



GIS-Aided Conservation: Ecological Monitoring and Community-Based Initiatives for Elephant Protection in South Africa

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Abstract

South Africa faces significant threats to its elephant populations, necessitating innovative conservation strategies. Utilising Geographic Information Systems (GIS) to track elephant movements, habitat use, and human-elephant conflict patterns. Engaging community members through workshops and surveys to gather data and promote co-management practices. Elephants exhibited distinct seasonal migration patterns across a broad landscape, highlighting the need for spatially targeted conservation efforts. GIS-assisted monitoring has provided actionable insights for effective elephant protection, fostering stronger community-conservation partnerships in South Africa. Expand GIS applications to other wildlife species and integrate findings into national policy frameworks.

Keywords: *Geographical Information Systems (GIS), Community-Based Conservation, Elephant Monitoring, Landscape Ecology, Protected Area Management, Spatial Analysis, Sustainable Development*

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