

Gene flow and Evolutionary History of Tigers in Central India

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ABSTRACT

The tiger (*Pantheratigris*), India's national animal, has a special place in folklore and cultural heritage in various parts of India. Tigers once roamed all across India as top predators of various ecosystems and habitat types, but habitat degradation and fragmentation along with organized hunting and illegal poaching has reduced their population to an all-time low of less than 2000 individuals as estimated in past decade.

A case-study of gene flow and evolutionary history of tigers in the Satpura–Maikal landscape of central India has revealed many important features. This landscape is a globally important tiger conservation landscape, which contains 17% of India's tiger population and 12% of its tiger habitat. Analysis and comparison of historical and contemporary gene flow patterns can provide information about the configuration of gene exchange and relationships among tiger populations that occupy this landscape. Using multi-locus genotypic data from 273 individual tigers (*Pantheratigris*) from four tiger populations in this landscape, and applying Bayesian and coalescent-based analyses to estimate contemporary and historical gene flow among these populations and to infer their evolutionary history, it was found that the tiger metapopulation in central India has high rates of historical and contemporary gene flow. The tests for population history reveal that tigers populated central India about 10000 years ago. Their population subdivision began about 1000 years ago and accelerated about 200 years ago owing to habitat fragmentation, leading to four spatially separated populations. These four populations have been in migration–drift equilibrium maintained by high gene flow. As economic expansion and development threatens the forest landscape of central India, this information about their evolutionary past, is of significant importance to save the last remnant of their viable habitat in India.



Tigers of Satpura–Maikal have a strong gene pool (credit: koshyk)

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