ecological Drivers of Human-Wildlife Conflict

Human–wildlife conflict (HWC) in Bagamati Province is driven by a complex interaction of ecological processes, landscape characteristics, wildlife population dynamics, and human socio-

economic activities. Information obtained from household surveys, focus group discussions, key informant interviews, field observations, and secondary sources indicates that increasing conflict cannot be attributed to a single factor. Instead, multiple interconnected drivers influence wildlife movement, increase contact between humans and wildlife, and elevate the risk of crop damage, livestock depredation, property destruction, and human casualties.

3.3.1. Perceived Causes of Human–Wildlife Conflict

Most respondents (64.9%) identified the lack of food resources within forests as the primary driver of HWC, followed by increasing wildlife populations (48.6%) and agricultural land abandonment (27.0%). Other important factors included reduced fear of humans by wildlife (21.6%), habitat loss and human encroachment (16.2%), increased shrub density (10.8%), movement of older animals into farmland (10.8%), high reproductive rates of wildlife (8.1%), inadequate fencing (8.1%), illegal translocation of monkeys (5.4%), road construction (2.7%), and loss of native fruit trees (2.7%). These findings indicate that local communities perceive HWC as the result of interacting ecological and anthropogenic factors.

3.3.2. Habitat Characteristics Influencing Conflict

Conflict was concentrated along forest–agriculture interfaces, where approximately 84% of reported incidents occurred within one kilometre of forest edges. Agricultural fields provide abundant food resources for herbivores and omnivores, while nearby forests provide cover and movement corridors. Community forests, regenerating secondary forests, and riparian habitats further facilitate wildlife movements beyond protected areas, increasing interactions with nearby settlements.

3.3.3. Human Land-use Practices

Agriculture and livestock husbandry strongly influenced conflict occurrence. Seasonal cultivation of paddy, maize, vegetables, and fruit crops attracted wildlife, whereas free-ranging livestock, particularly chickens and goats, were vulnerable to predation by leopards and jackals. Dependence on forests for fuelwood, fodder, grazing, and non-timber forest products also increased the likelihood of encounters between people and wildlife. Expanding roads, settlements, and infrastructure fragmented habitats and altered wildlife movement routes.

3.3.4. Wildlife Behaviour and Adaptation

Several conflict-causing species have adapted successfully to human-modified landscapes. Monkeys have become highly habituated to human presence and frequently raid crops during daylight hours. Wild boars increasingly forage in cultivated fields during twilight and night, while leopards utilize community forests and peri-urban habitats to prey on livestock. Elephants and rhinoceroses exhibit seasonal movements into agricultural lands following crop maturation, resulting in predictable conflict hotspots.

3.3.5. Socio-economic Factors

Communities dependent on agriculture and livestock were most vulnerable to HWC because wildlife damage directly affected household income and food security. Most respondents had only primary-level education, and limited financial resources constrained investment in effective mitigation measures such as predator-proof livestock sheds, electric fencing, and permanent barriers. Households located close to forests experienced more frequent wildlife encounters and higher economic losses.

3.3.6. Institutional and Management Factors

Respondents highlighted delayed compensation, inadequate technical support, limited awareness programmes, and weak institutional coordination as factors aggravating HWC. Although wildlife conservation has contributed to increasing wildlife populations, investments in conflict prevention and community support have not expanded at the same pace. Strengthening collaboration among government agencies, local communities, and conservation organizations was widely recommended.

3.3.5. Respondent perceived Major factors for HWC

The majority of respondents identified a lack of food resources in forests as the primary driver of human–wildlife conflict, reported by 64.9% of respondents. Nearly half (48.6%) perceived increasing wildlife populations as a major cause of conflict. Other commonly reported factors included land abandonment and reduced harvesting of forest products (27.0%), loss of fear of humans by wildlife, particularly monkeys (21.6%), and habitat loss and human encroachment (16.2%). Less frequently reported causes included increased shrub density, movement of older animals into farmlands, high reproductive rates, inadequate barriers, infrastructure development, and the translocation of monkeys (Table 6).

Table 6: Respondents' perceptions of the major factors contributing to human–wildlife conflict in the study area.

Perceived cause of conflict	Frequency	Percentage (%)
Lack of food in forests/jungle	24	64.9
Increase in wildlife population	18	48.6
Land abandonment and reduced forest-product harvesting	10	27.0
No fear of humans (especially monkeys)	8	21.6
Habitat loss and human encroachment	6	16.2
Increased shrub/forest density	4	10.8
Old animals shifting to farmland	4	10.8
High reproductive rate of wildlife	3	8.1

Lack of barriers/fencing (e.g., concrete walls)	3	8.1
Road construction and infrastructure development	1	2.7
Illegal translocation/dumping of monkeys	2	5.4
Loss of native fruit trees	1	2.7

Respondents identified lack of food resources within forests as the most important driver of conflict, followed by increasing wildlife populations. These perceptions are ecologically plausible and consistent with studies suggesting that habitat degradation, altered forest composition, and declining availability of preferred forage can encourage wildlife to utilize agricultural landscapes. The reported importance of land abandonment is particularly noteworthy. Rural outmigration and changing agricultural practices have led to the abandonment of farmlands in many parts of Nepal, promoting shrub encroachment and secondary forest development. Such landscapes may provide suitable habitat and movement corridors for wildlife while simultaneously increasing opportunities for conflict near remaining cultivated fields.

Other associated causes aggravated HWC in Bagamati are

- High human population density (including major urban centers like Kathmandu, Bharatpur, Hetauda)
- Forest fragmentation and proximity of settlements to forest edges
- Dependence on forest resources (fuelwood, grazing, farming)
- Poor waste management that attracts wildlife
- Limited awareness and preparedness among local communities

3.4 Impact of HWC

The economic impacts of human–wildlife conflict varied considerably among districts. Most respondents (64.9%) perceived insufficient food resources within forests as the leading cause of human–wildlife conflict (HWC), followed by increasing wildlife populations (48.6%). Other frequently reported drivers included land abandonment and reduced forest resource extraction (27.0%), reduced fear of humans by wildlife, particularly monkeys (21.6%), and habitat loss and human encroachment (16.2%). Additional contributing factors comprised dense shrub growth, movement of older animals into agricultural fields, high reproductive rates, inadequate fencing, infrastructure expansion, and wildlife translocation. Respondents further associated HWC with high human population density, forest fragmentation, settlements adjacent to forests, dependence on forest resources, poor waste management, and limited community awareness and preparedness, highlighting the multifaceted socio-ecological drivers of conflict in Bagmati Province The composition of livestock losses differed among livestock type. Chickens accounted for the largest proportion of livestock killed by wildlife (28.6%), followed by other livestock categories (26.4%)

and goats (13.9%). Losses of dogs, ducks, buffalo, yaks, sheep, and cattle were comparatively lower.

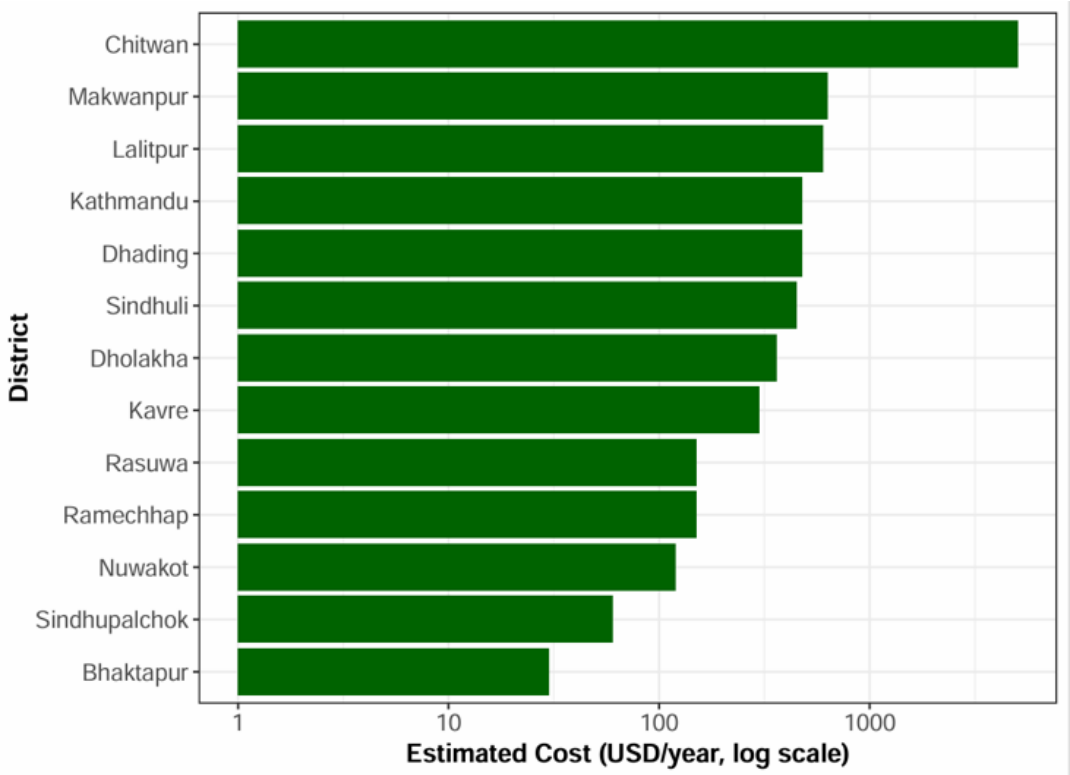

Figure 13. Estimated loss cost (real data) incurred by wildlife attack

The economic consequences of conflict were substantial, particularly in Chitwan, Makwanpur, Lalitpur, Kathmandu, and Dhading. Economic losses associated with crop damage, livestock depredation, property destruction, and reduced agricultural productivity can significantly affect household well-being, particularly among low-income farming communities. Importantly, direct financial losses often underestimate the true costs of conflict.

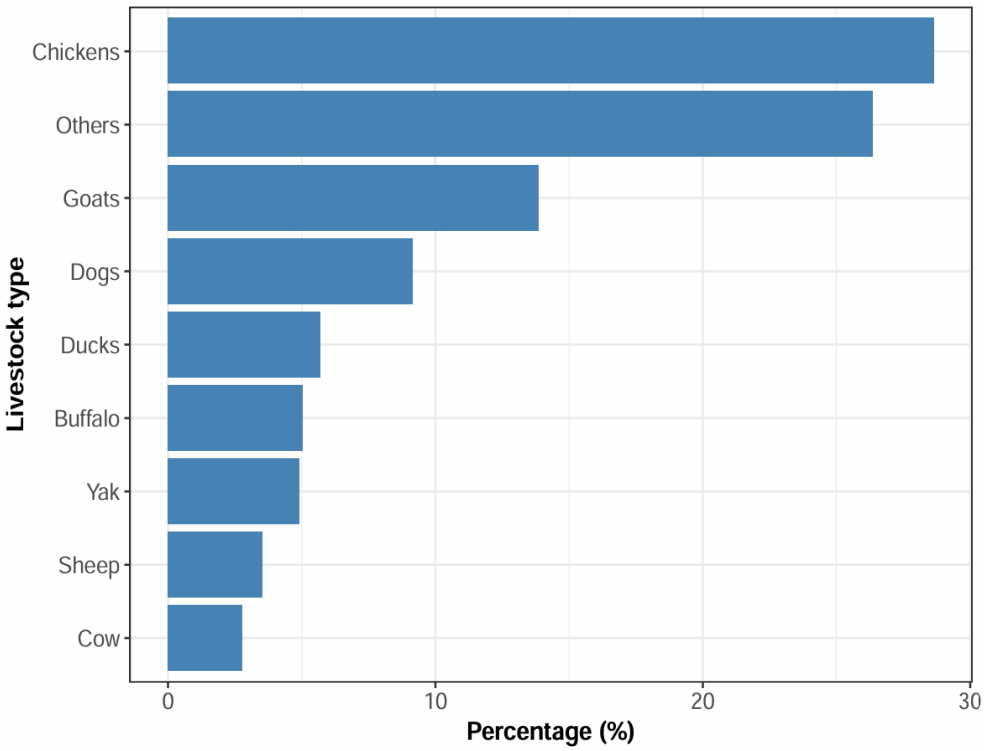

Figure 14. Estimated loss cost (%) incurred by wildlife attack

Households may also experience indirect impacts such as lost labor, reduced school attendance, increased guarding effort, and psychological stress associated with living in conflict-prone environments. These hidden costs can contribute to negative perceptions of wildlife conservation and may undermine community support for conservation initiatives if compensation and mitigation programs are inadequate.

Questionnaire responses revealed that most respondents had primary-level education, while relatively few had higher education qualifications . Wildlife sightings were reported predominantly on a daily basis, indicating frequent interactions between local communities and wildlife.

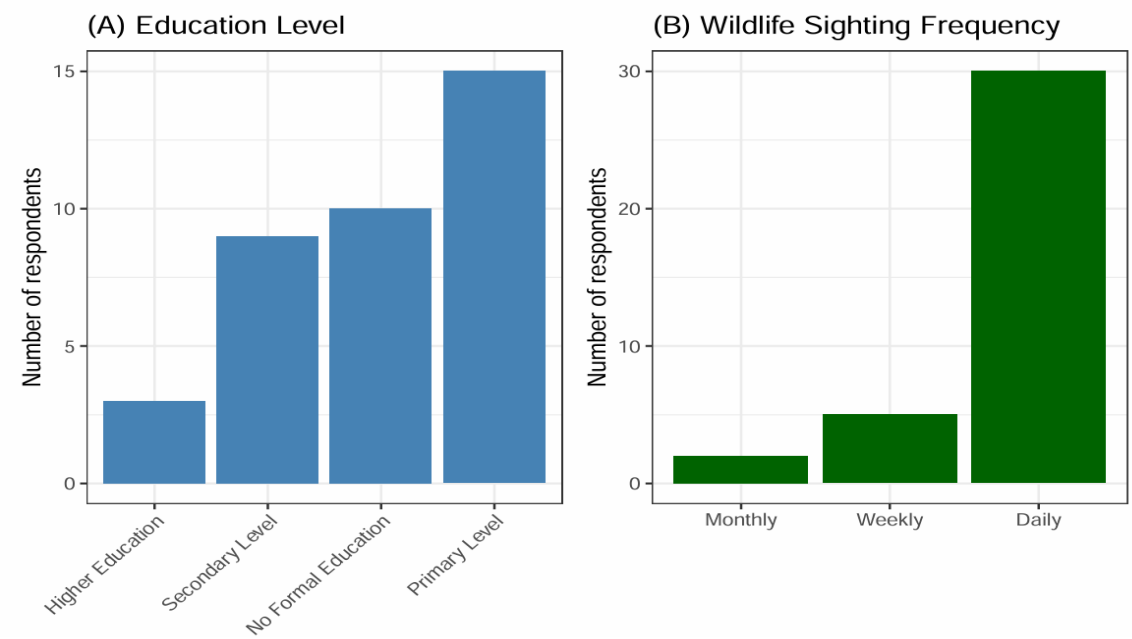

Figure 15. (left) Characteristics of respondents and wildlife observations. (A) Education level of respondents and (right)

Frequency with which respondents observed wildlife near their homes or farmlands.

Most respondents had primary-level education, and wildlife sightings were reported predominantly on a daily basis. Crop damage was the most commonly reported form of human–wildlife conflict, affecting all respondents (100%). Livestock depredation was also widespread, reported by 81.1% of respondents. In contrast, property damage (8.1%) and human injury (5.4%) were relatively uncommon (Table 7).

Table 7: Types of humans–wildlife conflicts experienced by respondents

Conflict type	Frequency	Percentage (%)
Crop damage	37	100.0
Livestock depredation	30	81.1
Property damage	3	8.1
Human injury	2	5.4

3.5 Measures to reduce HWC

Human–wildlife conflict has encouraged communities across Bagamati Province and communities have been adopting a wide range of traditional and modern mitigation measures. The findings suggested that no single intervention is sufficient to prevent such conflict across the province.

However, the effectiveness of these measures were varied according to wildlife species, landscape characteristics, financial resources, and local participation in the province.

3.5.1. Traditional crop protection measures

To minimize wildlife-related damage, respondents primarily relied on active, non-lethal deterrent measures. Crop guarding was the most frequently adopted strategy, followed by the use of dogs and catapults (Guleli). Other commonly employed measures included noise-making devices, lights, and fencing, whereas community-based watch systems were less widely practiced. Farmers typically guarded fields both day and night, particularly during crop maturation, using watchtowers, temporary shelters, torches, whistles, drums, and other locally available materials. Dogs served as early warning systems by detecting approaching wildlife, while catapults and similar deterrents were used to repel monkeys, wild boars, deer, and porcupines. Although these methods are relatively inexpensive and easy to implement, they are highly labour-intensive and generally less effective against large mammals such as elephants and rhinoceroses. Overall, the findings indicate that HWC in Bagmati Province is concentrated in agricultural landscapes, imposing significant economic, social, and livelihood impacts on local communities.

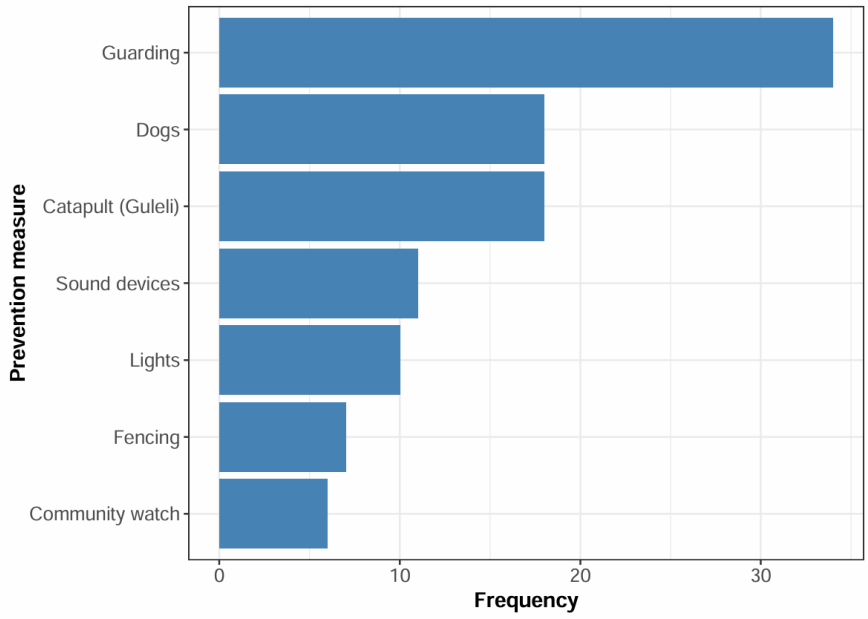

Figure 16. Preventive measures adopted by respondents to reduce human–wildlife conflict.

3.5.2. Physical Barriers and Fencing

Communities employ a range of physical barriers, including bamboo fences, wooden barriers, stone walls, trenches, and wire fencing, to prevent wildlife from entering agricultural fields. In several high-conflict areas surrounding protected areas, electric fencing has proven effective in reducing crop damage when properly installed and maintained. However, its broader implementation remains constrained by high installation, operation, and maintenance costs, making it less accessible to many rural and remote communities with limited financial resources.

3.5.2. Livestock Protection Measures

Livestock owners commonly mitigate predation by keeping animals in secure enclosures at night, reinforcing livestock sheds, closely supervising grazing, and avoiding forest-edge grazing during periods of peak predator activity. Compared with traditional shelters, predator-proof enclosures have proven more effective in reducing livestock losses; however, their widespread adoption remains constrained by high installation and maintenance costs. In addition, vaccination, improved livestock husbandry practices, and collective herding enhance animal health and management, thereby indirectly lowering the risk of predation and contributing to more effective livestock protection.

3.5.3. Challenges Limiting Mitigation Success

Several factors were identified as limiting the effectiveness of existing human–wildlife conflict mitigation measures. These include insufficient financial resources, labour shortages, high maintenance costs, increasing wildlife populations, habitat fragmentation, weak institutional coordination, and limited technical capacity. Respondents also noted that conventional deterrent methods are becoming progressively less effective against habituated species, particularly monkeys and wild boars, while constructing and maintaining elephant-proof barriers requires considerable long-term financial investment. To address these challenges, respondents strongly recommended habitat restoration through fruit-tree planting and improved natural food availability within forests, alongside strengthening physical barriers such as fencing, to reduce wildlife incursions into agricultural lands and minimize crop and livestock losses.

5. Conclusions and Recommendations

5.1. Conclusions

Human–wildlife conflict (HWC) has emerged as a widespread, persistent, and spatially heterogeneous conservation and livelihood challenge across Bagmati Province. The results demonstrate that conflict is concentrated in agricultural landscapes, forest edges, and protected area interfaces, with crop damage (100% of respondents) and livestock depredation (81.1%) representing the dominant forms of loss. Over the 2015–2025 period, 1,833 HWC incidents, 171 human fatalities, 191 human injuries, and 1,472 livestock losses were documented, highlighting the substantial ecological and socio-economic burden of HWC.

Spatial analyses consistently identified Chitwan as the principal HWC hotspot, followed by Makawanpur, Dhading, and Sindhuli, while municipality-level analyses further revealed localized hotspots associated with protected areas, wildlife corridors, and forest–agriculture interfaces. Conflict intensity was greatest within one kilometre of forest edges and occurred predominantly during morning and evening hours, indicating predictable spatial and temporal patterns that can guide targeted management interventions.

The study further demonstrates that HWC is driven by a combination of ecological and anthropogenic factors. Respondents identified insufficient food resources within forests, increasing wildlife populations, land abandonment, forest fragmentation, and human encroachment as the principal drivers of conflict. Monkeys, wild boars, leopards, jackals, rhinoceroses, elephants, and tigers were the major conflict-causing species, although their impacts varied according to species ecology and landscape context.

Although local communities employ traditional mitigation measures such as crop guarding, dogs, fencing, and predator-proof livestock management, their effectiveness is constrained by limited financial resources, weak institutional support, habitat fragmentation, and increasing wildlife populations. Therefore, reducing HWC in Bagmati Province will require an integrated landscape-level approach that combines habitat restoration, improved food availability within forests, strategic fencing, species-specific mitigation, strengthened institutional coordination, timely compensation mechanisms, and active community participation to promote long-term human–wildlife coexistence.

5.2. Recommendations

Based on the findings of this study, several management and policy recommendations are proposed to reduce human-wildlife conflict and promote coexistence between people and wildlife in Bagamati Province.

5.2.1 Improve Wildlife Habitat and Food Availability

The most frequently cited cause of conflict was the lack of food resources within forests. Therefore, habitat restoration programs should prioritize the planting of native fruit-bearing trees, fodder species, and other wildlife food plants within forest ecosystems. Improving habitat quality may reduce the tendency of wildlife to enter agricultural lands in search of food.

5.2.2 Strengthen Physical Barriers and Farm Protection Measures

The construction of effective barriers, including solar-powered electric fencing, predator-proof livestock enclosures, and reinforced boundary walls, should be expanded in high-conflict areas. Particular attention should be given to districts such as Chitwan, Dhading, Makwanpur, and Nuwakot where conflict intensity is highest.

5.2.3. Promote Community-Based Conflict Mitigation

Local communities already rely heavily on guarding, dogs, and other deterrent measures. These efforts should be strengthened through community-based monitoring programs, coordinated guarding systems, and training on effective non-lethal wildlife deterrents. Community participation is essential for sustainable conflict management.

5.2.4. Develop Species-Specific Management Strategies

Different wildlife species cause different types of damage. Crop-raiding species such as monkeys and wild boars require different management interventions than livestock predators such as leopards and jackals. Future management plans should therefore adopt species-specific mitigation strategies rather than a single generalized approach.

5.2.5 Enhance Compensation and Government Support Programs

Timely compensation schemes, livestock insurance programs, and emergency response mechanisms should be strengthened to reduce the economic burden on affected households. Improved support can increase local tolerance toward wildlife and reduce retaliatory actions against threatened species.

5.2.6 Increase Awareness and Environmental Education

Educational programs should target farmers, schools, and local communities to improve understanding of wildlife behavior, conflict prevention techniques, and conservation benefits. Awareness initiatives are particularly important in areas where wildlife sightings occur daily and interactions are frequent.

5.2.7 Establish Long-Term Monitoring and Research Programs

Future studies should quantify wildlife abundance, movement patterns, economic losses, and conflict trends using standardized monitoring approaches. Long-term datasets will improve understanding of conflict dynamics and support evidence-based management decisions across Bagamati Province.

Respondents most commonly recommended increasing food availability for wildlife through planting fruit and other edible trees within community forests (32.4%), followed by the construction of barriers such as fencing and concrete walls (24.3%). Improved wildlife management (18.9%) was also frequently suggested. Overall, respondents emphasized habitat improvement and effective wildlife management as key strategies for reducing human-wildlife conflict (Table 8).

Table 8: Suggested measures for reducing human-wildlife conflict in Bagamati

Suggested solutions	Frequency	Percentage (%)
Plant fruit trees and improve wildlife food resources in community forests, preference to only Sal is a problem	12	32.4
Construct barriers (e.g., concrete walls, fencing, electric fencing)	9	24.3
Improve wildlife management and population control	7	18.9
Government support and intervention	4	10.8
Habitat management (pond construction, edible plants, forest restoration)	4	10.8
Awareness and community engagement	2	5.4
Prevent translocation/dumping of monkeys	1	2.7
Promote sustainable agriculture and reduce land abandonment	1	2.7

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FIELD PHOTOS

Lothar, Chitwan

Dhunibesi, Dhading

Nilkantha, Dhading

Fieldwork in Chitwan and Dhading

Day 1. May 02, 2026 - Shaktikhor

and Uperdanggadhi, Ichhyakamana

Day 2: May 03, 2026 - Shaktikhor (field visit and consultation at Shaktikhor, Chitwan)

Day 3: DFO– Dhading: Visit DFO, Dhading, collected digital HWC records of last 3 years

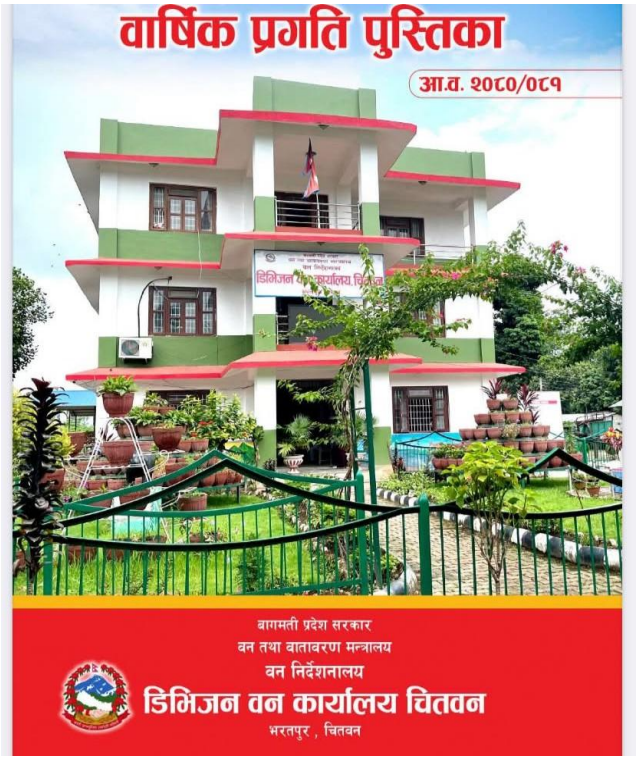

सामुदायिक वनहरू
जिल्ला वस्तुगत विवरण
धादिङ-२०७२
गा.वि.स. अनुसार जनसंख्या वृद्धिदर २०
नेपाल सरकार
राष्ट्रिय योजना आयोगको सचिवालय
केन्द्रीय तथ्याङ्क विभाग
तथ्याङ्क कार्यालय मकवानपुर
(मकवानपुर, धादिङ)
फोन : ०५७-५२३६८२

Day 4 : Dhading Nilkantha and Dhunibesi discussion and FGDs

Day 5 : Dhading Syauli Bazar, Salle gau field visit, FGDs

Day 6 : Ichhyakamana, Chitwan

Day 7 : DFO Chitwan, Chitwan
Collected HWC report of Chitwan, 5 yr planm annual progress report

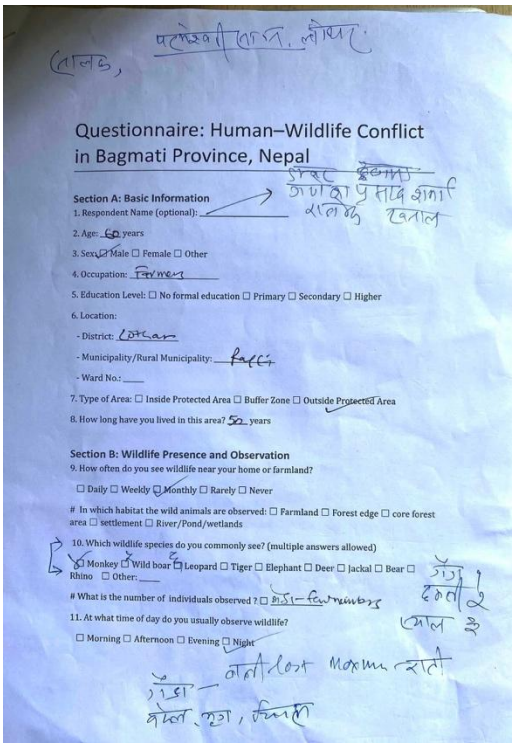


Day 8 : Lothar, Chitwan,
Visit and discussion at Parewashowri CFUG, Lothar

Field members:

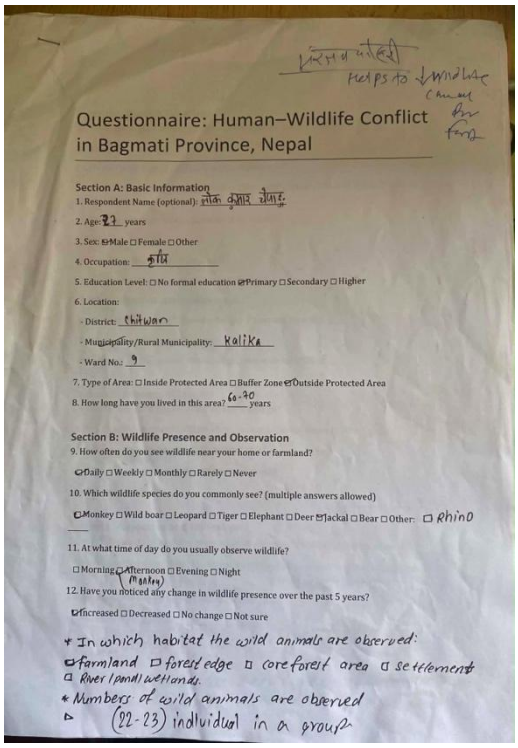
Sandesh Koirala, MSc Patan Multiple Campus; Dipak Raj Joshi, AFU, Hetaunda; Krishna Lamsal, AFU Hetaunda; Ripu Kunwar, Kathmandu;
Satyam Chaudhary, Kathmamndu; Bishnu Adhikari, Kathmandu

Filled questionnaires (sample)


Questionnaire: Human–Wildlife Conflict in Bagmati Province, Nepal

Section A: Basic Information
1. Respendent Name (optional):
2. Age: 60 years
3. Sex: ☑ Male ☐ Female ☐ Other
4. Occupation: Farmer
5. Education Level: ☐ No formal education ☐ Primary ☐ Secondary ☐ Higher
6. Location:
- District: Lothar
- Municipality/Rural Municipality: Parri
- Ward No.:
7. Type of Area: ☐ Inside Protected Area ☐ Buffer Zone ☐ Outside Protected Area
8. How long have you lived in this area? 50 years

Section B: Wildlife Presence and Observation
9. How often do you see wildlife near your home or farmland?
☐ Daily ☐ Weekly ☑ Monthly ☐ Rarely ☐ Never
In which habitat the wild animals are observed: ☐ Farmland ☐ Forest edge ☐ core forest area ☐ settlement ☐ River/Pond/wetlands
10. Which wildlife species do you commonly see? (multiple answers allowed)
☑ Monkey ☐ Wild boar ☐ Leopard ☐ Tiger ☐ Elephant ☐ Deer ☐ Jackal ☐ Bear ☐ Rhino ☐ Other:
What is the number of individuals observed ? ☐ 5-51- few numbers
11. At what time of day do you usually observe wildlife?
☐ Morning ☐ Afternoon ☐ Evening ☐ Night


Questionnaire: Human–Wildlife Conflict in Bagmati Province, Nepal

Section A: Basic Information
1. Respondent Name (optional): सौरभ कुमार चौधरी
2. Age: 27 years
3. Sex: ☑ Male ☐ Female ☐ Other
4. Occupation: कृषि
5. Education Level: ☐ No formal education ☑ Primary ☐ Secondary ☐ Higher
6. Location:
- District: chitwan
- Municipality/Rural Municipality: Kalika
- Ward No.: 9
7. Type of Area: ☐ Inside Protected Area ☐ Buffer Zone ☑ Outside Protected Area
8. How long have you lived in this area? 60-70 years

Section B: Wildlife Presence and Observation
9. How often do you see wildlife near your home or farmland?
☑ Daily ☐ Weekly ☐ Monthly ☐ Rarely ☐ Never
10. Which wildlife species do you commonly see? (multiple answers allowed)
☑ Monkey ☐ Wild boar ☐ Leopard ☐ Tiger ☐ Elephant ☐ Deer ☑ Jackal ☐ Bear ☐ Other: ☐ Rhino
11. At what time of day do you usually observe wildlife?
☐ Morning ☐ Afternoon ☐ Evening ☐ Night
12. Have you noticed any change in wildlife presence over the past 5 years?
☑ Increased ☐ Decreased ☐ No change ☐ Not sure
* In which habitat the wild animals are observed:
☐ farmland ☐ forest edge ☐ core forest area ☐ settlement ☐ River/pond/wetlands.
* Numbers of wild animals are observed
▷ (22-23) individual in a group

Annex 1. List of Respondents

Activity	District	Place	Participant Name	Age (yr)	Occupation	Education Level
FGD	Dhading	Nilkantha 9 Nigalapani	Ram Saran Khati	49	Driver	Primary Level
FGD	Dhading	Nilkantha 9 Nigalapani	Khem Lal Baraili	41	Jewelary making	Primary Level
FGD	Dhading	Nilkantha 9 Nigalapani	Deuti Khadal	70	Agriculture	No formal education
FGD	Dhading	Nilkantha 9 Nigalapani	Subba Baraili	60	Agriculture	No Formal education
FGD	Dhading	Nilkantha 9 Nigalapani	Sani Nepali	40	Agriculture	Primary Level
FGD	Dhading	Nilkantha 9 Nigalapani	Damai Sarki	61	Agriculture	No Formal education
FGD	Dhading	Nilkantha 9 Nigalapani	Tek bahadur Surkheti	60	Agriculture	Primary Level
FGD	Chitwan	Dhuni Besi Municipality 3, Ramailo Chour	Shiva Tamang	55		Primary Level
FGD	Chitwan	Dhuni Besi Municipality Ward No.3, Ramailo Chour	Krishna Bishokarma	35		Higher level
FGD	Chitwan	Dhuni Besi Municipality Ward No.3, Ramailo Chour	Maila Tamang	56		No formal education
FGD	Chitwan	Dhuni Besi Municipality Ward No.3, Ramailo Chour	Sano Kancha Tamang	53		Primary Level
FGD	Chitwan	Dhuni Besi Municipality Ward No.3, Ramailo Chour				
FGD	Dhading	Nilkantha-13, Syauli Bazar-Batuwa	Subash Gurung	30	Driver	Secondary
FGD	Dhading	Jugepani Tol	Begh Bahadur Gurung	53	Agriculture	No Formal education
FGD	Dhading	Tallo Batuwa Tol	Dhanendra Bahadur Gurung	55	Retire indian army	Primary Level
FGD	Dhading	Kuwapani Tol	Krishna Bahadur Gurung	33	Agriculture	Secondary
HH15	Chitwan	Kalika Municipality-9, Shakti Tol	Pashupati Thapa	55	Small Business	
HH16	Chitwan	Kalika Municipality-9	Surya Bahadur Praja	33	Agriculture	

HH17	Chitwan	Ichchhakamana Rural Municipality-7, Upardang Gadi	Amar Gurung	67	Agriculture	
HH18	Chitwan	Ichchhakamana Rural Municipality-7, Upardang Gadi	Dil Maya Gharti Magar	69	Agriculture	
HH19	Chitwan	Ichchhakamana Rural Municipality-7, Upardang Gadi	Man Maya Chepang	36	Agriculture	
HH20	Chitwan	Kalika Municipality-9	Lok K Chepang	27	Agriculture	
HH21	Chitwan	Rapti Municipality-1, Mahadev Tar	Chandra Rai	40	Gym trainer	
HH22	Chitwan	Rapti Municipality-1, Jhyal Chour	Dorse Tamang	46	Agriculture	
H35	Chitwan	Rapti Municipality-1, Lothar Chowk	Dambar B Dhngana	58	Agriculture	
H36	Chitwan	Rapti Municipality-1, Lothar Chowk	Ganesh P sharma	54	Agriculture	
H37	Chitwan	Rapti Municipality-1, Lothar Chowk	Rajendra Khanal	48	Agriculture	
HH23	Chitwan	Rapti Municipality-1, Lothar Chowk	Gopi Krishna Sedai	58	Electronic shop	
HH24	Chitwan	Rapti Municipality-1, Lothar Chowk	Khadka Bahadur Timalsena	77	Former truck driver	
HH25	Chitwan	Rapti Municipality-12, Phrasang (Chepang Basti)	Prem Chepang	26	Agriculture	
HH26	Chitwan	Rapti Municipality-1	Surendra Rai	49	Agriculture	
HH27	Chitwan	Ichchhakamana Rural Municipality-5, School	Prakash Silwal	49	Cattel farm owner, lekha padi bebasai	
HH28	Chitwan	Ichchhakamana Rural Municipality-5, School	Kul Bahadur Ghimire	54	Agriculture	
HH1	Dhading	Dhunibeshi Municipality-3	Maila Tamang	56	Agriculture	
HH2	Dhading	Jwalamukhi Rural Municipality	Dhan Kumari Bishokarma	60	Agriculture	
HH3	Dhading	Nilakantha Municipality-11, Seule Bhagaure)	Ram Prasad Sapkota	75	Agriculture	
HH4	Dhading	Nilakantha Municipality-8, Sasha	Kancha Tamang	49	Metal welder, foreign employment	
HH5	Dhading	Nilakantha Muni-5, Mathilo Gaun	Hasta Bahadur Magar	70	Poltician, Agriculture	
HH6	Dhading	Khaniyabas Rural Municipality-3, Majhe Gaun	Dal Bahadur Gurung	62	Retire Indian army	
HH7	Dhading	Siddhalek Rural Municipality-4	Biraj Bhatta	18	Student	
HH8	Dhading	Siddhalek Rural Municipality-7, Hattisudha	Dil Bahadur Adhikari	70	Hotel owner	

HH9	Dhading	Nilakantha Municipality-9, Nigalpani	Krishna Lamsar	57	Teacher	
HH10	Dhading	Nilakantha Municipality-9, Tallo Jhahare	Ram Hari Kunwar	28	Agriculture	
HH11	Dhading	Gangajamukhi Rural Municipality-4, Tinghare	Rahul Gurung	21	Garment worker	
HH12	Dhading	Galchi Rural Municipality-7, Khantar Gaun	Ram Prasad Rimal	63	Agriculture	
HH13	Dhading	Galchi Rural Municipality-7, Khantar Gaun	Narayan Rimal	40	Agriculture	
HH14	Dhading	Galchi Rural Municipality-7, dhaltar Gaun	Ganga Devi Khatiwada	75	Agriculture	
HH29	Dhading	Nilkantha Municipality-13, Ram Beda Tol	Ramesh Prasad Lamichhane	43	Business and local shop	
HH30	Dhading	Nilkantha Municipality-13, Nabrung	Ram Bahadur Gurung	58	Agriculture	
HH31	Dhading	Nilkantha Municipality-13, Salle Gaun	Chetra Kumari Adhikari	71	Agriculture	
HH32	Dhading	Nilkantha Municipality-13, Nabrung	Sonu Gurung	23	Agriculture	
HH33	Dhading	Nilkantha Municipality-13, Torke Jharna	Ran Bahadur Gurung	48	Hotel owner and agriculture	
HH34	Dhading	Nilkantha Municipality-13, Rijal Tol	Karna Bahadur Adhikari	45	Agriculture	

Annex 2. Questionnaire: Human–Wildlife Conflict in Bagamati Province, Nepal

Section A: Basic Information

1. Respondent Name (optional): _____ 2. Age: _____ years3. Sex: ☐ Male ☐ Female ☐ Other4. Occupation: _____

5. Education Level: ☐ No formal education ☐ Primary ☐ Secondary ☐ Higher 6. Location:

- District: _____- Municipality/Rural Municipality: _____
- Ward No.: _____

7. Type of Area: ☐ Inside Protected Area ☐ Buffer Zone ☐ Outside Protected Area 8. How long have you lived in this area? _____ years

Section B: Wildlife Presence and Observation

9. How often do you see wildlife near your home or farmland? ☐ Daily ☐ Weekly ☐ Monthly ☐ Rarely ☐ Never

In which habitat the wild animals are observed: ☐ Farmland ☐ Forest edge ☐ core forest area ☐ settlement ☐ River/Pond/wetlands

10. Which wildlife species do you commonly see? (multiple answers allowed)☐ Monkey ☐ Wild boar ☐ Leopard ☐ Tiger ☐ Elephant ☐ Deer ☐ Jackal ☐ Bear ☐

Rhino ☐ Other: _____# What is the number of individuals observed ? ☐ _____

11. At what time of day do you usually observe wildlife?

☐ Morning ☐ Afternoon ☐ Evening ☐ Night

12. Have you noticed any change in wildlife presence over the past 5 years? ☐ Increased ☐ Decreased ☐ No change ☐ Not sure

Section C: Conflict Experience

13. Have you or your household experienced human–wildlife conflict? ☐ Yes ☐ No

14. (If yes) What type of conflict have you experienced?☐ Crop damage ☐ Livestock

depredation ☐ Property damage ☐ Human injury ☐ Human

death ☐ Other: _____15. Which animal species was involved in the conflict?

_____16. How often do these conflicts occur?

☐ Frequently ☐ Occasionally ☐ Rarely ☐ Once only 17. When do conflicts most commonly occur?

☐ Morning ☐ Afternoon ☐ Evening ☐ Night ☐ Seasonal (specify): _____ 18. Where do conflicts usually occur?

☐ Farmland ☐ Near house ☐ Forest edge ☐ Inside forest ☐ Other: _____

Section D: Impacts of Conflict

19. What losses have you experienced due to wildlife?☐ Crop loss ☐ Livestock loss ☐ Property damage ☐ Human injury ☐ Other: _____

20. Estimate the economic loss (if possible): NPR _____ per year 21. Did the incident result in human injury or death?

☐ No ☐ Injury ☐ Death

Section E: Response and Mitigation

22. What actions do you take to prevent wildlife conflict? (multiple answers allowed) ☐ Fencing ☐ Guarding ☐ Use of lights/noise ☐ Dogs ☐ Community watch ☐ None ☐ Other:

23. Are there any community-level measures in place? ☐ Yes ☐ No If yes, specify:

_____

24. Have you reported the conflict to authorities? ☐ Yes ☐ No 25. If reported, which authority?

☐ Forest Office ☐ National Park Office ☐ Local Government ☐ NGO ☐ Other: _____ 26. Did you receive compensation or support?

☐ Yes ☐ No If yes, was it adequate? ☐ Yes ☐ No27. Strategies, measures applied by the affected people to reduce the conflict work ?

Section F: Perception and Attitude

28. How would you describe your attitude toward wildlife? ☐ Positive ☐ Neutral ☐ Negative

29. Do you think wildlife conservation is important? ☐ Yes ☐ No ☐ Not sure

30. What do you think are the main causes of conflict?☐ Habitat loss ☐ Increase in wildlife population ☐ Human encroachment ☐ Lack of food

in forest ☐ Other: _____31. What solutions do you suggest to reduce conflict?

_____32. Have you applied any solution to mitigate HWC?

☐ Yes ☐ No

Section G: Additional Comments

33. Any additional comments or suggestions:

_____

Annex 3. HWC in Dhading

मानव-वन्यजन्तु द्धन्द्द (20७९ साल देखी हालसम्म को घटनाको विवरण र राहत

आ.व.	मानव घाईते संख्या	पशु चौपाया क्षती (संख्या)	बाली क्षति रोपनी /बिधा वा मूल्या	प्रदान गरिएको राहत रकम रु.	प्रमुख दोषी वन्यजन्तु हात्ती /बाघ)	प्रभाबित पालिका /क्षेत्र	कैफियत
2079/080	1			200000	भालु	रुवीभ्याली	
	1			30,000	भालु	रुवीभ्याली	
2080/081		बाख्रा-12	0	1,20,000	चितुवा	गंगा जमुना	12जनाको
		बाख्रा-21	0	210,000	भालु	गंगा जमुना	
			बाली क्षती	3,30,000	बाँदर	नीलकण्ठ	33 जनाको
		गाई-1	0	30000	चितुवा	गल्छी	
		गाई-1	0	30000	चितुवा	नीलकण्ठ	
		गोरु-2	0	40000			
			बाली क्षती	20,000	बाँदर	नीलकण्ठ	2जनाको
	1		0	17000	चितुवा	नीलकण्ठ	
		गाई-2	0	40,000	चितुवा	नीलकण्ठ	
		बाख्रा-3	0	30,000	चितुवा	खनियाबास	
		बाख्रा-17	0	170,000	चितुवा	गंगा जमुना	
		बाख्रा-2	0	20,000	चितुवा	नीलकण्ठ	
			बाली क्षती	30,000	बाँदर	नीलकण्ठ	३जनाको
			बाली क्षती	20,000	बाँदर	नीलकण्ठ	2जनाको
2081/082		बङ्गगुर-2	0	40,000	चितुवा	गंगा जमुना	

		गाई-2	0	40,000	चितुवा	नीलकण्ठ	
		बाख्रा-4		40,000	चितुवा	खनियाबास	
			बाली क्षती	240,000	बाँदर	नीलकण्ठ	24 जनाको
				1,247,000			
2082/83			बाली क्षती	१७२००००	बाँदर	धुनिबेसी र नीलकण्ठ	172 जना
		बाख्रा-2		२००००	चितुवा	नीलकण्ठ	
		बाख्रा-1		१००००	चितुवा	धुनिबेसी	
		बाख्रा-1		१००००	चितुवा	थाक्रे	
		गाइ		४००००	चितुवा	नीलकण्ठ	
							जम्मा 248 जनाको रहात सिफारिस भएको

Annex 4. Synopsis of thesis review

District	Location	Site	Impact	Species	Impact (% or …)	Season	Impact (% or …)	Reference
Parsa	pnp	thori rm,jirabhawani rm, jeetpur simara sub metro manhari rm		tiger				aayushma panthi. 2026 Assessment of HWC; acase study of wildlife attack sites on human in and around parsa national park
				bear				
				elephant				
				rhino				
				boar				
Chitwan	madi municipality			elephant	avg annual loss 282500	jan	8.5	srijana acharya. 2024 assessment of human elephant conflict in BZ area of chitwan NP.
						feb	12.22	
						mar	7.06	
						apr	5.56	
						may	10.3	
						jun	11	
						jul	4.36	
						aug	35.36	
						sep	5.64	
Kathmsndu	shivapuri NP			common leopard		premonsoon mar-jun	34.3	anupama bagale. 2026 livestock depredation pattern by commmon leopard ; temporal variation analysis in shivapuri nagarjun national park
						winter dec-mar	25.7	
						monsoon jun-sep	24.9	
						post monsoon sep-dec	15.1	

Chitwan	cnp	meghauli UC, lamichaur UC	crop damage	dear				arati poudel 2021. human wildlife conflict in chitwan national park
				wild boar				
				rhino				
				elephant				
			human injury	rhino	35			
				elephant	30			
				tiger	25			
				other	10			
			property damage	elephant	30			
				rhino	40			
				other	30			
Chitwan	cnp			elephant	1672	summer	608	anisha parajuli 2022 an assessment of status pattern and trends of human wildlife conflict at bufferzone of cnp
				rhino	1332	autumn	1673	
				tiger	283	winter	1519	
				bear	54	spring	616	
				leopard	453			
				boar	603			
				crocodile	14			
				python	1			
				gaur	4			
kathmandu	shivapuri nagarjun np	buffer zones		bear	2016.17- 63500	summer	600	surakshya poudel. 2021 temporal patterns of hwc and economic losses from wildlife in bufferzone of shivapuri nagargun national park
				fox	2017.18 - 615100	autumn	110	
				leopard	2018.19 - 224742	winter	10	

				monket=y	2019.20-1779860	spring	30	
				mongoose	2020.21 - 2089520			
				porcupine				
				sambar				
				snake .				
				boar				
Kathmandu	shivapuri nagarjun np	panchmane, mulkharka, bhotechaur area		leopard	2070: 86000	april -june	17	bibek banjara. 2018 an assessment of human common leopard conflict in snnp
					2071: 856000	july-sept	28	
					2072: 226000	oct-dec	38	
					2073: 371000	jan-mar	19	
					2074: 360000			
Nuwakot	LNP	ghyangfedi village	<5k - 9	boar	32			manish acharya 2018. status of human wild boar (sus scrofa) conlict in Lnp(acase from ghyangfedi village of nuwakot district)
			5k-10k: 14	monkey	16			
			10k-15k: 20	bear	13			
			15k-20k: 13	leopard	2			
			>20k: 7					
Chitwan	cnp	gardi and ayodhyapuri VDCs		elephant		april	5.06	
						may	12.66	
						june	18.99	
						july	31.65	
						august	5.06	
						oct	2.53	
						nov	8.86	
						dec	15.9	

Chitwan	cnp	kalyanpur VDC of madi municipality	2074: 90500	elephant	8			an assessment of impact study ondamage by wild boar in the adjoining areas of cnp
				monkey	19			
				rhino	3			
				boar	30			
Lang tang	lnp	dhaibung, bhorle and laharepauwa BZUC	323000 total loss and 3578 per household	monkey		summer	50	bishnu prasad poudel. 2018. an assessment of human monkey conflict in lnp
						autumn	30	
						winter	5	
						spring	15	
Shnnp	snnp	jhormahankal bz		boar	46.67			salu basnet 2017. assessment of human wildlife conflict in snnp (a case study of jhormahankal bufferzone of snnp
				porcupine	18.15			
				monkey	30.18			
				leopard	4			
				birds	3			
				elephant		jul-oct	66	sujan bohora 2017. human elephant conflict in chitwan national park, nepal (a case study in buffer zone, aayodhyapuri and madikalyanpur VDCs
Chitwan	cnp	aayodhyapuri and madikalyanpur VDCs				mar-apr	24	
						may june	10	
Parsa	pwr	amlekhgunj and nirmalbasti	crop damage	deer				

			774862.50 total and 7748.6 per household	elephant				sami shrestha. 2016. an assessment of HWc (a case study from buffer zone of pwr)
			nirmalbasti 537300	boar				
			amlekhgunj 237562	sambar				
				blue bull				
				birds				
Chitwan	cnp	ayodhapuri and meghauli BZ area		tiger		winter	49	pragya poudel 2016. status and trend of human tiger conflict in BZ of chitwan Np (a case study from ayodhyapuri and meghauli BZ area
						monsoon	19	
						summer	32	
			total 1190448	rhino		summer	13.75	pravha subedi 2016 assessment of crop raiding by greater one horned rhinocerous in Bza of cnp nepal (A case study from prasauni vdc of nawalparasi district
Nawalparasi	cnp	prasauni vdc				autumn	41.25	
						winter	33.75	
						spring	10	
Chitwan	cnp	meghauli chitwan	crop damage	rhino	983625	jan	3	bishnu bahadur kumal 2016. assessment of human rhino conflict in bufferr none of cnp nepal.
						feb	2	
						mar	1	
						apr	2.57	
						may	3	
						jun	2.45	
						jul	0.75	
						aug	0.7	
						sep	17	
						oct	37	

						nov	18	
						dec	13	
Chitwan	cnp	bechauli vdc	house	elephant	house: 35000	apr	5.56	menuka chhetri 2015. assessment of human elephant conflict in BZA of cnp (a case study of bechauli vdc of chitwan district
			kitchen		Kitchen: 44000	may	12.22	
			bathroom		Bathroom:280000	jun	18.89	
			shed		Shed: 171000	jul	31.11	
			grain		Grain: 375000	aug	5.56	
						sep	8.5	
						oct	2.22	
						nov	8.88	
						dec	7.06	
Chitwan	cnp	guta nagar vdc vdc	rice: 60k	elephant	95			rishan kumar pokhrel 2015. assessment of park people conflict in cnp (a case study of gitanagar vdc of chitwan district
			wheat: 44k	chital	40			
			maize: 32k	boar	45			
			Sugarcane:12k	gauri gai	35			
			Veg: 8k	monkey	20			
			livestock	tiger	13			
				leopard	13			
				other	2			
			human casaulty	tiger rhino elephant				
Chitwan	cnp	meghauli and rajahar vdc	2066.67 - 850000	tiger				shiva lal gaire 2015. status of human tiger conflict (panthera tigris tigris) conlict in cnp(acase from meghauli and rajahar vdcs BZ, cnp)

			2067.68 - 34000					
chitwan	cnp			tiger		summer	35	abishek poudel 2012. htc in cnp nepal
						monsoon	35	
						winter	30	
chitwan	cnp	kalyanpur vdc	house	elephant	200000	jun	16	ajay kumar mishra 2013 assessment of human elephant conflict from cnp a case study from kalyanpur vdc of chitwan
			store		75000	jul	31	
			shed		50000	aug	5.06	
						sep	4	
			buffalo		248	oct	2.53	
			goat		249	nov	8.86	
						dec	15.9	
						jan	4	
						feb	50.6	
						mar	8	
chitwan	cnp	ayodhapuri and meghauli BZ area		tiger				ram krishna bhattarai 2013 assessment of human tiger conflict in cnp (a case study from meghauli and ayodhyapuru vdc of BZA in chitwan

Annex 5. Newspaper and journal article review (2018-2024)

Month	Year	Time	Injured by	No.of cases	Age	Sex	Location	References
NG	NG	Day	Bear	1	Teenage	Female	Farmland near forest, Dhading	Khatri, D., Paudel, D., Poudyal, B. H., Khatri, S., Poudel, D. P., & Marquardt, K. (2024). Examining socio-ecological transitions and new human–wildlife relations in farming landscapes of the Nepal Himalaya. Journal of Agrarian Change, 24(4), e12594. https://doi.org/10.1111/joac.12594
NG	NG	Day	Monkey	1	Mid-age	Female	Sindhupalchowk	
NG	NG	Day	Bears	1	NG	NG	Dhading	
NG	2012-2021	NG	Bears	18	NG	NG	Dolakha, Ramechhap, Sindhupalchok	Pathak, A., Lamichhane, S., Dhakal, M., Karki, A., Dhaka+K7+L2:L5+L5:L6+L5:L7
NG	2003-2013	NG	Rhino, Tiger, Sloth Bear, Elephant, Wildboar and Leopard	126, 68, 59, 28, 26, 18 cases respectively	NG	NG	Buffer Zone, Chitwan National Park	Ruda, A., Kolejka, J., & Silwal, T. (2018). GIS-assisted prediction and risk zonation of wildlife attacks in the

								Chitwan National Park in Nepal. ISPRS International Journal of Geo-Information, 7(9), 369. https://doi.org/10.3390/ijgi7090369
NG	2014-2018	NG	Rhino, Wildboar, Tiger, Sloth Bear, Elephant, Crocodile, Leopard	85, 33, 26, 24, 19, 6, 1 cases respectively	NG	NG	Madi , Amaltari, Kasara, Sauraha of Chitwan National Park	Spatio-temporal patterns of wildlife attacks on humans in Chitwan National Park, Nepal. http://dx.doi.org/10.22034/sris.2020.44861
NG	2009-2020	NG	Rhino, Sloth Bear, Tiger, Wildboar, Elephant	150, 60, 45, 60 and 25 injury respectively	NG	NG	Chitwan National Park and Buffer Zone Area	Kandel, S., Silwal, T., Yadav, S. K., & Dhakal, S. (2023). Temporal and spatial pattern of wildlife attacks on human in Chitwan National Park, Nepal. Nepalese Journal of Zoology, 7(1), 7-13. https://doi.org/10.3126/njz.v7i1.56305
NG	2016	NG	Elephant	2	NG	NG	Ayodhapuri, Bagauda, Budhi Rapti, Kerunga, Lothar, Megauli, Miragakung,	Dangol, D., Ghimire, A., & Bhattarai, S. B. (2020). Human-elephant conflict in

							Paanchpandav, Rewa, Patihani of Chitwan National Park	the buffer zone of Chitwan National Park, Nepal. Nepalese Journal of Zoology, 4(1), 36-43.https://doi.org/10.3126/njz.v4i1.30671
NG	2012-2021	NG	Panthera pardus , Panthera tigris tigris, Rhinocerus unicornis and Elephas maximus, Crocodylus palustris, Melursus ursinus	3, 47, 109, 42, 7, 31 respectively	NG	NG	Meghauli, Chitwan National Park	Parajuli, A., Basyal, C. R., Baral, M., Adhikari, H., Yadav, S. K., Basnet, J. B., & Timilsina, S. (2023). Status, patterns, and trends of human-wildlife conflict in the buffer zone of Chitwan National Park, Nepal. Journal of Animal Diversity, 5(4), 1-14. https://doi.org/10.22034/JAD.2023.5.4.1
NG	2013-2018	NG	Tiger	2 in 2013, 1 in 2014 and 2 in 2018 respectively	NG	NG	Bachchhauli and Ayodhyapuri buffer zone of Chitwan National Park	Thapa, S. (2022). Human-Tiger Conflict in and around the Chitwan National Park, Nepal (Doctoral dissertation, Department of Zoology).

January	2025		Rhino	5	NG	NG	Ratnanagar Municipality-16	https://kathmandupost.com/province-no-3/2025/03/09/in-chitwan-unchecked-human-wildlife-conflict-adds-to-conservation-challenges
November	2009		Elephant	1	NG	Female	Someshwar hill, Ayodhyapuri, Madi Municipality	https://kathmandupost.com/national/2024/03/24/human-animal-conflict-ayodhyapuri-buffer-zone-residents-live-in-terror
March	2004		Tiger	1	NG	Male	Ayodhyapuri, Madi Municipality	
NG	2020-2024		Wildlife	41	NG		Chitwan	https://risingnepaldaily.com/news/65605
Magh	2026	Wednesday	Rhino	1	3	Male	Nawalpur	https://english.ratopati.com/story/47117/forest-near-village-human-wildlife-conflict-is-increasing
Magh	2026		Rhino	1	NG	Male	Brahmsthan, Madhya Bindu Municipality-3, Nawalparasi (Bardaghat -Susta East)	
Magh	2026	Tuesday 12:00 PM	Rhino	1	40	Male	Amaltari, Kawasoti Municipality-17	
NG			Rhino	1	NG	Male	Chitwan	https://news.mongabay.com/2021/11/in-nepal-doubling-down-on-tiger-conservation-looks-to-pay-off/

NG	2016-2017		Wildlife	43	NG	NG	Around Chitwan National Park	https://dialogue.earth/en/nature/civil-military-relations-transform-in-nepals-chitwan-park/
NG	2017-2018		Wildlife	65	NG	NG	Around Chitwan National Park	
NG	2018-2019		Wildlife	140	NG	NG	Around Chitwan National Park	
July-August	2025		Rhino, Elephant	12 and 2 respectively	NG	NG	Chitwan National Park	https://www.myrepublica.nagariknetwork.com/news/human-wildlife-conflict-ten-deaths-in-six-months-35-40.html
January	2023		Elephant (Govinde)	4	NG	NG	Kumroj Area, Chitwan	https://news.mongabay.com/2023/04/mating-urge-adds-new-pressure-to-human-elephant-conflict-in-nepal/
NG	2025		Rhino	3	NG	Female	Outside Laukhani village, buffer zone area	https://www.theguardian.com/environment/2025/apr/16/conservation-success-rhinos-nepal-human-conflict-towns-chitwan-national-park-aoe
4-Mar	2021		Rhino	2	NG	Male	Bharatpur metropolis-7 and Ratnanagar municipality-7	https://english.ratopati.com/story/18287/HWC-cases

August	2023	Morning	Leopard	1	NG	Male	Thapatole of Machhegaun of Chandragiri Municipality-9, Kathmandu	https://myrepublica.nagariknetwork.com/news/one-injured-in-leopard-attack-in-chandragiri-9

Annex 6. Raw data and analyses

Human loss and injured by wildlife attack		
Districts	Death	Injured
Bhaktapur	2	5
Kathmandu	3	7
Kavre	3	6
Lalitpur	2	5
Makwanpur	4	8
Nuwakot	2	12
Sindhuli	1	7
Dhading	2	17
Dolakha	1	12
Ramechap	1	19
Rasuwa	2	13
Sindhupalchok	1	11
Chitwan	146	78

Number of livestock attack by wildlife by district		
Districts	Number	
Bhaktapur	14	
Kathmandu	15	
Kavre	37	
Lalitpur	38	
Makwanpur	45	
Nuwakot	42	
Sindhuli	25	
Dhading	48	
Dolakha	14	
Ramechap	7	
Rasuwa	8	
Sindhupalchok	14	
Chitwan	78	

Average annual rates of human–wildlife conflict (HWC) across districts of Bagamati Province, Nepal (2022–2025)			
District	Estimated cost USD/year		
Bhaktapur	30		
Chitwan	5040		
Dhading	480		

Dholakha	360		
Kathmandu	480		
Kavre	300		
Lalitpur	600		
Makwanpur	630		
Nuwakot	120		
Ramechhap	150		
Rasuwa	150		
Sindhuli	450		
Sindhupalchok	60		

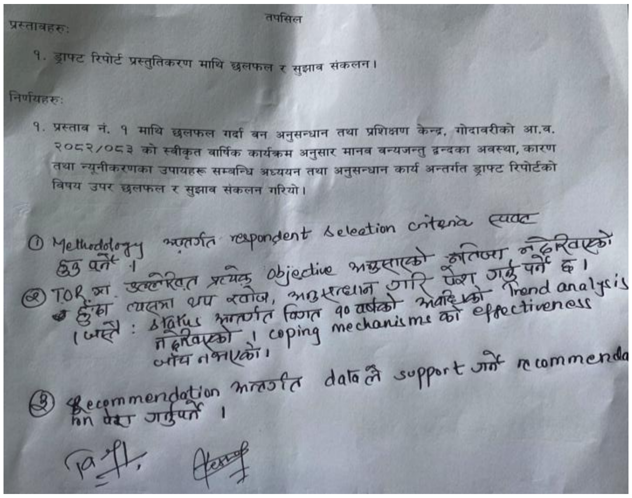
Proportion of livestock killed by wildlife			
Species	Number	Percent	
Goats	189	13.85	
Cow	38	2.78	
Yak	67	4.91	
Sheep	48	3.52	
Buffalo	69	5.05	
Dogs	125	9.16	
Chickens	391	28.64	
Ducks	78	5.71	
Others	360	26.37	

Education level of the respondents, (A and B)		
Level of education	%	
Higher Education	3	
No formal education	10	
Primary Level	15	
Secondary Level	9	
Dailey	30	
Weekly	5	
Monthly	2	

In which habitat the wild animals are observed		
Habitats	Frequency	
Settlement	1	
Farmland	3	
Farmland, Forest edge	6	
Farmland, Settlement	6	

Farmland, Forest edge, Water Bodies	4	
Farmland, Settlement, Forest edge, Water Bodies	1	
Forest edge and Water bodies	3	
Settlement, forest edge, waterbodies	1	
Farmland, Forest edge, Settlement	9	
Inside home, Farmland, Water bodies	1	
Forest edge, Farmland and Water bodies	1	
What actions do you take to prevent wildlife conflict?		
Prevention measure	Frequency	
Guarding	34	
Dogs	18	
Catapult (Guleli)	18	
Technology: Sound devices/laser	11	
Lights	10	
Fencing	7	
Community watch	6	

Annex 7. Suggestions and responses



तपसिल

प्रस्तावहरु:

१. ड्राफ्ट रिपोर्ट प्रस्तुतिकरण माथि छलफल र सुझाव संकलन।

निर्णयहरु:

१. प्रस्ताव नं. १ माथि छलफल गर्दा वन अनुसन्धान तथा प्रशिक्षण केन्द्र, गोदावरीको आ.व. २०८२/०८३ को स्वीकृत वार्षिक कार्यक्रम अनुसार मानव वन्यजन्तु द्वन्दका अवस्था, कारण तथा न्यूनीकरणका उपायहरू सम्बन्धि अध्ययन तथा अनुसन्धान कार्य अन्तर्गत ड्राफ्ट रिपोर्टको विषय उपर छलफल र सुझाव संकलन गरियो।

① Methodology अन्तर्गत respondent selection criteria स्पष्ट हुनु पर्ने ।

② TOR मा उल्लेखित प्रत्येक objective अनुसारको नतिजा नदेखिएको हुँदा त्यसमा थप खोज, अनुसन्धान गरि पेश गर्नु पर्ने छ । (जस्तै : status अन्तर्गत विगत १० वर्षको अवधिको Trend analysis नदेखिएको । coping mechanisms को effectiveness जाँच नगरिएको ।

③ Recommendation अन्तर्गत data ले support गर्ने recommendation पेश गर्नुपर्ने ।

Responses:

Comments	Respond	Remarks
Primary data collection	Incorporated	Respondents' selection
Objective base Result	Incorporated	Results are arranged in accordance with objectives. There are 5 objectives and results are arranged in 6 sub-sections.
Recommendations	Incorporated	Presented following the data/respondents responses and experts idea

Annex 8. List of mammalian species in Bagamati (this list excludes the small mammals such as rodents and bats)

Name	Scientific name	CR	EN	VU	NT	LC	GOV
Indian Spotted Chevrotain	Moschiola indica	0	0	0	0	1	1
Hog Deer	Axis porcinus	0	1	0	0	0	1
Asian Elephant	Elephas maximus	0	1	0	0	0	1
Alpine Musk Deer	Moschus chrysogaster	0	1	0	0	0	1
Greater One-horned Rhino	Rhinoceros unicornis	0	0	1	0	0	1
Axis Deer	Axis axis	0	0	0	0	1	1
Nilgai	Boselaphus tragocamelus	0	0	0	0	1	1
Gaur	Bos gaurus	0	0	1	0	0	1
Barking Deer	Muntiacus vaginalis	0	0	0	0	1	1
Sambar	Rusa unicolor	0	0	1	0	0	1
Himalayan Tahr	Hemitragus jemlahicus	0	0	0	1	0	1
Himalayan Goral	Naemorhedus goral	0	0	0	1	0	1
Blue Sheep	Pseudois nayaur	0	0	0	1	0	1
Wild Boar	Sus scrofa	0	0	0	0	1	0
Himalayan Serow	Capricornis thar	0	0	0	1	0	0
Four-horned Antelope	Tetracerus quadricornis	0	0	1	0	0	1
Red Panda	Ailurus fulgens	0	0	1	0	0	1
Dhole	Cuon alpinus	0	1	0	0	0	1
Striped Hyaena	Hyaena hyaena	0	0	0	1	0	1
Honey Badger	Mellivora capensis	0	0	0	0	1	1
Sloth Bear	Melursus ursinus	0	0	1	0	0	1
Clouded Leopard	Neofelis nebulosa	0	0	1	0	0	1
Royal Bengal Tiger	Panthera tigris	0	1	0	0	0	1
Snow Leopard	Panthera uncia	0	0	1	0	0	1
Fishing Cat	Prionailurus viverrinus	0	1	0	0	0	1
Spotted Linsang	Prionodon pardicolor	0	0	0	0	1	1
Himalayan Black Bear	Ursus thibetanus	0	0	1	0	0	0
Crab-eating Mongoose	Herpestes urva	0	0	0	0	1	0
Leopard	Panthera pardus	0	0	1	0	0	0
Leopard Cat	Prionailurus bengalensis	0	0	0	0	0	0
Bengal Fox	Vulpes bengalensis	0	0	0	0	1	0
Eurasian Otter	Lutra lutra	0	0	0	1	0	0
Large Indian Civet	Viverra zibetha	0	0	0	1	0	0
Golden Jackal	Canis aureus	0	0	0	0	1	0
Jungle Cat	Felis chaus	0	0	0	0	1	0

Indian Grey Mongoose	Herpestes edwardsii	0	0	0	0	1	0
Small Asian Mongoose	Herpestes javanicus	0	0	0	0	1	0
Yellow-throated Marten	Martes flavigula	0	0	0	0	1	0
Stone Marten	Martes foina	0	0	0	0	1	0
Masked Palm Civet	Paguma larvata	0	0	0	0	1	0
Common Palm Civet	Paradoxurus hermaphroditus	0	0	0	0	1	0
Small Indian Civet	Viverricula indica	0	0	0	0	1	0
Altai Weasel	Mustela altaica	0	0	0	1	0	0
Marbled Cat	Pardofelis marmorata	0	0	0	1	0	0
Asiatic Golden Cat	Pardofelis temminckii	0	0	1	0	0	0
Red Fox	Vulpes vulpes	0	0	0	0	1	0
Assam Macaque	Macaca assamensis	0	0	0	1	0	0
Rhesus Macaque	Macaca mulatta	0	0	0	0	1	0
Semnopithecus hector	Terai Grey Langur	0	0	0	1	0	0
Caprolagus hispidus	Hispid Hare	0	1	0	0	0	0
Himalayan Water Shrew	Chimarrogale himalayica	0	0	0	0	1	0
Indian Pangolin	Manis crassicaudata	0	1	0	0	0	1
Chinese Pangolin	Manis pentadactyla	1	0	0	0	0	1
Lesser Bandicoot Rat	Bandicota bengalensis	0	0	0	0	1	0
Greater Bandicoot Rat	Bandicota indica	0	0	0	0	1	0
Hoary-bellied Squirrel	Callosciurus pygerythrus	0	0	0	0	1	0
Orange-bellied Himalayan Squirrel	Dremomys lokriah	0	0	0	0	1	0
Hodgson's Brown-toothed Shrew	Episoriculus caudatus	0	0	0	0	1	0
Long-tailed Brown-toothed Shrew	Episoriculus leucops	0	0	0	0	1	0
Five-striped Palm Squirrel	Funambulus pennantii	0	0	0	0	1	0
Indian Bush-rat	Golunda ellioti	0	0	0	0	1	0
Particolored Flying Squirrel	Hylopetes alboniger	0	0	0	0	1	0
Indian Hare	Lepus nigricollis	0	0	0	0	1	0
Himalayan Marmot	Marmota himalayana	0	0	0	0	1	0
Common Indian Field Mouse	Mus booduga	0	0	0	0	1	0
Fawn-colored Mouse	Mus cervicolor	0	0	0	0	1	0
House Mouse	Mus musculus	0	0	0	0	1	0
Brown Spiny Mouse	Mus saxicola	0	0	0	0	1	0
Earth-colored Mouse	Mus terricolor	0	0	0	0	1	0
Short-tailed Bandicoot Rat	Nesokia indica	0	0	0	0	1	0
Little Himalayan Rat	Niviventer eha	0	0	0	0	1	0
Himalayan White-bellied Rat	Niviventer niviventer	0	0	0	0	1	0

Red Giant Flying Squirrel	Petaurista petaurista	0	0	0	0	1	0
Himalayan Field Rat	Rattus nitidus	0	0	0	0	1	0
Brown Rat	Rattus norvegicus	0	0	0	0	1	0
Himalayan Rat	Rattus pyctoris	0	0	0	0	1	0
Black Rat	Rattus rattus	0	0	0	0	1	0
Sikkim Large-Clawed Shrew	Soriculus nigrescens	0	0	0	0	1	0
House Shrew	Suncus murinus	0	0	0	0	1	0
Himalayan Striped Squirrel	Tamiops macclellandii	0	0	0	0	1	0
Indian Gerbil	Tatera indica	0	0	0	0	1	0
Asiatic Long-tailed Climbing Mouse	Vandeleuria oleracea	0	0	0	0	1	0
Royle's Mountain Vole	Alticola roylei	0	0	0	0	1	0
Arboreal Brown-toothed Shrew	Episoriculus macrurus	0	0	0	0	1	0
Indian Crested Porcupine	Hystrix indica	0	0	0	0	1	0
Bobak Marmot	Marmota bobak	0	0	0	0	1	0
Sikkim Vole	Neodon sikimensis	0	0	0	0	1	0
Chestnut White-bellied Rat	Niviventer fulvescens	0	0	0	0	1	0
Large-eared Pika	Ochotona macrotis	0	0	0	0	1	0
Nubra Pika	Ochotona nubrica	0	0	0	0	1	0
Spotted Giant Flying Squirrel	Petaurista elegans	0	0	0	0	1	0
Hodgson's Giant Flying Squirrel	Petaurista magnificus	0	0	0	0	1	0
		1	8	10	12	60	26