Land use/cover changes and wildlife population trends in Masai Mara Ecosystem in Kenya

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(1) Introduction: Land use/cover changes in wildlife conservation areas have serious implications for the ecological systems and distribution of wildlife species.

(2) Objective: The main objective of this study is to analyze the long-term land use/cover changes and wildlife population dynamics in Masai Mara, a wildlife sanctuary in Kenya.

(3) Data and Methods: This study integrates different data, methods and approaches. Multi-temporal satellite images for the years 1975, 1986, and 2007 were used in a post classification analysis with GIS to map land use/cover changes. For the analyses of wildlife and livestock population changes, animal population censuses conducted between 1975 and 2007 were used. National censuses on human population, demographic and health surveys, national archives, and existing literature on conservation and land use policies were also used. In addition, an in-depth field survey of Masai households, complemented by structured interviews, supplemented these approaches.

(4) Results: The results are shown in Figures 1 and 2. Substantial land use/cover changes and drastic declines in wildlife population were noted.

(5) Conceptual model: Following this study, we developed a conceptual model shown in Figure 3 which summarizes the dynamics of ecosystem change in terms of competition for land and biomass.

(6) Conclusion: This study has analyzed the long term land use/cover changes and wildlife population trends in Masai Mara Ecosystem. Results show rapid land use/cover changes and drastic declines for a wide range of wildlife species. Urgent measures are needed to ensure wildlife protection and habitat conservation for sustainable development.

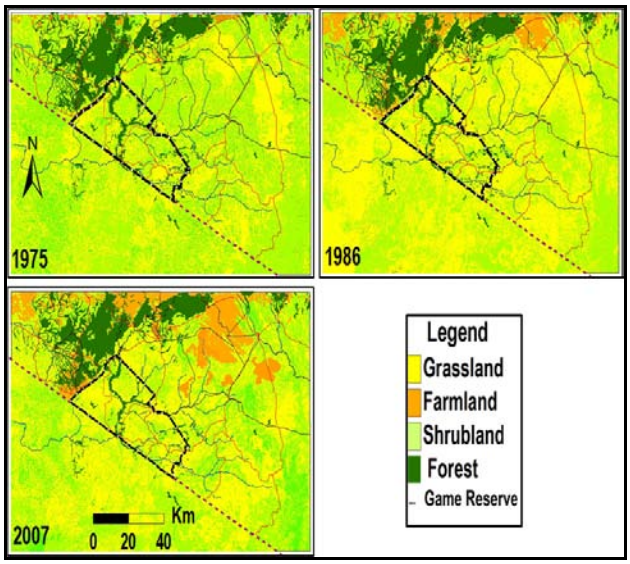

Fig. 1: Land use /cover maps for Masai Mara ecosystem derived from multi-spectral satellite images for 1975, 1986 and 2007.

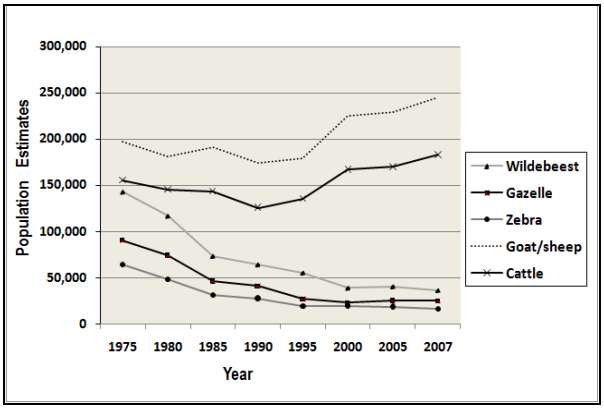

Fig. 2: Observed wildlife and livestock population trends.

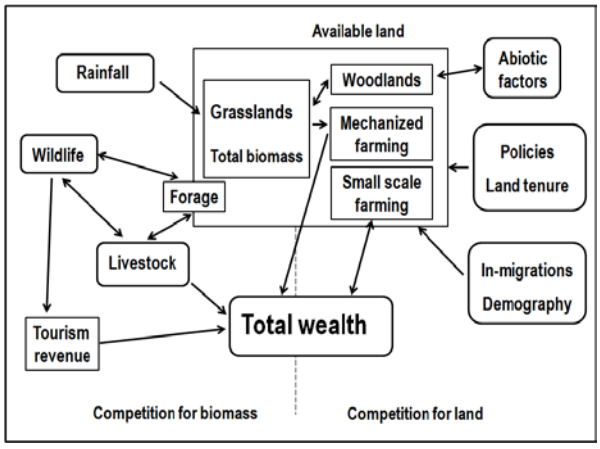

Fig. 3: Conceptual model depicting land use/cover dynamics in Masai Mara Ecosystem.