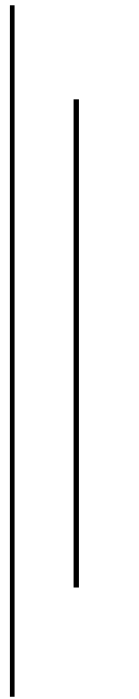


**STATUS OF HUMAN-WILDLIFE CONFLICT &
MITIGATION MEASURES: AN ANTHROPOLOGICAL
STUDY OF BARDIYA NATIONAL PARK**

A Thesis

**Submitted to the Department of Anthropology, Tri Chandra Multiple Campus,
in Partial Fulfilment of the Requirement for Master's Degree in Anthropology**



Submitted by

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December 2024

LETTER OF RECOMMENDATION

Head of the Department

Department of Anthropology

Tri Chandra Multiple Campus

Tribhuvan University

This is to certify that **Mr. Narayan Prasad Sharma**, a student of MA in Anthropology at the Tri Chandra Multiple Campus has successfully completed this Thesis with the title "Status of Human-Wildlife Conflict & Mitigation Measures: An Anthropological Study of Bardiya National Park" in due time, under my regular guidance and supervision. The researcher has prepared a comprehensive research report which fulfills all of the requirements as prescribed by this Department. I, therefore, recommend this Thesis for its final evaluation.

I wish him success in his future academic efforts.

Date: 26 December 2024

Thesis Supervisor

.....

Mr. Anup Rai, MPhil.

(Assistant Professor)

LETTER OF APPROVAL

This Thesis with the title "Status of Human-Wildlife Conflict & Mitigation Measures: An Anthropological Study of Bardiya National Park" and submitted by **Mr. Narayan Prasad Sharma**, as prepared for the fulfillment of requirements of MA in Anthropology, is hereby accepted and approved.

Date: 27 December 2024

Approved by

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Mr. Anup Rai

(Thesis Supervisor)

DECLARATION

I hereby declare to the best of my knowledge that this Thesis is original. No part of it was earlier submitted for the candidature of research degree to any faculty or any university.

I further assert that the data, fact and figures included in this Thesis are genuine to the best of my knowledge and for the time being. No data, fact or figure has been misrepresented to arrive at the findings, conclusion and suggestions.

.....

Narayan Prasad Sharma

20 December 2024

DEDICATION

I would like to dedicate this Research Report to the victims of Human-Wildlife Conflict in Bardiya and other districts of Nepal, who have either laid down their lives or suffered from other debilitating injuries in the hands of problematic animals, and their family members.

PREFACE

This thesis, titled "Status of Human-Wildlife Conflict & Mitigation Measures: An Anthropological Study of Bardiya National Park", embarks on a critical exploration of the multifaceted interactions between human communities and wildlife within one of Nepal's most ecologically significant areas. Human-wildlife conflict is a global concern, but its manifestations and impacts are profoundly local, shaped by unique ecological, social, and economic contexts. Bardiya National Park, a haven for diverse species including the endangered Royal Bengal tiger, Asiatic elephant and one-horned rhinoceros, also borders communities that depend on its resources for their livelihoods, leading to inevitable encounters and conflicts.

The primary objective of this research is to present a detailed assessment of the current status of human-wildlife conflicts in Bardiya National Park. By employing both quantitative and qualitative research methods, this study seeks to capture the extent, frequency, and types of conflicts experienced by local residents. Moreover, it endeavours to understand the socio-economic and cultural dimensions that influence these conflicts, providing a holistic view of the situation. Equally important, this thesis evaluates the mitigation measures that have been implemented to address these conflicts. Through field observations, interviews with stakeholders, and a review of existing policies and practices, the research identifies the strengths and limitations of current strategies. The insights gained aim to inform more effective and sustainable conflict mitigation approaches, balancing the dual goals of wildlife conservation and community welfare.

Acknowledging the complexity of human-wildlife interactions, this study contributes to the broader discourse on conservation by emphasizing the importance of community engagement and adaptive management practices. The findings underscore that successful mitigation is not solely dependent on scientific and technical solutions but also on fostering cooperation and mutual understanding between park authorities and local communities. By identifying successful strategies and areas needing improvement, this thesis aspires to contribute to the development of more sustainable and harmonious coexistence practices, ensuring both the protection of wildlife and the well-being of human populations in and around the Bardiya National Park.

ACKNOWLEDGEMENTS

This research study could not have completed in the present form without the invaluable support, guidance and encouragement rendered by various individuals and institutions. Here, I would take the opportunity to express my sincere gratitude to those who have contributed and assisted in many ways, to make this Thesis a reality.

Firstly, I would extend my heartfelt thanks to my respected supervisor and esteemed faculty Assistant Professor **Mr. Anup Rai** for his unwavering guidance, encouragement and constructive feedback throughout the entire period of study. I am equally grateful for his intrinsic knowledge of the anthropological study of Human-Wildlife Conflict and methodological expertise as well as for his friendly and mentoring personality. I am also grateful to **Mr. Santosh Kumar Bhagat**, Assistant Professor of Anthropology at Padma Kanya Multiple Campus for his timely and constructive feedback to the betterment of this Thesis during the defence viva. I would further express my deep gratitude to the other competent faculties of Anthropology in the oldest college of the country, Tri Chandra Multiple Campus for their enthusiastic inspiration in the making of this Thesis.

I am profoundly thankful to the illustrious anthropologists and sociologists of our country such as **Prof. Dr. Binod Pokhrel**, Head of Central Department of Anthropology, TU; **Associate Prof. Dr. Man Bahadur Khatri**, Central Department of Anthropology, TU; **Associate Prof. Dr. Tika Ram Gautam**, Central Department of Sociology, TU; and **Assistant Professor Mr. Mana Hari Dhakal**, Central Department of Sociology, TU for their invaluable inputs in directing the course of this research report.

I am hugely indebted to **Mr. Nagendra Lamsal**, Government Attorney at the District Government Attorney Office, Bardiya for his unmatched assistance in organizing the field trips and coordinating with the concerned agencies, authorities as well as stakeholders for the successful completion of this study. If not for his priceless support, the fieldwork in this inquiry would not have been as organized, systematic and productive as it has been. I am also highly appreciative of the inestimable help rendered by **Ms. Aditi Koirala**, a meritorious student of BA.LLB level at the National Law College, during the course of fieldwork in various spots of Bardiya district. If not for her instrumental support, the data collection process could not have been as much speedier, efficient and inclusive as it has been. Also, I would extend my heartfelt gratitude to the officials at the Bardiya National Park for their precious experience and knowledge sharing in the subject matter of this research.

I would take this opportunity to earnestly thank the valued respondents and participants of this study including academics, elected local representatives, local level staffs, police officers, conservation officials, officials of various community forest user groups, local elders and residents for imparting me the first hand data, despite their busy schedules, which were needful for according this study a definite shape and direction. Finally, I would thank my family members who have lent me a positive working environment that helped in drafting this Thesis much faster and in a better form.

Narayan Prasad Sharma

LIST OF ABBREVIATIONS AND SHORT FORMS

A) Abbreviations

ACAP	:	Annapurna Area Conservation Project
AI	:	Artificial Intelligence
APA	:	American Psychological Association
APF	:	Armed Police Force
BBC	:	British Broadcasting Corporation
BCN	:	Bird Conservation Nepal
BNCC	:	Bardiya Nature Conservation Club
BNP	:	Bardiya National Park
BPP	:	Biodiversity Profile Project
BZCF	:	Buffer Zone Community Forest
BZMC	:	Buffer Zone Management Committee
CBAPU	:	Community Based Anti-Poaching Unit
CBNRM	:	Community Based Natural Resource Management
CBO	:	Community Based Organization
CBWM	:	Community Based Wildlife Management
CCO	:	Chief Conservation Officer
CCTV	:	Close Circuit Television
CITES	:	Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975)
CTML	:	Chure Terai Madhesh Landscape
DFO	:	Divisional Forest Office/Officer
DNPWC	:	Department of National Parks and Wildlife Conservation
DoF	:	Department of Forests
DoFSC	:	Department of Forests and Soil Conservation
EU	:	European Union
FGD	:	Focus Group Discussion
FY	:	Fiscal Year
GIS	:	Geographical Information System
GoN	:	Government of Nepal
GPS	:	Global Positioning System

GTF	:	Global Tiger Forum
HEC	:	Human Elephant Conflict
HTC	:	Human Tiger Conflict
HWC	:	Human-Wildlife Conflict
ICIMOD	:	International Centre for Integrated Mountain Development
ICT	:	Information and Communication Technology
IEC	:	Information, Education and Communication
IGO	:	Intergovernmental Organization
INGO	:	International Nongovernmental Organization
IUCN	:	International Union for Conservation of Nature
MoFE	:	Ministry of Forests and Environment
MoU	:	Memorandum of Understanding
NA	:	Nepal Army
NGO	:	Nongovernmental Organization
NP	:	Nepal Police
NPWCA	:	National Parks and Wildlife Conservation Act (1973)
NRM	:	Natural Resource Management
NTFP	:	Non-Timber Forest Product
NTNC	:	National Trust for Nature Conservation
PA	:	Protected Area
RRT	:	Rapid Response Team
SoP	:	Standard Operating Procedure
TAL	:	Terai Arc Landscape
TEK	:	Traditional Ecological Knowledge
UAV	:	Unmanned Aerial Vehicle
UK	:	United Kingdom
UN	:	United Nations
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNGA	:	United Nations General Assembly
USA	:	United States of America
WCN	:	Wildlife Conservation Nepal
WWF	:	World Wildlife Fund
ZSL	:	Zoological Society of London

B) Short Forms and Symbols

&	:	and
©	:	Copyright
Art.	:	Article
Dr.	:	Doctor
e.g.	:	Exempli gratia, for example
edn.	:	Edition
ed.	:	Editor
et al.	:	Including other persons
etc.	:	Et cetera, of the same class, more to follow
i.e.	:	That is to say, in other words
Fig.	:	Figure
Ibid	:	Just as above
Kg.	:	Kilogram
Mr.	:	Mister
Ms.	:	Miss/Mistress
No.	:	Number
p.	:	Page
Prof.	:	Professor
s., sec.	:	Section
supra	:	Refer above

LIST OF FIGURES AND TABLES

A. Figures

Figure 1.1: Conceptual Framework on the Human-Wildlife Conflict	14
Figure 3.1: Mode of Analysis and Interpretation of Data (Qualitative)	42
Figure 4.1: Forms or Variants of Human-Wildlife Conflict	58
Figure 4.2: Drivers or Causes of Human-Wildlife Conflict	70
Figure 4.3: Impacts of the Human-Wildlife Conflict	79
Figure 4.4: Adaptation Strategies of the Local Population	88
Figure 4.5: Measures Instituted for the Mitigation of Human-Wildlife Conflict	97

B. Tables

Table 4.1: Loss of Human Lives	71
Table 4.2: Distribution of Relief and Compensation	72
Table 4.3: Death of Wildlife	73

TABLE OF CONTENTS

Letter of Recommendation	i
Letter of Approval	ii
Declaration	iii
Dedication	iv
Preface	v
Acknowledgments	vi
List of Abbreviations and Short Forms	vii
List of Figures and Tables	x

CHAPTER - 1 INTRODUCTION

1.1 Background	1
1.2 Statements of the Problem	4
1.3 Objectives of the Study	7
1.4 Research Gaps	7
1.5 Conceptual Framework of the Study	8
1.5.1 Human Ecology Theory	8
1.5.2 Behavioural Ecology Theory	10
1.5.3 Cultural Ecology Theory	12
1.6 Significance of the Study	14
1.7 Limitations of the Study	15
1.8 Organization of the Study	16

CHAPTER 2 LITERATURE REVIEW 18-32

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Sources of Data	33
3.1.1 Primary Data	33
3.1.2 Secondary Data	34

3.2 Tools of Data Collection	34
3.2.1 Interview Schedules	34
3.2.2 Focus Group Discussion	36
3.2.3 Field Notes	36
3.2.4 Process of Data Collection	36
3.3 Sampling Methods	37
3.3.1 Sampling Techniques	37
3.3.2 Sample Size	37
3.3.3 Inclusion and Exclusion Criteria	38
3.4 Analysis and Interpretation of Data	38
3.4.1 Qualitative Data Analysis	39
3.4.2 Quantitative Data Analysis	41
3.5 Research Design	42

CHAPTER 4

ANALYSIS AND INTERPRETATION

4.1 Animals in Anthropology	44
4.1.1 Knight and the Human-Animal Relations	44
4.1.2 Mullin and Her Sociocultural Studies	45
4.1.3 Mullin, Animals and Anthropology	46
4.1.4 Segata, Legwoy and Animals in Anthropology	46
4.1.5 Boyd and His Links of Animal Relations and Archaeology	47
4.1.6 Fuller and Human-Buffalo Conflicts in Western Nepal	48
4.1.7 Hardin and the Tragedy of Commons	48
4.2 Livelihoods and Lifestyles of the Local Population	49
4.2.1 Geruwa	50
4.2.2 Bansgadhi	51
4.2.3 Thakurdwara	52
4.2.4 Madhuwan	53
4.3 Distinction between the Indigenous and Modern Techniques of Forest and Wildlife Conservation	54
4.4 Forms or Variants of Human-Wildlife Conflict	56

4.4.1 Attacks on Humans	56
4.4.2 Damage to Physical Property	57
4.4.3 Crop Raiding	57
4.4.4 Livestock Depredation	57
4.4.5 Habitat Encroachment	57
4.4.6 Competition for Resources	57
4.4.7 Poaching and Illegal Trade	58
4.4.8 Disease Transmission	58
4.4.9 Vehicular Collisions	58
4.5 Drivers or Causes of the Human-Wildlife Conflict	59
4.5.1 Rise in Wildlife and Human Population	59
4.5.2 Fragmentation of Wildlife Habitat	60
4.5.3 Shrinkage of the Forest Cover	61
4.5.4 Food Insecurity for the Animals	63
4.5.5 Forest Dependency among the Locals	63
4.5.6 Resistance of the Locals	64
4.5.7 Lack of Species Profiling	64
4.5.8 Reduced Sense of Public Ownership	65
4.5.9 Fortress Model of Conservation	65
4.5.10 Changes in the River Course	66
4.5.11 Wildfires	66
4.5.12 Archaic Laws	67
4.5.13 Climate Change	68
4.6 Current Status of the Human-Wildlife Conflict	70
4.7 Impacts of the Human-Wildlife Conflict	73
4.7.1 Loss of Life and Limb	73
4.7.2 Livestock Depredation	74
4.7.3 Crop Raiding	74
4.7.4 Vandalism on the Physical Structures	75
4.7.5 Psychological Trauma	75
4.7.6 Confrontation with the Authorities	76

4.7.7 Disinterest towards Conservation	77
4.7.8 Economic Hardships	77
4.8 Adaptation Strategies of the Local Population	79
4.8.1 Origins	80
1. Physical Barriers and Structures	80
2. Community Based Vigilance	80
3. Cultural Traditions and Knowledge	80
4. Use of Domestic Animals	81
5. Spatial Management	81
6. Anthropogenic Landscape Management	81
7. Adaptation over Time	81
4.8.2 Deterrence Measures	82
1. Raising Alternative Crops	82
2. Adopting Safety Measures	82
3. Practicing Deterrence Measures	83
4. Fencing and Walling	84
5. Growing Local Produce	85
6. Changes in Way of Life	85
7. Receiving Trainings and Employing the Skills Learnt	86
8. Promoting Community Forests	86
9. Adopting Newer Technologies	87
10. Reducing Forest Dependence	87
4.9 Measures Instituted for the Mitigation of Human-Wildlife Conflict	89
4.9.1 Strategies	89
1. Conflict Mitigation Strategies	89
2. Capacity Building and Resource Allocation	89
3. Community Engagement and Education	89
4. Incentive Programs	89
5. Involvement in Planning and Decision-Making	89
6. Building Collaborative Partnerships	90
7. Research and Monitoring	90

8. Legislation and Enforcement	90
4.9.2 Current Measures	91
1. Sharing of Public Revenue	91
2. Promotion of Alternative Crops	91
3. Encouraging Alternative Energy	91
4. Promotion of Home-Based Resources	92
5. Skills Development and Training	92
6. Erection of Conservation Infrastructure	93
7. Use of Technology	93
8. Distribution of Conservation Merchandise	93
9. Disbursement of Relief and Compensation	94
10. Engagement and Dialogue with the Locals	95
4.10 Grievances and Expectations	97
4.10.1 Of the Local Population	97
4.10.2 Of the Public Authorities (Park and Forest Officials, Police Personnel, etc.)	100
CHAPTER 5	
SUMMARY, CONCLUSION AND RECOMMENDATIONS	
5.1 Key Findings of the Study	104
5.1.1 Emerging Facts and Trends	104
5.1.2 Underlying Reasons/Factors for Human-Wildlife Conflict	110
5.1.3 Measures for the Mitigation of Human-Wildlife Conflict	115
A. Measures from the Park and Forest Authorities	115
B. Measures from the Local Levels	117
5.2 Conclusion	118
5.3 Recommendations	125
5.3.1 Policy Recommendations	126
5.3.2 Recommendations for Future Researches	133
References	135-138

Annexure

Annex-1: Samples of Interview Schedules Used in the Fieldwork

Type A: Filled with the locals residing in the vicinity of Bardiya National Park

Type B: Filled with the elected Local Level officials and staffs

Type C: Filled with the Bardiya National Park and local Forest officials

Type D: Filled with the police officials serving in the affected area

Annex-2: Sample of Focus Group Discussion Form

Annex-3: Sample of Field Notes

Annex-4: Detailed List of the Research Participants in Interviews and Focus Group
Discussions

Annex-5: Photographs of the Fieldwork and Other Events

CHAPTER 1

INTRODUCTION

1.1 Background

The Bardiya National Park (BNP) is located primarily in Bardiya district of Lumbini Province in Nepal that also reaches out to Surkhet and Banke districts. It is the largest national park in the lowland Terai covering an area of 968 sq.km. It is 1.3 times the size of Singapore. Geographically, the Park is situated at 28⁰15' to 28⁰35.5' north and 80⁰10' to 81⁰45' east¹. It links with Banke National Park in the east and with Katarniaghat Wildlife Sanctuary of India in the south via the Khata bio corridor.

The BNP is classified as a Category II protected area by the IUCN. The park's elevation ranges from 152 to 1,564 meters. It stretches 70 km from east to west and 10 km from north to south, with the east-west Mahendra Highway cutting through 30 km of the park's core area. A buffer zone was first established around the park in 1997, covering 327 sq. km, and was later expanded to 507 sq. km in 2010. The park and its buffer zone occupy areas of 86.6 percent in Bardiya, 13.17 percent in Surkhet and 0.24 percent in Banke district².

Established as a Royal Hunting Reserve in 1969 with an area of 348 sq. km., the park was renamed Royal Karnali Wildlife Reserve in 1976. Between 1982 and 1984, 1,572 families were relocated from the Babai Valley to Tara Tal, expanding the park to its current size of 968 sq. km³. It was renamed as Royal Bardiya Wildlife Reserve in 1984 and as Royal Bardiya National Park in 1988. As the country became republic, its name was again changed to the present Bardiya National Park in 2008.

The Park now includes 3 rural municipalities (Geruwa, Baijnath, and Barahtal) and 5 municipalities (Thakurbaba, Madhuwan, Barbardia, Bansgadhi, and Bheriganga) from the Bardiya, Banke, and Surkhet districts. Presently, there is one buffer zone management committee, 19 buffer zone user committees, 262 buffer zone user groups, and 147 buffer zone community forests.

¹ Dhakal, S., & Rimal, S., et al. (2023). Spatio-temporal patterns of livestock predation by leopards in Bardiya National Park, Nepal. *Land*, 12(3), 3. Basel, Switzerland.

² Bardiya National Park Office. (2022). *Management plan of Bardiya National Park and its buffer zone (2022-2027)*, 4.

³ Ibid.

The Park and local communities collaboratively manage the buffer zone, jointly initiating community development activities and overseeing natural resources. They work in tandem with the Park management to control wildlife poaching, human encroachment and to promote income generation and awareness activities within their jurisdiction.

Around 133,470 people live in 26,117 households within the buffer zone⁴. The main ethnic groups residing around the park are Tharus, Brahmins, Chhetris, and Dalits (both hill and terai). The Karnali, Babai, Geruwa, and Orahi rivers flow through the park and buffer zones. In the fiscal year 2021/22, the park generated an annual revenue of Rs. 23,916,231 from 16,297 visitors, both Nepali and foreign nationals⁵.

The Park is home to significant mammal species such as the Royal Bengal tiger, Asiatic elephant, one-horned rhino, Gangetic dolphin, swamp deer, antelope, sambar deer, spotted deer, hog deer, and striped hyena. Notable bird species include the Bengal florican, lesser florican, white-rumped vulture, and giant hornbill. The Park also harbours important reptile species such as the Burmese python, gharial crocodile, golden monitor lizard, mugger crocodile, and various turtles. The Park lies in the tropical to sub-tropical zone, where alluvial grassland and sub-tropical deciduous and riverine forest provides a suitable habitat for large wildlife⁶. It is home to several wildlife species of high conservation significance. Around 61 species of mammals, 513 species of birds, 42 species of reptiles and amphibians, and 120 fishes have been recorded in the Park area⁷. In addition to the resident species, several migratory birds also frequent the Park vegetation.

The Park supports two critically endangered WWF Global 200 ecoregions: the Terai-Duar savannas and grasslands, and the subtropical broadleaf forests. It represents a unique assembly of native flora and fauna from the Siwalik and inner Terai ecosystems. The Park is also a key part of the Terai Arc Landscape (TAL), connecting with Banke National Park (Nepal) and Katarniah Wildlife Sanctuary (India) through the Khata bio-corridor. Moreover, the Park is one of Nepal's 27 Important Bird Areas and ranks among the 100 most popular destinations worldwide⁸.

⁴ Ibid, at 5.

⁵ Ibid.

⁶ *supra* note 1.

⁷ Bardiya National Park. (2024). *Welcome to Bardiya National Park*. Retrieved August 4, 2024, from <https://bardianationalpark.gov.np/en/>.

⁸ *supra* note 2, at iii.

The Park is an important component of Terai Arc Landscape. About 70 percent of the forest consists of *saal* tree with a mixture of grassland and riverine forests⁹. The *saal* leaves are traditionally used as plates during festivals and religious offerings.

The Park faces numerous challenges that must be carefully managed to conserve biodiversity and maintain viable populations of keystone and flagship species. Key issues include human-wildlife conflict, poaching, large linear infrastructure (such as highways, irrigation canals, and transmission lines), illegal wildlife trade, forest fires, human encroachment, habitat degradation, invasive species, wildlife handling, and management of orphaned wildlife.

Most communities living around the Park and its buffer zone depend on forest resources for forage, animal bedding and fodder to meet daily livestock needs and practice livestock rearing as a source of income¹⁰. The Tharu ethnic group, native to this area, traditionally practices subsistence farming and its own way of life.

The total livestock population in the buffer zone of Park is estimated at 75,000 with animals like goats, cattle, buffaloes and pigs more common¹¹. The population density around the Park is swelling due to migration from fringe villages and other districts leading to an uptick in human wildlife encounters.

Protection of flora and fauna has not only been a national priority but also a key international commitment made by our country. For e.g., the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a vital international treaty aimed at ensuring that international trade in wild animals and plants does not threaten their survival.

Signed in 1975, CITES brings together 184 member countries and operates through a system of permits and regulations to monitor and control trade in over 38,000 species of plants and animals, ranging from those that are not currently threatened to those at risk of extinction. Species are categorized into 3 appendices based on their level of endangerment; Appendix I includes the most endangered species, which are prohibited from international trade except in exceptional circumstances, while Appendix II lists species that may become threatened if trade is not regulated.

⁹ Ibid.

¹⁰ *supra* note 1.

¹¹ Ibid.

The CITES plays a critical role in global conservation efforts by promoting sustainable practices and international cooperation to protect biodiversity and maintain ecological balance. However, its implementation status is replete with mixed results.

1.2 Statements of the Problem

Nepal's distinctive geography and abundant biodiversity support a variety of wild animal species. While our country has achieved significant milestones in wildlife conservation, numerous factors still pose a threat to their survival. One of the most pressing issues is the conflict between humans and wildlife. This conflict stems from competition for food and resources, leading to 2 main types of losses: the first involves harm or death to wildlife, potentially resulting in species extinction, while the second pertains to the human side of the equation, which includes damage to crops, livestock, property, and, in some cases, loss of life. Local communities assert their usage rights for customary forest products, as well as the rights to passage, fishing, foraging, collecting fodder, and grazing cattle within Park resources. This often exposes both humans and their livestock to wildlife threats.

It is pertinent here to note that the Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971, popularly known as the Ramsar Convention to which Nepal acceded on 17 December 1987, requires that its member states maintain a minimum of 10 percent of their total land mass as protected areas or buffer zones. Nepal exceeds that threshold as the protected areas of all kinds occupy a whopping 18 percent of its total land mass. This overdrive towards conservation of flora and fauna has many a time come into conflict with the local needs and sentiments.

Human dominated areas which have not been included in the protected areas are the major conflict hotspots in Nepal. About 90 percent of the districts in Nepal have incidences of wildlife-human conflict¹². The alteration of landscapes and ecosystems by humans for residential, agricultural, and infrastructure development has led to the fragmentation of natural habitats. Such activities have limited wildlife movement, migration, reproduction, and breeding behaviour.

Problems like the loss of extraction rights and damages caused by wildlife, without adequate

¹²Bhattacharai, P. (2021, August 23). Human-wildlife conflict in Nepal. *The Himalayan Times*. <https://thehimalayantimes.com/blogs/human-wildlife-conflict-in-nepal>.

financial compensation, have been identified as fundamental causes of conflict between local communities and conservation initiatives.

Human-wildlife conflict is a negative interaction between human and wildlife, while sharing the same habitat¹³. Increasing instances of human-wildlife conflict can lead to severe issues, particularly when they result in human casualties, often caused by large animals. Prevention and mitigation become more challenging when keystone species are involved.

Common forms of loss and damage from wildlife include crop raids, property damage, livestock predation, and human casualties. The rise in conflicts between park authorities and local communities in protected areas poses serious challenges to wildlife conservation efforts and maintaining a healthy ecosystem. Wildlife attacks on livelihood assets and the consequent economic losses often result in the reduced support of local communities for wildlife conservation¹⁴.

Whereas the number of wildlife has risen, so has the number of people who have lost their lives, crops and livestock. Recent government records show that human-wildlife conflict has been escalating in the past few years. Altogether 68 individuals have lost their lives across Nepal in the past 6 years from tiger attacks alone¹⁵. Only 4 persons were killed from such attacks in the fiscal year of 2018/19 which swelled to 21 in 2021/22¹⁶.

In my study area of Bardiya district, statistics show that from the period between 1999 and 2020, 49 individuals had been killed by wild elephants leaving 120 injured¹⁷. In the same duration, 22 individuals were killed from tiger attacks and 19 were injured¹⁸. Leopards killed 3 individuals and wounded 11 whereas rhinos killed 5 persons and wounded 27 more within the same timeframe¹⁹.

These data reveal that altogether 79 people succumbed to wildlife attacks and 177 got injured from wildlife assaults in the above 21-year period. Casualties from tigers have taken place mostly inside the forest while incidents of wild elephants have taken place while chasing them

¹³ *supra* note 2, at 21.

¹⁴ *Ibid.*

¹⁵ The Rising Tiger-Human Conflict. (2024, July 29). *Kantipur Explained*. YouTube. <https://www.youtube.com/watch?v=YZMFtx44-cM>.

¹⁶ *Ibid.*

¹⁷ *supra* note 2, at 46.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

away carelessly²⁰. Likewise, loss of livestock is in an increasing trend which rose from 256 cases in 2013 to 967 in 2020²¹. The livestock loss has resulted in the increased retaliatory killing of wildlife as well. As for crop raiding, wild elephants have damaged crops mostly compared to other wildlife which increased more only after 2003²².

The Bardiya National Park, study area of my research, has become a success story in tiger conservation, but at a steep cost of human lives. It has received the International Award TX2 in the year 2022 for making significant strides in tiger conservation²³. The Park shared that award with India's Sathya Mangalam Tiger Reserve during the 2nd Global Tiger Summit held in Russia²⁴.

Following the 2009 census, 18 tigers were found in the Park and the buffer zone, but the number has reached 125 in the 2021 census, thus marking a 7-fold increase in just 13 years²⁵. The Park is one of the 5 protected areas in Nepal that harbour tiger population which also include the Parsa National Park, Chitwan National Park, Banke National Park and Shuklaphanta National Park.

The retaliatory killing of wildlife to protect livestock and prevent economic losses poses a significant threat to wildlife populations. Unfortunately, such actions often result in more severe consequences, including the decline of predators like tigers. Fostering harmony between local communities and large wildlife such as tigers, elephants, and leopards, is essential for maintaining a healthy ecosystem and can also create various avenues for economic development.

Although Nepal's anti-poaching initiatives have achieved considerable success and received international acclaim, the human toll associated with these outcomes has frequently been overlooked by both the government and conservation organizations.

Nepal's efforts to conserve tigers have relied heavily on partnerships with and support from local communities. However, the rising number of attacks has raised concerns about the

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Neupane, T. (2022, June 11). Bardiya Residents Are Paying the Brutal Price of Tiger Conservation. *The Kathmandu Post*. <https://kathmandupost.com/province-no-5/2022/06/11/bardiya-residents-are-paying-the-brutal-price-of-tiger-conservation>.

²⁴ Ibid.

²⁵ *supra* note 13, at 16.

current conservation model. Experts suggest that it is time to evaluate the tiger conservation campaign to ensure it does not overlook the human costs involved.

This study attempts to answer the following research questions:

- 1.2.1 What is the current status of human-wildlife conflict in Bardiya National Park?
- 1.2.2 What are the livelihood patterns and lifestyles of the local population under study?
- 1.2.3 How do the local people or victims of human-wildlife conflict perceive the conservation measures imposed by the Park?

1.3 Objectives of the Study

The present research has been guided by the following objectives:

- 1.3.1 To gauge the status of human-wildlife conflict in Bardiya National Park and identify its impact on the conservation measures.
- 1.3.2 To examine the specific causes, spread and effects of human-wildlife conflict in Bardiya National Park through an anthropological lens.
- 1.3.3 To understand the conceptual meaning of human-wildlife conflict for discerning the perspectives and experiences of local people residing in the key settlements near the Bardiya National Park.

1.4 Research Gaps

Not much studies have been carried out in the theme of human-wildlife conflict, especially from an anthropological viewpoint. Hence, this research is premised on several research gaps.

Firstly, there have been an insufficient exploration of the socioeconomic factors contributing to human-wildlife conflict, such as poverty, land use changes, and resource dependency, and how these factors vary across different communities.

Secondly, there has been a shortage of in-depth studies on community involvement in conservation efforts, including the barriers to participation and the potential benefits of integrating local knowledge and practices.

Thirdly, gaps could be found in research on the effectiveness of alternative livelihood programs in reducing dependency on forest resources and mitigating human-wildlife conflict.

Fourthly, there has been a limited understanding of local cultural beliefs and practices related to wildlife, and how these influence attitudes toward conservation and conflict mitigation.

Fifthly, there has been an insufficient inquiry on how climate change is affecting human-wildlife conflict, including changes in wildlife behaviour and habitat, and the resulting impact on local communities.

Finally, a need is evident for more studies on the role of technology in conflict mitigation, such as the use of drones, camera traps, and other monitoring tools, and their effectiveness in reducing human-wildlife interactions.

The current study aims to plug these research gaps to the extent possible.

1.5 Conceptual Framework of the Study

Human-wildlife conflict signifies a hostile interaction between the humans and wild animals ushering in negative impacts on both sides. Factors like agricultural expansion, enforcement measures, depletion of food and other resources, habitat encroachment are escalating such conflict in protected areas like the Bardiya National Park.

This research has attempted to probe the status of human-wildlife conflict in the Park periphery and assess the efficacy of different mitigation measures. Being so, this study is founded in certain anthropological theories that not only lend conceptual clarity to the research but also grants philosophical validity to the research methods and findings. The human ecology theory, behavioural ecology theory and cultural ecological theory underpin the present academic study in the following manner:

1.5.1 Human Ecology Theory

Human ecology theory probes the relation and interaction between humans and their immediate natural environment. This theory highlights understanding how human societies adapt to their environments and how these interactions define human and ecological systems in which they live. In the context of an anthropological inquiry, this theory offers a comprehensive lens to explore human-wildlife conflicts and the related mitigation measures.

(a) Integrating Human Ecology Theory into the Conceptual Framework

This theory may be well integrated into this conceptual framework as follows:

1. **Resource Utilization:** The human ecology theory shines light on how humans and wildlife compete for shared and limited resources like water, land and food. By dissecting the patterns of resource use, researchers like me can diagnose the root cause of such encounters and potential areas for intervention.
2. **Adaptation Mechanisms:** This theory helps us in grasping how local communities in the Park periphery adapt to the presence and movement of wildlife. This includes examining cultural beliefs, traditional knowledge and practices that have evolved for centuries and are handed down to generations to manage and mitigate undesirable confrontations between the humans and wildlife.
3. **Socioeconomic Factors:** It emphasizes the influence of socioeconomic conditions on human-wildlife interactions. Variables such as reliance on agriculture, poverty and lack of alternative means of livelihood can exacerbate conflicts, which need to be handled while framing any viable mitigation strategy.
4. **Habitat Encroachment and Land Use:** This theory offers us insights on how human activities fuelled by changes in land use and habitat encroachment adversely affect wildlife behaviour and movement. This viewpoint aids in contextualizing the spatial dynamics of conflicts.
5. **Building Resilience:** It calls for building resilience within local communities to endure and recover from the ill effects of conflict. This entails not only immediate conflict mitigation in the aftermath of a loss or harm on individuals but also long-term strategies to foster the adaptive capacity of communities by means like education, training, policy support and economic diversification.
6. **Community Adaptation:** This theory advocates the importance of adaptive strategies invented by the local communities over decades of experience to cope with the detrimental effects of human-wildlife conflict. This involves the use of community patrols, physical barriers, alternative cropping, alternative energy sources and other preventive measures. Having a sound knowhow of these adaptive strategies goes a long way in designing and implementing culturally suitable and environmentally sustainable mitigation measures.

(b) Practical Applications in the Study

The practical applications of the human ecology theory may be found in the following spheres:

- 1. Sustainable Livelihoods:** In promoting alternative livelihoods that lower dependence on activities that result in conflicts, such as agro-forestry, eco-tourism or non-timber forest products.
- 2. Context Specific Measures:** In developing the mitigation measures grounded in the adaptive strategies identified through this theory. For e.g., if communities use certain traditional practices in a sustainable manner, the authorities can support and help scale up those activities.
- 3. Community Participation:** In recommending policies that promote community participation in conservation efforts, fostering co-management of resources and conflict minimization.
- 4. Integrated Policies:** In suggesting policies that seamlessly integrate wildlife conservation with community development. This includes compensation schemes, infrastructure development and aid in the alternative means of livelihood.

Thus, this approach ensures that both human and ecological needs are duly taken care of, furthering coexistence and resilience in the face of endless conflicts.

1.5.2 Behavioural Ecology Theory

Behavioural ecology theory emphasizes on understanding the evolutionary basis of animal and human behaviour and how these responses adapt to environmental challenges. This theory explores how the behavioural strategies of animals and humans affect their survival and reproductive success, factoring in the local ecological contexts. In an anthropological inquiry of this kind, this theory offers critical insights into the behaviour of both wildlife and humans. This helps us to identify the root causes of conflict and design effective mitigation strategies.

(a) Integrating Behavioural Ecology Theory into the Conceptual Framework

- 1. Behavioural Plasticity:** The behavioural theory probes the extent to which wildlife and humans can adjust their behaviour in response to changes in their environment like habitat fragmentation, availability of resources, human activities and animal movements.

2. **Adaptive Strategies:** It acquaints us on how wildlife species and local communities adapt their behaviours to tackle environmental pressures and presence of adversaries. This includes territoriality, migration patterns, foraging behaviour and risk avoidance.
3. **Cultural Practices:** This theory investigates cultural beliefs and popular practices that influence human behaviour towards wildlife. Comprehending these cultural dimensions is imperative for developing culturally sensible mitigation strategies.
4. **Human Adaptations:** It examines how local communities adapt their responses to maintain a peaceful existence with wildlife. This entails introducing changes in agricultural practices, ensuring community vigilance and use of locally available deterrents.

(b) Practical Applications in the Study

The practical implications of behavioural ecology theory in the present study can be submitted as follows:

1. **Community-Based Interventions:** In designing and implementing community-based interventions that leverage local knowledge and practices. This embodies training community members in supervising and managing the human-wildlife conflict.
2. **Targeted Deterrents:** In developing and executing deterrents that are rooted on the specific, peculiar behaviours of problematic wildlife species. For e.g., using flashlights and alarms to keep nocturnal predators at bay.
3. **Adaptive Management:** In fostering adaptive management approaches that enable continuous learning and adjustment of strategies grounded on behavioural observations and feedback from local communities.
4. **Behaviour-Informed Policies:** In advocating for policies that are informed by a profound and in-depth understanding of contrasting human and animal behaviours. This includes policies that assist in the use of effective deterrents, community engagement and compensation schemes.

Thus, this anthropological approach ascertains that mitigation measures are sustainable, context-specific and culturally suitable which aid in promoting coexistence and resilience in the wake of conflict situations.

1.5.3 Cultural Ecology Theory

Advanced by Julian Steward, the cultural ecology theory proposes a framework to assimilate how human societies adapt to their hostile or friendly environments through cultural practices. This theory can be applied with success to any anthropological inquest on human-wildlife conflict and mitigation measures, such as in the present research. Below is discussed how this theory fits into this specific study:

(a) Integrating Cultural Ecology Theory into the Conceptual Framework

The cultural ecology theory can be successfully integrated into this conceptual framework as in the following manner:

- 1. Traditional Mitigation Measures:** The cultural ecology theory highlights traditional practices like using certain plants (sesame, garlic, ginger, mentha, etc.) or communal efforts to guard crops as vital for gaining a better understanding on the community's adaptive schemes.
- 2. Cultural Beliefs and Wildlife:** This theory focuses on the role of cultural beliefs in determining how communities interact with wildlife. In Bardiya, certain animals may hold religious or cultural significance (tiger, elephant, parrots, eagles, etc.), thus influencing how they are treated and protected.
- 3. Institutional Policies:** It examines policies and programs implemented by Park authorities, like compensation schemes for wildlife damage, awareness campaigns and community-based conservation programs which represent the interaction between local adaptation measures and institutional support.
- 4. Modern Mitigation Technology:** It probes the integration of modern technology such as GPS tracking of problematic animals, electric fencing and use of social media in conservation efforts, demonstrates how communities adjust to new methods into their traditional practices.
- 5. Ecological Feedback:** This theory investigates the changes in wildlife behaviour due to human activities like use of deterrents and habitat modification. It also feeds back into the ecological system, thus influencing the dynamics of human-wildlife interactions.

6. Impact on Local Communities: It holds that the success or failure of mitigation schemes affects the social structure and economic well-being of the local community. Effective measures can promote food security and minimize economic losses, while failures can result in increased tension and conflict.

(b) Practical Applications in the Study

The practical applications of cultural ecology theory in the present research may be framed as hereunder:

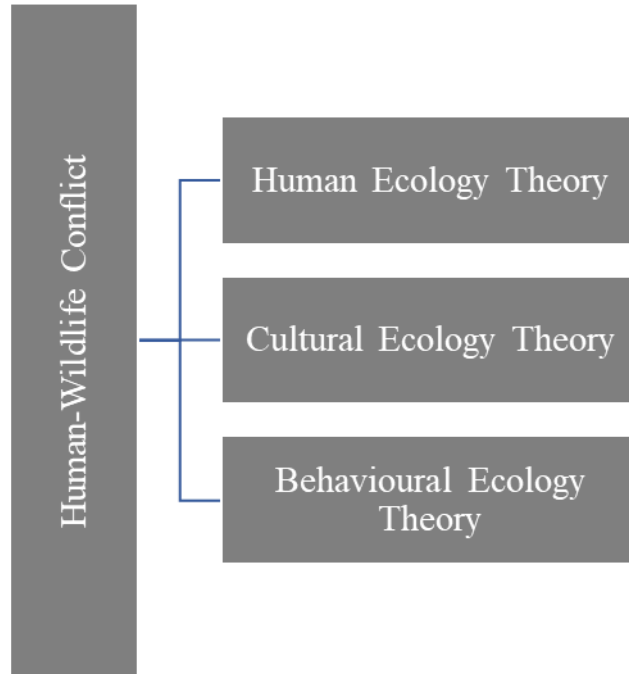
- 1. Adaptive Strategies:** By applying the cultural ecology theory, researchers can gauge the diverse adaptive strategies employed by the local communities, providing critical insights into the adaptability and resilience of human societies in the face of certain ecological challenges.
- 2. Fusion of Local and Scientific Knowledge:** This theory emphasizes the importance of integrating local knowledge with scientific research to design effective mitigation techniques. It is vital for us to know beforehand how local people perceive and interact with wildlife for developing suitable and locally-informed solutions.
- 3. Sustainable Livelihoods:** It posits that developing alternative livelihood options that are less susceptible to wildlife conflicts can lower dependence on practices that can trigger conflict, thus promoting coexistence.
- 4. Community Involvement:** It surmises that effective mitigation measures require active community involvement and the inclusion of local perspectives in conservation efforts. Empowering local communities through participatory approaches can boost the effectiveness of conservation projects.

This way, the cultural ecology theory provides an elaborate framework to review the complex interplay between human societies and their immediate environment in the context of raging human-wildlife conflict in Bardiya National Park.

In short, the conceptual framework and its implications in the present study may be submitted diagrammatically as follows:

Figure 1.1

Conceptual Framework on the Human-Wildlife Conflict



In essence, the above conceptual framework imparts a structured approach to grasp and address the nature, spread and extent of conflict between humans and wildlife in my study area. By fusing theoretical insights with empirical research methods, this study has attempted to contribute valuable ideas into mitigating such conflict and promote an amicable relation between local communities and wildlife.

1.6 Significance of the Study

This study shall be important for a number of reasons. Firstly, this study provides valuable insights into the interactions between humans and wildlife in Bardiya National Park. By examining the nature and extent of conflicts, it helps to understand how these interactions affect both human communities and wildlife populations.

Secondly, the research highlights the cultural and social dimensions of human-wildlife conflict. It explores how local communities perceive wildlife, the cultural significance of various species, and how conflicts impact social structures, livelihoods, and daily life.

Thirdly, the research emphasizes the role of local communities in conservation efforts. By involving them in the study and highlighting their perspectives, it promotes community-based approaches to conflict mitigation, fostering cooperation and sustainable solutions.

Fourthly, the research can serve as an educational tool for both local communities and the broader public. It raises awareness about the complexities of human-wildlife interactions and the need for balanced coexistence.

Fifthly, while focused on Bardiya National Park, the study's findings can have broader implications for other regions facing similar issues. The methodologies and insights can be applied to other contexts, contributing to global knowledge on human-wildlife conflict and conservation.

Finally, the findings can inform policymakers and park management about the effectiveness of current conflict mitigation measures and suggest improvements. This evidence-based approach can lead to more effective policies and strategies for managing human-wildlife conflicts. Moreover, it may also serve as a benchmark or stepping stone to conduct further and more advanced researches within the same field of inquiry. So, it is expected that this research, upon its approval and completion, will serve as a useful reference material for the teachers and students of anthropology as well as state conservation officials.

1.7 Limitations of the Study

Since, it is impractical and impossible to include each and every aspect of human-wildlife conflict in this type of limited study, due to restraint of time and resources as well as particularity of its objectives; this study has been bound by certain limitations. The study has adopted descriptive and analytical methods only. It is more of empirical research than a theoretical one.

Due to constraint of time and limitation of subject matter, this study focuses more on the scenario of Nepal as regards the human wildlife encounters. As such, the current study has been constrained by several limitations on account of the fixed timeframe, resources and nature of investigation.

Firstly, the research probes the human-wildlife conflict in 4 settlements of Bardiya National Park only which have suffered the most damage from animals in terms of life and property. They include the settlements in Geruwa Rural Municipality, Bansgadhi, Madhuwan and Thakurbaba Municipalities.

Secondly, it applies anthropological lenses in reading through the problem and leave all other perspectives, such as legal, economic or environmental.

Thirdly, it is based on field study and more reliant on the collection of primary and qualitative data from the research subjects, rather than secondary and quantitative information.

Fourthly, the study pursues analytical and deductive methods, leaving all other techniques. It resembles cross-sectional and across-case research to the exclusion of other approaches.

Finally, as for the time limit, being a student, the research was wrapped up within 6 months of time from its inception.

1.8 Organization of the Study

To arrange the study in a more scientific, systematic and well-managed manner, the research report has been organized into **5** different Chapters as below:

The **First Chapter** includes baseline information and requirements such as background, introduction, objectives of the study, research statements, research gaps, conceptual framework of study, significance and limitations of study as well as its organization.

The **Second Chapter** deals with literature review. It has shined light on what online and physical resources I, as a researcher, have used in finding facts and arriving at conclusion. In his opinion, reviewing related literature helps to place the study within the broader context of existing research on human-wildlife conflict. It further provides background information on the historical and current state of such conflicts in Bardiya National Park and similar regions. Moreover, by examining previous studies, I have identified gaps in the existing body of knowledge, allowing to focus on unexplored or under-researched aspects of human-wildlife conflict, ensuring the study addresses significant and novel questions.

The **Third Chapter** concerns with research methodology. It provides an overview of the methodology employed in producing this research report. It tackles matters such as the primary and secondary sources of data employed in the study, tools of data collection, and the process by which relevant data was collected and used at arriving in logical inferences.

The **Fourth Chapter** pertains to analysis and interpretation part and shines light on the policy, legal and anthropological perspectives on human-wildlife conflict prevalent in the Park area. Here, I have examined how government laws and policies view the plight of locals and how it differs or matches with the actual situation at ground, by means of a on-site field study. In doing so, I have applied key anthropological thoughts or perspectives which best suit the ground reality.

Finally, the **Fifth Chapter** focuses on the key findings derived, the conclusion reached and useful suggestions for minimizing the human-wildlife conflict in the Park and enable both the humans and wild animals to live in mutual harmony and coexistence. The suggestions also aim at refining any further research work that may be undertaken in this field of study in future. Thus, this final Chapter will offer a gist of study as well as the desirable steps to be taken in the days to come.

A **References Section** lists down all the printed and online materials that have been referred in course of making this report. Likewise, an **Annexure Section**, consisting of annexes includes the research tools such as interview schedules designed for different respondents, samples of focus group discussion form, sample of field notes, detailed list of research participants as well as photographs of the fieldwork and other events. This Section acts as an evidentiary support on how the academic findings and conclusions have been derived.

CHAPTER 2

LITERATURE REVIEW

The literature review is primarily composed of review of past academic works in the area of human-wildlife conflict. It includes a survey of social and anthropological researches done at the national as well as regional and international level. Moreover, anthropological case studies from different human societies have been reviewed extensively.

Only a handful of researchers have contributed academic content in the area of human and wildlife conflict in Nepal. This area thus still seems to be a neglected or less focussed aspect of social science inquiry in our context.

At this premise, the review of literature in the present inquiry has covered the following titles and treatises:

Hardin (1968), in his article "Tragedy of the Commons," published in the journal *Science*, contends that personal short-term interests often conflict with the greater good of society, and that exercising restraint can lead to long-term benefits for everyone. Examples of the Tragedy of the Commons include issues such as wastewater pollution, overfishing, and ineffective governance. Problems like ocean pollution, dead zones, and unregulated logging threaten marine ecosystems and the environment. Moreover, the atmosphere and forests are also being compromised, with unregulated logging endangering carbon storage capabilities. As the global population grows and resource demand intensifies, the negative impacts of the Commons become increasingly evident. Some believe that there may be no definitive solution to managing the commons, arguing that establishing property rights in public spaces could help mitigate overconsumption. In my view, alternatives could involve government intervention or strategies that encourage collective action. Ultimately, regulating consumption and resource use can help curb overconsumption, while government investment in conservation and resource replenishment can further prevent depletion. Thus, Hardin presents the tragedy of commons as an economic and environmental issue where individuals exploit shared resources, resulting in overconsumption, underinvestment, and eventual depletion of those resources. His thesis, floated some 56 years ago, holds relevance even today.

Robinson & Redford (1991), in their edited book "People, Parks and Wildlife: Towards Coexistence", explore the complex relationship between human communities and protected areas, emphasizing the need for coexistence between local populations and wildlife conservation efforts. They discuss the challenges and solutions for managing protected areas where wildlife and human interests intersect. In my opinion, they stress the balance between conservation goals and human needs and also examples from various regions including Asia and Africa highlighting successful and challenging instances of coexistence.

Mullin (1999), in her research paper "Mirrors and Windows: Sociocultural Studies of Human-Animal Relationships," published in the Annual Review of Anthropology, asserts that the relationship between humans and animals has a long-standing presence in anthropology and is now experiencing a resurgence of interest and urgency. One might assume that as anthropologists increasingly focus on urban environments where people are less likely to engage in livestock care or hunting, animals would play a smaller role in their research. Nevertheless, anthropologists have recently dedicated considerable attention to human-animal relationships, a topic that is also being re-examined in various other fields, including biology, geography, literature, and cultural studies. Mullin points out that anthropological research on human-animal relationships has predominantly focused on "traditional societies," limiting its applicability for those aiming to understand these relationships in industrialized contexts. She observes that much of the anthropological work on human-animal interactions has taken place in regions peripheral to industrial capitalism, often failing to consider the extent to which these areas have been impacted by global transformations.

Craighead & Servheen (2001), in their research paper "Living with Large Carnivores: Lessons from the Y2Y Region", published in the journal Wildlife Society Bulletin, offer an overview of the Yellowstone to Yukon (Y2Y) region, highlighting its significance as a large interconnected ecosystem that supports various species, including large carnivores like grizzly bears, wolves, and mountain lions. The authors discuss the challenges and opportunities associated with living in proximity to large carnivores, emphasizing the importance of understanding human-carnivore dynamics for effective coexistence. The paper outlines the ecological roles of large carnivores in maintaining healthy ecosystems, such as regulating prey populations and promoting biodiversity. They identify various challenges to large carnivore conservation, including habitat loss, fragmentation, and human-wildlife conflict,

particularly in regions with increasing human development. The authors share lessons learned from conservation efforts in the Y2Y region, emphasizing the need for landscape-level planning, habitat connectivity, and community involvement in conservation initiatives. As we can see, the importance of collaboration among stakeholders, including government agencies, NGOs, and local communities, is highlighted as essential for achieving effective conservation outcomes for large carnivores.

Hoare & Adams (2001), in their edited book "Human-Elephant Conflict: Case Studies from Africa and Asia", compile various case studies detailing the interactions and conflicts between humans and elephants in both African and Asian contexts. They begin with an overview of the causes and implications of human-elephant conflict, emphasizing the increasing incidences as human populations expand into elephant habitats. They offer detailed case studies from different regions in Africa and Asia. Various approaches to mitigating human-elephant conflict are discussed. These include physical barriers (like fences), deterrents (such as chili peppers), community-based approaches, compensation schemes for affected communities, and habitat management. The case studies of Hoare & Adams not only examine the specific nature of conflicts in each area, including crop raiding, property damage, and occasional human fatalities caused by elephants, but also emphasize the need for integrated approaches that consider both elephant conservation and the livelihoods of local human populations.

Karant & Madhusudan (2002), in their article "Mitigating Human-Wildlife Conflicts in Southern Asia", published in the compendium *Making Parks Work: Strategies for Preserving Tropical Nature*, argue that over the past 20 years in South Asian region, conservation and development agencies have increasingly advocated for more "inclusive" policies regarding parks. These policies are based on the assumption that human activities like farming, livestock raising, forest product collection, and hunting can "peacefully coexist" with wildlife conservation goals. However, this review demonstrates that the presence of human settlements within parks that host large, dangerous animals inevitably leads to unacceptable levels of conflict. Even if we momentarily set aside the negative impacts of these human activities on wildlife and parks, it is evident that rigidly adhering to the idea of coexistence could actually escalate conflicts in the future. It can be noted from their research paper that while enforced "coexistence" might sometimes be unavoidable due to local demographic,

geographic, and social factors, there is no evidence to suggest that it benefits either conservation or human welfare.

Mullin (2002), in her article "Animals and Anthropology," published in the journal *Society and Animals*, highlights that animal studies remain largely overlooked or misunderstood among contemporary anthropologists, often due to various misconceptions. Despite this, animals have historically been a focal point in anthropological research, and perceptions of this relationship have significantly evolved in recent years. Mullin argues that classical ethnographers, such as Geertz, Levi-Strauss, and Evans-Pritchard, used animals primarily as tools to investigate specific social structures or processes. In contrast, the human-animal relationship is increasingly recognized as a valid area of study on its own, deserving dedicated attention apart from other anthropological concerns. For instance, in his 2001 paper on the impact of Foot and Mouth Disease on the British sheep-breeding industry, Franklin not only focuses on sheep but also examines the various connections and reconnections that are fundamentally reshaping the British agricultural landscape. Mullin, in her article, observes that many emerging anthropologists are exploring the long-standing connections between humans and animals in new and insightful ways, which can be seen as a welcome development.

Athreya & Karanth (2003), in their research paper "Living with Leopards: Coexistence or Conflict", published in the journal *Conservation and Society*, address the challenges and dynamics of human-leopard interactions in India, particularly in areas where human activities overlap with leopard habitats. They examine the nature and extent of conflicts between humans and leopards, highlighting instances where leopards attack livestock or come into close contact with human settlements. They delve into the socio-cultural aspects influencing human attitudes towards leopards, including tolerance levels and traditional practices that impact coexistence. They discuss various strategies for mitigating conflict, such as compensation schemes for livestock losses, community-based conservation efforts, and education programs to promote awareness and tolerance. They provide insights from specific regions in India, such as Junnar in Maharashtra, where leopards are commonly found in human-dominated landscapes. It assesses the effectiveness of different conflict resolution approaches implemented in these areas. In my perception, the authors' work offers recommendations for policymakers to improve human-leopard coexistence, emphasizing the

need for integrated management practices that consider both ecological and human dimensions of wildlife conservation.

Sukumar (2003), in his article "Elephants and Humans: Conflict or Coexistence", published in the journal *Current Science*, begins with the increasing incidences of human-elephant conflict in India, especially in regions where human activities encroach on elephant habitats, leading to various challenges in coexistence. He discusses the ecological role of elephants in their habitats, highlighting their importance in maintaining ecosystem balance. He also addresses the social dynamics that contribute to conflicts, including population growth and land-use changes. The paper examines the different forms of human-elephant conflict, such as crop raiding, property damage, and threats to human life. He presents statistical data and case studies to illustrate the scale and impact of these conflicts on local communities and elephant populations. The article explores the consequences of human-elephant conflict for both humans and elephants, including economic losses for farmers, retaliatory killings of elephants, and challenges to elephant conservation efforts. In my outlook, the author seems successful in outlining various strategies for promoting coexistence between humans and elephants, including habitat restoration, the establishment of wildlife corridors, and community engagement in conservation efforts.

Campbell (2005), in his article "Nature's Discontents in Nepal", published in the journal *Conservation and Society*, illustrates how participatory conservation has introduced ideas in the form of buffer zones and policies to make conservation more amenable to local people's interests in Nepal. He presents the examples of protected areas like Langtang National Park, Makalu Barun Conservation Area and the Annapurna Area Conservation Project (ACAP) to corroborate his findings. His mainstay is that indigenous knowledge should be integrated with conservation goals to obtain efficient results. He opines that in the last two decades, nature conservation in developing countries like Nepal has adapted to new demands for social inclusion, and people-friendly protected area management. The article looks at contrasting institutional situations of an old national park under reform (Langtang), a new national park combined with a conservation area (Makalu Barun) and a conservation area with a high tourist footprint. Even some 20 year later, the proposition of Campbell stands true not only to the local regions of Langtang, Makalu Barun and Annapurna Areas but also to other places having a dense human-nature interaction.

Woodroffe & Thirgood et al. (2005), in their edited book "People and Wildlife: Conflict or Coexistence", posit that human-wildlife conflict is a significant challenge in conservation. As humans encroach upon natural habitats and as conservation efforts reintroduce wildlife to areas where they have long been absent, interactions between people and wild animals are increasing. Some species, even those that are beautiful and endangered, can severely impact human lives and livelihoods. Tigers can kill people, elephants can destroy crops, and wild dogs can devastate unattended sheep herds. Historically, people have responded to these threats by killing wildlife whenever possible, leading to the endangerment of many species that are difficult neighbours. However, the urgent need to conserve these species requires coexistence between humans and endangered wildlife. They offer a range of solutions to human-wildlife conflicts, including innovative and traditional farming practices, offsetting wildlife damage costs through hunting and tourism, and the development of local and national policies. The ideas put forth by the researchers seem to be applicable and imitable to my study area of Bardiya National Park as well.

Irby & Lindsey (2006), in their edited book "Human-wildlife conflict in Africa: Causes, Consequences and Management Strategies", begin with an introduction to the concept of human-wildlife conflict, defining it and outlining its prevalence and significance in the African context. Various factors contributing to human-wildlife conflict are discussed, including habitat loss, competition for resources, agricultural practices, and the socioeconomic dynamics of communities living near wildlife areas. The authors address the ecological, economic, and social impacts of human-wildlife conflict, including loss of crops, livestock, and human lives, as well as effects on wildlife populations and conservation efforts. Different management strategies to mitigate human-wildlife conflict are presented, ranging from deterrence techniques and habitat management to community-based conservation approaches. The role of policy and governance in conflict management is also examined. The authors further observe the importance of involving local communities in developing and implementing conflict management strategies is emphasized, highlighting the need for sustainable solutions that benefit both people and wildlife.

Turner & Berkes (2006), in their research paper "The Role of Traditional Ecological Knowledge (TEK) in Managing Human-Wildlife Conflict", published in the journal *Ecological Applications*, discuss the concept of TEK, which encompasses the knowledge,

practices, and beliefs developed by indigenous and local communities over time regarding their interactions with the environment. Their paper outlines the growing issue of human-wildlife conflict, especially as human populations expand into wildlife habitats, leading to challenges in conservation and management. The authors argue that integrating TEK into wildlife management practices can provide valuable insights and strategies for mitigating conflicts. The TEK offers a long-term perspective on animal behaviour, habitat use, and ecosystem dynamics. They present case studies illustrating successful applications of TEK in managing human-wildlife interactions, highlighting the importance of local community involvement in conservation efforts. This article concludes by advocating for the recognition and integration of TEK as a legitimate and vital component of wildlife management policies and practices. Their paper seems to offer a renewed focus for collaboration between scientists, managers, and indigenous communities to effectively incorporate TEK into modern conservation strategies.

Nagendra & Ostrom (2007), in their article "The Cultural Dimensions of Human-wildlife conflict: Insights from Indonesia", published in the journal *Ecology and Society*, introduce the concept of human-wildlife conflict, emphasizing its cultural dimensions and how these vary across different societies, particularly in Indonesia. The authors discuss the importance of cultural beliefs, values, and practices in shaping human-wildlife interactions. They explore how local traditions and social norms influence perceptions of wildlife and conflicts. The article presents specific case studies from Indonesia, examining the nature of conflicts between humans and wildlife, particularly with species such as elephants and orang-utans. These case studies highlight the role of local cultural practices in mitigating or exacerbating conflicts. The authors analyse the role of local institutions and governance structures in managing human-wildlife conflict. They argue that culturally appropriate and community-based governance can help reduce conflicts. The article offers recommendations for policymakers and conservationists, advocating for the integration of cultural dimensions into conflict management strategies. In my view also, fostering dialogue with local communities and recognizing the significance of traditional ecological knowledge goes a long way in meeting the twin goals of resource conservation and ensuring ease of living.

Nelson & Agrawal (2008), in their article "Community Based Wildlife Management: Improved Livelihoods and Wildlife Conservation", published in the journal *Ecology and*

Society, introduce the idea of community-based wildlife management (CBWM). They define it as an approach that involves local communities in the management of wildlife resources, emphasizing the interconnectedness of conservation and local livelihoods. They discuss the theoretical underpinnings of CBWM, drawing on concepts from ecological economics and social ecology to highlight the benefits of involving local communities in wildlife management decisions. They present case studies from various regions in Asia and Africa where CBWM has been implemented, illustrating its effectiveness in balancing wildlife conservation and community development. These examples demonstrate how local engagement can lead to successful management outcomes. The authors analyse the ways in which CBWM initiatives can improve the livelihoods of local communities, including increased income from sustainable wildlife use, job creation in ecotourism, and enhanced food security. Finally, the article examines the positive conservation outcomes associated with CBWM, such as improved biodiversity protection, habitat restoration, and reduced human-wildlife conflict. The crux of this paper is that when communities benefit from wildlife, they are more likely to engage in conservation efforts. This practice seems to be emulated to a greater extent in my study area of the Bardiya National Park also.

Segata & Lewgoy (2016), in their article "Animals in Anthropology", published in the Vibrant Virtual Brazilian Anthropology dossier, note that animals have long been a part of anthropology. From the early days of the discipline, they have appeared in rituals, classifications, and symbols. Animals have been hunted, raised, domesticated, eaten, feared, and revered. While anthropology is typically defined as the study of "man," this has often relegated animals to supporting roles, where they serve as background elements, assist in various activities, or help illustrate human thought and social organization. This perspective has contributed to the widespread view of animals as mere resources, as they are often depicted only within ecosystems or cultures centred on human experiences. Consequently, traditional anthropological approaches have tended to assign animals figurative, functional, or mediating roles, overshadowed by the prominence of human agency. However, a recent shift in anthropological research is beginning to change this narrative. As we can observe now, anthropologists and social scientists are increasingly moving animals to the forefront of ethnographic studies, highlighting the interconnectedness of human and animal lives and how these relationships are co-produced.

Boyd (2017), in his research paper "Archaeology and Human-Animal Relations: Thinking through Anthropocentrism", published in the Annual Review of Anthropology, discusses the idea that while achieving a non-anthropocentric perspective may ultimately be impossible, current research highlights its potential as a guiding principle. Anthropocentrism is defined as the ethical belief that only humans possess intrinsic value, leading to the view that nonhuman animals hold only economic and symbolic significance as perceived by humans. Boyd emphasizes the importance of adopting a non-anthropocentric attitude if we wish to be sensitive to other forms of life in the past, while acknowledging that we cannot completely move beyond human perspectives and experiences. This viewpoint contrasts with the multispecies approach, which, in its radical decentring, tends to overlook questions of human responsibility and the power dynamics between humans and nonhumans. Embracing a non-anthropocentric stance in human-animal relations means focusing on the interdependent lives of people and animals as mutually shaped relationships. In my conception, we require an awareness of the asymmetries inherent in these relationships, recognizing that the seemingly straightforward categories of people and animals are neither intuitive nor universally applicable across cultures.

Knight (2018), in his article "Human-Animal Relations", published in The International Encyclopaedia of Anthropology, discusses a notable issue with the term "human-animal relations." He argues that this phrase may lead to the misconception that humans are fundamentally separate from animals, implying that animals are inferior and justifying a distance between the two. This perspective reflects human exceptionalism, which reduces animals to generic entities. Conversely, some believe this criticism is an overreaction to a simple term used to describe the everyday interactions between humans and animals. Knight notes that humans exploit animals in various forms, such as for labour, sport and food. We often assess animal lives based on their usefulness to humans, focusing on the benefits we derive from them. Unfortunately, this understanding tends to overlook the animals' well-being, as they typically receive no advantages in these exploitative relationships and often suffer as a result. This one-sided approach is particularly evident in practices like meat production, where animals like sheep, goats, cattle, and buffalo are killed for human consumption. This paper by Knight underscores that hunting exemplifies this lopsided dynamic, as animals are hunted solely for human benefit, leaving them with nothing in return.

Treves & Karanth (2019), in their book "Conflict and Coexistence: Human-Wildlife Interactions in a Changing World", introduce the conflict-to-coexistence continuum, which is a framework for understanding and managing human-wildlife interactions. They provide numerous case studies from different parts of the world, illustrating how coexistence can be achieved. Examples include the use of beehive fences to deter elephants in Kenya and managing mule deer migrations in the United States. They present various practical solutions such as non-lethal methods to prevent depredation, the economic valuation of wildlife through ecotourism, and local and national policy interventions aimed at reducing conflicts. Further, they emphasize the importance of understanding the multifaceted nature of human-wildlife conflicts and the need for interdisciplinary approaches to promote sustainable coexistence between humans and wildlife. Thus, this book by Treves & Karanth tackles the role of human emotions, social identity, and tolerance in human-wildlife interactions, emphasizing the need to incorporate these aspects into wildlife management strategies. These ideas seem to be coherent in my current study effort also.

Konig & Kiffner et al. (2020), in their research paper "Human-Wildlife Coexistence in a Changing World", published in the journal *Conservation Biology*, highlight that human-wildlife conflicts have been and will continue to be a crucial topic in conservation and agricultural research. These conflicts are increasingly occurring in agricultural landscapes and in the context of trans-boundary wildlife management. Providing objective decision support can be challenging because the realities and perceptions of human-wildlife interactions vary greatly across rural, urban, and peri-urban areas. Land users who experience costs due to wildlife argue that they should be compensated for their losses and that preventative measures should be subsidized. On the other hand, supporters of human-wildlife coexistence policies, such as urban residents, may not face threats to their livelihoods from wildlife. This spatial heterogeneity in the costs and benefits of living with wildlife is common in most contemporary societies. In my understanding, research plays a vital role in understanding these conflicts and promoting and implementing solutions for sustainable coexistence, requiring various methods and tools. There is no one-size-fits-all solution.

Mekonen (2020), in her research paper "Coexistence between Human and Wildlife: The Nature, Causes and Mitigations of Human-wildlife conflict around Bale Mountains National Park, Southeast Ethiopia", published in the journal *BMC Ecology*, explores the extent and

impact of human-wildlife conflict in her study area of a national park in Ethiopia, Africa. She notes that human-wildlife conflict arises when wildlife needs and behaviours negatively impact humans or when human activities adversely affect wildlife. The primary causes of conflict as per her study included agricultural expansion, human settlement, overgrazing by livestock, deforestation, illegal grass collection, and poaching. To protect crops from raiders, farmers used techniques such as crop guarding, live fencing, scarecrows, chasing and smoking. To defend against livestock predators, they employed methods like fencing, chasing, scarecrows and guarding. The findings of Mekonen reveal that human-wildlife conflicts in the area significantly affected humans, animals, and the environment through crop damage, habitat disturbance and destruction, livestock predation, and the killing of wildlife and humans. There seems no point in differing with her thesis.

Fuller (2021), in her article "Human-Buffer Conflicts and Intimacies in Modernizing Nepal", published in the Australian Journal of Anthropology, argues that the older generation of women in Ludigaun, western Nepal, faces challenges regarding their work and relationships with buffalo, leading to an uncertain future and potential identity crises. She asserts that the bond between these women and their buffaloes goes beyond fulfilling material needs, forming a vital emotional connection. Fuller highlights that women's engagement with buffaloes reveals their active role in shaping identities related to caste, gender, and social status, rather than being passive figures. For these older Bahun women, keeping buffalo is essential for asserting their influence. Fuller depicts the human-buffalo relationship as a significant source of value for Bahun women, especially as out-migration has led to the departure of their children. As per my understanding, in an era when human-environment connections are increasingly fragmented, the human-buffalo relationships in western Nepal underscore the unity between humans and their surroundings, illustrating that intimacy and the process of becoming involve multiple species.

The Bardiya National Park (2021), in its "Five Year Strategic Plan on the Mitigation and Management of Human-wildlife conflict at the Bardiya National Park and its Adjacent Areas", reveals that the major wildlife inviting human and wildlife conflict in Bardiya district include elephants, tigers, rhinos, leopards and wild boars. The number of these wild animals is constantly on the rise. While building huge development infrastructure projects, no alternative

for the Park land is pursued by the planners. For e.g. the Mahendra Highway runs through the core area of Park, the Babai irrigation canal is not wildlife friendly, the animal migratory corridors being overwhelmed by humans, contraction of forest cover, and increasing anthropogenic activity/pressure on the Park limits, have made the wildlife unsafe in their own natural habitats. The Strategic Plan notes that forests, wildlife and environment aspects have not been adequately taken into account while running development projects. The identification of problematic animals like tigers and elephants and their rescue/control have become challenging. Many untoward incidents have occurred also because of lack of awareness and recklessness of local people towards the behaviour and nature of wildlife. For e.g. residents try to chase an elephant by surrounding it from all sides, teasing an animal that has entered their premises, being drunk while chasing it off, etc. The Plan further revisits the popular methods used to protect human lives and property, to promote human wildlife amity and also proposes future directions in this regard.

The Bardiya National Park (2022), in its "Management Plan of Bardiya National Park and its Buffer Zone (2022-2027)", envisions to protect and restore the biodiversity of Park and its buffer zone by living in harmony with nature and sustaining healthy Terai and Chure ecosystem. To achieve this vision, the Park has set aside a goal as to conserve and manage biological diversity at landscape level to ensure maintenance of a viable population of key-stone and flagship species including other wildlife applying science-based measures thereby maintaining park and people amity. The specific objectives of management plan are to protect rare, endangered and threatened wildlife with special focus to protected species mainly tigers, wild elephant, rhino, swamp deer, dolphins and gharials with appropriate protection strategies; to improve and manage habitat by maintaining wildlife friendly forest grassland mosaic and improving connectivity to contain wildlife in the Park and buffer zone forests; to regulate and promote sustainable eco-tourism that maintains ecological integrity and contribute to local economy without having negative impacts in the socio-cultural life of local community; to maintain human wildlife amity by decreasing human-wildlife conflict and live in co-existence; to promote participatory biodiversity conservation by empowering buffer zone communities while decreasing the risks of climate vulnerabilities and improving livelihood of local people; and to strengthen institutional capacity of Park and buffer zone through research, capacity building, coordination and collaboration.

Aljazeera English (2023), in its YouTube video "The Real Story Behind Nepal's Wildlife Conservation Success", starts with a statement that in Nepal, one of the Asia's poorest countries, a remarkable story is unfolding, as it has brought rhinos and tigers from the brink of extinction, with their numbers more than doubling in the last 15 years. But as wildlife numbers rise, human-wildlife conflict is also growing. An activist alleges that indigenous peoples are being driven off their ancestral homes and traditional ways of livelihood. Though the story deals with the coverage of Chitwan National Park, the facts are no different in the Bardiya National Park also, which shares similar topography, climate and the impoverished indigenous communities encircling the protected area from all sides. The video narrator reveals that during Nepal's civil war between 1996 and 2006, rhino numbers fell by one third. An army officer discloses in the video that 116 army members have laid down their lives in the conservation efforts over the past 50 years. In the past year (2022), the army arrested 27 poachers in and around Chitwan. However, the video shares concern over the increased militarization of Nepal's national parks and the disproportionate force used by the security personnel against the destitute indigenous communities living off the forests. Critics lament that this "fortress" model of nature conservation has led to gross human rights violations. In the later part of video, a victim of human-wildlife conflict recounts how he was attacked by a rhino from behind, two years back, while he was cutting grass for his goats in the Park area. Thus, this video portrays a bitter-sweet picture of the conservation efforts spearheaded in one of the leading protection areas of Nepal. Whereas these initiatives have ushered in encouraging results in raising the number of endangering species, it has also caused bitter hardships and lack of agency for the local population.

British Broadcasting Corporation (BBC, 2023), in its YouTube video "How Nepal is Saving its Tigers", begins with a statement that the tigers are making a remarkable comeback in Nepal, with their numbers more than doubling in the last 10 years. It is a small victory to bring them back from the brink of extinction. There are currently 4000 tigers in the whole world now, following a 95 percent drop in their population over the years. It is definitely something to be celebrated, but it does not come without cost. The common area shared among the tigers, their prey species and humanity shares are so tight that communities live in terror. The video also includes heart-breaking accounts of individuals falling victims to merciless tiger assaults. The army captain is seen in the video that a greater number of tigers

and larger number of people, definitely there is going to be conflict; and it is going to be a challenging job for the army to maintain peace between the two species. The video narrator observes that one of the key factors of Nepal's success has been the strong enforcement against poaching that involves the military. The video further covers the grim account of tiger assault on community leader Bhadai Tharu, leaving him without the left eye, whose responses have also been collected in this study.

Dhakal & Rimal et al. (2023), in their article "Spatio-Temporal Patterns of Livestock Predation by Leopards in Bardiya National Park, Nepal", published in the *Land* journal, begin with a premise that wild animals, humans and livestock have coexisted for thousands of years. However, in recent times, there has been a significant rise in human-wildlife conflict worldwide. The rapid growth of the human population and the increasing number of residences near protected areas have intensified conflicts with wildlife. As the human population grows, infrastructure development expands rapidly, and habitats shrink, many significant wildlife species are now confined to protected areas. These animals often venture into the surrounding areas of the Park in search of food, cover, and shelter, leading to frequent interactions with humans and livestock. The rise in human-wildlife interactions can lead to serious conflicts, especially when large animals cause human casualties. They further note that escalating human-wildlife conflict in the Park poses a significant threat to conservation efforts, as the Park has already spent a substantial amount of money (USD 80,000) compensating for livestock losses due to animal attacks over the past two decades. What should be our priority is to reduce conflicts and ensure the coexistence of wildlife and humans, it is necessary to improve habitat conditions to minimize competition within the Park, develop an insurance scheme for livestock and humans, provide support for improved livestock sheds, and implement practical strategies focused on specific animals and areas of the Park.

Kantipur (2024), in its YouTube video "The Rising Tiger-Human Conflict", begins with two recent observations: a female tiger being killed in Nawalpur district adjoining the Chitwan National Park; and a woman killed by a tiger in Bansgadhi Municipality of Bardiya district. As per the Global Tiger Forum, the current world tiger population has reached 5574 by the year 2023. The contribution of our country in this positive accomplishment cannot be overstated which has seen its tiger numbers rise from 121 in 2010 to 355 in 2022, marking

more than a threefold increase in 12 years. The Bardiya National Park itself houses 125 tigers at present. The video narrator also shines light on the raging tiger-human conflict which has imposed loss on both sides. Altogether 68 individuals have lost their lives across Nepal in the past 6 years from tiger attacks. Only 4 persons were killed from such attacks in the fiscal year of 2018/19 which swelled to 21 in 2021/22. However, the number of human fatalities has dropped to 10 in 2023/24. But this brief decline does not suggest that the threat has effectively passed out. The people living for decades around the national parks and wildlife reserves have been the hardest hit in this tiger-human conflict, the video notes. Due to rising temperatures, the water sources inside the protected areas are fast dwindling, thus pushing wildlife to India and other human settlements for quenching their thirst. To tackle this challenge, 180 water holes have been built in Bardiya National Park and 80 in Parsa National Park. Out of the 180 water holes in Bardiya, solar pumps have been installed in 50 of them for ensuring year-round water supply for the wild species. This video offers a compelling narrative on the success Nepal has achieved in not only conserving but also expanding tiger population as well as on the hefty cost that the local inhabitants have to pay in this regard.

This way, literature review has included a summary of previous studies, works and researches on the subject. Further, I have scanned the newspaper articles, publications of Department of National Parks and Wildlife Conservation, Ministry of Forests and Environment, magazine inputs, online and website content, etc. for the purpose of consolidating this study.

CHAPTER 3

RESEARCH METHODOLOGY

The study is of empirical nature and is based on descriptive as well as analytical method. I have pursued multi-resource methods. Both qualitative and quantitative data have been collected, with the qualitative information prevailing over the quantitative. Fieldwork has chiefly produced qualitative and primary data whereas quantitative and secondary data have been gathered mainly through library and internal study. I, as a researcher, want to identify this inquiry as cross-sectional and across-case research. Ratio scale of measurement has been used predominantly over other scales. The validity and reliability of research findings have been verified by checking them against the pre-set research problem and objectives. The conceptual and operational definitions of key terms have been derived from their connotations as used in anthropology and conservation studies.

3.1 Sources of Data

As with the case of most other researches, this study also incorporates both the primary and secondary sources of data, as follows:

3.1.1 Primary Data

The primary data involved in this study is comprised of the following documents/instruments:

- Interview Schedules filled up by me during fieldwork
- Focus group discussion, and
- Field notes filled through unstructured observation

Primary data has been collected in 4 key settlements of Bardiya district which border the Park and which are also most affected by the human-wildlife conflict. They include Geruwa, Madhuwan, Bansgadhi and Thakurdwara. Among them Geruwa is a Rural Municipality whereas other three are Municipalities. The fieldwork was done for a period of 10 days in the first and second weeks of June 2024.

Interview schedules have been filled with the respondents in all of these 4 settlements. Field notes were also filled on the basis of live and unstructured observation of events. Moreover, focus group discussions (FGDs) have been held among the respondents in the said areas.

3.1.2 Secondary Data

I have also depended on a wide array of secondary data elicited from the following sources:

- News reports and articles from daily broadsheets like the Kantipur, The Himalayan Times, Naya Patrika, etc.
- News reports and articles from online portals such as onlinekhabar.com, setopati.com, etc.
- YouTube videos (social medial content) posted by authoritative news organizations like the BBC, Aljazeera and Kantipur TV.
- Websites of government bodies involved in wildlife protection such as the MoFE, DNPWC, etc.

3.2 Tools of Data Collection

The key tools of data collection employed in this research include the following:

3.2.1 Interview Schedules

Interview schedules were employed as the basic tools of data collection. A total of 73 interview schedules were prepared and administered to as many respondents. These schedules have mainly generated qualitative and first-hand primary data.

The respondents have comprised diverse clusters of informants including local residents, elected local officials such as Mayors, Deputy Mayors, Chairpersons, Vice Chairpersons, Ward Chairpersons and Ward Members; victims and their families; officials and members of Forest User Groups; local police officials and conservation officials at the Bardiya National Park.

I have also held informal conversations with 4 anthropologists and sociologists following my return from fieldwork in June 2024 in order to gain better theoretical insights into my theme of study.

The composition of respondents and participants covered in this study may be presented as follows:

a) As per their affiliation

S. No.	Affiliation	Numbers
1	Local residents including victims and forest user group officials	51
2	Local level elected officials/staffs	10
3	Local police officials	6
4	Conservation officials at the BNP, Forest Officer and NTNC	6
Total respondents/informants		73

b) As per their gender and ethnicity

Male			Female		
Khas Arya	Indigenous Nationalities	Dalits	Khas Arya	Indigenous Nationalities	Dalits
24	25	4	6	11	3
Total male respondents: 53			Total female respondents: 20		

c) As per Victimhood

Total respondents at the field (Local residents)	51
Themselves attacked by wildlife	4
Their relatives killed or wounded by wildlife	16
Total victims from wildlife attacks	20

In order to cater to the nature of different interest groups, 5 different types of interview schedules were framed for primary data collection. These schedules featured some common questions as well as some different queries also, depending on their relevance to the study population.

3.2.2 Focus Group Discussion

I have also conducted 4 different focus group discussions (FGDs) in 4 different places of data collection namely Geruwa, Madhuwan, Bansgadhi and Thakurdwara. Each group involved 8 participants each comprising of women, victims, Dalits and indigenous nationalities, the elderly and forest user group officials. Whereas the interview schedules were filled individually, FGDs were collected in a group setting. The purpose of FGDs was to elicit critical data not covered by structured interview schedules and to verify the authenticity of information collected during the previous interview phase. The FGDs have covered 32 respondents, 8 at each of the 4 venues among the total number of 73 informants which I had contacted for study.

3.2.3 Field Notes

Field notes also have played a key role as tools in primary data collection. I would carry the field notes while conducting interviews or FGDs. I would quickly note down any pertinent information or a striking news story in those notes. Later, I would include them in the draft of research report. Based on unstructured observation of phenomena, I have filled 12 different field notes in total. In addition, memos, pocket diary, personal notes also accompanied the data collection efforts as and when appropriate.

3.2.4 Process of Data Collection

As for gathering primary data, I studied the subject area, the relevant news and stories in detail. Thereafter, I contacted the study population and built rapport with them. I acquainted them with the purpose, significance and process of this study. The questions to be included in the interview schedules were prepared in advance. Minor impromptu questions were also asked to further clarify the responses.

Once the responses were recorded, I noted them down in computer and placed them in the research report, wherever appropriate. These interview schedules are also included in the Annexure Section. I also transferred the contents of FGDs and field notes to electronic form and used them in the building of this report. Further, I have collected various photos displaying local initiatives in wildlife conservation and presented them in the Annexure Section. Due to their visual appeal and immediate effect, photographs have become an important source of data presentation here.

The fieldwork mostly yielded qualitative data as compared to quantitative information. The numerical data was covered mostly from the secondary sources including published reports, management plans, news reports and articles, both in print and online formats.

3.3 Sampling Methods

The universe in my research was the whole population living in the fringes of Bardiya National Park. However, as my study was not of a census type, rather a sample survey, I had to select key individuals and officials who could best answer my queries and offer authoritative data, rather than mere speculations. As such, the actual victims of human-wildlife conflict, their family members, conservation officials, enforcement officials, local level authorities and local community elders formed the informant base for my study.

3.3.1 Sampling Techniques

I have employed purposive sampling combined with snowball sampling to identify participants who have rich and relevant knowledge of the topic under study.

- (a) **Purposive Sampling:** Participants have been selected based on their direct experience or knowhow of human-wildlife conflict. I believe it has ensured the inclusion of diverse perspectives, including those of the local survivors, their kith and kin, local level authorities and government officials.
- (b) **Snowball Sampling:** It became especially useful for reaching out the victims of human-wildlife conflict, who have lost either a limb, property, crops or their dear ones in the hands of aggressive animals. They may not be easily accessible through traditional recruitment methods. Initial participants referred others with similar experiences or knowledge with whom I established contact later.

3.3.2 Sample Size

- (a) **Interview Schedules:** A total of 73 individuals, including 53 male and 20 female informants distributed across 4 different zones selected on the basis of pervasiveness of such conflict and spread across various sub-groups to ensure representation of varied experiences and perspectives. The lack of women representatives in key posts and their hesitation to open up before an interview can explain the relatively low composition of female participants in the present inquiry.

(b) Focus Group Discussions (FGDs): A total of 4 FGDs, each with 8 participants, conducted in 4 different venues to uncover the collective community perspectives.

3.3.3 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the informants in this research comprised of the following:

(a) Inclusion Criteria

- Residents of the Geruwa, Madhuwan, Bansgadhi and Thakurdwara settlements.
- Directly or indirectly affected by human-wildlife conflict in one form or the other.
- Individuals and officials having ample knowledge on the causes, magnitude, impact and the context of such conflict.

(b) Exclusion Criteria

- Individuals with no knowledge or experience related to the conflict with wildlife.
- Individuals not residing in any of the above 4 settlements.
- Participants unwilling or unable to provide informed consent.

By targeting this study population and employing purposive and snowball sampling, I have tried to ensure a focused yet diverse range of perspectives that will illuminate the complex interplay between human ambitions and animal needs in and around the Bardiya National Park.

3.4 Analysis and Interpretation of Data

The collected facts and figures have been subjected to data processing, analysis, interpretation and presentation so as to derive key findings and to show the ways forward. As this research is chiefly a qualitative study, no coding, classification and tabulation of data was done. The textual data elicited from primary and secondary sources was compiled, analysed and presented in the form of findings, conclusions and suggestions. The collected information is also displayed employing several tables and figures which have facilitated the analysis and interpretation of data. The discourse made from Chapters 1 to 4 has been summarized in Chapter 5. Other supportive data also provide a referential value to the research which have been presented in the Annexure section.

The organization of collected data, both primary and secondary, remains a vital step to ensure it is meaningful and manageable for further analysis and interpretation. The devices that I have used in this process include transcription of oral data from verbatim to written, cleaning the impure and redundant data, developing themes that represent the broader patterns or ideas emanating from the data, organization of responses into narratives that fit the research purpose, documenting the context and restructuring of key findings emerging from the study. I have also revisited and refined the themes as new insights emerged during the analysis. Then I annotated data with contextual details such as place, time and participant characteristics, which are central to attain interpretive accuracy.

By organizing data as such, I could draw meaningful conclusions from the data while maintaining the complexity and context inherent in those human encounters and experiences. Further, it helped the data remain accessible to its end users in its true form.

This study adopts a deductive method or reasoning, i.e. a conclusion is made based on some observed statements that are held to be true. In other words, the study starts with an existing theory or hypothesis which has been tested through empirical observation on the field. I began with an initial assumption that human-wildlife conflict was taking a heavy toll in the normal lives of local inhabitants in the study area. My presumption was guided by the media reports and the popular talk surrounding the topic, including those witnessed in social media handles. From the findings of actual fieldwork, my initial hypothesis was proved beyond doubt. Thus, I have moved from general to specific.

Likewise, I have embraced the objective approach which aims to discover objective truth through empirical observation, and without the influence of researcher's personal biases, preconceptions or impressions. In this light, the key techniques employed in the analysis of this study may be further bifurcated as follows:

3.4.1 Qualitative Data Analysis

Content analysis and narrative analysis have been the two prime techniques utilized during the analysis of qualitative data used in this inquiry.

(a) Content Analysis

Under content analysis, also known as document analysis, I have made a systematic examination of communications or current records.

In doing so, I have determined the presence of certain words, phrases and concepts within several qualitative texts available in print and online variants. Then the quantified and analysed the presence, meaning and relations of certain words, themes or concepts using the content analysis procedure.

For instance, I have marked and analysed the presence and connotations of several prominent words, phrases and concepts including conservation, Bardiya National Park, human-wildlife conflict, livelihood, biodiversity, indigenous communities, dependency, etc. These trigger words and phrases have helped him to locate the relevant text and draw useful contents from them.

(b) Narrative Analysis

Similarly, if we turn to narrative analysis, there is a consensus among qualitative researchers that stories and storytelling are the most popular methods of sharing useful information. From this perspective, most things that we read, heard or see are storied. Hence, the underlying aim of a narrative analysis is understanding what the stories convey and how.

Thus, narrative analysis follows a specific pattern of storytelling. Any narrative may be analysed based on its content (the substance of story), structure (how the story is told), functions (the purpose a story serves) and context (in what place or setting the story is told).

For instance, I, in course of fieldwork in Bardiya, came to hear from the locals, numerous stories on their lived experiences of human-wildlife conflict. These stories may cover, among other things, topics such as wildlife encounters, resilience, adaptation techniques, loss of a family member, damage to crops and livestock, animal assault, fencing, boundary walls, conservation, ecotourism, etc. These stories and the unique ways of storytelling followed by the locals have not only enhanced my curiosity and attachment with the narrative, but also helped me gain much insight and knowledge on the study area in an informal manner.

(c) Steps in Qualitative Analysis

Qualitative data analysis, in social science research like this one, involves several systematic steps to ensure the data is interpreted accurately and meaningfully. In course of this inquiry, I have pursued the following major steps while processing and analysing qualitative data:

- i) Data preparation
- ii) Familiarization with data
- iii) Theme development
- iv) Data interpretation
- v) Verification and validation, and
- vi) Reporting

3.4.2 Quantitative Data Analysis

By its nature, the scope of quantitative data in this study has been limited and a bulk of such data has been gathered through the works previously done by others, i.e. secondary sources of information. It is because fieldwork and primary data collection with study population often produces their lived experiences, opinions, perceptions and attitudes over an issue, which are essentially qualitative in nature. The present inquiry is also heavily tilted towards qualitative data and the use of quantitative data is limited to certain statistical outputs such as the number of total respondents, their variation and composition across each stratum.

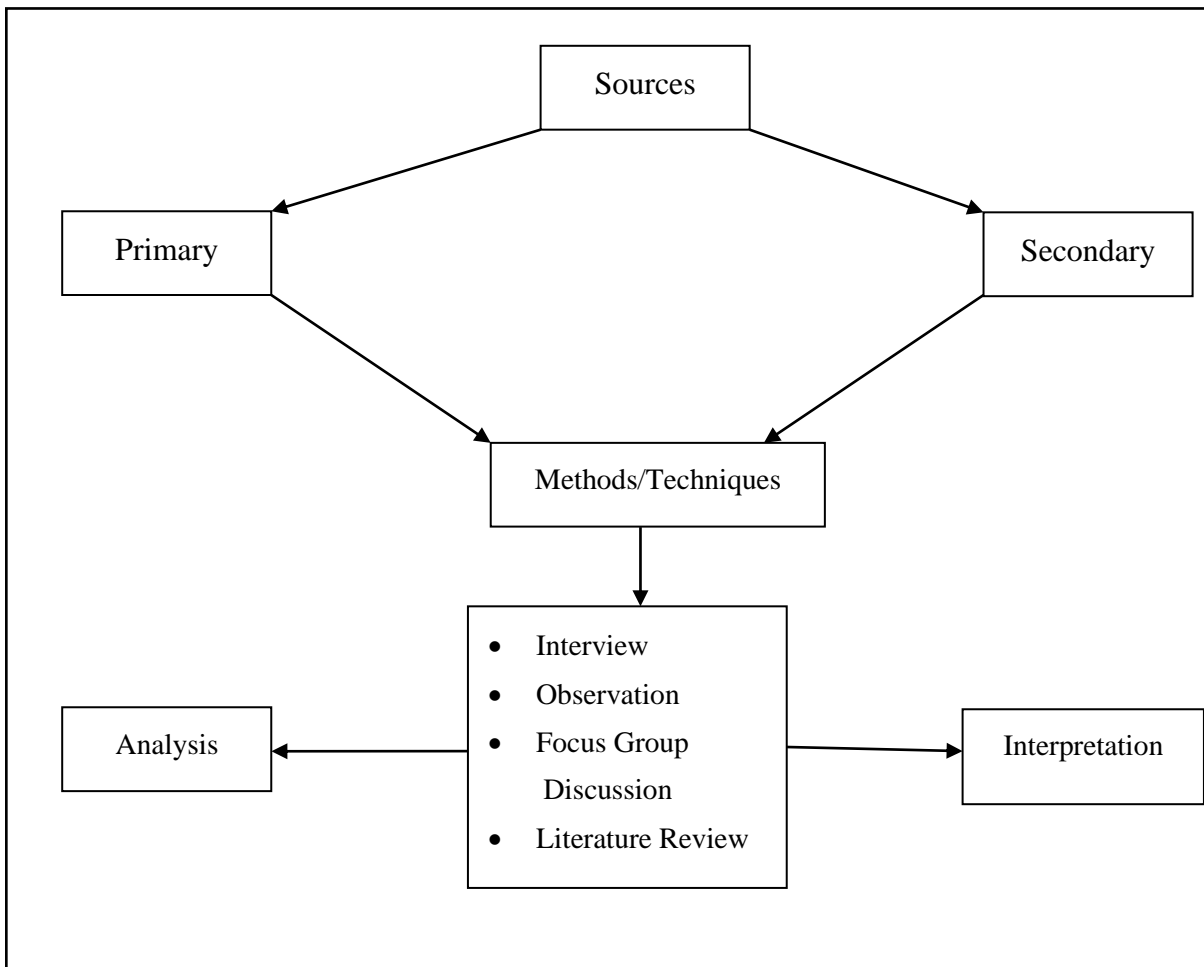
Quantitative data in social science research may be analysed using a variety of statistical techniques, which usually fall into descriptive and inferential statistics. Descriptive statistics summarize and explain the features of a dataset. They provide simple summaries about the sample and the measures. Common descriptive statistics include mean, median and mode. Only the measure of mean has been used in this study. Conversely, inferential statistics allow researchers to make conclusions about a population based on a sample. They help in testing hypotheses and making predictions. Common inferential statistics include hypothesis testing, correlation and regression and advanced statistical models. The current study did not require such complex calculations.

While reporting results, I, as an investigator, have chosen to interpret findings, use figures and tables and discuss limitations of the study and analysis methods. By applying these techniques, I have tried to derive meaningful insights from quantitative data, leading to pertinent findings and conclusions.

At this premise, the key modes of analysis and interpretation of data in the present study may be shown as in the following diagram:

Figure 3.1

Mode of Analysis and Interpretation of Data (Qualitative)



I have followed the APA (7th edition, 2019) style for citing in-text footnotes and for enumerating sources in the References section. I have also observed all the ethical guidelines that are expected in such types of social inquiry such as confidentiality, privacy, autonomy, integrity, voluntariness, transparency and informed consent.

3.5 Research Design

A research design signifies the overall blueprint of a research enterprise. It outlines the basic steps that the investigator will follow and sets out defined goals that the study aims to achieve. The question of which research design will be suitable for the collection and analysis of data in an economic and efficient manner relies on the nature of problem and access to the cats relating to such problem. Once the research problem is identified and defined, formulation of

research design follows subsequently. It is essential to collect relevant data with minimum effort and expenses, so as to control waste of time and resources. In truth, a well-built research design will not only immensely aid in obtaining plausible answers to research questions, but also for controlling variance.

While organizing the present study, I began with the Introduction Part comprising of background, statements of problems, objectives, significance of study, research gap, conceptual framework, limitations and the organization of study. This Part sets the stage of study and imparts key information to the users on the inquiry to follow. It was then followed by a Literature Review, a Section that implies a revisit of the resources already available in the line of inquiry. It helped me in knowing what other researchers have found in regard to the similar questions, what theories have been postulated and what gaps exist in the relevant corpus of knowledge. The third Part pertains to Research Methodology inclusive of research design, study area and data collection methods consisting of interviews, focus group discussion and unstructured observation. The fourth Part pertains to Data Analysis done through content analysis, narrative analysis and the presentation of figures and tables.

Ethical considerations are also a critical aspect of my research enterprise. In course of my study, I have paid due attention to the crucial factors of informed consent, confidentiality, respect for participants, integrity, voluntariness and transparency. In addition, expected outcomes, timeline and an organized dissemination of findings also feature prominently in my research design.

Thus, by primarily employing qualitative methods, this research has attempted to offer a holistic understanding of human-wildlife conflict in Bardiya National Park and contribute to more coherent and community-inclusive mitigation strategies.

CHAPTER 4

ANALYSIS AND INTERPRETATION

Analysis and interpretation refer to the process in which raw data is transformed into meaningful insights, revealing the underlying patterns and dynamics of human-wildlife interactions. Through rigorous analysis, researchers can identify the root causes of conflicts, assess the effectiveness of current mitigation measures, and understand the socio-cultural context of the affected communities.

Interpretation goes beyond mere data presentation; it provides a nuanced understanding of how and why certain conflicts occur, considering ecological, economic, and cultural factors. This depth of understanding is essential for developing tailored, effective conservation strategies that not only protect wildlife but also address the needs and concerns of local communities. By integrating qualitative and quantitative data, the analysis and interpretation ensures that the findings are robust, comprehensive, and actionable, ultimately contributing to more sustainable and harmonious human-wildlife coexistence.

In this light, the analysis and interpretation in the present study have produced the following lines of inquiry:

4.1 Animals in Anthropology

Animals have received constant attention in old and recent anthropological discourses. Past and present anthropologists have thoroughly shone a light on the various facets of human-animal interactions, sometimes pleasant and at other times unpleasant also. Whereas the inquiries of yesteryears would focus more on the animals' utility for humans and animals occupied place in the importance hierarchy accordingly, modern inquests tackle a multitude of newer ideas, including commercial animal farming, pet animals, animal organ transplantation, zoonotic diseases, animals in advertisements, and so on. In this premise, a synopsis of some of the major treatises on the quintessential human-animal bond may be framed as follows:

4.1.1 Knight and the Human-Animal Relations

Knight (2018) argues that the "relations" part of "human-animal relations" is vague as to suggest an association. It can refer to direct human contact with individual animals but also to

the connection between humans and animal populations²⁶. It can also imply the human use of an animal product with the user barely aware of the origin of that animal who succumbed to his or her cause. For e.g., the average meat consumers may have only a scanty knowledge of the animal behind the dish.

However, human relations with wild animals happen to be of a formal kind which is because these animals are disposed to refrain from a direct contact with humans, who could be hunters in another shape and form. They are usually so much conscious that individual wild animals are averse to establish a long-term or working relation with the people around them. Tame or domesticated animals are a different phenomenon, however. They can not only bear close human proximity but also actually enjoy them. It is because of an absence of any imminent threat from humans to their lives. Instead, domesticated animals are dependent on their masters or their families to meet their food and shelter needs.

4.1.2 Mullin and Her Sociocultural Studies

Mullin (1999) makes a point that while having pets may foster more positive views of certain animals, industrial capitalism incentivizes viewing animals as mere objects, machines, or resources. In Western society, people are increasingly reluctant to think of animals as food, even as meat consumption continues to rise. In this context, shrink-wrapped packages and precooked meals are only loosely associated with "animals" through our imagination. Slaughterhouses and meatpacking plants have moved to the outskirts of cities, and many individuals, vegetarians included, prefer to remain unaware of the practices within these facilities or the lives of the workers there. The individual killing of animals for food can be unsettling, but industrial slaughter is often even more disturbing, as it can evoke parallels with mass extermination of humans.

Mullin further observes that with the rise of ecotourism, global traffic in exotic animals, the spread of factory farming, and transnational conflicts over conservation and the treatment of animals, it is especially important that humans' relationships with animals in one part of the world be considered in relation to those in others²⁷. Recently, the study of human-animal relationships has become a seminal area of interest, and this trend is expected to persist in anthropology and other fields.

²⁶ Knight, J. (2018). Human-animal relations. *The International Encyclopaedia of Anthropology*, 3.

²⁷ Mullin, M.H. (1999). Mirrors and windows: Sociocultural studies of human-animal relationships. *Annual Review of Anthropology*, 216.

4.1.3 Mullin, Animals and Anthropology

Mullin (2002) reminds us that contemporary anthropologists are increasingly exploring how new methods of animal production and management are reshaping human-animal interactions. Animals are now patented, cloned in laboratories, raised in private facilities, and their organs are transplanted across species. In this evolving landscape, ethnographic research has expanded to multiple sites, examining animals in diverse settings including rural, urban, and online environments. This shift has also sparked interest in emerging areas such as biotechnology, the food chain, ecotourism, global capitalism, and the construction of national identities, all of which reflect unique relationships with and dependencies on animals.

Nearly a half century ago, Levi-Strauss urged anthropologists to acknowledge the ways in which animals provide humans with an important conceptual resource, while anthropologists of a more materialist sensibility attended to the ways that animals serve as sources of power, wealth and inequality²⁸.

However, recent research has challenged the divide between material and conceptual aspects, advocating for the significance of examining the connections between the semiotic and economic dimensions of human-animal interactions. While anthropologists continue to study animals primarily to gain insight into human behaviour, there has been a shift away from the anthropocentric perspectives of the past that portrayed animals as mere passive objects of human influence. Earlier studies often overlooked the agency of both humans and animals, with human actors receiving far more attention than their animal counterparts.

4.1.4 Segata, Legwoy and Animals in Anthropology

Segata & Legwoy (2016) receive animal studies as a vast interdisciplinary field that encompasses not just anthropology but also sociology, history, philosophy and literature. This field is further divided into various areas of interest, including animal rights - which advocates for the moral recognition of animals as subjects with rights equal to those of humans; anthropozoology - which examines the biological connections between species, including humans; ethology - which studies animal behaviour; and human-animal studies - which investigates the social relationships between humans and animals.

²⁸ Mullin, M.H. (2002). Animals and Anthropology. *Society and Animals*, 390.

This expansive movement appears to reflect an epistemological and moral shift in how we understand human-animal relationships. Building on the groundwork laid by the first generation of researchers, new studies have emerged that highlight animality as a significant theme, particularly concerning the impacts of globalization and science. This second group is in general more interested in inquiring about animals in less exotic contexts than those commonly emphasized in the discipline, but which equally place anthropology in limited, by inserting themselves in the crossing of effects and influences²⁹.

4.1.5 Boyd and His Links of Animal Relations and Archaeology

Boyd (2017) posits that archaeology focuses on the study of humans concerning nonhumans and the material world. In simple terms, both people and animals exist as beings interconnected with each other and with various materials and substances. Understanding how these relationships were experienced and navigated is central to historical research. Every life form defines itself through its connections with others, which involves recognizing or disregarding the existence of other beings. For instance, examining the domestication of various animals highlights the limitations of symbolic and cognitive approaches when they maintain a divide between animal nature and human culture.

Today, multiple theoretical frameworks regarding human-nonhuman-animal relations are well-established in contemporary critical animal studies. By the early 2000s, the general disciplinary position on animals began to shift, with many re-examining the basic assumptions about animals and nonhuman bonds³⁰. Similarly, in modern sociocultural anthropology, numerous ethnographic studies have increased awareness of different perspectives and non-Western ways of understanding and categorizing nonhuman animals.

Previously, cultural anthropologists were primarily interested in nonhuman animals concerning their roles in human practices, such as rituals, and their symbolic significance within human cosmologies. However, current research on human-nonhuman-animal relations now encompasses a broader array of significant topics, including newer themes such as climate change, the biopolitics of species extinction, bio-capitalist xenotransplantation and bioengineering practices.

²⁹ Segata, J & Legwoy, B. (2016). Animals in anthropology. *Vibrant Virtual Brazilian Anthropology*, 33.

³⁰ Boyd, B. (2017). Archaeology and human-animal relations through anthropocentrism. *Annual Review of Anthropology*, 302.

4.1.6 Fuller and Human-Buffalo Conflicts in Western Nepal

Fuller (2021) contends that the relationships between humans and buffalo in Ludigaun, western Nepal, are significant for identity formation, influencing how social groups interact with one another, engage with development, shape a specific form of nationalism and state-building in Nepal, and relate to the environment. Both conflicts and bonds between humans and buffalo highlight the essential role of these connections in kinship and individual development. They also reflect a society undergoing significant gender, generational, and environmental changes, alongside a shifting agricultural landscape. This context underscores the strategies villagers employ to navigate and leverage these transitions, including pursuing education abroad.

The shared experiences of older women in the community suggest that they play a central role in all facets of social reproduction in Ludigaun. Their hard work and struggles are deeply intertwined with the investments made in the identity of the village. They bear and raise children, they feed people and animals, they work hard and through their work, they are key to reproducing social and moral identities³¹. In this context, the lives of women and buffalo are closely intertwined, with their well-being intricately linked.

4.1.7 Hardin and the Tragedy of Commons

The crux of Hardin (1968) in his famed article "Tragedy of the Commons" is that individuals, acting in their own self-interest in a shared resource system, will ultimately deplete or degrade that resource, leading to collective ruin.

Hardin argues that when people have unrestricted access to a common resource - like air, water, or grazing land - they tend to overuse it because they benefit individually from its use, while the costs of overuse are shared among all users. This results in the tragedy where the long-term sustainability of such resource is compromised, illustrating the need for regulation or management to protect common goods from over-exploitation.

By summing up the individual partial utilities, the rational herdsman determines that the most sensible choice is to add another animal to his herd. And then another, and another. This conclusion is reached by every rational herdsman who shares a common resource.

³¹ Fuller, S. (2021). Human-Buffalo Conflicts and Intimacies in Modernizing Nepal. *Australian Journal of Anthropology*, 17.

Herein lies the tragedy: each person is trapped in a system that drives him to expand his herd indefinitely, despite the finite nature of the world. The inevitable outcome is ruin, as each individual focuses on pursuing their own best interest in a society that upholds the notion of freedom in common resources. Freedom in a "commons" brings ruin to all³².

Another plank of Hardin's thesis is that even when the limitations of the commons are recognized, there are still areas where reform is challenging. Since no one owns the Earth's atmosphere, it is often treated as a communal waste disposal site where everyone can release pollutants.

This behaviour has led to negative outcomes, including acid rain, the greenhouse effect, and the depletion of the ozone layer. Industries and nations often view the treatment of industrial waste as too costly. Similarly, the oceans are viewed as another communal dumping ground.

However, maintaining the right to pollute could ultimately have disastrous consequences for everyone. Nations are only starting to develop regulations to mitigate this harm.

This tragedy of commons theory of Hardin also applies to a certain extent in case of this research enterprise also. Human population in and around the Parklands has been rising owing to north-south and village-town migration.

Moreover, the wildlife population is also blooming due to stringent protection measures enforced by the Park administration. Thus, the twin-faced surge in population, both among the humans and wildlife, has exerted severe pressure on finite, spatial resources. As the resources meant for wild animals are being consumed by humans, so have the wild animals also been pushing into human settlements to consume the resources meant for the local dwellers.

4.2 Livelihoods and Lifestyles of the Local Population

I have conducted on-site field research in 4 key settlements in and around the Park perimeter, namely, Bansgadhi, Geruwa, Thakurdwara and Madhuwan. All of them shared identical livelihoods and lifestyles of the local population owing to the similarities in topography, climate, population density, migration patterns, culture, reliance on forests as a way of life and other key socioeconomic indicators. It may be discussed in greater detail as follows:

³² Hardin, G. (1968). The Tragedy of the Commons. *Science*, Vol. 162, 1244.

4.2.1 Geruwa

Geruwa is one of the research areas from where I collected primary data with the local respondents and officials. Geruwa Rural Municipality lies on an island made by the alluvial deposit of Karnali river in the western part of Bardiya district. It is made up of the erstwhile Village Development Committees of Patabhar, Gola, Pashupati Nagar and Manau. Currently, having 6 wards in total, Pashupati Nagar serves as its administrative headquarters.

Geruwa is flanked by the Bardiya National Park and Geruwa stream to the east, Rajapur Municipality, Kailali district and Karnali river to the west, Kailali district and Bardiya National Park to the north, and Rajapur Municipality to the south. It shares an elevation from 145 metres to 180 metres from the sea level. A local level having a total area of 78.41 sq. kms, it houses a population of around 40 thousand as per the 2021 Census.

Tharu and Nepali are the prevalent languages in this Rural Municipality. Shanti Bazar, Patharaiya, Nawajyoti Bazar and Prashenipur are its major trade centres. Agriculture and animal husbandry are the major sources of livelihood here. Paddy is the dominant crop raised by the locals followed by wheat, corn, lentils and vegetables. Domestic animals like buffaloes, cattle, sheep and goats are raised. Trade and commerce are not in a much-developed state here. Even the employment opportunities are few and far between.

This locality shares a tropical and temperate climate marked by heavy downpours in the monsoon season of June-September. Most of the roads here are dirt tracks or gravelled paths. As for the education part, the Rural Municipality comprises of 5 secondary schools, 7 basic schools, 15 primary schools and 56 elementary child development centres. As for the health part, it consists of 4 health posts, one Ayurveda dispensary, one community health unit and 72 rural health volunteers are also listed as basic healthcare providers.

I found from observation and conversations with locals that most of them are middle class and lower middle class in terms of economic stratum. The Tharus are the aboriginal or indigenous community and other communities migrated there from the hills up north. Brahmins, Chhetris, Magars and Dalits are the major migratory caste groups who descended from the hilly districts of Dailekh, Dang, Rolpa, Rukum, Surkhet, Achham, Jajarkot and Salyan in search of better opportunities of livelihood and ease of life. This migration pattern seems to be a generational affair beginning some 60 years ago and continuing even today, albeit at a

slower pace. Both the Tharu indigenous community and their migratory neighbours seem to share bonhomie and good rapport among themselves.

More than 50 km of this Rural Municipality borders with the Bardiya National Park in the east and north. Due to its proximity with the Park forests and its own lush community forests interspersed in between, Geruwa happens to be one of the hotbeds of human-wildlife conflict across the whole district of Bardiya. The local inhabitants live in a constant state of fear from wildlife attacks hardly a household remains which has not been invaded by the predators emerging from jungle in one way or the other.

4.2.2 Bansgadhi

Bansgadhi Municipality is one of the 8 local levels of Bardiya district out of which 6 are Urban Municipalities and 2 are Rural Municipalities. This Municipality is made up of the erstwhile Village Development Committees of Beluwa, Motipur and Deudhakala. It is situated some 25 km northeast from the district headquarters of Gulariya. The east-west Mahendra Highway runs through the midst of this Municipality which constitutes the Chure region to the north and Terai plains to its south. It is flanked by Kaprechaur of Salyan district to the north, Mankhola of Banke and the Gyang stream to the west, Bardiya National Park to the north and Badhaiyataal to the south. It is spread over an area of 206 sq. km and harbours a tropical to temperate climate. The average elevation is 154 metres above sea level and average rainfall amounts to 1130 mm. Temperatures reach as high as 43 degrees Celsius and can drop as low as 7 degrees. It is one of the few localities in western Nepal that houses the Chepang community.

A majority of land in the Bansgadhi Municipality is tillable, fertile and arable, thus acting as an attraction for north to south migration. Out of its total surface area, 40 percent is made up of farmland, 50 percent is covered by forests, 3 percent by bushland, 3 percent by grassland, 2 percent by water bodies, and one percent each by dense township and sand deposits. Agriculture and animal husbandry are the prime means of eking out living especially in the rural stretches. Paddy, wheat, corn, lentils, mustard, potato and sugarcane are the staple crops raised by the locals. Buffaloes, cattle, sheep and goat are the favourite livestock selected for rearing. As for the urban locales, small businesses have showed up and some are even involved in cottage industries. Foreign labour migration is also a common sight here.

As with the other parts of Bardiya, the Tharus constitute the indigenous community populating the place for more than a hundred years. However, now the migrated communities descending from the northern hilly regions of have made up the majority in most wards. They predominantly include the Brahmin, Chhetri and Magar caste groups followed by the Dalits who have shifted their domicile from districts such as Dang, Rolpa, Rukum, Baglung, Parbat, Achham, Dailekh, Jajarkot and Surkhet.

The Bansgadhi Municipality is one of the human-wildlife conflict prone areas of Bardiya due to its affinity with the Park forests as well as its own community forests grown and preserved by the locals.

However, the problem seems not as acute as with the other localities of Geruwa, Madhuwan and Thakurdwara. Yet, the normal lives of locals are shattered now and then by the occasional aggressions of wildlife, either on their person or property.

4.2.3 Thakurdwara

Thakurdwara is one of the major population centres of Thakurbaba Municipality located in Ward No. 9. The Municipality itself was formed by merging the erstwhile Village Development Committees of Neulapur and Bagnah. It is flanked by the Bardiya National Park to the east, west and north and by the Madhuwan Municipality to the south.

The Thakurbaba Municipality spans an area of 104.52 sq. km and lies from 144 to 214 metres above sea level. It is divided into 9 different wards comprising of 11,564 households in total. It houses a population of 57,362 with a population density of 548.55 persons per sq. km. Males comprise of 29,070, females 28,287 and others amount to 5 individuals as per the Household Survey conducted in 2023. The temperature varies from 8 to 43 degrees Celsius, thus offering a tropical to temperate climate. Annual rainfall averages 1120 mm per year.

The east-west highway and postal road run through the midst of this local level. Due to presence of the vaunted Bardiya National Park in this Municipality, the residents living in its vicinity benefit from the revenue and opportunities generated by both internal and external tourism. The locals are engaged in the homestay business, jungle safari, rental vehicles and hospitality jobs. Trade and commerce are also sprouting along the east-west highway section of the Municipality. As for the rural belt, agriculture and animal husbandry remain the staple

professions of locals. Wheat, paddy, lentils, mustard, sugarcane and corn are the popular farming picks of locals. They also raise livestock including cattle, buffaloes, sheep and cattle.

The Tharus comprise the indigenous community here but are now outnumbered by the migratory communities from neighbouring and nearby districts, especially from the northern regions of Salyan, Pyuthan, Dang, Dailekh, Surkhet, Jajarkot and Rukum. Brahmin, Chhetri, Gurung and Magar communities form the bulk of migrants followed by some Dalit population as well. The migration push seems to have commenced some 50 to 60 years ago which is still trickling down.

The prospects of abundant agro-production, availability of markets to sell produce, employment opportunities from tourism business, and easy transportation facilities seem to be the pulling factors. Apart from self-employment, third party employment also seems to be lucrative source of livelihood because of the presence of government offices, educational institutions, shops and outlets and the budding hospitality business.

As for the spectre of human-wildlife conflict, it is not so much pervasive in the urban locales from where the highways pass. But the problem is more pressing in the hinterlands, especially in areas such as Thakurdwara, one of my places of study, due to its sharing of borders with the Park jungles.

4.2.4 Madhuwan

The current Madhuwan Municipality has been formed out of the erstwhile Village Development Committees of Sanoshree, Tarataal, Suryapatuwa and Dhodari. It lies some 6 km west from the district headquarters of Gulariya. It is flanked by Barbardiya Municipality in the east, Rajapur Municipality and India in the west, Bardiya National Park and Thakurbaba Municipality in the north and Gulariya Municipality and India in the south.

The Madhuwan Municipality covers a total area of 129.73 sq. km and lies at around 175 metres from the sea level. A population of 58,346 individuals reside in 11,243 households. Males account for 29,517 and females for 28,829 of the entire population. It comprises of 9 wards in total. Most of the lands in this Municipality are flat and fertile.

Hence, it has always attracted north to south migration of the hilly communities including Brahmins, Chhetris, Magars, Gurungs and Dalits.

As for the ethnic makeup of the residents, the indigenous nationalities constitute a clear majority, followed by the Brahmins, Chhetris and Dalits. The Hindus constitute a dominant religious group followed by Christians, Muslims and Buddhists. Tharus are the leading ethnic group. Education in the Municipality is served by 41 schools of different levels as well as a college. Orali, Machhad, Belwa, Pragati, Kusumba and Madhuwan are the key trade hubs in the region. Around 57.81 percent of the total population uses tapped water while the rest use water sourced from tubewells, ponds, fountains and streams. About 87.79 percent of the locals have electricity connection and others are dependent on solar as a source of energy.

As with other study areas, agriculture and animal husbandry seem to be the preferred mode of livelihood in this Municipality also. Paddy, wheat, lentils, corn and mustard dominate the staple crops. The locals also raise animals like cattle, buffaloes, sheep and goats. Small and medium businesses have dotted the urban locales with good road connectivity. Many inhabitants have also chosen foreign labour migration as a means of living. Most of the residents are self-employed in the agro sector and a few have taken up jobs in the government and private sectors.

As for the exposure to human-wildlife conflict, the Madhuwan Municipality is one of the most aggravated communities in Bardiya district. Be it the urban neighbourhoods or the rural hamlets, wildlife attacks have gone unabated leading a substantial loss of lives and property of the residents. Most of the households have suffered harm at the hands of wild predators in one form or the other.

4.3 Distinction between the Indigenous and Modern Techniques of Forest and Wildlife Conservation

Whereas the indigenous techniques benefit from centuries of continuous traditions, skills and experiences, modern techniques are the offshoot of the recent scientific inventions and breakthroughs. The indigenous practices are the assets or heritage of ethnic people having their own, peculiar ways of life and adaptation strategies to deal with a challenge, problem or even opportunity. Thus, the indigenous techniques essentially differ from the modern ones as regards the conservation of forests and wildlife across different parameters. Below is a brief comparison between them in a tabular form:

Aspects	Indigenous Techniques	Modern Techniques
1. Knowledge Base	It is rooted in traditional ecological knowledge (TEK).	It is grounded in modern scientific research and data analytics.
2. Methods	It entails methods such as taboos, folklore, sacred groves and community restrictions.	It embodies methods such as national parks, reserves, conservation areas and zoological gardens.
3. Tools and Technology	It employs low-tech tools and manual technology like sickles, ploughs, hand planting and natural seed dispersal.	It employs advanced tools and modern technology like radio collars, drones, trap cameras, GIS, AI and genetic studies.
4. Approach	The approach here is community centric, culture sensitive and holistic.	The approach here is technology and data driven, scientific.
5. Resource Use	It prefers sustainable use of resources in respect of nature's regenerative capacities.	It also prefers sustainable management but may include intensive interventions and even invasive techniques.
6. Focus on Biodiversity	It lays emphasis on preserving entire ecosystems as they are culturally valuable and irreplaceable.	It lays emphasis on targeted species intervention (e.g. a tiger, a snow leopard or a pelican) and habitat restoration.
7. Cultural Integration	It is deeply integrated with the local knowledge and cultural practices.	It is deeply integrated with the official plans and policies thereby marking a detachment from the traditional knowledge and cultural sensibilities.

8. Governance	It is enforced informally and voluntarily by the local communities.	It is implemented formally and often times coercively by the government agencies and law enforcement.
9. Education and Awareness	Education and awareness are spread through oral traditions and storytelling methods.	Education and awareness are spread through scientific studies, formal trainings and campaigns.
10. Challenges	The indigenous techniques are vulnerable to modernization and loss of cultural significance. Problems may also appear in storing the traditional knowledge for future retrieval.	The modern techniques run the risk of alienating the masses in conservation efforts due to their insensitivity toward local needs. They may also be cost-intensive, require high degree of expertise and can be less inclusive of the community.

In fact, both approaches have their strengths and limitations and are often complementary in modern conservation strategies. Integrating indigenous practices with modern techniques can lead to more effective and inclusive conservation outcomes. This scenario seems to be desirable as for my study area of Bardiya National Park as well.

The problem here lies in a lack of symmetry or harmony between the traditional and modern approaches to resource conservation. If established, the new approach would aid in meeting the goals of protection of flora and fauna as well as in bringing out content and sense of ownership for the hard-pressed locals.

4.4 Forms or Variants of Human-Wildlife Conflict

Human-wildlife conflict occurs when the needs and behaviour of wildlife impact negatively on humans or when humans negatively affect the needs of wildlife. These conflicts can take various forms, depending on the species involved, the ecological and social contexts, and the specific interactions between humans and wildlife. Below are the major forms or variants of human-wildlife conflict:

4.4.1 Attacks on Humans

Here, wildlife attacks humans, causing loss of life or limb. The typical species involved

include the big cats (e.g., tigers, leopards), bears, rhinos, elephants, wolves, etc. Loss of human life, injuries, psychological trauma, medical expenses and fear and anxiety in the affected communities are the undesirable effects of attack on humans.

4.4.2 Damage to Physical Property

Here, wildlife damages infrastructure, homes, barns or other property. The typical species involved are elephants, rhinos, bears, etc. The adverse impacts include repair and replacement costs for the owners, insurance claims, disruption of human activities, etc.

4.4.3 Crop Raiding

Under crop raiding, wildlife damages or consumes crops, leading to economic losses and food insecurity for farmers. The common species involved are elephants, rhinos, wild boars, primates (e.g., baboons, monkeys), blue cows, spotted deer, etc. Reduced agricultural yields, increased costs for protective measures, food insecurity and economic strain on farmers are the notable impacts resulting from crop raiding.

4.4.4 Livestock Depredation

Under livestock depredation, predators attack and kill livestock, resulting in financial losses for herders. The common species involved are the wolves, leopards, hyenas, bears, tigers, etc. Loss of livestock, financial hardship for farmers and herders, retaliatory killing of predators, are some of the ill effects of livestock depredation.

4.4.5 Habitat Encroachment

Here, human activities encroach on wildlife habitats, leading to displacement and increased encounters between humans and wildlife. All kinds of forest species and wetland species bear the brunt of their habitat encroachment or displacement. Habitat loss, increased human-wildlife interactions, stress and displacement of wildlife are some of the unpleasant impacts of such habitat encroachment.

4.4.6 Competition for Resources

Here, wildlife and humans compete for the same natural resources, such as water, land and food. The usual species involved include various herbivores (e.g., deer, antelope), primates and birds. The detrimental impacts consist of depletion of resources, reduced availability of resources for humans and conflicts over access to resources.

4.4.7 Poaching and Illegal Trade

Here, humans illegally hunt or capture wildlife for their parts (e.g., ivory, horns, skin) or for the pet trade. The usual species involved as victims include the elephants, rhinos, tigers, snakes, etc. This may result in decline in wildlife populations, disruption of ecosystems, legal and enforcement costs as well as loss of biodiversity.

4.4.8 Disease Transmission

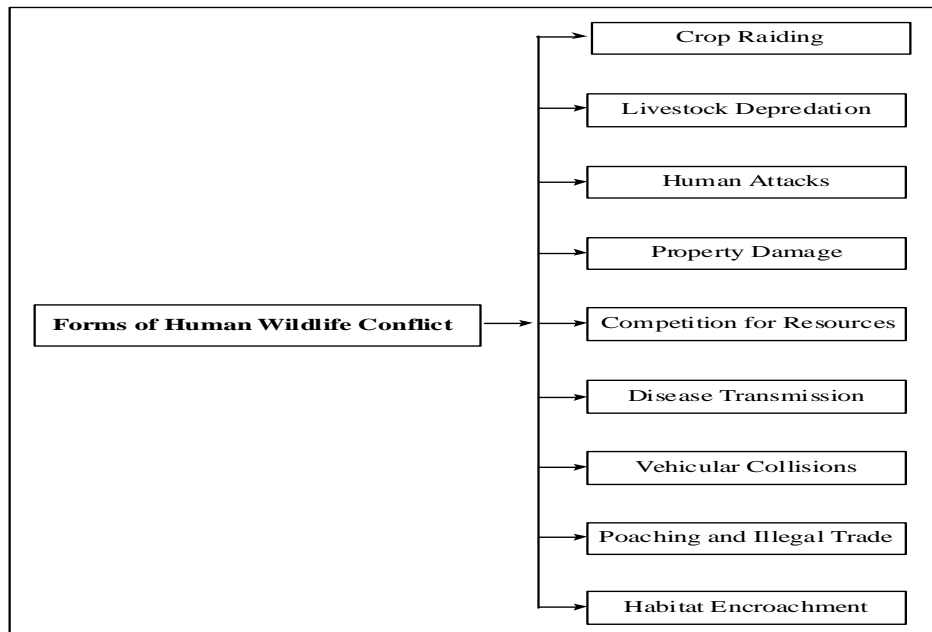
Here, wildlife transmits diseases to humans or domestic animals. The usual species involved are the bats, rodents, birds and primates. Some of the key harms include health risks, economic losses due to livestock deaths and costs for disease management and prevention.

4.4.9 Vehicular Collisions

Here, wildlife collides with vehicles on roads, leading to injury or death for both humans and animals. The typical species involved have been the deer, elephants, wild boars and various smaller mammals. Human fatalities and injuries, animal fatalities, vehicle damage, increased risk for drivers and costs for road safety measures arise out as undesirable effects of such vehicular mishaps. Thus, addressing human-wildlife conflict requires a multifaceted approach that considers the needs and perspectives of both humans and wildlife, aiming for coexistence and sustainable solutions.

Figure 4.1

Forms or Variants of Human-Wildlife Conflict



4.5 Drivers or Causes of the Human-Wildlife Conflict

The drivers or causes of human-wildlife conflict are manifold. They depend on the particular location, nature of animals, forest density and way of life of local population. In case of my study area, the Bardiya National Park, there are certain drivers or causes of human-wildlife conflict which show no signs of abatement.

The reasons or factors for such conflict differ on who you ask - whether a government official or the local inhabitants. Still, there is a consensus on the underlying causative factors which include the following:

4.5.1 Rise in Wildlife and Human Population

Population of both the wildlife and local inhabitants has surged over the years. Due to highhanded conservation measures, poaching and smuggling of wildlife has gone down considerably. As its result, the growth of wildlife all over the protected areas has been spectacular for the past decade.

For e.g. Nepal is home to 355 tigers as per the 2022 tiger census³³. There were 121 tigers in Nepal in 2010, which rose to 198 and 235 in 2018³⁴. Against the commitment to increasing their numbers to 250 by 2022, the tiger population reached 355 - much higher than the goal³⁵. The population of one-horned rhinoceros in Nepal stands at 752, and there are around 400 wild elephants roaming in our forests today³⁶.

As for the Bardiya National Park the situation is no different either. Whereas there were 18 tigers in the Park in 2009, their numbers have grown to 87 in 2018 and 125 in 2022³⁷; thus marking a 7-fold increase within 13 years. Moreover, the Park also houses 38 rhinos and 120 elephants as per the latest figures³⁸. In fact, the Bardiya National Park comes only behind the Chitwan National Park in the country in terms of diversity in flora and fauna. Such impressive numbers seem unsustainable considering the size, area and food resources available in the Park.

³³ Ghimire, B. (2024, March 1). *58 people died in last fiscal year as human-animal conflict gets deadlier*. The Kathmandu Post. <https://kathmandupost.com/national/2024/03/01/58-people-died-in-last-fiscal-year-as-human-animal-conflict-gets-deadlier>.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

³⁷ NEUPANE, *supra* note 23.

³⁸ Big Five Game in Bardiya National Park. (2023, January 26). *Tiger Encounter*. <https://tigerencounter.com/blog/big-five-game-in-bardia-national-park>.

Likewise, the human population has also swelled in the recent areas around the edges of Park and national forests. Village to urban migration as well as north to south exodus of people from districts like Dailekh, Achham, Doti and Jajarkot into the plains of Bardiya and Banke districts has contributed to such population surge which has placed strenuous pressure on the forest resources. Further, the government also resettles landless people, squatters and victims of natural disasters in the fringes of Park area, as a majority of such land is open and public. This growth in human population and activity has escalated the chances of wildlife and animals fighting for the same sources of sustenance; thus, exacerbating conflicts between them.

Surprisingly enough, in our present day and age marked by hatred and vitriol towards others and lack of tolerance and acceptance among the communities, I found absolutely no bad blood between the indigenous Tharu people and the migrants from hills that have descended and continue to descend till date. Both the aborigines and new entrants are living in mutual harmony side by side and hold no grudge against the other. They instead have blended seamlessly with the local milieu. The migrants know the Tharu language and culture well enough and the Tharus also speak Nepali language and are curious to learn about the hilly traditions and tropes. The migrant community is indebted and thankful to the Tharu population for their acceptance and simplicity whereas the Tharu people also credit the incomers for bringing awareness, business ideas and new ways of farming with them.

4.5.2 Fragmentation of the Wildlife Habitat

Wild animals in the Bardiya National Park are experiencing fragmentation of their habitat due to reasons more than one. Bardiya is the prime habitat of Royal Bengal tiger and Asiatic elephant who are territorial in nature. They do not like their spaces shared with anybody else, either other animals or humans. They also require a safe and adequate supply of foodstuff, grassland and water resource. A tiger gives birth to 4 or 5 cubs in one pregnancy cycle. As they grow up, the tiger or tigress comes into conflict with its own offspring. Whereas the young and agile animals can hunt wild prey like deer and blackbucks, the old, diseased and pregnant animals have to rely on easy prey.

Hence, they are the ones who often frequent the villages in search of domestic animals like pigs, goats, buffaloes and cattle. These domestic animals do not offer much resistance and

offer substantial food with little effort. This makes them habitual to frequent villages and farmlands.

Likewise, the elephant flocks are matriarchal in nature. They have a permanent passage or corridor to move across. However, due to the construction of bridges, canals and roads, their traditional corridors are disturbed to the extent that they need to deviate from established paths and infiltrate human settlements. The growth of infrastructure has failed to catch up with the growth of animal population. A caged tiger eats 8 kg of meat per day and costs Rs. 15 thousand per day to maintain it.

Hence, it is impractical and untenable to maintain wildlife in artificial settings, outside their natural habitats.

This issue has also been flagged in the government commissioned report "Status of Tigers and Prey in Nepal" (2022). It says that although prey density in general has increased across tiger habitats in the country, the density of large prey species in particular remains low. In Bardiya, prey density increased from 78 to 90 animals per square km between 2018 and 2022 but the biomass of these prey animals may not be adequate for the tigers³⁹.

4.5.3 Shrinkage of the Forest Cover

Forest cover in and around the Park has been shrinking for a few years due to a myriad of reasons. This thinning of forest line has exposed the wild animals to human settlements and farmlands. The livelihoods of animals and humans are crossing paths in a more frequent basis. Both are dependent on the same set of resources which are so stretched that they cannot even satiate the needs of any one section.

The Khata Corridor and the Terai Arc Landscape are wildlife corridors that connect India and Nepal, allowing animals to travel between protected areas. Khata is a 15-mile corridor that connects Bardia National Park in Nepal to Katarniaghat Wildlife Sanctuary in India. The corridor is a vital link for tigers and other wildlife and is considered a beacon of hope for tiger conservation in South Asia. However, settlements along the corridor are threatened by the wildlife that use it, including elephants, rhinos, leopards and monkeys.

³⁹Joshi, A. R. (2023, May 11). Lack of large prey may be feeding rise in Nepal's human-tiger conflicts. *Mongabay*. <https://news.mongabay.com/2023/05/lack-of-large-prey-may-be-feeding-rise-in-nepals-human-tiger-conflicts>.

Another is the Terai Arc Landscape which refers to a cross-border landscape that includes 13 protected areas, nine in India and four in Nepal. The landscape is connected by wildlife corridors, which allow animals to access other reserves. The Terai Arc Landscape also uses a landscape conservation approach that involves local communities in forest management and restoration.

The migration corridors like Khata are meant only for wildlife movement. But unfortunately, they have turned into habitats for the animals that are displaced from forests proper. Moreover, corridors provide those predators with almost everything they need including cattle for food, crops, water, vegetation cover, etc. Human animal encounters have risen following the COVID pandemic and accordingly incidents of conflict also. As there was a fall in movement of humans and vehicles during the lockdown period, it made the areas previously off limits to the animals, accessible again. As lockdowns were lifted and normalcy returned, the animals had already controlled the passages and trails that were previously reserved for the local residents only.

Numerous roads have been built inside the Park area. Jungle safaris are conducted unabashedly and in an increased order. When thousands of visitor tread into the core habitats of wild animals in the Park area under the name of jungle safari, their habitats have become hugely disturbed. This has pushed the wildlife away from their natural dwellings. Even more, the human settlements have replaced the wildlife habitats of the past. The natural corridors used by the wildlife for movement are now populated by the schools, bridges, asphalt roads and other structures. Hence, their natural pathways have been compromised.

Moreover, due to climate change, rivers and streams are thinning up. The natural barriers separating communities from the wild are thus fast vanishing. This has made the entry and exit of animals to and from the human settlements, effortless. The human density has also increased manifold. The locals have to venture into the Park jungle and community forests for collecting fodder for their animals and firewood to cook foodstuff. The stray cattle have also lured the predators into the villages as they offer effortless food to the starving wild cats. It is easy for the wild animals to hunt domestic animals rather than wild prey. For e.g. if a tiger succeeds in killing a buffalo or ox, it will sustain the herd for 3 to 4 days. Moreover, they also offer no or little resistance against the predator.

4.5.4 Food Insecurity for the Animals

Food insecurity is one of the underlying drivers of human wildlife confrontation in Bardiya. The water sources or water holes are drying up sooner. So, the wild animals are forced to enter human settlements even for satiating their thirst. This issue has also been flagged in the government commissioned report "Status of Tigers and Prey in Nepal" (2022). As per the Report, tiger is an apex predator and prefers larger size prey. With lower density of the large sized prey, tigers switch to larger and easier prey that would not offer much resistance, and also offer a huge meat load in one attempt, like buffaloes, cattle, goats and sheep. The Park is teeming with wild animals, but the food supplies have largely dried up.

However, this is not happening in the Park ecosystem. The elephants and sloth bears eat less of the crops raised by locals but destroy more. The large animals have huge daily food needs that could not be met from the jungle alone.

However, the tigers and leopards pursue the prey animals to great lengths. As such, they unwittingly enter villages at first. They find there that food supply is abundant as well as within an easy reach. It makes them come over again and again. Fed up, the locals try to confront or resist them, causing casualties in the process.

An average adult tiger must kill about 45 to 50 deer sized prey animals every year to survive, and a tigress raising 3 cubs requires as many as 60 to 70 animals a year.⁴⁰ Lush grasslands have to be in place for such herbivores to thrive.

However, the grasslands have been depleting fast due to wildfires, human encroachment and development works. As the herbivores move out of the Park grasslands, wild cats like tigers and leopards will be denied of their favourite prey, leading them to infiltrate communities in search of easy prey.

4.5.5 Forest Dependency among the Locals

A majority of the local population around the Park area lives off the produce of forest. It could be fodder, firewood, timber, vegetables like *niguro*, mushroom, tubers, fish, *saal* leaves and even water in some places. Much of the local population comprises of the poor, landless and squatters.

⁴⁰Tiger conservation. (2024, August 1). *Arulagam*. <https://www.arulagam.org/wildlife-conservation/tiger-conservation#:~:text=The%20male%20tiger%20is%20more,to%2070%20animals%20a%20year.>

The Dalits, migrant workers and freed *Kamaiyas* also live around the forest edges. They have little to no land holdings and as such they have to rely on the forest to meet most of their daily needs. Hence, engaging with the jungle is their compulsion and not choice. As they own little or no land parcels, crop cultivation is not their option.

So, they raise big number of cattle, sheep and goats to make their ends meet. It forces them to look at the forest for gathering fodder and firewood. Some also rush to the risky areas to collect *niguro* (a wild fern), mushrooms and fish so that their ovens could be lit and the surplus could be sold at the market. These marginalized communities also take their livestock for grazing during which the predators can ambush them.

4.5.6 Resistance of the Locals

Fed up of frequent animal attacks on their crops, livestock and property, many a times, the locals take the matters into their own hands. A majority of local settlements border with the park forestland. When the predators intrude the private land, they will not quit on their own. They need to be confronted and chased off. This causes conflict and even undesired incidents. Sometimes, this even results in the killing of wildlife inadvertently. There is not an exact data of the Bardiya National Park as regards that matter. But as many as 172 animals, including tigers and elephants, died in the fiscal year of 2022/23, including 41 in poaching across the nation, as per the Report of the National Concerns and Coordination Committee of the National Assembly (2023)⁴¹. Many of them have died in popular resistance that is often witnessed in the aftermath of an unpleasant incident.

Resistance of locals has also manifested in more violent manner in the past. When a tiger mauled a woman, Ashimta Tharu of Madhuwan Municipality-2 in June 2022. Soon, the enraged locals took to streets, pelted stones at police, set 3 police motorcycles and a temporary police post in Orali Bazar on fire. The police resorted to firing for controlling the irate mob leading to the death of a woman Nabina Tharu and injuring yet another protestor. A total of 14 police personnel were wounded in the ensuing clashes.

4.5.7 Lack of Species Profiling

Absence of species profiling inside the Park region is also fuelling human-wildlife conflict.

⁴¹ GHIMIRE, *supra* note 33.

The Park management has failed to draw out objectively how much space is required for a specific animal by preparing individual species profiling. The profile should cover aspects such as its nature, foodstuff, habitat, lifespan and movement. There has been no scientific study on how much forest area can successfully sustain how many animals by its resources. This has led to the overcrowding of wildlife inside a tight and contested space. We must ask ourselves: How many tigers or other endangered animals do we need, and how many can we realistically protect? Which habitats are best suited for their protection? Once these questions are addressed, only the needful animals should be kept and the rest be relocated or allowed for paid hunting to maintain the manageable numbers.

4.5.8 Reduced Sense of Public Ownership

It is a wakeup call that support and ownership of local population towards wildlife and forest conservation is dwindling rapidly. Many locals complain that they grew community forests and protected national forests through their incessant efforts. However, the same forests and the wildlife are now posing credible threat to their lives, livestock and property. This has made them turn off from conservation efforts and education.

So, conservation officials and local elders are finding a hard time to reconvince the locals towards the need and significance of protection measures for their own good. I also witnessed a rapid fall in public interest and concern in safeguarding the wild and wildlife during his interaction with the local population. This nonchalant attitude of locals is going to pose formidable challenges in the future preservation efforts.

4.5.9 Fortress Model of Conservation

In course of fieldwork, many local elders and elected representatives found fault with the "fortress model" of conservation. As told by a respondent, the National Parks and Wildlife Conservation Act, 1973 has been framed during the Panchayat era which was marked by the State authority exercising power over the citizens by an iron fist. How can the wildlife be conserved by pointing guns and rifles at the local population? Any conservation effort will succeed only by winning the hearts and minds of the locals. If conservation benefits the locals, then naturally they will be more motivated in the conservation efforts. However, the locals would remain indifferent if conservation efforts yield no benefits for them.

4.5.10 Changes in the River Course

Primarily the Karnali, Babai and Geruwa rivers crisscross the Park area in Bardiya. These rivers change their courses pretty often, especially during the rainy season. This change of waterflow not only erodes the forested area, but also annex a sizeable chunk of private lands into the fold of National Park. It is because these rivers also act as the boundaries of the Park that separates public lands from the private.

Thus, this incidence is giving rise to 2 problems. First, it has depleted the already thinned out forest, thus causing even more congestion among the animals, making their survival difficult. Second, the yearly annexation of private farmlands into the Park territory has reduced the landholdings of native population, thereby sparking fury and resentment among them.

4.5.11 Wildfires

Wildfires also play a pivotal role in the escalation of human-wildlife conflict in and around the Park area. It is because the wildfires not only destroy wildlife habitats but also raise food insecurity by burning off the food supplies. As plants, leaves and grass become scarce, the herbivore animals would be pushed afar. The carnivores who feed on these herbivores will then be affected in the food cycle. Ultimately, that food deficit would push the wild animals from their natural dwellings to the human settlements, barns and crop fields in search of food, water and shelter. As the locals would resist such transgression by these predators, clash and confrontation are bound to occur.

Further, wildfires can alter the behaviour of wildlife. Animals that survive fires may become more aggressive or desperate in their search for resources, increasing the risk of conflict with humans. Efforts to rebuild and restore areas affected by wildfires often involve increased human activity in previously undisturbed areas. This can lead to more frequent interactions and potential conflicts with wild species.

In my area of study, i.e. Bardiya National Park, the natives complained that whereas they put off wildfires emanating in community forests immediately as they are noticed, the same speed of reaction could not be seen in case of wildfires erupting in Park-controlled national forests. Wildfires there could be seen raging for days before they are finally put off by government agencies. Hence, the loss and damage from wildfires are more prominent in the already resource-strapped forest areas, thus accentuating the conflict potential.

4.5.12 Archaic Laws

Archaic laws are another causative factor in the perpetuation of human-wildlife conflict. As told by the respondents during fieldwork, including local elders and elected representatives, the current National Parks and Wildlife Conservation Act, 1973 is archaic and outdated in nature. It was promulgated during the zenith of party-less Panchayat autocracy which believed in taming its citizens by force and coercion. The Act was also written with a similar mindset.

Prior to malaria eradication in Terai during the 1970s, forests were meant exclusively for the wildlife and not humans. However, later people began populating forests by logging and establishing settlements. Now, the situation is such that neither can we entirely relocate the animals nor the humans from their habitats. Two Forest Acts have been adopted after the enactment of National Parks and Wildlife Conservation Act, first in 1992 and then in 2019. However, we are still functioning under the Act of 1973 with minor amendments.

When the Act was introduced some 50 years ago, Nepal was a monarchical and unitary state and its provisions resemble the same political reality.

However, the political, legal and social situation is vastly different today. Monarchy has been abolished and republicanism has set in. The state has been restructured. The unitary model has given way to the 3-tier federal setup inclusive of the Federation, Provinces and Local Levels. Thus, there has been a huge mismatch between the changed state reality and the laws that conservation enforcement works through.

In course of fieldwork, I myself heard numerous grudges made by the local level elected officials who protested that the Act of 1973 leaves nothing to the Province and Local Levels and entrusts everything to the National Parks and Army officials.

The protection of Park area is entrusted on the Nepal Army and the forest personnel. In case of buffer zones, they are protected by the locals themselves through committees. It was designed to involve public participation and create a sense of ownership among them. However, a lot has changed in the past 30 years. But there is still no single amendment on the Buffer Zone Management Rules of 1996. Their revision is long overdue as the local bodies of past are in no way near to the powerful local levels of today. The buffer zones are made liable only to the Park management but not towards the concerned local levels wherein they function.

Likewise, there is no role of the local levels in utilizing the firewood, fallen trees, wood logs, sand, stones and pebbles lying in the buffer zone. The Park management exercises total authority in these resources. The first wave of anger is vented by the natives towards the local levels, in the event of an unpleasant occurrence, but the hands of these levels are tied in this matter.

4.5.13 Climate Change

Climate change leads to alterations in habitats, including shifts in vegetation, water availability, and temperature regimes. These changes can force wildlife to move to new areas in search of suitable conditions, often bringing them into closer contact with human populations. Changes in climate can lead to resource scarcity, such as reduced availability of water and food. Wildlife may encroach on agricultural lands, water sources, and human settlements to meet their needs, increasing the potential for conflict.

Climate-induced stress can also alter the behaviour of wildlife. For e.g., animals may change their migration patterns, breeding seasons, and feeding habits in response to changing environmental conditions, leading to more frequent and unexpected encounters with humans. As climate change impacts agriculture, water availability, and other human activities, people may change their land use practices.

This can include expanding agricultural lands, urban areas, and infrastructure into previously wild areas, increasing the likelihood of human-wildlife encounters. Climate change can further disrupt ecosystem services that both humans and wildlife rely on, such as pollination, water purification, and climate regulation. These disruptions can exacerbate conflicts as both humans and wildlife compete for dwindling resources.

As for my study area, the Bardiya National Park also, the effects of climate change are evident in numerous ways. The wildfires have become a frequent occurrence. While some rivers and rivulets are drying up, others are changing course. Flash floods have become more common. The *Banmara* weed has engulfed natural vegetation resulting in a short supply of edible plants for the animals. The water holes dug out by the Park authorities are also drying up rapidly. They have to install solar pumps to maintain a steady supply of fresh water into those artificial ponds. All these environmental factors have colluded to escalate the occurrence and intensity of human-wildlife conflicts in the Park periphery.

The natives to the place, especially the Tharu community are expressly bearing the brunt of this climate change crisis. It has been impacting their livelihoods, cultural integrity and overall well-being. The Tharus rely on traditional practices such as farming, hunting and fishing which are sensitive to climate conditions. Changes in temperature, precipitation patterns and the frequency of extreme weather patterns are indeed disrupting these practices, threatening their food security and cultural traditions associated with these activities.

Akin to other native populations, the Tharus living around the Park forests also have a deep spiritual and cultural connection to their ancestral lands. Climate change threatens these ties by altering landscapes and ecosystems, which can lead to a loss of conventional wisdom and cultural practices passed down through generations.

Likewise, abrupt changes in local climate also run the risk of exacerbating the health issues within the Tharu community in particular. Altered ecosystems can lead to an increase in disease spread by vectors like mosquitoes, while food and water insecurity can contribute to malnutrition and other health complications.

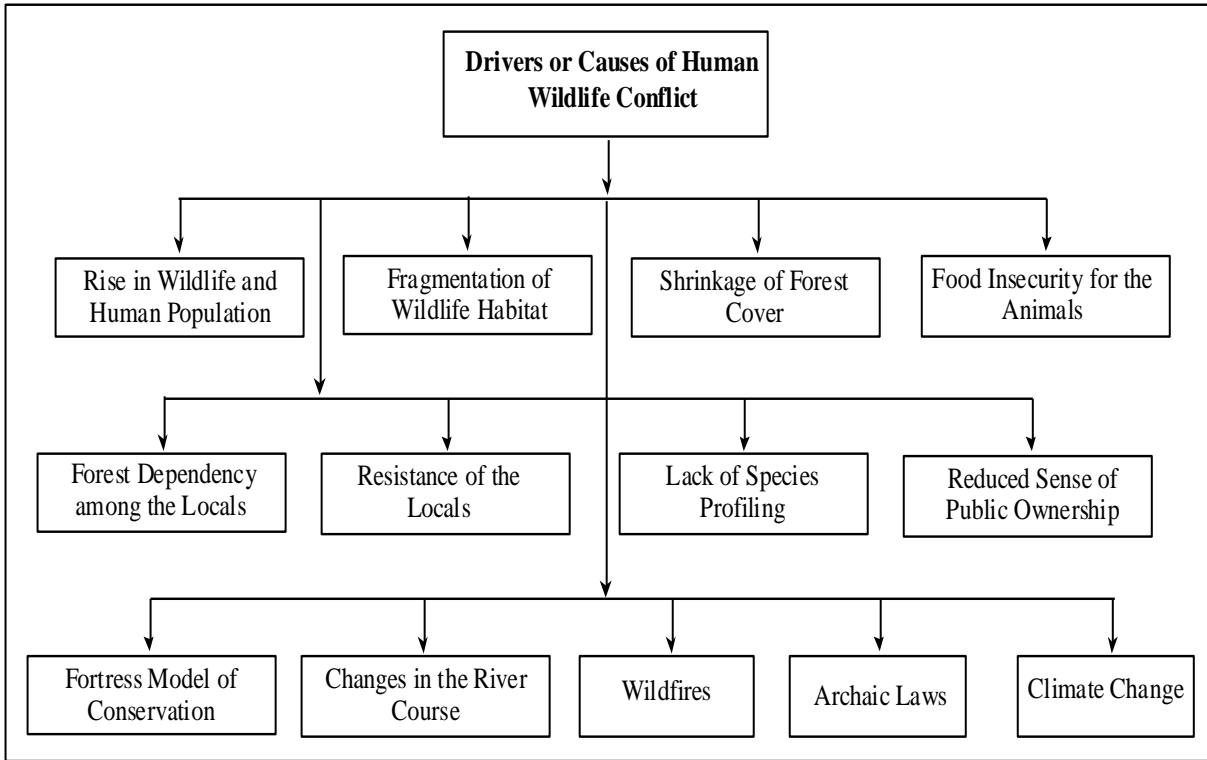
The Tharu community lives in bio-diverse areas that are vital to their way of life. Climate change can threaten these delicate ecosystems, leading to possible species extinction, and loss of natural resources that many communities rely on for survival. Ethnic communities like Tharus are often marginalized and thus have less access to resources, education and political representation. This social inequality makes it harder for them to adapt to climate change impacts, further entrenching cycles of poverty and vulnerability.

In course of my fieldwork, I found it more difficult for the Tharu natives to navigate the trickier path of climate change than other migrant populations. It is because the migrants seem more adapt and primed to deal with the challenges posed by climatic complications as they are the second residents in this place, having already left their initial dwelling and learning much practical lessons in the process.

In contrast, the Tharus share a deeper and more intimate relationship with their immediate surroundings and are more reliant on the resources that their lands have to offer. In this light, recognizing their rights, integrating traditional knowledge into climate policies and ensuring their meaningful participation in decision-making process are vital for developing effective responses to these challenges.

Figure 4.2

Drivers or Causes of Human-Wildlife Conflict



4.6 Current Status of the Human-wildlife Conflict

Human-wildlife conflict is a pervasive problem not only in my study area of Bardiya National Park, but across all the protected areas. As per the official statistics, 200 people have perished, 566 have got gravely injured and 297 got mildly wounded in the last 5 years following wildlife attacks all over the country⁴². The human casualties are constantly on the incline. In the preceding fiscal year of 2022/23 only, wild animals caused damage to 531 houses and sheds whereas 10,426 incidents of human-wildlife conflict have been documented in the same period⁴³.

As per the Department, the rising population density and unmanaged land use have severely depleted wildlife habitats which have led the animals to make foray into communities and farmlands. Animals like tigers, leopards, elephants, rhinos, wild boars, sloth bears and monkeys are responsible for inflicting damages to lives, crops, livestock and property.

⁴² Puri, A. (2024, January 30). Manab banyajantu dwardwa: Paanch warshama dui saya janako mrityu, aseemit arthik kshati. *Online Khabar*. <https://www.onlinekhabar.com/2024/01/1427541>.

⁴³ Ibid.

A majority of human-wildlife conflict events have been reported in Chitwan National Park followed by the Bardiya National Park.

Table 4.1
Loss of Human Lives

Fiscal Year	Loss of Human Lives (Nepal)
2018/19	30
2019/20	33
2020/21	40
2021/22	58
2022/23	39

(Source: Department of National Parks and Wildlife Conservation)

Such conflict has not only imposed human costs, but also economic loss. In the last 5 years, the government has disbursed a whopping sum of Rs. 640.5 million as relief and compensation to the affected locals⁴⁴.

Whereas relief is given in case of human fatalities, compensation is imparted in case of losses other than human life, such as damage to livestock, standing crops and physical structures. In the fiscal year of 2022/23, the government distributed a purse of Rs. 130.54 million as relief and compensation to the victims of conflict⁴⁵. Around 4,102 incidents of damage to crops, 531 incidents of damage to houses and sheds, and 324 incidents of loss to food grains stored in houses, and death of 5,234 domesticated animals like buffaloes, cattle, goats, sheep and pigs have been documented during the same timeline⁴⁶.

A sum of Rs. 1 million is offered as relief in case of a wildlife attack resulting in human death. The same amount is granted in case the victim dies within 35 days of such assault. Pursuant to the new Guidelines for the Distribution of Relief for Losses from Wildlife 2023,

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

the compensation for livestock loss has been doubled, for up to Rs. 60 thousand per domesticated animal.

Table 4.2
Distribution of Relief and Compensation

Fiscal Year	Distribution of Relief and Compensation in Rs. (Nepal)
2018/19	89.01 million
2019/20	100.67 million
2020/21	140.1 million
2021/22	170.28 million
2022/23	130.54 million

(Source: Department of National Parks and Wildlife Conservation)

It is not that the humans and their assets are only in the receiving end. The wild animals have suffered equally as well. As per the official statistics, a total of 558 wild animals had been killed by humans and other accidents in the fiscal year of 2022/23. Such a loss is more acute in Terai and Madhesh regions while it is milder in hills and mountains. The Chitwan National Park has witnessed the highest number of wildlife losses followed by the Bardiya National Park whereas the lowest losses have been recorded in Khaptad National Park.

The major reasons behind such deaths include old age, natural disasters, road accidents, poaching, retaliatory attacks by locals, drowning in canals, electrocution and dog bites. A total of 149 spotted dears, 43 blackbucks, 27 monkeys, 26 elephants, 13 red deer, 11 tigers and 8 elephants have perished in the fiscal year of 2022/23⁴⁷. Out of the 11 tigers killed, 10 died due to natural reasons while one was bludgeoned to death by the irate locals⁴⁸. Likewise, the National Parks and Wildlife Reserves rescued 734 distressed wild animals in the same period⁴⁹.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

Table 4.3
Death of Wildlife

National Park/Conservation Area	Death of Wildlife (Nepal)
Chitwan	118
Bardiya	108
Banke	93
Shuklaphanta (Kanchanpur)	87
Blackbuck Conservation Area (Bardiya)	43

(Source: Department of National Parks and Wildlife Conservation)

4.7 Impacts of the Human-Wildlife Conflict

4.7.1 Loss of Life and Limb

While focusing on the status of human-wildlife conflict at the Bardiya National Park alone, the statistics are equally dismal. A total of 36 individuals have lost their lives within the past 4 years in the Park area and community forests interspersing it⁵⁰. In the past, elephants were the major predators whereas today most human victims are either killed or maimed by the tigers. In addition, hundreds of others have been injured in such assaults, many of which result in permanent disability in the victims.

As per the official statistics, during the timeframe from 1999 to 2020, elephants killed 42 individuals and injured 120; tigers killed 22 individuals and wounded 19; rhinos killed 5 persons and wounded 27; leopards killed 3 persons and injured 11; and all other animals were responsible for killing one individual and injuring 33 in the Park and its peripheries⁵¹.

⁵⁰ Panthi, K., & Malla, R. (2023, December 28). Bardiyama manab banyajantu dwandwa wyawasthapan huna sakena, chaar warshamaa athaara janako mrityu. *Kantipur TV*. <https://kantipurTV.com/news/2023/12/28/1703749155.html>.

⁵¹ Bardiya National Park Office. (2021). *Five-year strategic plan on the mitigation and management of human-wildlife conflict in the Bardiya National Park and its adjacent areas (2021-2026)*, 11.

For e.g., 55-year-old Samundri Budha Chhetri and 50-year-old Dhansari Gurung, 50, were attacked by a Royal Bengal tiger and killed on the spot in March 2023. Their half-eaten bodies were later recovered by the locals from Madhuwan Municipality-5, Bardiya. Likewise, Bhadai Tharu, a local elder from the native Tharu community lost his left eye some 20 years ago when a tiger pounced on him in national forest when the Park administration had opened it for forage clearance (*kharkhadai*).

4.7.2 Livestock Depredation

Damage to livestock has been another pertinent ill impact of the human-wildlife conflict in the Park premises. Domesticated animals like buffaloes, cattle, goats, sheep and pigs have become the preferred prey for predators like leopards and tigers. The locals take these animals for grazing deep into the interiors of Park which is the natural habitat for these wild cats. Finding bulky and slow-moving prey in their vicinity, they are tempted to hunt them. Once they are accustomed to such easily available prey, they then start frequenting communities time and again.

During the period of fieldwork in June 2023 at Geruwa Rural Municipality of Bardiya, I myself found a wounded oxen which was bitten by a tiger the night before in the shed. It was looking seriously ill and the owner was telling that it might survive no more than 3 or 4 days. Whereas leopards target small and medium sized prey like goats, sheep and pigs, the tigers are more attracted towards large prey such as buffaloes and cattle. Locals revealed to me, in course of fieldwork that stray cattle that have been abandoned by their owners are another cause of worry because they have no fixed location and move around the jungle. When wild cats find them, they take for soft targets. Having known that they are huntable, they then start to prowl and attack even in densely populated communities.

4.7.3 Crop Raiding

Damage to the standing crops is another nuisance created by the human wildlife confrontation. The elephants like corn while rhinos prefer sugarcane. Paddy and wheat are loved by both. In addition, wild boars, monkeys, sloth bears, blue cows and sometimes spotted deer also cause damage to the seasonal crops raised by the locals. The native

community shared with me that sometimes wildlife results in more loss to the crops than hailstorm or floods.

Not only standing crops in the field, even the food grains that are already harvested and stored in houses and barns are also not safe from the wildlife's wrath.

Many a time, elephants break open the grain stores and eat as well destroy the produce, especially paddy. Houses are sometimes raided only for the possibility of food grains stored inside. Locals lamented to me that, whether standing crops or stored grains, these animals consume less but throw and waste more. For e.g., in the fiscal year 2022/23, the elephants coming from different places to the Bardiya National Park destroyed around 78 houses and damaged the crops of 426 farmers⁵².

4.7.4 Vandalism on the Physical Structures

Wildlife running amok damage houses and other physical structures such as animal sheds, food barns, fences, walls and bathrooms. Poor local residents cannot afford to build concrete structures and have to be content with wooden, raw brick or zinc sheet edifices. Such shabby structures offer little resistance to powerful predators like rhinos and elephants. That is why, one finds more of such damage in rural and peripheral areas populated by the poor and low-income families rather than in urban townships where the owners can afford to build sturdy and durable structures.

For e.g., between the fiscal years of 2005/06 to 2022/23, elephants have destroyed more than 500 houses and damaged crops in more than 100 bighas in the buffer zone area, the traditional pathways, and in the nearby districts in Bardiya district⁵³.

4.7.5 Psychological Trauma

As observed from the fieldwork, recurring human-wildlife conflict seems to be taking a heavy toll on the psychological and emotional wellbeing of the locals. The loss of lives, especially those of dear ones, damage to crops, harvest, livestock and physical structures exact a painful price on the psyche of victims or survivors. As these unforeseen losses makes the inhabitants physically and economically vulnerable, they will cast an adverse impact on their mental

⁵² Panthi, K. (2023, August 13). *Bardiya marks World Elephant Day amid growing human-wildlife conflict*. The Kathmandu Post. <https://kathmandupost.com/province-no-5/2023/08/13/bardiya-marks-world-elephant-day-amid-growing-human-wildlife-conflict>.

⁵³ Ibid.

health as well. Likewise, the nervousness of when and where next animal strikes and the panic looming in its aftermath force the locals to live on their toes at all times.

They cannot leave the elders and children alone in the homes. They have to wait impatiently for the return of their loved ones from schools or offices. They cannot presume which journey will their last one. No time, space or season seems safe for them. They do not feel secured even inside their homes or in their nearby fields as attacks have happened in those places as well.

4.7.6 Confrontation with the Authorities

Confrontation with the authorities is another unpleasant outcome of the conflict. The local officials and forest authorities caution towards the growing belligerence and defiance among the native residents. During the June 2023 riots in Bardiya, following a tiger attack on a woman, not only one protestor was killed and another injured in police firing, but 14 police personnel also sustained various degrees of injuries in the intense clashes. The Forest Sub Division Office at Khata was torched by the violent mob and locals demanded the elimination of buffer zones. Many natives, especially who have lost their loved ones to wildlife attacks, demand that the Bardiya National Park be removed from their district. They share a deep sense of resentment towards the current enforcement modality where they find animals and birds given more priority over their own lives. They frequently asked me: Are we for the wild animals or are they for us?

Forest authorities based in field complain that the situation becomes particularly tense in the aftermath of a wildlife assault leading to death or injury of a local individual. The atmosphere then would be so charged up that the officials find it difficult even to reach the scene and complete the paperwork. Sometimes, they reject to collect the dead body until quick compensation is promised.

Such confrontation of locals with the government officials seems to be occasional incidents rather than an established pattern. However, the ill impacts do not become any less mild because of this difference. The locals are equally infuriated with the supposed hostile and unfriendly attitude of security and protection officials. This has led to their decreased interest in the preservation efforts that they think value the animal lives over their own. Even the government authorities acknowledge this change of tack among the natives in their

conversation. They are concerned that if the local population, for whose benefit, all these schemes and measures have been launched, itself falls out of favour, then what would be the point in expending time, effort and resources in those initiatives.

4.7.7 Disinterest towards Conservation

Many local residents asked me what the conservation was for. For making their lives fuller and happier or making their lives unsafe and riskier. I too tried to explain the merits of protection efforts but most of them seemed to be unimpressed.

Though wrongfully, the locals are harbouring resentment that the forests are risk spots and the wildlife residing therein is vermin. This antipathy has turned a sizeable chunk of local population off the conservation measures. This bitterness is more pronounced among the youth generation and families who have lost their loved ones to wildlife aggression.

Nonetheless, there are quite a few village elders who, having lost their family members, livestock or crops to wildlife, still campaign in favour of protecting the jungles and species. They argue that the wild animals cannot speak or lobby for themselves. Hence, it is us who have to think, feel and talk on behalf of those voiceless creatures. There should be a difference on the way of life between animals and humans. We, being the most intelligent of creatures, also have to be the most sensitive and responsible.

Moreover, humans are poking more into the animal habitats than the animals poking the human settlements. Hence, we, the humans are more liable for the undesirable incidents. Wildlife campaigners like Bhadai Tharu are testament to such thought, who despite losing an eye to a tiger attack, does not feel deterred and continues to preach the benefits of conservation and coexistence in communities.

However, the current generation is less receptive to the pleas of those elders as they see the forests and wild animals as the root cause of their sufferings.

4.7.8 Economic Hardships

Many of the locals living around the Park are sustenance farmers. They think of selling the extra produce from farms and discharge financial needs. They also sell the dairy products such as milk and ghee in the local markets to raise some funds for livelihood. However, as a wild animal strikes their produce or livestock then all of their plans lie in ruins. Their

household budget for the entire year turns upside down. Not only they are deprived of regular earnings, but they also have to borrow funds for replacing lost cattle or purchase costly food grains from the market.

Even more serious is the case of loss of life. Most of the human casualties happen to be the household heads or breadwinners as they will be the ones taking most risk to feed their loved ones. As they get killed or maimed in a wildlife assault, the loss or debility of a family elder leaves other dependent members vulnerable to financial shocks. The education of children gets compromised, income opportunities get dwindled and the family gets stuck in indebtedness, sometimes resulting in involuntary displacement from native lands.

Though the Park or forest administration distributes the prescribed relief or compensation amount in case of loss to life, property, livestock or farm produce, the locals complain that it would be far below the actual value of the damage suffered. The relief amount would not recoup the harm in its entirety.

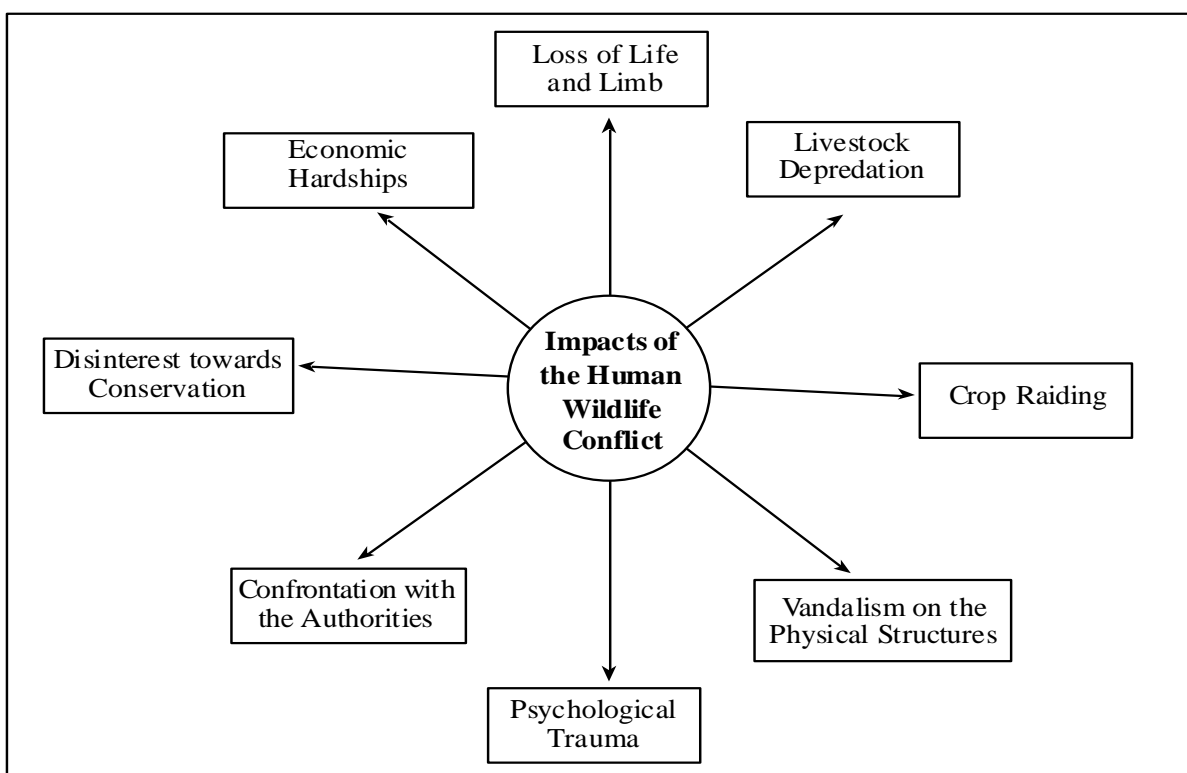
Despite the pressing economic hardship discussed above, I found no notable trend of outmigration or displacement of the locals, including the native Tharu community, from the lands tied with them. The reasons seem to be different across the spectrum. The Tharus are not moving from their ancestral lands because of lack of capital and their undying commitment towards their cultural integrity which could be lost if they switch to a new place.

As for the other migrant communities, they have already migrated from their hilly origins and they are also not in a mood to shift their abodes all over again. They are instead looking for other alternative measures to mitigate their economic privation which include shifting from their traditional means of livelihood, adapting to safer and secure lifestyles, changing crop patterns, and seeking better assistance from government agencies, the local levels in particular.

In fact, the locals seem to be so assimilated into their respective communities that I barely found any of them wanting to out-migrate due to the pressure of human-wildlife conflict. Their only concern is that the conflict should be mitigated and the authorities need to do more to this end. Their grudge is that they came and settled in the place long before the National Park was proclaimed by the government in 1988.

Today, both the indigenous and migrant communities fear that the lives of animals have taken precedence over theirs and the lands which happened to be their routine backyard have turned into a perilous kill zone. They find it especially difficult to save their children, the elderly and women amidst the frequent prowling of wildlife. They often question: are animals for us or we are for animals - for which they cannot find convincing answers from the authorities. As conservation apparatus remains adamant on its mission, the local lives and livelihoods are taking a heavy toll.

Figure 4.3
Impacts of the Human-Wildlife Conflict



4.8 Adaptation Strategies of the Local Population

The adaptation strategies employed by the local populations residing in zones with high human-wildlife conflict reportage are vital for ensuring both the safety of people and the protection of flora and fauna. These strategies can be multidimensional, involving a curious mix of institutional, behavioural and cultural approaches. The local communities living in the fringes of Bardiya National Park have no readymade alternatives at their disposal. A majority of them have neither the willingness nor capacity to migrate elsewhere.

Thus, what is left for them is to accommodate to the changed ground realities and pursue adaptation measures that would maintain their livelihoods at decent levels and predict as well as minimize the threats emanating from the forests.

4.8.1 Origins

The adaptation strategies of indigenous communities like the Tharus settling in the outskirts of Bardiya National Park since decades in response to wildlife attacks are hinged in their own unique historical, environmental and cultural premises. These initiatives often evolve over generations, handed down from predecessors to their successors and are influence by the organic interactions between the communities and their adjacent ecosystems. Below are discussed some key origins and elements of those strategies:

1. Physical Barriers and Structures

Different communities including the Tharus have historically built locally feasible physical barriers like walls, fences or thorny edges to protect livestock and crops from animal predation. These structures are typically made from locally available resources and reflect an experience-proven understanding on the particular risks posed by specific wildlife. For e.g., concrete walls to fend off elephants and mesh wire fences to keep wild cats at bay.

2. Community-Based Vigilance

In some cultures, community practices focus on collective vigilance rather than individual bravado in keeping an eye on wildlife movement. This usually includes groups guarding wildlife prone places at night, forming quick response teams for prompt response to any animal aggression, joint patrolling on foot or cycles and lighting up secluded areas at night, etc.

3. Cultural Traditions and Knowledge

Indigenous people like the Tharus in my study area possess extensive traditional ecological knowledge. It entails an in-depth understanding animal demeanour, habitat use and seasonal migration. This knowhow enables them to fairly predict animal movements and frame suitable responses. Rituals, myths and stories told in homes and tea shops often relay important lessons about survival and coexistence tactics.

4. Use of Domestic Animals

Some of the indigenous strategies involve the use of guard animals like dogs to protect the livestock. These animals are often bred for their protective instincts and trained to anticipate and respond to wildlife threats. This practice ensures safety for both the people and their property.

5. Spatial Management

The local ethnic groups often employ spatial management techniques like relocating settlements or grazing areas away from high-risk zones. By gaining familiarity with animal territories and migratory patterns, they can effectively mitigate encounters with dangerous wildlife.

6. Anthropological Landscape Management

Local ethnicities like Tharus in our case modify their environments through measures like joint responses, controlled burns and farming practices that incentivizes the growth of certain plant species that deter wildlife. For e.g., sesame, mentha, lemongrass, ginger and garlic. These practices help in minimizing wildlife encounters while enhancing biodiversity, advantageous for both the community and ecosystem.

7. Adaptation over Time

As ecosystems switch due to climate change, habitat destruction or other external vectors, indigenous strategies also continue to evolve and adapt. Communities often devise and adopt new knowledge and practices. In doing so, they sometimes blend traditional methods with modern technology to better handle wildlife risks. For e.g., forming social media groups in Viber, Messenger or WhatsApp to share reports of animal attacks and promptly organize rescue efforts.

This way, the adaptation strategies developed and practised by indigenous communities, like those of Tharus in our context, represent a complex interplay of social, cultural and environmental factors. These initiatives are often holistic and focus on living with harmony with nature rather than exploiting from it. Having a fair knowledge of these adaptation strategies impart valuable precepts on sustainable practices that can benefit broader conservation efforts and community resilience in our day and age.

4.8.2 Deterrence Measures

At this premise, I have taken stock of the following adaptation strategies of locals during his fieldwork around the Park perimeter:

1. Raising Alternative Crops

This involves planting less palatable or more resistant crops that are less attractive to wildlife. A blend of traditional and technical knowledge has shown that cereal crops such as corn, paddy, wheat and barley are highly prized by mega fauna including elephants and rhinos. Crop raids by these and other animals like monkeys, sloth bears, blue cows and wild boars tend to be concentrated on farmlands producing those harvests.

As such, the Park management, the National Trust for Nature Conservation (NTNC) and local levels have come up with a plan to raise alternative crops that are not preferred by predators. They include cash crops such as mentha, turmeric, sesame, garlic, ginger, bel, lemon and lemongrass. Not only these variants fetch attractive prices in the markets and are instantly sold, they also need less land to plant and also deny the animals the hiding spots or foliage cover provided by taller and denser crops like corn, paddy and sugarcane. As people can look through these cash crops, which are shorter in size and are spread more even, they can spot an animal lurking around and adopt safety measures. The organizations working in the conservation sector have also invested in installing herb processing machines where mentha and lemongrass farming has gained pace. The NTNC also buys the output or produce from the locals.

2. Adopting Safety Measures

Adopting the needful safety measures implies differentiating between life and death for the locals. The safe way is the right way for them. Some of the popular safety precautions include:

- i) Not wearing red, white or yellow clothes while moving through the jungle.
- ii) Wearing dull and passive colours like green and grey which can easily blend into the surroundings.

- iii) Not walking or working alone even in areas nearby to homes.
- iv) Walking or working in groups or at least in pairs. The wild animals mostly do not attack a group.
- v) Not leaving the children and elderly alone in homes.
- vi) Sending the children in school buses rather than by foot to their educational institutions.
- vii) Carrying torch lights or flash lights after sunset.
- viii) Not moving around once darkness falls unless it is extremely urgent.
- ix) Installing street lights and switching on household bulbs for the whole of night.
- x) Carrying sticks, spades or sickles while walking alone.
- xi) Not entering the Park forests unless during forage clearance (*kharkhadai*) which happens once a year and lasts for 3 to 5 days.
- xii) If a wild animal is seen, not to run away but stare in its face and take backward steps with head holding forward, etc.

Going by the above security measures being practised by the locals since decades, we can safely assume that they reflect the genius of indigenous communities, particularly the Tharu people, in protecting themselves from the aggression of wild animals and also saving the predators in the process. Their safety initiatives are designed with a motto of "live and let live", not harming the invasive animals, and safeguard the lives, produce and property of local residents at the same time.

As the Tharus have been staying in the forest borderlines since ages, they are at the forefront of suffering harm from the predator animals and also to invent innovative ideas and practice to fend off the immediate danger. Later, the migrants seem to have shared in these methods and also added their own intuition and insight in further refining these tactics.

3. Practising Deterrence Measures

Deterrence measures refer to those activities that reduce the vulnerability or loss arising from wildlife aggression. These include both age-old and time-tested practices as well as measures informed by recent research. In this light, the popular deterrent measures practiced by the local residents to fend off wildlife risks include:

- i) Raising an alarm (hue and cry) upon spotting a predator nearby.
- ii) Banging steel utensils to create an unpleasant noise.
- iii) Playing loud songs or music in the community microphone.
- iv) Digging trenches and pits in the key entry points.
- v) Erecting scarecrows in farmlands so that the animals may mistake them for real humans and stay away.
- vi) Building watchtowers (*machaans*) to keep an eye on wildlife activity.
- vii) Frequent cleaning of bushes and shrubs for denying the predators hiding spots.
- viii) Ringing bells or lighting up fires if a wildlife presence is felt. Most wild animals are averse to fire and light.
- ix) Conducting community patrols with sticks to maintain situational awareness.
- x) Applying the evasion skills learnt from different trainings.
- xi) Trying to identify the wild animals by their sounds alone.
- xii) Burning dried chillies, coconut ropes and dried elephant dung so that the fumes will keep predators away.
- xiii) Building strong community grain houses to store food grains of individual families in a collective manner.
- xiv) Women not wearing messy clothes like sarees while working in the jungle as it might prevent a swift escape in case of danger.
- xv) Surrounding the goat and poultry pens by white ropes which can distract wildlife, etc.

4. Fencing and Walling

Basically, fencing and walling lies within the preserve of Park administration. However, locals can also contribute to this effort by erecting fences and walls around their houses or farmlands. Mesh wire fences as well as brick and mortar walls could be built for keeping wildlife intrusions at bay. If household resources do not permit, then cheaper and organic ways of building fences may also be followed.

For e.g. planting cactus, other prickly species and bamboo to act as natural fences, using plastic ropes instead of mesh wire in fencing purposes, may not only reduce the costs, but also offer decent enough protection from wildlife incursion. Proper fencing and walling techniques will remain decisive in avoiding human-wildlife conflicts for the most part.

5. Growing Local Produce

The Park administration and the buffer zone management committees are encouraging the farmers to focus on local produce so that forest dependency may be cut down. For e.g. planting fodder trees near homes, planting timber trees in private lands, growing mushrooms, tubers and vegetables in-house, rearing fish in local ponds, growing medicinal herbs in the community forests, etc. This transition will not only alleviate the pressure on wild resources but also reduce jungle visits by the locals, thus avoiding chances of conflict with the animals.

Further, these measures would incentivize entrepreneurship in villages and provide for a reliable source of long-term self-employment. If the locals have to go fewer times into the jungle, then the possibilities of fateful encounters with the wild animals could be minimized, ensuring safety for both the species.

6. Changes in Way of Life

There has been a popular saying among the conservation activists in the Park belt: The animals are unable to change their ways of life. They will behave the way they want to. But it is us, the humans that can and must change our ways of life. We should keep things in the right order and priority. Jungle is the bread and butter for many native communities. Still, they have to evolve and mellow with the changing times.

We should treat wild animals as our own brethren. Forests are required not only for us, but also for these majestic creatures of nature. In fact, there is the first right of way of animals in the forests and humans should accept this order or priority.

There should be a renewed focus on collecting fodder, firewood and timber from private lands or community forests instead of relying on the Park produce. The locals should never lower the guard and always remain vigilant. They should develop an interest on how a particular animal behaves and reacts so that safety measures could be adopted accordingly.

7. Receiving Trainings and Employing the Skills Learnt

The Park management, NTNC, local levels and buffer zone management committees invest significant time, effort and resources in trainings and orientations for the affected population. These programs may run anywhere between 1 to 7 days depending on the target groups.

As we were resting in the famous Dalla Homestay of Madhuwan Municipality, Bardiya, after ending the day's work, the rangers of the Park were busy educating the locals through films and multimedia projectors on how to control poaching and promote eco-tourism. The Tharu locals, including women and the elderly, were partaking in that one-night training with keen interest.

However, participating in training regimes alone will not suffice. Learning to use the skills in everyday situations is the real deal. The skills learnt from those trainings such as checking wildlife poaching, identifying animal behaviour, keeping families safe, reaping the eco-tourism opportunities, managing a sustainable lifestyle, creating a self-reliant supply system and promoting coexistence of both animals and humans, need to be translated into actual practice, and the efforts have begun to show results too.

This new arrangement will go a long way in boosting human-animal understanding and downplay the risks of conflict between the two.

8. Promoting Community Forests

The Park management and other stakeholder institutions are trying to develop community forests as the load-shifters to national forests. The more these community resources grow, the more they can buttress the national forests by alleviating their burden in terms of resource demand. As its result, there have been 241 buffer zone consumer groups across the Park perimeter.

A total of 19 buffer zone management committees have been formed from among them. There are also 150 community forest user groups and one religious forest active within the belt. These forest groups and committees get regular technical and financial help from not only the Park management but also from NTNC and other conservation-based agencies.

Up to 50 percent of the revenue generated by the Park is redistributed among these buffer zone management committees under different heads. The locals seem to be happy with this arrangement and are cooperating in their own ways.

If products of national forests such as medicinal herbs, fodder, timber and firewood could be ensured from the community forests, then the locals need not wade into riskier Park areas where the fear of legal action and wildlife attacks looms large.

9. Adopting Newer Technologies

As newer generations are replacing the older ones in the local families and communities, they are more willing and handier to use newer techniques and technologies in their everyday lives, including for mitigating conflicts with the wildlife.

For e.g. today, they can take pictures and videos of wildlife sightings by their cell phones and relay it to the community members in real time. They have formed alert and awareness groups in various social media platforms such as Viber, Messenger and WhatsApp. They also report incidents of animal sightings or conflict to the Park or forest officials through these channels. Collection and presentation of proof relating to wildlife crimes and confrontation has become quite easier with the advent of newer technologies.

Today, the locals use scaring devices in their communities. Once a wild animal approaches, microphones installed in watch towers (*machaans*) start blaring out pre-recorded sounds of pigs, goats, buffaloes and humans to chase the predators away. Controlled current is passed onto the mesh wires by means of a battery mounted portable device. This technique has been found greatly effective in deterring wildlife intruders except for elephants and rhinos.

10. Reducing Forest Dependence

Finally, the locals are waking to a newfound awareness that the current rate of consumption and demand would not sustain the forest resources for long; and one day the forest will buckle under its own weight. Hence, they are scrambling to pull the weight off the Park and outsource their demands from private lands and community forests. Previously, the natives would do little to be self-reliant and would look up to the Park to fulfil even the basic of their needs.

However, due to constant awareness and exposure, things have now changed for the better. Today, more and more local residents are inclined to grow agricultural and forest produce within their households and communities, so that individual and group needs could be met with minimum impact on the jungle.

Farmers are also pivoting towards cash crops like ginger, garlic, lemon, sesame, mentha, lemongrass and turmeric rather than towards cereal crops like corn, wheat and paddy. These

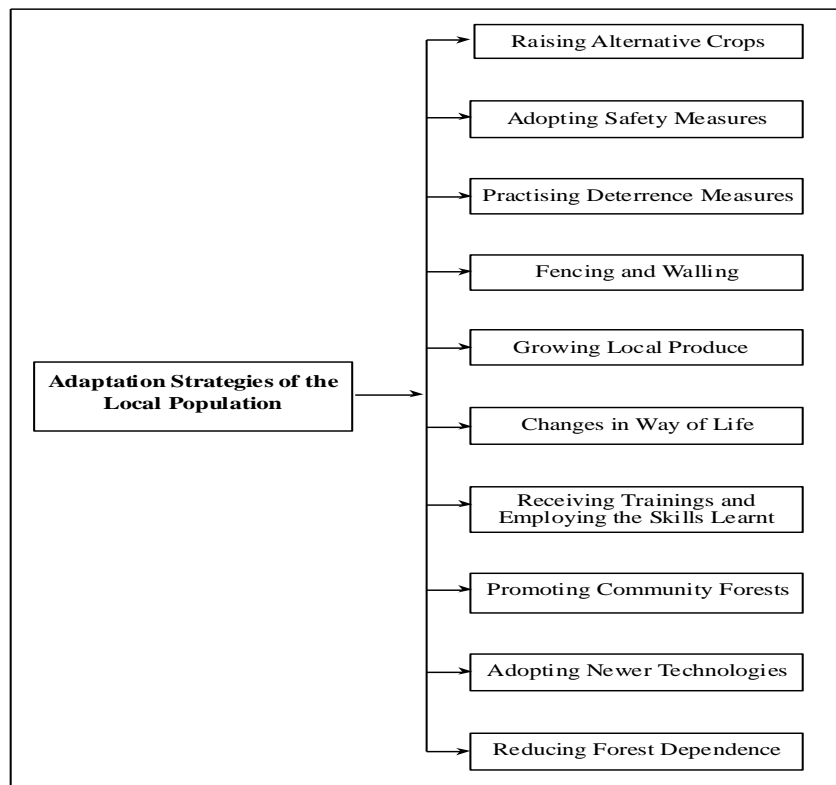
cash crops not only require lesser care, water and tillage, but are also sold quickly and fetch attractive prices. Further, they deny the predators of the hiding spots under dense growth.

The curious and interesting adaptation strategies employed by the locals seem to prove a point that where there is a will, there is a way. They cannot take law into their own hands. They cannot make an exodus from their traditional lands and dwellings. Still, they need to save themselves, their crops, livestock and residences from wildlife aggression. It is difficult to overpower the ferocious animals by individual effort. Hence, collective action is the only way forward. It presupposes group coherence, groupthink and joint collaboration to meet the shared challenges of safety and security.

What happened today for others can happen to us tomorrow. Nobody is really immune from the dangers posed by the roaring and roaming fauna. They cannot resort to violent or coercive measures to keep wildlife at bay because of the value for conservation and the worth that these animals add to the local ecosystem and economy. This leaves the locals with only one route: to develop creative as well as time tested measures that could save them without inflicting any harm to the wild population.

Figure 4.4

Adaptation Strategies of the Local Population



4.9 Measures Instituted for the Mitigation of Human-wildlife Conflict

Enhancing the participation of local populations in mitigating the impacts of human-wildlife conflict requires a multifaceted approach from state authorities and agencies. Below are some strategies they can implement to this end:

4.9.1 Strategies

1. Conflict Mitigation Strategies

They comprise of introducing non-lethal methods for deterring wildlife, like noise-making devices or the use of guard animals and train local communities in their use. They further consist of establishing buffer zones around wildlife habitats to reduce human-wildlife interactions while allowing for sustainable land use by local communities.

2. Capacity Building and Resource Allocation

This strategy seeks supporting local NGOs and community groups focused on wildlife conservation and HWC mitigation, providing them with resources, training and funding. It also calls for allocating sufficient funds for local initiatives, enabling communities to develop their own solutions to mitigate conflicts and manage wildlife sustainably.

3. Community Engagement and Education

It entails conducting education programs that inform local communities about human-wildlife conflict, the importance of wildlife conservation and how people can coexist with wildlife. It further requires organizing workshops that provide practical skills for mitigating conflicts, such as wildlife monitoring techniques or effective fencing methods.

4. Incentive Programs

They suggest implementing compensation schemes for farmers and herders who suffer losses due to wildlife. This can help reduce retaliatory killings and foster a more positive attitude towards conservation. They also embody providing incentives for practices that benefit both wildlife and local livelihoods, such as organic farming or sustainable tourism.

5. Involvement in Planning and Decision-Making

It presupposes involving the local communities in the development of wildlife management policies. Utilizing local knowledge can lead to more effective and culturally suitable

solutions. It also seeks to establish committees that include local representatives to discuss wildlife issues and collaboratively develop strategies.

6. Building Collaborative Partnerships

It summons a workable partnership with NGOs and international agencies to leverage expertise and resources in addressing human-wildlife conflict. It also underscores the need to foster better collaboration between sectors, including agriculture, forestry and tourism, to develop holistic approaches to address this pressing issue.

7. Research and Monitoring

This strategy requires involving the local community members in research efforts related to human wildlife conflict, enabling them to contribute valuable insights and observations. It further necessitates utilizing technology to gather data from local populations on wildlife sightings and behaviours, which can help inform management strategies.

8. Legislation and Enforcement

It entails updating the relevant laws and policies to recognize the role of local populations in wildlife management and conflict resolution. It further attempts to ensure that enforcement strategies for wildlife protection are supported and recognized by local communities to reduce tensions.

By implementing these strategies, state authorities and agencies can empower local populations to play an active role in mitigating human-wildlife conflicts. Such approaches not only enhance the effectiveness of conservation efforts but also promote community resilience and sustainable livelihoods. Building strong relationships and fostering mutual respect between wildlife and local communities is crucial for long-term solutions.

In the case of Bardiya National Park, the focus of my study, despite notable grievances from the general public, the Park management together with its partner agencies such as National Trust for Nature Conservation (NTNL), Zoological Society of London (ZSL), World Wildlife Fund (WWF) and other community-based organizations (CBOs) have instituted several measures with an eye on mitigating human-wildlife conflicts.

Though the effectiveness or success rate of such initiatives are debatable, there is no discord to the fact that these measures have, to some extent, contributed to alleviate the sufferings of

people, promote income generation efforts and establish coexistence between the animals and humans.

4.9.2 Current Measures

At this premise, the key official measures instituted by the Park management geared towards the mitigation of human-wildlife conflict may be recalled as follows:

1. Sharing of Public Revenue

From 30 to 50 percent of the revenue generated by the Park is redistributed among the buffer zone management committees, which are 19 in number, under different heads. Such revenue is collected from ecotourism initiatives such as jungle safari permits, fishing permits, nature guide permits, herb collection permits, timber transportation permits, etc. Remainder of such revenue is distributed between the provincial and federal levels. The objective behind such redistribution of revenue is to create socioeconomic opportunities for the local population which bears the brunt of wildlife aggression and law enforcement. Sharing of public revenue among the natives is expected to motivate them towards deeper conservation efforts as they could believe that protection of wildlife would ensure financial prosperity for them and it is in their best interests to maintain ecological balance in their localities.

2. Promotion of Alternative Crops

The Park management, together with its partner agencies, has been promoting the cultivation of alternative crops that are not only financially more lucrative, but are also wildlife repellent. Cereal crops like corn, wheat and paddy are now being replaced by cash crops such as lemon, turmeric, ginger, garlic, mentha, lemongrass and sesame. Since these crops require less water, labour and land to raise and deprive the predators from tall hiding spots, the authorities are incentivizing their cultivation by educating the farmers of their benefits, offering seeds and saplings and buying back their produce.

3. Encouraging Alternative Energy

Firewood is the primary source for cooking food, both for humans and domestic animals, in the Park belt because it is easily available and mostly for free. Many locals have a daily routine of wading into deep forests and return with a backload of dried firewood.

This pattern not only erodes forest cover but also puts the people in harm's way, as chances of wildlife encounters would mount if locals frequent the jungles more often.

As such, the Park management, in partnership with other conservation agencies such as the NTNC, WWF and ZSL has been actively encouraging the use of alternative energy such as cooking gas, solar, electricity and biomass. The goal of such programs is to pivot the locals from the traditional sources of energy, for reducing their dependence on forest resources, and to try modern power sources in their daily lives. As such, the natives are being encouraged to use equipment like induction stoves, gas stoves and electric heaters for cooking food, both for humans and domestic animals. These efforts will not only promote environment cleanliness but also reduce human footprint in the jungles. Simultaneously, the risks of human-wildlife conflict will also go down.

4. Promotion of Home-Based Resources

The Park management and community forest user groups are also actively promoting the growth and use of home-based resources. Many produce which are now extracted from the jungle can be successfully grown in local lands and communities also. For e.g. fodder trees, timber trees, vegetables like mushroom and medicinal herbs can be grown in private fields as well as nearby community forests. Fishes may be grown in local ponds.

Hence, it is prudent to replace forest-based resources with the home-based ones and the locals are finally waking up to this new reality. In a few years from now, as the communities become self-dependent in resource availability, we can expect the pressure on Park resources and risks of wildlife aggression to subside.

5. Skills Development and Training

The Park administration, in partnership with the local levels, has been conducting skills development trainings intended for the affected population. It has supported introducing electric auto rickshaws so that the local youth may take up alternative profession without having the need to depend on forest resources. Auto mechanic, plumber and electrician trainings are also held regularly targeting the unemployed men and women.

Moreover, training and orientations have been conducted in conflict transformation. In coordination with the Forest Offices, the Ward Offices and Municipalities are offering training to the locals on wildfire prevention, building of fire islands, fire rings, etc. The local levels are also contributing in mesh wire fencing and digging ditches.

6. Erection of Conservation Infrastructure

In recent years, the Park officials have lent priority to the erection of conservation infrastructure to demarcate the living spaces of animals and humans. As its result, mesh wire fences and concrete boundary walls have been built around Park perimeters in many places.

In some extra sensitive locations, controlled live current is passed on these fences by using a battery mounted portable device. The current is enough to shock the predator but not to kill it. Once shocked, the animal will try to be nowhere near again. Stone and raw brick walls are also built by the local communities by their own effort. The local levels have also lent a helping hand to the construction of conservation infrastructure.

For e.g., the Thakurbaba Municipality has by far built 8 km long boundary wall by its own resources to prevent elephant intrusion. It has also expended around Rs. 10 million to install 500 street lights in desolate areas. Likewise, the Geruwa Rural Municipality has, in the past 5 years, spent around Rs. 10 million to build mesh wire fences in attack prone areas. Geruwa is especially vulnerable to human-wildlife conflict as it shares a 36 km border with the Bardiya National Park. All these measures ensure minimal interactions between the locals and wildlife thereby diminishing the risks of loss to lives and property.

7. Use of Technology

Lately, the Park authorities have intensified the use of modern technology to monitor wildlife behaviour and their risks on the locals. These gadgets are used not only by the conservation personnel but also by Nepal Army units that provide security cover to the Park forests. Drones are flown and CCTV cameras are fixed in sensitive locations. Radio collars are installed in particularly problematic animals for tracking their whereabouts. Spy cameras are installed deep into the forests for identifying the predators responsible for wayward hunting. Tigers and leopards could be recognized on the basis of their stripes which do not match with one another. Speed guns are used to control the speed of vehicles in highways so that chances of road-kill are reduced. Moreover, the use of ICT and social media is also prioritized to connect with the locals and create a two-way communication system.

8. Distribution of Conservation Merchandise

In collaboration with the donour agencies, the Park management frequently distributes

conservation merchandise to the local communities free of cost. Public mikings are conducted on the risks of wildlife aggression and loudspeakers are also distributed. Torch lights are handed out to the locals in peripheral settlements. Scaring devices are installed in watch towers (*machaans*). The NTNC installs smokeless wood-fired ovens in rural kitchens for free. Street lights are being installed by the local levels so that there will be sufficient brightness during dark.

9. Disbursement of Relief and Compensation

Disbursement of relief and compensation is a cornerstone of human wildlife mitigation strategy. Relief distribution for victims and survivors began only from 2012 with the inception of Guidelines for the Relief Assistance of Losses from Wildlife, the same year. Those Guidelines were amended for 3 times. Today, the relief regime is governed by the Guidelines for the Distribution of Losses from Wildlife, 2023. It offers the following range of relief and compensation amounts for different kinds of losses or damages:

A. In case of human casualties

- i) Up to Rs. 20 thousand as per the treatment bills in case of minor injuries.
- ii) Up to Rs. 200 thousand as per the treatment bills in case of serious injuries that need hospitalization.
- iii) Entire medical expenses covered as per the recommendation of a doctor in case of serious injuries that need emergency care and if the injured is treated in a government hospital.
- iv) A lump sum amount of Rs. 500 thousand in case the injured is permanently disabled due to wildlife attack.
- v) A lump sum amount of Rs. 1 million in case of a death of a person from wildlife assault.

B. In case of damage to livestock

- i) Up to Rs. 60 thousand in case of loss of large domestic animals such as buffaloes, oxen, cows, yaks, horses or mules.
- ii) Up to Rs. 10 thousand per animal in case of loss of domestic animals other than the above (e.g. goats and sheep).

iii) Up to Rs. 10 thousand per incident in case of loss of poultry or fisheries.

C. In case of damage to physical structures, crops and grains

i) Up to Rs. 20 thousand in case of damage to houses and animal sheds.

ii) Up to Rs. 10 thousand in case of loss to stored food grains.

iii) Up to Rs. 10 thousand for a maximum of 2 times a year in case of damage to standing crops.

However, if there are crop or livestock insurance schemes in place, then the compensation shall be provided only after deducting the sum paid by the insurer.

In addition to the aforesaid relief and compensation amounts, the local levels also grant extra compensation over and above that is offered by the Park officials as above. For e.g. the Thakurbaba Municipality makes an ex-gratia payment of Rs. 50 thousand to Rs. 200 thousand in case of human casualty arising from wildlife attacks. As for the damage to house and animal sheds, a maximum sum of Rs. 15 thousand is provided for the local residents.

Moreover, a sum of Rs. 200 per kattha is awarded for loss to standing crops, once a year and for a maximum of two crops. Regarding the loss to livestock, it is covered by insurance scheme wherein the federal government bears 80 percent, the Municipality bears 15 percent and the concerned individual bears 5 percent of the premium payable to the insurance company. Likewise, the Geruwa Municipality makes an ex-gratia payment of up to Rs. 100 thousand in case of human casualty and Rs. 10 to 30 thousand in case of loss to livestock.

In fact, the relief and compensation measures are indeed post-incident responses and are of a curative nature rather than preventive. Though they cannot, as such, prevent human-wildlife conflict, but work to cushion the ill impacts of such conflicts.

10. Engagement and Dialogue with the Locals

Engagement and dialogue with the affected local population remains a key component of a coherent human-wildlife conflict mitigation strategy. This aspect had been neglected for long, but is now gaining newfound priority. Not only the Park management and its partner institutions, but the local Forest Offices, Police Offices and Local Levels have also shown keen interest in engaging and negotiating with the locals.

For e.g., the Park and Forest officials routinely conduct dialogue and negotiations with the affected population in the event of a wildlife incident or on other occasions.

Various Days and Events are celebrated at the participation of locals. The Tharu *Badghars* are regularly consulted by the public authorities to improve synergy between the indigenous community and conservation apparatus. Rangers and forest officials visit through the local communities and homestays and conduct interaction programs on a periodic basis. Sometimes, the village elders and elected representatives are also invited to the Park Office for holding discussions and sharing information.

Likewise, Area Police Offices lying in the vicinity of Park also run public interaction events under the banner of Community Policing. They further conduct awareness raising campaigns at the village levels. Sometimes, they hold interagency discussions involving the community leaders, local levels, Park staffs and officials of forest user groups.

The police personnel get mobilized as soon as they are informed of any wildlife incident. They conduct foot patrols and vehicular patrols in high-risk areas after dark. They also prepare reports and recommendations for the wildlife victims so that they would be entitled for compensation from the concerned agencies.

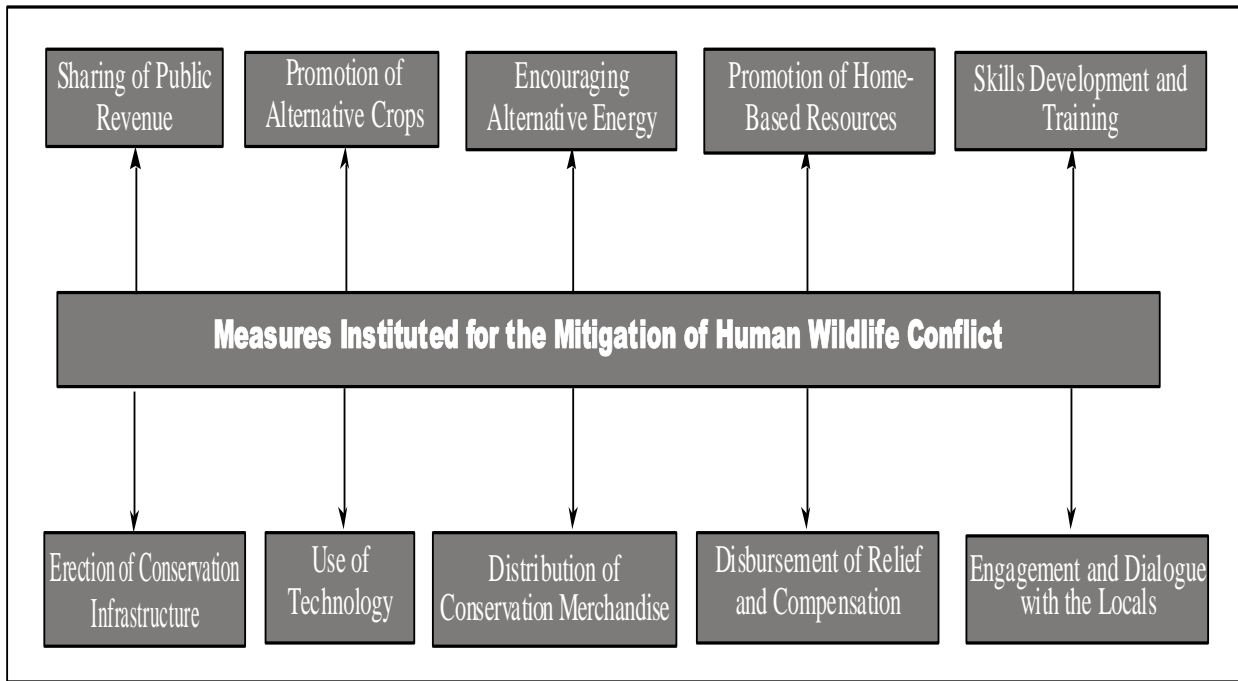
The Local Levels are also not far behind either. They act as mediators in case any dispute erupts between the locals and Park authorities. They also press the Forest Offices for speedier distribution of relief amounts. Sensitization programs are run for women only groups as well.

The NTNC has been running Behaviour Change Campaigns in the affected areas. Bardiya is the first district from which that Campaign has been launched. Such interactions are held down to the Sector or Post level. Public meet-ups are held in the aftermath of a wildlife incident to learn lessons and ensure preparedness for the future.

These outreach and communication programs can go a long way in addressing the local grudges in time and develop a coordinated approach to mitigate the incidents as well as aftereffects of human-wildlife conflict. Despite protests from certain quarters, the efforts are bearing fruit, albeit slowly.

Figure 4.5

Measures Instituted for the Mitigation of Human-Wildlife Conflict



4.10 Grievances and Expectations

Despite the aforementioned efforts to placate the locals and minimize the human wildlife encounters, it is not that everything is hunky dory between the public authorities and the local population. They share deep-seated resentment against each other which sometimes manifest into misunderstandings and flare-ups, especially in the aftermath of a wildlife incident. I, as a researcher, collected such grievances and mutual expectations during the time of fieldwork which can be broadly divided into two different kinds as follows:

4.10.1 Of the Local Population

The government's protection policy is unilateral. The CBAPU, formed for controlling wildlife smuggling, actually conducts spying for the Park administration. The fallen and rotting woods and trees come flowing with the river and go to India worth billions of rupees. Later, the same woods return to Nepal as furniture. Equal rights should be granted to the local levels. The salvage of rotten and fallen wood as well as logs flown by the river should be given to the local people.

Similarly, it would have made the forest area clean and the local levels also would have made millions in revenue. The domestic demand for wood products and furniture would also have been met. The rift between local levels and Park Office is so wide that the previous Mayor of Thakurbaba Municipality and the Warden of Bardiya National Park were not even on talking terms. In addition, the approach and orientation of conservation enforcement depends heavily on the individual nature and attitude of Wardens that lead the Park Office, rather than by a streamlined set of standards and benchmarks.

The locals also share an interesting story. The Chaudhary Group was interested in setting up a noodles plant in the Thakurbaba Municipality. However, it ultimately pulled back due to the restrictions imposed by buffer zone. It ultimately shifted its plans to Bansgadhi. A local entrepreneur had built a brick kiln by using paddy husk as fuel in Ward No. 2 of the Municipality. He did not use any firewood or forest product. However, the Parks still forced him to shut it down.

Another public grudge lies in the fact that the water flow is obstructed in many Park areas due to the fallen trees and logs closing the way. It has led to the river streams diverting towards the human settlements. The local villages get inundated. However, neither the Park removes the jam by itself nor allows it to be done by others.

The Lumbini Province has selected the Thakurbaba Municipality to set up an industrial village. However, the buffer zone rules can come in its way. The buffer zone as it exists today shall not produce any results. The concept seems okay in principle.

However, the buffer zone management committees have become more powerful than the local levels, and are running parallel mechanisms. The strict and impractical protection rules have made it difficult for the Thakurbaba Municipality even to select and develop landfill site for its waste management. It is because all regions of municipality come under the buffer zone other than Ward No. 5.

Another popular grievance is that the locals cannot cut down the trees in their own lands without seeking approval from the local forest office. A warrant is required while transporting even household wood and logs to the furniture mills. Any conservation effort will succeed only by winning the hearts and minds of the locals. If conservation benefits the locals, then naturally they will be more motivated in the conservation efforts. However, the locals would remain indifferent if conservation efforts yield no benefits for them.

People are dying left, right and centre. A leopard which assaulted and wounded an armed soldier in Ward No. 6 of the Thakurbaba Municipality was left to go scot-free. Whereas conservation is necessary, it should not come at the cost of humans. The alternative way of sustaining livelihoods is not possible for the locals for whom the forest is a source of so many products essential for their survival. More than 3300 families own less than one *kattha* of land in the Thakurbaba Municipality. The number of squatters and freed bonded labour (*kamaiyas*) is also substantial. Many of them earn a living by selling firewood sourced from the Park jungle. Hence, we should account for this fact also.

The local respondents perceive that the conservation part has now saturated. Now, we have to move towards the management of fruits of conservation. There is no role of the local levels in utilizing the firewood, fallen trees, wood logs, sand, stones and pebbles lying in the buffer zone. The Park management exercises total authority in this matter.

However, they will be the first ones against whom public anger is vented if something untoward happens. Likewise, the funds of local levels that should have been spent on development and public infrastructure is being directed towards building walls and fences to ward off predators. Hence, to recoup this deficit, the federal and provincial governments should provide local levels with additional funds.

The archaic laws inconsistent with the present political system should be repealed. Protection of wildlife should also be matched by the safety of locals. The Park considers the Geruwa stream as its boundary. When the stream changed its course, even the private lands of locals are also annexed by the Park. By far, around 700 bighas of private land has been annexed into the forest land.

The local population also laments that the foreign organizations and donor agencies have mostly carved the conservation agenda of our country, with total disregard to the ground realities and spatial peculiarities. They are running a parallel economy and governance by means of grants and foreign aid.

The Park area lies between the streams of Babai, Karnali and Geruwa rivers. There is no scientific demarcation of boundaries. Even the private lands are annexed into the Park land when the rivers change their course, especially during monsoon. The locals are dependent on the Park resources, not by choice but out of compulsion. There are only a handful of wildlife

smugglers who do it for profit or money motive. Most jungle visits are made by the sustenance farmers and resourceless individuals. However, the Park administration and army personnel treat every one of them as professional criminals.

Many responsible actors shared with me that the viewpoint to assign more importance to flora and fauna as compared to humans is in itself flawed. The individuals are required to keep their domestic animals safe within their premises. Then, why should the government not keep the wild animals safe within the forest perimeter? The Forest Offices and Park Offices are reticent on coordinating and partnering with the local governments. They built the biological corridor with much fanfare. However, the necessary structures have not been created. Moreover, it is not proper to leave all matters into the employees' hands. Working together with the locals should be promoted.

In their view, the priorities have been lopsided. Due to international funding and propaganda, the authorities pledge to increase the wildlife number, including tigers, bears, elephants and rhinos in the hope of securing foreign grants. And they return to frame anti-social laws that run against the ground reality. The government conservation efforts have succeeded because of the active support of the locals. However, we are now on the receiving end. In fact, conservation has brought more nuisance than benefits.

The problem of human-wildlife conflict is long term and complicated. But the government comes up with short term and temporary solutions.

Further, the buffer zone is not only boon but also bane for us. Whereas they have introduced Bardiya district to the world stage and generated income and employment opportunities through eco-tourism, it also has led to a lot of hindrances in our daily lives. The same set of stringent rules apply for both the Park area (meant for animals) and buffer zones (meant for humans). How can anyone justify this even-handed approach?

4.10.2 Of the Public Authorities (Park and Forest Officials, Police Personnel, etc.)

In the same vein, the public authorities also have a lot of concerns to share and observations to make. They begin with a statement that the local people are caught between law enforcement and their own practical convenience. Though they are sensitive and informed of the hardships the local population is facing due to strict conservation practices, we cannot do

more because we have to act within the purview of laws. For e.g., if a pole of fence is uprooted, then it will be wiser for the locals to reinstall it, rather than waiting for support from Park management which may take time. However, this is still not happening.

They note that coexistence between the wildlife and humans is the need of hour. The local residents have no timetable for entering and exiting the dense forests. They do it at any time and often alone. It is because if they move in groups, they have to share the produce among themselves, which nobody wants to. This raises the risk of casualties by wildlife attacks. The benefitted community will deem the current conservation policies and system as proper.

However, the community that could not derive benefits would term them as unsuitable. We may take the example of Dalla homestay where the locals cherish conservation efforts, because they have been successful to link those efforts with steady income through ecotourism.

The interests of animals and humans are disparate. The only interest of animals is survival of them and their offspring. They do not intend to hoard property, indulge in luxuries, enjoy a lavish life, indulge in recreation or save property for future generations, unlike humans. Most animals are not violent in nature. They fight with humans only when their peaceful survival is threatened.

Whether we are invading the habitat of animals or animals invading our habitats? We need to give this issue a piece of thought. In fact, wild animals began to visit human settlements only when humans first encroached their safe lands and food resources. Otherwise, they would have stayed within their own coveted spaces. This fact should not be lost on us.

Free fishermen and free firewood or fodder collectors not only risk themselves but also others in the community. People analyse cost-benefit or risk-return ration before deciding to enter jungle or not. If the benefits or returns outweigh the costs or risks, then people will be tempted to encroach forests and exploit their resources. Earlier, conservation efforts kept the local stakeholders in sidelines.

However, today, there is a growing realization that the communities need to be integrated with such efforts. Moreover, if there was equal punishment for poaching a tiger and a deer, then tigers would have been wiped out by now.

They also conceded that the approach of Park in enforcement is stricter than is required. There is a scope for making it more liberal and permissive. Many items such as timber, fodder, firewood, vegetables, etc. can be grown locally without the need to make risky jungle visits. However, the locals find it easier to gather the readily available resources from forests than to manage by themselves. Many locals share a myopic vision on wildlife conservation, focussed on immediate needs alone. Should not our grandchildren see how a tiger or rhino looks like?

If we can make the environment clean, then the employees will not be the only ones to breathe in fresh air. It will benefit everyone from local community to incoming tourists. Today, if Bardiya district is known all over the world, it is because of the success of our unrelenting conservation efforts.

The government should make specific provisions for the management of problematic animals. Once a tiger becomes man-eater, it remains so for the rest of its life. The allegation that we are protecting wildlife at the cost of human lives is not well placed. The human population in Nepal is close to 30 million but the tiger population is only 350 nationwide. They are attaching equal significance to both the sides. The Park authorities are suffering from shortage of human resource and budget. Further, the current Relief Guidelines have raised the financial burden manifold.

There is a lack of policy focus on how to deal with the wounded, disabled, the old and man-eater animals as they pose the gravest risk to local population. We stressed only in increasing the numbers. We pledged in 2011 to double the tiger population by 2022. We exceeded that target by a wide margin. In the recognition thereof, we also won the TX2 award. However, the management part was left behind in this furore.

Forest and wildlife protection is a matter concerning every one of us. It is also a hot issue globally. We are bound by various international treaties and conventions in this regard such as the CITES. Hence, national needs should be matched with international commitments. The fecklessness of local residents is also equally responsible for human wildlife skirmishes. They question that why should the wild animals arrive in the community forests which have been raised by their own efforts. But we should be aware that animals know no borders or boundaries, whether inland or international. We should learn by heart that communities are our habitats, so are the jungles for them.

Wildlife conservation and human safety are not exclusive and they should go hand in hand. We need to ponder: Whether we are going to their homes or they are coming to ours. In fact, we need both animals and humans for a sustainable ecosystem.

Thus, the aforesaid grievances and expectations, compiled on the basis of individual responses during fieldwork, tell a lot about the long way to go before we achieve peaceful coexistence between the humans and wildlife and to ensure that conservation is for all.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Key Findings of the Study

The key findings of the current study may be divided into various relevant heads and discussed as follows:

5.1.1 Emerging Facts and Trends

As noticed from primary and secondary data derived from fieldwork and library study, the emerging facts and trends concerning the status of human-wildlife conflict in the study area of Bardiya national Park may be framed as follows:

1. Most wildlife assaults are reported when the locals traverse the jungle for collecting fodder, firewood and vegetables; and while grazing cattle in the forest inlands.
2. There is no role of the local levels in utilizing the firewood, fallen trees, wood logs, sand, stones and pebbles lying in the buffer zone. The Park management exercises total authority in this matter.
3. The locals cannot cut down the trees in their own lands without seeking approval from the local forest office. A warrant is required while transporting even household woods and logs to the furniture mills.
4. Damage to crops and livestock, damage to housing structures and human casualties are the key forms of impacts resulting from human-wildlife conflict.
5. Attacks on humans are carried out chiefly by tigers, leopards and bears. Likewise, crop damage is caused mainly by wild boars, rhinos, monkeys and elephants.
6. There are little too few options for the native communities for leading an alternative lifestyle. Most locals are dependent on the Park resources, not by choice but out of compulsion.
7. As most of the time of forest authorities is spent on managing human-wildlife conflict, it has left little time and resources for the conservation efforts.
8. Previously, the conservation regime was run entirely by police and army personnel. Later, it came into civilian control and buffer zones, local levels also appeared on the scene.

9. Earlier, conservation efforts kept the local stakeholders in sidelines. Today, there is a growing realization that the communities need to be integrated with such efforts. There seems to be a shift in thinking, now focusing on how to gain their ownership in the protection measures.
10. Neither the animals nor the humans could remain confined within their designated spaces. As they cross their paths, chances of encounter grow up.
11. The government should make specific provisions for the management of problematic animals. Once a tiger becomes man-eater, it remains so for the rest of its life.
12. Prior to malaria eradication in Terai during the 1970s, forests were meant exclusively for the wildlife and not humans. However, later people began populating forests by clearing forest patches and establishing settlements.
13. Now, the situation is such that neither can we entirely relocate the animals nor the humans from their habitats. Hence, peaceful coexistence between the two is the only way forward.
14. Rising incidents of human-wildlife conflict have cast shadow on the conservation initiatives. The local residents will be combative in places where untoward incidents have occurred. The Park and Forest officials cannot reach those sites even to assess the damage immediately post the incident.
15. Our efforts should be focused ensuring that the wild animals should remain within their own frontiers and the humans also within their own domain.
16. Relief is granted in the event of human fatality while compensation is offered in the event of other loss or damage to property, livestock or standing crops. The relief or compensation amount is higher than that of neighbouring India.
17. Relief and compensation are cleared swiftly from the Park Office whereas it takes time from the local Forest Offices. The reason is that whereas the Park Office can settle the relief demands of victims and disburse payments by itself, the Forest Offices need to refer the files to the Lumbini Provincial government for approval which involves bureaucratic red tape and time.
18. Incidents happening inside the Park area are compensated by the Park Office whereas those happening out of its range are paid out by the respective Forest Offices.

19. The government spends millions annually for disbursing relief and compensation. However, it should instead focus on prevention measures and employment for the survivors.
20. The compensation is too nominal for crop damage or loss. Regardless of the frequency of loss to standing crops, compensation is awarded only once a year, and for a maximum of 2 crops.
21. The maximum compensation for crop damage is pegged at Rs. 10 thousand which only covers a fraction of actual loss. The Forest and Agriculture Office staffs do not come in time for monitoring the damage sustained.
22. The current Relief Guidelines of 2023 have increased the financial burden manifold as they have steeply hiked the relief and compensation amounts in the event of any loss to life or property.
23. The local governments and forest institutions are at odds over the conservation issues, though they are essential for both of them.
24. The people are caught between law enforcement and their own practical convenience.
25. The conservation part has now saturated. Now, we have to move towards the management of fruits of conservation.
26. Growing instances of human-wildlife conflict have cast an adverse effect on wildlife protection efforts. It will put the entire conservation philosophy in bad light.
27. The wild animals are not changing their conduct or correcting their behaviour. So, it falls on us - the humans - to change track and mend our ways.
28. The locals are forced to send their children in school buses even within short distances because of the perils associated with walking the jungle trails on foot.
29. In many instances, the parents and breadwinners of families are also losing lives, leading to loss of social cover and financial shock for the survivors.
30. It takes about Rs. 10 million to build 1 km of such concrete wall. As the Bardiya National Park covers an area of 968 square km, complete walling easily costs around 1 billion, which is a financial challenge in its own way.

31. Humans are more intelligent and rational than humans. So, more onus falls on us. The animals cannot think about them. However, we can think about both us and animals.
32. Wildlife conservation and human safety are not exclusive and they should go hand in hand. We need to ponder: Whether we are going to their homes or they are coming to ours. In fact, we need both animals and humans for a sustainable ecosystem.
33. Both the communities and animals are reliant on the same forest. It makes them cross paths sometimes. The most recurring attacks are made by the elephants and leopards.
34. The Park management has not repaired the broken walls or fences. It is not as sensitive and interested in the plight of locals as it should be, as told by the local respondents.
35. The Park administration can employ the local population to repair the broken fences and walls with some incentives. Electric fencing should also be expanded which can run by batteries and can be carried in bags.
36. Wildfires are destroying the already depleting food sources of animals, prompting them to pivot towards the villages.
37. The food supplies in the forest are waning. Many predators have developed taste for human flesh.
38. Many local communities are so situated such that they have to cross jungles wherever they want to go. However, today, they cannot venture out alone. The respondents ask that if they were to send 3 to 4 individuals for a single task, then who will perform the other household chores?
39. The locals cannot move out of their homes from dusk to dawn. The conflict has dampened the willingness and interest of locals towards wildlife conservation. It is difficult to leave the kids and elderly people alone in homes, even during daytime.
40. The informants complain that they grew community forests so that they could obtain timber, firewood and fodder nearby. However, now the same forests have become a life risk for them.
41. The Royal Bengal tiger usually does not strike humans or animals outside of jungle. The leopard frequently sneaks into the communities for hunting pigs, goats and sheep. Elephants come in groups and destroy houses as well as standing crops.

42. The conservation efforts have succeeded because of the active support of the locals. However, they now lament that they are now on the receiving end. In fact, conservation has brought more nuisance than benefits, as per their perception.
43. The surplus animals could not be relocated thus creating an enormous pressure on the existing food resources.
44. Wild predators are snatching people even from scooters and bikes. They get disturbed from the lights and sounds of vehicles and go off the hook.
45. The Bardiya National Park opens only once a year for forest cleanup (*kharkhadai*), usually during the months of November or December, and for a period of 3 to 5 days. This is only the authorized and safest window for the locals to venture into national forest and collect fodder or firewood.
46. The locals allege that water flow is obstructed in many Park areas due to the fallen trees and logs closing the waterways. It has led to the river streams diverting towards the human settlements. The local villages get inundated. However, neither the Park removes the jam by itself nor allows it to be done by others.
47. Conventional knowledge tells that the women should not wear saree and blouse while moving through the jungle as it would make escape and evasion difficult. Likewise, bright and contrastive clothes of red, white or yellow should not be worn while entering the forests. Instead, green, grey and other dim coloured clothes should be worn that can easily melt with the foliage.
48. The local and state revenue has swelled due to the attraction of Bardiya National Park among the internal and foreign tourists. However, tourist influx is also disturbing the once quiet habitats of wildlife.
49. The benefitted community will deem the wildlife conservation policies and system as proper. However, the community that could not derive benefits would term them as unsuitable. We may take the example of Dalla homestay at Madhuwan Municipality where the locals cherish conservation efforts as they have been successful in reaping benefits from sustainable eco-tourism.

50. If the Park and Forest officials only advise the locals without lending active support, then their policies and programs will not achieve mission statements. Hence, any intervention measure should inevitably include pathways for alternative means of livelihood and for reducing their dependence towards forest and its resources.
51. The wild animals cannot speak or argue for themselves. Hence, we, as humans, have to speak on their behalf also as we are the finest of species. There are numerous other government agencies to look after the human interests, but only a few for these speechless animals.
52. The fecklessness of local residents is also equally responsible for human wildlife skirmishes. They question that why should the wild animals arrive in the community forests which have been raised by their own efforts.
53. We should be aware that animals know no borders or boundaries, whether inland or international. We need to convince the local population that forests are as useful for the wild animals as they are for us.
54. As an adaptation strategy, the locals may make noise upon seeing a predator. They may light fires, spread smoke, beat utensils, blare loud music or songs in loudspeakers or switch on the home or street lights in such cases. Most wild animals are averse to fire and light.
55. The Khata Corridor and the Terai Arc Landscape serve as wildlife pathways linking India and Nepal, enabling animals to move between protected regions. Stretching 15 miles, the Khata Corridor connects Bardia National Park in Nepal with Katarniaghat Wildlife Sanctuary in India. However, the presence of wildlife, such as elephants, rhinos, leopards, and monkeys, poses challenges to the settlements along the corridor.
56. The protection of flora and fauna is both a national priority and an international commitment for our country. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), established in 1975, is a crucial treaty that ensures international trade in wild animals and plants does not jeopardize their survival. Though the CITES is essential for global conservation, promoting sustainable practices and international cooperation, its implementation shows mixed results.

5.1.2 Underlying Reasons/Factors for Human-Wildlife Conflict

As learned from the present empirical study, recent surge in human-wildlife conflict in the study area of Bardiya National Park is driven by a complex interplay of factors, including:

- 1. Obstruction of Natural Pathways:** The natural corridors used by the wildlife for movement are now populated by the schools, colleges, bridges, canals, asphalt roads and other structures. Hence, their natural pathways have been compromised. It makes the abundant wildlife spillover to human settlements and farmlands in search of food and shelter. For e.g. the elephants walk in groups and use the same passage for transiting between one patch of the jungle to another. However, development infrastructure has crisscrossed such traditional migratory corridors and these mammals find breaks and interruptions along the way. As such, they tend to deviate from their natural paths and break into villages and farmlands. Once done, they get tempted to visit the communities and fields over and over again. Thereafter, wildlife intrusion becomes habitual much to the fright of local residents.
- 2. Overpopulation of both Humans and Animals:** The population of both humans and wildlife has been soaring over the years. The numbers of mega fauna like tigers, elephants and rhinos have trebled in the past 10 years. For e.g. tigers have grown to 125, elephants to 120 and rhinos to 38, as per current estimates. The strength of other mid-sized animals has also swelled such as black bucks, swamp deer, spotted deer, wild boars, pythons, monkeys and hyenas due to rigorous enforcement measures.

In a similar vein, human concentration around the Park belt is also going up. Rural to urban migration, hills to plains exodus and resettlement by the government of disaster-hit people, freed *Kamaiyas*, landless individuals and destitute Dalits on many different occasions may be attributed as the underlying reasons behind such population surge. As its result, the contest for common forest resources has intensified between the humans and wild species. Both are dependent on the same jungle patches for their survival and subsistence. Thus, population rise is gradually spreading thin the forest covers, and their dwellers are exposed into the open.

- 3. Habitat Fragmentation:** Large infrastructure projects like transmission lines, highways, and irrigation canals running through the core Park area have fragmented wildlife

habitats, pushing animals into human-dominated areas. Whereas internal and foreign tourists have swarmed the Park in recent years leading to lucrative revenue for the Park and locals, this influx has also troubled the quiet, natural habitats of the wild. Numerous roads have been built inside the Park area as human settlements and forest areas are comingled in many places. Jungle safaris are conducted unabashedly and in increased frequency. When thousands of visitor tread into the core habitats in the Park area under the name of jungle safari, tenting, camping and rafting, their locales become grossly disturbed. In addition, regular wildfires, river-led forest erosions and anthropogenic encroachment have further exacerbated this crisis. All these factors have colluded to push the wildlife away from their natural dwellings and into local communities.

- 4. Inorganic and Interest-Driven Conservation Agenda:** The foreign organizations and donour agencies have mostly carved the conservation agenda of our country. They are running a parallel economy and governance by means of grants and technical aid. The Park management has lost on the human component and is focusing only on the conservation of flora and fauna, with less than adequate resources. The priorities have been lopsided. Due to international funding and propaganda, the authorities pledge to increase the wildlife number, including tigers, bears, elephants and rhinos in the hope of securing foreign grants. And they return to frame anti-social laws that run against the ground reality.
- 5. Post Pandemic Shifts:** The human-wildlife conflict aggravated during the COVID emergency that lasted for more than 2 years. People became leisurely as works and businesses took a halt. Hence, they ventured into the forests more frequently leading to more recurring encounters with the predators. As there was a fall in movement of humans and vehicles during the lockdown period, it made the areas previously off limits to the animals, accessible again. As lockdowns were lifted and normalcy returned, the animals had already controlled the passages and trails that were previously reserved for the local residents only.
- 6. Displacement of Old and Senile Animals:** Most of the wild animals are territorial in nature. It means they vehemently safeguard their habitats and do not like other animals or humans encroaching them. They also require a safe and adequate supply of foodstuff, grassland and water resource. A tiger gives birth to 4 or 5 cubs in one pregnancy cycle.

As they grow up, the tiger or tigress comes into conflict with its own offspring. As the parent tigers grow old and senile, and as pressure piles up on them by the latest batch of competitors, they shift to safe and easy methods of hunting prey and quenching their hunger. Whereas the young and agile animals can hunt wild prey like deer and blackbucks, the old, diseased, injured, pregnant and lactating animals have to rely on easy prey.

Hence, they are the ones who often frequent the villages in search of domestic animals like pigs, goats and cattle. These domestic animals do not offer much resistance and offer substantial food with little effort. A tiger or leopard can succeed in killing a wild prey like deer in 19 or 20 attempts. However, it may hunt down a 300 kg buffalo in a single try. This makes them habitual to frequent villages and farmlands.

7. **Archaic Laws:** Our wildlife protection regime has been operating on the basis of a National Parks and Wildlife Conservation Act that has been framed more than 50 years ago. Nepal has transitioned through many political and administrative systems ever since. The Wildlife Act was made during the height of party-less Panchayati and unitary rule. However, we have already moved into the federal setup in the last 10 years. Two Forest Acts have been adopted after the enactment of National Parks and Wildlife Conservation Act, first in 1992 and now in 2019. However, we are still functioning under the Act of 1973 with minor amendments. Now is the high time we introduced a new wildlife law that would be compatible with the current political reality and popular aspirations.

Likewise, there is still no single amendment on the Buffer Zone Management Rules framed in 1996. Their revision is long overdue as the local bodies of past are in no way near to the powerful local levels of today. The buffer zones are made liable only to the Park management but not towards the concerned local levels wherein they function.

8. **Ill Impacts of Climate Change:** Climate adjustment has become tougher because of climate change impacts. As water holes are drying up inside the Park areas, wild animals are forced to enter human settlements even for satiating their thirst. The water sources are fast drying up. Rivers and streams are thinning up. It has ceased the natural barriers making the animals effortless to enter and exit the human settlements at will. The human density has also increased manifold. The stray cattle left by the owners have further lured the predators into the villages as they offer effortless food to the starving wild cats.

- 9. Discord between Production and Protection Components:** We should divide and study the prevailing forests and wildlife conservation into two distinct components: production and protection. Whereas the Division and District Forest Office mechanisms are devoted towards the production efforts, the National Parks and Wildlife Reserves represent the protection measures. The problem is that the production part has not matched up with the protection part. This has caused the public expectations to not be met and thus leading to popular dissent.
- 10. Shortage of Conservation Infrastructure:** We stressed only in increasing the numbers. We pledged in 2011 at the St. Petersburg Tiger Summit to double the tiger population by 2022. We exceeded that target by a wide margin. In the recognition thereof, we also won the TX2 award. The fastest tiger growth has been witnessed in Banke and Bardiya districts for the past 5 or 6 years. However, the management part was left behind in this furore. The growth of infrastructure has also failed to catch up with the growth of animal population. A caged tiger eats 8 kg of meat per day. It costs Rs. 15 thousand per day to maintain a captured wild cat. We centred on making one proud declaration after the other, but the needful infrastructure could not match up.
- 11. Overdependence on Forest Resources:** Overreliance of local residents on forests and their resources is a big contributing factor in escalating human-wildlife conflict. Jungles are bread and butter, and a way of life for the indigenous communities. The governments also resettle the landless people in the fringes of forests and river banks. Mostly, they are the poor, destitute, squatters, freed *Kamaiyas*, Dalits and migrant workers who live around the forest edges. Their tiny land parcels do not support intensive agriculture or abundant production. This drives them towards the forests to bridge this deficit. So, they raise big number of cattle, sheep and goats to make their ends meet. It forces them to look at the forests for gathering fodder and firewood. Hence, engaging with the jungle is their compulsion and not choice.
- 12. Interspersion of Private and Forest Lands:** The farmlands of many local residents share borders with the forest. So, people come into contact with predators while tilling their lands. The forest patches and communities are comingled in many areas. For e.g., the Park considers the Geruwa river as its boundary. When the river changed its course,

even the private lands of locals are also annexed by the Park. By far, around 700 bighas of private land has been annexed into the forest land. About 36 sq. km of Geruwa Rural Municipality falls in the Park region. Thus, a majority of local settlements border with the park forestland. When the predators intrude the private lands, they will not quit on their own. They need to be confronted and chased off. This causes conflict and even undesired incidents.

- 13. Short Term and Insensitive Approach:** The problem of human-wildlife conflict is long term and complicated. But the government comes up with short term and temporary solutions. Likewise, the approach of Park management also changes with each successive Wardens. Some adopt a liberal and permissive approach whereas others maintain a rigid and pedantic stand. The police and army protect the animals and birds, but threaten locals.

Moreover, the buffer zone is not only boon but also bane for them. Whereas they have introduced Bardiya district to the world stage and generated income and employment opportunities through eco-tourism, it also has led to a lot of hindrances in our daily lives. The locals allege that they cannot even dig out the stones from their own fields or backyards without Park permission. Even if they wish to transfer a tractor load of firewood cut from their own trees from one locality to the other, they need a permit; otherwise, the consignment will be confiscated. The same set of stringent rules apply for both the Park area (meant for animals) and buffer zones (meant for humans), which is highly impractical as well as insensitive.

- 14. Food Insecurity for the Animals:** Until a few years back, the forest was dense and resourceful to support all types of wildlife. However, the forest area is constantly on the decline due to anthropogenic activities, development works, river-led erosion and wildfires. The Park is teeming with animals but the food supplies have dried up. The prey animals have declined as are the grasslands and open scape. However, the number of wild animals is growing uncontrollably. If wildlife could get enough food in their own habitats, then they would naturally not pivot towards the villages.

- 15. National to Community Forest Migration:** The consumer forests are evolving while the national forest is thinning out. There is no sufficient food source left in the Park forests.

But there is plentiful food source in the community forests. The community members have grown community forests to full extent. However, the national forest covered by the Park is in a dilapidated state. Hence, it is natural that the ever-increasing wild animals are quitting national forests in favour of community forests. The community forests are also frequented by the locals to meet various needs. As the humans and animals cross each other's paths, conflicts are bound to happen.

Likewise, the bio-corridors are meant only for wildlife movement. But unfortunately, they have turned into habitats for the animals that are displaced from forests proper. Moreover, corridors provide those predators with almost everything they need including cattle for food, crops, water, vegetation cover, etc.

5.1.3 Measures for the Mitigation of Human-Wildlife Conflict

It is true that human-wildlife conflict is soaring in the study area of Bardiya National Park resulting in several unpleasant consequences for both humans and wild animals. However, the measures for mitigating the incidence and impacts of such conflicts and for promoting human animal amity are also not far behind, despite gaps in the demand and supply situation.

At this premise, those measures may be further bifurcated as follows for the ease of analysis:

A. Measures from the Park and Forest Authorities

Camera traps have been installed in multiple locations. Radio collars have been installed on especially problematic animals, such as man-eating tigers. Planting of bio-chips in the bodies of erratic wildlife is being experimented for tracking their movement. Metal cages are also placed here and there. Mesh wire fences have been erected. Electric fences have been built covering 30 km in length. Public awareness programs are being run. Public mikings are conducted and loudspeakers are also distributed. Further, loudspeakers and cycles are being given to locals of peripheral settlements.

Likewise, farmers in the fringe areas cultivate cereal crops like paddy, corn and mustard which are liked by elephants, rhinos, monkeys and deer for food. Hence, the Park and Forest officials have encouraged the peasants to grow alternative plants that are animal repellent. For e.g., turmeric, ginger, garlic, onion, lemon, lemongrass, sesame, etc.

A total of 3300 youths is mobilized under some 250 community-based rapid response teams (RRTs) for monitoring and reporting wildlife crimes as well as conflicts. The authorities also

currently supporting habitat management of wildlife so that they need not vacate their organic territories and step into human settlements. Similarly, the officials are currently supporting habitat management of wildlife so that they need not vacate their organic territories and step into human settlements. Problematic animals are being controlled on a regular basis and relocated elsewhere.

The Park Office, together with its partner organizations, is supporting skill development programs among the local youth so that they need to be over-reliant on forest and its resources. For e.g., electrician, plumbing, sewing, driving, auto mechanic, nature guide, etc. The Park and Forest officials are said to be engaged all year round in various protection activities such as habitat management, grassland management, wetland management and waterhole creation, despite suffering from acute shortfall of budget and human resources.

They further distribute saplings, seeds of fruits and hybrid grass in various communities. Other agencies like Divisions and Sub Division Forest Offices, NTNC, ZSL also distribute seeds or saplings of turmeric, ginger, onion, lemon and garlic that are not liked by the predators. The NTNC also buys the output or produce from locals. The Park has supported in introducing electric auto rickshaws so that the local youth may take up alternative profession. With support from partner organizations, it also installs smokeless wood fire ovens in rural kitchens for reducing firewood dependency.

The Park management is promoting alternative sources of energy such as solar, electricity and cooking gas to reduce strain on wild resources like firewood. A few bio-corridors have been designated for ensuring smooth movement of wildlife without colliding with human movement. The Bardiya National Park and Katarniaghat Wildlife Sanctuary of India are partnering to create new bio-corridors as animals frequently crisscross Indo-Nepal border from the jungle areas.

The Terai Arc Landscape (TAL) Project commenced in 2001 with support from the World Wildlife Fund (WWF). It has helped numerous rural poor to improve their lives in sustainable ways, and has fostered public support for conservation. The Park and Forest authorities visit public and private schools and teach the students on how to remain on the safe side and react when faced with a wild predator. Moreover, they also intimate them on the peculiar traits and habits of specific animals so that they can respond accordingly.

Trenches are dug to fend off elephants. Mesh wire fences are built to keep off other predators including wild cats. In many places, electric fences are also integrated. Watch towers or *machans* are erected to monitor the movement of wild boars, sloth bears, deer, porcupines, elephants, rhinos, blue cows, etc. which may wade into farmlands. Torch lights are handed to the local residents. Street lights are being installed. In addition, behaviour change campaigns are run across the communities so as to alert the residents who need to travel through the jungles on a daily basis.

As a curative measure to cushion the impact of a wildlife harm, relief and compensation are offered to the victims or survivors in case of any loss or damage on human life or property, resulting from wildlife action. The Park management has dug out dozens of waterholes to feed the wild animals. It has installed solar pumps to maintain constant water supply in these holes. It has also built numerous watch towers (*machaans*). However, those measures have fallen short in the wake of soaring demand.

B. Measures from the Local Levels

The Thakurbaba Municipality has tied the relief efforts with the agro-insurance and livestock insurance schemes. The Municipality has also strived to include 11,564 households within the town to include under the home insurance initiative. The Thakurbaba Municipality offers an additional ex-gratia payment of Rs. 150,000 in case of human fatality. This sum is in addition to the Rs. 1 million granted by the Park Office. Further, health insurance and accident insurance schemes are also offered by the Thakurbaba Municipality for the destitute families. Past year, the Municipality distributed 500 units of induction stoves free of cost so as to reduce dependence on firewood for cooking purposes.

Whereas the Park management is focusing on mesh wire fencing, the Thakurbaba Municipality is building boundary walls. The Municipality is also working on embankment measures so that rivers and rivulets would not change course during monsoon season. The Thakurbaba Municipality had allocated Rs. 1 million for installing street lights. Today, these lights cover much of the sensitive areas during night. The 14 NGOs operating in the Thakurdwara Municipality are also put to task in this matter. Likewise, the Thakurbaba Municipality has created a revolving perpetual fund (*akshay kosh*) to fund claims of compensation. Loss to all livestock is now covered under the insurance scheme where full value may be reimbursed of the dead animal at the recommendation of agro-technician.

The Madhuwan Municipality has financially and technically assisted in the creation of Dalla Homestay in 2011, a symbol of pride and entrepreneurship among the local Tharu community. Today, this Homestay has gained national and global fame for its sustainable eco-tourism endeavour.

Likewise, the Geruwa Rural Municipality has been building mesh wire fencing by its own means. It spent a sum of Rs. 10 million during the previous 5-year tenure. This program is still running as a multiyear project. It offers a sum of Rs. 10 to 30 thousand in case of loss of cattle and Rs. 100 thousand in case of human deaths, over and above the relief to be provided by the Park administration. The Rural Municipality offers a sum of Rs. 10 to 30 thousand in case of loss of cattle and Rs. 100 thousand in case of human deaths, over and above the relief to be provided by the Park administration.

In essence, all local levels of Bardiya, in coordination with the Forest Offices, the Ward Offices and Municipality, have been offering training to the locals on wildfire prevention, building of fire islands, fire rings, etc. These levels are also contributing in mesh wire fencing and digging ditches.

Thus, numerous measures have been instituted by the Park authorities and Local Levels in response to the human-wildlife confrontation. However, the desired outcomes are yet to be achieved as they have fallen short of the public demand and aspirations, which are growing by the day.

5.2 Conclusion

Human-wildlife conflict occurs when the needs and behaviour of wildlife impact negatively on humans or when humans negatively affect the needs of wildlife⁵⁴. Human-wildlife conflict is a critical issue in both conservation and social science research. Policymakers require evidence-based information to create sustainable management strategies and policy frameworks. Land users who experience losses due to wildlife often argue for compensation and the subsidization of preventive measures. Conversely, advocates for human-wildlife coexistence policies, including urban residents, typically do not face direct threats to their livelihoods from wildlife.

⁵⁴ Mekonen, S. (2020). Coexistence between Human and Wildlife: The Nature, Causes and Mitigations of Human-Wildlife Conflict around Bale Mountain National Park, Southeast Ethiopia. *BMC Ecology*, 1.

Recent research indicates that interdisciplinary and transdisciplinary approaches can assist stakeholders and institutions in developing sustainable management practices that foster human-wildlife coexistence.

Human-wildlife conflicts frequently occur in agricultural, forested, and production landscapes, such as rural or peri-urban areas, and near protected regions. These conflicts are commonly understood as negative interactions between wildlife and humans. From an anthropocentric viewpoint, conflicts arise when wildlife damages crops or harms domestic animals. Because this is a reciprocal process, humans and animals are negatively affected by the conflict, and it is one of the most complex and urgent issues facing wildlife management and conservation, especially outside protected areas⁵⁵. Researchers are exploring methods to redirect policy-relevant conflict research toward fostering human-wildlife coexistence and co-adaptation.

Over the years, literature on human-wildlife conflicts, interactions, and coexistence has expanded significantly, with conflict research outpacing studies on interactions and coexistence. This trend may be attributed to the focus on the negative outcomes of human-wildlife interactions or the emergence of new perspectives that incorporate a coexistence paradigm. The significance of involving stakeholders in environmental decision-making is increasingly acknowledged, leading to numerous efforts to establish participatory processes.

The root causes of human-wildlife conflict are diverse. The unprecedented scale of natural resource exploitation by nearly 8 billion people drives a need for food production, resulting in extensive land use changes that convert natural or semi-natural areas into urbanized and agricultural landscapes. Current research on human-wildlife conflict primarily centres on large mammals, as these species can pose risks to human safety and livelihoods. An anthropocentric perspective tends to label wildlife species as either beneficial or harmful, often overlooking their intrinsic value. Human activities - such as land conversion, resource extraction and the introduction of non-native species - continually influence the animal populations.

Consequently, the finite supply of natural resources increasingly positions agricultural and human-dominated landscapes as arenas for human-wildlife interactions. These interactions frequently lead to conflicts between different groups with competing interests; for instance,

⁵⁵ König, H.J. & Kiffner, C. et al., Human-Wildlife Coexistence in a Changing World, *Conservation Biology*, Vol. 54, No. 54, 787.

tensions often arise between farmers, focused on economic productivity, and conservationists, who aim to preserve natural areas.

Key value judgments in contemporary discourse include anthropocentrism, which treats nature as a resource without intrinsic value; neglecting the rights of future generations; and prioritizing consensus over the contest of ideas. Modern anthropologists argue that by framing conservation conflicts as conflicts between people about nature, such studies ensure that nature often comes second and this may do a disservice to conservation.⁵⁶ They highlight the issues that arise when conservation objectives are perpetually subordinate to human priorities. One radical yet compelling approach suggests recognizing nature's inherent right to exist.

Recent conservation strategies emphasize that wildlife species outside protected areas may be perceived as pests and that there is a growing risk of conflict if benefits and costs are disproportionately and unequally shared among the stakeholders and societies.⁵⁷

Wild animals, humans, and livestock have coexisted for millennia, but in recent decades, human-wildlife conflicts have dramatically increased worldwide. The rapid growth of human populations and the expansion of residential areas near protected regions have intensified these conflicts. As human populations rise, the swift development of infrastructure and the reduction of natural habitats have confined many significant wildlife species to protected areas. These animals often venture into the surrounding areas in search of food, shelter, and cover, leading to more frequent interactions with humans and livestock. Such interactions can escalate into severe conflicts, especially when large animals cause human casualties.

The interests of animals and humans differ significantly. Animals are primarily focused on their own survival and that of their offspring. They do not seek to accumulate wealth, indulge in luxuries, lead extravagant lives, pursue recreation, or preserve resources for future generations, which contrasts with human behaviour. Generally, animals are not inherently violent; they will only confront humans when their peaceful existence is threatened.

We should consider whether we are encroaching on animal habitats or if animals are invading ours. Historically, wild animals began to approach human settlements when humans first intruded on their territories and food sources. Otherwise, these animals would have remained in their preferred environments. This reality is important for us to recognize.

⁵⁶ Ibid.

⁵⁷ Ibid.

The Bardiya National Park, located in the tropical to subtropical zone, features alluvial grasslands and subtropical deciduous and riverine forests that provide ideal habitats for large wildlife. The park is a critical habitat for significant species such as tigers, elephants, and leopards, and serves as an alternative habitat for the one-horned rhinoceros. The local communities around the park and its 507-square-kilometre buffer zone rely heavily on forest resources for forage, animal bedding, and fodder to meet their daily livestock needs.

Livestock rearing is a primary source of income for these communities, who also claim customary usage rights for forest products, passage, fishing, and other park resources. These activities often bring humans and their assets into close proximity with wildlife.

The escalating human-wildlife conflict in the Park is a severe threat to conservation efforts as the Park has already invested a substantial amount of money (USD 80,000) compensating for livestock lost in animal attacks over the last two decades⁵⁸. To mitigate these conflicts and maintain coexistence between humans and wildlife, it is essential to improve habitat conditions to reduce competition within the park, develop insurance schemes for livestock and humans, support the upgrading of livestock sheds, and create practical, targeted strategies for specific animals and park areas.

Human-wildlife conflict is a complex issue that demands the attention of conservationists and social scientists globally. Habitat fragmentation and encroachment diminish prey species' availability, while the increase in predator populations heightens the risk of conflicts with large carnivores like leopards and tigers, thereby undermining conservation efforts.

Today, human-wildlife conflict has evolved from a simple competition over shared resources to a significant political issue, as it directly impacts people's livelihoods and requires substantial financial resources to address. Crop raids, livestock predation, and human casualties are the most common forms of loss caused by wildlife.

The peaking conflict between park authorities and local communities in protected areas presents serious challenges to the motivation for wildlife conservation and the maintenance of healthy ecosystems. Wildlife attacks on livelihood assets and the resulting economic losses often lead to diminished support from local communities for conservation efforts.

⁵⁸ DHAKAL & RIMAL, *supra* note 1, at 1.

Retaliatory killings of wildlife to prevent livestock depredation and economic loss constitute a major conservation issue. However, those retaliatory killings have often led to worse consequences including vanishing predators, such as tigers in Northeast China, lions in Africa, mountain lions in Argentina and leopards in South Africa and Southwest Asia⁵⁹.

Human-wildlife conflict not only threatens the long-term survival of wildlife but also affects the well-being of local communities near the park. The financial losses resulting from livestock depletion are equivalent to USD 142.61 per household, which is a significant amount for households whose average monthly income from livestock husbandry contributes nearly 100 percent of the total income of rural communities.⁶⁰

Promoting harmony between coexisting communities and wildlife is crucial for maintaining a healthy ecosystem and opening up opportunities for economic development. The relief and compensation strategy aims to minimize human-wildlife conflict by increasing community tolerance levels. Although such conflicts are inevitable, creating a win-win situation with a supportive environment and constructive interactions is necessary for coexistence. Enhancing wild prey density within the park can reduce predation outside its boundaries.

Moreover, the park should develop cluster-specific management plans that go beyond national strategies, balancing economic, political, and participatory approaches to prevent worsening livestock depredation and other conflicts.

Wildlife conservation encompasses 3 key aspects: preserving rare species, responsibly managing abundant wildlife, and mitigating wildlife-related damage. The primary focus of parks is often on the preservation of wildlife, but successful conservation efforts frequently necessitate concurrent strategies for conflict mitigation.

Various human activities - such as hunting, logging, animal husbandry, collection of non-timber forest products (NTFP), agricultural expansion and erection of development projects - can negatively impact both wildlife and parks. In this context, the overriding conservation priority should be to enhance the long-term survival prospect of the park itself rather than the survival of every individual *problem animal* involved in a conflict situation⁶¹. Our approach should emphasize conservation at the species and landscape levels, rather than focusing on individual animals.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Karanth, K.U. & Madhusudan. M.D, Mitigating Human-Wildlife Conflicts in Southern Asia, in *Making Parks Work: Strategies for Preserving Tropical Nature*, eds. John Terborgh and Carel Van Schaik (Island Press, 2002), 250.

In South Asia, many parks have human settlements either adjacent to or within their boundaries. These parks are often part of larger landscapes where there is extensive edge contact between wildlife habitats and human communities. At this interface, conflicts are inevitable due to the nutritional, ecological, and behavioural needs of wildlife. Evidence suggests that larger animals are more likely to come into conflict with humans than smaller species, leading to significant economic losses through crop damage, property destruction, and loss of livelihood opportunities. Tragically, human injuries and fatalities can also occur.

Crop damage by wild animals is perhaps the most widespread and persistent form of human-wildlife conflict in the tropics. The damage is not limited to the consumption of crops but also includes trampling, rooting, and other forms of wastage. This can lead to the loss of staple foods for the poorest rural populations and the destruction of commercial crops, which may take years to re-establish. Although people generally do not tolerate such crop losses to wildlife, a few communities in north-western India do show cultural acceptance of crop damage by wild antelopes⁶². However, even in these communities, traditional tolerance is gradually eroding due to cultural and economic changes.

Livestock predation by carnivores is another serious issue, often leading to retaliatory killings of the problem predators. Interestingly, local perceptions of livestock losses tend to be exaggerated, with the perceived value of the lost livestock often exceeding the actual value.

Human-wildlife conflict reaches its most severe form when people are injured or killed by wild animals. Incidents involving man-eating tigers, leopards, and elephants can spread panic across entire regions, prompting large-scale retaliatory killings and fostering widespread antagonism toward wildlife.

Various approaches have been employed to mitigate human-wildlife conflicts, many of which have been developed through practical, on-the-ground experience rather than through scientific planning. The potential remedies available to local people and authorities vary in scope from the softest option of stoically tolerating the damage caused by wildlife, to the hardest option of killing the problem animal⁶³. Most conflict mitigation strategies revolve around three general approaches: modifying human behaviour, altering wildlife behaviour, and preventing conflict through spatial separation.

⁶² Ibid.

⁶³ Ibid.

In particular, when human settlements are interspersed within parks that house large and dangerous animals, the likelihood of unacceptable levels of conflict increases. However, the rise of consumerism and growing economic expectations, coupled with weakening cultural ties to the land, may create new opportunities for implementing strategies based on voluntary, incentive-driven spatial separation. These strategies could be especially effective in parks where the number of people involved is small, alternative land is available, and the degree of conflict is high. To capitalize on such opportunities, park-specific actions promoting spatial separation must align with broader development policies.

Human-wildlife conflicts occur when the needs and behaviours of wildlife negatively impact humans, or vice versa, resulting in crop damage, injury or death of people, destruction of property, predation on livestock by predators, and, at times, retaliatory killings of wildlife. A significant driver of these conflicts is the growing human population near wildlife habitats. As the population and demand for resources increase, so do the frequency and intensity of these conflicts.

Bardiya National Park faces numerous challenges that must be carefully addressed to ensure the conservation of biodiversity and the survival of key species. Major concerns include human-wildlife conflict, poaching, large-scale infrastructure projects (such as highways, irrigation canals, and transmission lines), illegal wildlife trade, forest fires, human encroachment, habitat degradation, invasive species, and the management of wildlife, particularly orphaned animals.

In recent years, human-wildlife conflict has emerged as a significant challenge in maintaining a harmonious relationship between the Park and surrounding communities. Since 2000, elephants have killed 49 locals, while tigers and leopards have claimed the lives of 25 individuals in and around the park.

Recently, there has been a rise in wildlife attacks on locals, their livestock, crops, and property. In response, the park has implemented the "Human-Wildlife Conflict Strategy and Plan for the People Living Adjacent to BNP" (2021-26). This plan has been rolled out, resulting in a significant reduction in local antagonism toward the park. Locals assert their customary rights to use forest products, passage, fishing, and other park resources.

However, wildlife frequently raids agricultural harvests, particularly by wild elephants and

rhinos. Tigers, leopards, elephants, and rhinos are also primarily responsible for human injuries and fatalities. To mitigate human-wildlife conflict, the park has employed various active and passive strategies aimed at promoting coexistence between humans and wildlife.

Active measures include chasing animals away using fire, tractors, excavators, elephants, and occasionally gunfire. Passive measures involve the installation of solar electric fences, barbed wire, mesh wire fences, trenches, bio-fences along concrete walls, and changing crop patterns. Compensation for human deaths, injuries, and losses of crops, property, and livestock is governed by the Guidelines for the Distribution of Losses from Wildlife, 2023.

In addition, insurance schemes have been introduced to cover livestock and crop losses. Victim families receive relief support within seven days of submitting the required documents to the park administration. However, long-term solutions are necessary to minimize conflict levels.

To minimize the frequency of conflicts, research and studies should be conducted on the patterns and fatalities of these incidents across diverse geographical regions. Wildlife corridors should be established in areas where humans are predominant, along with designated migratory routes for animals.

Moreover, residents should be educated and trained in animal behaviour. Since conflict always results in losses, we need to focus on transforming conflict into collaboration.

Reducing human-wildlife conflict in the park's buffer zone is crucial for fostering positive relations between the park and local communities. Relief funds will be administered efficiently in accordance with the Relief Guidelines, ensuring that support is provided promptly. Provisions will be made to offer immediate medical assistance to injured individuals through the relevant buffer zone user committees, and the process for distributing relief funds to victims will be expedited.

5.3 Recommendations

Certain suggestions may be drawn from the findings and conclusion derived above which may be useful not only for policy reforms but also for conducting future inquests into this area. So, they may be correspondingly divided into inputs for reforms and interventions, and for future research purposes, as follows:

5.3.1 Policy Recommendations

Addressing human-wildlife conflict requires a multi-pronged strategy that combines prevention, adaptation, and support for the affected communities. Below are given the key recommendations to reduce conflict and promote coexistence:

- 1. Conservation Education:** The relevant authorities should implement comprehensive awareness programs to educate communities about wildlife behaviour, reducing misunderstandings and promoting responsible co-existence. As the government has expressed its commitment on various international forums to promote diversity and conserve wildlife, it must take certain steps in this regard. People need to be taken on board first. The awareness and sensitization programs should not be limited to office bearers only. Instead, they should expand to the grassroots level. The Park officials, the National Trust for Nature Conservation (NTNC), local levels and buffer zone management groups should take initiative in this connection.
- 2. Change in the Ways of Life:** The wild animals do not have an instinct for correcting their behaviour. So, it falls on us - the humans to change track and mend our ways. We need to transform human behaviour and daily lifestyle. People should not venture out of their homes after dusk. If required, then they should travel in groups and carry torch lights or other sources of light. The bushes and shrubs surrounding a neighbourhood should be cleared to avoid hiding spots. As told by a respondent to me, there is not a single incident where wild animals have attacked or killed someone staying or sleeping inside their homes. Local people are tempted to enter jungle for collecting vegetables, fish and snails all alone because if they go in groups, then they have to share the produce. This makes them vulnerable to animal attacks.

Hence, such greed should be discarded for the sake of collective safety. The local population should not enter and exit the jungle patches at will. The Park administration opens the Park for 3 to 5 days every year for forage clearance (*kharkhadai*) which would be the right opportunity to move into the jungle in groups. Children and elderly members should not be left alone in the homes as they could become easy prey. They should not lower their guard and always remain vigilant. The Park administration, local levels and forest user groups have a key role to play in this regard.

3. Pursuance of Adaptation Strategies: Following traditional adaptation strategies goes a long way in mitigating the chances and aftereffects of human-wildlife conflicts. The local residents should not move into jungles all alone. They should not sleep outside at night. They should raise an alarm or siren when suspicious wildlife activities are sighted. They need to guard their crops from an elevated position. Scarecrows have to be erected in crop fields for fending off wild animals. Cactus and other prickly plants should be planted at the edges of their houses and fields.

Pits may be dug; bamboos may be planted and crops that are disliked by the animals have to be raised. The elephants mainly damage crops and houses while leopards and tigers attack humans and livestock. They should also build fences around their properties, light fire and raise hue and cry upon sighting predators. The Park officials, local levels, the NTNC, conservation I/NGOs, forest offices and the village elders can contribute towards this end.

Local residents should walk in groups or at least in pairs. They also need to apply the skills learnt from trainings. The locals should study the traits and peculiarities of wildlife. They should develop an interest in how particular animals behave and act. One should not wear bright coloured clothes that would attract the attention of wildlife. For e.g. wearing red, green, white or yellow coloured fabric will draw the attention of tigers, leopards, rhinos and elephants.

Hence, wearing dim and subtle colours such as green and grey will help one melt into the surroundings and avoid detection by animals. One should try to identify by their sounds if they are not in plain sight. This trick will help us on how to take preventive measures depending on the nature of animal.

4. Interagency and Inter-Level Coordination: If we are to save the jungle and its inhabitants, then federal, provincial and local governments all have to join hands and every level should be given a stake in the process. Interagency and inter-level coordination is the key. Duplication in efforts and resources for similar tasks should be avoided. Hence, there should be a synergy and symmetry among the federal, provincial and local levels in their plans, programs and practices regarding conservation and livelihoods.

5. **Reducing Overreliance on Forests:** The local communities have to try with leading a self-reliant way of life by diminishing its dependence in the Park forests. Many items such as wood, fodder, firewood, vegetables, etc. can be grown locally without the need to make forays into the risky jungle patches. Herbs and other medicinal plants may also be grown in their own backyard or community forests under assistance from nurseries and Forest Offices. The federal and provincial Ministry of Forests and Environment, the NTNC, the Sector Forest and National Park Offices have to take a lead in this process.
6. **Refocus on Local Levels and Communities:** Protection of wildlife should also be matched by the safety of locals. Wildlife conservation and citizen safety should go hand in hand. The buffer zones should be made liable not only towards the Park management but also towards the concerned local levels. The funds of local levels that should have been spent on development and public infrastructure is being directed towards building walls and fences to ward off predators. Hence, to recoup this deficit, the federal and provincial governments should provide local levels with additional funds. If the local governments are allowed to sell of fallen trees and other residues, it will greatly bolster their revenue prospects. The Park authorities, police and military personnel engaged in conservation vigilance and the local self-help groups should come up with a more balanced and popular plan in this direction.
7. **Change in Enforcement Modality:** The approach of Park in enforcement is stricter than is required. There is a scope for making it more liberal and permissive. The Park should waive royalty and fees for utilizing natural resources such as sand, stones, pebbles, timber and firewood for the locals. It should return the private lands that it has annexed following the change of river course over years. The Park management should not get off simply by paying relief to the victims or their dependents. Employment opportunities should also be provided to the next of their kith and kin. The federal Ministry of Forests and Environment, provincial government, Park administration and local levels have a crucial role to play in this connection.
8. **Physical Segregation:** The jungle and community areas have to be segregated by fences and walls. The territories of community forests, national forest and private lands need to be clearly demarcated. Various types of fences, including boundary walls and wire

fences, have to be built and expanded to deter wildlife from entering settlements and farmlands. Street lights should be placed in the edges of villages. Boundary walls have to be built to check elephants and rhinos, as mesh wire could not keep them off. High electric fences would be effective to ward off wild cats like tigers and leopards. The broken fences or walls should be mended and guards be deputed for checking the status of such structures, across the forest perimeter. The federal Ministry of Land Management, Cooperatives and Poverty Alleviation, the provincial government, the Department of Surveys and Park officials are the focal agencies to this end.

- 9. Early Warning and Fire Control:** The authorities should pilot and implement effective early warning systems to alert communities about the presence of wildlife near villages, allowing for timely action and avoidance. If we can prevent wildfires, then food insecurity shall not occur in national forest. Hence, the animals feel no need to pivot to the community forests for survival where the encounter locals more frequently. The locals extinguish wildfires as soon as they detect them in the community forests. However, the authorities fail to put off fires for days in national forests. The Department of National Parks and Wildlife Conservation, the NTNC, the local levels and local self-help groups need to venture out more frequently to meet this purpose.
- 10. Harnessing Newer Technology:** Latest technology should be roped in. India has been harnessing the artificial intelligence (AI) to predict and detect the movement of wildlife across established corridors. In the past, many wild animals would be hit by incoming trains on a daily basis. However, India has now resolved this risk by relying on technological innovation. In our case also, drone monitoring of wildlife movement, installation of radio collars, camera traps and biochips to track the status of wildlife in real time should be given prominence. The Department of National Parks and Wildlife Conservation, the NTNC, conservation I/NGOs and local youth groups should be better mobilized in this direction.
- 11. Insurance Schemes:** Developing cost-effective insurance schemes to compensate for loss of lives and property of locals caused by wildlife is the key. Insurance schemes should be introduced to cover loss of human life, crops, livestock, houses or other property. Relief and compensation should not be merely symbolic, but cover the actual

value of loss or damage incurred. We have to provide financial support for the development and implementation of insurance schemes to compensate for losses to human life, crops, and property caused by wildlife. Not relief, but actual compensation amounting the total value of loss should be offered. The Nepal Insurance Authority, individual insurance companies, Park and Forest Offices, and the local levels should pay a better heed to this matter.

- 12. Relocation Support:** The government declared the Khata bio corridor as the Khata Protected Forest amid much fanfare in the year 2010. However, it did not vacate the human settlements. In the Madhuwan Municipality, there are 125 squatter families living in the forest fringes. There are illegal settlements in other locations also. If we could remove those settlements and relocate their residents, then human wildlife encounters might drop sharply.

Even if we cannot relocate them, we can develop integrated settlements. Hence, the conservation agencies should impart the assistance needful to relocate settlements from areas with high incidence of wildlife damage, ensuring a safe and sustainable relocation process. The federal Ministry of Land Management, Cooperatives and Poverty Alleviation, Department of National Parks and Wildlife Conservation, the Department of Surveys and local levels should spring up in action to this end.

- 13. Law and Policy Reforms:** The conservation laws and policies should be updated in keeping with the changed political and social realities. The nation has already moved towards the federal system of governance. The state is being restructured. However, the prevailing conservation model still smells of a unitary rule which we have discarded already. The focal law, National Parks and Wildlife Conservation Act of 1973, needs to be replaced by a new law that conforms to the changed political reality. Moreover, the Buffer Zone Management Rules framed in 1996 also clash with the new jurisdiction of local levels conferred by the present Constitution. These laws and policies were suitable for the time they were made. However, they need to be refined and revised with the course of time. The federal Ministry of Forests and Environment, federal Ministry of Law, Justice and Parliamentary Affairs, the provincial Ministry of Internal Affairs and Law and the conservation I/NGOs should be roped in for this process.

14. Promotion of Alternative Energy: If we can move the local population towards alternative energy such as electricity, biogas and solar, then forest products could be saved without risking human lives. Likewise, electricity, solar and cooking gas should be promoted as energy for cooking purposes in place of firewood for which the locals wade into the wild.

This shift will relieve the burden imposed on national forests and their resources. The federal Ministry of Education, Science and Technology, concerned provincial ministry, Alternative Energy Promotion Centre, local levels and buffer zone management committees have to join hands to achieve this feat.

15. Community Engagement: Increasing community awareness of wildlife behaviour and encouraging proactive measures to deter encounters goes a long way in mitigating conflict and fostering coexistence. How can the wildlife be conserved by pointing guns and rifles at the local population? One informant asked me during the fieldwork. Any conservation effort will succeed only by winning the hearts and minds of the locals. If conservation benefits the locals, then naturally they will be more motivated in the conservation efforts, as evidenced in the success story of Dalla Homestay.

However, the locals would remain indifferent if conservation efforts yield no benefits for them. The local schools and colleges, local Forests and National Park Offices, local levels and forest user groups should be given a better leeway to implement this goal.

16. Wildlife-Friendly Infrastructure: Wildlife-friendly infrastructure guidelines should be framed and enforced during the development of large infrastructure projects, particularly in wildlife corridors. The Park management should consider building sky bridges and bypasses to give the animals an alternative route.

The federal Ministry of Physical Infrastructure and Transportation, the provincial Ministry of Physical Infrastructure Development, Park officials, local levels and contractors have to be reminded of their duties in this regard.

17. Alternative Cropping: The conservation community should promote the cultivation of crops that are less appealing to wildlife, reducing conflict potential. The popular practice is to raise cereal crops such as paddy, corn, wheat and barley. Not only are these crops liked by wild predators like elephants, rhinos, wild boars, blue cows and monkeys, they also offer

perfect hiding spots for them. Hence, the local population should be more encouraged towards alternative crops such as mentha, sesame, lemongrass, lentils, turmeric, garlic, etc. The federal and provincial Ministry of Agriculture and Livestock, the Department of National Parks and Wildlife Conservation, Park authorities and local service centres.

18. Problematic Wildlife Management: The conservation officials should build large-scale holding facilities for managing problem animals, and employing regular tracking of wildlife movements to inform community awareness and proactive interventions. We should tread a middle path by ensuring the safety of both wildlife and humans. The surplus animals have to be relocated to the least populated areas. The Park management should provide for the relocation of excess tigers, elephants, boars, etc. or allow for their paid hunting. It should identify the old, senile and pregnant animals and transfer them to other safer areas. They may be shifted to retirement homes also.

The attention of Department of National Parks and Wildlife Conservation, the Park officials, the NTNC, the Central Veterinary Hospital and conservation I/NGOs should be drawn towards this connection.

19. Species Profiling: The Park extends to an area of 968 square km. Hence, the authorities have to determine how many tigers and elephants can be sustained within this area. The Park management should draw out objectively how much space is required for a specific animal by preparing individual profiles. A detailed zoological survey should be conducted for individual animal species. It should cover aspects such as its nature, foodstuff, habitat, roaming area and lifespan and movement.

Agencies such as Department of National Parks and Wildlife Conservation, the Park officials, the NTNC and conservation I/NGOs should be better mobilized to this connection.

By employing these diverse strategies, we can work towards reducing human-wildlife conflicts, promoting coexistence, ensuring the safety and well-being of both humans and wildlife, and fostering a sustainable future for all. All of these measures should centre on reducing the encounters between humans and wildlife and confining them into their own, respective territories.

5.3.2 Recommendations for Future Researches

The planet's human population increases by more than 200,000 people every day⁶⁴. This exerts severe and intensifying pressure on limited natural resources throughout the world. The resulting environmental degradation, biodiversity loss and recent surge in human-wildlife conflict threaten nature and adversely affect how people live in and adapt to the changing realities in their ancestral lands.

As such, we as researchers, have to underpin solutions to wildlife problems through applied research of a high standard. Our approach should be empirical, interdisciplinary and collaborative, seeking to include all 4 elements of the Conservation Quartet, viz. understand and address the problem; education to explain it; community involvement to ensure participation and acceptance; and implementation of social, cultural, economic and legal solutions.

Since environmental concerns have increased across all societies, academic inquiries on wildlife protection and conflict mitigation have gained traction worldwide. A central component of any academic research on human wildlife interaction needs to incorporate certain ideas such as that wildlife protection should earn public trust, management should be based on principles of democracy and best-available science, and wildlife conservation efforts should be seamlessly matched with concern for human safety and convenience, which I, as a researcher, found lacking in course of this inquiry.

Wildlife conflict research forms an integral part of conservation education and should cater to the traditional dependence of indigenous communities towards forest resources.

Therefore, any future academic research on wildlife conflict minimization and protection measures from an anthropological perspective is required to shed light on certain key issues and debates, namely:

- i) Relationship between humans and wildlife
- ii) Wildlife as an important resource in human evolution

⁶⁴Recent and future population growth. (August 2024). In *Introductory biology*. LibreTexts. [https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Introductory_Biology_\(CK-12\)/06%3A_Ecology/6.23%3A_Recent_and_Future_Population_Growth](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Introductory_Biology_(CK-12)/06%3A_Ecology/6.23%3A_Recent_and_Future_Population_Growth).

- iii) Importance of wildlife in the long-term evolution of human society
- iv) Distinction between wildlife welfare and rights
- v) Differences between absolute and scientific wildlife conservation
- vi) Inadequacies in the media and public perception regarding wildlife conservation
- vii) Habitat loss, fragmentation and its impact on local communities
- viii) Popular discontent against the prevailing conservation model
- ix) Dependence of indigenous communities towards nearby forests and their produce
- x) Disparities on how local population and public authorities view the same jungle, etc.

Thus, a future researcher in human wildlife interaction needs to develop innovative approaches and apply the best available information to efforts directed at meeting the needs of both nature and people in a changing world. The research should be mission-driven and aimed at solving immediate problems. He or she has to connect natural, social and cultural systems, and tackle emerging threats. He or she should further possess the regional and global analyses to identify and set priorities for the world's valuable habitats and species. The findings and conclusions of any future research on wildlife preservation should have the ability to unite the stakeholders over common conservation goals.

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ANNEXURE

Annex-1

Samples of Interview Schedules Used in the Fieldwork

Type A: To be filled with the locals residing in the vicinity of Bardiya National Park

Interview Schedule No:	Name/Codename of the Respondent:
Filled on:	Address:
	Age:
	Gender:

1. From when have you been staying in this place?

Ans.

2. Which profession/occupation have you been pursuing for livelihood?

Ans.

3. Have you or any of your family members ever been attacked by wild animals?

Ans.

4. Against whom the attack was directed and when?

Ans.

5. Where were you when the attack occurred?

Ans.

6. What was the nature of damage inflicted on you or your family?

Ans.

7. If the attack happened inside the Park area, then why had you entered there?

Ans.

8. How many times have you or your family sustained wildlife attacks?

Ans.

9. How would rate such damage?

Ans.

10. Have you received any relief or compensation from government agencies on behalf of that damage?

Ans.

11. If yes, then what was the amount of such compensation?

Ans.

12. Are you satisfied with the current forest and wildlife conservation system of government?

Ans.

13. If you are not, then what is your major grievance with the forest and wildlife conservation system of government?

Ans.

14. In your view, how can a balance be established between the need to protect forests and wildlife and the convenience of local population?

Ans.

15. How would you rate the human wildlife conflict status in your area?

Ans.

16. In your view, what are the underlying causes of human wildlife conflict in areas bordering the Park?

Ans.

17. What impact has been felt on your livelihood and safety due to the human wildlife conflict?

Ans.

18. In your view, which measures should be instituted by the Park administration to mitigate human wildlife conflict?

Ans.

19. In what ways can the local residents contribute to mitigate human wildlife conflict and conserve the wildlife?

Ans.

20. At length, do you want to add something?

Ans.

Thanks for your time and cooperation.

Type B: To be filled with the elected Local Level officials and staffs

Interview Schedule No: Filled on: Office:	Name/Codename of the Respondent: Designation:
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1. Since how long have you been residing in this area?

Ans.

2. Have you or any of your family members been attacked by the wild animals?

Ans.

3. Have the wild animals caused you any loss or damage other than assaulting humans?

Ans.

4. It is said that the local men and women fall prey to wildlife attacks while they enter the forested area of Park for collecting forest products. In your view, why are the locals compelled to enter the forested area despite knowing the risks?

Ans.

5. Are you satisfied with the current government system as regards the conservation of forests and wildlife?

Ans.

6. If you are not, what are your major grievances towards the current government system as regards the conservation of forests and wildlife?

Ans.

7. How would you rate the level of human wildlife conflict in your locality?

Ans.

8. What are the underlying reasons, in your view, behind the surge of human wildlife conflict in the areas adjoining the Park?

Ans.

9. How has the human wildlife conflict impacted on the livelihood and safety of the locals?

Ans.

10. What measures should be enforced by the Park management to mitigate the human wildlife conflict?

Ans.

11. What is your opinion on the allegation of local population that the wildlife is being protected at the cost of human lives?

Ans.

12. What is the readiness level of local government for mitigating the human wildlife conflict?

Ans.

13. How can the local individuals contribute in mitigating the human wildlife conflict and in wildlife conservation efforts?

Ans.

14. At the end, do you want anything to add up?

Ans.

Thanks for your time and cooperation.

Type C: To be filled with the Bardiya National Park and local Forest officials

Interview Schedule No: Filled on: Office:	Name/Codename of the Respondent: Designation:
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1. How would you assess the forests and wildlife conservation policy and system of the government?

Ans.

2. How would you rate the level of human wildlife conflict in the Park area?

Ans.

3. How the human wildlife conflict has impacted on the efforts of wildlife protection?

Ans.

4. How the human wildlife conflict has impacted the livelihood and physical safety of local inhabitants?

Ans.

5. What are the underlying reasons for the increase in spate of human wildlife conflict at the Park area?

Ans.

6. What is your opinion on the allegation of local population that the wildlife is being protected at the cost of human lives?

Ans.

7. What are the policies and programs formulated by the federal and provincial governments for the mitigation of human wildlife conflict?

Ans.

8. How often do you run dialogue and negotiation sessions with the local population and stakeholders for the mitigation of human wildlife conflict? How frequently those suggestions and inputs could be incorporated in the conservation efforts?

Ans.

9. What efforts have been instituted by your Office in its own initiative for mitigating the human wildlife conflict?

Ans.

10. Is the relief for wildlife victims extended in a timely manner?

Ans.

11. What is the purse of such relief amount?

Ans.

12. In your view, is the relief amount sufficient for the victims?

Ans.

13. What measures should be instituted in your view for reducing the dependency of local people on forest products from the Park and to shift them towards alternative way of sustaining livelihoods?

Ans.

14. Which reforms would you suggest in the conservation polices and system being adopted by the government?

Ans.

15. Finally, what are your suggestions for ensuring the peaceful coexistence between the humans and wildlife?

Ans.

Thanks for your time and cooperation.

Type D: To be filled with the police officials serving in the affected area

Interview Schedule No: Filled on: Office:	Name/Codename of the Respondent: Designation:
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1. What is the frequency of human wildlife conflict incidents at the Park region in the past one or two years?

Ans.

2. Among the incidents of human wildlife conflict, which ones are the most prevalent?

Ans.

3. It is said that the local men and women fall prey to wildlife attacks while they enter the forested area of Park for collecting forest products. In your view, why are the locals compelled to enter the forested area despite knowing the risks?

Ans.

4. How frequent are the complaints being filed in your Office in the past one or two years regarding incidents of human wildlife conflict?

Ans.

5. What are such complaints mostly about?

Ans.

6. What reforms do you suggest in the conservation policies and practices currently adopted by the government?

Ans.

7. What is your opinion on the allegation of local population that the wildlife is being protected at the cost of human lives?

Ans.

8. How can the local individuals contribute in mitigating the human wildlife conflict and in wildlife conservation efforts?

Ans.

9. What efforts have been carried out by your agency or office for the mitigation of human wildlife conflict?

Ans.

10. Does your Office offer facilitation for enabling the victims of human wildlife conflict to receive compensation on time?

Ans.

11. How often do you run dialogue and negotiation sessions with the local population and stakeholders for the mitigation of human wildlife conflict? How frequently those suggestions and inputs could be incorporated in the conservation efforts?

Ans.

12. What measures should be instituted in your view for reducing the dependency of local people on forest products from the Park and for shifting them towards alternative way of sustaining livelihoods?

Ans.

Thanks for your time and cooperation.

Annex-2
Sample of Focus Group Discussion Form

FOCUS GROUP DISCUSSION

A. Details of the session

Date:

Time:

Venue:

Moderator: Mr. Narayan Prasad Sharma

Recorder: Ms. Aditi Koirala

B. Details of the participants

S. No.	Name or codename	Gender	Age	Occupation/Profession	Address
1					
2					
3					
4					
5					
6					
7					
8					

C. Questions asked to the participants and the answers received therefrom

1. What is the extent or degree of human wildlife conflict experienced in your locality?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

2. How have the incidents of human wildlife conflict impacted on your daily lives and livelihood?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

3. Which precautions have you been adopting to remain safe from risks emanating from wildlife?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

4. Which measures have been instituted by the Park administration and government agencies for mitigating human wildlife conflict?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

5. How effective have been those measures in your view?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

6. In which resources are you dependent on the forests within the Bardiya National Park?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

7. Which measures need to be instituted, in your view, for ensuring the peaceful coexistence between wildlife and the humans?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

8. What are your expectations from the Park management and local governments for reducing your dependence on forest resources and adopting an alternative way of life?

Ans. No. 1:

Ans. No. 2:

Ans. No. 3:

Ans. No. 4:

Annex-3
Sample of Field Notes

FIELD NOTES
Basic Details

1. Date:

2. Time:

3. Venue:

4. Theme:

Key Observations

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Annex-4

Detailed List of the Research Participants in Interviews and Focus Group Discussions

S. No.	Name/Codename	Designation	Affiliation	Remarks	Identity
1	Jiban Paudel	Technical Assistant	Office of the Thakurbaba Municipality		Male, Khas Arya
2	Bina Kumari Bhattarai	Deputy Mayor	Thakurbaba Municipality		Female, Khas Arya
3	Kalu Chanda Thakuri	Game Scout	Range Post, Geruwa		Male, Khas Arya
4	Jaman Singh KC	Chairperson	Geruwa Rural Municipality		Male, Khas Arya
5	Laxmi Kumari Chaudhary	Vice Chairperson	Geruwa Rural Municipality		Female, Indigenous
6	Mohan Nagarkoti	Assistant Police Hawaldar	Area Police Office, Patabhar		Male, Dalit
7	Ram Ganesh Sah	Chief Forest Officer	Forest Sub Division Office, Bansgadhi		Male, Madhesi
8	Khadga Bahadur Khadka	Mayor	Bansgadhi Municipality		Male, Khas Arya
9	Tej Bahadur Khadka	Police Sub Inspector	Area Police Office, Patabhar		Male, Khas Arya
10	Umesh Paudel	Nature Resource Conservation Assistant	National Trust for Nature Conservation (NTNC)		Male, Khas Arya
11	Rupesh Sah	Police Inspector	Area Police Office, Motipur		Male, Madhesi
12	Prabin Paudel	Conservation Officer	Office of the Bardiya National Park		Male, Khas Arya
13	Ashish Tripathi	Ranger	Office of the Bardiya National Park		Male, Khas Arya

14	Purushottam Wagle	Conservation Officer	Office of the Bardiya National Park		Male, Khas Arya
15	Santosh Chaudhary	Senior Forest Officer	Forest Sub Division Office, Madhuban		Male, Indigenous
16	Tauleshwor Chaudhary	Police Sub Inspector	Area Police Office, Dhodari		Male, Indigenous
17	Bishnu Prasad Shrestha	Police Inspector	Area Police Office, Dhodari		Male, Indigenous
18	Ram Bahadur BK	Police Senior Hawaldar	Area Police Office, Motipur		Male, Dalit
19	Baliram Chaudhary	Ward Chairperson	Madhuban Municipality-4		Male, Indigenous
20	Hari Chaudhary	Forester	Forest Sub Division Office, Bansgadhi		Male, Indigenous
21	Bir Bahadur Tharu	Local Resident	Madhuban-4, Basanta		Male, Indigenous
22	Pradeshi Chaudhary	Local Resident	Madhuban-3, Khata	His father was wounded by a leopard.	Male, Indigenous
23	Ak Bahadur Budathoki	Local Resident	Madhuban-3, Khata	His wife was wounded by a leopard.	Male, Khas Arya
24	Prem Wamshi	Local Resident	Madhuban-3, Bhagariya	His mother was wounded by a leopard.	Male, Indigenous
25	Sita Chaudhary	Local Resident	Geruwa-4, Rajipur	Her father-in-law was killed by a tiger.	Female, Indigenous

26	Kalicharan Dahit	Ward Member	Geruwa Rural Municipality-2		Male, Indigenous
27	Ram Singh Tharu	Local Resident	Bansgadhi-4, Newada		Male, Indigenous
28	Bishnu Budathoki	Local Resident	Madhuban-3, Khata	He was himself attacked by a leopard.	Male, Khas Arya
29	Debi Lal Lamichhane	Chairperson	Jaya Bageshwori Community Forest User Group, Bansgadhi-7		Male, Khas Arya
30	Sanjib Kumar Chaudhary	Local Resident	Bansgadhi-4, Newada		Male, Indigenous
31	Indra Mani Chaudhary	Local Resident	Bansgadhi-4, Badhuwatal		Male, Indigenous
32	Khadga Bahadur Thapa	Local Resident	Madhuban-5, Shantipur	His mother was killed and wife wounded by a leopard.	Male, Khas Arya
33	Lautan Tharu	Chairperson	Bansapti Community Forest User Group, Bansgadhi-5		Male, Indigenous
34	Hari Gurung	Chairperson	Khata Community Forest Coordination Committee, Madhuban-1		Male, Indigenous
35	Bhadrai Tharu	Chairperson	Gauri Womens Community Forest User Group	He lost an eye in a tiger attack.	Male, Indigenous

36	Dahawa Tharu	Ward Chairperson	Bansgadhi Municipality-5		Male, Indigenous
37	Balaram BK	Local Resident	Geruwa-1, Sakhel	He lost his daughter and wife in a tiger attack.	Male, Dalit
38	Radha Chaudhary	Ward Chairperson	Thakurbaba Municipality-9	The only female Ward Chairperson of Bardiya district.	Female, Indigenous
39	Karma Prasad Chaudhary	Ward Chairperson	Geruwa RM-1		Male, Indigenous
40	Tek Raj Negi	Chairperson	Panifekawa Community Forest User Group, Geruwa-1		Male, Khas Arya
41	Purna Bahadur Khatri	Chairperson	Khadga Devi Community Forest User Group Bansgadhi-8		Male, Khas Arya
42	Tara Bohara	Local Resident	Geruwa-1, Bhatara	Her mother-in-law was killed in a tiger attack.	Female, Khas Arya
43	Chet Bahadur Tharu	Secretary	Khaireni Phant Community Forest User Group Bansgadhi-4		Male, Indigenous
44	Emsara KC	Local Resident	Madhuban-5, Shaktipur	Her sister-in-law was wounded in a leopard attack.	Female, Khas Arya
45	Puja Tharu	Local Resident	Madhuban-3, Dhanura	She lost her husband and his brother to tiger the same day.	Female, Indigenous
46	Binita Chaudhary	Ward Member	Madhuban Municipality-4		Female, Indigenous
47	Ram Bahadur KC	Local Resident	Madhuban-3, Babariya	His father was killed in a tiger attack.	Male, Khas Arya

48	Prem Prakash Khanal	Local Resident	Madhuban-3, Magdaiya	His nephew was killed in a leopard attack.	Male, Khas Arya
49	Durga Kumari Chhinal	Ward Member	Geruwa Rural Municipality-3		Female, Dalit
50	Tulasi Budhathoki	Local Resident	Bansgadhi-2, Banbadua		Female, Khas Arya
51	Ram Narayan Chaudhary	Member	Madoi Women Community Forest User Group Bansgadhi-6		Male, Indigenous
52	Motisara BK	Local Resident	Bansgadhi-2, Banmudha		Female, Dalit
53	Pushpa Kumari Somai	Local Resident	Bansgadhi-4, Newada	Her husband was wounded in a bear attack.	Female, Indigenous
54	Komal Tharu	Local Resident	Bansgadhi-4, Bathuwa	She was wounded in a bear attack.	Female, Indigenous
55	Kamala Dangi	Local Resident	Bansgadhi-2, Banjhoda		Female, Khas Arya
56	Sarita Kumari Tharu	Member	Brindawan Community Forest User Group Bansgadhi-2		Female, Indigenous
57	Narendra Prasad Paudel	Local Resident	Geruwa-4, Shantipur		Male, Khas Arya
58	Niraj Tharu	Local Resident	Geruwa-4, Shantipur	His father was killed in a tiger attack.	Male, Indigenous

59	Bishram Chaudhary	Ward Member	Madhuban Municipality-4		Male, Indigenous
60	Sita Sunar	Ward Member	Madhuban Municipality-4		Female, Dalit
61	Maiti Tharu	Local Resident	Madhuban-3	Her husband was wounded in a leopard attack.	Female, Indigenous
62	Gahanu Tharu	Local Resident	Madhuban-3, Khata	He was wounded in a bear attack.	Male, Indigenous
63	Suresh Tharu	Local Resident	Geruwa-4, Shantipur	He lost his father in a tiger attack.	Male, Indigenous
64	Hari Tharu	Local Resident	Geruwa-4, Rajipur	He lost his mother in a tiger attack.	Male, Indigenous
65	Min Bahadur Khatri	Local Resident	Geruwa-2		Male, Khas Arya
66	Rita Kumari Tharu	Member	Brindawan Community Forest User Group Bansgadhi-2		Female, Indigenous
67	Harka Bahadur Sunar	Local Resident	Geruwa-5 Syalibazar		Male, Dalit
68	Khusiram Chaudhary	Local Resident	Geruwa-5 Banjariya		Male, Indigenous
69	Jan Bahadur Shahi	Local Resident	Geruwa-5 Banjariya		Male, Khas Arya
70	Maya Chaudhary	Local Resident	Geruwa-5 Banjariya		Female, Indigenous
71	Josuda Thapa	Local Resident	Geruwa-5 Banjariya		Female, Khas Arya
72	Tulsi Ram Thapa	Local Resident	Geruwa-5 Banjariya		Male, Khas Arya
73	Mukesh Kumar Pandey	Local Resident	Geruwa-5 Syalibazar		Male, Khas Arya

Annex-5

Photographs of the Fieldwork and Other Events



(With Mr. Jaman Singh KC, Chairperson of the Geruwa Rural Municipality after filling up the interview schedule)



(Agrarian village life in the Geruwa Rural Municipality)



(After collecting primary data from the informants in Area Police Office, Dhodari)



(With Mr. Khadga Bahadur KC, Mayor of Bansgadhi Municipality upon collecting the needful information)



(Conversing with the staffs at the Sector Range Post, Banjariya)



(Exchanging information with the respondents in Motipur, Madhuwan)



(A local woman was mauled to death by a waiting tiger in the Bansgadhi locality. Source: Area Police Office, Dhodari, Bardiya)



(Collecting information and experience with the locals in Patabhar, Geruwa)



(Filling interview schedules with the local respondents in Dhodari, Bansgadhi)



(Research assistant Ms. Aditi Koirala filling the interview schedule with a local informant)



(An ox was mauled by a leopard at nighttime in Geruwa Rural Municipality. Later, it was known that it succumbed to the injuries)



(A problematic leopard being brought to the Park Office premises in a metal cage upon tranquilization)



(Fallen trees and logs rotting in the Park forests. But the rules do not allow the locals to collect, sell or remove them)



(Interacting with the locals in Motipur, Madhuwan)



(After interacting with the conservation officers at the BNP Office in Thakurdwara)



(A local woman shows her thigh mauled by a wild cat in Motipur, Madhuwan)



(Conversing with the local informants in Dhodari, Bansgadhi)



(A local elder Mr. Badhai Tharu, who lost an eye in a tiger attack some years back)



(Research Assistant Ms. Aditi Koirala filling up an interview schedule with a local informant)



(Local Tharu women catch fish in a stream by using traditional technology in Thakurdwara)



(A traditional Tharu house in the famous Dalla Homestay)



(With Ms. Radha Chaudhary, the only female Ward Chairperson of Bardiya district, upon collecting the needful information)



(With Ms. Bina Kumari Bhattarai, the Deputy Mayor of Thakurbaba Municipality after interview)



(With a research staff at the local office of National Trust for Nature Conservation in Thakurdwara after interview)