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PRESS RELEASE

Forecasting the effects of roads and railways on endangered tigers



An adult male tiger in Nepal's Chitwan National Park. Photo credit: Neil Carter

A new University of Michigan study that forecasts the impacts of expanding roads and a planned railway on endangered tigers in Nepal's Chitwan National Park has yielded important findings that can aid conservation efforts.

Using an advanced simulation model, lead author [Neil Carter](#), an assistant professor at the U-M School for Environment and Sustainability, and his colleagues investigated how the rapid development of transport infrastructure, which is a major threat to endangered species worldwide, could affect future tiger populations.

Roads and railways can increase animal mortality, disrupt habitats, and exacerbate other threats to biodiversity, according to the study.

Researchers analyzed what would happen to tigers in the future if they were to die from collisions with vehicles or from reductions in prey near transport infrastructure.

“We found that roads and railways would dramatically increase tiger mortality, as tigers would frequently encounter vehicles and trains while patrolling their territories,” said Carter. “On average, in our model, tiger deaths along the roads and railways would reduce the tiger population from around 130 animals to just 50 animals over a 20-year period.”

These reductions are “alarming,” Carter noted, “and would jeopardize the future of tigers in the region.”

Based on these model results, researchers urge land planners, researchers, and developers to utilize Smart Green Infrastructure planning—such as realigning roads and railways to avoid critical tiger habitats and reducing traffic volumes and speeds—to minimize impacts on tiger biodiversity and their prey.

“There is still much to be learned about the effects of roads and railways on tiger behaviors and populations,” Carter said, “but we think using models like ours can help promote tiger-friendly conservation development.”

The study, “Forecasting effects of transport infrastructure on endangered tigers: a tool for conservation planning,” was published online May 17 in the journal PeerJ.

The other study authors are Narendra Pradhan, Krishna Hengaju, Chinmay Sonawane, Abigail H. Sage, and Volker Grimm.

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Media Contacts

For the authors:

Neil Carter - nhcarter@umich.edu

For PeerJ:

Euan Lockie: press@peerj.com

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