Consequences of Changes in Herding Mobility for Livelihoods and Sustainable Landscapes

A Case Study from Laikipia, Kenya

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Integrative Conservation Research Brief

Decreases in dryland herding mobility are thought to have large impacts on the sustainability of herding practices in East Africa. To understand how changes in forage access impact herder livelihoods in semi-arid Laikipia, I took a landscape-level, historical approach. I used focus-group discussions, interviews, and surveys of most households in a Maa-speaking herding community to investigate how household assets, employment, and social factors shape herding strategies and responses to drought events. I found that three recent historical changes have combined to reduce historical grazing access: restriction from private wildlife conservation ranches, pastoralist conflict, and group ranch conservancy formation. The restructuring of herding practices due to these changes has implications for vegetation, livelihoods, and ongoing conflicts over forage access.

INTRODUCTION

Mobility in Semi-arid Lands

Pastoralist herding, or livestock husbandry, is generally considered to be a well-suited livelihood for semi-arid environments that do not support farming. Due to high variability in rainfall (see Figure 1), accessing water and pasture resources requires seasonal flexibility. Customary pastoralist rules and norms were thought to facilitate access in much of East Africa historically[1]. However, when seasonal grazing movements cannot occur, vegetation has less chance to recover seasonally, and there is also a decreased ability to meet subsistence needs[2,3]. Therefore, while agreements that allow for mobility are thought to prevent overuse and degradation of forage during dry seasons, negative impacts on perennial grasses can occur when there is a lack of movement[4,5].

In Laikipia, Kenya, historical changes have shaped pastoralist land use and mobility[6,7]. Most Maasai pastoralists were forcibly removed from Laikipia by the British government in the early 1900's. The remaining herding communities living in Laikipia are mainly descended from Maa-speaking pastoralists that intermarried with five hunter-gatherer groups[6].

These communities live within Mukogodo Division, an area with boundaries dating to the colonial era. Other work has documented how decreasing access to external areas during the dry-season has led to low numbers of livestock per person compared to other pastoralists in the region[6]. There has also been a recently increased reliance on goats and sheep that is driven by their greater drought-hardiness, fast reproduction, and ease of sale[6].

Figure 1 – Seasonal Grass Variability

RESEARCH FRAMING AND METHODOLOGY

This study was undertaken to understand the interaction between changes in herding livelihoods and changes in landscape-level vegetation. In the subset of research reported here, I focus on the impacts of changes in mobility on livelihoods. This work involved first establishing a timeline of changes in forage access and herding practices. I then explored how these changes have affected herder livelihoods. This study, combined with other ecological work in progress, aims to inform sustainable landscape conservation.

Between 2012 and 2015, at Koija Group Ranch, Mukogodo Division, in Laikipia County (Figure 2), focus-group discussions with elder herders were used to determine salient ecological and livelihood changes that have occurred over recent history (1980-2015). Household surveys with the majority of households (225 out of 227) were completed with an elder who makes herding decisions (male or female, average age estimated at ~48.2 yrs). Data collected included information on livestock, household assets, herding practices, labor, seasonal herding location place names, and household response to drought.

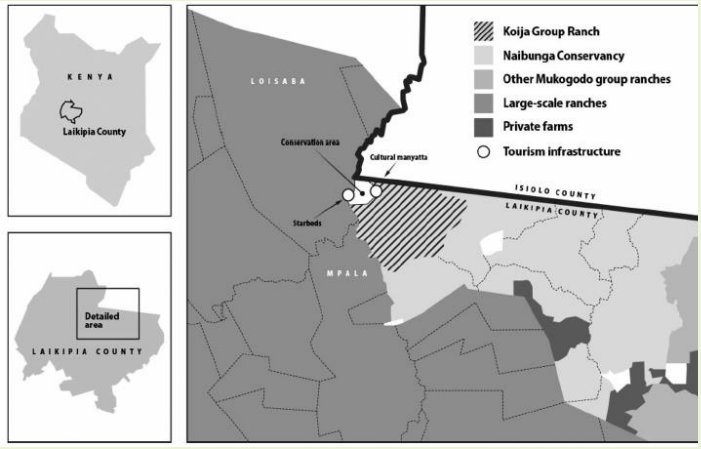

Figure 2 – Study Site in Central Kenya[8]

RESULTS AND DISCUSSION

Historical Losses of Mobility

Results indicate that customary cattle grazing access has been lost over the past 30 years due to three main reasons: 1) restriction from private wildlife conservation-oriented ranches to the west, 2) pastoralist conflict to the north and east, and most recently 3) land titling and restricted access driven by wildlife conservancy formation within pastoralist group ranches (Table 1).

Stated Reason	Time Period	# of Households Reporting
Exclusion from Private Ranches	1980 -1985	90
Conflict Between Other Pastoralists	1990 - 1995 1995 - 2000 2000 - 2005	145 48 34
Group Ranch Conservancy Formation	1995 - 2000 2000 - 2005	20 59

Table 1 – Most Frequent Reasons Stated for Loss of Seasonal Grazing Access
(only includes reasons with >20 households reporting)

Changes in Herd Composition and Local Concentration of Livestock

Herding remains the dominant livelihood at Koija. Cattle have decreased since the early 1980's (Table 2), while small-stock (sheep and goats) have increased. Overall livestock (TLUs) have increased in the past 30 years (Table 2), but at the same time population has doubled due to both influxes from other areas and reproduction. There are few animals per person overall, with an average overall value of 2.04 Tropical Livestock Units (TLUs) per person (1 TLU = 10 sheep or goats, 1.42 cattle, or 1 camel). Just 37 out of 225 households had above 4 TLUs per person, the number considered adequate for subsistence in the region[9]. Cows are distributed unevenly, with no cows in 53 out of 225 households, but fourteen households having modestly-sized herds of 45 to 170 cattle. On the other hand, seventy households had less than 0.7 TLUs per person (the equivalent of 10 goats or sheep per person).

	1980	2016
Camels	0	299
Cows	5,357	3,530
Sheep + Goats	2,692	28,386
TLU	4,042	5,624

Table 2 - Livestock Holdings (1980-2016)

Cows require grass, necessitating dry season movements to areas outside of Koija. Sheep require less grass than cows, and goats can survive on diverse vegetation. The dry-season woody vegetation and grass within Koija is able to support small-stock but not cattle.

Increasing Dependence on Few Areas

Cattle are increasingly dependent on a limited number of areas accessible either through customary rights, paid access to private ranches, or through employment on private ranches. Factors such as access to cash, household assets, and herding labor also determines who can gain access. Herders with larger herds utilize a disproportionate share of access to the reserve forage resources for cows. Just seven families accounted for 26.53% of the paid and employed access to private wildlife conservation ranches. Many herders are less able to gain access through the above pathways, and so remain reliant on grazing in areas they formerly accessed customarily, but are currently not permitted to access. This unpermitted grazing involves physical danger to herders due to wildlife, conflict with private land owners/managers, and monetary penalties imposed when caught. Due to these factors, many households rely primarily on goats and sheep that can better survive on the forage resources on Koija. This has resulted in a localized concentration of small-stock, creating a novel ecological pressure on vegetation. Most herders indicated these changes were also decreasing regrowth of grass during the wet season.

Inequality in livestock holdings has increased since 2002. Herders with outside employment had higher rates of cattle increases between 2002 and 2016 (t-Ratio=1.748, prob>t=0.431). Drawing from interviews, herders attributed this not just to the direct benefits from income, but to individual grazing resource access on private ranches and other benefits gained from employer relationships.

CONCLUSIONS AND RECOMMENDATIONS

Complexity of Livelihood Changes

The main model of wildlife conservation on pastoralist lands in Laikipia involves partnerships between wildlife conservation organizations and pastoralist group ranch lands where a portion of land is set aside as wildlife habitat in exchange for direct involvement in ecotourism. Within conservancies a number of additional practices are often adopted, including market-oriented solutions intended to make herding practices more profitable, and governance reforms intended to promote specific types of rangeland management. While these approaches emphasize adjustments within group ranch boundaries, this study's results point to external forage access as a matter of higher relevance for livelihood concerns.

Insufficiency of Forage within Group Ranches

Forage areas within Koija are unable to support cattle year-round due to the high variability of rainfall. This variability in rainfall is especially high compared to neighboring private ranches[10], leading to this factor perhaps being overlooked in policy discussions. The current amount of permitted reserve grazing access on private lands appears to provide benefits mainly to herders that are employed or have modest-sized herds, while other herders rely overwhelmingly on herding of small-stock. Illicit grazing on private wildlife conservation ranches by herders from Koija can thus be best understood as a response to the limitations of access to reserve grazing during drought. Further, mobility is known to prevent degradation of rangelands[4], and sedentism is indicated by herders to be decreasing forage regrowth in the wet season. While internal management of forage resources through practices such as rotational grazing may yield benefits, my results imply these practices are unlikely to offset the need for outside forage.

History's Role in Current Land Use

This study demonstrates how understanding the historical sequence of forage access loss is necessary to understand changes in livelihoods and ecological impacts. These results indicate that human population growth and increases in livestock do not sufficiently explain current livelihood challenges. The findings reported here provide insight that can inform conversations about grazing access with a sensitivity to historical loss of land from herder perspectives. Recognizing the

complexity of these inter-related historical changes may also identify previously overlooked ways of improving livelihoods. Finally, while conflicts such as those occurring at the time of writing (early March 2017) are related to complex regional and political factors, these findings could potentially help shape policy relevant to such conflicts.

Seeking Policies for Sustainable Landscape Based Upon Herding Ecology

Others[11] have recommended that legally recognized rights of pastoralists to access seasonal grazing lands might lead to enhanced flexibility and improved relations. Such policies, if structured with explicit regard to seasonal variability, have a high potential to minimize locally negative impacts of livestock on vegetation and to enhance livelihoods more equally across pastoral communities. Private ranches and conservation organizations have played a historical role in the titling of group ranch lands as a prerequisite of conservancy formation[12], but the results of this study show conservancy plans have not accounted for robust consideration of seasonal access. In the absence of policy changes, it should be expected that localized degradation as well as conflicts will continue, especially as variation of rainfall increases with climate change[13].

Acknowledgements

This research was completed with support by National Science Foundation Coupled Natural and Human Systems and Phipps Botany in Action funding. This work was done as part of a larger research project collaborating with Dr. Lizzie King and Dr. Laura German at the University of Georgia. Naiputari Paul Wachira provided invaluable assistance as a research technician. Thank you to the people of Koija Group Ranch, and to Loisaba Conservancy for accommodating me during this research. Thanks to Sara Heisel and Walker DePuy for their valuable comments.

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