

Use of bioclimatic region-specific single nucleotide polymorphism reveals cryptic long-distance dispersal of a female tiger from Terai Arc Landscape in northern to western India

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ABSTRACT

Tigers are showing male-biased dispersal and females philopatric. Keoladeo National Park (KNP), India, globally a bird sanctuary, and there has been no history of tiger presence. In 1999, villagers and the forest department sighted a female tiger in the grassland of KNP and was believed that female might have been from nearby tiger populations (c. < 200 km), i.e. Sariska or Ranthambhore in western India. Different approaches such as use of multi locus genotyping and isotope have been used in ancestry determination to either bioclimatic region or population. Because of microevolution, empirical studies have demonstrated presence of fixed SNP in mtDNA gene specific to different bioclimatic regions and has been used to determine ancestry. We compared mtDNA data with existing data on different mtDNA genes for tiger populations across India and revealed the presence of fixed specific SNPs which could distinguish the tigers of India into four broad bioclimatic regions. Therefore, that dispersed tigress had fixed specific SNPs (haplotype) in mtDNA genome which resembles specific to the Terai Arc Landscape (TAL) in the phylogenetic tree. This landscape is about 200 to 350 km from the KNP. Hence, our finding suggests and support occurrence of long-distance dispersal among female tigers.

Keywords: Tigress, dispersal, habitat fragmentation, TAL

