Received: April 2024 Revised: May 2024 Accepted: June 2024

Doi: https://doi.org/10.3126/jpd.v5i1.67532

A Story of Farmer-Monkey Interactions Towards Their Effects on Semi-Urban Migration and Livelihood

Bishnu Lamichhane* Barsha Lamichhane**

Abstract

Migration involves changing residence due to economic, environmental, social, and political factors. Push factors such as poverty, unequal resource distribution, and labor demands compel people to relocate. In Nepal, low agricultural productivity serves as a significant push factor for migration, exacerbated by crop damage caused by wildlife. This crop damage results in economic losses for farmers, affecting their livelihoods and contributing to rural-to-urban migration patterns. A qualitative study was conducted in Likhu-6 in the Nuwakot district in October and November 2023. Participants were Nepalese residents aged 18 and above from Likhu Rural Municipality Ward No. 6.

Farmers in the study encounter challenges due to the increasing monkey population, leading to crop damage and income reduction. This situation has compelled many farmers to relocate to semi-urban areas in search of alternative livelihoods. The presence of monkeys has diminished crop yields, causing financial strain on farmers and prompting them to abandon their farms for semi-urban areas. This migration has not only influenced the agricultural sector but also impacted the local economy and community dynamics. Efforts should be made to address the interactions between farmers and monkeys through deterrent measures and community-based solutions. Sustainable, long-term strategies are necessary to mitigate the impact of monkeys on farmers' livelihoods.

Keywords: Monkey, wildlife, migration, livelihood impact, crop damage, community dynamics.

Introduction

Migration is the process of changing one's usual place of residence (IOM, 2019). The main drivers of migration are the 'push and pull' theory proposed by Lee (Lee, 1966), which includes economic, environmental, social, and political factors that push individuals out of their homeland and attract them to the destination country (Castelli, 2018). Various social, demographic, economic, environmental, and political factors influence people to move.

**Mr. Lamichane is a Researcher Department of Transcultural Psychosocial Organization (TPO) Nepal, Baluwatar Kathmandu, MPhil (CDPS), T.U., Kirtipur, Nepal. Email: lamichhanebis11@gmail.com.*

**Mrs. Lamichane is a student of Computer science from technical school, currently studying BSW. Email: barshalamichhane29@gmail.com*

Push factors are often related to governmental imbalances, termed as macro drivers of mobility. Other push factors include fears of disorder or persecution based on race, religion, or politics in the areas where people live, and inequalities are the main drivers of mobility (Dubey & Mallah, 2015). Nepalese migration is frequently associated with poverty, unequal distribution of resources, and varying labor demands based on geography (Kumar, 2004). Low agricultural production also serves as a push factor for migration (IMRAN, BAKHSH, & HASSAN, 2016).

The causes of low agricultural production are expected to worsen in the future due to various adverse impacts (Green, Cornell, Scharlemann, & Balmford, 2005). Crop damage by wildlife, such as wild boar, bear, porcupine, monkey, musk deer, and partridge, is a significant factor contributing to low production(Rao, Maikhuri, Nautiyal, & Saxena, 2002). Monkeys and wild boars accounted for 50 percent to 60 percent of total crop damage in villages(Boulton, Horrocks, & Baulu, 1996). Farmers in Ireland reported a 30% increase in crop damage by velvets due to the rise in verve abundance and reduced crop availability. Wild animals like elephants, wild boars, and deer migrating into agricultural fields cause extensive crop damage through consumption and trampling(Goel & Sharma, 2021). The Asian elephant caused the highest damage, followed by the wild pig and the Indian crested porcupine(Jayson, 2013). In the Koshi Tappu area, 96 percent of respondents reported conflicts with wild animals, with rice being the most affected crop. Wild elephants were identified as the main culprits(Jayson, 2013). To mitigate conflicts, respondents suggested building concrete walls around affected areas (Thapa, 2010). In the Buffer Zone villages of Bardia National Park, wildlife crop depredation was influenced by various factors, and households incurred annual losses of rice, wheat, and maize(Ghimire, Devkota, Dhakal, & Upreti, 2022).

Damage to crops has a significant impact on livelihood conditions, leading to rural-to-urban migration as a key strategy in rapidly developing low and middle-income countries. This approach is seen as crucial for strengthening rural livelihoods and adapting to climatic risks (Adger et al., 2015; Warner & Afifi, 2014). The concept of livelihood strategies has gained traction in development planning, aiming to reduce poverty by addressing social, political, and economic processes across different geographical locations and scales (Beall & Kanji, 1999; Ellis, 2000, 2003; Rakodi & Lloyd-Jones, 2002; Whitehead, 2002).

Migration of people from rural areas (GAHUN) to semi-urban areas (BESI) is a common trend in Nepal. Historically, people used to reside in GAHUN and cultivate crops in BESI. However, the current trend shows a significant migration from GAHUN to BESI across Nepal. GAHUN areas typically have older residents and more trees, making them more vulnerable to wildlife damage. While previous studies have focused on the extent of crop damage caused by wild animals, there is a lack of research on how people cope with this issue, the effects on social and economic factors caused by wildlife, and the best solution methods for these problems.

Objectives

This paper aims to investigate the experiences and livelihood conditions of villagers in GAHUN who have migrated and those who have stayed. It also seeks to assess the effectiveness of crop protection methods against animals, particularly monkeys, by comparing the strategies employed by migrants and non-migrants. Additionally, the study aims to explore grassroots solutions to mitigate the impact of monkeys on crops.

Methodology

Study Design and Setting: A qualitative study was conducted in Likhu-6 in October and November 2023, during the Dashain and Tihar festivals. The study aimed to assess the push factors leading to migration and the coping strategies of people who have limited options in the Nuwakot population. Likhu Rural Municipality was established in 2017 (2073 BS) as a local government in Nepal, formed by merging five VDCs. It covers an area of 47.88 square kilometers with a population of 16,852 people in 3,629 households, divided into 6 wards (Village Profile, 2023).

Interview Guideline: The semi-structured interview guideline was developed by the researcher. The guides were tested in Ward No. 5 of Likhu Rural Municipality with a different population before minor adjustments were made based on feedback from the team.

Participant Recruitment: The study included Nepalese residents aged 18 and above from Likhu Rural Municipality Ward No. 6. Purposive sampling was used to select 18 individuals, with 10 residing in their usual place and 8 who had migrated due to disasters or monkey-related issues. Data collection was stopped based on data saturation.

Interview Process: Interviews were conducted from October to November 2023. Participants were verbally informed about the study's purpose, recruitment criteria, process, risks, benefits, confidentiality, and data usage. Only those who provided verbal consent were included, and participation was voluntary. Participants were also informed of their right to withdraw at any time without explanation.

Data Analysis: Audio recordings were transcribed in Nepali by the interviewers and then translated into English. Excel was used for a framework and thematic analysis. The second author familiarized themselves with the data, developed a thematic framework, and indexed and charted the interviews based on the finalized framework for interpretation.

Strengths and imitations: This study has limitations as it is based on residents of Likhu Rural Municipality Ward No. 6, which may limit the generalizability of the results to the entire population of Nepal. Additionally, the study was conducted by an independent researcher without any registration and ethical clearance.

Results

Wildlife, especially monkeys, can significantly impact human migration and livelihoods, especially in rural areas where agriculture is the main source of sustenance. In the Nuwakot District of Nepal, farmers often face challenges from wildlife, particularly monkeys that damage crops and reduce agricultural productivity. The presence of wildlife, such as monkeys, can force farmers to migrate to urban areas in search of alternative livelihoods due to crop losses. This interaction between farmers and wildlife affects both migrant and non-migrant farmers, as they may need to invest in protective measures or adjust their agricultural practices to minimize wildlife damage.

Crops Differential in GAHUN and BESI

The main crops grown in the study area include paddy, maize, vegetables, potatoes, millet, and wheat. There are differences in the types of crops grown between GAHUN and BESI. BESI typically cultivates a greater variety of vegetables and crops, while GAHUN focuses on planting crops that are less susceptible to damage by monkeys, with paddy being the least affected crop. Participants noted that GAHUN has more fertile soil and is more conducive to vegetable cultivation compared to BESI. Residents of GAHUN shared their perspectives on this matter:

> *"In the past, we used to grow a variety of vegetables in our village, such as potatoes, garlic, and onions. However, we now only plant paddy, which has also been destroyed by monkeys, but not as severely as the vegetables and maize." - GAHUN participant*

Farmers with enough family members to chase monkeys plant vegetables in their GAHUN, while those with fewer family members did not plant any vegetables. A farmer with few family members expressed:

> *"I stopped farming maize and curry because the monkeys would destroy them, causing stress. Now, I only plant paddy. I don't have enough members to watch over the monkeys." - GAHUN participant*

Another participant mentioned that they will be planting both vegetables and grains to feed their large family. They also expressed the need to protect their crops from monkeys. Framers with large families expressed:

> *"I live in GAHUN with my husband, daughter, four young sons, and two daughters-in-law. We cultivate vegetables, paddy, and wheat in our village. If monkeys approach our fields, we will drive them away." - GAHUN participant*

Participants reported that when they were in GAHUN, they used to buy vegetables and grains from BESI and other places. However, upon migrating to BESI, they began cultivating more land for business purposes and selling their produce in the market and to people in GAHUN. This led to the land in GAHUN being left uncultivated. A participant who migrated to BESI described their experiences:

> *"When I lived in GAHUN, I used to buy vegetables and maize. After moving to BESHI, we started planting essential vegetables and also grew potatoes for commercial purposes. In BESI, we didn't have to worry about monkeys, unlike in GAHUN where we were constantly stressed about protecting our vegetable crops from them." - BSI participant*

Crops Destruction Experiences

Participants expressed their stress when monkeys destroyed their crops. Lack of manpower at home forces them to find ways to address the monkey problem, often resulting in crop loss. Participants expressed disappointment at not being able to harvest their crops after investing time and effort in their fields, leading them to purchase grains from others. One participant described their situation as follows: *"I am extremely stressed about the destruction of my crops. Over the past three years, I have been planting wheat on my farm. Unfortunately, when I am away from home, my family members are unable to scare away the monkeys that come and wreak havoc on my crops. A group of monkeys lingers on my farm all day, destroying the entire wheat crop. This has prevented me from being able to harvest the crops. As a result, I had to burn the dried wheat grass and replant it with paddy. I also had to purchase wheat for my household." - GAHUN participant*

Residents of the GAHUN area have faced challenges due to monkeys raiding their crops in their absence, leading to damage and the need to purchase produce from elsewhere. One participant expressed frustration over the destruction of their vegetables, emphasizing the urgency of finding a solution to this issue.

> *"When I lived in GAHUN, I used to cultivate potatoes and seasonal vegetables. I would spend most of my day tending to my vegetable farm. One day, the monkeys were absent, so I returned home early in the evening. While having my meal, I heard the monkeys and rushed to my farm. To my dismay, the monkeys had destroyed my entire potato crop, leading to my family and me crying for an hour. This was the most devastating encounter with monkeys, prompting me to purchase potatoes from other sources. Now, residing in BBESI, I no longer have to fret about monkey-related issues." BESI participant*

Participants mentioned facing difficulties in participating in social and religious activities due to monkeys in their community. They noted that attending events often resulted in crop and vegetable damage, with monkeys even entering homes and consuming stored food. One participant shared their experience:

> *"Last year, there was a wedding in my village. My whole family went to assist with the household chores. We were occupied there all day. Upon returning home in the evening, we found that all our vegetables and wheat had been ruined, and a monkey had consumed the rice we had stored. I noticed that the rice packet was torn, so I had to discard it all." -GAHUN participant*

Reason for Changing Usual Place of Residence

People often change their usual living places due to various push factors. Participants reported that monkeys not only affect their farms but also disrupt their food storage and prepared meals. One participant shared their migration experience, citing monkeys as a primary reason for moving.

> *"While working on our farm, my daughter, feeling bored at home, cooked rice and curry and brought it to us. However, when we finished our morning work and went to have our meal, we discovered that the rice pot was empty and the entire pot of curry had spilled on the floor. Since we had other tasks to attend to during the day, we didn't have time to cook another meal. As a result, we went without food for the entire day. It was then that I decided to move from GAHUN to BESI." - BESI participant*

Many participants reported that they own more land in GAHUN compared to BESI. However, they mentioned facing difficulties in transporting food and vegetables from BESI to GAHUN. They expressed that if they could grow vegetables in GAHUN, they would prefer not to migrate to other areas with less land. One participant shared their migration experience, citing the challenge of transporting food from BESI as a primary reason for moving.

> *"I own more land in GAHUN than in BESI. In GAHUN, I have around 30 Ropani of land, while in BESI, I only have 1 Ropani where I currently reside. I decided to migrate to BESI due to the monkey problem in GAHUN. In BESI, I plant essential vegetables and then transport them to the village. Despite having less land in BESI, I find it more convenient for my agricultural activities compared to GAHUN."- BESI participant*

However, individuals who had no alternative but to remain in GAHUN chose not to relocate to BESI. The limited opportunities for selling land in GAHUN were hindered by issues with monkeys. People were reluctant to migrate to the GAHUN region from other areas due to the limited land-selling prospects. Financial constraints prevented people from purchasing land in BESI, leading them to stay in the GAHUN area.

> *"I am unable to leave this place because I do not own land in BESI. Those who own land in BESI have already left this place. I am still here because I have no other options. People who migrated to BESI abandoned their land, leaving it uncultivated, and started planting trees. As the trees grew, more suitable habitats for monkeys were created. However, I am unable to leave as no one is willing to buy my land, and I lack the funds to migrate without selling it. Therefore, I remain here. If I can sell my land, I too will migrate to BESI."- GAHUN participant*

Livelihood Impact

Livelihood refers to how individuals secure the necessities of life, such as food, water, shelter, and clothing. It is how a person or a family earns money to support themselves. In

GAHUN, participants face more challenges in securing their livelihood compared to BESI participants. Participants have observed improvements in the livelihood conditions of others but feel unable to make changes themselves due to limited access. They remain in vulnerable conditions without the means to improve their livelihoods. One participant expressed this sentiment as:

> *I am from the GAHUN community, where we have lived for 5-10 generations. Some members of our community migrated to BESI during a property distribution, but we have remained in GAHUN. Those who moved to BESI changed their economic status by growing cash crops. In GAHUN, we have land but lack opportunities for income generation. Unlike the people in BESI, we do not have regular savings. - GAHUN participant*

Another participant in GAHUN expressed the same sorrow over their unchanged livelihood situation compared to the people in BESI.

> *"I observed that the people in BESI are producing more potatoes, selling them, and saving money. In GAHUN, we are buying vegetables and potatoes from BESI. Their way of life is changing and their standard of living is decreasing compared to our fathers' and grandfathers' generations." - GAHUN participant*

The contract migrant population has altered their way of life compared to nonimmigrant individuals. Migrant participants have expressed their satisfaction and the changes they have experienced as follows:

> *"I am currently residing in BESI, where I am engaged in farming while my son and daughter-in-law manage the business. I moved from GAHUN to BESI a decade ago and have been actively involved in agriculture since then. My son transitioned into the business, and I am pleased with the decision to leave the village and pursue a new livelihood." - GAHUN participant*

Community Dynamic Impact

The social structure and composition of communities have evolved due to Sami-urban migration leading to the emergence of social divisions, a shift in the concept of community from a spatially bounded neighborhood to one defined by interpersonal networks and resource flows. They expressed the lack of people in social work. One participant expressed his fear of emergency:

> *"Over the past 20 years, the number of households in our village has decreased significantly, from over 20 to just 5 or 6 in my neighborhood. We rely on social support for religious rituals, but finding willing participants has become a challenge. While the BESI area used to have more people available for assistance, in GAHUN, only a few remain, making it difficult to manage tasks. Our community is currently grappling with this issue, and I fear the consequences if I or my family members fall ill. With a dwindling population in the village, managing human resources during emergencies is a major concern." - GAHUN participant*

Despite the challenges, the community remains a vital space for upholding shared values, enforcing social norms, and providing essential public services. However, concerns about isolation and loneliness, especially among children, are prevalent among community members. Participants often express worries about the limited opportunities for social interaction and friendship within the community, affecting the social development of children.

> *"When I was a child, I had around 10 to 12 friends my age to work, play, go to school, and learn with. Unfortunately, now only 4 to 5 of us remain in the neighborhood, and the only child close to my son's age is in that household. This lack of children his age has made it difficult for my son to make friends and socialize. I have encouraged him to get involved in the community, but he is hesitant to go out as he doesn't have peers his age. This situation is affecting his social relationships". - GAHUN participant*

Local Economic Impact

In the village, some people have left their land uncultivated leading to decrease in production compared to the previous year. This decline is attributed to the migration of individuals to BESI abandonment of land when they migrated to BESI. This has hurt their economic situation. One participant expressed their situation as follows:

> *"I have more land on GAHUN, but I left it to cultivate this land. My family stays on GAHUN, which provides enough food for the year, and I use it to sell my BESI production. Currently, I am in BESI, where I am selling only a few products. If I can farm on GAHUN, I can earn from my agricultural profession." - BESI participant*

Participants also mentioned the challenge of purchasing daily food items despite having sufficient land in the village. They found it difficult to save money when they had to buy food and vegetables regularly. One participant stated he has struggled to save money because he has to buy food every day.

> *"I used to buy vegetables and grains from BESI because I didn't plant any in my garden. While others may see me as having a job and owning a home, I still need to spend a significant portion of my income on daily necessities. This is because I am unable to farm on my land. However, I do have land, and if I were to plant vegetables on it during my holiday time, I could potentially save money." – GAHUN participant*

Coping from Monkey

To protect their crops from monkey people employ various methods to keep monkeys away from their homes. Participants noted that a particular dog did not chase the monkey because the male monkey had previously attacked the dog. People found it necessary to accompany the dog when dealing with the monkey. Additionally, participants reported that the monkey also targeted females and children. One participant shared their approach to dealing with the monkey:

> *"I have a dog in my home that helps me chase monkeys. Most of the monkeys run away when they see the dog, but some male monkeys do not. Male monkeys tend to be aggressive towards dogs, so I have to accompany my dog when chasing monkeys to prevent any attacks. I spend most of my time on my farm with my dog, protecting my crops from monkeys." - GAHUN participant*

Some respondents reported that they stay from morning to evening to protect their crops. People who are strong and able to chase monkeys can easily drive them away to other farms. One participant expressed their view that he has to be vigilant all day to ensure the monkeys don't destroy my crops.

> *"I used to spend my days from morning to evening near my field. Whenever monkeys approached my field, I would chase them away. Once I chased the monkeys away, they would move on to other farms where there were no people to chase them. This made me feel relieved and I would continue to chase them whenever they came near me. I am now free from the monkeys." - GAHUN participant*

Participants also reported that they had no other option but to stay in the village. If they do not have time to chase monkeys, they are satisfied with the remaining grain. They do not have any other solutions to the problem. One participant expressed it as:

> *"There was no other option but to stay on this island, so I decided to plant a few vegetable crops near my home. I have one farm located far from my home that I left uncultivated because monkeys would damage the crops if I planted grains there. To make up for this, I farmed on other people's land and had to give half of the harvested grain as payment, despite feeling content." - GAHUN participant*

Suggested Solutions

Researchers asked participants for their thoughts on solutions to the monkey problem. Participants from the study area suggested various strategies, including deforestation, preserving monkeys in their natural habitat, vasectomies for monkeys, limiting the number of house dogs, and promoting unity among villagers to deter monkeys. Participants from the study area expressed their willingness to keep one monkey per household if it ensures the safety of their crops.

> *"In my opinion, if all villagers chase and catch monkeys, there are around 500-600 households here. If each person preserves one monkey in their house, the monkey population in the forest would be depleted, leading to crop damage. I am willing to keep a monkey in my house, and other villagers are also willing to do the same. By safeguarding monkeys in our homes, we can protect our crops and cultivate vegetables on our farms, bringing happiness to all." - GAHUN participant*

Participants also mentioned that the monkey population is growing steadily due to natural births. They recommended implementing family planning methods as a possible solution. One participant shared their perspective:

> *"Monkeys reproduce rapidly, leading to a significant increase in their population in forests. When I was a child, there were only a few monkeys, and we found it exciting to chase them. However, the current population growth is concerning. Implementing family planning measures could help control the monkey population. If the government does not take action, the increasing number of monkeys could pose a threat to human habitation in the area. It may become necessary to enforce measures such as relocation or population control to manage the monkey population effectively." - GAHUN participant*

Participants also mentioned that having a dog is a solution for dealing with monkeys. They emphasized that if each household has a dog, monkeys would be less likely to come into the village. One participant expressed that Having a dog in every household can help scare away the monkeys.

> *I have a dog in my home that I used to chase monkeys away. If all the villagers in this area had a dog in their homes (there are around 20 households in this village), when the monkeys come, the 20 dogs barking would prevent the monkeys from entering our village. However, other villagers do not want to keep dogs in their homes, so I am unable to do anything about the monkey problem. - GAHUN participant*

Participants also suggested that local governance should encourage the cultivation of cash crops like lemons, which are not destroyed by monkeys. One participant expressed their view as:

> *"If someone gives me a lemon plant, I will plant it on my uncultivated land. I believe that lemon plants are not easily destroyed by monkeys." - BESI participant*

Discussion

Participants in the study expressed stress caused by monkeys destroying their crops, leading them to consider various solutions, including sacrificing their crops. They were frustrated by the inability to harvest their crops and had to buy grain from others despite investing in their fields. Monkeys not only affected their farms but also disrupted food storage and meal preparation, prompting some participants to consider migrating. To protect their crops, people employed various methods to deter monkeys, such as keeping a dog. However, some dogs may not chase monkeys if they have been attacked before. Participants in GAHUN face more challenges in securing their livelihoods compared to those in BESI, limiting their ability to make improvements. Social structures have changed due to semi-urban migration, leading to social divisions and a shift in the concept of community. Decreased production and economic challenges arise from abandoned land when migrating. Participants also struggled to purchase daily food items despite owning land in the village, making it difficult to save money.

The livelihood impact consists of the same wildlife, protected areas can have diverse impacts on nearby communities, affecting their livelihoods and vulnerability. While PAs

can offer economic benefits, infrastructure, and ecosystem services, they can also restrict land use and access to resources, potentially leading to increased poverty and human-wildlife interaction (HWI)(Pereira, Rosalino, Ekblom, & Santos, 2024). HWI, such as crop-raiding or livestock predation, can harm livelihoods and drive communities to risky behaviors like poaching, exacerbating conflicts (Cooney, Roe, Dublin, & Booker, 2018; Pereira et al., 2024). Factors like gender, age, education, and wealth can influence how households cope with or prevent HWI impacts. Effective wildlife management and livelihood development strategies should be context-specific, involving communities and respecting their cultural values, knowledge, and governance (Biggs et al., 2014; Chambers, Conway, & Studies, 1992).

The damaged crops impact in economic conditions of people, similar results were found in communities near buffer zones and community forests often encounter crop damage by wild animals. Crop losses from animal raids can directly reduce food supplies and contribute to food insecurity, particularly for communities' dependent on subsistence farming. (Raphela & Pillay, 2021). Decreased production and economic challenges arise from abandoned land when migrating. Participants also struggled to purchase daily food items despite owning land in the village, making it difficult to save money. Crop raiding by animals can result in significant income losses for subsistence farming communities. One study estimated a potential income loss of approximately $150 per year due to crop damage, representing about 17% of the total income for the affected community(Raphela & Pillay, 2021).

Migration can have both positive and negative impacts on the social cohesion and integration of host communities. However, evidence suggests that in the long term, migration does not significantly impact local neighborhood cohesion(Saggar, Somerville, Ford, & Sobolewska, 2012). On the negative side, an influx of migrants may initially cause locals to withdraw from collective life and close off their social networks, as predicted by Putnam's 'Hunkering Down' theory (Fajth, Bilgili, Loschmann, & Siegel, 2019).

One suggested solution to address the issue of the increasing monkey population is to keep a monkey in each household and implement family planning measures for monkeys. This aligns with Nepal's government policy aimed at controlling the monkey population. The Agriculture, Cooperative, and Natural Resources Committee, in collaboration with veterinarians and forest rangers, is actively discussing and addressing concerns raised in parliamentary meetings regarding monkey-related issues and the necessity for control measures (Republica, 31 Jan 2024). By implementing family planning measures for monkeys, the population growth can be controlled, and as monkeys age, their numbers may naturally decrease. Other research has found that the crop production strategy proposed in China requires farmers to improve their knowledge and adaptability, as well as promote cohabitation between humans and wildlife (Li & Von Essen, 2021). It is essential to explore and implement more effective and friendly methods to reduce conflicts and ensure the continued coexistence of humans and non-human primates, or to keep and preserve monkeys in their natural habitats (Wiafe & Arku, 2012).

Conclusions

Farmers in the study area challenges grappling with posed by the increasing monkey population, resulting in crop damage and income loss. Consequently, many farmers are compelled to relocate to urban areas in search of alternative livelihoods. The presence of monkeys in agricultural areas has led to decreased crop yields, causing financial strain on farmers and prompting them to abandon their farms for urban employment opportunities. This migration of farmers has not only affected the agricultural sector but also impacted the local economy and community dynamics. Various measures need to empliment to address the issue of farmer-monkey interactions, including deterrent methods and community-based solutions. However, the problem persists, highlighting the need for sustainable, long-term solutions to mitigate the impact of monkeys on farmers' livelihoods. By addressing the challenges faced by farmers and implementing effective strategieslocal government can work towards establishing a harmonious coexistence between farmers and monkeys in the study area. One potential solution could involve each household keeping one monkey, which could help protect crops and reduce the overall monkey population. Another solution is for local governance to promote the cash crops such as lemons and other crops that are less susceptible to damage by monkeys.

Conflict of interest: The authors alone are responsible for the views expressed in this article and do not represent their affiliated institutions' views, decisions, or policies. The authors declare that there is no conflict of interest.

Author contributions: Barsha was responsible for data collection, analysis, and interpretation of results, and Bishnu was responsible for the guidelines of all work. Both of the authors write and review the final manuscript.

Disclaimers: The views expressed in this publication are solely those of the authors and do not necessarily reflect the views of their affiliated institutions.

Acknowledgment: We would like to thank all the respondents who participated in the **qualitative** survey and special thanks go to the Journal of Population and Development, Department of Population Studies, Patan Multiple Campus, Patan Dhoka, Lalitpur for acceptance of our manuscript.

References:

Adger, W. N., Arnell, N. W., Black, R., Dercon, S., Geddes, A., & Thomas, D. S. (2015). Focus on environmental risks and migration: causes and consequences. *Environmental Research Letters, 10*(6), 060201.

Beall, J., & Kanji, N. (1999). *Households, livelihoods and urban poverty*: University of Birmingham, International Development Department.

Biggs, E. M., Boruff, B., Bruce, E., Duncan, J., Haworth, B. J., Duce, S., . . . McNeill, K. (2014). *Environmental livelihood security in Southeast Asia and Oceania: a water-energy-food-livelihoods nexus approach for spatially assessing change. White paper*: IWMI.

Boulton, A. M., Horrocks, J. A., & Baulu, J. (1996). The barbados vervet monkey (Cercopithecus aethiops sabaens): Changes in population size and crop damage, 1980–1994. *International Journal of Primatology, 17*, 831-844.

Castelli, F. (2018). Drivers of migration: why do people move? *Journal of travel medicine, 25*(1), tay040.

Chambers, R., Conway, G., & Studies, B. I. o. D. (1992). *Sustainable rural livelihoods: practical concepts for the 21st century* (Vol. 296): Institute of development studies Brighton.

Cooney, R., Roe, D., Dublin, H., & Booker, F. (2018). Wildlife, wild livelihoods: Involving communities in sustainable wildlife management and combatting the illegal wildlife Trade. *Combating illegal Wildlife Trade*.

Dubey, S., & Mallah, V. (2015). Migration: causes and effects. *The Business & Management Review, 5*(4), 228.

Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*: Oxford university press.

Ellis, F. (2003). A livelihoods approach to migration and poverty reduction.

Fajth, V., Bilgili, Ö., Loschmann, C., & Siegel, M. (2019). How do refugees affect social life in host communities? The case of Congolese refugees in Rwanda. *Comparative Migration Studies, 7*(1), 1-21.

Ghimire, S., Devkota, D., Dhakal, S. C., & Upreti, B. R. (2022). Major Cereal Crops Damage by Wildlife: A Case Study from Chitwan National Park, Nepal. *Agriculture Development Journal*, 14-25.

Goel, S., & Sharma, R. (2021). *Assessment of crop damage by wild animals and renewable energy interventions-A case study from coastal Odisha, India*. Paper presented at the 2021 1st Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology (ODICON).

Green, R. E., Cornell, S. J., Scharlemann, J. P., & Balmford, A. (2005). Farming and the fate of wild nature. *Science, 307*(5709), 550-555.

IMRAN, M., BAKHSH, K., & HASSAN, S. (2016). Rural to urban migration and crop productivity: evidence from Pakistani Punjab. *Mediterranean Agricultural Sciences, 29*(1), 17-19.

IOM, 2019: https://publications.iom.int/books/migration-nepal-country-profile-2019 village Profile: https://likhumunnuwakot.gov.np/

Republican: https://myrepublica.nagariknetwork.com/news/151183/

Jayson, E. (2013). Assessment of crop damage by wild animals in Trichur district, Kerala: KFRI Research Report.

Kumar, B. (2004). Migration, poverty and development in Nepal. *Asian and Pacific migration journal, 13*(2), 205-232.

Lee, E. S. (1966). A theory of migration. *Demography, 3*, 47-57.

Li, W., & Von Essen, E. (2021). Guarding crops from monkey troops: farmer-monkey interaction near a nature reserve in Guangxi, China. *Environmental Sociology, 7*(1), 12-24.

Pereira, J. G., Rosalino, L. M., Ekblom, A., & Santos, M. J. (2024). Livelihood vulnerability and human-wildlife interactions across protected areas. *Ecology and Society, 29*(1).

Rakodi, C., & Lloyd-Jones, T. (2002). Urban livelihoods: a people-centred approach to poverty reduction. *London: Earthscan/DFID*.

Rao, K., Maikhuri, R., Nautiyal, S., & Saxena, K. G. (2002). Crop damage and livestock depredation by wildlife: a case study from Nanda Devi Biosphere Reserve, India. *Journal of environmental management, 66*(3), 317-327.

Raphela, T. D., & Pillay, N. (2021). Quantifying the nutritional and income loss caused by crop raiding in a rural African subsistence farming community in South Africa. *Jàmbá: Journal of Disaster Risk Studies, 13*(1).

Saggar, S., Somerville, W., Ford, R., & Sobolewska, M. (2012). The impacts of migration on social cohesion and integration. *Final report to the migration advisory committee*.

Thapa, S. (2010). Effectiveness of crop protection methods against wildlife damage: a case study of two villages at Bardia National Park, Nepal. *Crop protection, 29*(11), 1297-1304.

Warner, K., & Afifi, T. (2014). Where the rain falls: Evidence from 8 countries on how vulnerable households use migration to manage the risk of rainfall variability and food insecurity. *Climate and Development, 6*(1), 1-17.

Whitehead, A. (2002). Tracking livelihood change: Theoretical, methodological and empirical perspectives from north-east Ghana. *Journal of Southern African Studies, 28*(3), 575-598.

Wiafe, E. D., & Arku, F. S. (2012). Victims' Perspectives of Lowe's Monkeys'(Cercopithecus campbelli lowei) crop raiding events in Ghana: A case of Boabeng-Fiema Monkey Sanctuary. *Journal of Biodiversity and Environmental Sciences, 2*(2), 1-8.