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Conflict in paradise: Understanding the drivers of human-wildlife discord in central Western Ghats, Karnataka

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Abstract
The study, conducted in the Central Western Ghats of Karnataka, India, specifically in Sakleshpur and Mudigere taluks, centered on human-wildlife conflict. The primary data were collected from 200 respondents during 2022-23. The analysis revealed that the majority of farmer respondents living in medium-sized family category and the average size of land holdings is slightly higher in Mudigere (5.76 acres) compared to Sakleshpur (5.63 acres). The cropping intensity is higher in Mudigere farms (283.51%) compared to Sakleshpur farms (260.83%), indicating a greater level of diversification in Mudigere. The primary wildlife species responsible for crop raiding were identified as the Asian elephant (*Elephas maximus*), Indian Gaur (*Bos gaurus*) and Wild boar (*Sus scrofa*). Asian elephants accounted for 90.06 percent, Indian Gaur accounted for 5.54 percent and Wild boar accounted for the remaining 4.40 percent of total crop loss due to wild animals in the study area. Multiple regression analysis revealed that the presence of a water source near the plantation, and the availability of favourable crops/food for wild animals in proximity to the plantation, influencing the occurance of human wildlife conflict at the one percent level of significance. Based on these findings, the study recommended the adoption of better conflict mitigation measures like solar fencing to minimize losses caused by wildlife crop raiding s in the Central Western Ghats of Karnataka. Implementing effective strategies to address habitat destruction, improve food availability for wildlife, and manage the increasing wildlife population could help reduce the economic impact on farmers.

Keywords: Crop raiding, coffee plantation, CAGR, ex-gratia and economic loss

Introduction
Human wildlife conflict (HWC) is an inter-disciplinary or multidisciplinary area of research (Heberlein, 2004) [1], which deals with the dimensions of both humans and wildlife. "Human wildlife conflict occurs when the needs and behaviour of wildlife impact negatively on the goals of humans, or when the goals of humans negatively impact the needs of wildlife" (IUCN World Parks Congress, 2005) [2]. In many areas, expansion of human population, conversion of land area, encroach to wildlife habitat, developmental activities near the marginal areas and fragmentation of the forest are the fundamental causes for conflicts (Romanach *et al.*, 2007; Sharma *et al.*, 2011) [3, 4]. Concurrently, wildlife population is also increasing in the forest (Schulz and Skonhoft, 1996) [5], which may, partly be due to the stringent wildlife protection act in India.
The earliest occurrences of human wildlife conflict (HWC) can be traced back to the Neolithic period (Treves *et al.*, 2006) [6], coinciding with the development of grain cultivation and the domestication of animals (Zeder, 2008) [7]. With agricultural expansion came human population growth and the earliest ecological impacts of farming (e.g. deforestation and soil erosion) that can be dated back to 9000 BC (Colledge, 2004; Zeder, 2008) [25, 7]. Archaeological and paleo-ecological evidence also indicate that direct human alteration of terrestrial ecosystems occurred with hunting of wild animals, foraging on wild flora and transforming indigenous landscapes for agri-pastoral farming (Colledge, 2004) [25], eliciting conflict with wildlife.
Perpetual solutions for reducing human wildlife conflict are impossible, because, the dimensions of the humans and wildlife are being varied in each geographic region. Introducing innovative control measures to deter wild animals from human settlements is needed to alleviate the interaction (Tuyttens and Macdonald, 2000; Woodroffe and Frank, 2005) [9, 10]. Mitigation (or intervention) is anything that increases the tolerance of local communities for crop raiding wildlife and/or actively reduces the severity and frequency of the problem (Treves

and Karanth, 2003) [11]. The application of mitigation methods is restricted by finance, materials and technical capability of a given community (Treves and Karanth, 2003; Treves *et al.*, 2006) [11, 6]. Farmers used a variety of methods to deter bears and other wildlife from crop-fields however, given the reported level of crop-damage, none represent a viable solution. Quantification of damage and giving ex-gratia to the victims will minimize its severity (Nyhus *et al.,* 2003) [12]. Inadequate disbursement of ex-gratia and disruption on its processing are the major complications faced today (Ogra and Badola, 2008) [13]. Awareness programmes on the importance of wildlife will increase the tolerance among local people, which was reported to reduce the frequency of conflicts (Sutherland, 2000; Mishra *et al.*, 2003) [14, 15]. As wildlife conservation is the major problem faced worldwide, creating co-existence between humans and wildlife is mandatory to ease the situation (Madden, 2004) [16]. Awareness program on the importance of wildlife will increase the tolerance among local people, which was reported to reduce the frequency of conflicts (Sutherland, 2000; Mishra *et al.*, 2003) [14, 15].

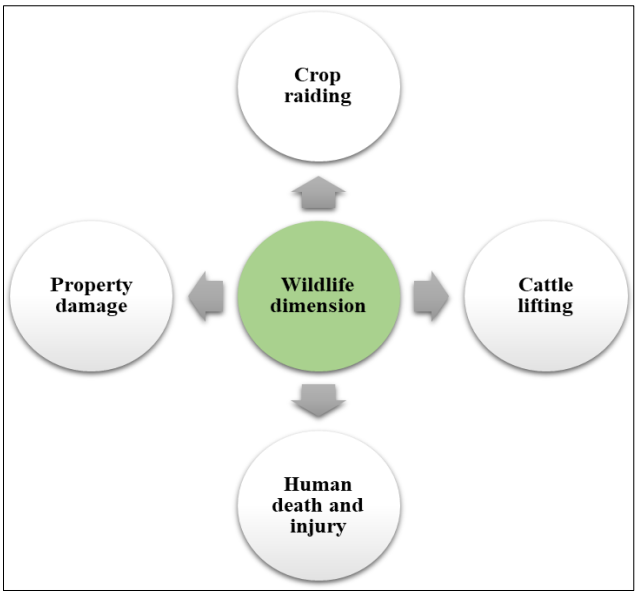

Fig 1: Wildlife dimension of human wildlife conflict

Dimensions of HWC can be classified into 1. Wildlife dimension and 2. Human dimension. Wildlife dimension results (a) crop damage (b) cattle-lifting (c) human casualties (d) household damage and (e) zoonoses. Wild animals attack humans in three different ways and they are (i) Territorial attack - Wild species show territorial behaviour towards same or different species and attack them, (ii) Defensive attack - The wild animal attacks on humans defensively in order to survive and (iii) Predatory attack – When the animal attacks the victim as a prey (Conover, 2002). Changing the behaviour of wild animals from territorial and defensive attacks to predatory attack on humans makes the situation so crucial and the studies on this aspect deserves significance in each geographic area. Transmission of diseases and infections between animals and humans are called zoonoses. As the pathogens may not be identified or confirmed by a zoologist, studies on zoonoses were entirely omitted here. Human dimension includes (a) social (b) economical (c) political (d) poaching and (e) human-human conflict. Although, the attitudes and activities of humans may reach up to any extent, quantification of their outlook is also limited (Macdonald *et al.*, 2005; Zubiri *et al.*, 2007) [17, 18].

Hence, with the objective of resolving this multifaceted predicament, present study focused on addressing human-wildlife conflict in the central western ghats of Karnataka. By examining the intricate interplay between farmers and wild animals in this ecologically sensitive region, the study seeks to quantify the losses incurred but also propose effective strategies to foster sustainable coexistence. Through rigorous empirical analysis and comprehensive site-specific investigations, this endeavour aims to pave the way for a harmonious balance between the thriving agricultural activities and the conservation of indigenous wildlife in the region. Each geographic area has a unique and distinct pattern of human-wildlife conflict, with this background information, the paper entitled

Conflict in Paradise: Understanding the Drivers of Human-Wildlife Discord in Central Western Ghats, Karnataka was carried out with the following two objectives

1. To analyze the factors influencing human wildlife conflict.
2. To assess the nature and extent of damage due to crop raiding.

Materials and Methods

This section presents detailed description of the study area, the data sources, methods of collection and analysis as well as the empirical model for the study.

Study area and data collection

A purposive random sampling technique was employed for the study, which was conducted in the Central Western Ghats of Karnataka, encompassing the Chikkamagalur and Hassan forest divisions (Fig. 2). The areas with the highest number of crop raiding cases were identified in Mudiegere and Sakleshpur ranges within the Central Western Ghats. To gather the primary data necessary for analysis, semi-structured interview schedules were utilized, and responses were collected from a sample of 100 respondents from the Mudigere forest range in Chikkamagalur and 100 respondents from the Sakleshpur forest range in the Hassan forest divisions. Consequently, a total sample of 200 farmers were examined (Fig. 3).

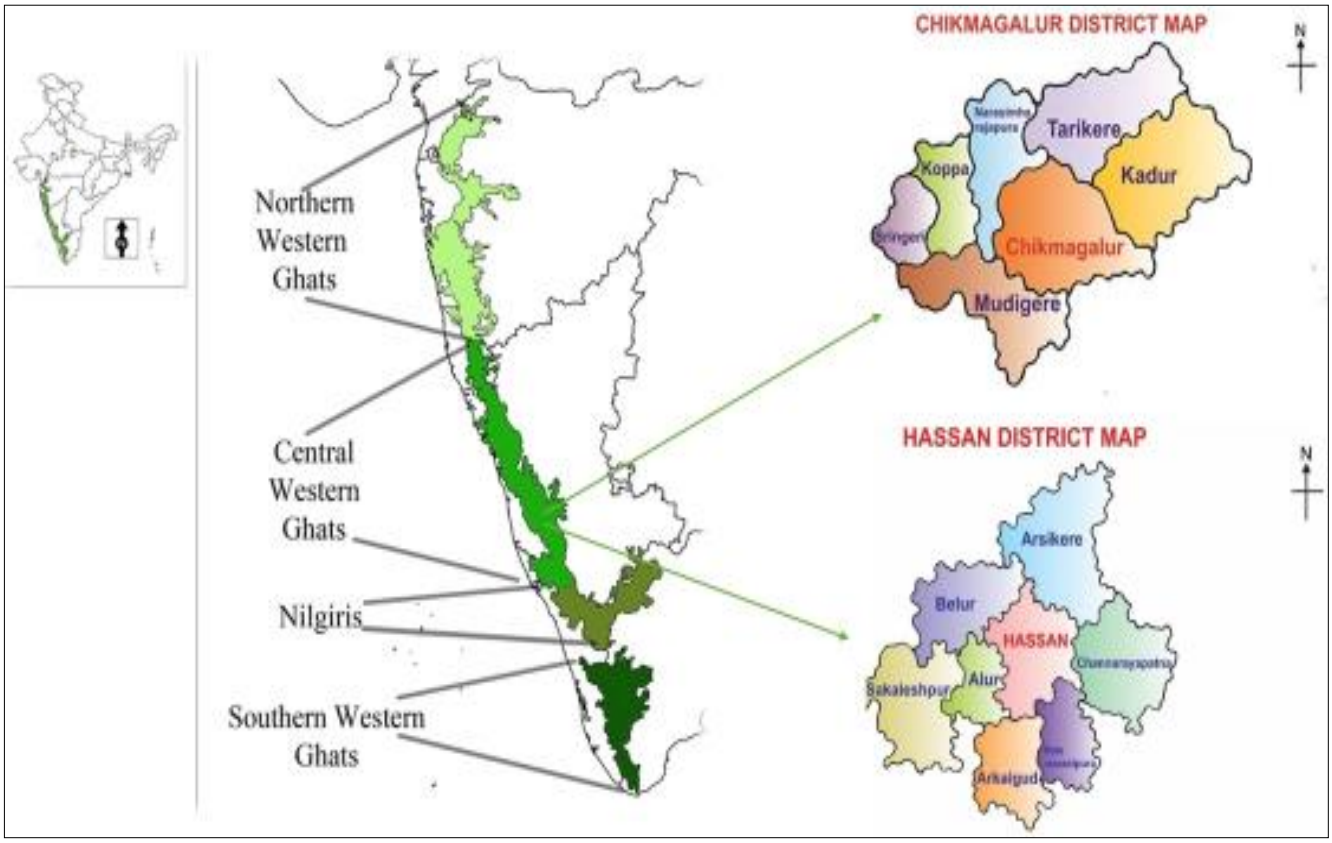

Fig 2: Map showing the study area

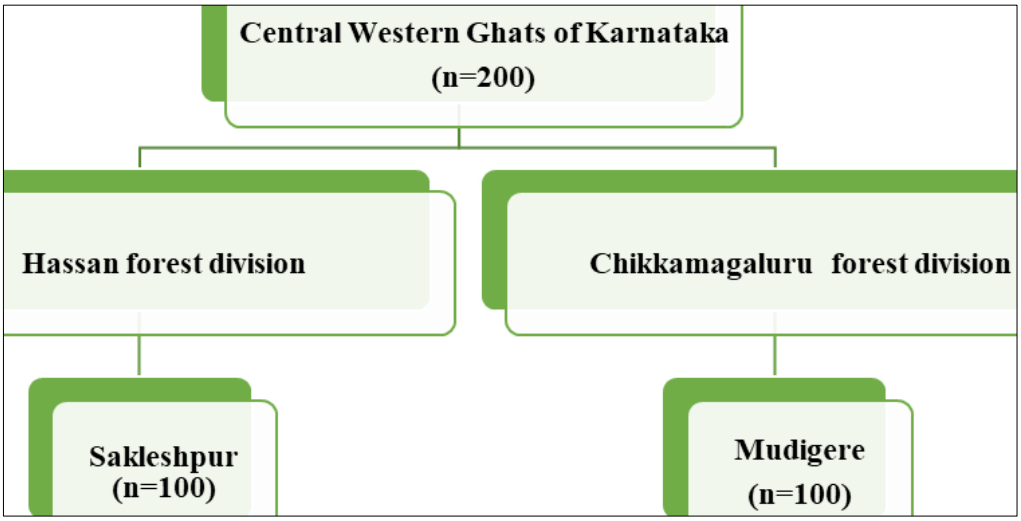

Fig 3: Sampling framework of the study

Analytical tools employed

The data on socio-economic characteristics, cost and returns from farming, constraints in getting ex-gratia, expenditure made by the government were analysed using descriptive statistics like percentages, averages and ratios and results are presented in tabular form.

Multiple linear regression

To estimate the factors contributing for Human wildlife conflict, multiple linear regression analysis was carried out, considering number of plants lost because of crop raiding (Y) as the dependent variable.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7D_1 + b_8D_2 + b_9D_3$$

Where,

Y - Number of plants lost because of crop raiding

X_1 - Age in years

X_2 - Education (Years)

X_3 - Family size (No.)

X_4 - Distance of farm from the forest area (Km)

X_5 – Number of crops grown (No.)

X_6 - Number of raids by wild animals (No.)

D_1 - Mitigation measures adopted (Adopted=1, non-adopted=0)

D_2 - Source of water near by the plantation (present=1, absent=0)

D_3 - Favourable food nearby the plantation (present=1, absent=0)

Results and Discussion

Socio-economic characteristics of the respondents

The socio-economic characteristics of a person can be used to characterize household economic inequality, which reflects his/her social class, status, and economic position in society, and plays an important part in increasing the well-being of the individual family and society as a whole (Galobardes, 2006) [19]. Household size, religion, gender, marital status, education, occupation status, income, respondent age and family patterns are all important factors considered to know the socioeconomic conditions of a household (Jiboye, 2004) [20].

The respondents were classified based on various socio-economic characteristics, and the results are presented in Table 1. The findings reveal important insights into the demographic composition of farmers in both Sakleshpur and Mudigere taluks, as well as the combined total area. The majority of farmers in both Sakleshpur and Mudigere areas fell within the age group of 40-60 years. Specifically, this age group constituted 64 percent of farmers in Sakleshpur, 69 percent in Mudigere with 66.50 percent for the overall study area. The second-largest age group was comprised of farmers aged over 60 years (>60 years), which accounted for 30 percent in Sakleshpur and 24 percent in Mudigere. The average age of farmer respondents in Sakleshpur (56 years) was slightly higher than in Mudigere (53 years) with average age of respondents 54 years for the pooled data of both the taluks. The age-wise distribution of farmers in Sakleshpur, Mudigere and the overall study area was notable. The fact that a significant majority, *i.e.* two-thirds, belong to the age group of 40-60 years suggests that the farming community in these regions is predominantly middle-aged. This finding has implications for the future of agriculture in these areas, as it indicates that a substantial portion of the farming population may be nearing retirement age from professional life. The slight difference in the average age between Sakleshpur and Mudigere, with Sakleshpur having a slightly higher average age, may be attributed to various factors such as local demographics, economic opportunities, and migration trends.

An examination of the educational status of farmers in Sakleshpur and Mudigere areas revealed that in Sakleshpur, 42 percent of the sample farmers possessed a high school level of education while in Mudigere around 40 percent of the farmers had attained a high school level of education. Around 21 percent of the respondents in Sakleshpur had completed primary education, while in Mudigere, 24 percent of farmers had reached the pre-university college education level. Very few farmers in Sakleshpur (8) and Mudigere (3) were illiterates. The average years of schooling among farmer respondents in Sakleshpur was around 9 years, whereas in Mudigere it was more than ten (10.37) years. The educational attainment of farmers in both Sakleshpur and Mudigere provides valuable insights into the human capital of the agricultural workforce. The substantial percentage of farmers with a high school level of education in both regions suggests that a significant portion of the farming community has acquired at least a basic level of formal education.

The analysis of size and composition of families of sample farmers revealed that in Sakleshpur, the majority of farmer respondents (77%) living in medium-sized family category (consisting of 4-6 members). The small family category (< 4 members) accounted for 16 percent of the farmer respondents in Sakleshpur. A smaller proportion of farmer respondents in Sakleshpur (7%) belonged to the large family category. In Mudigere, the distribution of family sizes was slightly different, with 66 percent of farmer respondents families were medium-sized

Table 1: Socio-economic characteristics of respondents in the study area

Particulars	Sakleshpur (n=100)	Mudigere (n=100)	Total (n=200)
I. Age of Household head (No.)			
Below 40 years	6	7	13 (6.50)
40-60 years	64	69	133 (66.50)
Above 60 years	30	24	54 (27.00)
Average age (Years)	56	53	54
II. Literacy level of Household head (No.)			
Illiterate	8	3	11 (5.50)
Primary	21	16	37(18.50)
High School	42	40	82 (41.00)
PU College	18	24	42 (21.00)
Degree and above	11	17	28 (14.00)
Average Years of Schooling	9.05	10.37	9.71
III. Family Size (No.)			
Small (<4)	16	28	44 (22.00)
Medium (4-6)	77	66	143 (71.50)
Large (>6)	7	6	13 (6.50)
Average family size	5	4	5
IV. Farm size (acre)			
Average land holding	5.63	5.76	5.70

Note: Figures in the parentheses indicate percent to the total sample farmers

28 percent belonged to the small family category, and 6 percent to the large family category. The findings regarding family size distribution among farmer respondents suggest that medium-sized families (4-6 members) are predominant in both Sakleshpur and Mudigere. This information can have implications for understanding the dynamics of household labour allocation and resource management within farming households. Medium-sized families are often better positioned to share agricultural responsibilities and leverage available resources efficiently. The presence of a significant number of small families may point to a need for support mechanisms or strategies to enhance their capacity to engage in farming activities effectively. Similarly, addressing the needs of large families within the farming population could contribute to more sustainable agricultural practices. The average size of land holdings is slightly higher in Mudigere, where it stands at 5.76 acres. In Sakleshpur, the average land holding size is marginally lower at 5.63 acres. For the overall study area, the average land holding size is calculated to be 5.70 acres.

Livestock and farm assets inventory of the respondents

The analysis of livestock inventory among farmers in Sakleshpur and Mudigere, as presented in Table 2, reveals that 43 percent of Sakleshpur and 29 percent of Mudigere farmers own milch cows, contributing to a total of 36 percent for the entire study area. Additionally, a smaller percentage of farmers possess bullock pairs (6.50%), buffaloes (2%), and poultry birds (0.50%). About 64 percent of farmers did not have any livestock. This percentage breaks down further, with 57 percent of farmers in Sakleshpur and 71 percent in Mudigere not engaging in livestock farming. However, a notable concern emerges as the results indicate that farmers express fear of livestock depredation, which deters them from engaging in animal husbandry activities in the study area. This fear has the potential to limit the diversification of livestock farming practices and could have economic and

nutritional implications (Ogra, 2008) [21]. Addressing this issue may require the implementation of protective measures, predator management strategies, and financial incentives to mitigate losses and encourage sustainable animal husbandry practices among the farming community in both regions (Karanth and Kudalkar, 2017) [22].

Table 2: Livestock inventory of respondents in the study area

Sl. No.	Particulars (No.)	Sakleshpur (n=100)	Mudigere (n=100)	Total (n=200)
1	Bullock pair	6	7	13 (6.50)
2	Milch cows	43	29	72 (36.00)
3	Calf	12	16	28 (14.00)
4	Buffaloes	1	3	4 (2.00)
5	Poultry birds	1	0	1 (0.50)
6	Not possessing any livestock	57	71	128 (64.00)

Note: Figures in the parentheses indicate percent of farmers

The farm assets inventory, as detailed in Table 3, provides valuable insights into the possession and utilization of agricultural machinery and equipment among the sample respondents in Sakleshpur and Mudigere. It is observed that 26 percent of farmers in Sakleshpur own tractors, whereas 23 percent in Mudigere have access to this machinery. In terms of power tillers, their use is more prevalent in Sakleshpur, with 21 percent of farmers utilizing them, compared to 16 percent in Mudigere. Conversely, when it comes to arecanut shellers, 12 percent of Mudigere farmers possess them, while the figure is slightly lower at 9 percent in Sakleshpur. It is noteworthy that over 80 percent of farmers in both areas have access to irrigation pumps and electric motors, indicating widespread irrigation infrastructure. Additionally, more than 75 percent of farmers in both taluks own sprayers, primarily utilized for weed control and the application of plant protection chemicals in plantations. These findings underscore the importance of mechanization and irrigation in contemporary agriculture, and the variations between the two regions highlight potential areas for targeted support and investment to enhance agricultural productivity and sustainability.

Table 3: Farm assets of respondents in the study area

Sl. No.	Particulars	Sakleshpur (n=100)	Mudigere (n=100)	Total (n=200)
1	Bullock cart	6	7	13 (6.50)
2	Wooden / M.B. plough	4	5	9 (4.50)
3	Power tiller	21	16	37 (18.50)
4	Tractor and accessories	26	23	49 (24.50)
5	Arecanut Sheller	9	12	21 (10.50)
6	Sprayer	77	78	155 (77.50)
7	Irrigation pump (IP Set)	82	85	167 (83.50)
8	Electric motor	82	85	167 (83.50)
9	Irrigation tank	42	52	94 (47.00)
10	Farm building	31	27	58 (29.00)
11	Cattle shed	12	7	19 (9.50)

Note: Figures in the parentheses indicate percent of farmers

Cropping pattern in the study area on sample farms

The cropping pattern of the sample respondents, as elucidated in Table 4, provides a comprehensive overview of agricultural practices in the study area. The major crops grown include coffee, arecanut, banana, pepper and paddy. In the case of plantation crops, coffee occupies the largest share of the net cropped area in both Sakleshpur (75.17%) and Mudigere (77.09%) taluks, followed by arecanut (6.21% in Sakleshpur and 12.15% in Mudigere), banana (0.71% in Sakleshpur and 1.87% in Mudigere) and pepper (0.53% in Sakleshpur and 0.65% in Mudigere). Interestingly, the limited cultivation of field crops like paddy is primarily to due to the propensity of elephants to consume field crops as their preferred food source, resulting in frequent elephant attacks at various stages of crop growth. Sakleshpur's paddy cultivation stands at 16.87 percent, while Mudigere's is slightly lower at 8.24 percent. Notably, the cropping intensity is higher in Mudigere farms (283.51%) compared to Sakleshpur farms (260.83%), indicating a greater level of diversification in Mudigere. This shows that Mudigere farmers engage in a more varied range of crops, possibly as a risk mitigation strategy or due to variations in agroecological conditions.

Table 4: Cropping pattern in the study area (acre)

Crops	Sakleshpur (n=100)	Mudigere (n=100)	Total (n=200)
Paddy	95.00 (16.87)	47.50 (8.24)	142.50 (12.51)
Coffee	411.75 (73.13)	444.13 (77.09)	855.88 (75.13)
Arecanut	34.00 (6.03)	70.00 (12.15)	104.00 (9.13)
Pepper	3.00 (0.53)	3.75 (0.65)	6.75 (0.59)
Banana	4.00 (0.71)	10.75 (1.87)	14.75 (1.29)
Fallow	15.25 (2.70)	0 (0.00)	15.25 (1.34)
Gross cropped area	1468.50	1633.39	3101.89
Net cropped area	563.00	576.13	1139.13
Cropping intensity (%)	260.83	283.51	272.30

Note: Figures in parentheses indicate percent to net cropped area

Table 5: Factors influencing human wildlife conflict in the study area (n=200)

Sl. No.	Particulars	Coefficients	Standard Error	t Stat	P-value
1	Intercept	-50.01	176.74	-0.28	0.778
2	Age (Years)	0.34	2.40	0.14	0.888
3	Education (Years)	8.43	6.21	1.36	0.178
4	Family size (No.)	-1.26	7.86	-0.16	0.873
5	Distance of your farm from the forest area (Km)	-18.06	11.13	-1.62	0.108
6	Mitigation measures adopted (Adopted=1, non-adopted=0)	-78.32*	45.37	-1.73	0.088
7	Number of raids by wild animals	48.47***	10.28	4.71	0.000
8	Source of water near by the plantation (present=1, absent=0)	156.66***	46.94	3.34	0.001
9	Favourable food nearby the plantation (present=1, absent=0)	128.09***	45.97	2.79	0.006

Note: 1. R square = 0.631, Adj R square= 0.5982. *, ** and *** indicates significant at 10 percent, 5 percent and 1 percent probability level, respectively.

The results on multiple linear regression model used to estimates the factors influencing crop raiding in the study area are presented in Table 5. The number of coffee plants lost due to crop raiding serving as the dependent variable was regressed on eight independent variables. The results of this analysis revealed significant influences of various factors on crop raiding. Among the factors considered in the model, four variables, specifically the mitigation measures adopted, exhibited a significant impact on crop raiding at the 10 percent level of significance. Additionally, three other variables, namely the number of raids by wild animals, the presence of a water source near the plantation, and the availability of favourable crops/food for wild animals in proximity to the plantation, demonstrated significant effects on crop raiding at the one percent level of significance.

Based on the mean level findings, for each additional raid by wild animals in the plantation, 48 coffee plants were estimated to be lost. Similarly, the presence of a water source within or near the plantations was associated with an increase in crop raiding, resulting in a loss of approximately 106 coffee plants compared to plantations lacking nearby water sources. Likewise, if there was the presence of wild animals' favorite food or crops within or near the plantations, the loss of coffee plants due to crop raiding was estimated to be 78 coffee plants higher than in plantations without such favorable conditions for wild animals nearby. These findings shed light on the significant factors contributing to crop raiding in the study area. The hypothesis that source of water near by the plantation is highly influencing crop raiding is accepted. The results are supported by the findings of Thenakoon *et al.* (2017) [23] and he revealed that, as the distance from the house to the cultivated land increased, the severity of damage also rose. Karanth *et al.* (2013) [24] reported that crop loss was linked to cropping frequency and variety, not proximity to protected areas. Mitigation efforts were common (83%), but only fencing and guard animals reduced crop losses.

To estimate losses, it is imperative to comprehend the nature of the damage. Therefore, the researcher conducted a comprehensive analysis of damage types in the study area, yielding noteworthy findings (Table 6). Damage resulting from elephant interactions encompassed trampling of coffee bushes, the damaging and uprooting of coffee plants, breaking of branches, and the destruction of vital infrastructure such as fences and irrigation systems. Conversely, when it came to Indian gaur, the primary nature of damage involved trampling coffee bushes and young plants. In case of Wild boar, which is a nocturnal feeder, prefers tubers among the crops. Most preferred crops includes, Banana rhizome, earthworms were also consumed by grubbing the soil and this mode of attack was recorded in the paddy fields Additionally, the analysis delved into the frequency of these damage incidents per year, revealing a range of 1 to 18 incidents annually for elephants, with some farms experiencing just one incident while others faced up to 18 raids per year. In contrast, incidents involving Indian gaur ranged from 0 to 10 per year and wild boar from 0 to 7 times per year. Notably, the analysis highlighted that 90.06 percent of the extent of damage was attributable to crop raiding by elephants, while the remaining 5.54 percent was linked to Indian gaur-related incidents and 4.40 percent by wild boar. These insights furnish valuable information regarding the patterns and types of damage inflicted by wildlife in the study area, and they are consistent with the findings of Karanth *et al*., 2013 [24].

Table 6: Species wise nature and extent of damage due to human wildlife conflict

Wild animals	Nature of damage	Preferred crop	Frequency per year	Extent of damage (%)
Elephant (*Elephas maximus*)	Trample on coffee bushes, Damaging or uprooting, Breaking branches, Destruction of infrastructure (fences, irrigation systems, and others)	Banana, Paddy, Palm trees, Arecanut	1-18 times	90.06
Indian gaur (*Bos gaurus*)	Crop foraging, Trampling of coffee bushes and young plants, Damage to fences, irrigation systems, and other.	Paddy, young coffee plants	0-10 times	5.54
Wild boar (*Sus scrofa*)	It is a nocturnal feeder and prefers tubers among the crops.	Banana rhizome, earthworms were also consumed by grubbing the soil and this mode of attack was recorded in the paddy fields	0-7 times	4.40

Conclusion

In summary, this paper has brought to light the substantial economic repercussions resulting from human wildlife conflict incidents in the central Western Ghats of Karnataka. The majority of farmer respondents living in medium-sized family category and the average size of land holdings is slightly higher in Mudigere compared to Sakleshpur. The cropping intensity is higher in Mudigere farms compared to Sakleshpur farms, indicating a greater level of diversification in Mudigere. The primary wildlife species responsible for

crop raiding were identified as the Asian elephant (*Elephas maximus*), Indian Gaur (*Bos gaurus*) and Wild boar (Sus scrofa). The presence of a water source near the plantation, and the availability of favourable crops/food for wild animals in proximity to the plantation, influencing the occurance of human wildlife conflict at the one percent level of significance. To address this issue, it is strongly recommended to adopt enhanced conflict mitigation strategies such as the installation of solar fencing to minimize losses caused by wildlife crop raiding in the central Western Ghats of Karnataka. Simultaneously, proactive measures aimed at preserving wildlife habitats and enhancing food availability for these animals can contribute to reducing the overall economic impact on farmers. This comprehensive approach holds the potential to mitigate the challenges posed by human-wildlife conflicts and foster sustainable coexistence in the region.

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References

1. Heberlein TA. Fire in the sistine chapel: How wisconsin responded to chronic wasting disease. Human Dimensions of Wildlife. 2004;9(3):165-179.
2. IUCN World Parks Congress; c2005. http://cmsdata.iucn.org/downloads/recommendationen.pdf.
3. Romanach S, Lindsey P, Woodroff R. Determinants of attitudes towards predators in central Kenya and suggestion for increasing tolerance in livestock dominated landscapes. Oryx. 2007;41(2):185-195.
4. Sharma G, Ram C, Devilal, Rajpurohit LS. Study of man-monkey conflict and its management in Jodhpur, Rajasthan, India. Journal of Evolutionary Biology Research. 2011;3(1):1-3.
5. Schulz C, Skonhoft A. Wildlife management, land-use and conflicts. Environment and Development Economics. 1996;1(3):265-280.
6. Treves A, Wallace RB, Treves NL, Morales A. Co-managing human wildlife conflicts: A review. Human Dimensions of Wildlife. 2006;11(6):383-396.
7. Zeder MA. Domestication and early agriculture in the Mediterranean basin: origins, diffusion and impact. Proceedings of the National Academy of Sciences. 2008;105(33):11597-11604.
8. Singh Y, Gurjwar RK, Lodhi R, Rao RJ. People perception on wildlife in national Chambal sanctuary, Madhya Pradesh, India. International Journal of Biology Sciences. 2020;2(1):08-15. DOI: 10.33545/26649926.2020.v2.i1a.16
9. Tuyttens FAM, Macdonald DW. Behaviour and conservation, Cambridge University Press, Cambridge; c2000.
10. Woodroffe R, frank LG., Lethal control of African lions (*Panthera leo*): Local and regional population impacts. Animal Conservation. 2005;8(1):91-98.
11. Treves A, Karanth KU. Human-carnivore conflict and perspectives on carnivore management worldwide. Conservation Biology. 2003;17(6):1491-1499.
12. Nyhus PJ, Fischer H, Madden F, Osofsky S. Taking the bite out of wildlife damage: The challenges of wildlife compensation schemes. Conservation in Practice. 2003;4(2):37-40.
13. Ogra M, Badola R. Compensating human wildlife conflict in protected area communities: Ground level perceptions from Uttarakhand, India. Human ecology. 2008;36(5):717-729.
14. Sutherland WJ. The conservation handbook: Research, management and policy. Blackwell Science. Oxford; c2000.
15. Mishra C, Allen P, Mccarthy T, Madhusudan MD, Bayarjargal A, Prins HHT, *et al*. The role of incentive schemes in conserving the snow leopard (*Uncia uncia*). Conservation Biology. 2003;17:1512-1520.
16. Madden F. Creating co-existence between humans and wildlife: Global perspectives on local efforts to address human–wildlife conflict. Human Dimensions of Wildlife. 2004;9(4):247-257.
17. Macdonald DW, Sillerozubiri C, Wang SW, WILSON D. From Conflict to Socioecology. Wildlife Conservation Research Unit, Oxford; c2005.
18. Zubiri SC, Sukumar R, Treves A. Living with wildlife: The roots of conflict and the solutions. Blackwell Publishing Ltd, USA; c2007.
19. Galobardes B. Indicators of socioeconomic position (part 2). Journal of Epidemiology and Community Health. 2006;60(2):95-101.
20. Jiboye A. An Assessment of the influence of socio-cultural factors on housing quality in Osogbo, Nigeria. Master's Thesis (Unpub.), Obafemi Awolowo University; c2004
21. Ogra M. Human–wildlife conflict and gender in protected area borderlands: A case study of costs, perceptions, and vulnerabilities from Uttarakhand (Uttaranchal), India. Geoforum. 2008;39(3):1408-1422.
22. Karanth KK, Kudalkar S. History, location, and species matter: insights for human–wildlife conflict mitigation from India. Human dimensions of wildlife. 2017;22(4):331-346.
23. Thenakoon TMSPK, Kandambige LST, Liyanage C. Impact of human–Elephant conflict on livelihood: A case study from a rural setting of Sri Lanka; c2017
24. Karanth KK, Gopalaswamy AM, PRASAD PK, DASGUPTA S. Patterns of human–wildlife conflicts and compensation: Insights from Western Ghats protected areas. Biological Conservation. 2013;166:175-185.
25. Colledge S. Reappraisal of the archaeobotanical evidence for the emergence and dispersal of the founder crops. Oxbow Books, UK, London; c2004.