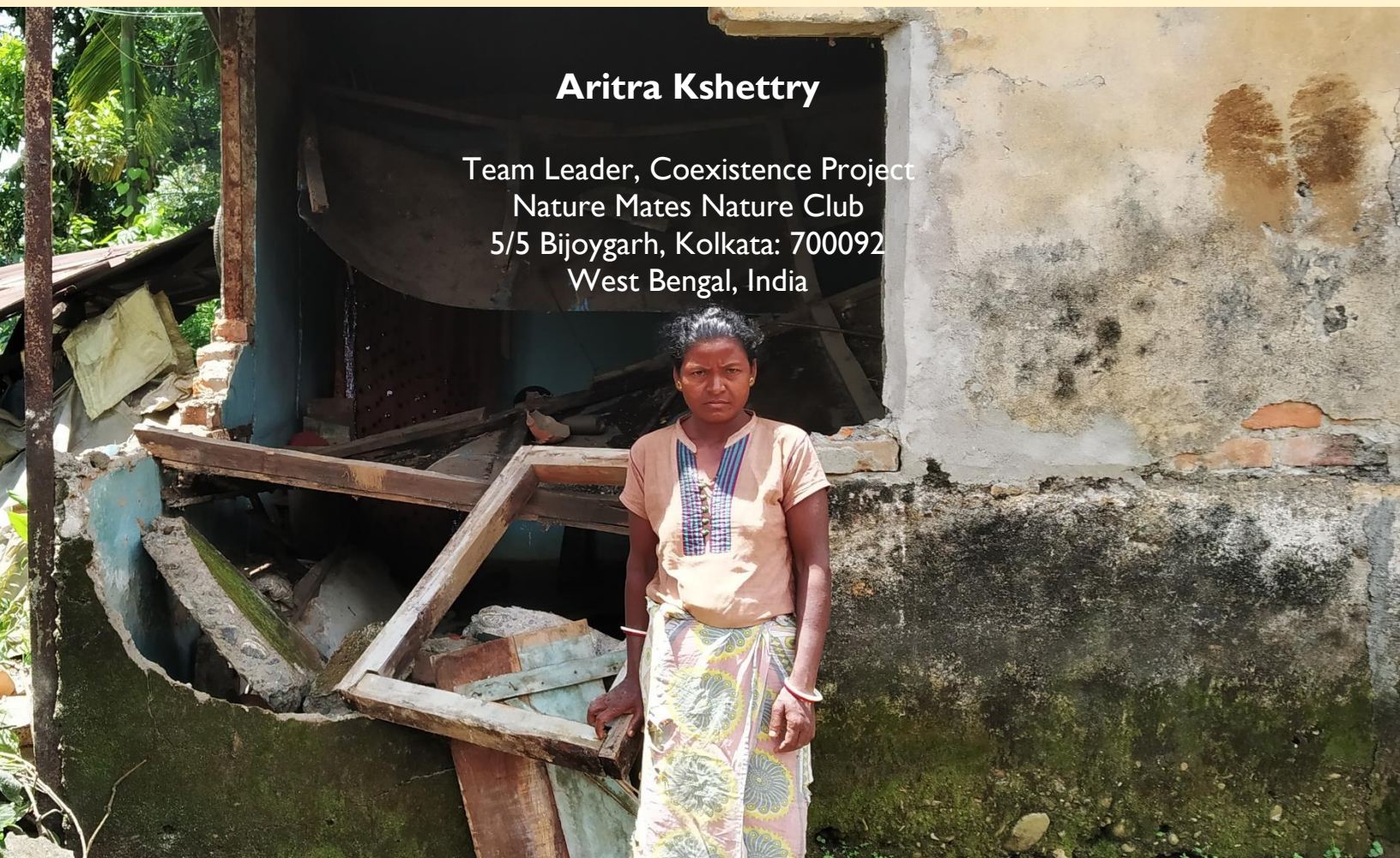




Offsetting losses, building tolerance: Conserving Asian elephants in a human-use landscape, India

Interim report to International Elephant Foundation



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Offsetting losses, building tolerance: Conserving Asian elephants in a human- use landscape, India

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Amount Requested: 11000 USD

Project Start Date: 15th January 2021

Revised Project Start Date: July 2021 (Due to Pandemic)

Project End Date: December 31st 2021

Revised Project End Date: June 2021

Previous IEF funding Award:

2019, Aritra Kshetry, “Using education and awareness as a tool to promote elephant conservation and reduce negative interactions in a biodiversity hotspot”, **India, 10400 USD**

Abstract:

Elephants persist in a mosaic of forests, tea-plantations and agriculture fields in West Bengal state, India. Frequent negative interactions such as human casualties, crop damage and property damage lead to considerable conflicts. Post-pandemic return of migrant workers has increased local dependence on agriculture and has witnessed a spate of elephant deaths due to accidental and deliberate electrocution. We propose to develop collapsible low-cost fences that may be easily installed and maintained by local land owners to deter elephants without harming them. The pilot project will collaborate with engineers and develop a scalable model which will be tested in two pilot villages. Success of the project will discourage the practice of setting live wires to protect crops, will reduce crop damage due to elephants and will also prevent human life loss that occur when people try to chase elephants away from crop fields. The fence design process is complete and a prototype has been designed and tested already. We are currently installing a 1km long fence in Baradighi Tea-estate, one of our two pilot villages. Another 1.5 km fence will be installed in the second pilot village, Meenglass Tea Estate by January 30th 2022. Technical support for the design is being provided by Solitary Nature and Animal Protection Foundation (SNAP) (www.snapindia.org). Institutional support regarding foreign receipts is being provided by Naturemates India field implementation of the project is led by Aritra Kshetry from the Coexistence Project (www.coexistenceproject.org)

Narrative:

The northern districts of West Bengal state have a population of ~600 elephants that range over 3000 sq. km. of fragmented forests, tea-estates, villages and agriculture fields. More than 700 people per sq. km. live in this area and are dependent on tea-plantations and agriculture for their livelihood. Elephants and people share space in this landscape which leads to certain negative impacts on people as well as on elephants. More than 45 people die each year due to encounters with elephants, thousands of acres of crops are lost to elephants (Kshetry, Vaidyanathan, Sukumar, & Athreya, 2020). Increasingly, retaliatory killings of elephants by electrocution is becoming common especially when thousands of migrant workers have come back to the region post pandemic and are heavily dependent on agriculture for livelihood. More than 10 elephants have died between March and August 2020 due to accidental and deliberate electrocution; this is a sharp increase compared to 1-2 cases per year on an average in the past.

Paddy and maize crops are the mainstay of the area and a prime reason for conflict. Elephants feed on these crops in the field and also access stored grains in houses thereby damaging building and causing human casualties. People die trying to protect their crops and also when elephants break into houses. Live wires around crop fields are being used in some cases to deter elephants which leads to death of the animal. Hence, to mitigate the negative impacts, the proposed project aims to design a low-cost power fence model which may be used seasonally to protect housing areas from elephants. The materials required are being procured locally and regional engineering colleges are involved in design and implementation. Local villagers are being trained in the installation and maintenance and a system will be developed so that each village sets up its own fund to maintain these fences regularly. This system will be tested in two pilot villages with high incidence of building damage to test the efficacy. While keeping the safety of local inhabitants and protection from elephants in mind, we have designed fences that will deter elephants using loud alarms and flashing lights. The alarm and lights will also alert local residents of elephant presence and thereby prevent accidents.

- **Project Goals and Objectives**

- **Goal:**

The goal of our project is to enable safer shared spaces between people and elephants by alleviating crops losses and threat of elephant electrocution.

- **Objectives:**

- Identify pilot villages willing to partner with the project
 - Design the fences based on a review of successful designs and in consultation with regional engineering institutes
 - Implement the project in pilot villages with suitable control sites for comparison
 - Assess the efficacy of the model by comparing damages with control sites and also the acceptability among the villagers

- **Project Activities:**

Objective 1: Identify pilot villages willing to partner with the project

Activities: Based on incidences of building damage and damage to crop storage areas, we identified six tea-plantation villages to pilot test the fences. The six tea-estates are Bamandanga Tea Estate, Baradighi TE, Meenglass TE, Huldibari TE, Mogalkata TE and Damdim TE. The highest instances of damage to buildings were recorded in Meenglass TE and Baradighi TE and hence we have consulted with the management of these two estates to install the pilot fences. The fence design has been finalized and fence installation has already begun in Baradighi TE. The control site has also been selected in the two plantations where the housing areas will not be fenced. The damage to buildings will be compared between the two sites.

Objective 2: Design the fences based on a review of successful designs and in consultation with regional engineering institutes

Activities: Our team members in consultation with the design team at SNAP initially designed a solar power fence design. However, local community members raised safety concerns since the fence will be near housing areas and could lead to jolts to children and the elders. Although solar powered fences are completely safe for children as well as elders, we reworked our design to replace solar fences with alarm fences. The poles of the fences will be set on flexible springs so that the elephants cannot dislodge the poles with their trunks/tusks. A small vibrating motor will mimic the current in the fence and thereby alert elephants. The fence will be connected to pressure sensors which will trigger siren and flashing lights when disturbed by elephants. This will also alert the villagers regarding elephant present in the neighbourhood so that they can adopt the safety precautions that were shared during the phase 1 of the project in 2019 using awareness and education tools. The siren, motor and lights will be connected to solar panels and batteries to prevent any misuse and accidental electrocution. The vibrating motor and siren can be seen in the attached model fence pole image.

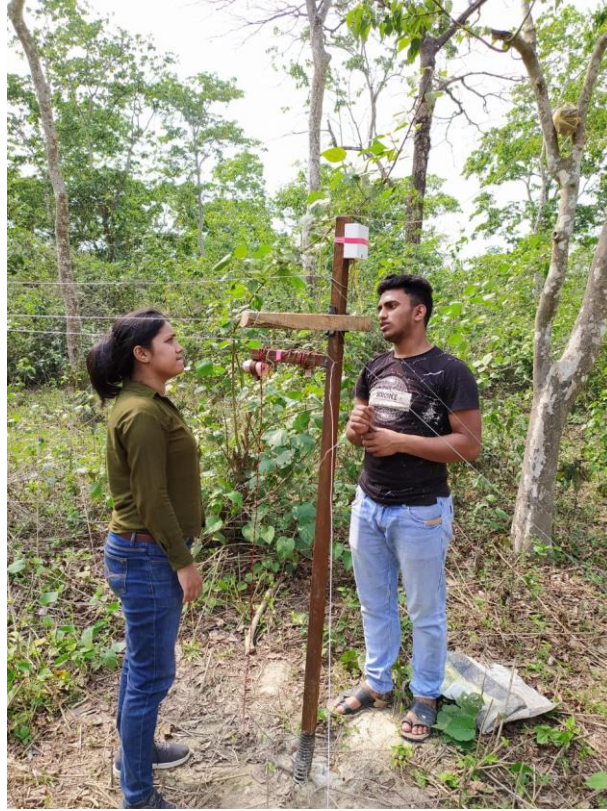


Figure 1: Model alarm fence design showing attached siren (on top) and vibrating motor to mimic energized fences. The pole is attached to a spring base.

Objective 3: Implement the project in pilot villages with suitable control sites for comparison

Activities: Installation of the pilot fence has already commenced in Baradighi Tea Estate and will be completed by 15th December. The fence in Meenglass tea-estate will be completed by 30th January 2022.

Objective 4: Assess the efficacy of the model by comparing damages with control sites and also the acceptability among the villagers

This activity will be carried out once fence installation has been completed. We will also compare damages due to elephants in the fenced areas from before and after the fence installation.

- Major findings and accomplishments:

1. The entire fence design was developed indigenously with locally available materials, this indicates that the available knowhow in the project site is tremendous and such local knowledge and innovation could be the key to Human-Elephant Conflict Mitigation using locally relevant solutions.
2. The tea-estate management has been supportive of our efforts and provided support during the measurement and planning phase.
3. The local concerns regarding energized fences were quickly incorporated in the design and hence the alarm fence idea with flexible poles was developed.

- Monitoring & evaluation procedures

This is the interim report and the complete monitoring and evaluation report will be submitted with the final report. The pandemic induced lockdown and movement restrictions considerably delayed the project but now the team is working to complete the fence installation as soon as possible.

BUDGET: 1 USD=72.95 INR

Fund Utilization Report:

Total Amount received in Phase 1: 5500 USD

BUDGET ITEM	AMOUNT RECEIVED FROM IEF	EXPENDITURE
Materials for fence construction (Galvanized wire, Solar panels, battery, sirens and Spring Poles)	3450	2850
Local Travel for team members (125 USD per month for 4 months for fuel expenses)	500	500
Remuneration for project coordinator (175 USD per month per person for 6 months)	1050	1050
Field station rent	500	4900
Total	5500	4900