

Mid-term Project Report

Project:- Understanding Elephants human interaction patterns in a human–wildlife conflict landscape in north-eastern India

Rufford Small Grant awardee- Sayan Banerjee (year 2020)

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Work Status

Work commenced as planned in January 2021 at the Dhansiri Forest Division at Udalguri district, Assam. During the 1-month reconnaissance period, I set up the field station and streamlined field logistics. Equipment as mentioned in the budget was bought and a field assistant was selected. Several visits to the forest division office and forest range office were made to collect data related to complaints of damage by elephants. Yearly cumulative data were obtained, and compensation reports were accessed.

Next, I went for daily quick reconnaissance to different villages where human-elephant conflict incidences have been reported and I talked to a few members of the village to take stock of the situation. It was understood that the problems related to elephants start with the onset of monsoons and the end of May and continue till November-December. I noted the general livelihood patterns in those villages. Different stakeholder groups were identified with whom engagements need to be done in the due course of work.

One village close to the forest boundary was selected for pilot interviews and testing of the questionnaire. Two personnel from the forest department were chosen for pilot interviews as well. These interviews led to a restructuring of the questionnaire.

Major landscape elements were noted and GPS points were taken to analyse in Google Earth and QGIS. I have decided to increase this mapping work to further analyse incidences of conflict. Now mapping work will be done to document spatial points of crop/house damage and human death as well as elephant movement.

Due to an absence of elephants from January to May, no observation of elephant behaviour or human-elephant encounters could be done. So, instead I decided to start semi-structured interviews earlier than the scheduled time. Two villages were selected, and a few interviews were conducted to document patterns of conflict, perceptions and behaviour towards elephants and livelihood patterns. A few key informants such as forest department personnel, village headmen and local NGO members were interviewed as well to understand institutional responses to the conflict.

Preliminary analysis of cause of conflict:-

Peoples' testimonies as well as the GIS analysis indicate that massive deforestation occurred in this landscape from 1990 to 2000 after which human-elephant conflict has increased tremendously. During this time, all the reserve forests in this area faced deforestation and an expansion of the agricultural frontier. A 2009 estimate by Assam Forest Department showed that out of 240 km² of forest area in the Dhansiri Forest Division, almost 45% has been encroached. Due to loss of trees and opening up of forest floor, invasive species, especially *Lantana camara* has proliferated, which may have caused food insecurity for elephants inside the forest. This may have caused the elephants to spend significantly more time in human-dominated landscapes and mainly

forage on paddy crops. The impact of elephant behaviour on their food preference is under study.

Preliminary analysis of patterns of conflict:-

In the last 5 years (2016-2020), human elephant conflict has resulted in 31 elephant deaths, 76 human deaths and damage to 1480 houses and 905 ha of crops (see Table 1).

Year	Elephant death (no.)	Human death (no.)	House damaged (no.)	Crops damaged (ha)
2016	6	8	350	45
2017	8	7	380	260
2018	4	19	270	210
2019	7	27	285	230
2020	6	15	195	160

Table 1: Cumulative data on human-elephant conflict (2016-2020)

Compensation data from 2012-2016 was accessed and patterns of reported incidents were plotted. It was found that conflict incidences reached a peak during the agricultural season, from August to November (See Figure 1 and 2). During this time, herds as well as lone male elephants raided crops, mainly paddy. Lone male elephants also entered village premises frequently to damage houses in search of salt and food grains. Farmers have had to guard crops at night and drive elephants out from their farmland. These close-range encounters in crop fields as well as accidental encounters within the villages cause a major number of human deaths. Elephants have also died through suspected electrocution and poisoning. From 2012-2016, a total of 1185 and 163 incidences were reported from the villages and tea estates respectively.

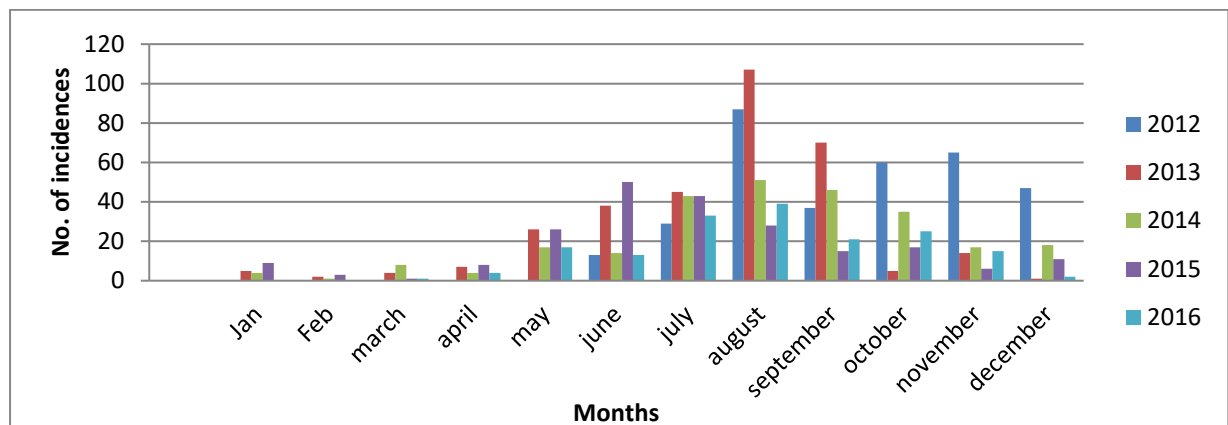


Figure 1: Month-based temporal pattern of conflict incidences (2012-2016)

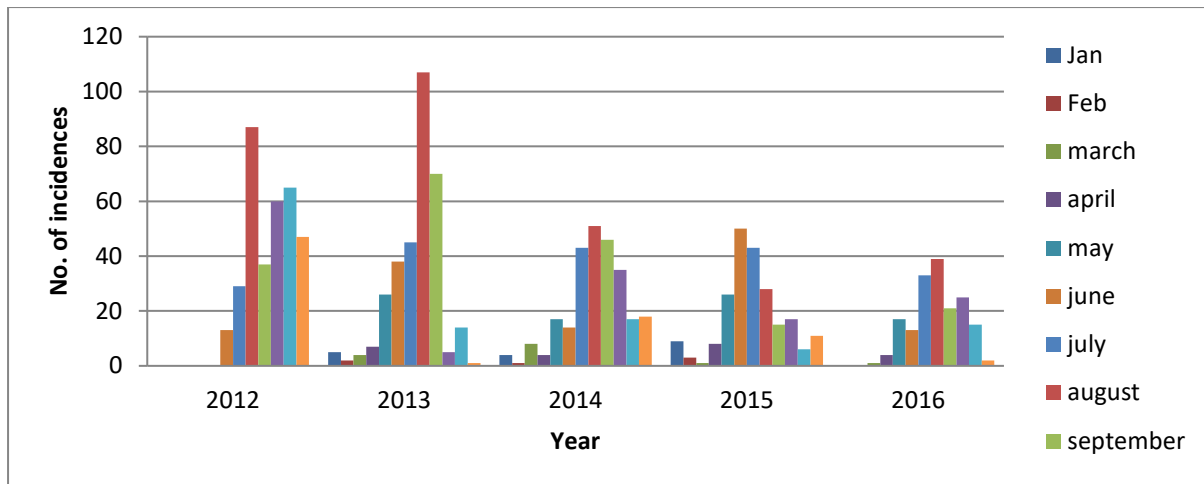


Figure 2: Yearly temporal pattern of conflict incidences (2012-2016)

Tea estates and the riverine areas are situated in a north-south direction with respect to the forest which runs east-west. These tea estates and riverbanks act as refuges for elephants where they spend a significant amount of time during daytime; during the night, they move to raid crops. Villages that are situated adjacent to the riverbanks, tea estates and forest boundary are more prone to elephant incursion.

Further analysis for 2016-2020 is ongoing.

Preliminary analysis of livelihood and people's perceptions towards elephants:-

The study landscape is multi-ethnic comprising different communities such as Bodo, Adivasi, Nepali, Bengali and Assamese who have distinct social histories related to living in this region. The villages near the forest area are dominated by Nepali and Adivasi communities, even though Bodos are the dominant community in the overall district. Tea estates have their own labour quarters, and the labourers belong exclusively to the Adivasi community.

The main occupation as reported by the villagers is farming, especially paddy farming. The average landholding size is less than 1 ha and farming is done mainly for subsistence with daily-wage based labour taken up as secondary occupation. Men in the villages, especially the youths, are moving out of the villages to find work in the urban centres. Forest dependency is mainly true for villages which are close to the forest boundary. A majority of the households collect firewood from the forest, for which there are restrictions imposed by the forest department. People can only collect twigs and broken branches and cannot fell trees. However, timber felling continues illegally. Nepali families living near the forest boundary practice livestock rearing, for which grazing is done within the forest. Water for drinking is collected from different streams that flow down from the forest. A majority of the villagers in the study landscape belong to the BPL category. In the tea estates, tea plucking and tea bush maintenance are the major activity for which mostly women are employed.

Impacts from elephant-related damages and response to those damages depend upon social locations of the villagers in terms of gender, class, ethnicity, place of stay, etc. Individuals down the social hierarchy seemed to be more vulnerable and less adaptable to the conflict. However, a majority of the people I interviewed were tolerant of the elephant as they testified that elephants were coming to their villages as humans destroyed their habitat. They were empathetic towards elephants. People were more dissatisfied with the management of elephants by the forest department in the form of damage compensation and restrictions to firewood collection.

More interviews will be carried out to understand people's perception and how different social locations affect this perception.

Challenges Faced

The major challenge faced was the second wave of COVID-19 and restrictions related to it. The advent of the second wave was sudden and the damage caused by it was significant. There were COVID cases in my family as well as in the field for which I had to abandon the fieldwork in the second week of April 2021. I did not want to endanger my field interlocutors with visits to their places or fieldwork but kept in constant touch to know about their conditions. In April 2021, the state of Assam started putting restrictions on travel and imposed a lockdown in phased manner which is still continuing. Inter-district travel is currently banned, and I have not been able to access field since April. Thus, little fieldwork could be done from April-June. I will be accessing the field again whenever situation improves. Due to the sudden nature of the second wave, the schedule that I decided stands a bit jeopardized. I have revised it. If another wave of COVID19 comes, then it will be again changed.

The changed schedule that I am looking forward to is to finish the stipulated tasks by June instead of January 2022. The rescheduling of tasks is given in the subsequent sections.

Status of Objectives

The project aimed to document human-elephant interactions in the non-protected, mixed-use, human-dominated landscape of Udalguri district, Assam where human-elephant conflict incidences are quite high. In this context, the study has five broad objectives which are to assess:

1. General behavioural activities of elephants in a mixed-use, human-dominated landscape.
2. Behavioural responses of elephants to human presence and activities.
3. Patterns of livelihood and lifestyle of the local human communities in the landscape.
4. Spatial and temporal patterns of human-elephant conflict in the landscape.
5. People's perceptions, attitudes and behaviour towards elephants.

The project is ongoing and significant challenges were faced due to COVID-19 and related local restrictions. The status of the objectives and related remarks are given in the following table:

Sl no.	Objective	Status	Remarks
1	Assess general behavioural activities of elephants in a mixed-use, human-dominated landscape.	Yet to start	Movement of elephant herds in this area generally start from end of May and it continues till December. The documentation will start once the local lockdown is over and I get to access the field. Currently two herds of average size of 25-30 are at the area and frequently roaming at the tea estates.
2	Assess behavioural responses of elephants to human presence and activities.	Yet to start	Documentation will start once the local restrictions are over and I get to access the field.
3	Assess patterns of livelihood and lifestyle of the local human communities in the landscape.	Ongoing	Different stakeholders have been identified. Pilot surveys have been conducted and a final questionnaire has been formed for each stakeholder group. A few in-person interviews have been conducted for local communities at two villages near the forest boundary and key informants such as forest department personnel, village headmen, local NGO members. Major livelihood patterns have been identified and more probing is going on especially for forest dependent livelihood.
4	Assess spatial and temporal patterns of human-elephant conflict in the landscape.	Ongoing	Long term data on compensation to elephant related damages were obtained. Preliminary analysis shows the conflict reaches its peak during

			crop harvesting season in October-November.
5	Assess people's perceptions, attitudes and behaviour towards elephants.	Ongoing	Pilot interviews done and a survey is planned. Preliminary understanding shows people having great tolerance for elephants, but they are unhappy about how human-elephant conflict is managed.

Status of Activities

Different activities were planned with specific time schedules. The time schedules are strictly not followed due to multiple interruptions in the field which result in difficulty in planning proactively. The status of the activities and their probable timelines are as follows:

Task Description	Initial timeline	Status	Probable final timeline	Output	Remarks
Reconnaissance visit	Jan'21-Feb'21	Finished	NA	1. Streamlining logistics 2. Establishing contacts with authorities 3. Selecting field assistant 4. Recce to villages 5. Collecting data on human-elephant conflict from forest department	1. Field has been set up and field logistics has been taken care of. 2. Field assistant selected 3. Recce done to more than 20 villages 4. Data from forest dept collected
GIS mapping	Jan'21-Feb'21	Ongoing	Oct'21	1. Creating landscape level maps with social and ecological elements	1. Landscape elements identified, and map preparation is going on 2. GIS work broadened for identifying patterns and correlates of conflict hotspots
Pilot interviews	Jan'21-Feb'21	Finished	NA	1. Testing of interview questionnaire 2. Reforming questionnaire	1. Testing done at two villages and for few personnel from FD. 2. Questionnaire reformed
Observation of elephant	Feb'21-Sept'21	Yet to start	July'21 (if covid	1. Preparing ethogram	1. Elephant movement

behaviour by focal animal or group sampling			restrictions eased)- Jan'22	2. Documenting behavioural interactions between elephants and humans 3. preparing time-activity budget	starts from May end and continues till December. So, no data collection was possible in Feb-April due to absence of elephants. 2. Covid19 and related restrictions started from March end and it is still continued
Observation of human behaviour by participant and non-participant observation	Feb'21-Sept'21	Yet to start	July'21 (if covid restrictions eased)- Jan'22	1. Documenting interaction pattern with elephants in different areas such as crop field, forest and plantation 2. Documenting life and livelihood of people	1. Observation based data collection will start once elephants start moving in the landscape. 2. Depends upon covid restrictions
Semi-structured interview	Sept'21-Oct'21	Ongoing –early start	March'22	1. Documenting life and livelihood of people 2. Documenting people's perception towards elephants and human-elephant encounters	1. Interviews were commenced before covid restrictions started
Data analysis	Nov'21	Yet to start	April'22-May'22	1. Analysis of interaction patterns between humans and elephants	Due to postponement of data collection, this will shift accordingly
Dissemination of findings and strategizing future action	Dec'21-Jan'22	Yet to start	May'22-June'22	1. Meetings with community members and other	Due to postponement of data collection, this

				stakeholders 2. Demonstrating findings 3. Brainstorming to formulate actions to reduce human-elephant encounters	will shift accordingly
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Way Forward

The objectives of the work remain unchanged, and work will be carried out once the COVID-19 related restrictions are removed and the situation improves. The next 6 months are crucial for data collection as that is time when significant human-elephant encounters take place. As mentioned in the ‘challenges faced’ section, 3 months have been lost, from April to June 2021 due to restrictions. Also, there is a prediction for third wave of COVID-19 from September-October 2021 for which some more months may be lost. Therefore, to be on a safer side and for the fulfilment of the project, I suggest and request for a no-cost extension of the project till June 2022. I hope to finish the project by then if no subsequent COVID-19 wave occurs in 2022.