

ATTITUDES TOWARDS PRIMATES AND PRIMATE CONSERVATION IN MANIPUR, NORTHEAST INDIA

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ABSTRACT

In many regions across the world, where people and primates are found in close proximity, the attitudes of people towards primates impacts the latter's survival to a great extent. Northeast India is part of a global biodiversity hotspot and has the highest primate diversity in the country. This region is also home to over 140 ethnic groups, whose customs and traditions critically affect wildlife conservation practices. We conducted an informant-based survey in Manipur in Northeast India to investigate people's awareness of primate species and their attitudes towards primate conservation. We interviewed a total of 120 individuals across six districts of the state and collected information on primate species presence as well as the nature of human-primate interactions. The results of our study provide valuable information on the extent of primate presence in Manipur and factors affecting their future existence in this region.

Keywords: attitudes, conservation, hunting, Manipur, Northeast India, primates

INTRODUCTION

Wildlife conservation is heavily dependent on people's attitudes towards wild animal species, particularly in regions where human settlements are found in close proximity to wildlife reserves (Kellert *et al.*, 1996; Mishra, 1997; Shelley *et al.*, 2012). Human attitudes towards wildlife are influenced by fundamental values, interactions with as well as knowledge about the species (Kellert, 1991; Kaltenborn & Bjerke, 2002; Vaske *et al.*, 2009). When interactions with wildlife result in economic loss due to crop and material damage, or in physical injury and death, people tend to perceive wildlife presence as intolerable (Hill, 1999, 2004; Chhangani & Mohnot, 2004). Social customs such as hunting, for sport or ceremonial purposes, also mould beliefs regarding the utility and preservation of wildlife species (Parry & Campbell, 1992). Negative attitudes towards wildlife, and reckless land use changes, threaten the conservation and survival of wildlife outside protected forest reserves, the integrity and viability of the reserves, and the biodiversity they were established to conserve (Kirubi *et al.*, 2000). Hence understanding people's attitudes towards wildlife species and encouraging them to participate in biodiversity conservation measures are crucial to ensure ecologically sustainable development and wildlife conservation (Infield, 2001; Sekhar, 2003).

Northeast India, comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, is categorized under the

Indo-Burma global biodiversity hotspot (Myers *et al.*, 2000). Home to ten primate species, this region contains the highest primate diversity in the country. Culturally too, the region is very diverse, with approximately 145 tribes residing within this area, and the customs and traditions of these groups critically impinge upon the wildlife conservation practices that are required here (Aiyadurai, 2011). Many of the indigenous communities have strong animist traditions, and they hunt primate species for food, religious and cultural purposes, significantly affecting the latter's population densities and continued existence in this region (Choudhury, 2006; Mishra *et al.*, 2006; Srivastava, 2006). The remote and inaccessible terrain of many areas within this region and recurrent insurgency problems contribute to the overall poor infrastructure conditions which have hindered the wider application of wildlife studies here. Additionally, many states of Northeast India have large areas of Unclassified Forests that are almost completely controlled by local communities (Dasgupta & Symbleih, 2006). State forest department laws regarding protection of wildlife can rarely be enforced with any success in these forests and the success of any wildlife conservation programme is almost completely dependent on the voluntary participation of the people living near these forests.

Although many studies have documented the various ways in which humans and primates interface in

Northeast India, ranging from hunting and crop-raiding to ethnozoology (Solanki & Chutia, 2004; Mishra *et al.*, 2006; Sinha *et al.*, 2006; Aiyadurai *et al.*, 2010; Aiyadurai, 2011), there has been no focused attempt to understand perceptions of indigenous communities regarding primate species presence and human-primate interactions in this region. Hence we conducted an informant-based survey in the state of Manipur, with the objective of investigating local people's knowledge regarding primate species presence and their attitudes towards primate conservation in this part of Northeast India. More specifically we aimed to (i) determine how aware people were of the existence of various primate species in their neighbourhood, and (ii) assess the nature of human-primate interactions in the state.

STUDY AREA

Manipur (23.80°N to 25.68°N and 93.03°E to 94.78°E) in Northeast India is bordered by the states of Nagaland, Mizoram and Assam in the north, southwest and west respectively, and by Myanmar in the east and south. Physiographically the state can be divided into three main sectors: the Eastern hill ranges, Western hill ranges and the Imphal Valley that separates the hill ranges in the central plains. The climate is tropical monsoon and the vegetation is largely tropical wet evergreen and semi-evergreen in the lower- and middle-elevation areas. The forests are dominated at medium elevations by tree species like Needlewood *Schima wallichii* Choisy, Khasi Pine *Pinus khasyana* Griff., Teak *Tectona grandis* L.f., Queen's Flower *Lagerstroemia flos-reginae* Retz., and bamboo varieties *Bambusa balcooa* Roxb., *Bambusa khasiana* Munro and *Melocanna humilis* Roep. ex Trin, and at high elevations by Red Oak *Quercus serrata* Murray, Uningthou *Phoebe lanceolata* (Nees) Nees and Katus *Castanopsis tribuloides* (Sm.) A.DC. (updated from Champion & Seth, 1968). Of the 35-odd ethnic groups in Manipur, the non-tribal Meiteis, Pangans and immigrants constitute 66% of the state's population (Shimray, 2001). The valley region is dominated by the Meitei community which are predominantly Hindu whereas the hilly region is occupied by various tribal communities, notably the Naga and the Kuki-Chin-Zomi groups, with distinctive cultures and traditions (Shimray, 2001).

Seven species of primates (Assamese Macaque *Macaca assamensis* M'Clelland, Rhesus Macaque *M. mulatta* [Zimmerman], Stump-tailed Macaque *M. arcoides* [I. Geoffroy], Northern Pig-tailed Macaque *M. leonina* [Blyth], Capped Langur *Trachypitecus pileatus* [Blyth], Hoolock Gibbon *Hoolock hoolock* [Harlan]

and the Bengal Slow Loris *Nycticebus bengalensis* [Lacépède]) are reported to be present in Manipur; however there have been very few primate-focused studies in the state and consequently, little information is available about the geographic range or density of the various species present (Choudhury, 2001). Although 78% of Manipur's geographical area is covered by forests (extending largely across the hill ranges), less than 24% of this comes under the government controlled Protected Area network (FSI, 2011). A predominant part of the forest cover in the state (approximately 68%) has been categorized as Unclassified Forests (FSI, 2011) resulting in widely varying degrees of primate protection levels across the state.

METHODS

We conducted our study across six districts in Manipur: Imphal East, Imphal West and Bishnupur which are situated at lower elevations in the valley region and Churachandpur, Senapati and Chandel at higher elevations in the hilly region (Fig. 1). From February to April 2012 we surveyed 24 villages across the six districts, namely Mahabali, Uyumpok, Irinbung, Takhel, Leikrinthabi, Iroishemba, Phayeng, Game, Konung, Leimram, Thanga, Keibul Lamjao, Kom Keirap, Reandailung, Tolbung, Gitemuan, Sapermeina, Chalkot, Leimakhong, Seikul, Mitong, Komlathabi, Kwata and Moreh. We selected the villages based on their location near forest areas and relatively high accessibility of roads or trails. We used a combination of purposive and random sampling techniques to identify respondents for our study; about 50% of the respondents were selected based on suggestions by village headmen regarding individuals who hunted regularly and were well acquainted with forest areas.

The questionnaire consisted of three parts: the first part comprised questions about the occurrence of various primate species and the frequency of their sightings, while the second part focused on human-primate interactions, particularly hunting and provisioning practices, and the extent of primate crop-raiding. We used photographs of primates to aid correct identification by respondents and prompt them for detailed morphological descriptions. The last part of the questionnaire collected information on the socio-economic status of the respondents. Apart from the questionnaire responses, we also encouraged respondents to narrate myths or taboos concerning primate species and describe cultural practices and beliefs related to primates.

To detect differences in attitude between the hill and

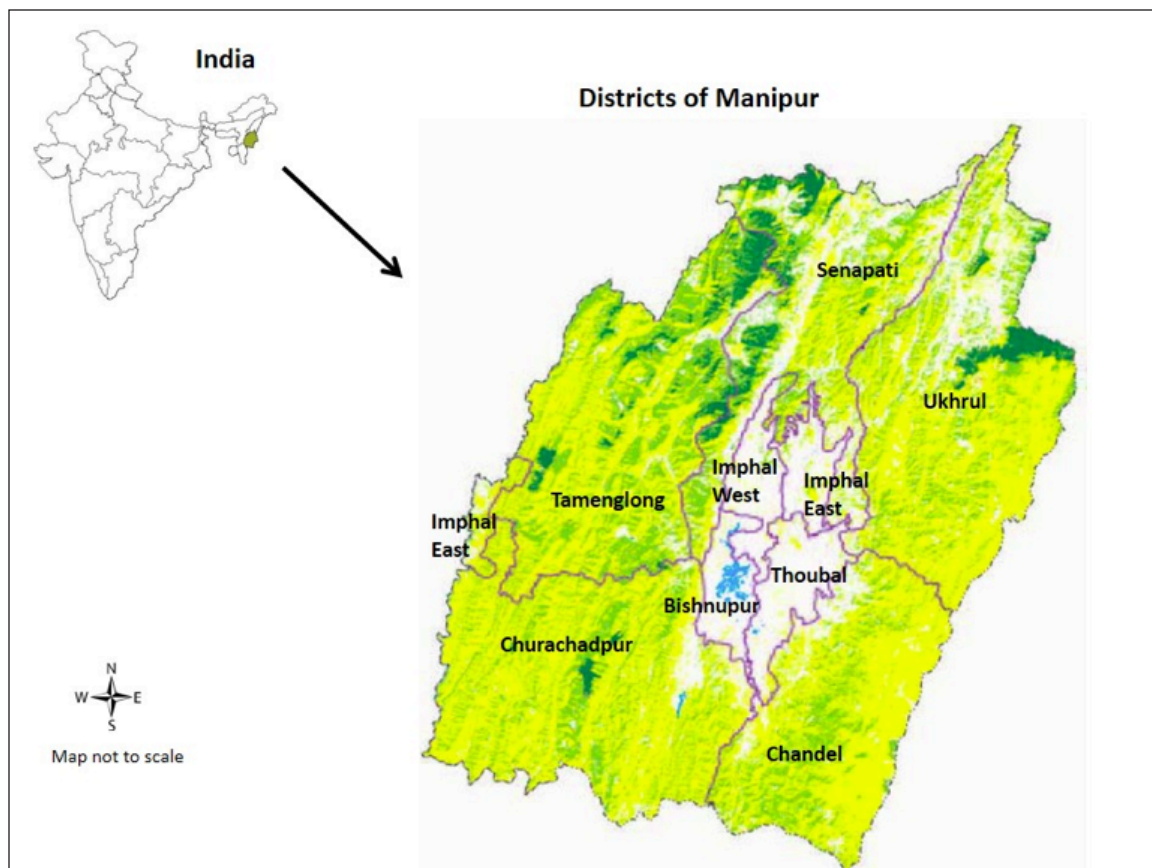


Fig. 1. Districts of Manipur (Redrawn based on map in FSI, 2009)

valley respondents with respect to primate conservation, chi-square analysis was applied to the distribution among the different questionnaire responses.

RESULTS

We interviewed a total of 120 individuals (five people from each village), of whom 88 were men and 32 women. Study respondents were in the age range 30 to 80 years and more than 90% of them had lived in the study location for more than 30 years. About half the respondents (52%) belonged to indigenous communities and all of these are Christians, while the remainder were from the Meitei community and are Hindus. Respondents from the valley region were predominantly Hindus (92%), while respondents from the hill region largely practised Christianity (95%). The primary occupation of most of the study participants was agriculture and/or livestock herding (55%); a smaller number were self-employed in small-scale businesses (38%) and a few were employees in government services (7%).

Primate species occurrence

Out of 120 respondents, 105 attested to the presence of at least one of five primate species that occurred in the forest areas around their villages – Rhesus Macaque, Bengal Slow Loris, Hoolock Gibbon, Capped Langur and Pig-tailed Macaque. Primate species occurrence was not uniform though: 26% of respondents reported just one species (Rhesus Macaque); 16% reported two (Rhesus Macaque and Bengal Slow Loris); while 25% reported three (these two plus either Capped Langur or Hoolock Gibbon). About 19% reported all four of these species and only 2% claimed the presence of five species, including the Pig-tailed Macaque. Thirteen percent of the respondents said that no primate species occurred around their villages. Some respondents were aware of the existence of the Stump-tailed Macaque and the Assamese Macaque, but none reported the species' presence in their areas.

Thus the Rhesus Macaque was the most commonly reported species, with 88% of the respondents reporting that the species existed in their neighbourhood or in

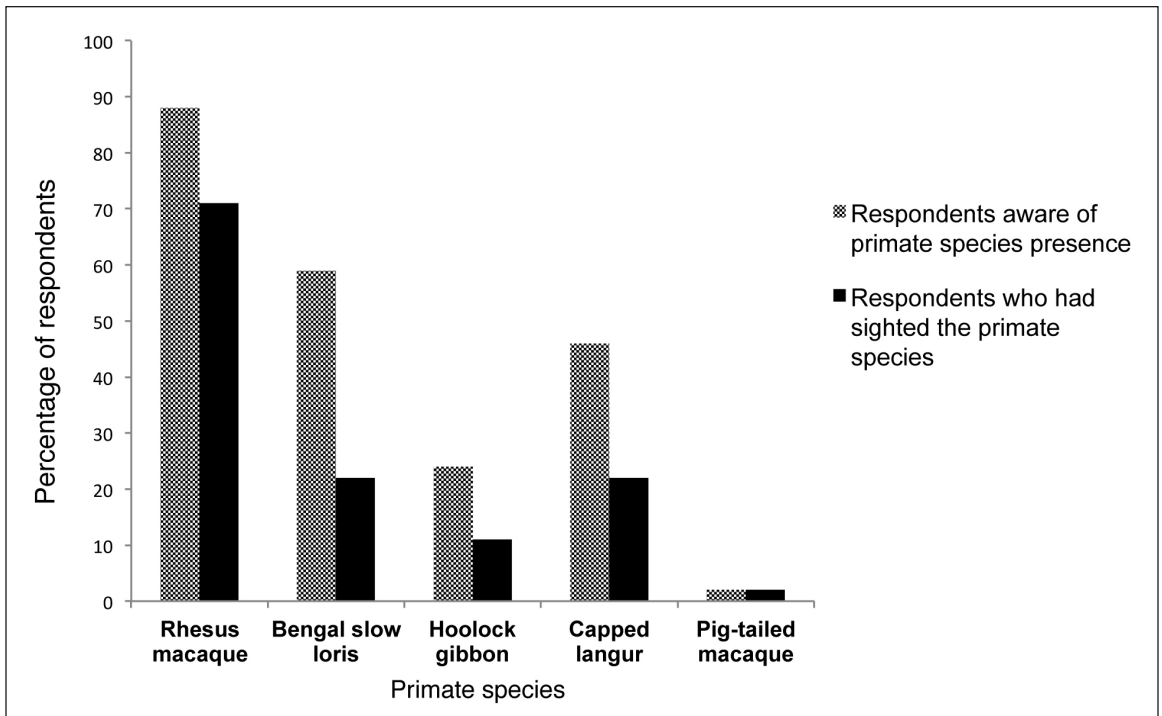


Fig. 2. Percentage of respondents (n=120) reporting primate species presence

the nearby forest and 71% of the individuals confirming that they had actually sighted the species (Fig. 2). The Pig-tailed Macaque was the least-known species with only 2% of the respondents confirming that it was present in nearby forest areas.

In terms of extent of distribution, the Rhesus Macaque was reported by people in all six districts (17 villages), while the Bengal Slow Loris was stated to occur near 15 villages in five districts. The Capped Langur was described to occur near 11 villages in Senapati and Churachandpur Districts, and the Hoolock Gibbon near five villages in Chandel, Churachandpur and Senapati Districts; however the Pig-tailed Macaque was reported by only two respondents in one village, in Churachandpur District.

Human-primate interactions

Respondents revealed the existence of many cultural taboos and myths concerning primate species. For example, eating the brain of the Rhesus Macaque is believed in many communities to impart strength to postnatal women, while consuming the flesh of Bengal Slow Loris is thought to cause illness among some tribal communities. A popular myth amongst many ethnic groups concerning the Hoolock Gibbon is that Hoolock individuals give birth to offspring every full moon and die every new moon, thus continuing the

cycle of life. Apart from such beliefs, study participants identified three main ways in which people interacted with primate species: 1) Macaque provisioning; 2) Crop-raiding by primates; and 3) Hunting of primates by humans.

Macaque provisioning

This was restricted to the Mahabali area in Imphal West District and was particularly practised by people belonging to the Hindu community. Only Rhesus Macaques were provisioned; study respondents did not identify other primate species as being associated with provisioning practises. In Kunung, Bishnupur District we observed that the Rhesus Macaque population was protected from hunting by the local community. Strict penalties were imposed by the village elders on anyone who harmed or disturbed the macaques in any way.

Primate crop-raiding

Less than half the respondents (48%) attested that primate crop and kitchen-raiding occurred, and these said that economic losses due to this were rather minimal. More people in Senapati, Churachandpur and Chandel Districts expressed discomfort over primate crop- and kitchen-depredations than people in other districts (Table 1). Only Rhesus Macaques were involved in crop-raiding; respondents clarified that al-

Table 1. Primate crop-raiding in Manipur

District	Main crops damaged	Primate species	Number & percentage of respondents	Level of damage reported*
Imphal East	Rice, maize	Rhesus Macaque	6 (30%)	Low
Imphal West	Rice, maize	Rhesus Macaque	4 (20%)	Low
Bishnupur	Rice, maize	Rhesus Macaque	3 (15%)	Low
Senapati	Rice, maize & vegetables	Rhesus Macaque	17 (85%)	Low
Churachandpur	Rice, maize & vegetables	Rhesus Macaque	12 (60%)	Low
Chandel	Rice, maize & vegetables	Rhesus Macaque	16 (80%)	Low

* Options offered were "negligible, low or high"

though the Capped Langur was a crop depredator in earlier times, it was not so anymore.

Primate hunting

Most of the study respondents (80%, n=96) agreed that primate species were hunted for meat, sport, or ritualistic purposes in the study area. Rhesus Macaque (71%, n=85) and Bengal Slow Loris (41%, n=49) were hunted most often, followed by Capped Langur (6%, n=7). Twenty-three percent of the study respondents identified themselves as hunters and reported using licensed guns to hunt wildlife. Of these individuals, 46% preferred to go hunting once in a month, 40% twice a month and 14% rather infrequently. Practically all the hunters were from the hilly districts; only one was from a valley district. Respondents in the Senapati District stated that they avoided hunting primates relative to other mammals; however respondents in other villages of the hilly region affirmed that it was a status symbol to kill macaques. Study participants also revealed that it was easier to kill macaques as they were often seen on forest edges and sometimes in crop-fields, whereas langur individuals were more difficult to hunt as they remained in the dense parts of the forests and high up in the canopy.

Primate conservation

Respondents reported that primate species density had significantly decreased over the last five years; indeed in villages like Takhel and Uyumpok in Imphal East District, people revealed that the forests around their villages were totally devoid of any primate population. When questioned on factors driving loss of primates, a significant difference was observed between respondents from the hilly districts and those from the valley districts ($\chi^2=18.87$, d.f.= 2, $p<0.0001$), particularly with respect to their attitudes towards hunting. Most of the respondents in the hilly districts (78%) identified habitat loss due to logging, human encroachment and

shifting cultivation as being primarily responsible for a decrease in primate density; or declined to comment on the matter (20%). Very few hill people considered hunting as a factor responsible for decrease in primate density (5%). People from the valley districts, on the other hand, saw both habitat loss (83%) and hunting (37%) as causing a decrease in primate density. Very few valley respondents were unwilling to answer the question (5%).

Differences were also recorded when respondents were asked their opinion on wildlife conservation ($\chi^2=57.11$, d.f.= 2, $p<0.0001$). Most people (87%) from the hilly districts declined to comment or avoided answering the question. The few people who answered the question replied that it was important to preserve forest habitats (12%). People from the valley districts, in contrast, replied that it was necessary to preserve forest habitats (45%), ban wildlife hunting (28%) and care for the welfare of all animals (5%). Very few valley people (17%) declined to comment on the issue.

DISCUSSION

Informant-based surveys of indigenous communities living in and near forest areas have proven to yield valuable ecological information about animal distribution and abundances, wildlife declines and change and loss in forest cover over long periods of time (Hunter & Brehm, 2003; Basset, 2005; Rajamani & Marsh, 2010; Pillay *et al.*, 2011). Such techniques are particularly useful in regions where intensive or long-term studies are difficult to conduct either due to civil conflicts or other accessibility issues (Sahoo *et al.*, 2013). Apart from gaining knowledge about plant/animal behaviour and distribution, informant surveys also provide deep insights into local people's attitudes towards particular species and their perceptions regarding wildlife conservation. The results of our survey provide valuable

information regarding the presence and distribution of primate species in the study area. Although a total of seven primate species are reported to be present in Manipur (Choudhury, 2001), data from our study indicate that at least three of these species (Assamese Macaque, Stump-tailed Macaque and Pig-tailed Macaque) are absent in many regions of the state, or present only in very low numbers. Remarkably, a good majority of the respondents reported the presence of the Bengal Slow Loris, a cryptic, nocturnal species that is understood to be present in low densities through much of Northeast India (Radhakrishna *et al.*, 2006, 2010; Swapna *et al.*, 2010). Information from study respondents also suggests that in Manipur, the Hoolock Gibbon is restricted to the forests of the hill districts.

Based on the study results, we strongly highlight the need for intensive primate population surveys in Manipur to clarify the conservation status of the Assamese Macaque, Stump-tailed Macaque, Pig-tailed Macaque, Hoolock Gibbon and Bengal Slow Loris in the state.

Crop-raiding by primates and retaliatory hunting by humans is a significant threat affecting primate populations in many parts of India (Singh, 2000; Southwick & Siddiqi, 2001; Singh & Rao, 2004; Sinha *et al.*, 2006; Kumara *et al.*, 2010); however this is not a significant source of conflict in Manipur. Instead, hunting for sport or cultural practices appears to be an important threat affecting the continued survival of primate species in Manipur. Hunting wildlife is more prevalent in the hilly districts than in the valley districts; unfortunately, as the forest cover in Manipur is mostly restricted to the hilly districts, these areas are also crucial habitats for some of the primate species such as Stump-tailed Macaque, Pig-tailed Macaque, and Hoolock Gibbon. The results of our study indicate a sharp divide in attitudes towards hunting animals and wildlife conservation between people in the hilly districts and those in the valley districts. More crucially, respondents whose cultural customs involve wildlife hunting failed to acknowledge hunting as a major factor that threatens primate populations. Although this is not an unusual finding – Aiyadurai (2011) for example points out how some indigenous communities in Northeast India perceive wildlife as an inexhaustible resource that remains unaffected by hunting pressures – insights from these observations not only underscore the urgent need for wildlife management measures in these regions, but also emphasise that only a very nuanced understanding of hunting as a cultural practice can aid us in working towards solutions that address this very crucial

threat to primate populations in Northeast India .

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