Final Evaluation Report

Your Details	
Full Name	Lo Tien Bieu
Project Title	Safeguarding Giants: An AI - Power Initiative for Elephants
Application ID	40256-1
Date of this Report	Feb 28, 2025

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	Comments
	acineveu	acineveu	acineveu	
Accurately				We coordinated and share
identify				data with HSI which has
population size				successfully identify
and distribution				number of elephant
of Asian				through camera traps in
elephant in Cat				Cat Tien, Dong Nai
Tien National				province
Park, Dong Nai				
province				
Make a hot spot				- We travelled around Ta
map, find out				Lai and Thanh Son
locations they				communes in the predicted
are most likely to				HEC hot spot and
enter/exit the				interviewed 84 local
forest areas to				farmers, then we using
raid local farms				Google Earth and ask
and have				people draw line of how
solution to avoid				elephant moved, range of
conflict				elephant moved when they
				are seen in the nearby
				areas, as well as their entry
				and exit point from the
				forest, it takes times to
				explain to farmer to
				understand the Google
				Earth Pro
Built up				- We have surveyed and
locations where				chosen some locations for
elephants can be				built up viewing areas,
sately and				these areas should be
ethically viewed				separated with resident
by visiting eco-				area by electric fence and
tourists				should be close to locations
				the forest we plan to enter/exit
				the torest, we plan to grow
				some muit plants that
				elephants most targeted

	when they came to the
	village, but due to lack of
	funding we cannot fully
	achieve the objective.
	Hence, since electric fence
	has finished closed up, the
	moving pattern of
	elephants has changed.
Successfully	We have set up and create
implement an AI	an Early Warning System
elephant alert	(Elmas) with the
monitoring	combination of set up AI
system	camera at entry/exit point
	that elephant use, we create
	Zalo and Facebook group
	called EON (Elephant
	Observation Network) this
	group will help farmer and
	Quick responding team
	update real-time on the
	damage, travel pattern,
	time, and number of
	elephant when elephant
	being seen in the area, this
	group also used to inform
	farmer in the village
	whenever AI camera
	detected elephant in the
	area. So by this method,
	farmer, local authorities,
	researchers will have
	information about the
	elephant and have advance
	strategies to protect the
	crops

2. Describe the three most important outcomes of your project.

a) Identifying HEC hotspots and distribution of elephants in the area We successfully pinpointed areas of Human-Elephant conflict (HEC) and mapped out where elephant are seen in Ta Lai, Thanh Son commune, Dong Nai province. This accomplish has given us vital information to better understand and manage the regions where elephants' territory and human activities overlapped.

b) Establishment of AI-Powered monitoring and alert system

Successfully set up AI cameras at the entry and exit points of elephants around Ta Lai. This include establishing the Elephant Observation Network (EON), which alert farmers and local authorities about elephant activities. This system enhances real-time monitoring and helps prevent potential conflicts by informing relevant parties promptly. Systematic Aerial surveys to identify elephant distribution areas. When informed by farmers through platforms like Zalo, Facebook group, the team promptly conducted quick-response flights to assess and address the situation. This approach ensures timely and effective response to potential human elephant conflict. The team also provide training for rangers so they can carry out the fly when the team is not available

c) The stakeholder meeting is being combined with our project presentation and real-time demonstration of how the AI cameras and thermal drones work to monitor elephants, and to benefit communities. The meeting is set for June 28th ,2023 at the Ta Lai Longhouse in Dong Nai. This venue is a central ecotourism hub for the communities that are most affected by HEC, and $\sim^{1}/_{3}$ of their income goes directly to support the commune. Therefore the meeting benefited the local stakeholders not only by providing them with knowledge, training, and insights, but also directly by the built in benefit sharing mechanism of the venue. We have been also actively working with four Cat Tien's ranger station in the center of Dong Nai Elephant population and the team have been training them on how to use the thermal drone and maintain AI camera system.

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

- Ground surveys for dung and footprint:

Challenges:

+ Weather conditions: Inclement weather, especially during the rainy season can make ground surveys difficult due to poor visibility and muddy terrain.

+ Identifying fresh signs: Differentiating between fresh and old dung or footprints can be challenging, impacting the accuracy of data collected.

+ Terrain difficulties: Remoted areas lack of proper roads or infrastructure, making it challenging to reach survey location such as dense forest or rugged landscapes.

Coping strategies:

- Adaptation to weather: Planning surveys during favorable weather and utilizing appropriate gear (rain gear, footwear, field gear) to navigate in muddy conditions

- Training and expertise: Providing training to team member to accurately identify and record fresh signs also to minimize errors in data collection

- Conduct survey throughout mapping and route planning in advance: Utilize GPS technology and satellite imaginary to identify possible access routes. Engage with local guide or communities who have knowledge of the area to determine the best access point, prepare equipment for trekking to the point that vehicle cannot access.

Systematic fight during rainy season

Challenges:

- Weather dependent operations: Rainy conditions can limit or impede aerial surveys due to poor visibility and unsafe flying condition. Drone can easy to malfunction due to moist and humidity

- Data accuracy: Precise documentation and imaging might be hindered due to weather-related factors like fog or rain

Coping strategies:

-Flexible scheduling: Developing a flexible schedule to accommodate weather fluctuations maximizing flying opportunities during clear weather. Bring dry-bag, raincoat and water proof material to protect survey equipment

Quick response to local reports:

Challenges:

- Timely communication: Challenges in receiving and responding promptly to real-time reports from local communities about elephant movement or conflicts

- Logistics and accessibility: Accessing remote area or regions with limited infrastructure can delay response times.

- Risk when going to the field at night time: At night due to limit of vision, may causing dangerous situation for researcher if elephant approaching

Coping strategies:

- Establishing communication channel: Setting up efficient communication channel such as mobile hotline or community liaisons, stay connecting with village chief and village members who live near enter/exit point of elephant to receive and respond to reports swiftly.

-Pre-positioning resources: Anticipating potential conflict zones and pre-positioning resources strategically for quicker response. Remember to mark and map out the area had most conflict occur.

- Technology monitoring: Using thermal drone to monitoring elephant activities at night to reduce risk for researcher when encounter elephant in the wild.

Installation of AI Cameras at entrance/exit Points:

Challenges:

- Technical issues: Installation and maintenance of AI-Cameras in remotes area might face technical challenges or connectivity issues.

- Tampering or damage: Risk of vandalism or damage to the camera equipment by wildlife or local inhabitants.

Coping strategies:

-Through out planning: Conducting through out site assessment before installation to address technical challenges and ensuring backup systems. Maintain AI-camera every week to make sure the system is working

- Community engagement: Involving local communities in ca,era installation, explaining the benefit and garnering their support to reduce tampering risks, installed poster under camera indicating the benefit of camera.

Surveying local communities about HEC:

Challenges:

- Cultural sensitivities: Gaining trust and cooperation from local communities might be challenging due to cultural differences and historical conflict

- Language barriers: Communicating eeffectively with communities speaking different languages cam impede data collection

Coping strategies:

- Community engagement and sensitization: Building relationships, involving community leader and conducting raising awareness program to gain trust and cooperation

- Translation and local assistance: Hiring local interpreters or translator to reduce language gap and facilitate effective communication

Electric fence limitation

Challenges: Dong Nai FPD has decided to complete the unfinished section of the electric fence, extending from behind Talai rice field across Talai lake up to road 323. In previous year, this area was a common route for the elephant herd, where they frequently entered the field to feed on rice and fruit

- However the electric fence was fully enclosed, the elephant change their movement patterns significantly. Instead of following their old migration route, they began breaking though sections of the electric fence to exit, making it quite harder to monitor and control their movements. Although this changed has been predicted. This shift has not only increased the risk of human-elephant conflict but has also made tracking the herd's movement patterns more complex

Coping strategies:

- Enhance monitoring of elephant movement routes though ground patrols and drone surveillance to identify locations where elephant frequently break through the fence
- Identify key areas where elephant tend to gather outside the electric fence (Temporary resting place), allowing for accurate mapping and timely warning to people

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

+ **AI-Powered monitoring and surveillance**

- AI-cameras are installed at key entry and exit point in the village to track elephant movement in real-time

- Farmer, villagers involve in reporting, update information for observation group

- Drones are deployed for aerial monitoring, helping detect elephant locations and behavior efficiently when receive report from farmers.

Early warning and conflict prevention system

- A structured Early warning system alerts villagers when elephant approach, allowing timely preventive measures to reduce human-elephants conflicts.

- A community network is established where farmer involve in report elephant activities, ensuring swift information-sharing across the village.

Education and training for farmers

- Workshop and hands-on training sessions teach farmer and stakeholders safe and effective ways to handle elephant encounters.

- Training focuses on practical conflict mitigation technique, such as non-violent deterrents and habitat management strategies.

- Villagers will spread new mitigation method to their family as a safe way to deal with elephant after training

Ecotourism development for sustainable livelihood

- The project promotes elephant-based ecotourism, providing alternative income opportunities for farmer

- Local communities are involved in planning, running eco-lodges, guided tours, and travel businesses, generating economic benefit from wildlife protection

+ Benefit to local community

Increased safety and reduce human-wildlife conflict

- The AI-powered monitoring system and Early warning system minimize unexpected encounters with elephants, improving community safety

- Farmer can protect crop better, fewer crop losses due to proactive conflict management strategies

Economic growth and alternative livelihoods

- Ecotourism creates new job opportunities in guiding, hospitality and tourism services

- Farmer benefit financially from tourism while reducing dependence on land intensive agriculture

Stronger community collaboration and resilience

- The elephant observation network strengthens cooperation among villagers, fostering collective problem solving

- Shared conservation responsibilities empower communities to take an active role in wildlife protection

Enhanced environmental awareness and sustainable practices

Training programs improve understanding of elephant behavior and conservation principle.
Improve skill for farmers, rangers, stakeholders in wildlife monitoring, drone operation
The initiative promotes sustainable agricultural practices that align with wildlife conservation goal

5. Are there any plans to continue this work?

Plan to continue:

- Establish an elephant ecotourism model with local operators who will guide tourists through the communities affected by HEC to purchase products and support the community while learning about the cultures, and finally observing wild elephants when alerted
- Have secondary meeting with other NGOs and project stakeholders that focus on community development in the area and see if they are willing to partner to expand the ecotourism initiative further into the Thanh Son area where the other portion of the elephant populations resides.
- Ensure the interventions are having a positive effect on elephant populations, local incomes, and local perspectives about elephants in Dong Nai

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

If the project runs successfully as planned, we would like to scale the model to the populations in the Central Highlands and Northern Vietnam. We would also like to promote the solution on platforms like PANORAMA to ensure others dealing with elephants and conflict can use the model as a conservation solution for their populations as well.

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

Expand AI and technology-based monitoring: Increase deployment of AI-powered cameras and thermal drone for more comprehensive tracking of elephant movements. Improve real-time data analysis to predict movement patterns and new potential human-elephant conflict zones.
Strengthen human-elephant conflict mitigation: Enhance early warning systems with wider community integration. Develop additional non-aggressive deterrents, such us sound based or light-based barrier, keep elephant away from residential area.

- Engage and empower local communities: Conduct more training, workshops for farmer and ranger on conflict prevention and coexisting with elephant. Expand ecotourism initiative to provide alternative livelihood for communities, reducing economic dependence on land-use that may threaten elephant habitat.

- Enhance habitat protection and restoration: Reforest and restore degraded area to expand safe corridors for elephant movement. Strengthen anti-poaching patrols and law enforcement.

- Increase public awareness and policy advocacy: Launch awareness campaign, advocate for stronger legal protection and policies. Seek local and international support for long-term funding programs.

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, The Rufford Foundation logo was used in several materials related to this project to acknowledge its support. Specifically:

- **Project Reports & Presentations** The logo was included in internal reports, public presentations, and stakeholder meetings.
- Workshops & Stakeholder Meetings During meetings with local authorities, national park staff, and community leaders, The Rufford Foundation was credited for funding key activities such as AI-based monitoring and community engagement efforts.

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

- Lo Tien Bieu: Project lead
- Russell Gray: Project advisor
- Ly Quoc Tan: Anti- poaching, Data collector
- Pham Thanh Thien: Anti- poaching, Data collector
- Le Thi Ngoc Lam: Anti- poaching, Data collector
- Soh Ao Ju Long: Anti- poaching, Data collector

10. Any other comments?

I would like to continue proposing efforts to keep this project running in the future, ensuring its long-term impact and sustainability. Strengthening the project will allow for ongoing monitoring of elephant movement, improvement of conflict mitigation strategies, and deeper community engagement to promote coexistence between humans and elephants. By expanding data collection, refining non-lethal deterrent methods, and enhancing local capacity-building programs, we can create a more effective and lasting solution to human-elephant conflict. Securing additional funding and collaboration with stakeholders will be essential in maintaining and scaling up the project's success. With continued support, this initiative can serve as a long-term model for elephant conservation and sustainable human-wildlife coexistence.