



e-ISSN: 2456-6632

This content is available online at AESA

Archives of Agriculture and Environmental Science

Journal homepage: journals.aesacademy.org/index.php/aaes



ORIGINAL RESEARCH ARTICLE



Socioeconomic status of the people and their attitude toward conservation in Parsa National Park, Nepal

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ARTICLE HISTORY

Received: 28 September 2023

Revised received: 04 November 2023

Accepted: 17 November 2023

Keywords

Human-wildlife conflict

Parsa National Park

Respondents attitude

Socioeconomic status

Wildlife conservation

ABSTRACT

This study aims to investigate the socioeconomic status of communities living in proximity to a park and their attitudes towards conservation. The questionnaires used in this study were carefully designed to achieve the desired research objectives. The majority of people living adjacent to the park depend on agriculture and livestock farming for their livelihood. People also benefit from the forest's resources in many aspects. People's perceptions of wildlife conservation vary widely and are influenced by various factors such as economic status, cultural background, education status, awareness level, and personal experiences. Respondents with higher education status have been found to exhibit positive attitudes towards conservation. Results have shown that 70% of respondents who live near the park claim that coexistence with wildlife is becoming increasingly problematic. While the respondents are pleased with the practical conservation strategies that have contributed to the rise in wildlife populations, they are concerned about the increasing conflicts with wildlife. Crop raiding is a serious problem in several villages located near dense forests. Livestock depredation is another major issue that has been observed in the same area. Wildlife has been known to attack and kill livestock, causing a significant loss of income for the farmers in these villages. Many people feel that the lack of effective compensation mechanisms has led to a sense of antagonism towards both authorities and conservation efforts as a whole. The importance of effective compensation mechanisms in conservation efforts cannot be overstated. Some of the respondents have noted that the development of ecotourism has the potential to mitigate human-wildlife conflict. Ecotourism provides jobs, income, and other economic opportunities that help improve their socioeconomic status and, in turn, promote conservation.

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Citation of this article: Parajuli, K., Adhikari, S., & Subedi, S. (2023). Socioeconomic status of the people and their attitude toward conservation in Parsa National Park, Nepal. *Archives of Agriculture and Environmental Science*, 8(4), 510-515, <https://dx.doi.org/10.26832/24566632.2023.080408>

INTRODUCTION

Parsa National Park, previously known as Parsa Wildlife Reserve, is one of the largest protected areas in the country and is home to many endangered and globally threatened flora and fauna. In 1984, it was gazetted as a wildlife reserve to preserve the habitat for endangered wild Asian elephants (*Elaphus maximus*), Bengal Tiger (*Panthera tigris*), Gaur (*Bos gaurus*), and a

variety of other fauna. Later, it was declared a national park in 2017. It is one of the important wildlife habitats, covering a total area of 627.39 km² covering parts of the Parsa, Bara, and Makwanpur districts (PNP, 2018). According to (PNP, 2018), the Park's altitude ranges from 100 to 950 meters. Primarily tropical and subtropical species make up the forests. Sal forests make up over 90% of forest vegetation. Many residents in Parsa National Park's buffer zone and surrounding areas rely on farm-

ing and livestock raising for their livelihoods.

Crop raiding is one of the serious issues facing all the farmers living nearby protected areas, which directly influences their economic status. The most frequent reasons for conflict with wildlife include crop raiding, property destruction, animal predation, and human casualties (Ogra and Badola, 2008). Human interaction with wildlife has been a well-known issue since ancient times, and people living close to wildlife, particularly in regions with high biodiversity, are well aware of it. Conflict risk is influenced by a variety of social and ecological factors at different scales. Growing human populations and related advances in agriculture, land and resource use, technology, transportation, and energy are some of the most significant underlying sources of conflict (Nyhus, 2016). The socioeconomic and cultural status of people and their awareness levels play an important role in conservation. It is generally recognized that the socioeconomic condition of the local community significantly affects the activities they engage in and the impact on many forms of interactions with their natural resources. Understanding the social influences on how people use natural resources continues to be crucial for resource conservation (Olawoye, 1996). Properly addressing the issue of human-wildlife conflict is crucial for the long-term success of wildlife conservation efforts (Madden, 2004). In addition, knowing more about local people's usage of forests is an extremely important factor that could enhance the planning of land use and minimize the conflict with them (Meijaard *et al.*, 2013). People of different religions, castes, and ethnic groups were found living in the area whose main sources of income were found to be agriculture, livestock farming, and remittance (Parajuli, 2020). People's attitude towards conservation is directly linked to the cost and benefits they get from the Parsa national park as well as their level of awareness of the importance of nature and biodiversity conservation (Thapa, 2016). Benefits such as recreational activities, environmental protection, economic advantages, or the utilization of resources for livelihoods as viewed by locals are frequently associated with positive attitudes toward protected areas (Heinen 1993; Baral and Heinen 2007; Allendorf, 2007). Similarly, negative attitudes are also linked to resource restrictions, economic losses, and human tragedies (Heinen, 1993; Allendorf, 2007). A common misconception is that residents cannot receive protected areas benefits; they are just for the government or outsiders (Allendorf, 2007). Therefore, special attention needs to be given to increasing the level of awareness through various educational and outreach programmes. The farmer's only source of livelihood is the crops he planted. A farmer's seasonal work is quickly destroyed by the herd of elephants and other animals, who also steal the food the farmer was hoping to sustain his family with. This will go beyond what is acceptable, and animal killing in retaliation follows. Therefore, a detailed study of the socioeconomic status of people living in the periphery of the national park, their dependency on the forest and their interaction with wildlife either positive or negative, and their perspective towards wildlife conservation is essential to develop a proper conservation strategy. It is also

necessary to evaluate the economic loss of the people that takes place by human-wildlife conflict.

In general, the aim of this study is to know a better understanding of the socioeconomic factors influencing wildlife conservation in Parsa national park, Central Nepal. This will be achieved through the respondent's usage levels of natural resources including firewood, animal product, timber collection and NTFP collection. The scientific study on the loss of their economy by conflict with wildlife and the natural resources they gain from the forest will help to extract their perspective towards wildlife conservation in Parsa national park. The research will also try to influence the local stakeholder for the promotion of ecotourism which helps to improve the socioeconomic status of people and ultimately help in conservation.

MATERIALS AND METHODS

Study area

Studies in general were carried out on the outskirts of Parsa National Park (Figure 1). The Parsa National Park is situated in the Makwanpur, Bara, and Parsa districts of Nepal's lowland Terai area. Along a 35 km western boundary, it has a direct connection to Chitwan National Park (Lamichhane *et al.*, 2018). The PNP originally covered 499 km², but in 2015 was expanded to 627.39 km² in order to protect the habitat for the Asian Wild Elephant and other plants (DNPWC, 2018). It was the largest Wildlife Reserve of Nepal before declaring it as a National park. Valmiki Tiger Reserve in the Indian state of Bihar is adjacent to it on the south. The park is located between 100 and 950 meters above mean sea level (DNPWC, 2019). From north to south, the Park can be roughly split into the Churia (Siwalik), Bhabar-Terai, and inner-Terai topography regions (DNPWC, 2019). Because the soil mainly consists of gravel and conglomerates, erosion is a possibility. The hills have an extremely rocky surface with many gullies and dry streambeds. Clear skies and pleasant temperatures are available from October through December. At night, the temperature can drop as low as 0°C. In the spring (January to March), temperatures rise and water sources become scarce. The days get hot and muggy throughout the summer (April to June), when temperatures might reach 40°C.

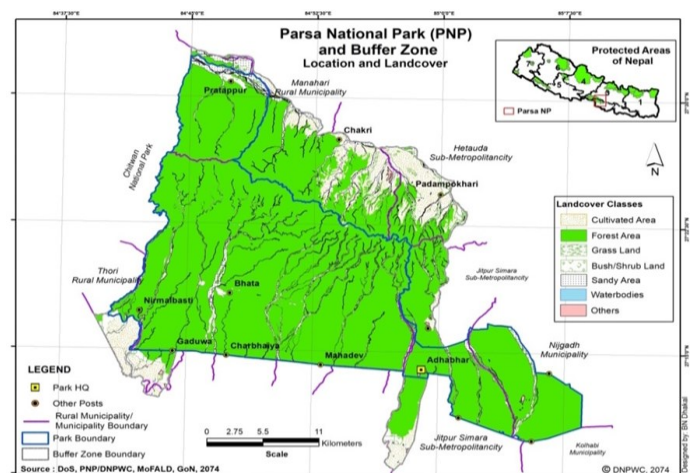


Figure 1. Showing study area.

Methodology

The study was conducted in the communities around the Parsa National Park in October 2017 to January 2018. The main affected area by human-wildlife conflict surrounding the park was selected for the survey. Villages like Ramuli-Pratappur, Dillipur, Lamitar, Masine, Chakari-Makari, Sukaura and Padampokhari of Makwanpur district and Nirmalbasti, Subarnapur, Shikaribas, Charbhaiya, Gaduwa, Sakhuwa-parsauni, Jhapra, Biruaguthi, Adabar and Tagiabasti of Bara and Parsa district. The questionnaire survey was conducted to understand the socioeconomic status of the people, the extent of human-wildlife conflict and their perception towards wildlife conservation. A total of 1000 individuals were chosen at random from a variety of professions, including local farmers, key informants, community forest user organizations, herders, etc. Questionnaires for the interview were categorized into different sections that covered the data regarding the general background of the people socioeconomic condition of people, people's dependencies on national park resources, associated human-wildlife interaction (both positive and negative interaction), ways implemented by local people for mitigating conflicts and their attitudes towards conservation etc. The questionnaire primarily aimed of exploring the local people's attitudes towards conservation and their socioeconomic status.

Along with conducting interviews, statistics kept in the district forest office and park headquarters for the previous ten years were also examined. In addition, a range of literature on the interactions between locals and wildlife was evaluated. Three researchers were involved in data collection. The Statistical Package for the Social Sciences (SPSS) was used to examine the data collected to look for any relationships between socioeconomic variables and conservation attitudes. Descriptive statistics were used and presented in the form of tables, graphs, charts, and pie charts.

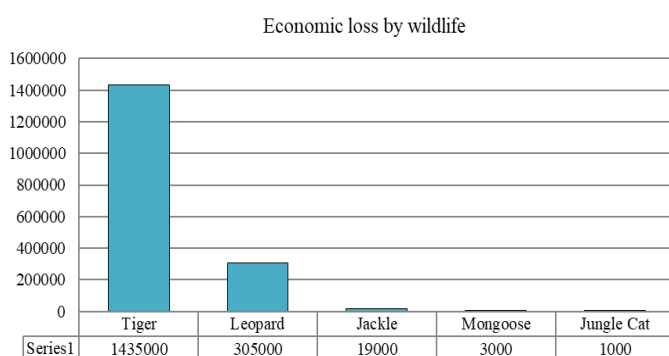


Figure 2. Monetary value of economic loss due to livestock depredation by wildlife.

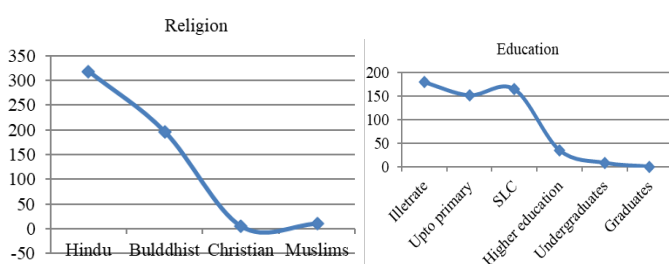


Figure 3. Religious and educational status.

RESULTS AND DISCUSSION

The results of this study are shown in Figures 2-5. The sample comprised 1000 people surveyed from rural settlements surrounding the Parsa national park. 59.69% of respondents were male and 40.30 % of respondents were found female. There was no significant correlation existed between wildlife conservation awareness level and gender. The population occupational structure showed two dominant occupations: Agriculture and livestock farming and remittance, including other sources of income like business tourism, cottage and small industry, collection of non-timber forest products (NTFPs), government and private sector service and labor. Respondents indicated that their primary occupation was farming and raising animals, which accounted for 65% of their total income and served as their main source of support. For their subsistence, people grow a variety of crops including rice, wheat, maize, millet, mustard, tobacco, soybeans, potatoes, and others. Remittances include the second major source of income that made up 19% of the livelihood (Figure 5). People of different varieties of castes and cultures were found living in the area. Four major religious categories were identified. Hindu is followed by 60.11% of the total sample followed by Buddhism 37%, Islam 1.9% and Christianity 0.9%. A total of 48% of respondents, including Gurung, Magar, Tamang, Newar, and Chepang, identified as ethnic migrants; It was determined that 34% of the population were hill migrants, including Brahmins, Chhetri, and Thakuri; 12% were Terai natives, including Tharu, Bote, Darai, and Mushahar; 3% were Dalits; and 3% were Madhesi, comprising Yadav, Shah, etc. The primary source of fuel for cooking for 80% of the respondents was firewood. In a similar manner, electricity, kerosene, biogas, and cylinder gas were each utilized. According to the population's educational status, 33% of the population is illiterate overall, followed by 26% of people with primary education, 30% of people with merely SLCs, 7% of people with intermediate education, and only 4% of people with university degrees (Figures 3 and 4).

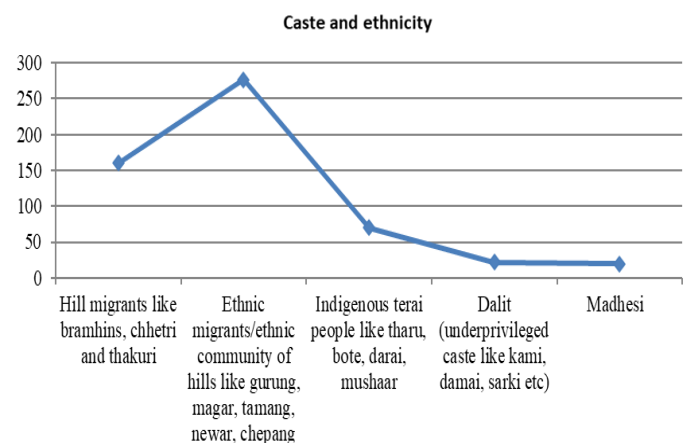


Figure 4. Caste and ethnicity of respondents in the study area.

Source of income/ occupation

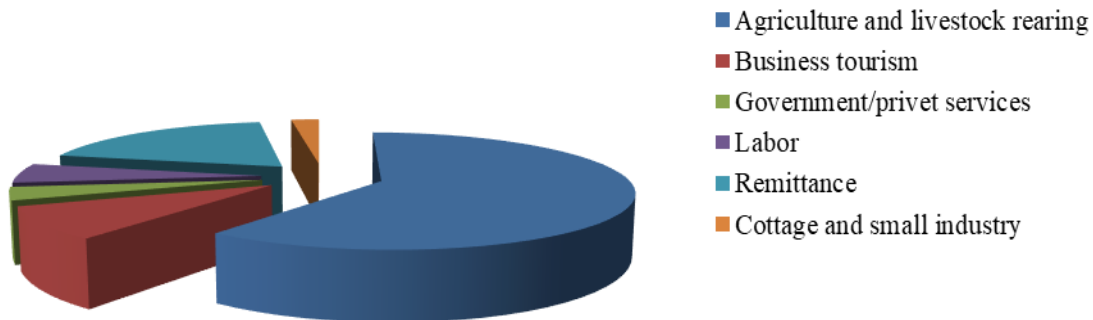


Figure 5. People's sources of income.

People's perception towards wildlife conservation was found to vary widely. It was found to depend upon different kinds of socioeconomic variables like their economic status, cultural background, education status and awareness level and personal experiences etc. Socioeconomic status can play a significant impact on conservation efforts and outcomes that can shape the success or failure of conservation initiatives. According to the findings, education, age, gender, and whether or not respondents had worked for a national park were the key factors influencing conservation views (Tomievi *et al.*, 2010). There was a correlation exist between literacy level and conservation awareness among the respondent. The P value for the correlation between conservation awareness level and education level was 0.032, and the data showed that of the people that went to college, 100% of them were very aware of wildlife conservation. This showed that person with higher education status shows positive attitudes towards conservation. They have a greater awareness and understanding of conservation issues. Similar result was observed by (Shrestha and Alavalapati, 2006). According to them educated respondent and farmers are likely to demonstrate a positive conservation attitude. Some of the respondents were found very unaware of the importance of wildlife and the consequences of wildlife loss and habitat destruction. 12% of the respondent did not fully understand the value of wildlife. So they have very less willing to support conservation. It shows the importance of education for conservation. By educating people, we can promote a better understanding of the value of wildlife and the threats facing it. This, in turn can lead to greater efforts to protect and conserve wildlife for future generations.

People with strong economic conditions had a positive inclination towards conservation but poor people were not so happy with wildlife conservation. Data from social surveys show that the area is dominated by poor, underprivileged ethnic groups who depend upon forest resources directly and indirectly. People collect fodder, firewood, timber, and non-timber forest product like medicine, vegetables etc. from the forest. According to (Shrestha and Alavalapati 2006), households with low socioeconomic status and a higher reliance on the Koshihappu Wildlife Reserve for raw resources like firewood and fodder are more likely to have a negative attitude toward conservation. Similarly, people with higher incomes showed a greater inclination

towards wildlife conservation. This is possible because wealthier families suffer less from wildlife damage compared to poor ones (Dhungana *et al.*, 2016). People think their economic situation will never get better because of livestock depredation, agricultural damage and human fatalities and injury by wildlife. A total of NRs. 17, 63,000 economic losses were reported due to livestock depredation from 2067 -2074 by wildlife. Similarly a total of NRs. 7,03,000 losses were reported due to property damage by Wild Elephant from 2071-2074. Similarly, crop damage of 69.09 ha of land was reported in 2073-2074. 95% of the respondents agreed that the wildlife population is rising day by day due to effective conservation strategies but concurrently they were unhappy because of increasing conflict with wildlife.

Respondents residing in the developed areas have positive attitudes towards conservation but those residing in rural areas had experienced conflict frequently. So those rural respondents had increased negative attitudes towards wildlife. Hasan and Csányi (2023) demonstrated that locals' attitudes varied based on the residential area where they lived; in the rural area closer to the forest and with more experience with wildlife, they had negative attitudes toward wildlife. People have a perception that forest resources help them in many aspects like pure drinking water, fresh air, fuel, medicine etc. but at the same time they were attacked by wildlife more frequently. Wildlife enters the village at night and depraves their livestock and crops. People saw wildlife as a threat to their livelihood, personal safety and economy, particularly around the jungle where human-wildlife conflict is commonly seen. So, those people showed less affinity to support wildlife conservation. Crop raiding was the most common problem in the area followed by property damage and threats to people. Significant quantities of crop raiding problems were seen in Ramauli-Pratappur, Thori, Subarnapur, Nirmalbasti, Tagiabasti and Sikaribas villages as this area is very close to the dense forest (Parajuli, 2020). Between 2012 and 2018, there were a total of 31 serious wildlife attacks on humans; of these attacks, 11 resulted in fatalities while 20 caused serious injuries (Parajuli, 2020). He has also reported that Elephants and tigers have been involved in human death and more human deaths (73%) have occurred as a result of the elephant attack compared to the tiger. Due to human deaths and injuries from a wildlife attack, retaliation was also recorded. Most respondents felt

compelled to take the time to respond to the reprisal killing record, but 10% of respondents said that wildlife was killed in retaliation (Parajuli, 2020). Wild boars, deer, and blue bulls were mostly killed for reprisals as they do crop depreciation. A study found that pets (typically hunting dogs) were primarily used to kill wild animals. It reveals that there is a negative attitude towards conservation in people who face conflicts with wildlife frequently. Human-wildlife conflict and retaliatory killings are global issues that have significant impacts on multiple species (Violaz *et al.*, 2021). Humans have a certain amount of tolerance level that is severely tested during the prolonged period of human-wildlife conflict. With huge economic loss and human fatalities and injuries, there comes a point when communities break (Saurab Babu, 2016).

The coexistence with animals is becoming more difficult day by day, according to 70% of respondents who live adjacent to the park, since the conflict scenario doesn't seem to be resolved. People have complained that government officials give more priority to conservation but not compensation for the victims. People protest about the procedure of the compensation scheme as it is a lengthy and time-consuming process and also the payment amount in comparison to damage was very low. Out of the total, 45% of the sufferer of human-wildlife interaction found not claiming relief support from the authority. They claimed that the natural resources helped them in some way to make up for their loss and that the procedure of receiving compensation is lengthy and time-consuming. Only 40% of the victims were found to report to the concerned authority about the loss and claimed relief support and 15% of the victims were very unaware of the provision of the compensation scheme. Difficult requirements for compensation, complicated compensation procedures, rejection of compensation claims, undervalued payments and irregular compensation and delay of payments were identified as key problems that keep human-wildlife conflicts at high levels (Gloriose, 2019). The lack of effective compensation mechanisms has led to a sense of antagonism among the people towards the authorities and conservation. According to (Thapa, 2016), 64% of respondents felt that Parsa's wildlife damage compensation was insufficient compared to the amount of property damage. (Parajuli, 2020) also reported that the compensation mechanism was not working effectively in the area due to which people's attitudes towards government and conservation were becoming antagonistic. It is important to develop a smart financial compensation system that can help to mitigate the costs associated with these types of incidents (Thapa, 2016). Coordinated and collaborative conservation action plans are therefore required to deliver successful results (Parajuli, 2020) that help to incline people's attitudes towards conservation.

A very few of the respondents have mentioned that the development of ecotourism could help to promote wildlife conservation. They have mentioned that government should promote eco-tourism in their communities like as in Sauraha, and Chitwan, which provides economic, social and cultural incentives for the communities that ultimately help in wildlife conservation. Ecotourism helps in conservation and socioeco-

omic development and also helps in increasing employment and entrepreneurship at a local level (KC *et al.*, 2016). Local communities living near protected areas are more likely to support conservation initiatives when they see tangible economic advantages, such as job opportunities, income from tourism-related businesses, and community development funded through ecotourism revenue.

Results showed that the park is home to several ethnic communities who have been living adjacent to the park for generations and these communities have been exploiting the forest resources for their livelihoods and consider it to be their traditional right. After the declaration of the area as a national park, the government translocates several villages, including Rambori, Bhata, Pratappur, and Ramauli, out of the park. While the move was necessary for the conservation of the park's natural beauty and wildlife, villagers find themselves being deprived of their customary lands who called this area home for generations. This can account for the negative attitude of these ethnic communities toward wildlife conservation in the park.

Conclusion

Socioeconomic status can have a significant impact on the success or failure of conservation efforts. This is because people's economic conditions affect their attitudes towards conservation initiatives. People from various castes, religions and cultural backgrounds were found residing in the area. Population occupational structure showed two dominant occupations: agriculture and livestock farming, as well as remittance. People cultivate various types of crops to sustain their livelihood. People's attitudes towards wildlife conservation were found depending upon different types of socioeconomic variables like economic status, cultural background, education status and awareness level etc. Individuals with higher education status tend to show positive attitudes towards conservation. Similarly, people residing in developed regions have exhibited positive attitudes towards conservation but those residing in rural areas had experiencing conflict frequently and demonstrated an increase in negative attitudes towards wildlife. Due to the increasing number of human deaths and injuries from wildlife attacks and the depredation of crops and livestock, retaliation has become a common response in some communities. So, those people have demonstrated a lack of interest in supporting wildlife conservation. A number of respondents have suggested that the development of ecotourism may play a significant role in mitigating human-wildlife conflict. Ecotourism generates economic benefits for the people that can directly contribute to conservation efforts. Many people feel that the lack of effective compensation mechanisms has led to a sense of antagonism towards both authorities and conservation efforts as a whole. Therefore, proper compensation schemes are essential for effective conservation. Coordinated and collaborative conservation action plans are essential for delivering successful results in conservation efforts. Inclining people's attitudes towards conservation is crucial, as it helps to raise awareness about the importance of protecting our natural environment and wildlife.

ACKNOWLEDGEMENTS

For granting permission and giving more information about human-wildlife conflict, we appreciate the District Forest Office in Makawanpur and the Department of National Park and Wildlife Conservation (DNPWC). Rufford Foundation's support of the initiative is greatly appreciated. We also acknowledge the field assistance provided by Mr Rajeev Acharya, Kamar Rai, and Bhagawan Adhikari. Our sincere gratitude goes to all those who participated in this project, including respondents, military patrolling officers, community forest users, and student and teacher volunteers. I appreciate my family members' constant support, encouragement and evaluation of the project's progress.

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