

**Impact of anthropogenic activities on elephant habitat and their movement patterns in southwestern Tanzania**

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The loss of natural landscapes surrounding protected areas compromise their future and threaten wildlife conservation. To guarantee long-term conservation of wildlife species in human-dominated landscapes, accurate information on the status of natural landscapes and their impacts on wildlife movement and density is paramount. A contingent of Protected Areas of varying degree of protection within and between Katavi-Rukwa and Ruaha-Rungwa ecosystems demonstrated that fully protected areas (National Parks & Game Reserves) are effective at protecting natural habitat and elephant abundance in contrast to least protected areas (Game Controlled Areas & Open Areas). Density estimates from both aerial surveys and dung counts were found to correlate strongly suggesting that indirect methods could be used to complement direct methods. This is good news for wildlife managers particularly in developing countries that hold the largest remaining world's biodiversity but faced with increasing conservation challenges. Anthropogenic activities have had a significant impact on the genetic differentiation among the three populations within and between the two ecosystems, but the levels were low, suggesting recent divergence. Genetic differences across populations and in separate age classes revealed evidence of increasing genetic structure among younger age classes across the landscape. It is recommended that protecting natural habitat and species in human-dominated landscapes requires the engagement of local communities which can be aided by the establishment of conservation-friendly village land use plans in all villages surrounding and between major protected ecosystems to guarantee connectivity and continued gene flow. Furthermore, wildlife managers are strongly encouraged to use indirect methods for estimating elephant densities in low-density areas to supplement estimates from direct counts from high density areas. Combining the two estimates would ensure realistic estimates of elephant numbers in the country (unlike the status quo which largely depends on direct counts) and hence more informed conservation decision making.