

# Tiger, tiger, not burning so bright

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(Phys.org) —India's tigers are facing extinction owing to a collapse in the variety of their mating partners, according to new research carried out by scientists at Cardiff University.

India is a refuge for approximately 60% of the world's [wild tigers](#), yet even here their numbers remain low and [genetic diversity](#) is declining rapidly making them increasingly vulnerable to extinction.

For the first time ever, scientists have compared [genetic data](#) from modern tigers with historical tigers shot during the time of the British Raj (1858-1947: the period of British rule over India) in order to gain a historical perspective of genetic diversity.

Having been granted unprecedented access to the [Natural History Museum](#) of London's tiger collection, researchers identified a very high number of DNA variants in the tigers shot during the British Raj - 93%

of which were not present in the Indian tigers of today.

One of the lead authors of this research, Professor Mike Bruford of the Cardiff School of Biosciences, explains the significance of his findings:

"We found that genetic diversity has been lost dramatically compared to the Raj tigers and what diversity remains has become much more subdivided into the small (20 - 120 individual) populations that exist today.

"This is due to loss of habitat and habitat fragmentation, meaning lower population sizes, and the prevention of tigers from dispersing as they once would have, which means their [gene pool](#) is no longer mixing across the subcontinent.

"This is important because tigers, like all other species, need genetic diversity to survive - especially under climate change – so what diversity remains needs to be managed properly so that the Indian tiger does not become inbred, and retains its capacity to adapt."

[Tiger population](#) sizes in India were brought to near collapse during the time of the British Raj; the predominant impetus for this was mechanised trophy hunting, which reduced its numbers from 40,000 to less than 1,800 in a mere 100 years.

"Both conservationists and the Indian Government must appreciate that the number of tigers alone is not enough to ensure the species' survival," adds Professor Bruford. "They need to protect the whole spread of forest reserves because many reserves now have their own unique gene combinations, which might be useful for future breeding programmes.

"This study shows that genetic diversity can be lost and a new genetic structure can arise very quickly, if the effects of population collapse and

[habitat fragmentation](#) are strong enough, so quick action is needed to stymie further demographic loss."

The territory occupied by the tiger has declined more than 50% during the last three generations and today mating only occurs in 7% of its historical territory.

The research is the product of a collaboration between Cardiff University and the National Centre for Biological Sciences in Bangalore, India.

Funding for the project was provided by a Royal Society Collaborative Research Grant.

'Demographic loss, genetic structure and the conservation implications for Indian [tigers](#)' is today published in the *Proceedings of The Royal Society B* journal.

**More information:** [rspb.royalsocietypublishing.org/...  
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