

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Rashmi Singh Rana
<b>Project Title</b>	Studying negative impacts of free-ranging dogs on native threatened wild mammals to develop effective mitigation framework in the Indian trans-Himalaya
<b>Application ID</b>	38029-1
<b>Date of this Report</b>	19 December 2023

**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
<p>To determine the nature and extent of negative impacts of free-ranging dogs (FRDs) with native wildlife through community knowledge.</p>				<p>We were able to assess the type, frequency, and intensity of dog-wildlife interactions in 52 villages. In total we conducted 55 Focus Group Discussions and five key informant interviews with local communities. We also conducted interviews with forest rangers and ground staff and informal conversations with two personnel from army camps to record observed dog attacks on wildlife. FGDs and KI interviews were conducted following a semi-structured questionnaire covering themes pertaining to village free-ranging dogs, owned dogs, dog-wildlife interactions, dog-livestock interactions, dog disease and mortality, behaviour, tolerance and attitudes towards dogs, mitigation practices and limitations. A participatory digital mapping exercise was conducted during FGDs and KI interviews to mark locations of dog-wildlife interactions and dog presence in wild habitats.</p>
<p>To identify the key drivers of the negative interactions of free-ranging dogs (FRDs) and native wildlife.</p>				<p>Dog population assessment surveys were conducted in 52 villages and four habitations which included market spots, tourist spots and GREF camp, making it a total of 56 locations (Map 3). These surveys employed a combination of distance sampling method following a line transect and photographic sight-resight method. A point count method was not possible and was deemed unsuitable owing to the rugged and mountainous nature of the terrain that did not allow for clear vantage points to see dogs.</p> <p>In addition to the 56 locations, we also repeated these 2-day surveys in four locations in the late evenings to</p>

			<p>compare temporal change. In total we conducted 60 2-day surveys (120 transects lines) and walked a total transect length of 494.07 km.</p> <p>A preliminary garbage site assessment was done around all villages. For each garbage disposal site, details like GPS coordinates, location name, dimensions of garbage (if calculation was possible), type of waste in the garbage site (wet, dry, electronic), the extent of spread of the garbage.</p> <p>To ascertain about factors that influence or drive dog-wildlife interactions and dog abundance in villages, both these response variables were modelled as a function of a list of predictors to tease out the role and direction of influence that factors such as village size, livestock holding, distance to garbage site, type of garbage, distance to market or tourist hub have on both the responses of interest.</p> <p>Village population size, livestock holding, garbage extent and distance from garbage site were important driving factors for dog abundance and dog-wildlife interactions.</p>
<p>Development of an effective dog threat mitigation action framework in context of Lahaul</p>			<p>A dog threat mitigation action framework with a four-fold foundation has been developed to be part of the integrated landscape level management plan for Lahaul. This framework shall be used in the four identified target zones where the reported dog-wildlife conflicts are significantly high.</p> <p>This plan was possible through multiple consultations from stakeholder in the study landscape, as well as in allied landscapes of Spiti and Ladakh where dog-related issues are a major challenge. Insights from these visits, along with interventions implemented in each landscape, were used to address gaps.</p>
<p>To facilitate institutional convergence to implement the suggested mitigation action</p>			<p>Following data analysis, results of the dog surveys and the extent of dog-wildlife and dog-livestock interactions were disseminated to key stakeholders. These</p>

<p>framework to reduce negative impacts of free-ranging dogs (FRDs) on wild animals in Lahaul.</p>		<p>included the Animal Husbandry Department, District Forest Department, Tourism Department, District Administration, local NGO leaders (YDA Garsha), and Panchayat Pradhans from villages with high dog abundance and related issues.</p> <p>The framework is proposed to be part of the Integrated Landscape Management Plan that will bring together multi-sectoral convergence for the ecologically sensible development of the Lahaul landscape. The mitigation framework and action plans suggested cannot be implemented this year due to challenging winter months. However, the implementation will begin next year post-winter.</p>
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**2. Describe the three most important outcomes of your project.**

- a) The most important and appreciated outcome was that we conducted a systematic dog population assessment for Lahaul clubbing together reliable methods such as distance sampling as well as sight-resight approach to get estimates of dog density, relative village abundances and total population size. This was the first time such a population assessment was undertaken for Lahaul creating a baseline of population estimates, age-structure and sex classification in free-ranging dogs of Lahaul. These estimates have been shared with relevant line departments and stakeholders in Lahaul. Future assessments can be compared to these estimated baselines of dog population.
- b) The project was able to demarcate areas or clusters of significantly high reported negative dog-wildlife interactions. These baselines shall serve as the target zones for concerted efforts to implement the proposed mitigation action framework to minimise negative dog-wildlife interactions.
- c) A dog threat mitigation action framework, relying on a four-fold foundation, was tailored and developed around the socio-ecological context of the Lahaul landscape, wherein we addressed the gaps in existing interventions measures, as well as suggested novel strategies through learning from consultations in other landscapes like Spiti and Ladakh.

**3. Explain any unforeseen difficulties that arose during the project and how these were tackled.**

For the dog population assessment activity, we had initially planned to conduct a point-count sampling as well. But given the mountainous and rugged nature of the terrain, it was soon realised that point-count was not a suitable method to get

reliable sightings of dogs that may be present but invisible even at close proximities. These would give false absences which is not due to the elusive nature of the dogs but only because of the lack of clear vantage points around villages. This is why we did not continue with this method. We only used the combination of line-transect sampling and photographic sight-resight sampling methods.

Recognising that free-ranging dogs return to villages at dusk, we attempted evening dog surveys. However, sunset limited our dog sightings and laser rangefinder accuracy, impacting our overall survey efficacy and efforts. We focused our evening dog surveys on four large villages to maximise dog sightings and counts, while surveying other villages during daylight hours only.

Weather conditions proved to be challenging for our surveys. Heavy snowfall restricted our movement from basecamp to the survey villages due to lack of vehicle or transportation. Other than using this time to complete data entry, data cleaning, we also visited the local government school in our basecamp village to engage with students and play nature-related games with them within their classrooms. We interacted with students from grade 6, 7 and 8. These activities were appreciated by the students. Moreover, we also used this time to conduct interviews with food shop or hotel and dhaba owners/workers within Keylong, to understand the nature of food waste generation and disposal practices.

The study landscape also experienced inclement weather and rainfall in monsoons that cause multiple major landslides on the national highway roads. Two of these landslides were in our basecamp village of Keylong. The team made the decision to leave the landscape in emergency using private vehicles before the weather conditions worsened. We returned to the landscape after monsoons once the weather was stable and the roads were repaired for the public.

#### **4. Describe the involvement of local communities and how they have benefited from the project.**

The local communities were the backbone of this project. Our data on dog-wildlife interactions as well as dog-livestock interactions are all based on community-reported observations for the last 5 years. Key informants from the affected villages were engaged as volunteers to update us with information on any new noted dog-wildlife interaction. Although only two new incidents were reported to us for this year, it was encouraging to see volunteers take interest in monitoring for such activities in their vicinity.

Most villages reported many issues with the growing dog numbers. About 83% of surveyed villages reported dog-wildlife conflicts, and 82% of the villages reported dogs preying and attacking livestock. Many villagers also noted that dog packs trampled and damaged their crops while playing or fighting in agricultural fields. The unmonitored dog population is of a significant concern for most the surveyed villages that are impacted by dogs. Implementing the mitigation action framework will promote in securing people's livelihoods and improve their resilience to losses incurred to livelihood due to free-ranging dogs.

**5. Are there any plans to continue this work?**

Yes, I am going to continue and elaborate this work further as part of my doctoral research work. This project allowed me to create the critical baseline needed to take the study on human-canid and multispecies interactions and coexistence forward. This study and its results have created a foundation for future research and conservation work in this landscape. I will be actively participating in this landscape as a research scholar which will allow me to further engage with stakeholders and facilitate and participate in the implementation of the proposed dog threat mitigation action plan in the Lahaul study landscape.

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

In addition to sharing the key findings and proposed mitigation framework with stakeholders, I will also present my work in conferences like Students Conference on Conservation Science(2024) in Bangalore and Indian Wildlife Ecology Conference 2024.

I am also preparing a manuscript for submission in the journal Animals for their special issue called 'Free-roaming cats and dogs: Ecology, Management and inter-species interactions'.

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

The most critical step is to implement the mitigation framework and action plans in the coming year before the next dog breeding cycle (in April). Although the winter months would not be conducive for ground or field activities of the action plan, most of the institutionalisation and planning has to begin immediately. This will happen as part of the developing Integrated Landscape Management Plan initiated by the Lahaul Forest Division.

However, the study needs to be taken forward by determining the spatial movement and extent of free-ranging dogs into critical habitats of the threatened wildlife of Lahaul with the help of ecological studies and intensive camera trapping efforts, especially in the four identified target zones. Studying dog behaviour may also allow deeper understanding of drivers and motivations behind dogs chasing or hunting wild animals.

**8. 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?**

Yes, presentations and report documents shared with relevant stakeholder such as the Forest Department, Animal Husbandry department, panchayat presidents had The Rufford Foundation's logo on it. I shall be using RF logos in all my future presentations and publications emanating from this project.

**9. Provide a full list of all the members of your team and their role in the project.**

*Field team:*

- Principal Investigator: **Rashmi Singh Rana**. Involved in conceptualisation of the study, designing the study, conducting field data collection, data analyses and report writing.
- Research Intern: **Bhaskar Singh Panwar**. Involved in field data collection activities, data entry, and field work documentation.
- Research Intern: **Neeraj Bisht**. Involved in field data collection activities, data entry, and field work documentation.
- Field Assistant: **Vikram Katoch**. Involved in field data collection activities and support.

*Supporting team:*

- Supervisor: **Dr. Yash Veer Bhatnagar**. Supervised and guided in the conceptualisation and designing of the study. Provided valuable support and suggestions throughout the progress of the study.
- Team member: **Mr. Shiv Kumar**. His valuable knowledge and experience in the landscape guided us during the course of our data collection activities.

**10. Any other comments?**

Since this study will be taken forward as part of my doctoral research work on dog-human-wildlife interactions, I would be very keen to apply for funding for the continuation of the present work.