

Assessing Public Perceptions toward Toque Macaques in Kuliyaipitiya Divisional Secretariat to Mitigate the Human-Macaque Interactions in Sri Lanka

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ABSTRACT

Age, gender, ethnicity, education level, political stance, the quantity of landholding, extent of habitation, and religion affect attitudes toward wildlife which reveal geographical variations. Nonetheless, Sri Lankans' cultural traditions and religious beliefs play a significant role when determining impressions and attitudes toward macaques. The people's attitudes, behavior, and views toward wildlife and the elements that affect these perceptions are crucial for conservation efforts and the management of human-wildlife conflict since social and environmental circumstances are intimately and inexorably intertwined. Therefore, the main objective of this study is to identify the people's attitudes toward the macaques in the study area to implement successful mitigation strategies to control the human-primate conflict. Deegalla, Kabalewa, and Elathawa Grama Niladari divisions in the Kuliyaipitiya divisional Secretariat of the North Western Province of the country were selected as study sites. The mixed methods approach was employed to collect data to comprehend the nature of sentiments people have about macaques and interviews were conducted between July 2020 and August 2021. Direct interviews were conducted for 635 randomly selected villagers and 240 farmers. The interaction between the informants and the primates involves many complexities and ambiguities. While interviewees are pleased to see macaques and other wild creatures in their outdoors or neighborhood, they do not want them to be seen near or in their homes, gardens, and commercially or domestically grown farms. Two of the major concerns for the interviewees were the large macaque population and the lack of control over their population. The degree of interaction between humans and macaques determined the attitude toward each species of primates. Owing to crop and property destruction, as well as the heavy economic loss incurred inculcated negative attitude toward macaques. It can be concluded that a holistic approach is needed to resolve the human-primate conflict in Sri Lanka, incorporating public perception toward primates.

Keywords: Religion, Beliefs, Human-wildlife conflict, Primates, Conservation, Attitude, Human Macaque Interaction

INTRODUCTION

As everywhere else in the globe, deforestation and increased demand for resources brought by the growth of human populations frequently resulted in the close interactions between humans and primates in Sri Lanka (Dittus, 2019; Nahallage et al. 2008; Nahallage et al 2022). Many studies on this topic were conducted and published between 2000 and 2023. The most common primate species responsible for these issues are either single toque macaques or adult females with their young, however, in many parts of Sri Lanka, there are many occasions where whole troops of toque macaques are to be blamed (Nahallage et al. 2022; Jayarathne et al et al, 2021; Prasad et al., 2016; Mendis & Dangolla, 2017d; Dittus, 2020). However, due to the

religious beliefs in Buddhism and Hinduism and cultural values and attitudes prevailing among the societies, people are reluctant to harm animals, especially primates even though they cause heavy economic losses to their livelihood (Nahallage and Huffman 2013; Cabral et al., 2018). Values are the variety of attitudes toward a situation or an object that serves as the basis for a person's attitudes, which in turn direct how it is interpreted and used (Manfredo et al. 2003; Manfredo 2009). Not everyone perceives the same values in nature, and the motivations behind people's values, as well as their perceptions and attitudes toward nature, are influenced by a variety of intrinsic (derived from personal experience) and extrinsic (derived from economic, social, and cultural factors) factors (Treves, 2008). Primates are widespread in Africa, Madagascar, South America, South Asia, and Southeast Asia and play a significant part in ecological groups. Due to its rich biodiversity, Sri Lanka is a significant island from an ecological perspective. Five species of primates live in Sri Lanka, making it a crucial location for the study of primates (Dittus et al., 2019b; Dela, 2007; Rudran, 2007; Nahallage et al., 2008). Prehistoric and historic evidence indicates that people have been interacting with primates for a very long time ago ((Pisor & Surbeck, 2019)). The abundance of primates in the existing literary sources, folklore, songs, idioms, etc.

Research Objectives

To contribute to the existing knowledge to the state of interactions between humans and toque macaques and to develop conservation strategies for protecting this endemic macaque species, this study attempts to comprehend the perceptions of local populations in the research area towards toque macaques.

MATERIALS AND METHODS

A mixed method approach such as semi-structured interviews, focus group discussions, and participant observation methods were employed to collect data from Deegalla, Kabalewa, and Elathalawa GN divisions in Kuliyaipitiya District in the northwestern province, regarding peoples' perception of macaques in the area. Semi-structured interviews were used to collect information from 635 villagers and 240 farmers. Residents of a village who were not engaged in farming, such as housewives, business owners, public servants, etc. were categorized as villagers while who were engaged in farming were categorized as farmers. The purposive sampling method was employed to choose interviewees for interviews which were acceptable given that the goal of collecting anthropological data was to determine how people felt about toque macaques. The interview guide included 33 questions on topics like the approximate number of macaque groups and their group sizes, the agricultural and socioeconomic issues faced due to crop damage whether measures were taken to prevent crop damage and their success, the threats to macaques, awareness of mitigation actions, involvement of the local authorities and about people's perception of toque macaques. Before collecting data, the purpose of the research was explained to them and the people who gave verbal consent to participate in the research were chosen for the study. Interviews were conducted between July 2020 and August 2021. The researcher interacted amicably with the participants at their location before gathering data through interviews and conversations. The informants were interviewed in a relaxed, non-threatening setting at their homes. Each interview lasted about 45 minutes. The locals were observed using the participatory observation approach to learn about their daily routines and develop trustworthy connections to study how they interacted with and responded to macaque visits to their farms. Throughout the field investigation, almost all the instances of interactions between macaques and humans were documented.

RESULTS AND DISCUSSION

Interviewees comprised 340 women and 535 men and their ages ranged from 20 to 80 years. The level of education ranges from none to advanced education. There was a high level of tolerance (95%) for primates among the 875 interviews, 748 of whom identified as Buddhist and 127 as Christian, both groups adhering

to their respective teaching of the faith. Killing and harming animals are forbidden in Buddhism. The broad cultural perspective of humans toward macaques and their activities is a critical factor in shaping the views of primates. One of the fundamental principles that have always separated people and animals is culture, which also influences how much respect each civilization accords towards animals. Many cultures have different levels of acceptance, tolerance, and even interactions with animals (Biquand et al., 1992; Burton, 2002; Gautier & Biquand, 1994, Nahallage, et. al., 2008, Nahallage and Huffman, 2013). Yet, attitudes toward nature cannot simply be classified as positive or negative. According to Allendorf (2007), attitudes are defined as the judgment of a given item with some degree of positivity or negativity. The connections between people and the environment are far more nuanced and emotional. Primatologists have many religious ideals shared by Buddhists and Hindus. As a result, attitudes and ideas regarding nature are nuanced and subject to change as circumstances and experiences do (Hill,2002). Any stressor, such as drought, hunger, land conflicts, and situations in local politics, may also change quickly (Lee,2010). We must comprehend the ideas and motives underlying these values in order to comprehend which values are embraced and why different people adopt various values. Every interviewee (100%) had a positive response when asked about the nature of the study area replying as “It’s lovely,” “We all enjoy it,” and “It’s peaceful”.

To measure the attitudes toward the macaques we used 7 statements with a Likert scale (Figure 1).

- 1 – Macaques have a right to be in our living environment
- 2 – Macaques are important and we must protect them
- 3 – Macaques’ presence will have a beneficial effect on human
- 4 – Human conflict is a man-made problem
- 5 – Due to deforestation, Macaques are encroaching on human settlements
- 6 – Macaques presence will have an adverse effect on human health
- 7 – It is necessary to capture and relocate Macaques to minimize disruption

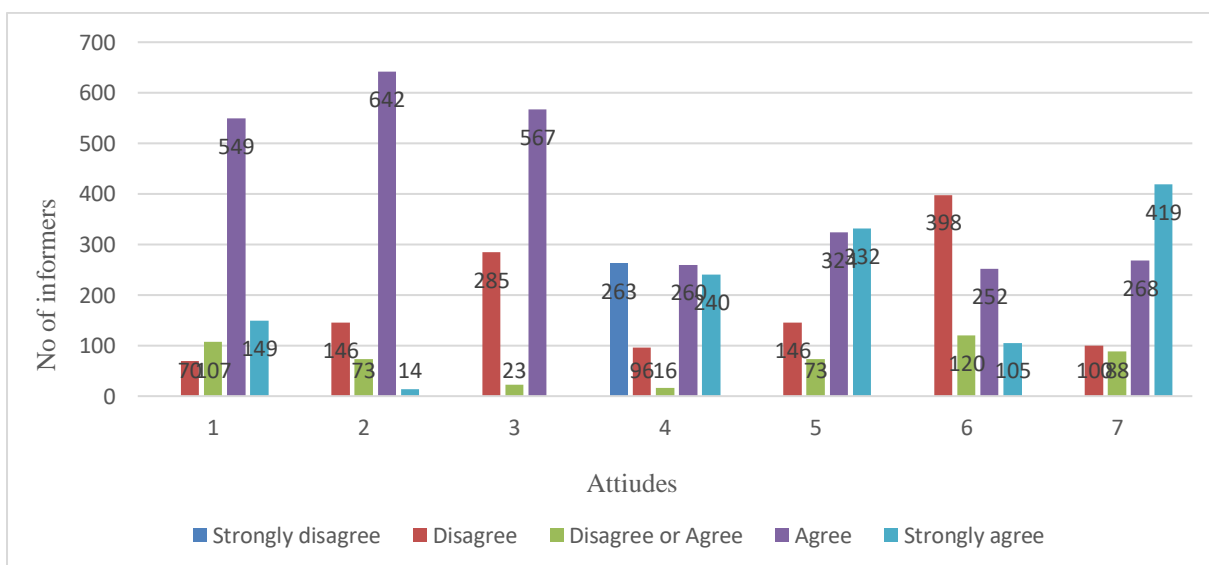


Figure 1. Attitudes towards macaques

Macaques’s presence will have an adverse effect on human health

According to Figure 01, The majority of people (86.4%) thought that macaques have the same right to live

in the environment as people do. According to the current interactions between humans and macaques, 58% of interviewees express positive opinions towards primates, while just 2.3% had a negative opinion. 642 interviewees were well aware that the survival of macaques is Crucial for the ecological balance. They were very (N = 419) positive for sterilization or translocation of macaques. 285 interviewees do not perceive any advantage in being close to the macaques. It can be said that people’s attitudes toward macaques are not all positive. 398 out of 875 (45.4%) interviewees believed that having a macaque around has a negative impact on human health. Macaques are revered, safeguarded, and fed by people in some parts of Northern India, Indonesia, and other places (Southwick & Siddiqi, 1977; Warne, 2002). The parameters of relationships between primates and humans are defined in Sri Lanka by the people’s religious and cultural traditions, which also represent the history, present, and probable future of their cohabitation. The presence of macaques at Buddhist and Hindu temples is a significant characteristic of this nation (Nahallage et al., 2008; Nahallage and Huffman, 2013; Peterson et al., 2015).

Cultural Attitudes Toward Primates

832 (95%) individuals who had an unfavorable opinion of primates also have somewhat similar but less strong attitudes toward other wildlife. However, their attitudes vary depending on the wild animals in question. 2.8% and 65.5% of the participants expressed negative associations toward porcupines and giant squirrels, respectively. This applies to the macaques present as well, depending on the level of damage caused macaques too were perceived differently.

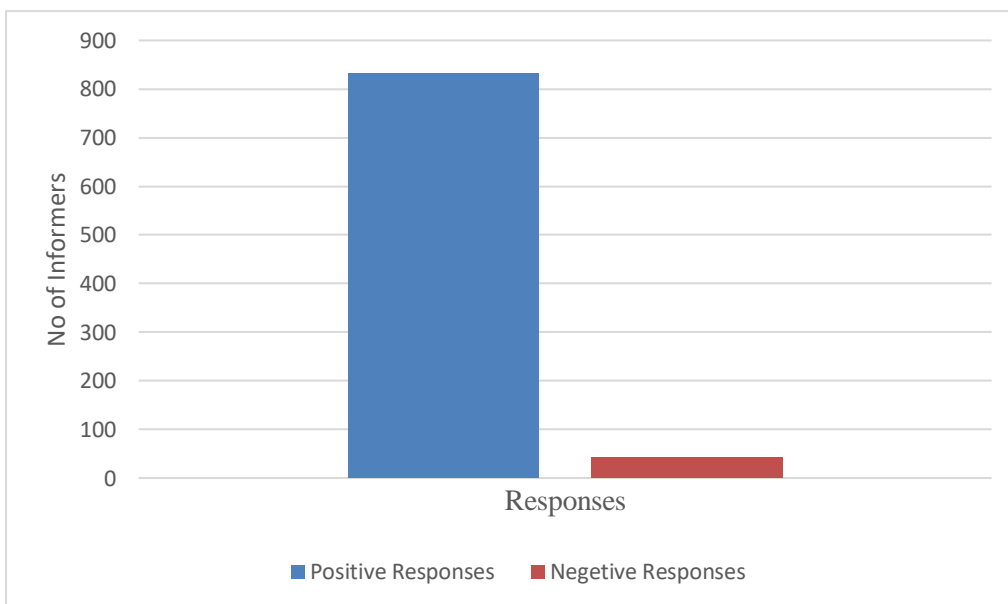


Figure 2. Attitudes towards other wildlife

Table 1. Correlation between Age and Attitude towards HMI

Age Range	No of Informers	Negative Responses	Positive Responses
20 – 30	138	116	22
31 – 40	222	09	213
41 – 50	287	07	280
51 – 60	185	05	180
61 – 70	38	01	37
71 – 80	05	00	05

There is a significant correlation between the interviewees age and the attitude towards macaques (Pearson

correlation: $r=0.515$, $\rho=0.000$. N-875). With age people's attitude towards macaques have become less negative. Throughout time, attitudes toward macaques have degraded because of the damage they have caused. Yet when humans become older, they learn more about macaques because of their progressive experiences over the years with frequent encounters. Compared to younger interviewees (Below thirty), older interviewees (Aged thirty to eighty) had higher knowledge about macaques. This may be due to the respondents' experience gathered over the years (Jayarathne et al, 2021).

Intellegence Of the Macaques

The intelligence of toque macaques was seen as a positive aspect by interviewees, and it was stated that this intelligence was the cause for the conflict with toque macaques more than with other wildlife species. According to the majority of interweaves (60%) toque macaques are more intelligent than other wildlife and many said (77%) macaques prefer human food over their natural food.

Humans' Perception of Macaque Behavior and Crop Damage

Many people are of the opinion that macaques are closely related to humans. According to the interviews, "Macaques became an issue because they are very talented in finding solutions to overcome the control strategies, we use to keep them away from farms". According to the results, the negative attitude toward macaques by the majority of interviewees was mainly due to the economic loss (96.7%) incurred by the macaques and only a small proportion (3.3%) had a positive attitude toward them. Villages are more hostile to toque macaques when compared with giant squirrels and porcupines. The latter species were regarded as more peaceful animals than macaques even though they damage crops as well. Another reason is that the other two species do not engage in property damage like the macaques. The results are in agreement that the nature and degree of damage inflicted by macaques determine how the locals feel about this interaction between them and the primates (Jayarathne et al, 2021). Despite the fact that most interviewees had a negative attitude towards property damages done by macaques in general, they nevertheless valued macaques for varied reasons. Some of the positive statements regarding macaques were "To disrupt or harm them is not good according to our religion," "I love observing the macaques," "It's appealing," and "Their conduct is so much like that of people.", "the most clever and astute wild animal in the region".

Table 1. attitude towards property damages done by macaques

Types of Property damage	percentage of inflict damages	percentage of do not inflict damages
Damage To Antennas	58.63	31.2
Damage To Water Taps and Water Sources	72.63	27.37
Roof Damage	68.2	31.8
Damage to Garbage Cans	63.81	36.19
Telephone Wires	38.23	61.77
Power Lines	37.8	62.2
Bulbs	39.32	60.68
Home Mirrors	32.26	67.74
Mirrors Of Vehicles	25.8	74.2
Clothes (Stealing)	33.2	66.8
Throwing Essential Kitchen Items (Chilly bottles, Rice hut etc)	40.69	59.31

There is a significant correlation between the crop-damaging species (chi-square test: $\rho=5.3$), toque macaques received 87.8% of the negative responses compared to 12.2% for other wildlife. The results of

this study can be used, as a conservation tool for comprehending human viewpoints and attitudes toward macaques. Religions are actively regulating and stifling human–primate connection in the Sri Lankan cultural framework. This determines how the locals perceive the conflict between humans and primates. Similar to Anuradhapura, Polonnaruwa, Kataragama, and Kandy there are other significant Buddhist and Hindu temples all over the island where people’s cultural and religious beliefs preserve primates (Nahallage and Huffman, 2013). Further, according to some studies, primates were said to represent human cruelty or morally problematic behavior, potentially as a result of their striking physical resemblance to humans (Knight, 1999; Morris & Morris, 1966). Humans and nonhuman primates have coexisted in the same natural environment for millennia, so they have a unique relevance between the causes of conflict and nature (Dickman, 2012; Fuentes, 2012; Fuentes & Wolfe, 2002; Nahallage, 2019).

Population Density and Hunting/Killing

All the interviewees are of the opinion that the population of toque macaques has grown over time. 99.4% of interviewees (n=870) stated that toque macaques invade farms and steal human food. The macaques were considered as pests by 92.8% (n=830). 43% (n=382) of those surveyed said that macaques are not hunted or killed, however 24.9% (n=221) claimed that some locals have a reputation for doing so, and 12% (n=110) expressed that they had no knowledge of the practice of killing macaques.

Natural Predators

89% (n=788) of the participants said that there were no natural predators of local macaques and 82.2% (n=728) informed dogs were the primary cause of death for toque macaques. According to some the deaths were also attributed to road kills (1%), hunting (2%), and electrocution from power lines (11%).

Respondents’ Educational Level and Occupation and Monthly Income

The attitudes towards macaques were more positive among the people (87.7%) with high monthly household incomes. This could be mainly due to the fact that people with substantial monthly earnings were able to endure the financial losses brought on by macaques more than less income-generating people. The respondents with monthly income of more than 60,000LKR had positive attitudes (83.3%) about macaques. Among the respondents with a monthly income of less than 60,000LKR were farmers (36%) who are facing macaque crop and property damages and 30.1% and 30.9% were private and government sector employees respectively. The farming interviewees held a positive attitude (85%) towards macaques even though they made it worse daily. Crop raiding had a minimal effect on the daily lives of the interviewees with high monthly salaries who were not farmers but farmers were less positive towards macaques. According to the study conducted by Jayarathne et al (2021), respondents’ major source of wealth and occupation had a considerable impact on how they felt about macaques. People tend to have negative feelings about macaques if they are constantly pestered by macaques. Among positive respondents, 36% and 51% interviewees were primarily educated (No schooling to grade 6) farmers and advanced educated (grade 7 to advanced level) government and private employees respectively. The interviewees (n = 28) have positive and favorable attitudes toward macaques 20 years back but as time passed, they develop negative attitude because of the continuous crop and property damage caused by macaques. These results were in line with other research that showed people who had issues with macaques were more prone to feel negative towards macaques (Nahallage, 2019). Gender had little impact on attitudes because 98% of female interviewees had negative attitudes towards macaques because macaques had no fear of them and females were the people who stay at home during day time. Females commonly got threatened by macaques than males.

Distance From the Edge of The Forest

The likelihood of having issues with toque macaques was highest among landowners who live closest to the

forest edge. The percentage of interviewees who reported having issues with macaques decreased as the distance to the forest edge increased.

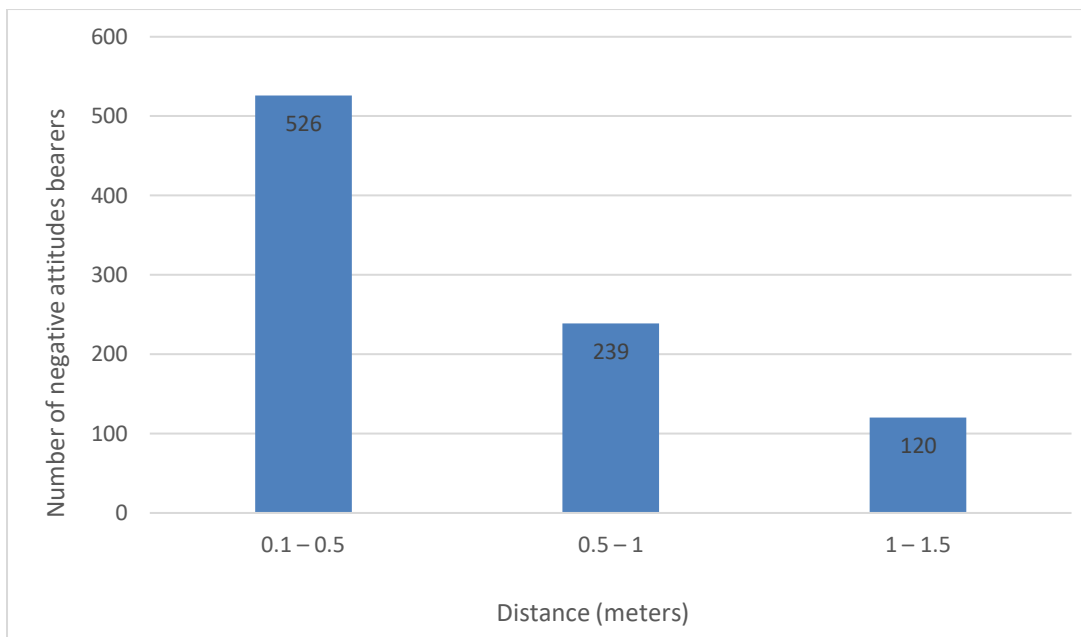


Figure 3. Distance From The Edge Of The Forest

CONCLUSIONS AND RECOMMENDATIONS

In the Sri Lankan cultural framework, religions are actively regulating and stifling interactions between humans and primates. Primates represent human bestiality or morally problematic behavior, as a result of their striking physical resemblance to humans. The connection between humans and primates, one of the biggest issues in Sri Lanka, may be understood holistically with the systematic behavioral research on primates and the studies conducted to look into people’s perceptions of them. It is vital to systematically assess the damage caused by primates in Sri Lanka and notify the results to farmers and other relevant government authorities. With their assistance feasible control strategies and framework could be implemented to reduce crop damage, which will be advantageous to both farmers and primates. Importantly to promote the conservation of these primates and their habitats, public awareness campaigns in schools and through the media are required.

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