

# The presence of human settlements has a negative impact on tiger connectivity

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Human settlements and roads place greater barriers on tiger dispersal than distance, according to new research published November 6th in the open-access journal *PLOS ONE*, by Uma Ramakrishnan and colleagues at the National Center for Biological Sciences in India.

Many tigers currently live in small [protected areas](#) in India, and their future survival depends on increasing the connectivity between these areas via "[tiger corridors](#)." In addition to overall distance, there are a number of factors that might limit this connectivity, including features of the landscape such as roads, availability of tiger habitat, and human habitation.

In this study, the authors used genetic approaches combined with landscape ecology to study tiger dispersals between six protected areas in Central India. They address two main questions; whether tiger populations in Central India are connected over long distances, and which landscape features, if any, affect this connectivity. By sampling tiger scat for DNA across a wide range of areas and analyzing the genetic information of parents and offspring, they found evidence for long-range tiger dispersal of over 650 km between protected areas, which is much longer than previously found. They next analyzed this data in the context of landscape features, and found that this long-range connectivity is negatively impacted by the size and location of urban settlements and road density, but not affected by distance between populations.

From a conservation perspective, these findings suggest that urbanization and unplanned development will reduce connectivity for tiger populations in Central India. To help maintain the connectivity and survival of tigers, management strategies should consider the effects of these features of the landscape. Ramakrishnan expands, "We used landscape genetic approaches based on fecal DNA from protected areas in the Central

Indian landscape to reveal that tigers are dispersing much longer distances than has been previously recorded. Additionally, our analyses reveal that human footprints on the [landscape](#) (roads, settlements) negatively impact connectivity between populations."

**More information:** Joshi A, Vaidyanathan S, Mondol S, Edgaonkar A, Ramakrishnan U (2013) Connectivity of Tiger (*Panthera tigris*) Populations in the Human-Influenced Forest Mosaic of Central India. *PLoS ONE* 8(11): e77980. [DOI: 10.1371/journal.pone.0077980](#)

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