

Unlock 1.0 : Linking Populations and Landscapes for Dhole Connectivity Conservation in India

Ryan G. Rodrigues, Arjun Srivathsa, Sushma Sharma, Divya Vasudev

Introduction

- India's growing economy and increasing focus on infrastructure development continues to exert enormous pressure on its forests and wilderness areas
- Expansion of linear infrastructure and increased fragmentation of forests across landscapes will induce a loss of functional connectivity for species
- Safeguarding individual populations and retaining functional connectivity is pivotal to their long-term persistence
- We assess connectivity for the endangered dhole (*Asiatic wild dog *Cuon alpinus**) to inform connectivity conservation across the country



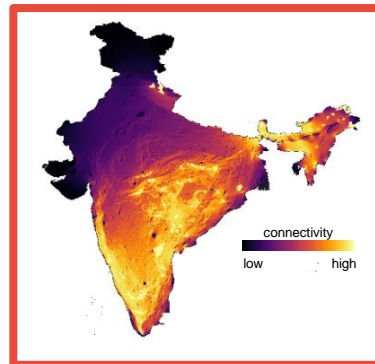
Image: Uday Kiran

Methods

- We created a countrywide 'resistance' surface for dholes and generated a connectivity map using circuit theory
- We described the landscape based on potential source populations and pairwise resistance distances and defined "conservation landscapes" using graph theory
- Identified administrative units in each landscape where habitat restoration would aid in maintaining dhole connectivity

Results: A

Connectivity map for dholes



Regions of high and low connectivity across India

Results: B

Dhole conservation landscapes



Western & Eastern Ghats (WEG), Central Indian Landscape (CIL), North East India (NEI)

Results: C

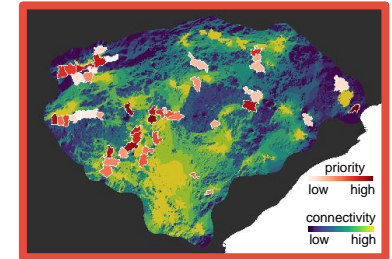
Conservation landscape features

	WEG	CIL	NEI
Area (km ²)	226,843	604,405	265,517
Protected	11.46%	4.73%	7.56%
Forests	24.49%	29.98%	42.64%
Agroforests	3.61%	2.80%	2.96%
Humans (mn)	91.1	125.9	58.6
Source PAs*	68	59	28

* Source PAs are protected areas with dhole source populations

Results: D

Landscape-level connectivity in Central Indian Landscape



Administrative units (*taluks*) with highest priority for connectivity conservation

Takeaways

- Dhole connectivity map provides a basis for habitat consolidation and corridor management across the country
- Focus efforts in CIL where source PAs are high but protected habitat is much lower compared to other landscapes
- Our results can be used as a basis for targeting management efforts to preserve connectivity outside protected areas

Acknowledgements

We thank the Wild Canids-India Project team, D. Ganguly, M. M. Chawla, B. Joshi and the NCBS IT team. We thank Wildlife Conservation Network and The Rufford Foundation for funding support.