

STUDY SUGGESTS HABITAT LOSS IS LEADING TO INBREEDING OF INDIAN TIGERS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A camera-trap image of a tiger in the Upper Nilgiris, Tamil Nadu. | Photo Credit: [Special Arrangement](#)

While Indian tigers have the highest genetic variation compared to other subspecies of the feline across the world, their populations continue to be fragmented by loss of habitat, leading to inbreeding and potential loss of this diversity, [says a new study](#).

"As human population started expanding, so also their signatures on the land. We know that some of these signatures would result in disrupting the ability of tigers to move," Uma Ramakrishnan, co-author of the research, published in the journal *Molecular Biology and Evolution*, told *PTI*.

According to Dr. Ramakrishnan, molecular ecologist and assistant professor at the National Centre for Biological Sciences, Bangalore, this habitat loss from human activities leads to tigers being "hemmed into their own protected area." "Now, they can only mate with the other tigers in their own population. Over time, this will result in inbreeding, they will end up mating with their relatives," she explained.

"Whether this inbreeding compromises their fitness, their ability to survive, we do not yet know," the molecular ecologist added.

While genetic diversity across a population improves their chances of survival in the future, the study said population fragmentation of tigers can decrease this variation, and endanger them further.

Although tigers have received significant conservation attention, the scientists said very little is known about their evolutionary history and genomic variation, especially for Indian tigers.

Human-tiger conflict in Kodagu: Should tigers be translocated?

With 70% of the world's tigers living in India, the researchers said understanding the genetic diversity of tigers in the country is critical to the feline's conservation worldwide.

The results of their three-year long study offer insights into genomic variation in tigers and the processes that have sculpted it.

Based on the results, the scientists believe there have been relatively recent divergences between subspecies, and intense population bottlenecks that may have contributed to inbred individuals.

According to the NCBS scientist, maintaining structural connectivity, enabling tigers to move between protected areas can help overcome these bottlenecks. "This would require the right types of habitat between protected areas, for example having densely populated human settlements would not work. Further, there also needs to be functional connectivity, that tigers do actually move," Dr. Ramakrishnan added.

In the study, the scientists sequenced whole genomes from 65 individual tigers from four subspecies of the feline, and conducted a variety of population genomic analyses that quantify genetic variability. They investigated the partitioning of genetic variation, possible impacts of inbreeding, and demographic history, and possible signatures of local adaptation.

While the total genomic variation in Indian tigers was higher than in other subspecies, the study found that several individual tigers in the country had low variation, suggesting possible inbreeding.

According to the research, tigers from northeast India were the most different from other populations in India "Given our results, it is important to understand why some Bengal tigers appear inbred and what the consequences of this are," said Anubhab Khan, co-first author of the research.

The study showed recent divergences between tiger subspecies, within the last 20,000 years, which the scientists believe is concordant with increasing human impacts across Asia and a transition from glacial to interglacial climate change in the continent.

However, the scientists believe this finding needs to be investigated further with expanded data and analyses of more tiger genomes.

"Most studies focusing on species of conservation concern use limited numbers of specimens to try to gain understanding into how genomic variation is partitioned," said Ellie Armstrong, co-first and co-corresponding author of the study from Stanford University in the U.S.

"It is clear from our work here, and a growing number of other studies, that it is crucial to increase our sampling efforts and use caution when interpreting results from limited sample sizes," Armstrong added.

According to Dr. Ramakrishnan, the genomic variation of Indian tigers continues to be shaped by the ongoing loss of connectivity. "Population management and conservation action must incorporate information on genetic variation. I hope doing so will help India maintain the gains in tiger conservation achieved so far," she added.

You have reached your limit for free articles this month.

Already have an account ? [Sign in](#)

Start your 14 days free trial. [Sign Up](#)

Find mobile-friendly version of articles from the day's newspaper in one easy-to-read list.

Enjoy reading as many articles as you wish without any limitations.

A select list of articles that match your interests and tastes.

Move smoothly between articles as our pages load instantly.

A one-stop-shop for seeing the latest updates, and managing your preferences.

We brief you on the latest and most important developments, three times a day.

*Our Digital Subscription plans do not currently include the e-paper, crossword and print.

Dear reader,

We have been keeping you up-to-date with information on the developments in India and the world that have a bearing on our health and wellbeing, our lives and livelihoods, during these difficult times. To enable wide dissemination of news that is in public interest, we have increased the number of articles that can be read free, and extended free trial periods. However, we have a request for those who can afford to subscribe: please do. As we fight disinformation and misinformation, and keep apace with the happenings, we need to commit greater resources to news gathering operations. We promise to deliver quality journalism that stays away from vested interest and political propaganda.

Dear subscriber,

Thank you!

Your support for our journalism is invaluable. It's a support for truth and fairness in journalism. It has helped us keep apace with events and happenings.

The Hindu has always stood for journalism that is in the public interest. At this difficult time, it becomes even more important that we have access to information that has a bearing on our health and well-being, our lives, and livelihoods. As a subscriber, you are not only a beneficiary of our work but also its enabler.

We also reiterate here the promise that our team of reporters, copy editors, fact-checkers, designers, and photographers will deliver quality journalism that stays away from vested interest and political propaganda.

Suresh Nambath

Please enter a valid email address.

Subscribe to The Hindu now and get unlimited access.

Already have an account? [Sign In](#)

Start your 14 days free trial [Sign Up](#)

You can support quality journalism by turning off ad blocker or purchase a subscription for unlimited access to The Hindu.

[Sign up for a 30 day free trial.](#)

END

Downloaded from **crackIAS.com**

© **Zuccess App** by crackIAS.com