

## Perceptions of Human-Elephant Conflict around Abhaypur Reserve Forest in Northeast India

Animekh Hazarika and Himangshu Dutta\*

Department of Ecology and Environmental Science, Assam University, Silchar, Assam, India

\*Corresponding author's e-mail: [himangshu.dibru@gmail.com](mailto:himangshu.dibru@gmail.com)

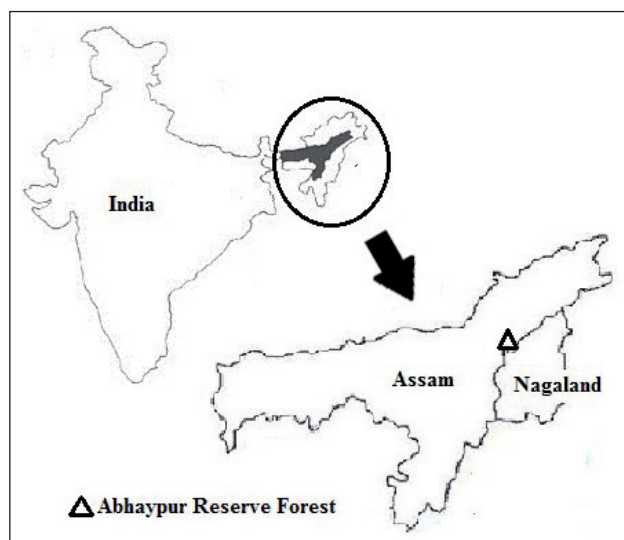
### Introduction

Conflicts occur when wildlife requirements or behaviour has negative consequences on human livelihoods or when the human activities intersect with the needs of wildlife (Makindi *et al.* 2014). Such occurrences must be studied and mitigation measures devised, as human-wildlife conflicts can hamper community support for long-term species conservation (Barua *et al.* 2010). Human-elephant conflict is a case in point.

Conflict between people and Asian elephants (*Elephas maximus*) is prevalent in the fringes of the Abhaypur Reserve Forest (Fig. 1) located at the inter-state border between Assam and Nagaland in Northeast India. Here we report on the first study of human-elephant conflict in the area.

### Methodology

Qualitative information was collected through participatory techniques. Focal group discussions



**Figure 1.** Location of Abhaypur Reserve Forest.

were held in two affected villages; Gowala Pothar No. 4 and Honalipam (Fig. 2), located in the fringes of Abhaypur. There were 848 and 483 people respectively in Gowala Pothar No. 4 and Honalipam. Ten residents were selected from each village to participate in discussions in consultation with the headmen, based on the ability to provide reliable and relevant information on human-elephant conflict. The headmen and the participants were assembled together for discussions. The focal group discussions were conducted for about two hours. Issues discussed included types of economic losses due to elephants, human attacks, historical cases of human-elephant conflict, impacts of elephant depredation on the socio-economic conditions and control measures used.

### Results and discussion

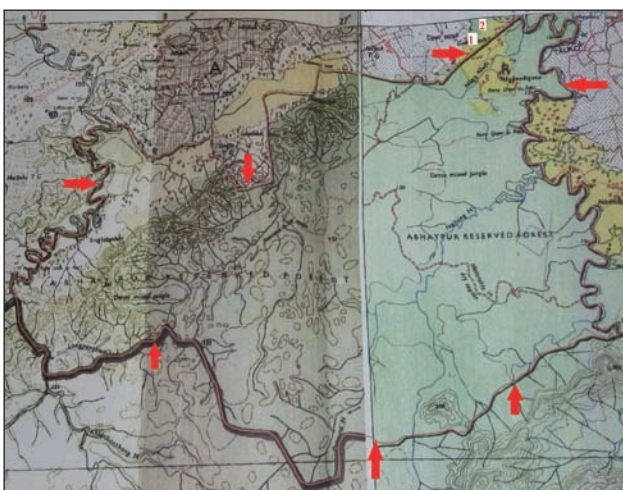
The villagers stated the occurrence of elephant attacks on humans as well as damage to home gardens, property and paddy fields throughout the year. The most severe incident was traced back to 2006, when about 35 elephants caused widespread issues. Elephant deaths due to electrocution occurred in 2003 in Sonari Tea Estate located in the forest fringe. In low-income situations, human-wildlife conflict adversely affects the well being of communities (Barua *et al.* 2013). Such a situation occurred in Abhaypur as the villagers were economically poor and consequently elephant depredations exerted a severe economic impact on them.

Depredations were less during the rainy season, possibly because of ample availability of fodder in the Reserve Forest. During this season, elephants occasionally moved out of the Reserve Forest, but the Forest Department successfully

drove them back. Conflicts intensified during winter. The main reasons mentioned were lower availability of elephant food in the forest and paddy cultivation in its fringes, which attracted elephants. In response, the villagers abandoned agricultural land. Some people switched to other means of income such as wage labour. As a result paddy production decreased, which exerted additional negative impacts on the local economy because agriculture was the chief means of livelihood.

The level of education was low and the villagers could not find better employment. Some converted paddy fields into tea gardens. However, all villagers were not financially capable of investing the capital required for conversion. The consequent reduction of agriculture near the Forest caused elephants to stray further (up to 15 km from the forest) in search of paddy, through human settlements. The result was greater property loss and attacks on people. The elephants followed no specific route and dispersed all around in small herds (usually 3–5 individuals).

Habitat destruction was identified as the main reason for human-elephant conflict in the area. Habitat destruction is more likely to occur in the fringes of protected areas because local communities obtain resources for consumption or commercial purposes from forest-fringe areas



**Figure 2.** Map of Abhaypur Reserve Forest showing the locations of the study villages (1 = Hunalipam; 2 = Gowala Pothar No. 4). Red arrows indicate the forest border. Map obtained from the Charaideo Forest Division, India.

(Davidar *et al.* 2010; Banerjee & Chowdhury 2013; Ministry of Environment and Forests 2014). In our study, the villagers stated that human-elephant conflict had first occurred in 1996 and intensified with ongoing habitat destruction. Widespread forest clearing and removal of earth from forested hillocks had been increasing around Abhaypur due to human population growth in the fringe villages and developmental activities. Population of the fringe villages had also increased because of immigration of flood-displaced rural people from other parts of Assam.

It was also mentioned that an elephant corridor existed between the Abhaypur Reserve Forest and Sola Reserve Forest, situated at a distance of about 30 km from Abhaypur to the northwest. However, human settlements have increased in this corridor, hindering elephant movement and causing conflict with humans. Protected areas may play an important role in preventing and reducing poverty by supporting livelihoods and providing social and cultural governance and subsistence values (SCBD 2009). But in Abhaypur, accelerated population growth was leading to the overexploitation of forest resources.

The Forest Department and local people used fire and firecrackers as control measures, which were not fully effective. Nocturnal fires were set around paddy fields and at times ignited balls of fire were thrown at conflict elephants. Fires and firecrackers are also used as control measures against elephant depredation in the fringes of Manas National Park, another protected area in Assam (Nath *et al.* 2009). In addition, stones were also pelted. Some residents guarded their paddy fields at the peak season of crop raiding. As a whole, the villagers were not financially capable of bearing greater expenditures on control measures. It was also mentioned that when authorities in Assam drove the conflict elephants into the forest, they moved towards Nagaland. However, Naga authorities chased the elephants back into the forest to protect their own lands. As a result, the animals returned to resume depredations.

Elephant depredation has given rise to severe negative socio-economic and administrative

consequences around Abhaypur. As human population and development continue to expand, certain wildlife species adapt themselves to newer landscapes whereas others suffer consequences due to negative interactions (Bateman & Fleming 2012; Northrup *et al.* 2012). In Abhaypur, it appears that elephants are adapting to human induced landscape changes, creating increasing conflict. Negative attitudes towards elephants and their conservation were evident in Abhayapur. This is a conservation issue because the success of wildlife conservation in protected areas is dependent upon the support and positive attitudes of local people (Rao *et al.* 2002).

In managing conflict, the aspirations of local people should be taken into account as attitudes and perceptions of local residents towards nature conservation should be integrated with conservation policies for it to be effective (Szell & Hallett 2013). As the elephants maybe ranging between the two States, inter-state initiatives are required for mitigation. Ideally management would enable Abhaypur to develop into a site of peaceful coexistence between humans and elephants.

### Acknowledgements

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