

**MAPPING FOREST COVER CHANGES IN NORTH NANDI
FOREST, KENYA USING REMOTELY SENSED DATA
AND GIS TECHNIQUES**

BY

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ABSTRACT

North Nandi Forest is one of the remnants of tropical rain forests in Kenya. While various types of degradation threaten the forest, no spatial analysis has been done which would help in planning and management of this forest. The use of Remotely Sensed data and GIS techniques to investigate the forest would be valuable for this purpose but has been lacking before this study was conducted. This study focused on forest cover changes in North Nandi forest, Kenya by use of satellite images and aerial photographs. The major objective was to map and determine the extent of forest cover changes during the last 33 years, between 1967 and 2000, and explain the causes and consequences of any changes so observed. The study was conducted using two sets of aerial photography for 1967 and 1991 and one satellite image for 2000. The aerial photographs were interpreted and digitized while the satellite image was classified using unsupervised ISODATA (Interactive Self-Organising Data Analysis) technique. Overall accuracy of the classified image was 87.6%. Geographical information systems was used in the spatial analysis of the data generated from the remotely sensed data. The results revealed a 13.0% decline in forest area between 1967 and 1991, and a decline of 15.0% between 1991 and 2000. The overall decline 1967-2000 accounted for 26.1% of the forest cover. There was also corresponding decline in the number and area under glades, swamps and riverine forests. The major cause being human encroachment especially excisions for settlement, the agro-based "*shamba*" system, and charcoal burning. This study concludes that this important forest is declining in area and that human perturbation is the most important factor causing this real degradation phenomenon. It is recommended that for sustainability of the environment, there is need to protect and conserve the remaining forest as well as discouraging further encroachment and excision. This can be achieved through reforestation of the degraded forest area, forest plantations around the forest edges will serve as a good buffer zone to the forest, clear demarcation of the forest boundary and regular monitoring using Remotely sensed data and GIS techniques.