Assessment of Human-Wildlife Conflict: A Case Study of Kothale Village in the Kalsubai Harishchandragad Wildlife Sanctuary (KHWS), Maharashtra (India)

ABSTRACT:

Human-Wildlife Conflicts (HWCs) refer to the interactions between humans and wild animals that result in negative impacts on both sides. Conflicts between humans and wildlife occur when human intervention encroaches on natural ecosystems and animals' wild behavior. This conflict often arises due to resource competition, crop damage, livestock predation, and human safety concerns. This study investigated the nature, causes, and mitigation strategies of HWCs in the Kothale village of Kalsubai Harishchandragad Wildlife Sanctuary (KHWS), Maharashtra. The 2011 census recorded 112 households in Kothale village, of which 45% gathered data about HWCs. The investigator identified the causes, consequences, and management approaches of human-wildlife conflict in the study area, as well as the perspectives of the local people, using survey questionnaires, semi-structured interviews, group discussions, and observation. The study discusses the local community's household characteristics, livestock, agricultural activities, crop raiding, local people's perceptions and attitudes towards wildlife, their experiences with wildlife, mitigation and management, etc. The survey revealed that during the five previous seasons, wild animals caused 86.27% crop damage, 62.75% attacked livestock, and 15.69% attacked people. The study found that loss of crops and livestock, as well as decreasing animal resources, were the main causes of conflict, along with habitat degradation and fragmentation brought on by human activity. Many victims do not receive compensation because of a lack of awareness among local residents, administrative delays at the local level, and inadequate documentation. Implementing various programs and recommended action plans can reduce human-wildlife conflict.

Key Words: *human wildlife conflict, crop damage, livestock, sanctuary, compensation.*

INTRODUCTION:

Human activities have greatly dominated the 21st century environment, influencing every ecosystem on earth (Peter M. Vitousek, 1997). Humans have transformed the earth's surface, allocating it for various land use types like agriculture, irrigation, or urban development, while also converting an additional area to pasture (Olson, 1998; Peter M. Vitousek, 1997). According to the human disturbance index, humans have disrupted around 75% of the Earth's liveable land surface

(Hannah, 1994). The UN reports that the rapidly growing global population, currently at 7 billion, will increase to 8.9 billion by 2050, accounting for a substantial portion of the human-caused influence (UN, 2004). The expansion of human settlements and modifications to land use and natural ecosystems have reduced a significant portion of Earth's remaining biodiversity to small, fragmented areas within predominantly human-controlled landscapes (Inonge Milupi, 2022). As human populations expand and natural habitats decrease, there is a growing competition between people and animals over living space and food, as expressed by the World Wildlife Fund (WWF) (Ladan, Examining Human Wild Life Conflict in Africa, 2014).

The term "human-wildlife conflict" refers to situations in which wildlife requirements and behaviours have a negative impact on human goals, or when human goals have a negative influence on wildlife needs. (WPC, 2003). According to the IUCN (2005), human-wildlife conflict (HWC) refers to a situation when the fundamental requirements of wildlife clash with those of humans, resulting in negative consequences for both human beings and wildlife (IUCN, 2005; Parker G., 2007). Human-wildlife conflict refers to any interaction between humans and wildlife that leads to adverse effects on human social, economic, or cultural aspects, as well as the conservation of wildlife species and the environment. The most frequently reported causes of conflicts with wildlife are crop raiding, animal depredation, human casualties, and property destruction (Ogra, 2008; Maheshwari Bhatta, 2020), (Madden, 2008).

Human-wildlife conflict arises across various scenarios and is characterized by its association with habitat, geographic location, vegetation, and climate, involving a vast array of species (Inonge Milupi*, 2023). The conflict has implications for the economy, the environment, society, and culture. Many wildlife species cause extensive harm to agriculture and livestock production. Whenever wildlife destroys crops or poses a threat to human life in nearby villages, the inhabitants perceive it as harm to their economy and their survival, particularly due to the absence of compensation policies in many African nations (Milupi, 2017), (Amaja, 2016).

Presently, there is a lack of awareness among human beings regarding the importance of wildlife in developing countries where human-wildlife conflict (HWC) is more prevalent. Furthermore, rural communities rely heavily on livestock and agriculture as a primary source of subsistence and income generation (Lamarque F. A.-O., 2009), (A. Parasnis, 2014). The main challenges surrounding national parks are crop damage, livestock depredation, and attacks on humans (A. Acha and M.

Temesgen, 2015; Y. Biru, 2017), (Teshome, 2015). Cattle have the greatest effect, with leopards being the most prevalent livestock predators, followed by hyenas *(Crocuta crocuta)* and African rock pythons *(Python sebae)* (B. Nibret, 2017). Therefore, farmers perceive these animals as nuisances, as they provide a significant challenge for farmers that are located near national parks (M. Tweheyo, 2011).

Previous conflict management strategies included lethal control, translocation, population size restriction, and endangered species conservation. Present management strategies attempt to utilize scientific knowledge to achieve improved outcomes in areas such as behaviour modification and reducing interaction. Mitigating human-wildlife conflicts is crucial in the management of biodiversity and protected areas due to the associated direct, indirect, and opportunity costs (Lamarque F. A.-O., 2009; Jackson Morompi Ole Masago, 2018). In various parts of the world, the establishment of a protected areas (PAs) network has been the main strategy for long-term biodiversity protection (HMG/N, 2002). The increasing number of Protected Areas (PAs) has also clashed with established connections and the urgent needs of communities near them that rely on forest resources for their sustenance (Silwal, 2003; Maheshwari Bhatta, 2020). Agricultural land surrounds many park areas. People who live in close proximity to these national parks have engaged with them in a variety of ways. While the conflict over land use rights and practices has raised concerns about the continued existence of the national park in specific areas, others have successfully developed a beneficial and ecologically harmonious relationship with it (Nepal, 1993; Maheshwari Bhatta, 2020).

Wildlife aggression with humans is increasing, hindering efforts to promote amicable interactions with local communities while including them in conservation efforts. Several investigations indicate that poor communities rely more heavily on forest resources, which contributes to the difficulty of preserving protected areas to meet human and wildlife needs (Budhathoki, 2004; Rayamajhi, 2009; Maheshwari Bhatta, 2020). Information concerning HWC can offer essential direction for determining future priorities in conservation, management, and exploration (Primack, 2013; Maheshwari Bhatta, 2020). The successful implementation of effective wildlife management strategies and the establishment of extensive networks of protected areas globally have resulted in the recovery of diminishing populations of numerous huge mammals. However, this positive outcome has also led to a rise in conflicts (Patil, 2002; Saberwal V.K., 1994; W.B., 2002; UPMA MANRAL, 2016).

In India, the current policy for mitigating conflicts with wild animals includes compensating for damages caused by the animals' attacks on livestock and humans, as well as capturing and relocating the animals instead of using lethal measures, which have been illegal since 1972. A comprehensive translocation effort apprehended a considerable number of leopards in regions predominantly inhabited by humans and subsequently released them into adjacent forests. Human-wildlife conflicts present a danger to human well-being, health, and security, frequently resulting in financial and societal consequences (Athreya, 2007; Yogesh P. Badhe, 2021). Conflicts are more common in areas where livestock rearing and agriculture play a vital role in the countryside's economy. It has raised concerns about wildlife management and human and domesticated animal welfare. Nevertheless, significant conservation issues arise where the habitats of carnivores intersect with areas of high human population density. The leopard is the most prevalent carnivore, located in southern Africa, southern Asia, and India (Myers, 1984; Nowell, 1996; Yogesh P. Badhe, 2021). The leopard has exceptional adaptation capacities due to its highly versatile food and hunting patterns, enabling it to cover vast distances (Yogesh P. Badhe, 2021; Stander, 1997; Yirga, 2011; Kulkarni, 2004; Mukherjee, 2001). Several worldwide studies have examined the substantial contribution of domestic animals such as dogs, sheep, and goats to the leopard's diet. Leopards can also survive in areas ruled by humans, where there is less conflict (Yogesh P. Badhe, 2021; Seidensticker, 1990), (VIDYA ATHREYA, 2010).

The human-wildlife conflict is a common issue in African countries. Mozambique's wildlife killed 265 people from July 2006 to September 2008. Effective land use planning can resolve many issues in the long term (Kevin M . Dunham, 2010). The human-elephant conflict (HEC) is a serious conservation threat to managers and conservationists in Asia and Africa, threatening not only the survival of the elephant species but also the safety and livelihoods of rural communities (Dipanjan Naha S. K., 2020). Elephants and rodents are the most damaging species when it comes to crop raiding, making HWC a significant problem in Mount Cameroon (Tangie Stanley Ndifor Attia, 2018). Elephants, being one of the most destructive animals in Zambia's Mosi-o-Tunya National Park, require the implementation of a compensation strategy for those affected by wildlife destruction (Inonge Milupi, 2022). There is a serious conflict between humans and wild animals as a result of the growing human population and the disappearance of wild animal habitat. The serious problem of conflict between humans and leopards confronts the Junnar forest division in the Western Ghats. As a

result of human encroachment into natural forest areas, leopards are seeking refuge in sugarcane crop areas as an alternative habitat, leading to attacks on humans and livestock in search of food (Yogesh P. Badhe, 2021).

Rapid urbanization and human encroachment into wildlife habitats are resulting in a rise in human-wildlife conflicts. Such conflicts pose a substantial risk of injury or loss of life to civilians and wild animals. Conflict between humans and wildlife also produces huge economic losses. Also, there is raising awareness regarding the legal repercussions associated with hunting wildlife. Therefore, controlling conflict between people and wildlife in urban areas is of paramount importance (Deepti Sharma, 2022).

OBJECTIVES:

This study aims to identify the causes of human-wildlife conflict, identify hotspot areas, and compensation, as well as recommendations for action plans to reduce human-wildlife conflicts while promoting balance between humans and the natural environment.

DATA COLLECTION AND METHODOLOGY:

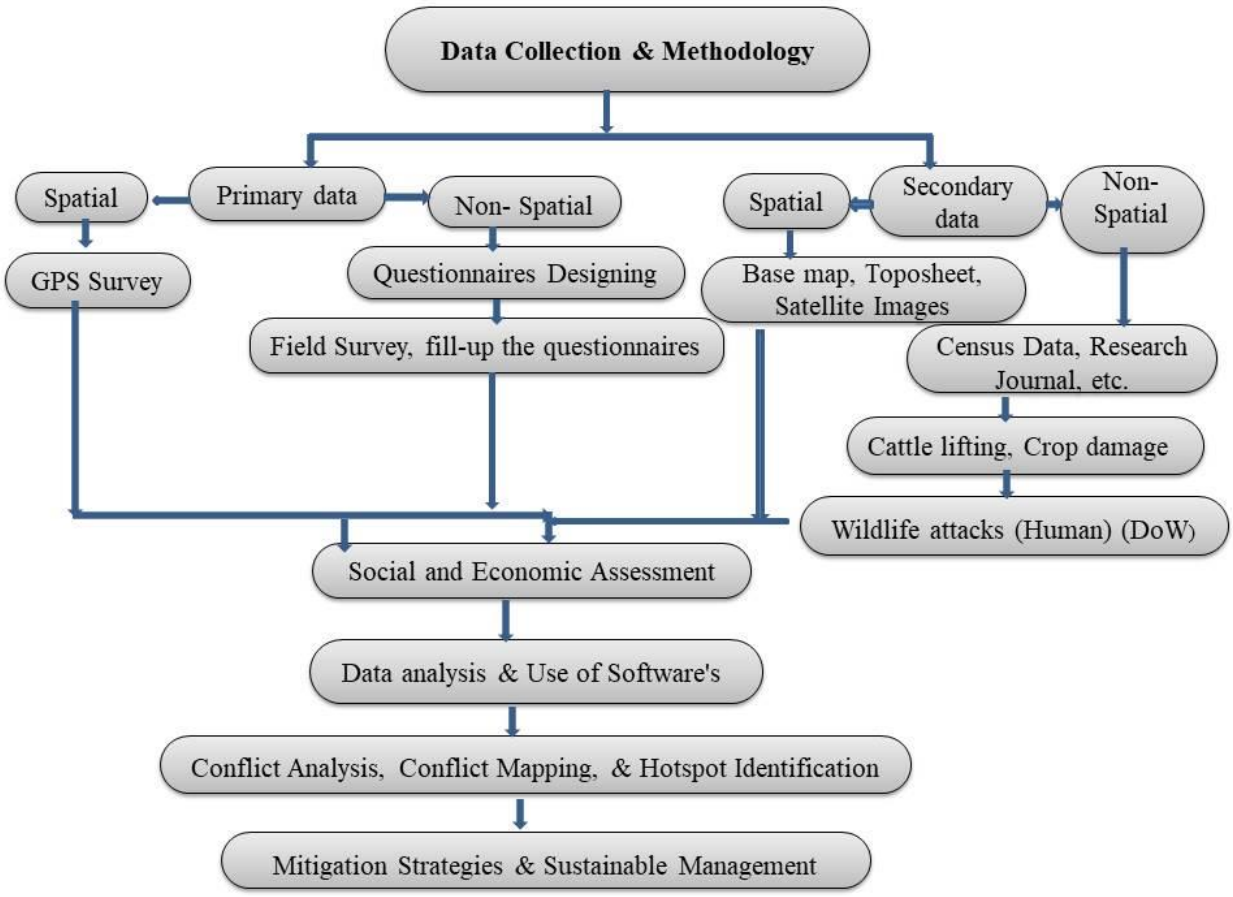
The study utilized both primary and secondary data sources, such as field visits, excursions, and conflict data. The primary data was collected with the help of questionnaires and field visits during January 2023 to May 2024. Secondary data was collected from various sources, such as records of wildlife injury compensation from the forest department, literature, newspapers, published research, and reports. The researchers analyzed and interpreted the collected data using basic computer computation techniques based on MS Excel. ArcGIS software has been used for mapping in order to comprehend the spatial distribution of human wildlife conflicts in the study area. A flow diagram represents the accepted methodology for this analysis (Figure 1).

DISCUSSION AND ANALYSIS:

The Kalsubai Harishchandragad Wildlife Sanctuary (KHWS) is situated in the Western Ghats of Maharashtra. The KHWS encompasses 26 villages. Kothale village is 40 kilometres away from the Akole Tehsil in the Ahmednagar district. Hills covered the village's three sides, occupying a 797.24-hectare area. The 2011 census reports the presence of 112 houses and schedules 98.22% of the tribal population. These villagers mainly depend on agriculture, cattle, and forest resources for their daily livelihood. We conducted a survey on 112 out of 74 households, and one of the significant findings was that 25 of these households were temporarily migrating for job opportunities. According

to the primary data collection, 94.59% of families (70) own their own agricultural land, and 77.03% of families (57) have livestock for domestic and agricultural purposes.

Figure 1 Flow Chart of Methodology



LAND USE AND LAND COVER:

For human subsistence, land is a vital natural resource and serves as the foundation for all terrestrial ecosystem services (Chen H, 2021; Ewunetu A, 2021; Gebeyehu Abebe, 2021). Land degradation, particularly changes in land use and land cover (LULC), has emerged as a significant global issue (Ewunetu A, 2021; Bewket W, 2009; Gebeyehu Abebe, 2021). On a global scale, LULC changes have emerged as the main cause of ecosystem service change, and Africa is experiencing significant changes across the continent (Lambin EF G. H., 2003; Birhanu L, 2019; Gebeyehu Abebe, 2021). African grassland, woodland, bush land, and other vegetation coverings have transformed into agricultural and settlement areas in the past few decades (Lambin EF G. H., 2006; Sewnet A, 2017; Gebeyehu Abebe, 2021). Changes in land use and land cover (LULC) occur because of a complex

relationship between institutional, social-economic, and environmental variables (Chamling M, 2020; Turner M G, 2015; Rafiq M, 2018; Gebeyehu Abebe, 2021). Changes in land use and land cover (LULC) have a significant impact on the environment's stability over time and space. This is due to their interconnection with various factors, such as local, regional, and global climate conditions, the carbon cycle, biodiversity stability, clean water availability, agriculture, and food security (Gebeyehu Abebe, 2021; Meer MS, 2020; Meshesha DT, 2014).

The results confirmed that the study area's total land area was 797.24 hectares. The LULC classification shows 29.5 ha (3.7%) of open land. Scrub land covered an area of 150.59 ha (18.89%), followed by Kharif + Rabi (Double Cropped) at 24.33 ha (3.05%) and Kharif at 6.74 ha (0.85%). In contrast, dense forest covered the maximum area of 557.12 ha (69.88%), with habitation located at 3.23 ha (0.4%) and a water body at 25.73 ha (3.23%) of the village's total area (Table No. 1 and Map No. 1). The existence of dense forests and hills is extremely beneficial for the habitat of wild animals, as it provides the largest area for them to survive.

LIVESTOCK ATTACK:

Kothale has a substantial community of individuals who have traditionally engaged in cattle rearing. These individuals engage in nomadic pastoralism, grazing livestock such as cattle, sheep, and goats. They migrate daily in search of suitable grazing land, grass, and water sources near their village and then return home in the evening. During this migratory movement, wild animals attack cattle (Ladan, Examining Human Wild Life Conflict in Africa, 2014).

Agriculture and cattle rearing are the main sources of income and sustenance for the indigenous inhabitants of Kothale Village. The survey reveals that 77.03% of the residents in the community possess cattle.

Table No 1: Land Use Land Cover

Sr. No.	Land Use Land Cover	Area in hector	Area in %
1.	Open	29.5	3.7
2.	Land with scrub	150.59	18.89
3.	Kharif + Rabi (Double Cropped)	24.33	3.05

4.	Kharif	6.74	0.85
5.	Dense /Closed	557.12	69.88
6.	Habitation	3.23	0.4
7.	Water body	25.73	3.23

Map No: 1 Land use and Land Cover

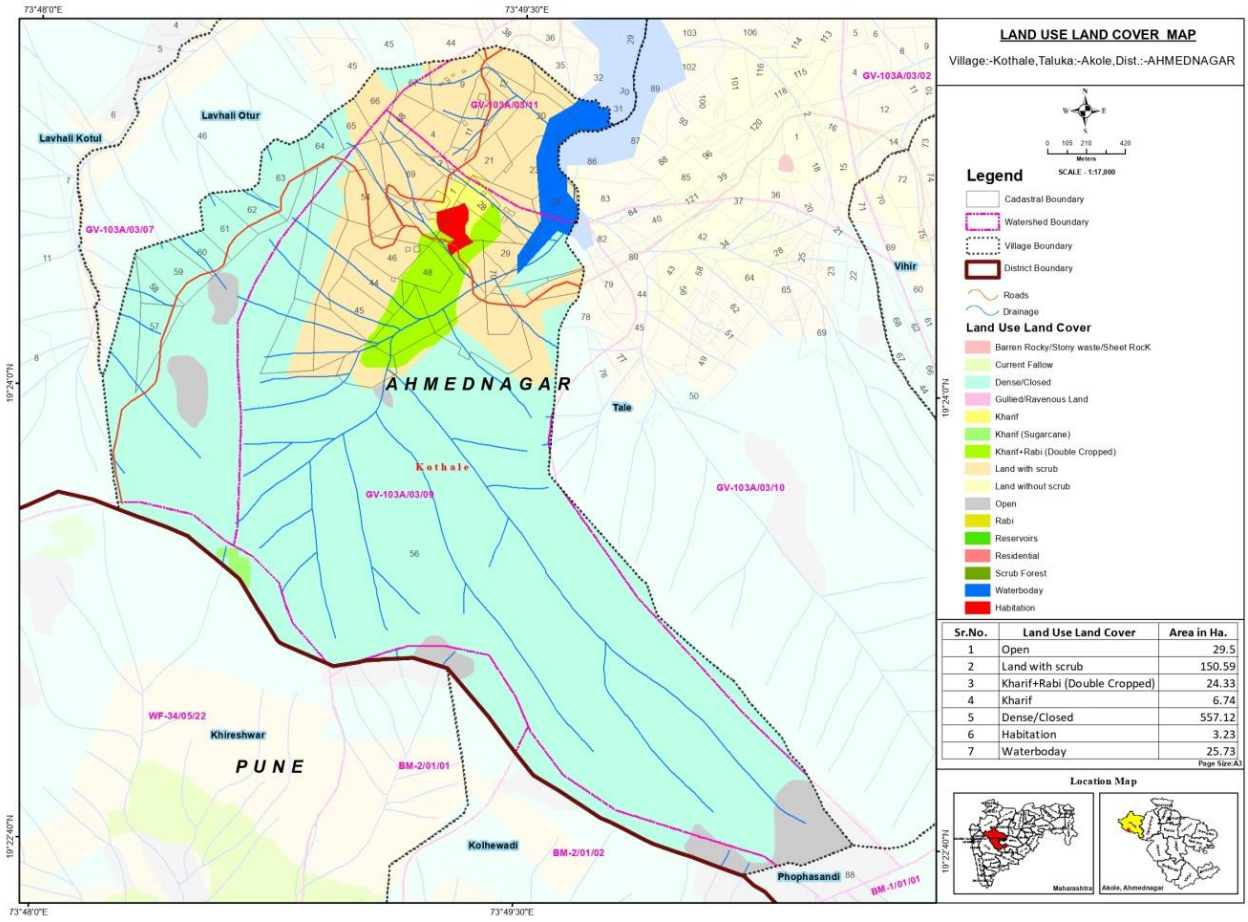


Table No: 2 Number of Livestock

Livestock	Goats	Cow (Cattle)	Hens	Oxen	Reda (Buffalo –Male)	Buffalo	Calves
No of Livestock	232	177	102	30	25	18	17
% Livestock	38.6	29.45	16.97	4.99	4.16	3	2.83

Source: Field Survey_ Computed by Author

Based on the primary survey, there are a total of 601 livestock animals, which consist of goats, cows, chickens, oxen, reda (male buffalo), buffalo, and calves. The hamlet employs 38.6% goats and 29.55% cows for various purposes, such as domestic consumption, milk production, dung fertilization, and income generation. In addition, the villagers use a portion of the cows to breed high-quality bulls for agricultural purposes. Hens, oxen, and Reda (buffalo-male) have a significant role as sources of sustenance and revenue for the tribal population, accounting for 16.97%, 4.99%, and a significant amount, respectively. In addition, the research area has buffalo, which account for 3.00% of the livestock population (Table No. 2). We primarily use these buffalo for milk production, as well as their manure for farming activities.

The main purposes for keeping cattle include utilizing dung (31.48%), obtaining milk (27.78%), engaging in agricultural activities (22.84%), generating cash (15.43%), and acquiring meat (2.47%) for household consumption and hospitality. In the village, there are 57 households that own domesticated animals. Of these households, exactly thirty have experienced a total of forty incidents in which wild animals attacked their livestock. The majority of these attacks have occurred in close proximity to the forest (47.5%), inside the cowshed of the residence (20%), during the journey to and from grazing the animals on the road (17.5%), and when the animals are grazing in the fields (15%). Wild animals assaulted livestock during the night (5.00%), during daylight hours (80.00%), and in the early hours of the morning (15%).

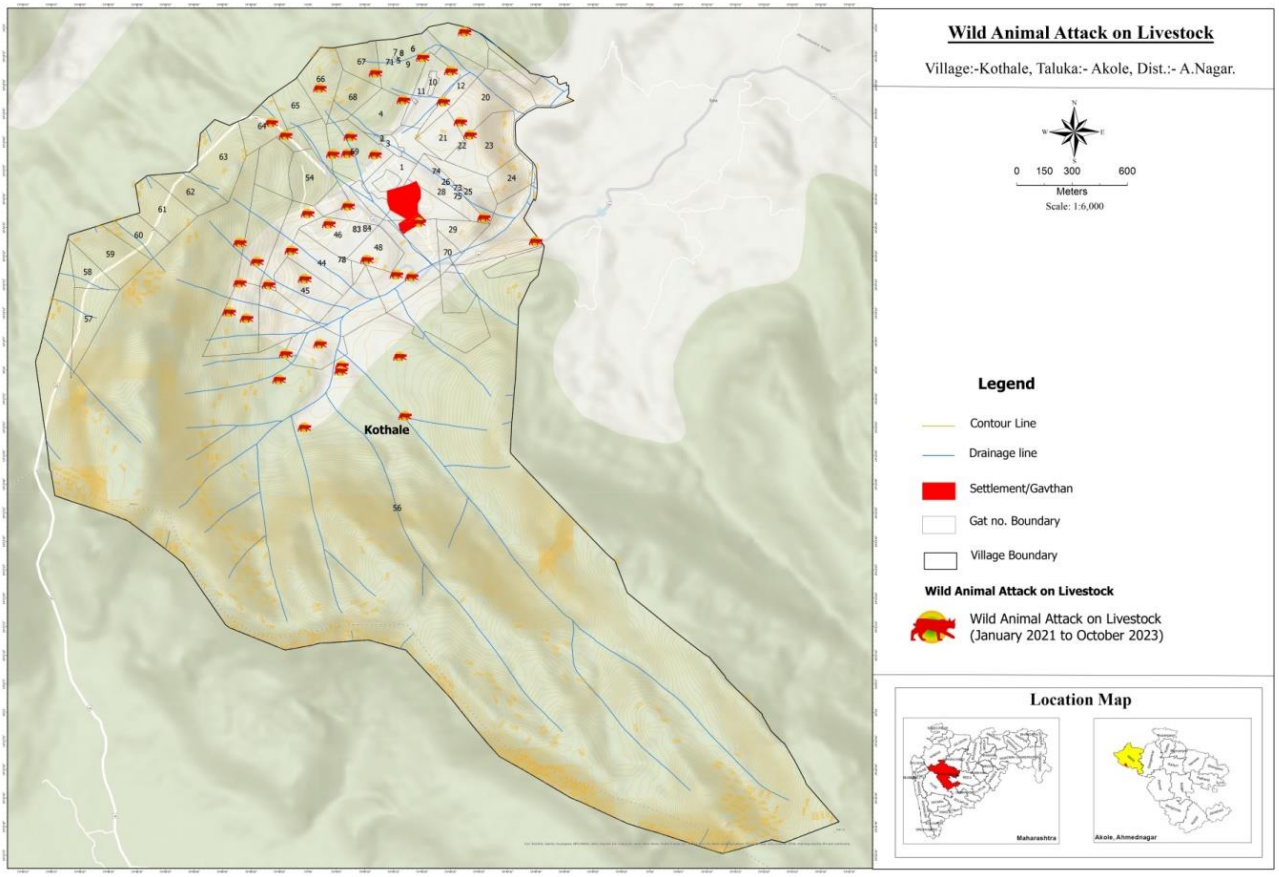
Throughout the duration of the study, there were a total of 40 instances where wild animals attacked the cattle, leading to the unfortunate demise of 52 animals and causing injuries to 4 others (Map No. 2). Wild animals exhibit a greater tendency to engage in attacks on other animals in the months of January, August, December, and March. The survey revealed that 30 families experienced a financial loss of approximately Rs. 3,57,500, while 11 families received financial assistance of Rs. 90,500 from the wildlife department.

CROP RAIDING:

Wild animals raiding crops was a serious issue for the farmers in KHWS's Kothale village. The responses from those interviewed indicate that various factors, such as the level of human activity on the farm, the type of crops farmed in relation to the park's location, and the scarcity of food and water for wild animals in the forest, influence the frequency and occurrence of crop raiding (Yazezew, 2021). Several wild animal species, including Wild boar, Sambar, and Herbivorous Monkeys, are responsible for crop raiding in this area. In the KHWS, the animals responsible for crop damage and the extent of crop damage differ with time and season. Paddy maturing time (July–

November) and wheat maturing time (December–April) were two peak seasons for raiding in this region.

Map No: 2 Wild animals attack on Livestock



The research area experienced the highest rainfall during the southwest monsoon season, which also aligned with the planting season in June. Seasonality, crop availability, crop type, and the phonological stage of the crop have a substantial impact on the herbivores' capacity to cause destruction to crops. They have observed that crop consumers, like wild boars, show a preference for harvested and maturing crops. (Eva M. Gross, 2018). One observation is that wild boars attack crops at night. An observation revealed that wild boars frequently engage in crop raiding during the rainy season, which spans from June to September. This period coincided with the crops' peak maturity. In the investigated region, 94.59% of families own agricultural land, while 5.41% of households have no agricultural land. Wild animals, such as sambar, wild boar, and monkeys, have damaged 82.86% of farmers' crops, and 17.14% of farmers report that wild animals have not harmed their crops.

The incidence of crop raiding was highest during the post-monsoon season, whereas it was less common during the pre-monsoon and monsoon seasons. The locals claim that attacks increase

during the post-monsoon season, when farmers harvest their crops after they reach the end of their growing cycle. Agriculture in the region is seasonal. In the summer, farmers grow vegetables and other summer crops wherever water is available. However, in these areas, farmers construct traditional observation towers (*machans*) and scarecrows to protect their crops from animals throughout the night. Due to more rain in the rainy season, there is less attack on crops by wild animals.

Farmers observe crop raids every year and find that rice, gram, wheat, and vegetables are the crops most frequently assaulted. Conflicts generally arise during the nighttime hours, with the highest levels of activity occurring at dusk and dawn. Crop raiding is usually a seasonal phenomenon occurring around the periphery of protected areas (PAs) (Dipanjan Naha, 2020). In a survey, the farmers in the study area expressed their opinions about the Rs 4,10,000 in agricultural financial losses caused by wild animal attacks. The forest department only compensated 3.45% of farmers for the damage to their crops, whereas 96.55% received no compensation at all.

We classify wild animal attacks on crop raiding into two categories: rainy season, winter season, and summer season. Out of the 58 incidents that occurred in the village, 40 took place during the rainy and winter seasons, specifically in locations away from the settlements. During the summer season, all 18 attacks occurred in close proximity to settlements and vital water sources, such as wells and tanks used for seasonal crops (Map No. 3). The most prevalent methods employed by local communities to combat crop raiding include surveillance (eye watching), constructing barriers (fence), pursuing intruders, using unfamiliar scents, and trapping (Yazezew, 2021). Guarding is the most intensive and successful way for farmers to ensure crop safety from wild animals. The study area uses *machans*, scarecrows, wooden fences, and fencing to reduce human-wildlife conflict. Additionally, farmers tie a glass bottle to a tall tree and place a small iron object next to it. The sound of the wind hitting the iron object on the glass bottle deters wild animals from approaching human habitation and crops. They also tie an iron belt around the necks of livestock and dogs.

ATTACK ON HUMANS:

In the village area, wild animals attacked seven household members. Over the past four years, conflicts with wildlife have resulted in injuries to seven villagers. Leopards, wild boars, bears, and snakes were responsible for most of the injuries in the village catchment area. The frequency of wild boar attacks on farm guards at night has increased, particularly during harvest season and livestock grazing periods near forests and roads. These attacks are a result of human encroachment on wild animal habitats.

STRATEGIES FOR MITIGATION AND SUGGESTIONS FOR ACTION PLAN:

When there is a possibility of conflict or if it has already occurred, policymakers use safeguarding practices.The ultimate objective of prevention measures is to reduce the problem and minimize its effect on society. We also suggested multiple strategies utilizing geospatial tools to mitigate the human-wildlife conflict (HWC) in the referred-to study area. This action plan was established based on data collected during field visits, GPS technology, the Survey of India Toposheet, and consultations with many different groups, including villages, forest departments, and cowherds.

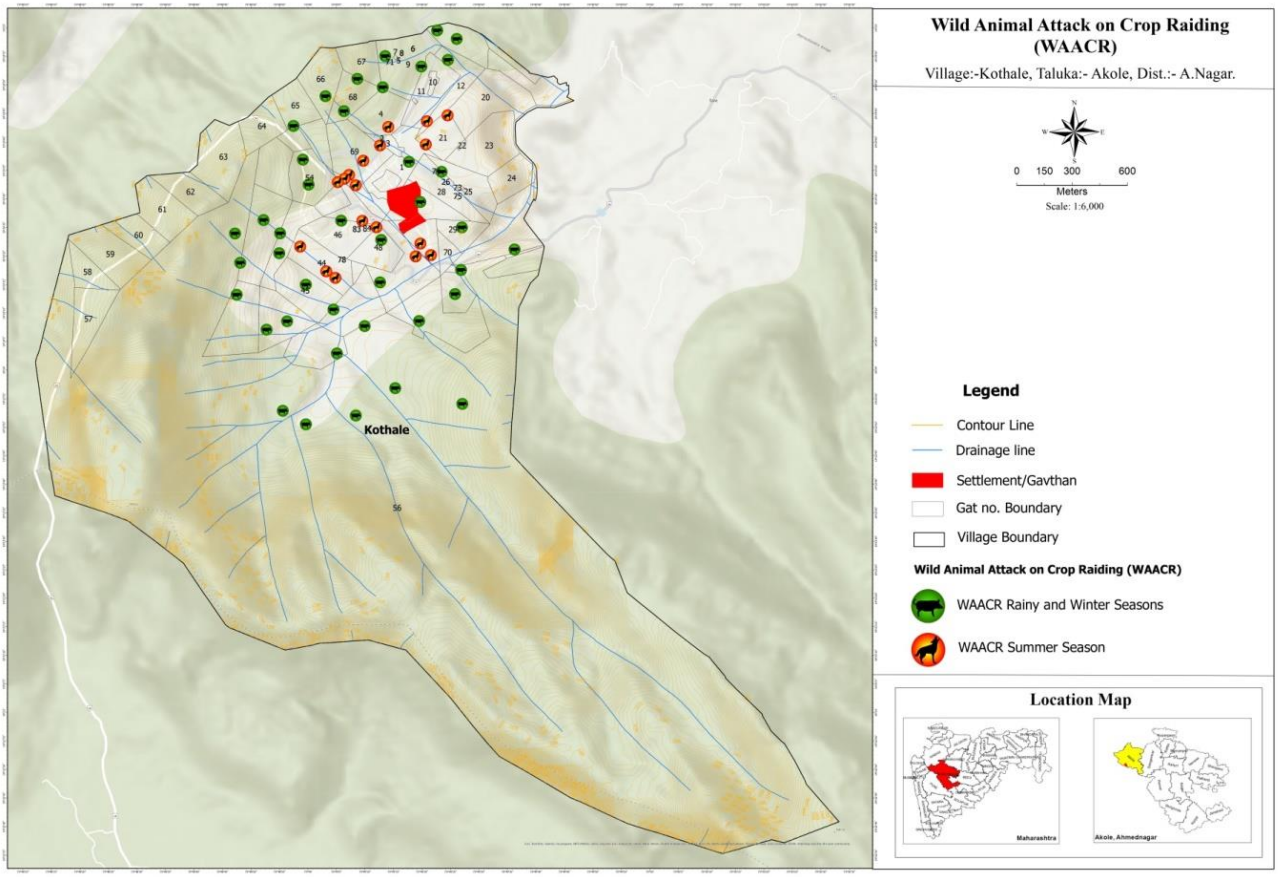
Map no. 4 also indicates the various action plans to reduce the HWC in the study area. The identification of the corridor's geographic region accounted for the presence of accessible wildlife, dense vegetation, and topography. Wildlife corridors, located far from human activities, promote minimal harm to the natural habitat of wild animals. Water is also one of the basic needs of wild animals. Villagers had the opinion that wild fauna frequently ventured into human settlements in pursuit of sustenance and water. Therefore, it is important to identify a suitable site for water sources and construct man-made water tanks, such as the KT Weir (*Kolhapur Type Bandhara*) and *Panavath*. The village region has hilly terrain and abundant rainfall, which accentuates the presence of natural springs as sources of water. One of the significant suggestions was to construct the observation tower in suitable locations to carry out observations of wild animal movements. This action plan is also helpful for the sustainable development of tribal villages, the conservation of natural resources, and reducing the conflict between nature and humans.

4. CONCLUSION:

The current study investigated the impact of human-wildlife conflicts on the local community's economic well-being and wildlife preservation, and it provided recommendations for reducing human-wildlife conflicts in Kothale village, KHWS. The conflict between humans and wildlife regarding habitat and food availability continues to grow due to the expanding human population, its increasing geographical reach, and the resulting decrease in natural ecosystems. The conflict occasionally results in adversity for individuals, including the loss of their livestock, crops, property, and even their lives. Kothale village in the KHWS faces a significant human-wildlife conflict. The research area is located in the Western Ghats, which serve as the natural habitat for wild animals. In this region,

humans and wildlife have historically coexisted harmoniously as integral components of the ecosystem. Nevertheless, as a consequence of human intrusion into the natural forest region, the vast majority of the native wildlife has migrated toward alternate habitats, such as human settlements, in search of sustenance and protection (Yogesh P. Badhe, 2021).

Map No: 3 Wild animals attack on Crop raiding



Kothale's local communities are negatively interacting with wildlife, not only because of their cultural practices but also because of their livelihoods. Cultural practices that affect wildlife conflict include subsistence farming, pastoralism, animal sacrifice in religious ceremonies, Raab agriculture, and the use of forest products for traditional crafts. Crop cultivation and livestock are vital for the community's survival and can serve as potential sources of conflict between humans and wildlife. Wildlife has costs for local communities in the form of crop losses, livestock predation, and human attacks. A significant portion of the local community has a favorable attitude toward wildlife conservation. This creates a greater opportunity to reduce the adverse interactions between humans and wildlife by implementing effective ways to prevent and reduce conflicts between both groups. As

a result, identifying issues related to human-wildlife conflict and developing an action plan will help reduce conflict in the study area.

We cannot obtain long-term data regarding human-wildlife conflict. Over time, human land use, wildlife behaviors, and migration patterns may change significantly, making short-term data analysis less reliable for long-term trends. *Therefore, fear, cultural factors, and exaggerated opinions influence the local communities' perceptions about HWCs. The underrepresentation of remote and hilly area data results in an incomplete understanding of the problem.* Lack of interdisciplinary collaboration may prevent policymakers from effectively conveying significant findings from studies or implementing them into management strategies. These limitations emphasize the need for more comprehensive, long-term, and multidisciplinary strategies to effectively comprehend and manage the complicated nature of human-wildlife conflict, even though the research on this dispute has provided profound knowledge.

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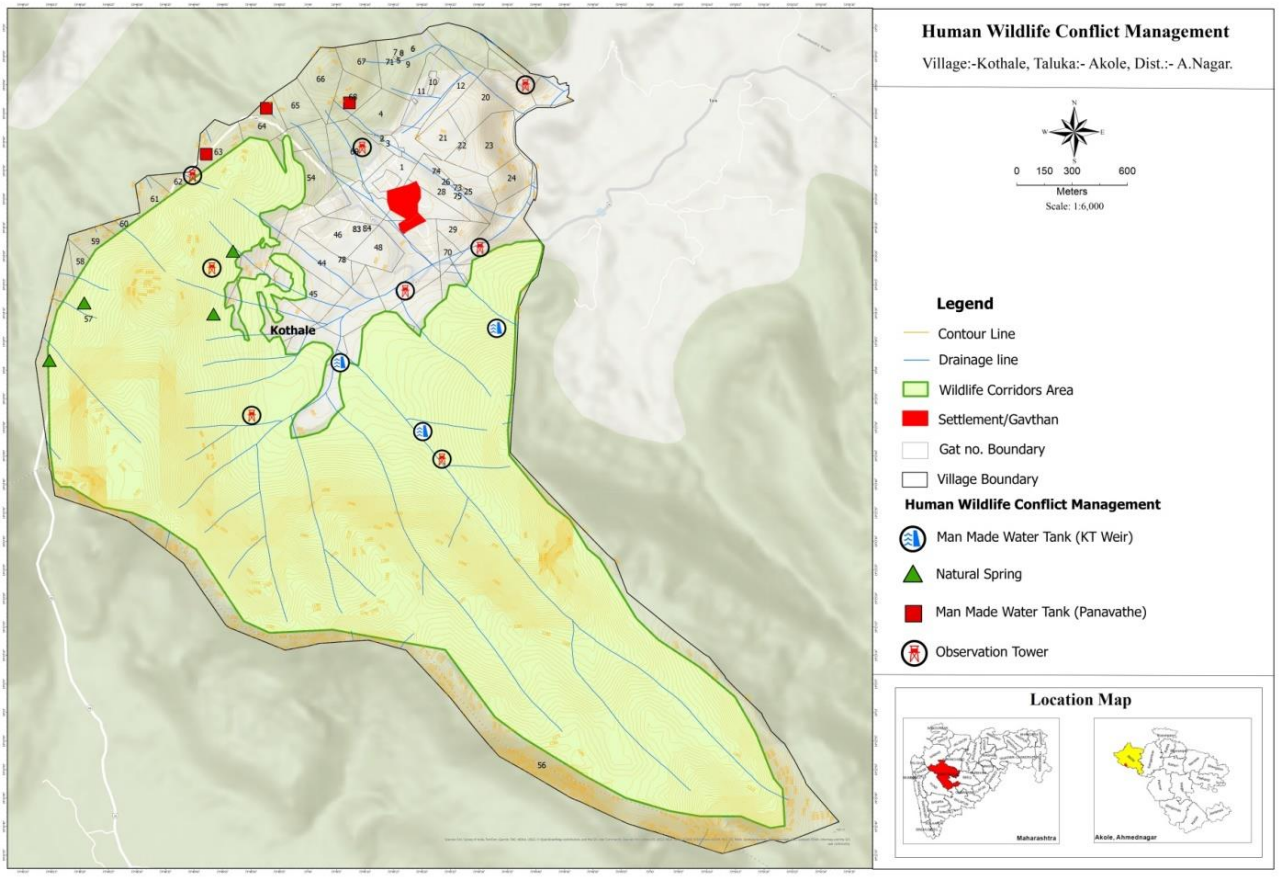
COMPETING INTERESTS: The author declares that they have no competing interests.

AUTHORS' CONTRIBUTIONS:

Both authors collaborated to carry out this work. Author Sandip Deshmukh designed the research work, managed the literature review, conducted field surveys, data analysis, GIS mapping, and wrote the first draft of the manuscript. Author Dr. Ravindra Jaybhaye developed the conceptual framework, supervised the research work, and reviewed the final manuscript. All authors read and approved the final manuscript.

Map No: 4 Human Wildlife Conflict Management (Action Plan)



ETHICAL APPROVAL:

We have emailed a letter requesting authorization to the secretary of the forest department, Government of Maharashtra. To obtain approval, we have written a letter and sent it to the Chief Conservator of Forests (Regional), Nashik, using postal services. In addition to the aforementioned, we personally visited the Sarpanch of Kothale village, the RFO, the Kalsubai Harishchandragarh Wildlife Sanctuary, and the Rajur Forest Area to obtain their consent.

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