

Final Evaluation Report

Your Details	
Full Name	Aritra Kshetry
Project Title	People, Elephants and Leopards: Synthesis of social and ecological knowledge in mitigating conservation conflicts in an Indian biodiversity hotspot
Application ID	27175-B
Grant Amount	£9950
Email Address	kolkatalife@gmail.com
Date of this Report	7 th June 2020

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
1. Spread awareness on safety practices around leopards and elephants				More than 60 workshops were carried out across 40 tea estates. More than 1800 workers participated in the workshops. Based on the workshops, voluntary teams were also created called Quick Response Teams; these teams attend to all wildlife emergencies in their village/tea estate and help in crowd control.
2. Estimation of leopard density in a novel landscape				We carried out the first ever estimation of leopard densities in a tea plantation landscape. The estimated leopard density is higher than several protected areas in India as well as Africa. Tea plantations hold tremendous potential for leopard conservation. We estimated the presence of 15.8 individuals per 100 sq. km (SE \pm 3.8)
3. Monitoring elephant movement and identifying precise movement routes				We collared three female elephants in the region with help from West Bengal Forest Department and Asian Nature Conservation Foundation. Monitoring of collared elephants, mapping their movements was supported by the Rufford Booster Grant.

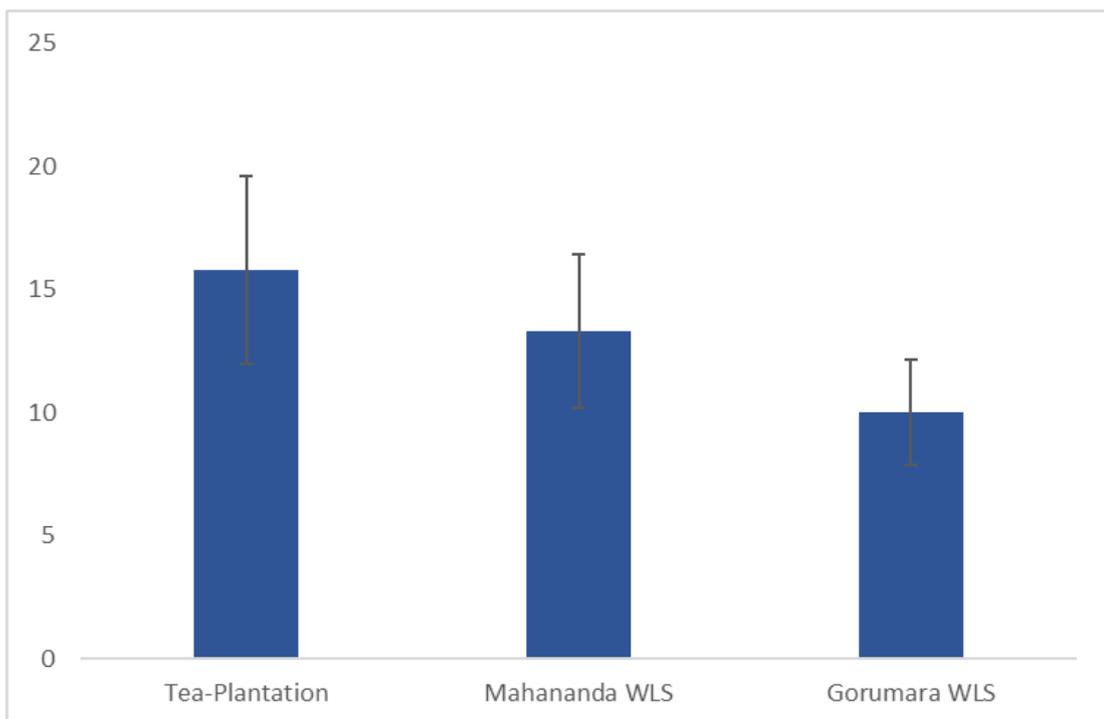
2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

There were no unexpected or unforeseen difficulties during the project period since the project team members have a long-term presence in the field and have been working closely with all the stakeholders to find shared solutions to problems of shared spaces between people and leopards/elephants. However, there was a minor challenge regarding the budget. Initially, the camera traps to be used for the density estimation were borrowed from another project but most of the cameras were faulty and inconsistent. Hence, new cameras were procured using the Rufford grant; prior permission was sought from the foundation before making the purchase. Also, four camera traps were damaged/stolen by miscreants but, we had standby cameras and hence data collection was not affected.

3. Briefly describe the three most important outcomes of your project.

a. First every estimation of leopard numbers in a tea-plantation landscape:

For the first time ever, we have been able to empirically estimate the density of a wild felid in a tea plantation landscape. We sampled tea plantations over 200 sq km with 10 pairs of camera traps. The study area was divided into four blocks of 50 sq km each and each block had 10 trapping stations with two cameras at each station. We sampled for over 800 trap nights and obtained more than 36000 images of which there included 19000 human images, 840 livestock images and 81 leopard images. The trapping effort also established the high level of spatial overlap between people and leopards where in most cases leopards and people were using the same roads for movement, but at a different time of the day. We estimated leopard densities to be 15.8 individuals per 100 sq km (SE ± 3.8). This estimate is higher than leopard densities in other human use areas of India such as the sugarcane fields of Maharashtra and is even higher than the protected areas of the project landscape.

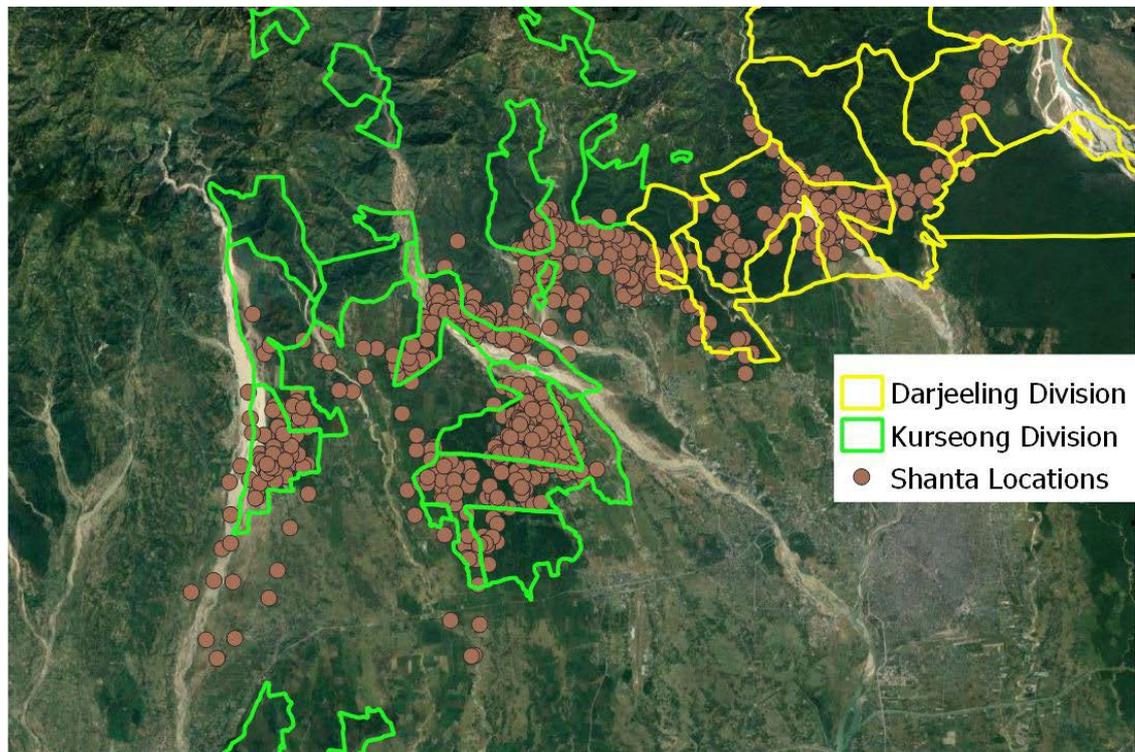


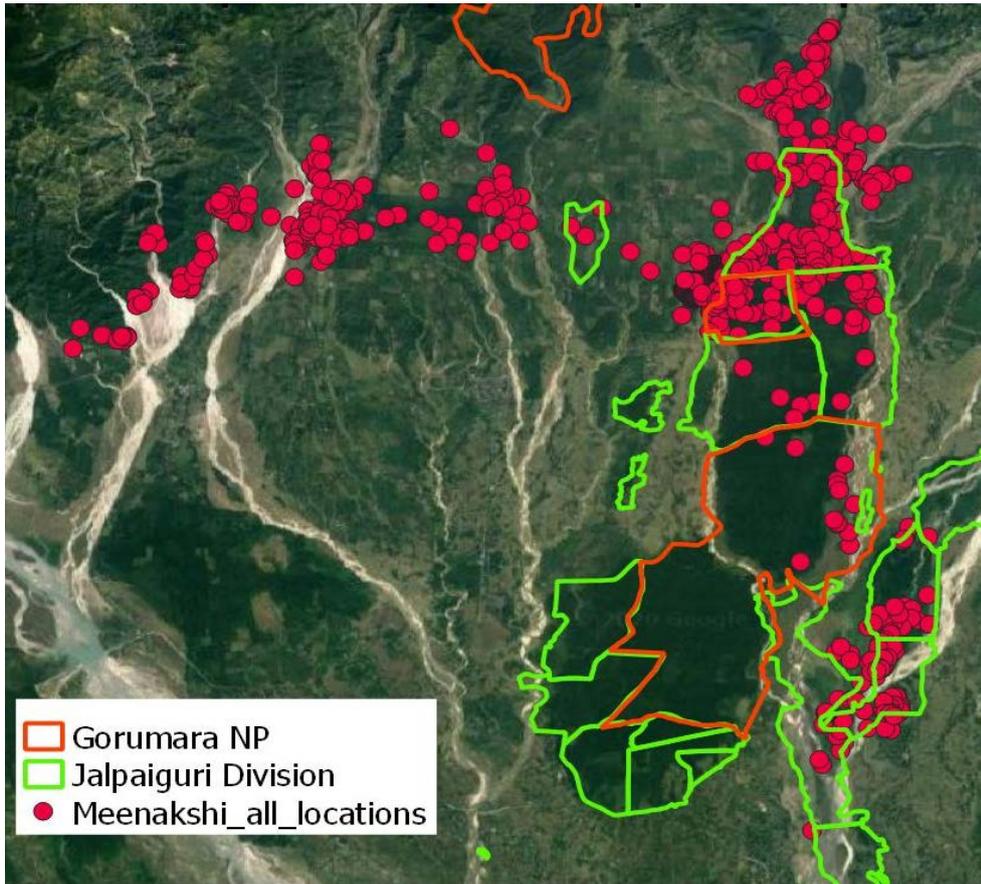
b. Identification of elephant home range and movement patterns:

Three adult female elephants were collared as part of a collaborative project between the West Bengal Forest Department and Asian Nature Conservation Foundation and Indian Institute of Science. Monitoring of the elephant herds was supported by the current grant including mapping of locations, ranging area and movement routes. We were able to identify critical bottlenecks in the movement routes of the herds where future conservation actions may be focussed to ensure connectivity of the movement routes.

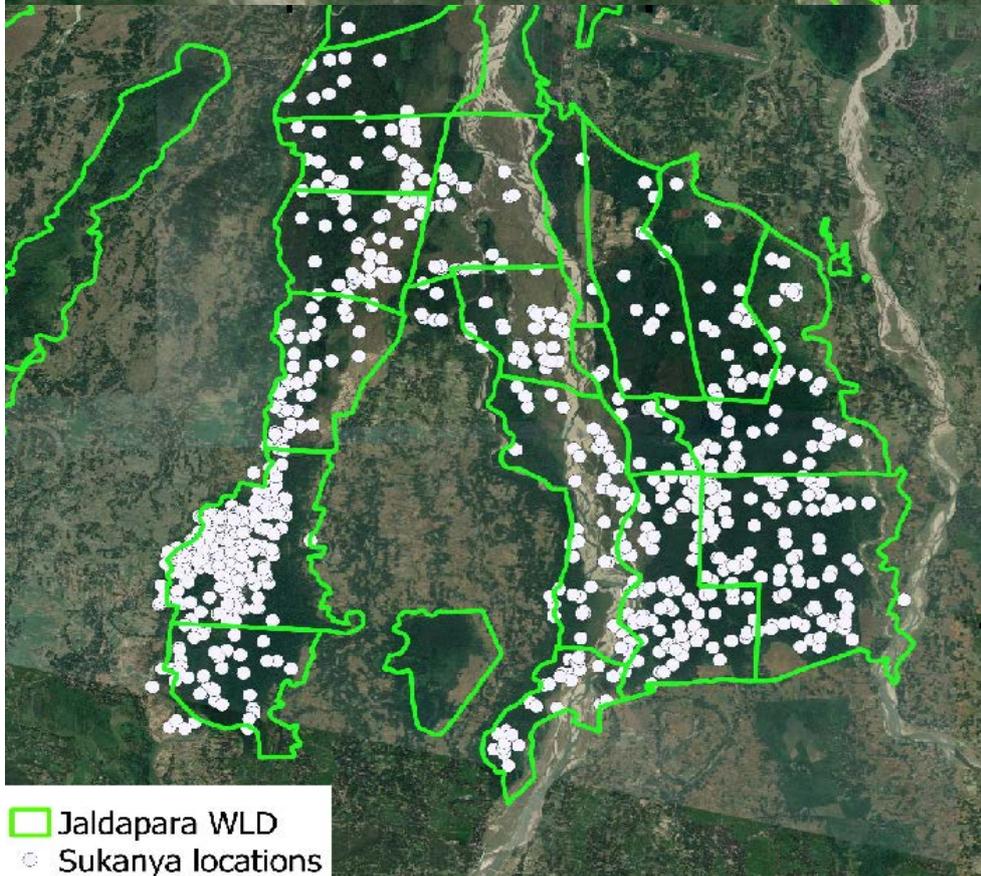
c. Increased awareness regarding safety practices:

Our past research has indicated that human casualties due to elephants and leopards are the prime hurdle to conservation efforts in the landscape. Subsequently, our research and conservation focus has centred on resolving this persistent problem. Based on intensive research over the past 4 years, we have been able to understand the circumstances behind these incidents and have also come up with awareness material to educate local communities on safety practices. We have developed posters in local languages and also short awareness videos. Further, we have also made all the resources available on our new project website for anyone to use. Awareness resources developed for our project has also been used in other states to educate local communities. We have reached more than 1800 participants through our awareness programmes across 40 tea estates in our 2500 sq km study area. We have also produced a short video on safety practices near elephants, it is available in two languages and has also been screened in local television (<https://www.youtube.com/watch?v=E7oJkf9BPJo>).





- Orange box: Gorumara NP
- Green box: Jalpaiguri Division
- Red dot: Meenakshi_all_locations



- Green box: Jaldapara WLD
- White dot: Sukanya locations

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

Involvement of local communities has been the key focus of our research and conservation activities over the past 5 years. Our core team is also comprised of members from local communities.

We have reached more than 1800 members of local communities, especially tea estate workers through our awareness programmes. These communities are at risk due to frequent direct encounters with leopards and elephants which leads to many casualties in the region. Our awareness sessions aimed to share safety practices to minimise the risk of injury due to leopards and elephants in the tea plantations.

We also floated the idea of voluntary wildlife teams during our awareness sessions. The idea behind the teams was to enable local people to deal with wildlife related emergencies such as elephant entry in housing areas, leopard presence near human habitations. The primary task of these teams would be crowd control and early warning to villagers regarding the presence of elephants in their immediate vicinity.

The idea gained popularity and with support from other organisations, 18 such teams were created, trained and equipped. These Quick Response Teams are community teams and they form the first response during any kind of wildlife related emergencies in their respective villages.

5. Are there any plans to continue this work?

The current project supported by the Rufford Booster Grant is a part of our long-term research and conservation activities in the region. Our next step would be to test the efficacy of certain mitigation measures to protect crops from elephants and use early warning systems to avoid leopard causes human casualties.

6. How do you plan to share the results of your work with others?

We have a very active website www.coexistenceproject.org where all our activities are updated regularly. We also publish most of our conservation and research in international peer-reviewed journals and through popular articles. The Rufford Foundation is acknowledged in all such fora.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The grant was used between April 2019 and April 2020. This period is the same as the anticipated duration of the proposed project. The proposed project, however, was part of our long-term research and conservation activities in the region which began in 2013 and will also continue in the future.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Camera Trap Purchase		3069	+3069	Permission for alteration of budget obtained from the RSGF
Accounting Fees and Bank Charges	900		-900	Waived off by host institute
Laptop Purchase for project	400	550	+150	
PI honorarium	640		-640	PI did not take any honorarium for the project activities
Field Assistant wages	2052	2052		
Project Coordinator	1283	1283		
Local four-wheeler hire	1283		-1283	Provided by other funding agencies
Two-wheeler hire	769	1000	+231	
Per-diem and food expenses	640	640		
Awareness material and website	535	535		
Fuel for local transport	1282	821	-461	Difference paid from other funding agencies
Batteries for camera traps	166		-166	Paid from other funds
Total	9950	9950		

9. Looking ahead, what do you feel are the important next steps?

Our immediate next step would be to publish the results from the camera trapping exercise in a peer-reviewed journal to share with our peers across the world.

We plan to use our results and initiate studies on the efficacy of various mitigation measures to minimise negative interaction between people and large wildlife in the region.

We also plan to create a short awareness video for leopards in the region in addition to our video on elephants.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

The Rufford logo has been included in our project website and two awareness posters which have been widely shared in the study area with Forest Department officials, tea estate management and local community members. The posters are available in English, Bengali and Hindi languages. All the awareness material are freely available on our project website (<https://www.coexistenceproject.org/awareness-materials>).

The foundation has also been acknowledged in our recent paper which was based on our research in the landscape <https://www.sciencedirect.com/science/article/pii/S2351989420300135> and **an** article in Mongabay on this research <https://india.mongabay.com/2020/02/looking-beyond-protected-areas-to-conserve-species-in-tea-garden-terrains/#:~:text=Conservation%20beyond%20protected%20areas,plantation%2C%20villages%20and%20agricultural%20fields.&text=%E2%80%9CThe%20north%20Bengal%20landscape%20is,forest%20patches%20and%20revenue%20villages.>

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Tonmoy Mukherjee (Project Coordinator):

Tonmoy has been with the project since February 2019 after obtaining his Diploma in Clinical research. Tonmoy is an expert when **it** comes to field surveys and methods such as camera trapping, distribution surveys and also takes care of data management and day to day activities of the project.

Priyanka Das (Team Member)

Priyanka has been part of the project since 2017 and is currently pursuing her masters in Conservation from an eminent Government Funded Institute. She will join the project team during her Masters' Dissertation which is funded by the Government of India. Her interests include forage selection, stress physiology and acoustics in elephants.

Amir Chettri (Project Assistant):

Amir has been part of the Project since June 2017 and is himself from a very highly affected village. His acceptance among local communities and his interpersonal skills is useful for the project. Furthermore, he is also trained in using Camera Traps, GPS, conducting interviews in local language as well as organising stakeholder meetings.

Motahar Rahaman (Project Assistant):

Motahar has been part of the Project since June 2017 and is himself from a very highly affected village. His acceptance among local communities and his interpersonal skills is useful for the project. Furthermore, he is also trained in using

Camera Traps, GPS, conducting interviews in local language as well as organising stakeholder meetings.

Ramesh Mahali (Project Assistant):

Ramesh belongs to the tribal community and has been part of our team since January 2018. His acceptance among local communities and his interpersonal skills is useful for the project. He is also trained in using Camera Traps, GPS, conducting interviews in local language as well as organising stakeholder meetings.

Left Flank

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L3M



L1F



L4F



L9F



