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TO GRAZE OR NOT TO GRAZE IN WATERSHED FORESTS: RECONCILING LIVESTOCK GRAZING AND DEGRADATION IMPACTS



4.0 Conclusion

- The study results indicate that uncontrolled grazing in natural forests causes severe forest degradation that alter forest structure and results in transformation of forests into open grasslands and shrublands in the long term.
- Such changes will have severe negative impacts on the ability of forest ecosystems to provide sustainable flow of forest products and services including water.

5.0 Recommendations

- There is urgent need for reintroduction of controlled grazing in public forests to reverse severe forest degradation currently taking place in Mau and similar ecosystems in the country.
- Scientific informed forest restoration should be undertaken in most degraded forest ecosystems to restore their functionality/resilience for enhance provision of vital good and services

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KENYA FORESTRY RESEARCH INSTITUTE
P. O. Box 20412 - 00200 Nairobi, Tel: +254 722 157 414, +254 724 259 781/2,
Email: director@kefri.org Website: www.kefri.org

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1.0 Introduction

Grazing in the farm is an important activity that supports livelihoods of hundreds of forest adjacent communities in key water towers in the country. However, recent studies have shown that grazing has greatly contributed to severe degradation of watershed forests. In the past, Kenya Forest Service (KFS) used controlled livestock grazing as a management tool to reduce grass biomass and facilitate regeneration of woody species. Grazing is also a source of revenue to KFS for the local communities are charged monthly fees for grazing in designated forest areas. However, uncontrolled grazing whereby hundreds of livestock are grazed in natural forests throughout the year has caused severe over-grazing resulting in forest degradation.

2.0 Study Results

2.1 Livestock population in forests

Livestock grazing in forests comprised of cattle, sheep, goats and donkeys. However, the grazing licenses provided by KFS did not include goats and donkeys indicating that they were being grazed illegally in the forests. In terms of livestock population Sururu forest station (Mau Forests Complex), that was adjacent to pastoralist communities had the largest sizes with Kinorero forest beat having about 726 cattle grazing between three and six months in a year. The population of livestock in different forest beats during wet and dry seasons are as shown in Figures 1, 2 and 3.

Figure 1: Livestock densities per beat (100 ha) in Sorget station in wet season

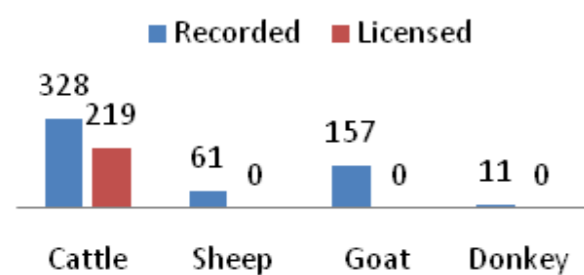


Figure 2: Livestock densities per beat (100 ha) in Sorget in dry season

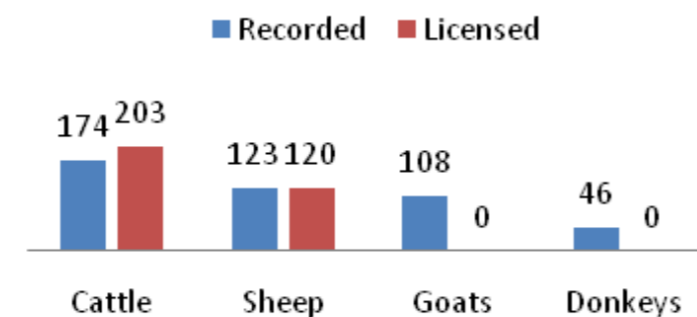
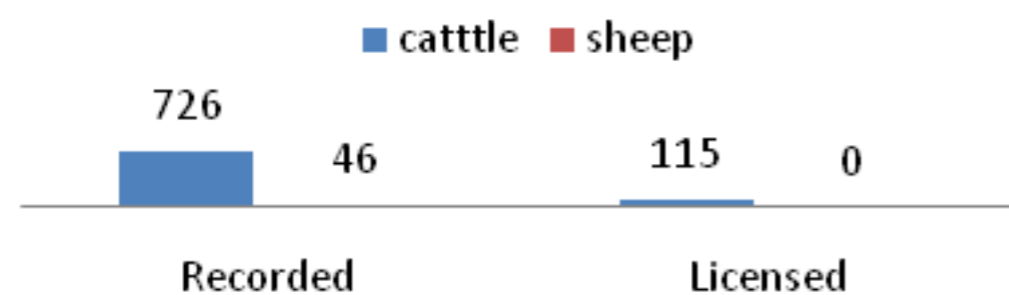
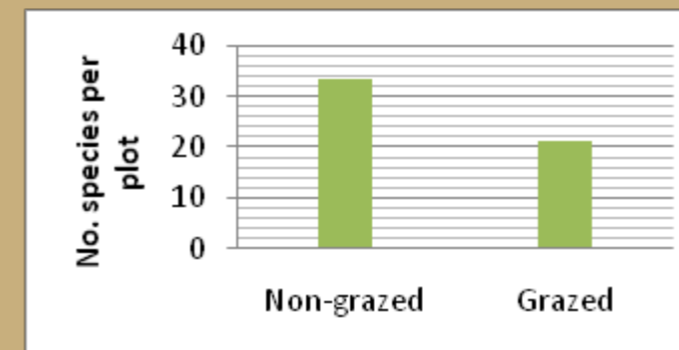


Figure 3: Livestock densities per beat Kenorero (120 ha) in Sururu Station in the dry season



2.2 Impacts of grazing on forests

The study showed that species richness was lower in the grazed areas than in non grazed areas. In grazed areas ferns, herbs, and other grasses were less common as compared to non-grazed areas. In the grazed areas shrubs such as *Baccharis latifolia* (Chilca) and *Salvia* species. (*Salvia*) were the most abundant. The findings indicate that livestock grazing limits tree stump re-growth and seedling establishment hence delaying canopy closure thus giving the grasses more time to develop a dense sward. Livestock grazing reduced tree growth but curtailed flowering and seeding hence their long-term survival of the species and diversity in the forests. Long term grazing has undesirable effect such as soil erosion and compaction that slow tree species regeneration in forest sites. The impacts of long term overgrazing on forest regeneration in areas subjected to intense grazing, long-term use, and soil erosion, can be very slow or may never occur. The impacts of grazing on species richness and soil condition is as shown below.



3.0 Plant species affected by grazing

3.1 Least browsed plant species

The study found that livestock has little impacts on the establishment of unpalatable woody species in Mau Forest with species such as *Carduus chamaecephalus* (a & b) dominating grazed areas.



3.2 The most browsed plant species

The most palatable herb species that were completely missing in areas that were intensely grazed included *Trifolia burchelianum* (c), *Harpagocarpus snowdenii* (d), *Gomophocarpus* and *fruitcosus*(e). Palatable tree species like *Dombeya torrida* was completely eliminated in areas under intensive grazing in Likia and Sururu blocks. To show the effect of grazing on palatable species regeneration and establishment trees such as *Prunus africana*, *Olea africana*, and *Dombeya torrida* among others must be physically protected against browsing to survive in Kiptunga forest (f).