

Human Wildlife Conflict as A Driver of Localized Insecurity: A Case of Amboseli National Park, Kajiado County, Kenya

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ABSTRACT

In Kenya, HWC is a major source of insecurity in communities surrounding protected areas, but policies frequently fail to recognize that the conflicts vary in terms of types, species, frequency, and severity. The study focused on the nature of human wildlife conflict and its impact on the localized feeling of insecurity by communities living close to Amboseli National Park, Kajiado County, Kenya. The study was based on the Resource Scarcity Theory and Human Security Theory. A convergent parallel design was used, which involved a household survey of 345 respondents in six community clusters (Kimana, Enkongo Narok, Olgulului, Eselenkei, Mbirikani and Rombo) and key informant interviews (KIIs) and focus group discussions (FGDs) in March 2026. Descriptive statistics, Pearson correlation, and multiple regression were used for quantitative data analysis, and thematic analysis was used to analyze the qualitative data. The findings indicate that the composite index for the nature of human wildlife conflict had a high mean score of 4.01 out of 5, with livestock predation being the most severe type of human wildlife conflict identified by 53.0 percent of the respondents, and perceived increasing severity of HWC at a mean score of 4.25. Localized insecurity ($r = 0.524$) was positively correlated with the nature of human wildlife conflict and was the strongest independent predictor of insecurity in multiple regression analysis ($\beta = 0.392$, $p < .001$), outpacing land use change and the effectiveness of land use conflict resolution mechanisms. At the cluster level, there was a significant spatial variation, with composite scores varying from 3.42 in Enkongo Narok to 4.40 in Kimana indicating variation in livelihood systems, corridor location and predominant conflict species. Livestock predation, elephant incursions and gendered exposure to nighttime wildlife encounters were the major themes that emerged from the qualitative evidence and these were the ones that shaped insecurity. The study finds that, human wildlife conflict (HWC) in Amboseli is structural and spatially differentiated, and suggests cluster specific, species targeted interventions underpinned by a standardised monitoring and early warning system.

Keywords: human wildlife conflict; localized insecurity; Amboseli; conflict nature; Kajiado County

INTRODUCTION

Insecurity is when a community is in a state of vulnerability where their safety, livelihood or wellbeing is at risk or suffering harm (Berebon, 2025). Localized insecurity is when such threats are manifested in a certain geographical zone and a negative impact on the social, economic and political stability of the geographical zone is observed (Britchenko, 2025). Human wildlife conflict, or HWC, is a form of conflict that occurs when the interests or needs of wildlife come into conflict with those of humans, and in which a human life, injury or property is lost, injured, or damaged as a result. HWC is a persistent, but under appreciated, source of localized insecurity, where the interests or needs of wildlife conflict with those of humans to the extent that a human life, injury or property is lost, injured, or damaged. Human-wildlife conflict is becoming more common and more serious as humans encroach on the habitats of wildlife, creating a series of effects that gradually reduce the capacity of surrounding communities to be resilient (Abrahms et al., 2023).

While HWC is an obvious conflict of interest regarding material resources between humans and wildlife, it has implications beyond the loss of materials (König et al., 2020). Repeated losses in communities can trigger negative attitudes to conservation, leading to retaliatory killing of wildlife and loss of favourable

habitat and wildlife cooperation with conservation authorities (Gathungu, 2015). Lack of trust between communities and governance institutions is itself insecurity, as it is the foundation for cooperation on conflict prevention and response.

HWC has expanded to a global organization. According to the World Bank (2023), HWC is increasing in over seventy countries, and the worst impacts are occurring in low income countries where HWC is especially prevalent and where household resilience to shocks is low. Wild boar, bear and monkey attacks in China have caused damage to crops and property, and have created social tensions, with only a small proportion of affected farmers being promptly compensated (Wu, Dai & Sun, 2024; Zhang et al., 2022). The damage caused by kangaroo, dingo and feral pig incursions on agriculture in Australia is currently estimated to exceed AUD 100 million per year, with 60 per cent of Queensland farmers reporting that they were vulnerable to damage (Australian Department of Agriculture, 2023; CSIRO, 2022). Wildlife complaints in the U.S. are more than 30,000 annually, and 45% of Montana residents say they feel unsafe due to bear, wolf and alligator encounters (Johnson et al., 2022; National Wildlife Federation, 2022). Since the fragmentation of habitats in Assam, Odisha and Karnataka, India is witnessing over 500 retaliatory elephant killings annually (Gureja, Kumar & Saigal, 2019; Mugar, 2022).

In Africa, HWC has also exacerbated resource-based conflicts. Elephant, lion and wild dog damage have led to insecurity for 70 percent of affected households around Hwange National Park in Zimbabwe (Muposhi et al., 2022). Across the entire country, 65% of households in the vicinity of the park in South Africa say they feel unsafe (Mkhize et al, 2022). In the Queen Elizabeth and Murchison Falls parks in Uganda, over 1000 incidents were recorded in one year and 60% of households reported that they were not at all secure (Uganda Wildlife Authority, 2023). The elephants and large predators are inflicting harm on water systems, raiding farms and attacking livestock, forcing Kenyan households into poverty and insecurity, and these patterns are repeating in the arid, coastal and northern counties, such as Laikipia, Samburu and Isiolo, respectively (World Bank, 2023; IFAW, 2024).

Amboseli ecosystem in Kajiado County is a case study of this phenomenon. Amboseli National Park is gazetted at 392 km², and is part of a larger ecosystem that spans 8,000 km² of community land, group ranches and conservancies (Kenya Wildlife Service, 2024; Amboseli Ecosystem Trust, 2025). Overall, the landscape supports over 1800 elephants, other wildlife, such as lions, hyenas and leopards and is reliant on community owned dispersal areas, including Olgulului, Eselenkei and Mbirikani, traditionally managed within Maasai pastoralist systems (Amboseli Ecosystem Trust, 2025; Big Life Foundation, 2025). The ecological interdependence of the protected park and its surrounding community land is both the basis for the value of the ecosystem and the context within which HWC and associated insecurity are lived.

HWC in Amboseli takes the form of frequent and intensive incidents involving multiple species. The elephant crop raiding is mainly restricted to Kimana and Eselenkei where irrigation farming is found along the river banks. Pastoralist herds are large in Olgulului and Mbirikani where livestock predation by lions and hyenas is concentrated. Elephant and Lion encounters can pose a direct threat to personal safety. The number of reported wildlife incursions increased by over 40 percent from 2018 to 2024, and some communities reported nearly daily raids of their crops during planting and harvesting seasons (Amboseli Conservation Program, 2025). Such conflicts result in patterns of insecurity beyond the physical and economic losses, including the fear of the nighttime experience, limited mobility, food insecurity, and a loss of trust in conservation institutions, which disproportionately impact women and children, especially when it comes to going to school and using water sources (Koech, 2025; Ontomwa, 2024).

While there has been considerable research on HWC in Kenya, key research gaps exist on the systematic documentation of the nature of HWC (type, species, frequency and intensity of conflict) and the relationship of these aspects to localized perceptions of insecurity. Previous studies in Amboseli have focused on conflict dynamics and conservation governance (Mugo, 2021; Ekisa & Okello, 2018; Sarinke, 2020), but not on the specific types of conflict events and their spatial distribution of insecurity in community clusters. This disconnect poses a challenge to conservation agencies and county government to shift from uniform "one size fits all" responses to interventions that are species, location and severity specific. The purpose of this

study is to fill that void by looking at the nature of HWC and its impact on the perceptions of localized insecurity among communities surrounding Amboseli National Park.

The purpose of this study was to examine the nature of Human Wildlife Conflict and its influence on perceptions of localized insecurity in Amboseli National Park and its environs, Kajiado County, Kenya. The study tested the following hypothesis:

H0: The nature of Human Wildlife Conflict has no significant influence on perceptions of localized insecurity in Amboseli and its environs, Kajiado County, Kenya.

H1: The nature of Human Wildlife Conflict has a significant influence on perceptions of localized insecurity in areas bordering Amboseli National Park, Kajiado County, Kenya.

THEORETICAL FRAMEWORK

The two theoretical approaches that are anchored for this study are Resource Scarcity Theory (Homer-Dixon, 1999) and Human Security Theory (United Nations Development Programme, 1994; Kaldor, 2007). The two theories are integrated as the theories of HWC and the insecurity of HWC have multidimensional characteristics. The ecological and structural forces that give rise to the conditions for conflict (Resource Scarcity Theory) and the perception of conflict as insecurity at the household and community level (Human Security Theory) are all acknowledged.

Resource Scarcity Theory

When groups compete for the same limited resource base, then scarcity of renewable resources like water, arable land and grazing space can cause conflict, as argued by Homer-Dixon (1999). He mentions three types of scarcity: supply induced scarcity due to environmental degradation, demand induced scarcity due to population growth and structural scarcity due to inequitable distribution and access. People and wildlife rely on the same limited resources in the Amboseli ecosystem: water in the dry seasons, grazing land that is competitive between domestic and wild herbivores and farmland that is stolen by elephants. Both people and wildlife have experienced a reduction in spatial base due to land use change, including the subdivision of communal group ranches, the fencing of corridors and the increasing intensity of irrigated agriculture along riverbanks, and a focus on the permanent water resources as a result of climate variability has increased encounter rates (Okello & D'Amour, 2008; Tyrrell et al., 2022; Abrahms et al., 2023). Resource Scarcity Theory accounts for the composite nature of HWC (conflict type, species, frequency and severity) to be more elevated in the clusters closer to water points and corridors, and the systematic variation in crop raiding, livestock predation and property damage across the six community clusters within this study.

Human Security Theory

First enunciated in the Human Development Report of the United Nations Development Programme (1994), Human Security Theory is a new paradigm for security that moves beyond a state-centred, territorial defence approach to one that is people-centred, concerned with freedom from fear and want. Kaldor (2007) and Tadjbakhsh and Chenoy (2007) then distinguished between seven interrelated aspects of human security: economic, food, health, environmental, personal, community and political security. In this study, Human Security Theory offers an explanation as to why HWC does not always equate with insecurity. Livestock predation and elephant incursions pose risks to personal security (injury or fear), economic security (loss of livestock, crops and property), community security (tensions over guarding practices and species specific fear) and political security (when institutional response to reported incursion is perceived to be slow or inadequate). Human Security Theory also explains why women and children are more likely than men to bear the brunt of fear and restricted mobility caused by interactions with wildlife, as they are more vulnerable to certain types of conflict due to differential exposure resulting from gendered division of labour in water collection, fuelwood collection, and school attendance.

Theoretical Linkage to the Study

The two theories are not mutually exclusive. Resource Scarcity Theory provides an explanation for why a specific type of HWC occurs in a specific place, at a specific frequency and severity, and Human Security Theory provides an explanation for why a conflict is experienced as insecurity at the economic, personal, community and political level.

METHODOLOGY

Research Design

The study used mixed methods convergent parallel design that collected quantitative and qualitative data together, analyzed them independently and integrated them for interpretation. This design was suitable because it enabled statistical analysis of the strength and direction of the relationship between the nature of HWC and perceptions of localized insecurity, and also allowed for the lived experiences of impacted households to be captured via interviews and focus group discussions, giving a more complete picture than either method alone (Creswell, 2009).

Study Area

The research took place in the Amboseli ecosystem in Kajiado County in Kenya which includes Amboseli National Park, 6 community clusters namely Kimana, Enkongo Narok, Olgulului, Eselenkei, Mbirikani and Rombo. The area is mostly pastoralist Maasai group ranches and conservancies, and their livelihoods are reliant on livestock grazing and, increasingly, on small-scale farming which competes with wildlife movement in space and time. It is home to elephants, lions, cheetahs, giraffes, zebras, wildebeest and many other bird species, has wildlife corridors, such as the Kitenden and Kimana corridors, that link the protected core to conservancies and extends across the border to northern Tanzania (Amboseli Kenya, 2022). Land use change is becoming a structural driver of pressure on these corridors, which serve as the backdrop to understanding the nature of HWC in this study.

The six clusters were purposively selected using three authoritative sources: Amboseli Ecosystem Management Plan 2020-30, Kenya Wildlife Service incident maps for the period 2019-2024 and 2019 Kenya Population and Housing Census (Kenya National Bureau of Statistics, 2020). Kimana is located southwest of the park, has irrigated agriculture and elephant crop raiding, and is a part of a wildlife corridor. Enkongo Narok is located to the north close to seasonal wetlands and is under heavy livestock predation. Olgulului is located to the east, and is a pastoral area, as well as tourism conservancy land, where conflict is mainly related to livestock depredation. Eselenkei is located on a corridor between Amboseli and the Tsavo ecosystem, and reports elephant migration related property damage. Mbirikani is to the west and has mixed tenure, but is still experiencing night time livestock raids, including the use of predator proof bomas. Rombo is located on the Kenya Tanzania border and is facing elephant movement and water tension across the border.

Target Population and Sampling

The target population included households in the six community clusters and institutional stakeholders from the Kenya Wildlife Service, County government and conservation non governmental organisations. The estimated household population in the six clusters was 4,800 (Kenya Population and Housing Census 2019, Kenya National Bureau of Statistics 2020). Multi stage stratified sampling design has been used. The clusters were purposively selected, households were stratified according to their primary livelihood as either agro pastoralists or predominantly pastoralists and then systematic random sampling was used within each stratum. The household sample size was calculated using Cochran (1977) formula for proportions, which resulted in a sample size of 384 households, and reduced by 10 percent in order to account for an expected non response rate, but also increased to 400 households, due to the finite population correction for the population of 4,800 households. This target was distributed proportionately across the clusters based on the relative population of the households.

A total of 345 questionnaires were completely filled out and returned, representing an 86.3 percent return rate out of 400 sent. Ten key informant interviews were held with six rangers and officers of the Kenya Wildlife Service with a mandate to respond to conservation concerns, one county government official responsible for land use planning and three members of the conservation non governmental organisation. There were 22 people in the three focus group discussions (seven women, nine men, and six youth).

Instruments

There were 3 instruments. The structured questionnaire was completed in person with adult household representatives and included eight items on a 5 point Likert scale that assessed the nature of HWC, including crop damage, livestock predation, human injury, property damage, frequency of incursions, perceived escalation in severity, the influence of frequency on insecurity, and the influence of conflict type on fear.

A key informant interview guide was used with institutional respondents to probe incident trends, response protocols and inter agency coordination. A focus group discussion guide was employed with community members to elicit common and distinct experiences of exposure, coping and perceived institutional response. The researcher administered all instruments with the assistance of bilingual field assistants in Kiswahili, Maa and English.

Validity and Reliability

A total of 336 complete cases were used in the exploratory factor analysis (principal axis factoring with varimax rotation) on the four study constructs, which comprised 34 items. The Kaiser Meyer Olkin measure of sampling adequacy was found to be 0.832 and Bartlett's test of sphericity was significant (chi square = 3616.13, degrees of freedom = 561, $p < .001$), supporting the use of factor analysis. A four factor solution explained 41.24% of the total variance, of which the items measuring the nature of HWC loading as a coherent and distinct factor explained 7.87% of the variance.

Cronbach's alpha for eight item HWC nature scale was 0.715, which is above the acceptable value of 0.70. Triangulation of the household survey, the key informant interviews and focus group discussions, systematic coding against a priori categories based on the conceptual framework, and member checking with selected participants were used to demonstrate the qualitative credibility.

Data Analysis

Quantitative data were analysed using descriptive statistics to summarise the distribution of responses on each Likert item and the composite index for the nature of HWC. Pearson correlation was used to examine the bivariate association between the HWC nature composite index and the localized insecurity composite index.

Multiple regression analysis was applied to determine the independent contribution of the nature of HWC to localized insecurity while controlling for land use change and the effectiveness of resolution mechanisms, following the model: $Y \text{ (Localized Insecurity)} = \beta_0 \text{ (the intercept/constant)} + \beta_1 \text{ (Nature of HWC)} + \beta_2 \text{ (Land Use Change)} + \beta_3 \text{ (Effectiveness of Resolution Mechanisms)} + \varepsilon \text{ (the error term)}$. Model assumptions of normality, linearity and homoscedasticity were tested prior to estimation. Qualitative data from key informant interviews and focus group discussions were transcribed verbatim and analysed thematically.

Ethical Considerations

The study was granted research clearance by the National Commission for Science, Technology and Innovation and received the necessary county and Kenya Wildlife Service approvals prior to fieldwork. Participation was voluntary and informed consent was obtained in writing or by thumbprint after the purpose, procedures, risks and right of withdrawal were explained.

Confidentiality was maintained through anonymised identifiers and secure data storage. Facilitators were

trained to pause interviews, offer breaks and provide referral information where questions touched on distressing experiences of injury or loss.

FINDINGS AND DISCUSSION

The demographic profile of respondents is then presented followed by the results of the nature of HWC and its effect on perceptions of localized insecurity, incorporating the qualitative information obtained from the key informant interview and focus group discussions.

All items on the Likert scale were from 1, strongly disagree, to 5, strongly agree, with a mean score of ≥ 3.50 considered high agreement.

Demographic Profile of Respondents

The demographic profile of the 345 household respondents is not shown in five tables, each of which is broken down into categories, with each category table followed by a brief interpretation of its relevance to exposure to HWC.

Table 1: Sex Distribution of Respondents (n = 345)

Sex	Frequency (n)	Percentage (%)
Male	192	55.7
Female	153	44.3
Total	345	100.0

Source: Primary Survey Data, 2026.

The sample was majority male (55.7 percent), consistent with the tendency of male household heads to respond to structured surveys within the prevailing cultural and household structure of Maasai communities in the study area.

The substantial female share nonetheless ensured that gendered perspectives on HWC exposure, central to Theme 3 below, were adequately captured.

Table 2: Age Distribution of Respondents (n = 345)

Age Group	Frequency (n)	Percentage (%)
18 to 25 years	51	14.8
26 to 35 years	122	35.4
36 to 45 years	84	24.3
46 to 55 years	53	15.4
56 to 65 years	22	6.4
66 years and above	3	0.9
Total	345	100.0

Source: Primary Survey Data, 2026.

The age group from 26-45 years old made up 59.7 percent of respondents. The data are thus skewed towards adults who are economically active, and who are most likely to be involved in herding, farming and household protection and therefore most likely to be at risk of exposure to HWC due to their daily life activities.

Table 3: Main Livelihood of Respondents (n = 345)

Main Livelihood	Frequency (n)	Percentage (%)
Pastoralist	148	42.9
Agro pastoralist	140	40.6
Crop farming	31	9.0
Small business	17	4.9
Wage / salaried	9	2.6
Total	345	100.0

Source: Primary Survey Data, 2026.

83.5 percent of the respondents were pastoralists or agro-pastoralists. The sample is thus dominated by livelihoods dependent on land which engage in herding, water collection and rain-fed crop cultivation, and thus regularly and directly interact with wildlife.

Table 4: Community Cluster of Respondents (n = 345)

Community Cluster	Frequency (n)	Percentage (%)
Mbirikani	68	19.7
Kimana	63	18.3
Eselenkei	60	17.4
Olgulului	54	15.7
Enkongo Narok	50	14.5
Rombo	50	14.5
Total	345	100.0

Source: Primary Survey Data, 2026.

The distribution of samples was fairly uniform with 14.5 per cent in Enkongo Narok and Rombo and 19.7 per cent in Mbirikani. This spread reflects, generally, the proportion of the estimated household population used for proportional allocation, as described in Target Population and Sampling, for each cluster.

Table 5: Distance to Park Boundary of Respondent Households (n = 345)

Distance to Park Boundary	Frequency (n)	Percentage (%)
Less than 1 km	10	2.9
1 to 3 km	24	7.0
3 to 5 km	39	11.3
More than 5 km	272	78.8
Total	345	100.0

Source: Primary Survey Data, 2026.

The majority of respondents (78.8 per cent) resided more than five kilometres from the edge of the park. This means that the impact of HWC is not limited to households on the immediate edge of the park, but also has a broader impact across the wider ecosystem.

Nature of Human Wildlife Conflict

Table 6 gives descriptive statistics for the eight Likert scale indicators of the nature of HWC with a severity band to anchor the mean score for each indicator to the dimension of conflict it measures, rather than to a generic agreement/disagreement concept. Perceived severity was very high to high on all eight indicators, with a mean of 4.01 out of 5 for the composite indicator for nature of HWC. The highest mean scores (4.34, very high) were for perceived severity of livestock killed or injured by wildlife, perceived severity of increased HWC severity over time, and perceived severity of recurring property damage from wildlife. The mean (3.67, high) and standard deviation (1.36) for perceived threat of human injury from wildlife encounters were relatively low, but there was high variation in individual exposure to physical threat.

Table 6: Descriptive Statistics for Nature of Human Wildlife Conflict Indicators (n = 341 to 345)

Indicator (perceived severity of)	Mean	SD	n	Severity Band*
Crop damage caused by wildlife (B1)	3.89	1.21	344	High
Livestock killed or injured by wildlife (B2)	4.34	0.90	345	Very high
Human injury from wildlife encounters (B3)	3.67	1.36	345	High
Property damage caused by wildlife (B4)	4.24	0.91	344	Very high
Frequency of wildlife incursions (B5)	3.92	0.99	343	High
Perceived escalation in HWC severity over time (B6)	4.25	0.91	342	Very high
Perceived influence of HWC frequency on insecurity (B7)	3.73	1.03	341	High
Perceived influence of HWC type on fear (B8)	4.08	1.04	342	High
Composite Index: Nature of HWC (all eight items)	4.01	-	345	High

Source: Primary Survey Data, 2026. Items were rated on a five point scale (1 = Strongly Disagree to 5 = Strongly Agree), with each item worded as a statement of perceived HWC severity, frequency or impact (see item text in column one).

*Severity Band is the mean score of each item classified against a fixed interpretive scale, not a generic measure of agreement: 1.00 to 1.49 = Very low; 1.50 to 2.49 = Low; 2.50 to 3.49 = Moderate; 3.50 to 4.49 = High; 4.50 to 5.00 = Very high. The band therefore describes the perceived severity of the specific indicator named in column one, for example a Very high band on B2 denotes very high perceived severity of livestock predation, not agreement in the abstract.

When asked about the single most serious conflict, 53.0 percent of the respondents (n = 183) said livestock predation, 20.3 percent (n = 70) said crop raiding, 14.2 percent (n = 49) said human injury or death, and 12.5 percent (n = 43) said property damage. As far as the seasonality of the HWC, 47.0 percent of respondents cited the dry season as the time of most frequent HWC, 44.3 percent said year round HWC and 8.7 percent said the wet season.

Key informants said that this seasonal trend was due to species-specific behaviour, with elephants reported to be more active in farmland and water points in dry seasons, and carnivores more active in livestock during wet seasons when cattle are more spread out in open pasture.

The qualitative findings from the ten key informant interviews (KIIs) and three focus group discussions (FGDs) (separate for women, men and youth) were analysed thematically after coding, and corroborated with these quantitative patterns. Three themes were found. The themes are summarised in Table 7 along with the sources that reported the theme, and three representative, source attributed data extracts per theme, which are presented in the narrative elaboration that follows the table.

Table 7: Thematic Summary of Qualitative Findings on the Nature of Human Wildlife Conflict

Theme	Description	Data Sources	Representative Data Extracts
Theme 1: Livestock Predation as the Primary Economic Threat	Predation by lions and hyenas identified as the most economically damaging conflict type, prompting adaptive changes in livestock management to reduce nighttime exposure.	All 10 KIIs; all 3 FGDs (Women, Men, Youth)	• “We suffered single night lion attacks that erased the financial equivalent of months of income.” (FGD, Men) • Livestock are brought close to homesteads every evening as a permanent adaptation to chronic predation risk. (FGD, Rombo) • Livestock predation by lions and hyenas was named as the most damaging conflict type across all ten KIIs and all three FGDs. (Convergent finding, all sources)
Theme 2: Elephant Driven Threat to Crops, Property and Physical Safety	Elephant incursions identified as the dominant concern among farming households, combining crop loss, damage to water infrastructure and fencing, and direct danger to life, mainly during the dry season.	KIIs with corridor/ranger mandates; Women's and Men's FGDs	• A woman and a child were chased by an elephant at a water point. (FGD) • Elephant incursions into grain stores left households without food for the remainder of the season. (FGD) • Human injury was confirmed near unfenced sections of the park boundary, with property destruction, including water tanks and fencing, cited alongside crop loss. (KII)
Theme 3: Gendered and Age Differentiated Insecurity	Fear of nighttime wildlife encounters reported to fall disproportionately on women, children and youth, restricting mobility; widows, elderly residents and female headed households identified as most structurally vulnerable.	Women's and Youth FGDs; corroborated by multiple KIIs	• “Elephant invasions are reshaping our sleep patterns and farming decisions.” (FGD, Women) • Youth reported avoiding certain paths at dawn and dusk because of elephant activity. (FGD, Youth) • Widows, elderly residents and female headed households were identified as most vulnerable, having limited labour for nighttime guarding and weaker social networks for collective deterrence. (KII)

Source: Key informant interviews and focus group discussions, 2026. KII = Key Informant Interview (n = 10); FGD = Focus Group Discussions (n = 3: Women, Men, Youth). Data Sources indicates which respondent categories reported each theme; it is not a numeric frequency count.

Theme 1, livestock predation as the primary economic threat, was raised without exception across all ten KIIs and all three FGDs. Pastoralists explained that a single night of lion predation could erase the financial equivalent of months of household income (FGD, Men, Enkongo Narok). Participants elsewhere described bringing livestock close to homesteads every evening as a permanent behavioural adaptation to chronic predation risk (FGD, Rombo).

Theme 2, the elephant driven threat to crops, property and physical safety, was the dominant concern among KII respondents holding corridor management or ranger response mandates, and among participants in the Women's and Men's FGDs. One FGD recounted an incident in which a woman and a child were chased by an elephant at a water point (FGD, Olgulului), while another described elephants raiding grain stores and leaving households without food for the remainder of the season (FGD, Eselenkei). Key informants confirmed cases of human injury near unfenced sections of the park boundary and cited damage to water tanks and fencing alongside crop loss (KII).

Theme 3, gendered and age differentiated insecurity, was raised consistently in the Women's and Youth FGDs and corroborated by several key informants. Participants described chronic nighttime fear of elephants as reshaping sleep patterns and farming decisions (FGD, Women, multiple clusters), and some reported having abandoned farming near the bush edge entirely (FGD, Women, Eselenkei) or personally escorting children to school following elephant sightings near the settlement (FGD, Olgulului).

Youth participants reported avoiding certain paths at dawn and dusk (FGD, Youth, Mbirikani). Key informants identified widows, elderly residents and female headed households as structurally most vulnerable, since these households have limited labour available for nighttime guarding and weaker social networks for collective deterrence (KII).

Taken together, the three themes indicate that HWC in Amboseli functions simultaneously as an economic shock, a direct physical threat and a chronic psychosocial burden that is unevenly distributed within households and across community clusters.

Relationship Between the Nature of Human Wildlife Conflict and Localized Insecurity

There was a moderate to strong positive correlation between the composite index of nature of HWC and the composite index of localized insecurity ($r = 0.524$). Localized insecurity was strongest as an independent predictor of the nature of HWC in multiple regression analysis after controlling for land use change and the effectiveness of resolution mechanisms ($\beta = 0.392$, $B = 0.504$, standard error = 0.066, $t = 7.662$, $p < .001$). Based on this result, the null hypothesis is rejected and the alternative hypothesis is accepted: The nature of HWC has a significant influence on perceptions of localized insecurity.

This is in line with Resource Scarcity Theory, because as competition for water, forage and space between people and wildlife grows more intense, the losses are readily apparent and have a direct impact on food security and economic viability, and Human Security Theory because the perceived escalation of losses was a mean of 4.25 indicating a structural and cumulative nature of insecurity rather than a series of isolated incidents.

Cluster Level Comparison

Table 8 present the composite index for the nature of HWC disaggregated by community cluster, revealing substantial spatial differentiation despite a generally high ecosystem wide mean.

Table 8: Mean Scores for Nature of Human Wildlife Conflict Indicators by Community Cluster (n = 341 to 345)

Indicator	Kimana	Enkongo Narok	Olgulului	Eselenkei	Mbirikani	Rombo	Overall
B1: Crop Damage	4.48	1.72	4.11	4.33	4.16	4.18	3.89
B2: Livestock Killed/Injured	4.60	4.22	4.41	4.65	4.40	3.64	4.34
B3: Human Injury	4.40	3.90	3.89	3.58	3.78	2.24	3.67
B4: Property Damage	4.51	3.86	4.28	4.70	4.37	3.53	4.24
B5: Frequent Incursions	4.37	3.24	4.22	4.13	3.88	3.46	3.92
B6: Severity Increasing	4.59	3.98	4.25	4.63	4.19	3.67	4.25
B7: Frequency & Insecurity	3.75	3.24	4.19	4.03	3.44	3.75	3.73
B8: Incident Type & Fear	4.49	3.20	4.15	4.32	4.09	4.06	4.08
Composite Index	4.40	3.42	4.19	4.30	4.04	3.57	4.01

Source: Primary Survey Data, 2026. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

The composite scores were between 3.42 in Enkongo Narok and 4.40 in Kimana. Kimana and Eselenkei had the highest score for livestock predation (4.60 and 4.65 respectively), and perceived escalation (4.59 and 4.63 respectively), both of which are associated with irrigated agriculture and the presence of major dispersal corridors. Enkongo Narok had the lowest composite score, with an unusually low crop damage score of 1.72, reflecting its pastoral livelihoods orientation and, accordingly, lower importance of crop raiding, but a higher livestock predation score of 4.22 which shows that HWC in this cluster is still significant and is largely caused by carnivores. Rombo had moderate to low scores for most of the indicators, including a low human injury score of 2.24 which may be due to its relative distance from elephant activity in the densest areas of the ecosystem.

This spatial distribution is in line with Resource Scarcity Theory, as the closest clusters to the wildlife corridors and permanent water bodies face the highest level of competition for land and forage, and are likely to suffer the greatest material losses and insecurity. Human Security Theory provides an explanation of this non-uniform effect because livelihood type, gender composition, and household structure lead to the prevalence of one dimension of insecurity (economics, personal, community, or political) in each locality. Combined, these results suggest that the nature of HWC is widespread throughout the Amboseli ecosystem, but it is also spatially variable, likely in both terms of intensity and character, and support the need to have cluster specific rather than ecosystem wide response strategies

Composite scores ranged from 3.42 in Enkongo Narok to 4.40 in Kimana. Kimana and Eselenkei, both characterised by irrigated agriculture and proximity to major dispersal corridors, recorded the highest scores on livestock predation and perceived escalation, at 4.60 and 4.65 for livestock predation respectively, and 4.59 and 4.63 for perceived escalation respectively. Enkongo Narok recorded the lowest composite score, driven by an unusually low crop damage score of 1.72, consistent with its predominantly pastoral livelihood base and correspondingly lower salience of crop raiding, although its livestock predation score of 4.22 confirmed that HWC in this cluster remains substantial and is driven principally by carnivores. Rombo recorded moderate to low scores across most indicators, including a notably low human injury score of 2.24,

likely reflecting its relative distance from the densest concentrations of elephant activity within the ecosystem.

This spatial pattern is consistent with Resource Scarcity Theory, since clusters situated closest to wildlife corridors and permanent water sources experience the sharpest competition for land and forage, producing the highest material losses and the strongest perceptions of insecurity. Human Security Theory explains why the effect is not uniform across clusters, since livelihood type, gender composition and household structure determine which specific dimension of insecurity, whether economic, personal, community or political, dominates within each locality. Taken together, these findings indicate that although HWC is pervasive across the Amboseli ecosystem, its precise character and intensity are spatially differentiated in ways that argue strongly for cluster specific rather than ecosystem wide response strategies.

DISCUSSION IN RELATION TO EXISTING LITERATURE

The results presented here build on previous research on HWC and human security in pastoral ecosystems. Livestock predation and crop raiding are consistently associated with economic insecurity, food insecurity and limited mobility in the entire eastern African region (Abrahms et al., 2023; Ayeb-Karlsson et al., 2025). The Amboseli findings extend this evidence by showing that the connection between the level of HWC and perceived insecurity is strong, both by conflict type and by cluster of communities (across all six community clusters), and is maintained regardless of distance from the park boundary. The second highest rated indicator in the composite index is perceived escalation in severity (mean 4.25), which further corroborates the perception that HWC is a structural and worsening phenomenon as opposed to a series of unlinked incidents, which is a core tenet of Human Security Theory (Barua, Bhagwat & Jadhav, 2013; Hoare, 2015).

CONCLUSION

This study set out to examine the nature of HWC and its influence on perceptions of localized insecurity among communities adjacent to Amboseli National Park. The evidence shows with high statistical confidence that the type of conflict, the species involved, the frequency and severity of conflict is the best predictor of localized insecurity in the Amboseli ecosystem. There was a high mean value for the composite index (4.01), livestock predation was perceived as the most serious type of conflict by 53.0 percent of respondents, while perceived escalation in severity had a mean of 4.25. The analysis also revealed that there was a moderate to strong positive correlation between the nature of HWC and localized insecurity with the nature of HWC having the strongest independent relationship with localized insecurity when compared with the other variables analyzed. The qualitative evidence from the key informant interviews and focus group discussions confirmed these quantitative results: Livestock predation is a direct and immediate economic threat, elephant incursions are a credible threat to physical safety, especially for women and children, and the pattern of perceived escalation across all six clusters suggested a structural and worsening trend, rather than individual incidents.

The study also confirms that the distribution of HWC is not uniform but rather a spatial variation in Amboseli. Within the six community clusters, there were differences in the nature of HWC ranging from 3.42 in Enkongo Narok to 4.40 in Kimana, which indicated different livelihood system, distance to wildlife corridors and the predominant conflict species. This spatial differentiation and the gender and age differentiated nature of exposure found in the qualitative results further indicate that insecurities in Amboseli are not uniform and require a calibrated policy response, not uniform. The dual theoretical framework used in this study, that is, the Resource Scarcity Theory and the Human Security Theory, were effective in explaining the ecological factors behind conflict and the lived, multidimensional nature of insecurity resulting from conflict together.

RECOMMENDATION

Kenya Wildlife Service, in collaboration with county government and community conservancies, should establish a standardised HWC monitoring and early warning system that records incident type, species

involved, location, time and the gender and age profile of affected household members. Existing community led coordination mechanisms, particularly informal mobile alert networks already in use within several clusters, should be formalised into official early warning infrastructure rather than duplicated by new systems.

Given the pronounced spatial differentiation identified in this study, response strategies should be calibrated to the dominant conflict profile of each cluster rather than applied uniformly across the ecosystem. In Kimana and Eselenkei, where crop raiding and elephant related property damage dominate, priority should be given to farm level deterrents and corridor management. In Enkongo Narok, Olgulului and Mbirikani, where livestock predation dominates, priority should be given to maintenance support for predator proof bomas and rapid ranger deployment during peak predation periods.

Because the findings indicate that women and children bear a disproportionate share of the personal security burden associated with nighttime wildlife encounters, community outreach and protective interventions, including escorted movement arrangements near water points and school routes during periods of heightened elephant activity, should explicitly incorporate gender and age differentiated vulnerability rather than treating affected households as a homogeneous group.

Future research should build on these findings through structural equation modelling to test the full causal pathway linking land use change, the nature of HWC and localized insecurity, and through longitudinal monitoring that tracks these relationships over successive seasons. Comparative research across other human wildlife interface ecosystems in Kenya, including Maasai Mara, Tsavo and Laikipia, would help establish the extent to which the spatial and species specific patterns identified in Amboseli generalise to other conservation landscapes.

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