

Investigating the Relevance of 'Corridors' for Asian Elephant Conservation and Human Elephant Conflict Mitigation

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Fig 1: Reconstruction efforts underway: wall of a shop; Roof & window of a house damaged by elephant

Corridor that provides for movement between habitat patches, but not necessarily reproduction is performing a conduit function. If a corridor provides resources needed for survivorship, reproduction and movement, it is performing a habitat function.

Rosenberg et al.,(1997)

Understanding the dynamics of elephant corridors is pivotal for effective conservation and HEC mitigation in Sri Lanka. The study reveals that the assessed corridor serves as part of elephant habitat rather than functioning as an elephant corridor.

Introduction

Wildlife corridors can play a crucial role in maintaining connectivity between isolated habitat patches. By facilitating both structural and functional connectivity they can mitigate the risks of inbreeding and extinction, enhancing population persistence and promoting colonization. A number of elephant corridors have been identified by Department of Wildlife Conservation (DWC) in Sri Lanka mainly for Human Elephant Conflict (HEC) mitigation but have still not been implemented except for the Wetehirakanda corridor assessed here.

Objectives

- To assess whether the Wetehirakanda corridor in Sri Lanka conforms to the objectives, principles and characteristics of wildlife “corridors”.
- To assess whether the corridor will help mitigate Human-Elephant conflict.



Fig 2: Elephant Road Crossing signage inside the corridor

Methodology

Table 1: Data Source for the study

Data	Source
Land use and Land cover	Landsat 8
Slope	SRTM DEM
Elevation	SRTM DEM
Habitat suitability map	Weighted Overlay analysis- ArcGIS
HEC	CCR, Fernando et al., (2021) & Prakash et al., (2020)
Electric fence	CCR
Tracking data	CCR & DWC
Human perception	Social survey

- Social survey:** To understand human perceptions on elephant corridors and HEC severity. Data obtained using close ended questionnaire (sampling size of above 5%).
- Habitat suitability map:** Map was generated through weighted overlay analysis, where various factors were assigned weights and ranks based on their respective contributions to habitat suitability.

Results

Table 2: Details of the study area

Corridor aspects	Details
Name of the corridor	Wetehirakanda
Geographical coordinates	6.486058° N 81.006227° E; 6.497506° N 81.135946°
Corridor conformation	Length: 14.38 km; Width: 2.61 km
Area of the corridor	32.79 sq. km
Legal status	Nature reserve; Ib Wilderness area (IUCN)
Significance	Connects Lunugamwehera NP and Udawalawe NP
Major land use	Agriculture (3%) & Settlement (5%)
Linear Infrastructure	Two highways B-528 & A2 intersecting at both ends
Elevation	80-290 meters
Slope	1-9 degrees
HEC severity	Moderate (35%) to Severe (55%)

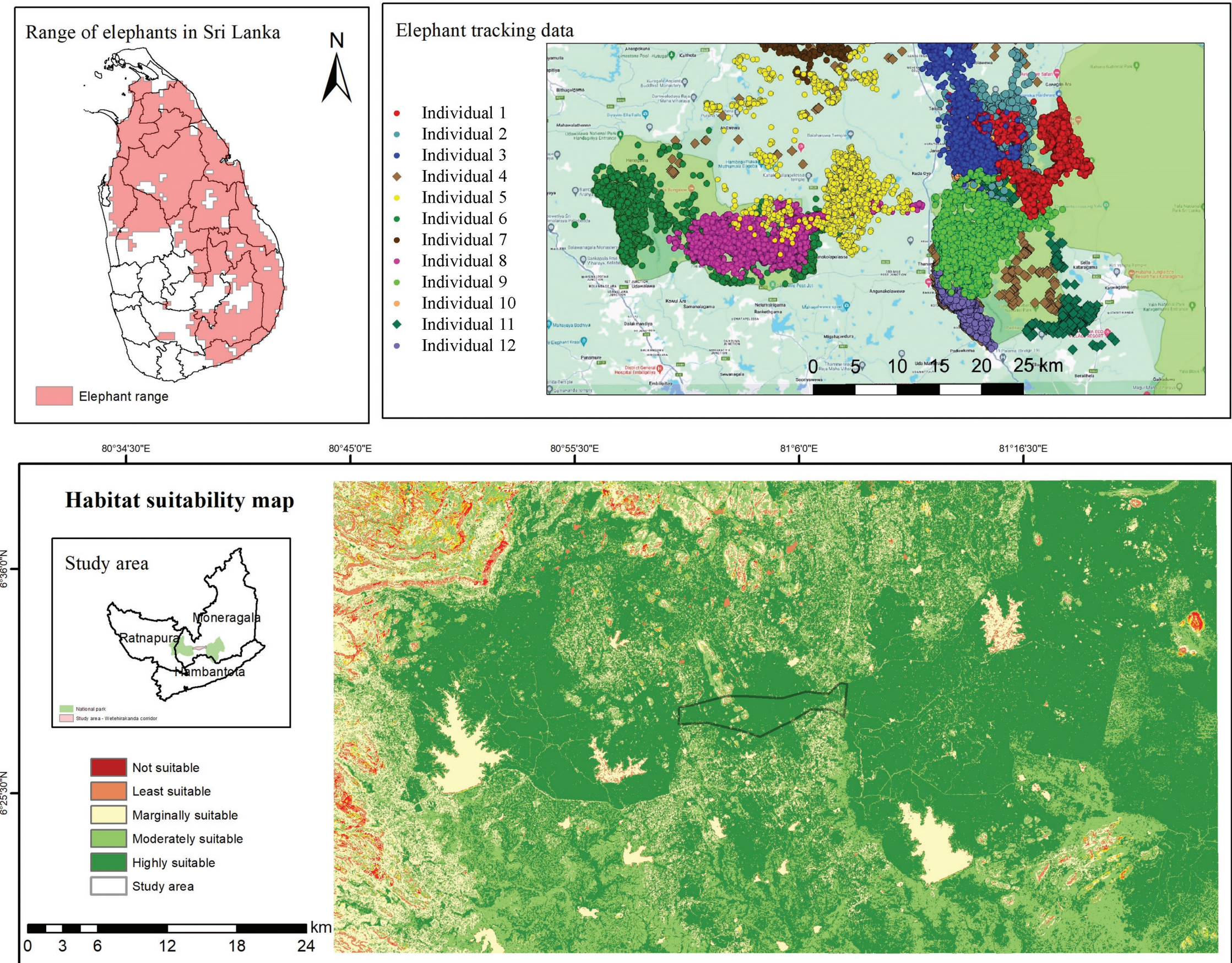


Fig 3: Habitat suitability map of study area

Conclusion

- The presence of elephants within both the national parks, the corridor and the surrounding areas indicates their utilization of these areas.
- Elephant presence both inside and outside the corridor and the lack of functional connection suggest that the corridor may primarily serve as a part of elephant habitat rather than functioning as a corridor for movement between habitat patches.
- As elephant habitat and HEC is extensive all around the parks and the corridor, it is unlikely that the corridor will help mitigate HEC.

Future endeavors include utilizing Circuitscape software for connectivity analysis to generate maps aimed at Asian elephant conservation.

References

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