

Project Update: May 2022

INTRODUCTION

The Asian elephant is classified as Endangered (IUCN, 2014) globally and listed in Schedule 1 and Part 1 of the Indian Wildlife Protection Act (1972) conferring the highest level of protection. The Indian sub-continent has an estimated population of about 27000-29000 elephants, which is about 50% of the total population (Gajah 2010). Most of these are currently distributed over an area of about 110,000 km² within four regions in India: the northeast, east-central, northwest, and south. The dynamics of these populations vary with some declining, some increasing, some are stable, and many are unknown (Sukumar 2003, Gajah 2010). The Asian elephant is one of the most conflict-prone wildlife species in the country and each year nearly 400 people and 100 elephants are killed due to conflict-related instances. Hence, HEC remains a major hurdle in elephant conservation efforts and nearly 60-70% of the Indian Government's Project Elephant budget goes directly or indirectly towards addressing it (Gajah 2010).



The Western Ghats (WG) biodiversity hotspot supports about 25% of the wild population of Asian elephants. The WG is expected to hold a minimum population of 10,000 elephants distributed in four landscape complexes. Among these, the Brahmagiri-Nilgiri Eastern Ghats landscape (NEG) supports over 57 % of the elephant population, which is the largest single breeding population of the species at its highest density anywhere in Asia (Gajah 2010; Baskaran 2013). Several protected areas including Bandipur, Nagarhole, Mudumalai, Biligiriranga Swamy Temple, Satyamangalam, Silent Valley,

Cauvery, and Brahmagiri fall within the landscape. The large extent of the habitat, diverse vegetation types, cultivated areas, and human settlements make the NEG a complex region in terms of conservation challenges. Also, NEG is prone to seasonal fluctuation in resource availability where surface water and fodder become scarce resources during summer in the extensive dry forests (Baskaran 1998, Sivaganesan & Johnsingh 1995). The Wayanad Wildlife Sanctuary and the adjacent forests (WWS) in the NEG have unique geographical features of numerous low-lying swamps and perennial streams which make this region a critical micro-habitat for elephants during summer (Nair et al. 1977, Baskaran 1998, Anoop & Ganesh 2020).

Despite the importance of WWS for elephants in the NEG, very little research has been carried out on any aspects of elephants in Wayanad (Anoop & Ganesh 2020). However, the forest department relies on inferences from the previous studies for park management. Currently, habitat degradation, man-made forest fire, livestock grazing, infrastructure development, the establishment of invasive plants, and human-elephant conflict are recognised as major challenges for elephant conservation in Wayanad (Anoop & Ganesh 2020). Among these, HEC is emerging as the major challenge for biodiversity conservation. For instance, anti-wildlife protests by the farmers and politicians are common in the region and the forest department officials and activists are often being attacked by them. With the problem escalating over the years, it is evident that we are not making much headway. Notably, elephant crop-raiding in Wayanad is attributable to a small number of habitually raiding animals. However, very little is known about the number of raiders, their sex, or the frequency of raiding mainly because raiding is largely nocturnal. Hence, individual identification of persistent and occasional crop-raiders, studying their movement pattern, and site fidelity, are important for mitigating conflict through radio telemetry, targeted elimination, or by studying their behavior. Also, crop raiding is a learned behavior; hence the identification and management of persistent crop-raiders will prevent the recruitment of new crop raiders in the landscape. Hence, this project aims to identify the crop-raiding elephants and their movement pattern in the WWS for the better management of HEC in the landscape.

PROGRESS MADE

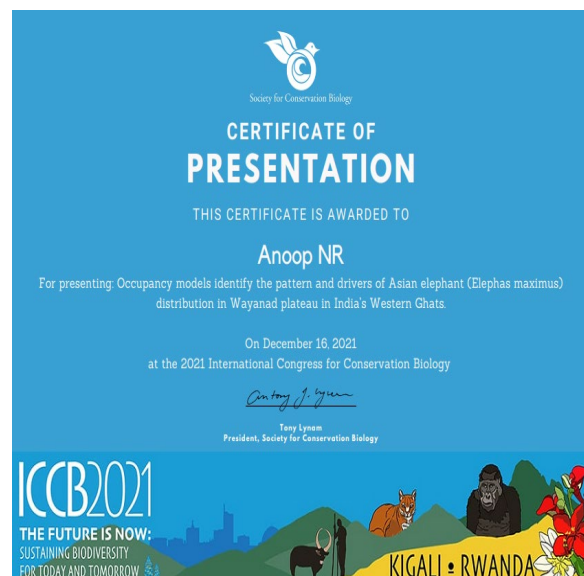
We have laid grids and identified routes to conduct surveys in three seasons (monsoon, post-monsoon, and summer) to photograph and identify elephants based on their external body features. So far, we have conducted an 800 km survey during summer and post-monsoon. May-June is the time when crop-raiding peaks in Wayanad due to the availability of jackfruit and mango. Hence, currently, the team is doing extensive field surveys and camera trapping to identify the maximum number of elephants entering farmland. We have identified and individual identity codes were generated for 37 bull elephants, of which 11 are found involved in crop-raiding. We also identified the distribution of bulls and marked locations through which elephants enter villages. This information is important for the regional management of Human-elephant Conflict (HEC) and for deploying camera traps to capture images of crop raiders. We also collected elephant images and identified them from social media and newspapers over the last 15 years. We use this information for data analysis. We trained forest department officials (mostly forest watchers) to conduct surveys and source photographs of elephants and identify them based on body features. We also

conducted several field visits with local NGO members and students and interacted with many farmers to understand the HEC situation. I have presented the output of the project in two prestigious conferences viz. Students Conference on Conservation Science (SCCS) Cambridge and International Congress on Conservation Biology (ICCB). I also presented the work in the Annual Work Seminar (AWS) conducted by ATREE, Bangalore.

The project also identified the number of elephants 'using' the Thirunelli-Kudrakote elephant corridor over the last 15 years based on photographs taken by researchers, tourists, and local people. During this project, we identified several functional corridors that pass through human habitation. Going beyond the scope of this project, this project initiated the demarking of these corridors based on elephant sign data and information from residents and forest department officials. This information will contribute to the mitigation of HEC, and it needs to be done systematically in the next phase of the project. This information is key for the long-term conservation of elephants in the fast-changing Wayanad landscape. We collaborated with Ferns Nature Conservation Society, based in Wayanad to start a long-term nature education program in Kerala.

One manuscript was published from the project in the journal Biotropica (<https://doi.org/10.1111/btp.12996>) and the other one is under review. We have published three articles in the local language 'Malayalam' about elephants and their conservation issues in Wayanad in magazines such as Soocheemukhi, and Aranyam (<https://forest.kerala.gov.in/images/publications/2021/102021.pdf>), and in the blog of a local NGO (<http://ferns.home.blog/?p=319>). Also, I am planning to submit my Ph.D. thesis by the end of this year.

CERTIFICATES OF PARTICIPATION IN CONFERENCES



The outputs of the current and previous projects are presented at two prestigious conferences viz. International Conference for Conservation Biology (ICCB) and Students Conference on Conservation Science (SCCS), Cambridge.

IMAGES FROM THE FIELD



Field visit by Dr. T Ganesh and researchers from ATREE and Ferns Nature Conservation Society.



Field visit with residents and persons from local NGO



Chandran (Wayanad sanctuary and Begur area) and Rajan (Chethalayam Range) are two tribal youths working as field assistants in the project. They are trained to use field equipment and systematic field data collection. They are now well-known elephant trackers in the landscape, which will bring better employment opportunities to them in the future.



Road survey to photograph elephants along the Brahmagiri-Thirunelli elephant corridor & identifying paths through which elephants enter villages to deploy camera traps to identify crop-raiders.



Surveying elephant dung in the forest areas & research team photographing elephants in North Wayanad division.



Deploying camera traps in forest farmland interface to capture images of crop-raiding elephants

BULL ELEPHANTS IDENTIFIED DURING THE PROJECT



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