

Study of Human-Wildlife Conflict in Chitwan National Park and Buffer Zone People in Nepal

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ABSTRACT

Conflict between animals and human beings arises when both the requirements and conduct of species adversely affects people or when the needs of species adversely impact humans. The cohabitation between humans or species evaluation was undertaken in the area of Bale Mountains National Park to investigate the environment, triggers, or reductions of human-wildlife conflicts. Community surveys, focused groups, interviews, field observations, or primary resources were used to acquire the data. Agro expansion (30%), urbanization (24%), vertebrate excessive grazing (14%), degradation (18%), unauthorized straw harvesting (10%), or hunting (4%) were the primary points of contention. Producers used guarding crops (34%), live fence (pursuing (14), scaring (22%), or flaming (5%) to combat agricultural robbers. Fencing (38%), pursuing (30%), scaring (24%) or monitoring (8%) were utilized as measures for management to safeguard livestock from hazardous creatures. Disputes between individuals and animals are harmful to both, as the research indicates. Determining an unambiguous border, drawing rules or regulations for executed local neighborhoods, formulating equitable gain expressing for the native neighborhoods.

Keywords- Destruction, Wildlife conflict, Chitwan National Park (CNP).

I. INTRODUCTION

Chitwan National Park (CNP), which spans four provinces and has total dimensions of 952.63 km², was Nepal's first national park[1-2]. It has more than 700 kinds of fauna, notably 68 distinct kinds of mammals, and ranges in height from 330 feet to 2,674 feet. The buffer zone is the territory on each side of a designated wilderness region wherein extra measures were implemented towards the security of the designated area while public limitations on resource usage are put in place[3-4]. The four buffer zones that make up CNP are Sauraha, Kasara, Amaltari, or Madi-Bagai. The slope of protection surrounding the core-site is made possible by the method of enclosing an enclosed region with additional protected or non-protected regions. In addition towards facilitating the relocation of species inside reservations to neighboring areas in accordance with their climatic requirements as a kind of environmental

reduction, these areas also aid in the conservation of important species. Arguably the more difficult worldwide problems regarding animals' preservation of wildlife involves the ongoing dispute among people as well as[5]. The fierce rivalry for scarce resources that goes hand in hand with an increase in the number of people as well as the consequent need for settlement leads to a variety such as disputes, including farm animals predatory behavior, crop-raiding, individuals injury and death, crop-pilfering, and the retaliatory killing of wildlife. Disputes over classified or threatened creatures attacking people are often divisive[6-7]. A vast habitat's fragmentation separates individuals of species that causes the core area to become smaller. Similar to how degradation and quick urbanisation reduce the amount of assets obtainable, destruction of habitat has the effect of supporting a fewer numbers of animals. The essay focuses on how communities could handle stray dog populations to promote preservation.

Wild animals have the potential to destroy crops, slaughter various livestock, and occasionally even murder people. The widespread leopards or Asian elephants were the two species that attack people more often. The median annual death toll jumped from 1.2 per year in 1998 - 7.2 per year in 2006, a 10 times increase. The re-growth of woodland within the buffer region is what has caused this growth[8]. It has been discovered that electric wire fence saves money while reducing human killing. That general public raises cattle as a means of subsistence, yet the danger from wild animals has existed.

National parks and other types of designated areas have been a crucial part of numerous nations' conservation efforts since Yellowstone National Park became the initial designated wilderness in 1872. However, their limitations on a use of park assets have led to disputes over resources and wildlife-induced harm to people and livestock, such as harassment and murder. Conflicts between humans and animals have a negative social, economic, or ecological impact on the residents in the buffer zone region[9-10]. The October 1982 Global Third-World Congress on NP focused on this topic and adopted collaborative methods that incorporated preservation and growth, or reduced wildlife harm while tackling the issues of Human-Wildlife Conflicts[11-13]. The Federal Recreation as well as Parks Preservation Act changed (fourth amendment within 1993) and adopted collaborative methods that incorporated preservation and growth, or reduced wildlife harm while tackling the issues of Human-Wildlife Conflicts.

Researchers found that only 13.7% of the money was allocated for direct actions to lessen wildlife's negative effects on communities. Regional community-based organizations are responsible for managing buffer zones, which are funded by the money generated by the parks. Conflicts between people and animals vying over identical supplies may increase as the human population rises[14]. Chitwan National Park has succeeded in protecting several of the most threatened animals, although sometimes at the cost of persistent disputes with the surrounding population. Disputes often involve made worse by illiteracy, unemployed people, an abundance of chances for community growth, or a dearth of jobs involving parks.

The Rana era (1846–1950) is when the legacy of wildlife preservation throughout the Chitwan Valley begins. The rhinoceros was designated a Royal hunting animal in 1846 by Prime Minister Jung Bahadur Rana. Approximately 800 rhinoceros were kept in Chitwan Valley until the 1950s. The Wildlife Preservation Act of 1957 established the legal framework for safeguarding the welfare of wildlife[15-16]. Chitwan National Park was designated as the initial wilderness preserve in

Nepal in 1973, under the National Parks and Wildlife Conservation Act.

Research is being done to address interactions between people and animals inside wilderness areas. The goal of Chitwan National Park was to raise public tolerance for adverse effects of species by introducing buffering projects[17]. The article identifies the factors that lead to confrontations between people or wildlife, analyzes how such conflicts affect animals, makes recommendations on how to resolve them, or improves on current strategies or methods for doing so.

II. MATERIAL AND METHOD

2.1 Study area

The Chitwan National Park in Nepal is representative of a type of tropical wilderness area where animal density is growing or populations nearby often suffer economic loss and hazards from wildlife. It is located in the southern region of Central Nepal's Bagmati District and has a 544 km² size as it formed around 1973. In 1977, it was increased to 932 km², and in 1984 it was declared a world historic site. Parts of the provinces of Chitwan, Parsa, Makawanpur, or East Nawalparasi are included in the park, making up 74.04%, 15.45%, 6.97%, and 3.54% of its total area. By 1996, an added 750 km² was authorized as a buffer zone enclosing the park[18-19].

Three significant bodies of water, including the Narayani, Rapti, or Reu rivers, drain the territory of the national park. From their inception around the year 1973, the Chitwan National Park and buffer zone region of Nepal has seen regular as well as severe confrontations between humans or animals.

2.2. Data Collection and Analysis

In order to achieve the goals of all investigation, an integrated methodologies strategy is implemented, incorporating the finest aspects of each subjective or statistical technique. Sometimes either a quantitative or qualitative technique by itself is insufficient to better comprehend a research challenge or the advantages of both for administration, a mixed methods design is helpful.

The universe was split into big preview of sampling at the initial stage, or both quantitative and qualitative research could offer the most insight. Mixed-approaches solutions are acceptable since the two techniques are complimentary. 22 members of the buffer zone users groups were chosen at random from each of the park's four sectors. 4 buffer zone users committees are chosen at randomly in every industry out among the 22 total buffering zone user's organizations for administration. 845 of the 8450 residences from these four buffer zone user groups were selected at random. The home is the sampling unit for questionnaire surveys.



Figure 1: Chitwan National Park

Aptitude surveys or target panel discussions served as the major sources of primary data. In order to fully comprehend the current difficulties or concerns, both open-ended and closed-ended inquiries are included in the questions. The secondary data were gathered by conducting a desk investigation of the hard copy or electronic documents or papers of different organizations that had been published or unpublished, as well as a variety of research states, dissertations, or research of projects on National Parks or Buffer Zones that had been published or unpublished.

Following data collection, graphs using percentages numbers are generated using the qualitative information from closed-ended inquiries that was tallied using coding. Open-ended responses or focused group

conversation data were evaluated deductively utilizing representations via phrases as well as concepts.

III. RESULT

Throughout the investigated regions, plundering crops remained a significant problem. The other respondents said that there was no harm, yet nearly two-fifths (38.5%) of survey participants saw agricultural harm brought on through different wildlife found in the NP. The rhinoceros was observed to have damaged crops the greatest, at a distance of around 2 km from the NP border (Table 1).

Table 1: Crop damage by wild animals based on distance from the park boundaries

Respondents' response for crop damage		HHs distance from NP	
		<2 km N	>2 km N
Animal responsible for crop damage	Rhinos	32	14
	Rhinos and wild Boars	2	0
	Rhinos and Elephants	4	0
	Wild Boars and others	13	8

However, rhinos were said to inflict the greatest destruction in all regions, with the maximum devastation recorded in the buffer zone of the Nawawalparasi region. Their creatures that caused agricultural to crops varied greatly throughout the 3 zones of buffering. Overall, there has been no significant environmental interaction with farmed animals throughout the safety area

locations. 3.5% of HHs experienced just little animal damage. In such instances, domesticated reptiles including chickens, goats, cows, ducks, pigs, as well as buffaloes suffered damage or slaughtered by untamed animals like tigers(tigris Panthera), jackals (Canis aureus), or leopards (Panthera pardus), pythons (Python molurus).

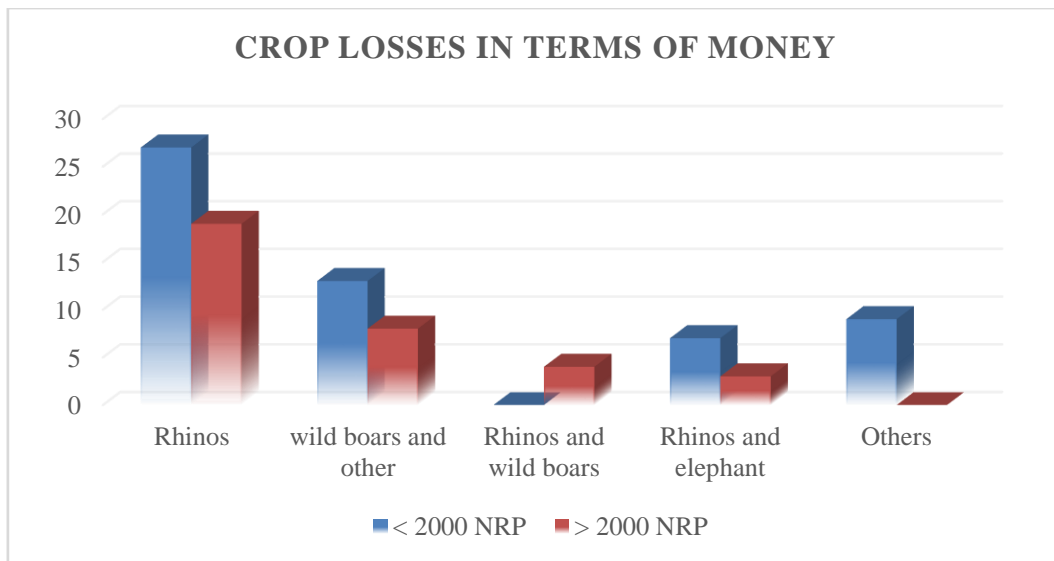


Figure 2: Wild animals responsible for crop damage

In general, rhinoceros were responsible for the majority of the financial losses from crop destruction (Fig. 2). Probably subsequent biggest quantity for agricultural destruction was brought on by wild boars

(Fig. 3). Only 4% of those surveyed did, however, get recompense for their expenses, while those who did were dissatisfied with it since it did not adequately offset the damage they suffered.

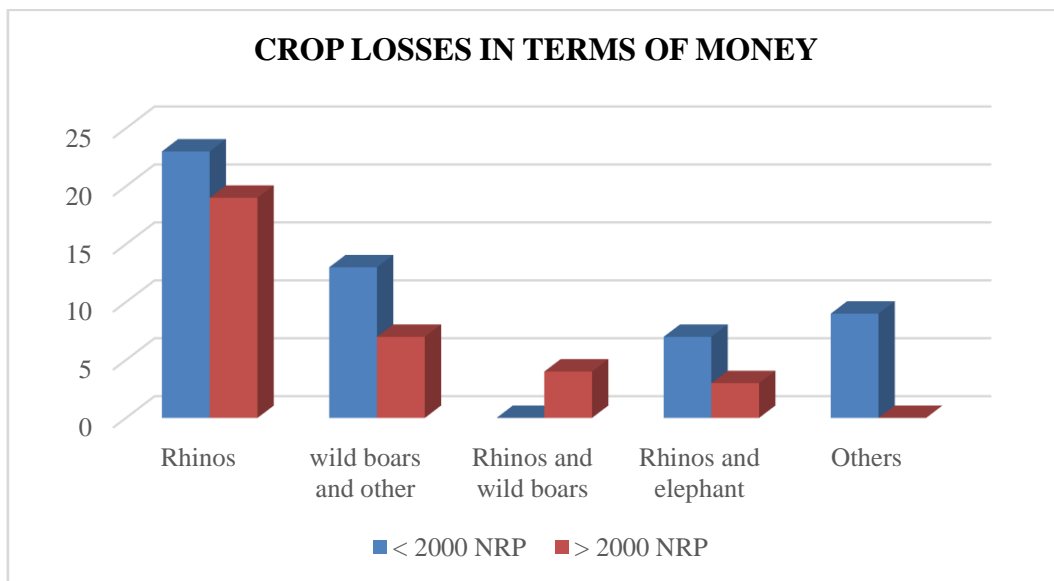


Figure 3: Animals are financially accountable for agricultural destruction.

3.1 Rhino frequency inside the Chitwan National Park's surrounding region

More than half of respondents (55%) reported rhinos often came to the settlement at night. Of those

who responded, 62.5% said that rhinos could be found beyond of the NP. Only 6.5% of responders in Table 4 claimed the rhinoceros remained within this area at dusk.

Table 2: The duration of rhino sightings in BZVDCs

Rhino occurrence in BZVDCs	Percentage %	Frequency
Evening	65	13
Night	55	110
Don't Know	38.5	77
Total	100	200

According to survey participants, rhinos do not leave national parks across Ratnanagar or Bharatpur governments as well as the Kumroj as well as Gitananagar volunteer development centers of the Chitwan Districts. As greatest rhinoceros abundance has been identified in the Nawalparasi Provinces of Koluwa, Dumbkibas, Parsauni, Rajhar, among Argauli, as well as the Chitwan Districts of Bhandara, Gunjanagar, Meghauli, or Jagatpur. According to the participants in the other 2 research locations, Pragatinagar or Mukundapur (VDCs of the Nawalparasi Region), rhinoceros sightings were less frequent this year than in years past.

3.2 Major Factors Influencing Conflict

The main problems with wildlife conservation within CNP were park-human disputes or disputes between humans with mammals. Agricultural or cattle destruction are two examples of the losses caused by animals. Out of 230 respondents, 214 stated crop loss is the main reduction their experience, six said animals destruction is an inconvenience their experience[20], as well as the remainder ten participants declared expenses beyond harvest loss as well as livestock slaughter includes destruction grief, property, casualties from spread of diseases, or mental distress brought on by fear.

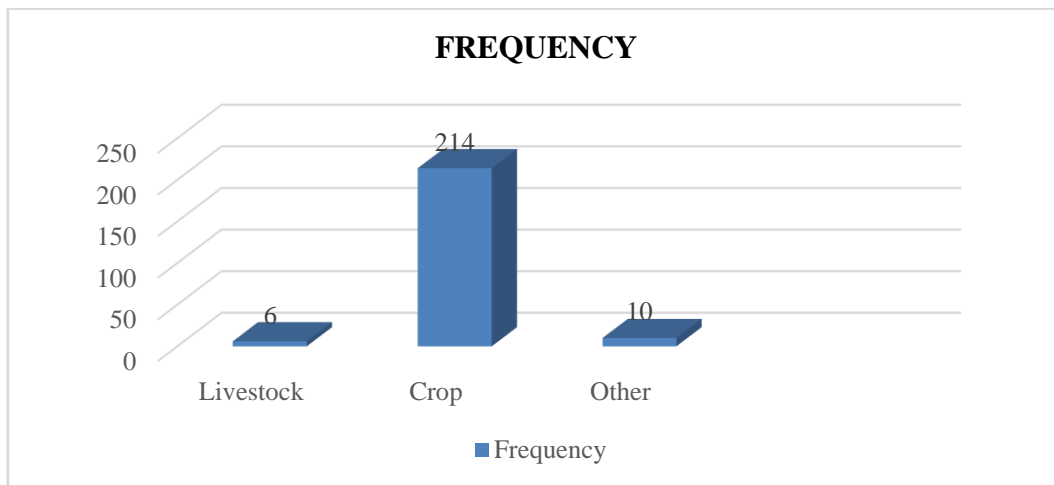


Figure 4: Type of Losses by Wildlife

3.3 Mammalian Species Frequently Visiting the Field

The tiger, rhino, deer, monkeys, elephant, and wild boars are the animal species that commonly visited human-inhabited settlements or the farm. Deer, rhinoceroses, as exotic bears were the most often seen natural creatures, according to 102 among those who responded.

3.4 Crop Damages

For a considerable period ago, animals have

been causing harm to the nearby towns within CNP. The main issue locals in all of the chosen volunteer development centers experienced is agricultural destruction[21]. Deer, rhinoceros, wild boars, bears, monkeys, and even elephants ravaged fields. Both of the most recent crop losses were examined. In the previous 2 years, agricultural predation affected 70.9% of the respondents.

Table 3: Crop Damages

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	212	70.9	77.7	77.7
	No	61	20.4	22.3	100.0
	Total	273	91.3	100.0	
Missing	System	27	8.7		
Total		300	100.0		

Meghauli residents are the ones which experienced most severely through agricultural loss, followed by MadiKalyanpur, Kumroj, Patihani, and lastly Gardi. Numerous crops, including millet, maize, paddy, barley,vegetables, or bananas, were seen being planted by humans. Although both matured and juvenile phases for harvests have been demonstrated to be

damaged by wild creatures, matured crops are often favoured. Although it had no set time for untamed creatures to stop by farms or villages, twilight was when they were most visible.

According to the vast majority of individuals, agricultural harm occurs throughout every season. Winter is when animals are most active; however they

may also be seen wandering about in the summer. The locals claim that due to crops are delicious and readily accessible, predatory creatures mostly come to the farm to eat them. Other factors might include a lack of nourishment inside the park, weak structural boundaries, conflict with other wild animals, the close proximity of its preserve that populated areas, or ecological deterioration that has pushed wildlife to frequent the field.

3.5 Livestock Depredation

The primary issue faced by residents of the communities near CNP is livestock theft. The wolf, leopard, tiger, or hyena is the wild creatures that preyed upon cattle. Cattle loss is lower than agricultural damage since wild creatures seldom prey on cattle. In the last two years, 2.3% of persons have claimed to have harmed from livestock.

Table 4: Livestock Depredation

Responses		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	2.3	2.5	2.5
	No	275	92.0	97.5	100.0
	Total	282	94.3	100.0	
Missing	System	18	5.7		
Total		300	100.0		

The bulk of assaults on younger animals, especially goats, are carried out by wild creatures, especially carnivores. Nevertheless, our research also revealed that they are murdered in livestock sheds if shelter is unprotective as well as unproofed. Wild creatures have been seen murdering cattle, particularly whenever predators locate them roaming solitary within the forest or close to the field[22]. Although some incidents have occurred throughout the morning and day, evening as well as midnight are often the favored times for pursuing and attacking animals.

3.6 Estimated monetary value of property damage by wild animals

Another significant problem brought on by the HWC throughout the research region is building destruction. In both wards that were chosen, ward 19 had a larger median projected financial damage each family than ward 15. In ward no. 19 (Baghfata), the standard monetary loss per family was NRs. 6002.22 each year, and for ward no. 15 (Gobariya), it was NRs. 3186.32 per year (Figure 5). It was as a result of district no. 19, having a greater incidence of crop, animals, or property destruction than ward no. 15. In the investigation's region, wild boar or ordinary leopards are the two main causes of financial loss.

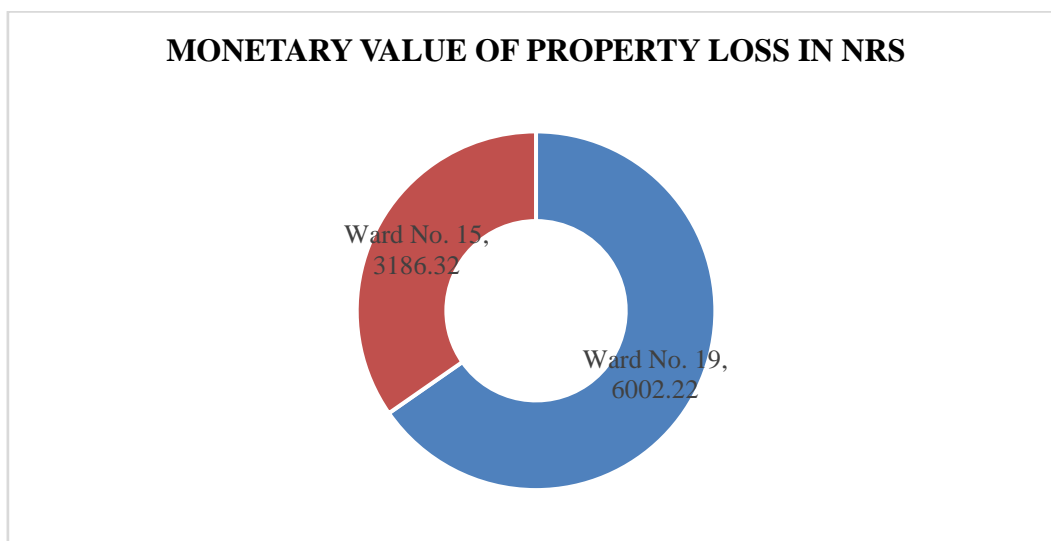


Figure 5: Average estimated monetary value of property damage by wild animals (NRs)

3.7 Comparison of types of conflicts

Throughout the research region, crop losses were often more severe. Mainly crop loss was the cause from suffering for almost sixty-five percent of those initial responders. 20% of the respondents solely

experienced livestock depredation, whereas 13.75% of the participants also experienced crop loss. Almost 1.25 percent of respondents reported agricultural losses, animal losses, and casualties among people (Figure 6).

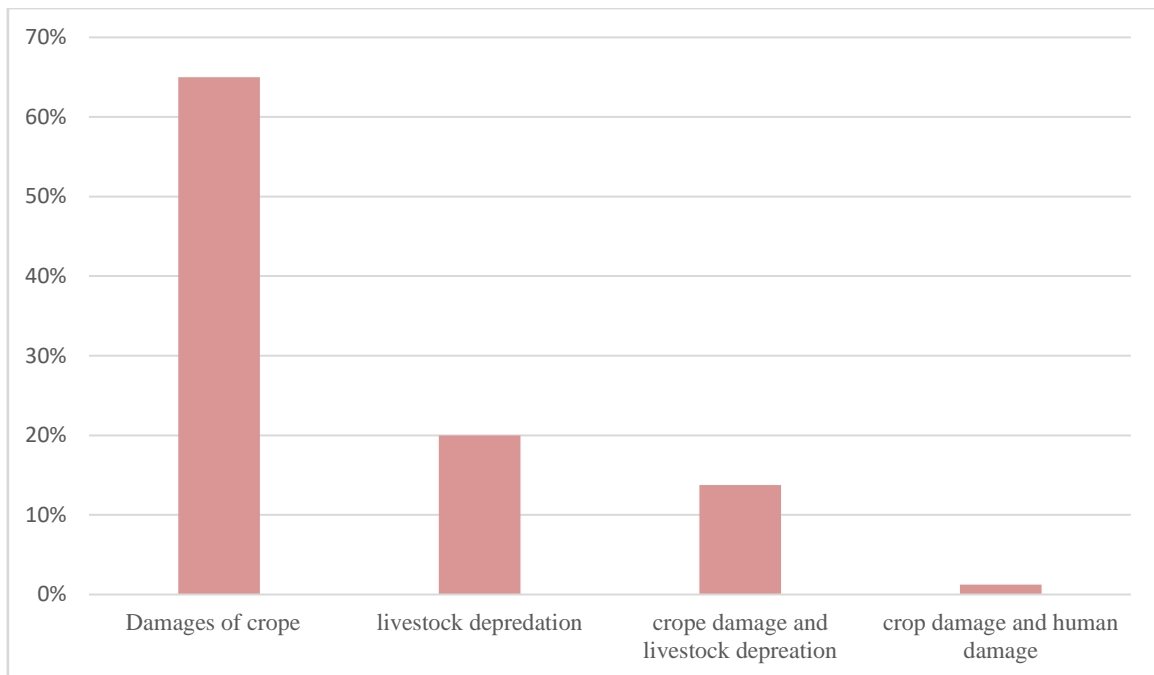


Figure 6: Comparison of types of conflicts

IV. DISCUSSION

4.1 Socioeconomic Condition

Discrimination in having sufficient assets needed to make a living, accessibility towards public offerings, and accessibility towards employment opportunities are widespread problems throughout Nepalese community. People from a variety of socioeconomic backgrounds and ethnic backgrounds live in the area known as the buffer zone. The Brahmin or Chettri (hill migrants) groups were home to the bulk of research participants. The Tharus (Native American tribe) lived within the research region for additional than ten years and maintained more agricultural land, outperforming Damai/Kami as well as Bote/Kumal/Chepong communities[23]. The research also revealed that tribal groups with larger land assets had higher yearly incomes.

Less than 0.5 hectare of land was owned by over 70% of the people who participated. Residents of the park are mostly farmers with plots of land less than one hectare. Literacy significantly influenced respondents' opinions of the rhino's worth: knowledgeable responders highlighted the rhino's environmental or physiological importance, while uneducated participants merely acknowledged the rhino's amusement value. Compared to the national average of 4.7, this median group structure within the research region was 5.78 people.

4.2 Rhino Occurrence, Crop damage and Conservation

The participants in this study reported that rhinos were one of the creatures that frequently went to the BZVDC and caused significant damage to agricultural products. Over 50% of the HHs noted a

frequent presence of rhinos throughout the buffer zone and surrounding regions. Prior research showed that rhino have been mutilated, and aquatic woodlands and prairies are essential rhinoceros environments. Residing outside of the NP border by over two km does not result in the same rhinoceros harm as living close to the NP boundary[24]. The majority of HHs stated that they saw rhinos in the BZVDC practically year-round.

For landowners with land assets of 0.5 hectares, the rhinos inflicted agricultural damage, but stated that the rhinos were entirely responsible for the harm after they reached the BZVDC. Considering the difficulties rhinos face, virtually all respondents said rhino preservation is crucial.

The research conducted by Wagner et al. found that over half of those polled said that poaching was to blame for the rhino species drop. Despite not being a significant consumer of animal parts, poachers utilize Nepalese as a passage country for their illicit trade with China or India. Additionally, the lack of habitat or mortality from natural causes is two more factors contributing to the rhinoceros decline. Precautionary strategies towards rhinoceroses include enforcing penalties for unconstitutional hunting, raising consciousness, fencing, enhanced safety from the NP, a home enhancement, rigid executives, using electrical barriers to prevent harm to crops and deforestation in the buffer zone, as well as local employment opportunities.

4.3 The National Park and the Community Forest in the Buffer Zone

The forest in Nepal is the primary supply of fuel wood, accounting for 78% of all consumption of fuel. Hardwood usage in rural regions surpasses 94% of all fuel used, leading to an unsustainable loss of

forestland. To reduce reliance on the BZCF or the National Park, biogas plants have been constrained by a restricted funding for offering incentives to build them. Approximately 11% of the responders to our research reported using biogas. Conventional wood-burning stoves are often used for cooking since there is little access to other forms of energy.

In the lack of other options, severe penalties are ineffective in halting the unauthorized removal of forest resources. Members from the barrier in Nawalparasi area regions collect additional wooded area commodities in the National Park than those from either Chitwan or Makwanpur buffer zone zones.

The buffer zone communal woodland, according to the inhabitants that take resources out of the National Park Forest, is not enough for the buffer zone resident's population. The park management regularly offers locals the chance to develop skills that will help them become independent. Heinen (1990) noted that trainees for the National Park administration's small-scale tourism assistant program had trouble finding employment following completing it. The buffer zone administration laws assist the user group in finding better chances to lessen impact on biodiversity or enhance preservation as well as alternate means of subsistence[25]. The BZUC also offers chances for skill-generation to enhance locals' economic circumstances or lessen their reliance on the forest. The upper racial levels of the society, especially those from the Brahmin or Chettri communities, seize these strengthening capacities chances.

People's attitudes towards conservation of rhinos are influenced by their financial situation, tribe, and other demographic parameters. Conflicts between the park and residents result from disregarding the requirements of indigenous individuals or other impoverished people for wood for fuel, feed, and safety from species exploitation. Despite higher levels of education, respondents' opinions regarding rhino preservation become more favorable. Most uneducated respondents acknowledged the rhino's recreational value, but those with at least an elementary education acknowledged its environmental significance. The vast majority of responders deemed rhinos to be deadly creatures, but individuals still maintain a favorable view towards the protection of rhinos despite their dread of them or the great deal of agricultural damage they wreak.

V. CONCLUSION

The survey found that rhinoceros are the most prolific crop robbers in CNP, followed by deer, monkey's wild boar, or elephants. Crop raiding was cited as the main source of conflict by the vast majority of responders. Large-bodied wild animals do more harm than small-bodied wild creatures do. Domesticated creatures such as tigers, leopards, jackals, or wolves'

prey on untamed creatures. Attacks on a few pets at home were discovered.

People demand fair recompense for the losses brought on by wildlife destruction. There is no single strategy which will minimize disputes as well as ensure the coexistence of mammalian species with people. Owing to the dispersion of habitats brought on by the spread of farming or other developmental processes, wild creatures could be encroaching into human's habitation. The struggle between humans and animals for necessities may be another factor escalating the conflict. It is important to develop solutions that take the health of humans or the well-being of creatures in nature into account.

In the area of the national park, indigenous inhabitants rely on woodland resources for energy, firewood, and feed. Despite the fact that removing timber from the NP woods has been prohibited for over thirty years, over half of those surveyed consistently relied on its assets, irrespective of how far they lived from the park. Despite the fact that rhinos inflict the bulk of the agricultural losses, those who live closer to the NP border have unfavorable sentiments regarding rhinos. Local NP administration has not offered reimbursement on damages. The number of rhinos inside area CNP is increasing in spite of this conflict, due to local residents' knowledge of the importance of rhinos. The NP government and other civil community organizations should be commended for raising awareness of the rhino's significance.

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