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Elephants, Local Livelihoods, and Landscape Change in Tsavo, Kenya.

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ELEPHANTS, LOCAL LIVELIHOODS, AND LANDSCAPE CHANGE IN TSAVO, KENYA

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Dedicated to my mother,
Priscilla Njeri Kamau

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ACRONYMS

ACM	Adaptive Collaborative Management.
ASAL	Arid and Semi-Arid.
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources.
CBC	Community Based Conservation.
CBD	Convention on Biological Diversity.
CBNRM	Community Based Natural Resource Management.
CBO	Community Based Organization.
CH	Chyulu Hills.
CHNP	Chyulu Hills National Park.
IBEAC	Imperial British East African Company.
KCRP	Kasigau Corridor REDD Project.
KFS	Kenya Forest Service
KLC	Kenya Land Commission.
KNA	Kenya National Archives.
KNBS	Kenya National Bureau of Statistics.
KWS	Kenya Wildlife Service.
MCA	Member of County Assembly.
NGO	Non-Governmental Organization.
NPK	National Parks of Kenya.
PR	Participatory Research.
REDD	Reducing Emissions from Deforestation and Forest Degradation.
ROK	Republic of Kenya.
SGR	Standard Gauge Railway.
TENP	Tsavo East National Park.

TWNP	Tsavo West National Park.
UNEP	United Nations Environmental Programme.
WCMD	Wildlife Conservation and Management Department.

ABSTRACT

This dissertation provides a historical context for socio-ecological relationships in Tsavo, Kenya by focusing on the interaction between elephants and people in the landscape. A better understanding of the relationship between elephants and people in the Tsavo landscape promotes opportunities for better policy outcomes. The dissertation engages with the analytical approach of political ecology, which has enabled it to provide a more nuanced understanding of the relationship between elephants and people in Tsavo. Apolitical accounts of human-elephant conflicts in Tsavo do not adequately address the colonial roots of human-elephant conflicts or their consequences for local livelihoods. This dissertation demonstrates how landscape transformations in Tsavo have altered the relationship between people and elephants such that local communities now perceive elephants as having political, economic and land-use advantage over humans. Due to the special protection they enjoy from the state, elephants in Tsavo are now the subject of "everyday acts of resistance" by local people. This study drew upon archival and published sources, multi-sited ethnography and qualitative research methods to examine the relationship between people and elephants, during the precolonial, colonial and post-colonial periods in Kenya. Field work for this project involved over 200 local participants drawn from eighteen villages that are adjacent to Tsavo East, Tsavo West and Chyulu Hills National Parks in Kenya. Semi-structured and unstructured interviews, focus-group discussions, ethnographic observation, and transect walks with village residents were conducted to gain local views on elephants and livelihood conditions. This study advances Community Based Conservation (CBC) strategies that support collaborative learning about local places and people's livelihood conditions before implementing new conservation agendas. Through an Adaptive Collaborative Management approach, this study contributes to literature on elephant conservation by exploring

how local knowledge can be included in co-management plans between local people and conservation authorities. It demonstrates that oral histories of living elders among the Kamba, Taveta, Taita, Waata, Orma, and Maasai are a fundamental resource for ACM initiatives and can inspire adaptive management solutions in Tsavo. The study concludes that Community Based Natural Resource Management (CBNRM) initiatives need to be adopted to reconcile rural development and elephant conservation needs in the Tsavo region.

CHAPTER ONE
INTRODUCTION

"The longer you can look back, the farther you can look forward."

Winston Churchill speech, 1944.

On April 30, 2016, Kenya burned the largest rhinoceros horn and elephant ivory stockpile in human history[1]. This was not the first ivory burning event in Kenya. The first event took place on July 18, 1989, when then Kenya's president, Daniel Moi torched a 12-ton pile of confiscated elephant ivory worth an estimated $ 3 million in a rare symbolic act to display Kenya's commitment to the protection of the African elephant. Richard Leakey, then director of the newly created Kenya Wildlife Service, the state authority that manages wildlife in Kenya played a significant role in convincing the Kenyan government that burning ivory was a deterrent to elephant poaching in Kenya (Leakey and Morell 2001). Similar acts of ivory burning were carried out in 2011, 2015, and 2016 by sitting Kenyan presidents. Other African elephant range states have followed Kenya's example, with Gabon, Malawi, and Congo-Brazzaville burning their ivory stockpiles in 2012, 2014 and 2015, respectively. While burning ivory receives praise and support among local and international conservation groups and individuals, critics have observed that these countries would have been better off selling the ivory and using the money to improve the management of parks, compensate victims of human-elephant conflict or fund development projects among poor communities that live with wildlife. Critics have also argued that burning elephant ivory demonstrates to communities who live with elephants that the animal has no value.

[1] 105 tons of elephant ivory and 1.35 tons of rhinoceros' horn were burned in Nairobi National Park in Kenya on April, 30 2016.

Ivory burning events in Kenya expose two realities: first, conservation of the African elephant (*Loxodonta africana*) has become a moral and global agenda; and second, wildlife conservation efforts in Africa are still dominated by "Western and extra-local cultural notions." Extra locally derived elephant conservation plans and actions are problematic because elephants impact on local livelihoods and their survival depends on local actions. Proponents of Community Based Conservation (Hulme and Murphree 2001), and Adaptive Collaborative Management (Colfer 2005), have strongly argued against conservation strategies that exclude local peoples. This study seeks to contribute to more adaptive landscape planning that supports the protection of the African elephant and local livelihoods.

Conservation policies and practices in East Africa have followed the "Yellowstone Model" which assumes that wildlife is best conserved in landscapes with no people. Critiques of this model have observed that this contrasts sharply with African indigenous cultures and belief systems that see humans and wildlife as belonging to one interconnected nature. Research by geographers and environmental historians has shown that humans are an integral part of landscapes and have played a critical role in their creation and maintenance (Mathewson 1984; Fairhead and Leach 1996; Denevan 2001; Sluyter 2002). The modern practice of conservation, of separating nature/wilderness from society, which is rooted in Western philosophy, began after the establishment of European colonial rule on the African continent. Around the mid-20th century, colonial governments in East Africa established protected areas (forest reserves, national parks) in response to wildlife and forest decline caused by a growing human population and rapid extraction of wildlife resources, for example, rampant elephant hunting. After independence, East African countries did not reconstruct their conservation practices, but submissively pursued colonial models. Towards the last quarter of the 20th century, more

protected areas were created by independent governments in East Africa. Often, creation of parks involved the forceful removal of people from their traditional lands, thus disrupting pre-existing human ecologies and forging news relationships between humans and wildlife. More importantly, local people have been left out of the management of protected areas.

Despite many years of protected areas existence, and the intervention of governments and international conservation organizations, the survival of wild species in East Africa especially large mammals, remains a challenge. Why is this the case? Some scholars have argued that conservation policies in Africa have deep historical roots in European colonialism and reflect the imposition of the European image of Africa upon the reality of the African landscape (Anderson and Grove 1987; Adams and McShane 1996; Leach and Fairhead 2000). There is no doubt that European colonists had little knowledge of Africa. It is also clear that during the colonial period in East Africa, conservation and development agendas were implemented without proper knowledge of local people and places. Therefore, Africa's colonial experience and the consequent reorganization of human relations with nature is implicated in biodiversity loss, especially the drastic decline of the elephant populations in the 20th century.

Critiques of preservationist and fortress conservation practices have also pointed out that protected areas do not address the overall problem of environmental decline because they amount to putting a "paltry bandage over a gaping wound" (Adams 2004; Dawson 2016). Although national parks safeguard biodiversity (and also manipulate it for capital gain), they are also implicated in the root causes of biodiversity loss such as the impoverishment of rural dwellers by creating conditions of resource scarcity (Carruthers 1995; Neumann 1998). The negative social impacts of conservation are often swept under the carpet while narratives such as "foreign exchange" generated by ecotourism are trumpeted by national governments.

The fact that modern conservation policies imposed on Africa have increased resource conflicts without substantially reducing the decline of wildlife species raises key questions. What does conservation mean for Africa? What do Africans want it to mean? What conservation dreams do Africans have, and how can Africans realize them in their own terms? Does conservation in Africa need to be freed from models imported from elsewhere? Will Africa reconstruct or keep conservation structures inherited from colonialism? Can Africa find solutions to its environmental problems without resorting to Western models? These questions have also been pursued by other scholars (Adams and McShane 1996; Neumann 1998; Mavhunga 2014) and are central to this project. I further explore these questions by focusing on the interaction between elephants and the rural residents of Tsavo[2], Kenya.

In Tsavo, human-elephant interactions are compelling for three reasons. First, in 1948, the colonial administration in Kenya alienated land to create Tsavo National Park, ostensibly to ensure the protection of elephants and other wild species from threats posed by a growing human population and changing land uses. Tsavo is the largest national park in Kenya, it accounts for about 40% of the total protected area of the country (KWS 2008). The unique aesthetic setting of Tsavo for wildlife tourism is undisputable, Tsavo is critical for Kenya's tourism industry. Secondly, although elephant numbers have declined significantly relative to their historical size and range, the Tsavo landscape still hosts the largest elephant concentration in Kenya. In 2013, the region had an estimated 12,000 elephants living both within and outside the national parks (Ngene et al. 2013). Thirdly, in Tsavo, conflicts are intense between the need for elephant protection and the livelihood needs of the local people. On one hand are conflicts between state

[2] Tsavo means "slaughter" in the language of the Kamba people. Prior to the 20th century, caravans of slave and ivory traders passed through Tsavo to the interior of East Africa.

conservation authorities and local people over access to protected areas resources and the threats posed to elephant populations by poaching (Maingi et al. 2012). On the other hand, there are also conflicts between people and elephants over threats to livelihoods when elephants damage crops and other property in private lands. Tsavo is generally an arid and semi-arid environment where subsistence livelihood from rain fed agriculture is often uncertain. Crop damage by wildlife has a severe impact on local food security.

Research Problem

The African elephant is on the decline. It is estimated that there were 20 million elephants in Africa at the time of European colonization in the late 19th century. This population dropped to about 1 million in the 1970's (Douglas-Hamilton 1987), to the current estimate of 350,000 individual elephants (Chase et al. 2016). Elephants are critical to Africa's ecology and economy (Moss 2001). Due to their migratory behavior, they heavily influence the recycling of nutrients and disperse seeds through their dung. As elephants move in forest and savannah environments, they push over, knock down trees, open up thickets and create a balance between grass and woody vegetation (Staub et al. 2013). In Africa's savannahs, elephants expose sub surface water in dry river beds thus supporting the survival of other wildlife species. As majestic animals, they are the symbol of wildlife conservation in Tsavo and other parks in Africa and attract millions of tourists to the continent. Their management however is very complex and contentious (Norton-Griffiths 2000). They require large quantities of browse and roaming space (Ngene 2010). Arguably, the success or failure of conservation efforts in the continent is measured by the stability of elephant populations. Reports of elephant poaching in Africa attract widespread attention around the world.

However, global perceptions of the African elephant are in sharp contrast with the perceptions of people who live around national parks and reserves where elephants occur. The relationship between conservation officials who manage elephants and local farmers and pastoralists in most rural parts of Africa is conflictual. These conflicts revolve around the concern about the survival of the African elephant and the protection of human lives and livelihoods. Elephants in Tsavo are facing threats from poaching, loss of their habitat, frequent droughts, and competing land uses, especially agriculture (Wato 2016).

The Tsavo landscape in Kenya has undergone significant socio-ecological changes that began prior to the colonial era in Africa. At the heart of these transformations in Tsavo is the changing relationship between people and elephants. Despite the importance of the shifting relations between people and elephants to current elephant conservation debates, a thorough analysis of the relationship between elephants, livelihoods and landscape transformation in the pre-colonial, colonial and post-colonial periods has not been undertaken.

One of the most significant transformations of the Tsavo landscape was the establishment of Tsavo National Park in 1948. The park was later divided into two semi-autonomous parks; Tsavo East National Park (TENP), Tsavo West National Park (TWNP). Like most other protected areas across Africa, the process of park formation involved the displacement of local people who were mainly hunter gatherers and pastoralists (Kasiki 1998). The rationale for the establishment of parks in Tsavo was to save plant and animal species by separating them from human beings. For the most part, communities living within and adjacent to the areas declared a park were not consulted before its establishment. In Kenya, state conservation agencies carry out management aspects in the national parks and reserves, including research, security, and tourism. Community participation in decision making is very low or non-existent. Despite lack of their

involvement, communities neighboring national parks in Tsavo suffer from crop depredation, and threat to life and property caused by wild animals. Amongst all wild animals, elephants are responsible for at least 70% of losses incurred from crop raiding, human deaths and injury in Tsavo (Kasiki 1998).

Several studies have addressed human-elephant conflicts in Tsavo. These studies have laid the foundation for human-elephant research in Tsavo and this study benefited from their findings. Three studies are notable: Cobb (1976), Ngure (1995), and Kasiki (1998). Cobb (1976), mapped the distribution of large herbivores in Tsavo including elephants and highlighted the threat of rapid human growth to elephant populations. Ngure (1995), gave a description of human-elephant conflicts management activities undertaken by the KWS and suggested mitigation measures especially the construction of elephant-proof fences to prevent crop damage by elephants. Kasiki (1998), is a more comprehensive study of human-elephant conflicts in Tsavo, the study makes a significant contribution to the understanding of the conflicts by analyzing the spatial patterns of the conflicts and their mitigation.

The major difference between these studies and my study is that they are apolitical and less critical (do not trouble current conservation structures) and focuses more on mitigation of human elephant conflict by state authorities. In contrast, my study is political and examines human-elephant conflicts from the perspectives of the local people. It places human-elephant conflicts in their historical and socio-cultural context using the lens of political ecology and argues for more involvement of local people in management of human-elephant conflicts. The study takes a participatory approach that brings on board the "ignored" voices of local people in Tsavo. Past studies have taken human-elephant conflicts for granted as natural, a problem to be managed rather than the result of historical processes. They do not adequately account for the

social and historical contexts in which these conflicts are produced. They take a "scientific" approach that leaves out the material, political, and symbolic relations between elephants and humans.

The studies do not address the power relations that exist between local people and the KWS or challenge colonial hegemony and its conservation legacies in Kenya. Kenya inherited a colonial institutional and legal framework for wildlife conservation that emphasizes the ecological and economic benefits of conservation while ignoring the "negative" social and economic impacts of conservation (Akama et al. 1996). The conservation structures bequeathed by colonialism denigrated and outlawed local traditional cultures and practices such as hunting wild animals for food. Consequently, local communities in Kenya have perceived wildlife, especially elephants, and wildlife officials as a threat to their lives and livelihoods. (Lee and Graham 2006; Sifuna 2009). The voices of local communities in Tsavo who face the daily reality of living with elephants have not been properly represented in past research. This study addresses this research lacuna by using local narratives to gain a better understanding of human-elephant relations in Tsavo.

My study challenges the status quo and stress that local people need to be key players in conservation, rather than dispossessed spectators. It provides an alternative view of Tsavo to the dominant narratives that portrays residents of Tsavo as ignorant of the importance of conservation and complicit in the loss of biodiversity and habitats. By employing an applied research design that supports Adaptive Collaborative Management (Berkes and Folke 1998; Colfer 2005) this study promotes opportunities for balancing elephant conservation and livelihood needs in the study area.

Research Purpose and Questions

The purpose of this study was to gain a better understanding of the historical and current human-elephant relations for adaptive and collaborative elephant conservation in Tsavo, Kenya. I focus on the pre-colonial and post-colonial shifts in human elephant relations, landscape transformation in Tsavo and conflicts between elephants and the people living adjacent to parks in Tsavo. The study is guided by three main research questions.

1. How has the relationship between humans and elephants in Tsavo changed since the mid-19th century to the present and what are the consequences?

   This question seeks to understand pre-colonial, colonial and post-colonial relations between people and elephants in the Tsavo region. For the precolonial period, I focused on the last half of the 19th century. I relied on ethnohistories of local people in Tsavo and traveler diaries of the first European travelers in East Africa from the 1850s. I also relied on archival sources and oral interviews with key informants who are resident in villages surrounding Tsavo. I also gathered data from published sources about the social-ecological changes in Tsavo in the 20th century and how they relate to human-elephant relations.

2. What are the local perceptions of elephant conservation among communities living in Tsavo and how do these perceptions differ?

   This question sought to gain local views about elephants in Tsavo with a focus on how elephants impact on local livelihoods. The question guided the comparison of attitudes towards elephants between two communities living in the Tsavo region. I focused on understanding the factors behind the differences in these attitudes by investigating the historical relations between the people and their landscape resources.

3. How can local perspectives on elephants in Tsavo contribute to Adaptive Collaborative Management (ACM) plans that resolve resource conflicts between local people and state authorities and enhance the conservation of elephants?

   This question explored how locally derived knowledge can be used to benefit a conservation design such as ACM. The question also explores the potential of ACM as a conservation design to resolve local resource conflicts by promoting and validating local views for inclusion in collaborative plans that support elephant conservation. This question is based on the hypothesis that solving grazing conflicts in the study area will promote elephant conservation.

Theoretical Framework

This study mainly draws from two theoretical approaches; Political Ecology and Adaptive Collaborative Management. Each approach is briefly described below.

Political ecology

Political ecology is a research approach that explains human-environment relations by examining the impact of broad scale socio-economic and political processes on local environments, actors and landscapes (Blaikie 1985; Blaikie and Brookfield 1987; Blaikie 1994). Political ecologists include the problems of distribution and exercise of political and economic power when analyzing environment and development problems. The approach takes keen interest in unequal power relations between actors and how these relations impact on people and environments. Good examples of recent political ecology research include the constructive critiques of community based conservation initiatives such as CAMPFIRE (Logan and Mosley 2002) and market based (carbon credit) initiatives against forest degradation (Beymer-Farris and Basset 2012). Political ecologists have demonstrated how dominant environment and development discourses are historically and socially produced, especially by those in power. For

example, Arturo Escobar has powerfully analyzed the relationship between the discourses and practices of modern development and the production of the "Third World" (Escobar 1995). Most political ecology research has focused on historical processes that have led to the transformation and organization of non-European landscapes according to European constructs.

In political ecology analysis, local conflicts over land and resources are produced by management institutions and frameworks that are embedded in multiple scales (local, national and global) (Marks 2012). This mode of analysis has promoted understanding of complex social and environmental problems such as forest degradation, soil erosion, overfishing and biodiversity decline (Watts 1983; Blaikie 1985; Neumann 1998). For example, consider a consumer who buys a cut flower in a London supermarket that was grown in greenhouses located in traditional elephant migration corridors in Kenya[3]. This consumer, might be a wildlife enthusiast but probably not aware of the consequences of her choice: increased human-elephant conflict in Kenya as elephants and flower farms compete for space.

Political ecologists have stressed that ecological systems are political to the extent that some social actors exploit environments for private gain at collective cost (Peet and Watts 1996; Robbins 2004). Paul Robbins, in his introductory text emphasized that the political ecology approach is based on the premise that there are "less coercive, less exploitative and more sustainable ways of doing things" (Robins 2004:20).

This study is situated in political ecology. Modern conservation practices in Africa are a product of historical processes mainly colonialism. Political ecology provides a unique lens to

[3] Kenya is the biggest exporter of cut flowers to Europe. Roses make up about 74 % of Kenya's flower exports to Holland, Britain, Germany and France.

understand changing human-elephant relations in Tsavo because the framework allows this study to explore the spatial and temporal scales in which these relations are produced.

Adaptive Collaborative Management (ACM)

ACM was introduced as a natural resource management strategy in the 1970s (Holling 1973) and particularly explored by the Center for International Forestry Research (CIFOR). One of the central ideas of ACM is that rights and responsibilities should be shared among those with a claim to the environment or a natural resource. Popularity of the principles of ACM has been growing as current environmental policies embrace the move away from "top-down" directives towards consensus-based processes and community participation in planning, implementation and monitoring of conservation projects (Mclain and Lee 1996; Berkes and Folke 2002). ACM promotes local learning that is important in the search for a durable and sustainable relationship between humans and the natural world. Knowledge sharing among stakeholders is key in ACM, and conversation among stakeholders facilitates the flow of this knowledge. The ACM approach helps in re-defining global conservation agendas by focusing on local places and people (Berkes 2009), and supporting the integration of scientific and local knowledge (Armitage et al. 2008b). This study employs the ACM approach to validate local knowledge about elephants and argue for its inclusion in locally sensitive and collaborative elephant management plans in Tsavo.

Participatory Research as a Methodological Approach

> It is by trying to understand how poor people manage their livelihoods and their natural resources in conditions of great difficulty that science can learn to make itself more useful to them, rather than by promoting transformation based on imported models.
>
> Mortimore, 2005:47.

Recently, social scientists have put emphasis on the inclusion of local people in the research process or what is now popularly known as Participatory Research-(PR) (Chambers 1994;

Slocum et al. 1998; Laurier 2003; Longhurst 2010; de Leeuw et al. 2012). Participatory research methods put local people at the center of research. PR is based on the assumption that ordinary people are capable of intelligent analysis of their actions and that their knowledge is relevant for shaping development policies and programs (Chambers 1994; Slocum et al. 1998). This research approach provides an opportunity for rural people to share and enhance their knowledge of life conditions and to plan and act together (Chambers 1994). Research has shown that local peoples are ecologically conscious and committed to sustainable ways of life (Tiffen and Mortimore 1994). Development researchers have also argued that development plans imposed from above are less sustainable and more likely to generate social conflicts (Pimbert and Pretty 1997). Development plans developed through participatory processes are more sustainable (Ostrom 2005). Participatory ethnographic methods promote collaborative learning, establish rigor, and increase the validity of research (Pain 2004; Baxter and Jack 2008; de Leeuw et al. 2012; DeLyser and Sui 2014).

This study adopted a participatory research approach and put local people at the center of research. Arturo Escobar has asserted that imagining new development paths requires the "restructuring of existing political economies of truth" (Escobar 1995, 2016). As other scholars (Foucault 1980; Said 1993; Derrida 1997) have argued before, this might require seeking knowledges that have been pushed to the margins and dismissed as backward, primitive and traditional. This study is, however careful not to frame PR as a counter-hegemonic development narrative whereby local views ignore other extra-local views and knowledge (Cooke and Kothari 2001). Rather, this study is aimed at validating local knowledge while also recognizing and respecting other forms of knowledge and viewpoints. The approach I employed in this study is supported by the Convention on Biological Diversity (CBD-article 8j) drafted in 1992, which

recognized the importance of the knowledge, innovation and practices of indigenous and local communities in biodiversity conservation (United Nations 1992).

Dissertation Prospectus

I have organized this dissertation into five chapters. Chapters 2,3, and 4 are written as stand-alone manuscripts which address the three research questions identified above. This chapters contribute to the overall research goal to understand the historical and current human-elephant relations for adaptive and collaborative elephant conservation in Tsavo, Kenya. Each of the chapters has an introduction, data and methods, results, discussion and conclusion sections. I will briefly discuss the three chapters.

Chapter two is an analysis of the shifting human-elephant interactions in Tsavo, Kenya. It combines data from oral histories and archival resources to analyze the changing relationship between people, elephants and landscape in Tsavo in the precolonial, colonial, and post-colonial periods. It is a historical-environmental geography analysis with respect to elephants, that takes a look at past cultural landscapes to understand the present. The chapter highlights the spatial re-organizations of land uses and livelihoods in Tsavo as British colonial administrators implemented development and conservation plans. These reorganizations are implicated in the rampant human-elephant conflicts that occur in Tsavo today. I argue that returned attention to historical relations with elephants provides alternative models of resolving these conflicts, which may be more equitable and successful than the current practices of fencing and militaristic "war on poachers" approaches to elephant conservation.

Chapter three analyzes local perceptions of elephants among communities living in Tsavo using in depth interviews with local residents. A comparison was made between two communities living within the Tsavo region; the Kamba people living around the Chyulu Hills

National Park and the Kasigau Taita who live around the Kasigau forest. The chapter highlights that people's ideas and perceptions of elephant conservation are a function of historical experiences rather than inherently problematic ways of looking at elephants. It demonstrates that local perceptions of elephants among communities living in Tsavo are political; they are embedded in issues of rights to livelihood and access to lands and resources. The chapter supports other research that has found that attitudes of people living near protected areas towards species can only be understood within the context of protected area history. In this chapter, I argue that local meanings and concerns about elephants need to be integrated in the management plans of protected areas.

Chapter four assesses how local knowledge of elephants and livelihood resources can contribute to adaptive collaborative management plans between the Maasai of Tsavo and the KWS. The chapter is based on fieldwork conducted in six villages located west of Tsavo West and Chyulu Hills National Parks on the role of livestock grazing on Maasai lands and livelihoods. It explores how solving grazing conflicts between the Maasai and KWS can promote cooperation in elephant conservation. The underlying assumption of this chapter is that the fusion of traditional and scientific knowledge and the involvement of different stakeholders is key to solving conservation and development challenges. The chapter validates local knowledge about coexistence between livestock and elephants, and also explores opportunities for shared learning between the KWS and the Maasai.

The next section gives a brief description of the physical and cultural characteristics of the study area. It is important to point out that the name Tsavo is sometimes used to refer to areas that fall beyond the area delimited in this study. This study focused more on people and places adjacent to national park boundaries due to their richer experiences with elephants.

The Study Area

This study was conducted in Tsavo region, Kenya (Figure 1). Tsavo is located in southern Kenya and covers parts of Taita Taveta, Makueni, Kitui, Tana River and Kajiado counties.

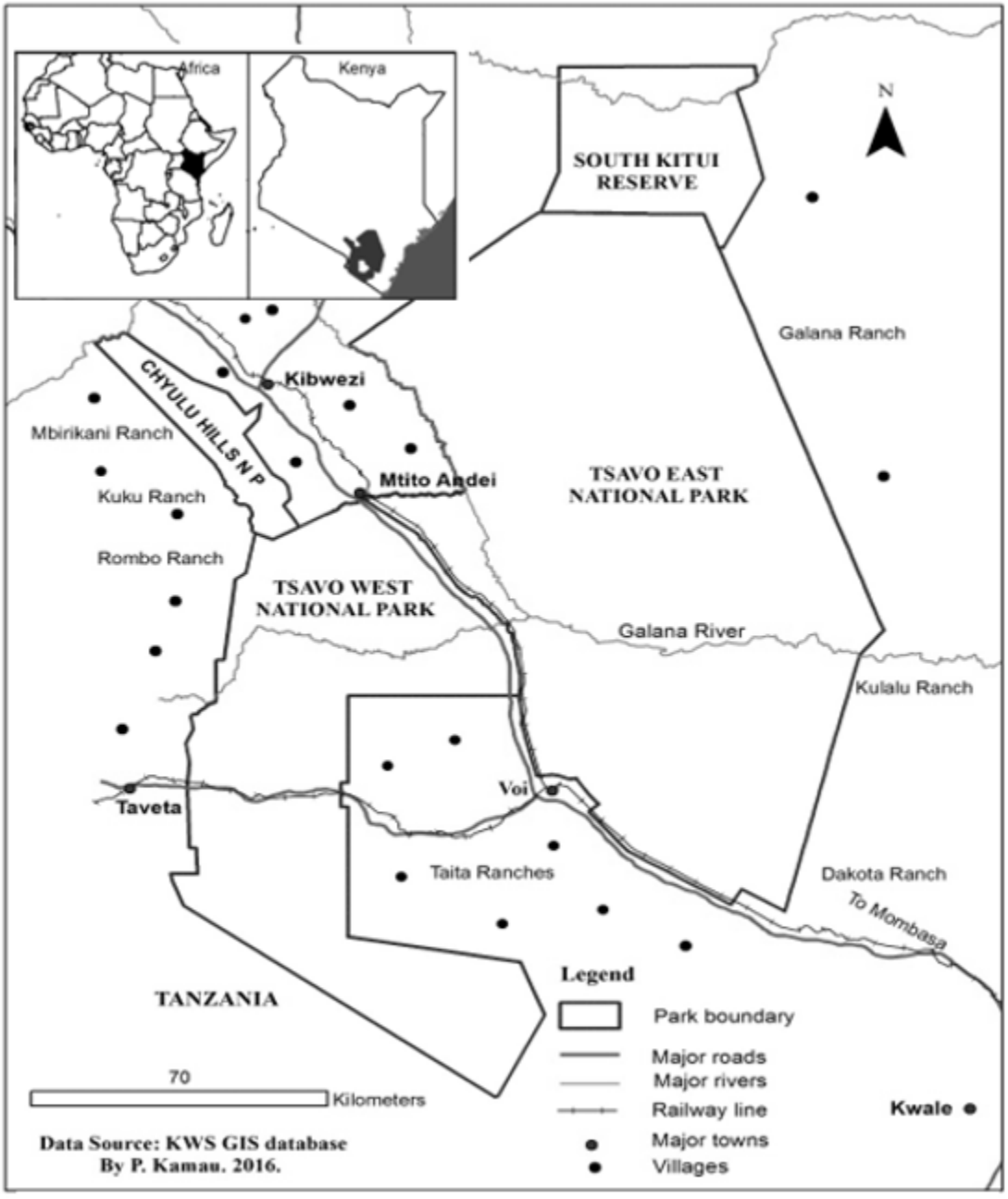

Figure 1. Map showing study area in Tsavo, southern Kenya.

The study area includes areas within and adjacent to three national parks: Tsavo East, Tsavo West and Chyulu Hills National Parks and surrounding community owned ranches. This area is approximately 48,000 km^2 and falls between latitudes ~1.60^0 S and 4.0^0 S, and longitudes ~37.4^0 E and 39.0^0 E. This expansive land makes Tsavo one of the few areas in Africa to accommodate large elephant herds. The general topography in Tsavo is low and flat, but numerous hills occur on the West and the Yatta plateau on the East of Tsavo (Mukeka 2010). Areas with high elevations such as Taita Hills and Chyulu Hills, are well watered and are traditionally preferred for human settlement. Tsavo is dissected by the Athi-Galana, the second largest river in Kenya which flows from the highlands in central Kenya to the Indian ocean. This river is critical to Tsavo's wildlife, especially elephants. There are numerous small rivers which feed into the Athi-Galana including the Tsavo River and Voi River, which flow from the east side of Mount Kilimanjaro.

Tsavo is arid to semi-arid and suffers from periodic droughts. The region has a bimodal rainfall pattern, about 200-700 mm of precipitation fall during the long rains (March-May), and during the short rains (November and December). Higher elevations such as Wundanyi Hills, Mount Kasigau and Chyulu Hills, receive more rainfall and have cooler temperatures. Mean maximum temperatures are 33^0 C in March and 20^0 C in July, the hottest and coldest months respectively (Winjngaarden 1985). Acacia-Commiphora bushland is the most dominant vegetation type in Tsavo (Figure 2). This Acacia-Commiphora savanna comprises varying densities of trees and shrubs, open grassland, woodlands, scrub, and thicket. Montane evergreen forests occur at higher elevations. Tsavo is home to a variety of wildlife species including the iconic "big five:" *Loxodonta africana* (African elephant), *Syncerus caffer* (African buffalo), *Panthera leo* (African lion), *Panthera pardus pardus* (African leopard), and *Diceros bicornis*

(Black rhinoceros) (Wijngaarden 1985). As a critical habitat for these endangered species, Tsavo receives immense attention globally for scientific and conservation reasons. The Tsavo landscape hosts the two largest national parks in Kenya: Tsavo East and Tsavo West, and the recently gazetted Chyulu Hills National Park, which are managed by the Kenya Wildlife Service (KWS 2008). Tsavo also has about 28 gazetted forests that drape the numerous hills found in the region.

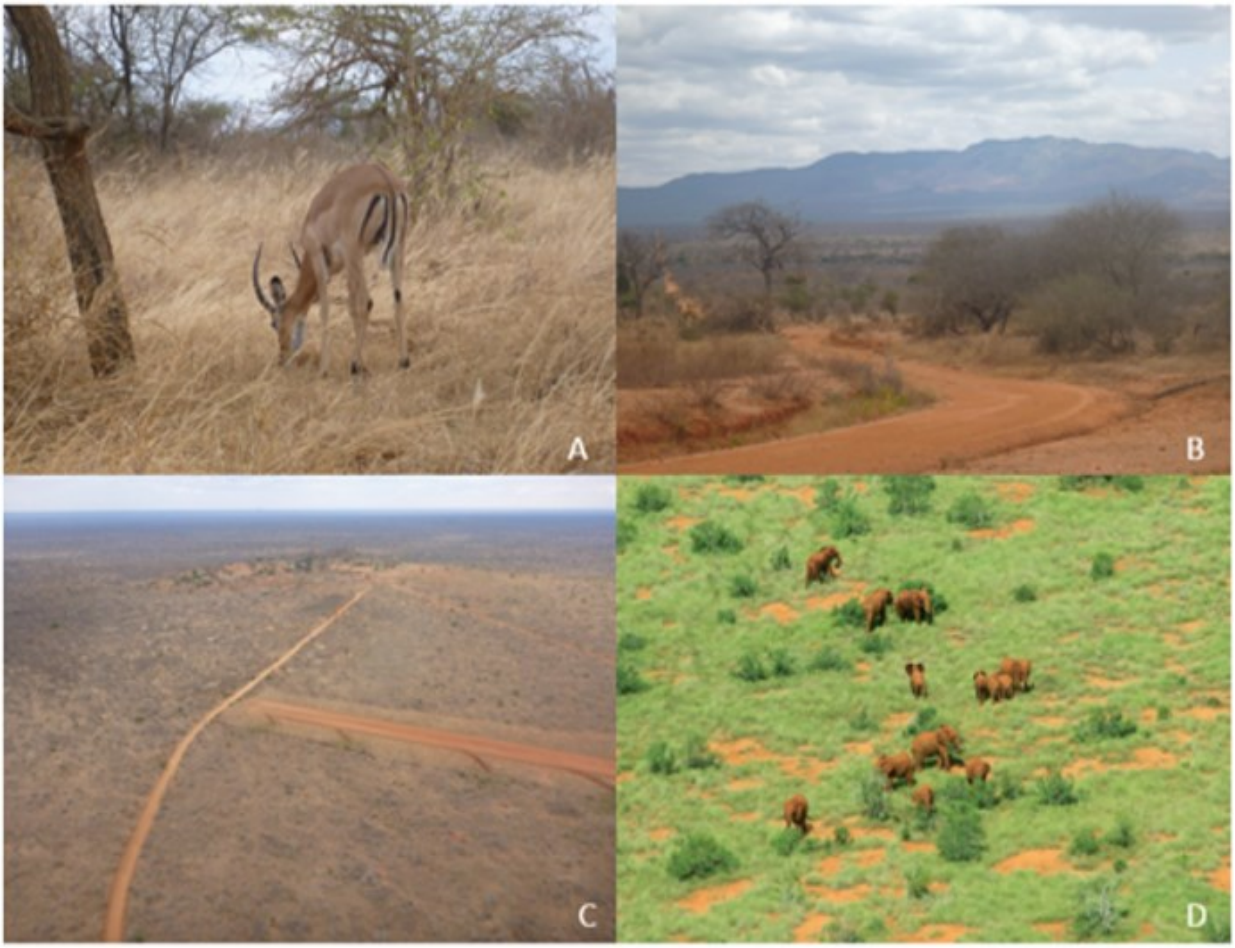

Figure 2. Landscape images of Tsavo, Kenya. A and B (taken July 2015), show Acacia Commiphora bushland mixed with grass. C and D (taken August and December 2015 respectively) are aerial views of Tsavo during dry and wet seasons respectively.

Adjacent to these protected areas and gazetted forests are villages, ranches, private and community lands. The gazetted forests are managed by the Kenya Forest Service. Most hills fall under trust land and are managed by local governments.

Tsavo has the highest single concentration of elephants in Kenya. The last elephant census in Tsavo, conducted in 2014, counted about 11,000 elephants in areas within and adjacent to parks. Prior to 1900, elephants roamed freely in Tsavo lowlands. Human settlements were very minimal and mostly occurred at high elevations. Agricultural tribes like the Taita and Kamba practiced farming in hilly areas and therefore incidents of crop raiding by elephants were few. Today, due to the conversion of elephant migration corridors to farmlands as human population grows, incidences of crop depredation by elephants are high in Tsavo. This causes conflict between local farmers and the KWS, which is responsible for managing wildlife in Kenya. KWS in conjunction with conservation partners have erected elephant-proof fences along park boundaries in areas that experience high rates of human-elephant conflict. There are plans to fence all parks to stop elephants from straying into farms. While fencing the parks will reduce human-elephant conflicts, it will interfere with elephant movements in Tsavo. Traditional elephant movements in Tsavo are already hampered by human settlements and infrastructural projects such as roads and rail tracks. In the last few decades, drought is the major cause of elephant decline in Tsavo, causing a drop from 35,000 elephants in 1974 to the current estimate of below 12,000 individuals (Ngene et al. 2013). Elephants in Tsavo also face sporadic threats of poaching for their ivory. A significant number of elephants are killed every year for ivory using automatic weapons or poisoned arrows.

Cultural groups in Tsavo

Although Tsavo is increasingly becoming multicultural, six cultural groups with distinct ways of life and belief systems lived in the study area before Kenya became a British colony in

1895 (Figure 3). They include the Kamba, Taita, Taveta, Maasai, Waata and the Orma[4]. Ethnolinguistically, the Kamba, Taita, and Taveta belong to the Bantu group which has a Niger-Congo origin.

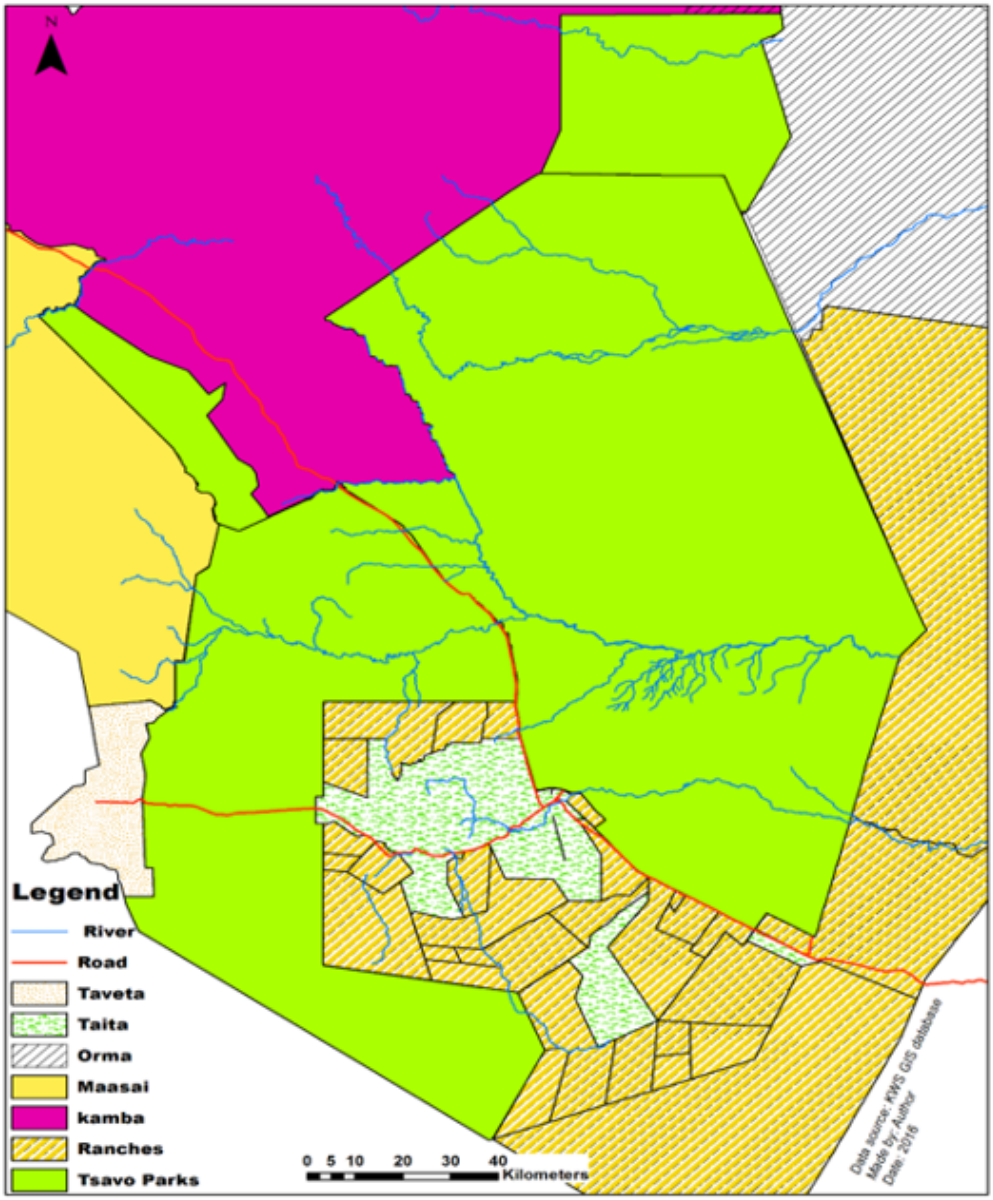

Figure 3. Map showing the spatial distribution of different cultural groups in Tsavo. The Waata do not have a distinct territory in Tsavo. They mostly live among the Taita.

[4] The Kamba, Taita, and Taveta are also called Akamba/Wakamba, Wataita, and Wataveta respectively.

The Maasai belong to the Nilotic language group with a Nilo-Saharan origin, while the Orma and Waata belong to the Cushitic group with Afro-Asiatic roots. The Waata, the smallest indigenous group in Tsavo also engage in small-scale farming and livestock keeping but are deeply socio-economically marginalized. The Waata have the least formal education and are the poorest group in Tsavo (Kassam and Bashuna 2004). The groups except the Waata have distinct settlement locations in Tsavo spread across five counties which host the three Tsavo parks (Figure 4). Tsavo population has grown steadily, and the current number of people living in townships and villages within the study area is estimated to be 777,979. This estimate is calculated from the 1999 national population census data (KNBS 2010), which project future population increase at the rate of 2.5% per year.

Presently, the majority of the Taita, Taveta, and Kamba engage in peasant farming and small scale livestock keeping. The Maasai and Orma are predominantly pastoralists; the decline of grazing lands and persistent droughts are forcing these people to venture into small-scale farming. The main crops cultivated in Tsavo include maize, beans, cow peas, and tropical fruits, especially mangoes. Due to the arid and semi-arid conditions of Tsavo, rain-fed agriculture in the lowlands is not reliable. Livestock breeds in Tsavo are well adapted to the dryland conditions, and most people depend on the sale of livestock products (milk, meat and hides) and livestock for their livelihood. About 20% of people in Tsavo are either traders or have taken up formal jobs (KNBS 2010). Tourism in national parks and community ranches provides direct and indirect employment opportunities to hundreds of people in Tsavo. This includes working in accommodation facilities such as hotels and lodges, supplying food to tourist facilities, and selling *curios* to tourists. Tourism has spurred the growth of towns in Tsavo. Voi and Mtito-Andei towns in Tsavo owe their success to the booming tourism industry in the region.

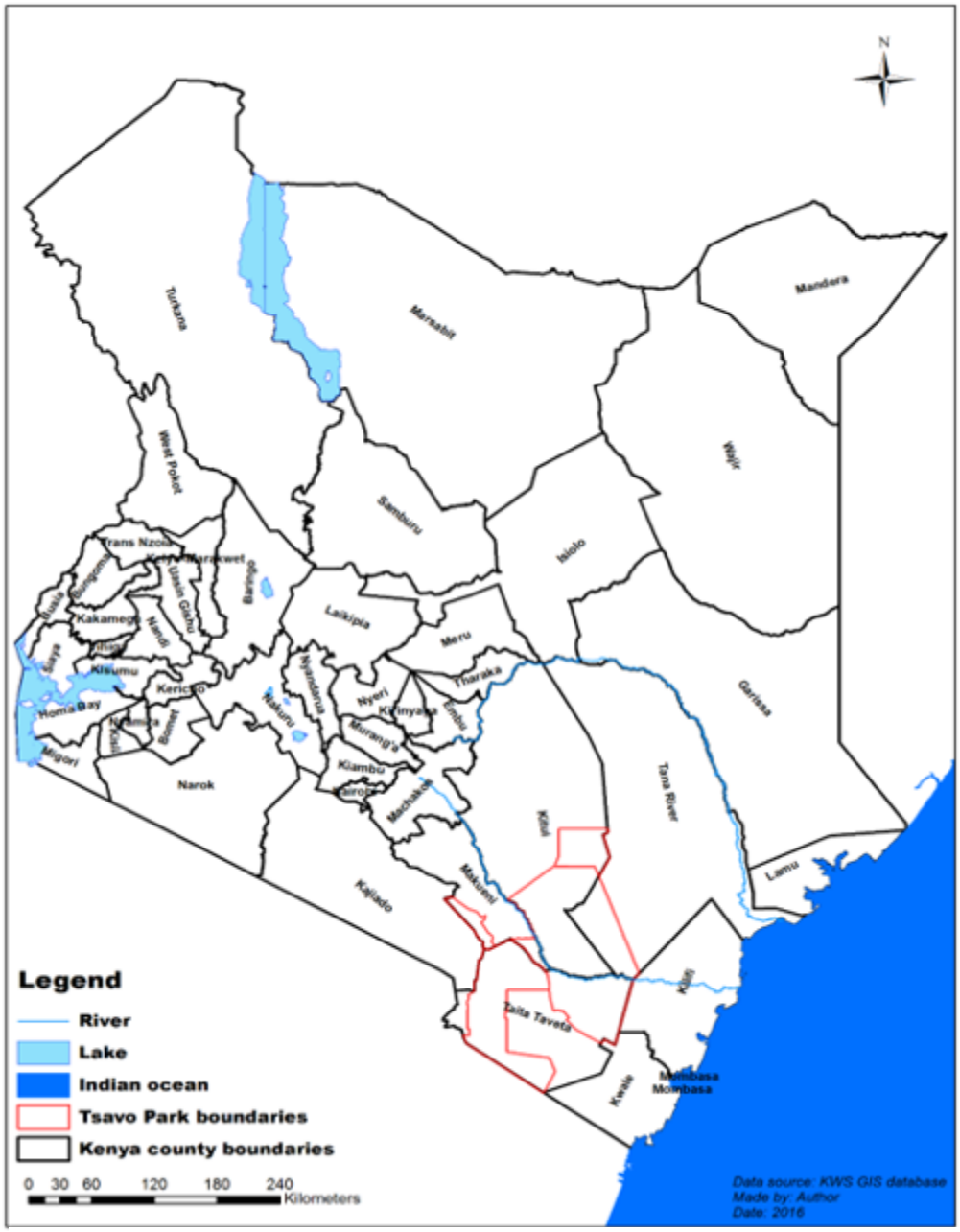

Figure 4. Map of Kenya counties overlaid with boundaries of national parks in Tsavo.

The majority of Tsavo residents are poor (subsist on less than $ 3 a day) and live in houses that lack modern infrastructure such as piped water and electricity. During severe drought conditions, at least 40% of people in Tsavo rely on relief food donations from government and charity organizations.

Non-governmental organizations (NGOs) in Tsavo

The work of conservation NGOs in the Global South have received attention from scholars (Chaping 2004; Brockington and Scholfield 2010). There is no question that these organizations have increasingly become powerful in shaping conservation decisions in developing countries. Anthropological studies of conservation have noted that NGOs in Global South are instrumental in forging consent for conservation practices based on Western models. The environmental discourses they promote favor the priorities and interests of the Global North over local needs, histories and complex relationships with nature in the Global South. Since they have strong networks to mobilize resources needed for conservation, their influence is significant. In Tsavo, NGO's are playing a significant role in elephant conservation. Since the KWS lacks capacity to adequately patrol the vast areas within and adjacent to Tsavo national parks, conservation organizations are complementing KWS's efforts with ground and aerial patrol teams. In fact, the lines between the KWS and NGOs have become blurred. This is partly because some NGOs have anti-poaching units similar to those of the KWS, well equipped with patrol vehicles, military uniforms and weapons. Some NGOs also have active conservation educational programs that complement those of the KWS.

The David Shedrick Wildlife Trust (DSWT), founded by Daphne Sheldrick, the window of David Sheldrick, the pioneer warden of Tsavo East National Park is the most visible NGO operating in the Tsavo region. The trust has mobile security and veterinary units that respond to incidences of wildlife poaching and wildlife injuries in Tsavo and adjacent areas. The Trust also runs elephant and rhinoceros orphan projects which have received international accolades. This organization enjoys immense donor financial support and has created many employment opportunities for local people. Other famous NGOs with significant conservation projects in

Tsavo include the Care for the Wild International, The International Fund for Animal Welfare, Wildlife Works, Tsavo Trust, The Eden Wildlife Trust. There are also smaller conservation NGOs that have less influence and geographical reach in Tsavo.

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CHAPTER TWO
A POLITICAL ECOLOGY ANALYSIS OF CHANGING HUMAN-ELEPHANT RELATIONS, AND LANDSCAPE TRANSFORMATION IN TSAVO, KENYA

Introduction

In Africa, recent interactions between humans and elephants are marked by conflicts over land use. Conflicts over land use have resulted from social and environmental changes that have taken place in rural landscapes of Africa. The Tsavo region in southern Kenya is an excellent example of a landscape that has undergone rapid transformations since the beginning of the 20th century. At the heart of this transformation is the changing relationship between people, elephants and landscape. This chapter employs the political ecology lens to explore the relationship between people, elephants and landscape in Tsavo, Kenya, during the precolonial, colonial and post-colonial periods. We relied on oral histories, published records, and archival sources to reconstruct human-elephant interactions in Tsavo after mid-19th century. In this analysis, we argue that pre-colonial cultural values and subsistence practices in Tsavo supported a sustainable relationship between humans and elephants. Socio-political transformations in Tsavo during the colonial period in Kenya and beyond have threatened the survival of elephant populations. We conclude that there is need to revive African ideas about human relations to nature. The renewed attention of local people's historical relations with elephants in Africa will be key to resolving human-elephant conflicts.

I preface this chapter with a folktale that hints at the traditional ways of life and relationship with elephants among the Kamba, one of the indigenous cultural groups resident in Tsavo. How did pre-colonial groups in Tsavo interact with elephants? How did historical

processes affect these relations and what are the consequences? These questions underpin the subject of this chapter.

Once upon a time, there was a poor man. The poor man heard of a super natural being called *Ivonya-Ngia* which means, "He that feeds the poor" in Kamba language. He set out on a journey to find *Ivonya-Ngia,* who lived far away. When he finally arrived, he saw several herds of goats and sheep, and there, amidst green pastures was the mansion of *Ivonya-Ngia.* The poor man was received kindly by *Ivonya-Ngia*. *Ivonya-Ngia* ordered his men to give the poor man a hundred sheep and a hundred cows. "No," said the poor man, "I want no charity; I want the secret of how to become rich." *Ivonya-Ngia* reflected for a while; then took a flask of ointment and gave it to the poor man, saying: "Rub this on your wife's pointed teeth in her upper jaw, wait until they have grown and then sell them." The poor man carried out the strange instructions, promising his wife that they would become very rich. After some weeks, the canine teeth began to grow and when they had grown into tusks as long as his arm the man persuaded his wife to let him pull them out. He took them to the market and sold them for a flock of goats. After a few weeks, the wife's canine teeth had grown again, becoming even longer than the previous pair but she would not let her husband touch them. Not only her teeth, but her whole body became bigger and heavier, her skin thick and grey. At last, she burst out and walked into the forest, where she lived from then on. She gave birth to a son who was also an elephant. The husband used to visit her in the forest but she would not be persuaded to come back. She gave birth to more children, all elephants who were as intelligent as people.[5]

[5] Adapted from a Web Gallery of Contemporary East and South African Paintings.

When Europeans arrived in Africa, they saw a wild and frightening nature that needed to be tamed and ordered so that humanity could better live and function within it (Mackenzie 1988; Adams and Mcshane 1996). Europeans brought to Africa new ideas and techniques to conquer nature, and perspectives on how humans should relate with nature. Geographers and anthropologists working on the nature-society nexus have demonstrated the importance of looking at pre-colonial landscapes as a method for understanding contemporary patterns. Their research has monitored the transformation of landscapes as conservation and development policies are implemented (Rocheleau et al. 1996; Neumann 1998; Schroeder 1999)[6]. This research has underscored the importance of landscape transformations in colonial contexts and demonstrate that colonial ideas continue to influence the management of post-colonial landscapes (Blaut 1993; Schroeder 1999; Sluyter 2002). Other scholars have also demonstrated that some of the most pressing social and environmental problems have their roots in the nature/society divide that was until recently taken for granted (Latour 1993; Zimmerer 2000). In Africa, material and conceptual landscape transformations in the colonial past continue to affect the wellbeing of people and biodiversity. Environment and development policies in the continent still carry many of the assumptions of the colonial models (Adams and McShane 1996; Adams 2003). The blame for human-wildlife conflicts often gets laid upon local people.

During the first half of the 20th century, colonial authorities transformed Africa's physical environments into new landscapes that conformed to European ideas of nature, land and society. By the end of the first quarter of the century, most communities in Africa had lost their traditional rights over management of ancestral lands to private and state land owners (Neumann

[6] See Mathewson (1998) survey of works by geographers and other social scientist on post-colonial cultural landscapes and ecology.

1992; Carruthers 1995; Adams and McShane 1996; Schroeder 1999). In some African colonies, land was alienated for colonial settlers, and this marked the beginning of changes in the human ecology of African land-use systems. Colonial governments also delineated forest reserves and national parks from communal lands and replaced communal land management rules with state regulatory policies that persist to date (Njogu 2004). Arid and semi-arid areas, landscapes that had been used for livestock production for millennia, were reconceived as 'wastelands' and converted to spaces for wildlife conservation.

European administrators and settlers in Africa regarded their policies, ideals, and institutions superior to those of natives and believed they had a moral duty to bring "civilization" to Africa (Thompson 1977; Rodney 1982). Although the beliefs and actions of colonial officials were not monolithic, for the most part, they perceived native landscapes and people as underdeveloped and "wild" (Adams and McShane 1996). They dismissed African land use and resource use practices as backward, destructive and inefficient. For example, African traditional hunting practices were described by wildlife conservation advocates as cruel and wasteful slaughter (MacKenzie 1988; Caruthers 1995). Colonial governments therefore sought to correct "destructive" African ways of use of the environment by expanding state power in rural areas through land use restrictions, regulations, destocking, hunting bans, evictions and land alienations (Neumann 1998). Natural resources were commodified, and charismatic megafauna such as elephants became the property of state.

Elephants are majestic animals. Currently, they are the symbol of wildlife conservation in Africa. Their management however is very complex and contentious (Norton-Griffiths 2000). They require large spaces and often have major impacts on the structure and function of natural ecosystem, mainly due to their large size and longevity (Laws 1970; Ngene 2010). Elephants are

at the core of conservation policies in Africa, success or failure of conservation efforts on the continent is measured by the stability of elephant populations. Reports of elephant poaching in Africa attract widespread attention around the world. Elephant ivory has an important place in the historical relations between Africa and the rest of the world. For example, because of elephant ivory, the United States of America's first diplomatic tie in Sub-Saharan Africa was made with Zanzibar in 1839 (Parker 2004). Zanzibar was a major conduit of ivory from East Africa since the 1500's. Due to their importance, African elephants have received great attention from policy makers and researchers.

Despite the abundance of ecological studies of the African elephants (Leuthold and Sale 1973; Corfield 1973; Douglas-Hamilton 1987; Bouche et al. 2011), the shifting relations between human and elephants in African landscapes have not been adequately explored. The bulk of elephant studies in Africa have recognized the ecological effects of elephants on the density and structural diversity of woody vegetation (Laws 1970; Leuthold and Sale 1973) and distribution of other landscape species. These studies correlate woodland decline with elephant density in explanations of landscape change but often leave out elephants' material, conceptual, political and symbolic relations with people.

There is abundant research that demonstrates that human settlements in elephant habitats have led to the sudden disappearance of elephants in some landscapes of Africa (Mackenzie 1998; Steinhart 2001). Also, efforts to conserve the African elephant have led to the dramatic removal of people from native landscapes (Neumann 1998; Hakansson et al. 2008). Elephant conservation efforts by national governments in Africa have also changed local people's perception about elephants and some communities perceive elephants as having more political, economic and land use advantage than humans (Anderson and Grove 1987; Sifuna 2009). In

most African countries, local people have lost traditional user rights over elephants. Elephants and other wildlife resources are now a national resource managed by central governments through national environmental laws. Local landscapes that were hitherto used for hunting, foraging and grazing by natives have been transformed into aesthetic attractions for the global tourism industry. This has created feelings of disenfranchisement and exclusion from landscape resources thus heightening conflict between local people and wildlife authorities in African elephant range states (Lee and Graham 2006). Efforts to solve conservation problems such as poaching and human wildlife conflict in Africa, without proper appreciation of complex human-elephant interactions have led to increased conflicts.

The Tsavo landscape in southern Kenya, provides a classic example of an African landscape where human-elephant interactions have changed dramatically over the last one century. Pre-colonial land tenure systems that facilitated hunting and gathering, and pastoralism in Tsavo were dramatically altered during the colonial period in Kenya. Land reforms implemented since the colonial period in Kenya, have undermined indigenous land ownership systems and created conditions for land scarcity in Tsavo (Akama et al. 1996). Human-elephant interactions in Tsavo are compelling for three reasons. First, although elephant numbers have declined significantly relative to their historical size and range, the Tsavo landscape hosts the largest single population of elephants in Kenya. In 2013, the region had an estimated 11,107 elephants living both within and outside the national parks (Ngene et al. 2013). As a key habitat for the African elephant, and the stronghold for Kenya's wildlife, the Tsavo landscape receives immense attention nationally, in the region, and internationally.

Secondly, in 1948, the colonial government alienated land that was deemed "unsettled" to create Tsavo National Park, which was later divided into two parts: Tsavo East, and Tsavo West

National Parks. These parks remain the two largest national parks in Kenya and account for about 40% of the total protected area in the country (Njogu 2004). The unique aesthetic setting of Tsavo for tourist viewing is undisputable and Tsavo is critical for Kenya's tourism industry. Thirdly, conflicts are intense between the need for wildlife conservation and the livelihood needs of the local people. Tsavo records the highest number of incidents of crop depredation by elephants and other human-wildlife conflict cases in Kenya (KWS 2008). Increasing human population and crop cultivation in lowlands that were previously dispersal areas for elephants and other ungulates have driven the conflict. Other problems include heightened claims for grazing rights in the parks, sporadic poaching of elephants for ivory, and illegal extraction of natural vegetation for making charcoal in national parks (KWS 2008). Current conflicts arising from resource restrictions and land scarcity expose the limitations of conservation and development policies implemented over the last century.

Drawing on theoretical developments in geography and anthropology, specifically political ecology (Blaikie 1985; Basset 1988; Peet and Watts 1996), this chapter explores human-elephant relations and landscape transformation in Tsavo since pre-colonial times, and during the colonial and the post-colonial periods in the 20th century. I relied on archival records, ethno histories, traveler diaries, and published documents to investigate landscape changes in Tsavo in the 20th century in relation to elephants. The chapter attempts to answer two questions: I. What were the characteristics of human-elephant relations in pre-colonial Tsavo? 2. How did landscape transformations in Tsavo during the 20th century change the relationship between elephants and humans and what were the consequences?

The first question seeks to understand pre-colonial relations between people and elephants in Tsavo. I focused on the last half of the 19th century. I relied on ethno-histories of

local people in Tsavo and traveler diaries of the first European travelers in East Africa from the 1850s. The second question attempts to understand how landscape changes in Tsavo in the 20th century shaped relations between elephants and people and the implications of the changing relationship. For this question, I relied on archival sources and oral interviews with key informants who are resident in villages surrounding Tsavo. I also gathered data from published sources about the social-ecological changes in Tsavo in the 20th century and how they relate to human-elephant relations. This chapter, I hope will provide a historical context to conservation problems in Tsavo especially the decline of elephant populations. This analysis of the pre-colonial relations between elephant and people and the origins of state conservation policy will shed light on debates about elephant conservation in Tsavo with regard to changes in control and access to natural resources.

Study Site and Methods

Study area: Geographic setting

This study was conducted in Tsavo region, Kenya (Figure 5). Tsavo is located in southern Kenya and cover parts of Taita Taveta, Makueni, Kitui, Tana River, and Kajiado counties. The study area includes areas within and adjacent to three national parks: Tsavo East, Tsavo West,[7] and Chyulu Hills National Parks and surrounding community owned ranches. This area is approximately 48,000 km^2 and falls between latitudes ~1.60^0 S and 4.0^0 S, and longitudes ~37.4 ^{0} E and 39.0 ^{0} E. This expansive land makes Tsavo one of the few areas in Africa to accommodate large elephant herds. The general topography in Tsavo is low and flat, but numerous hills occur on the West (Figure 6) and the Yatta plateau on the East of Tsavo (Mukeka

[7] Tsavo national park was gazetted in 1948 but later subdivided into Tsavo East and Tsavo West National Parks in 1949 for administration purposes. The two parks are separated by the Nairobi-Mombasa highway.

2010). Areas with high elevations such as Taita Hills and Chyulu Hills, are well watered and are traditionally preferred for human settlement. Tsavo is dissected by the Athi-Galana, the second largest river in Kenya which flows from the highlands in central Kenya to the coast. This river is critical to Tsavo's wildlife especially elephants. There are numerous small rivers which feed into the Athi-Galana including the Tsavo River and Voi River, which flow from the east side of Mount Kilimanjaro.

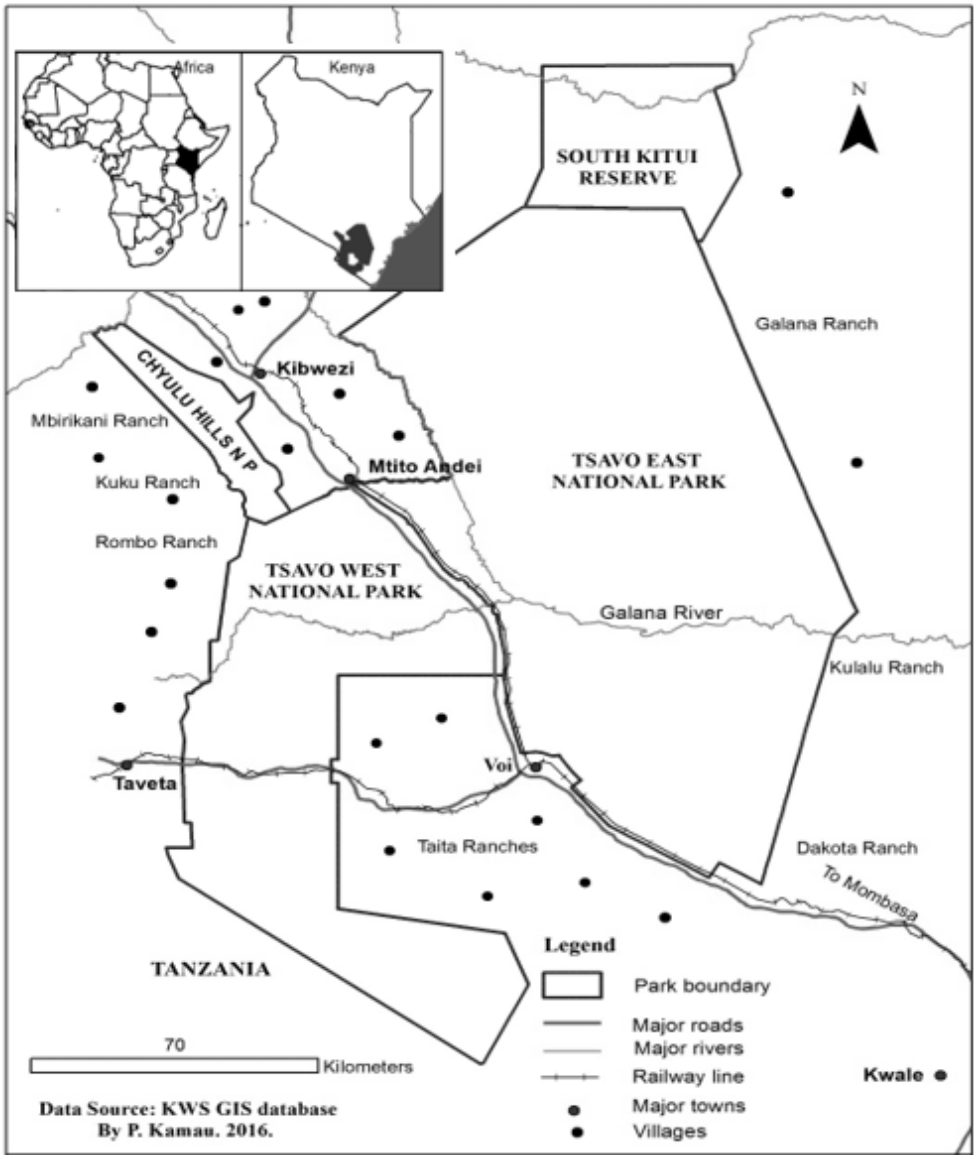

Figure 5. Map showing study villages in Tsavo, Kenya.

Figure 6. Landscape and elephants at Komboyo, Tsavo West National Park.

Tsavo is generally arid to semi-arid and suffers from periodic drought. Tsavo has a bimodal rainfall pattern: about 200-700 mm of precipitation fall during the long rains (March-May) and during the short rains (November and December). Higher elevations such as Wundanyi, Kasigau and Chyulu Hills, receive more rainfall and have cooler temperatures. Mean maximum temperatures are 33 ^{0} C in March and 20 ^{0} C in July, the hottest and coldest months respectively (Winjngaarden 1985). Acacia-Commiphora bushland is the most dominant vegetation type in Tsavo. This Acacia-Commiphora savanna comprises varying densities of trees and shrubs, open grassland, woodlands, scrub, and thicket (Figure 7). Montane evergreen forests occur at higher elevations. Tsavo is home to a variety of wildlife species including the iconic "big five:" *Loxodonta africana* (African elephant), *Syncerus caffer* (African buffalo), *Panthera leo* (African lion), *Panthera pardus pardus* (African leopard), and *Diceros bicornis* (black rhinoceros) (Wijngaarden 1985). As a critical habitat for these endangered species, Tsavo receives immense attention globally for scientific and conservation reasons. The Tsavo landscape

hosts the two largest National Parks in Kenya: Tsavo East National Park (TENP) and Tsavo West National Park (TWNP), and the recently gazetted Chyulu Hills National Park (CHNP), which are managed by the Kenya Wildlife Service (KWS). Adjacent to these protected areas are villages, ranches, private and communal lands.

Figure 7. Landscape and vegetation conditions at Mundanda rock in Tsavo East National Park. The rock was used for meat drying by local hunters prior to park establishment.

Tsavo has the highest single concentration of elephants in Kenya. Elephants occur in other parts of Kenya from the highlands around Mount Kenya to the lowlands near Kenya's coast. The last elephant census in Tsavo, conducted in 2014, counted 11,000 elephants in areas within and adjacent to parks. Prior to 1900, elephants roamed freely in Tsavo lowlands. Human settlements were very minimal and mostly occurred in high elevations. Agricultural tribes like the Taita and

Kamba practiced farming in hilly areas and therefore incidents of crop raiding by elephants were few. Today, due to the conversion of elephant migration corridors to farmlands as human population grows, incidences of crop depredation by elephants are high in Tsavo. This causes conflict between local farmers and the KWS which is responsible for managing wildlife in Kenya. KWS in conjunction with conservation partners have erected elephant-proof fences along park boundaries in areas that experience high human-elephant conflict. There are plans to fence all parks to stop elephants from straying into farms. This will interfere with elephant movements in Tsavo. Traditional elephant movements are already hampered by human settlements and infrastructural projects such as roads and rail tracks. In the last few decades, drought has been the major cause of elephant mortality in Tsavo causing a drop from 35,000 elephants in 1974 to the current estimate of below 12,000 individuals (Ngene et al. 2013). Elephants in Tsavo also face sporadic threats of poaching for their ivory.

Cultural groups in Tsavo

Although Tsavo is increasingly becoming multicultural, six cultural groups with distinct ways of life and belief systems lived in the study area before Kenya became a British colony in 1895. They include the Kamba, Taita, Taveta, Maasai, Waata and the Orma. Ethnolinguistically, the Kamba, Taita, and Taveta belong to the Bantu group that has a Niger-Congo origin. The Maasai belong to the Nilotic language group, with a Nilo-Saharan origin. And the Orma and Waata belong to the Cushitic group, with an Afro-Asiatic origin. Tsavo population has grown steadily (Figure 8), and the current number of people living in townships and villages within the study area is estimated to be 777,979.

Year	Human Population
1960	149,647
1979	323,867
1989	430,449
1999	539,300
2009	670,849
2016	777,979*

Data Source: Kenya National Bureau of Statistics (KNBS).
* The 2016 population is calculated from the 2009 population using the national population growth rate of 2.5 %.

Figure 8. Human Population of Tsavo since 1960.

This estimate is calculated from the 1999 national population census data (ROK 2010), which project future population increase at the rate of 2.5% per year. Presently, the majority of the Taita, Taveta, and Kamba engage in peasant farming and small scale livestock keeping. The Maasai and Orma are predominantly pastoralists. The decline of grazing lands and persistent droughts are forcing these people to venture into small-scale farming. The main crops cultivated in Tsavo include maize, beans, cow peas, and tropical fruits, especially mangoes. The Waata, the smallest indigenous group in Tsavo also engage in small-scale farming and livestock keeping but are socio-economically marginalized. The Waata have the least formal education and are the poorest group in Tsavo (Kassam and Bashuna 2004). Due to the arid and semi-arid conditions of Tsavo, rain-fed agriculture in the lowlands is not reliable. Livestock breeds in Tsavo are well adapted to the dryland conditions and most people depend on the sale of livestock products (milk, meat, and hides) and livestock for their livelihood. About 20% of people in Tsavo are either traders or have taken up formal jobs (ROK 2010). Tourism in national parks and community ranches provides direct and indirect employment opportunities to hundreds of people in Tsavo. This includes working in accommodation facilities such as hotels and lodges,

supplying food to tourist facilities, selling *curios* to tourists. The majority of Tsavo residents are poor (subsist on less than $ 3 a day) and live in houses that lack modern infrastructure such as piped water and electricity. During severe drought conditions, at least 40% of people in Tsavo rely on relief food donations from government and charity organizations.

Methods

This study used mixed methods and relied primarily on oral histories, archival records, traveler diaries, and published work on Tsavo. Field and archival research for this study was conducted between May and August in 2014 and 2015. The study involved oral interviews with 72 elderly people drawn from eighteen villages surrounding Tsavo East, Tsavo West and Chyulu Hills National Parks. The eighteen villages were equally distributed among six cultural groups (Kamba, Maasai, Taita, Taveta, Orma, and Waata). Villages selected are within a 10 km buffer of the respective national parks. I interviewed twelve informants from each cultural group, four from each village selected. Key informants were selected with the assistance of local administration officials: chiefs and assistant chiefs. The informants were men and women of above eighty years of age who had lived in selected villages since their childhood. Interviews were conducted in Swahili and local languages where necessary.

Participants in interviews were asked for voluntary consent; they were also assured that any information they shared would not identify them as individuals or their villages. Data from oral interviews was reinforced with published descriptive accounts of travelers, explorers and missionaries[8] in East Africa in the 19th century to reconstruct the pre-colonial conditions in

[8] I relied on diary entries by J. L Krapf and J. Rebmann, who were German missionaries in East Africa in the 19th century. While their mission in East Africa was to convert natives to Christianity, they give summary descriptions of the vegetation and wildlife of the places they visited, including Tsavo.

Tsavo. These accounts (Krapf 1860; Hobley 1895; Roosevelt 1910; Corfield 1974) provide vivid descriptions of people, elephants and general conditions of the Tsavo landscape in the last half of the 19th century and early 20th century. Archival research was done between June and July 2014 at the Kenya National Archives in Nairobi. I focused on historical records and maps that detail land tenure, claims, and dispossessions in Taita-Taveta and Makueni areas during British colonial administration and the post-independence period in Kenya. I also relied on the Kenya Land Commission Report (ROK 1934) and county development plans of Makueni, Taita Taveta, Kajiado, and Kitui counties of Kenya.

Results

Humans-elephant relations in Tsavo in the pre-colonial period:1850-1900.

In the 19th century, none of the cultural groups in East Africa kept written records. However, there are a few written descriptions of Tsavo by German and British explorers and missionaries who passed through Tsavo starting in the mid-19th century (Krapf 1860; Hobley 1895; Corfield 1974), in their ventures to the interior of East Africa. These records indicate that there was high elephant and low human population density in Tsavo in the 19th century. The travelers saw elephant herds, trails and dung along the routes used, their diaries indicate a wider geographical range of elephants across Tsavo than is seen today. Human mortality rate was high in the 19th century. The nomadic lifestyles of some tribes in Tsavo, intertribal wars, diseases, and starvation during recurrent droughts inhibited Tsavo's population growth. This allowed elephants and other species to freely roam the Tsavo lowlands. The cattle raiding behavior of the Maasai controlled the movement and activities of other tribes and arguably kept human population in check. Charles Hobley, an official in Kenya's colonial administration self-servingly wrote:

> It is interesting to contemplate what would have probably happened in this country if European intervention had not occurred when it did. As far as one can judge, the inroads of the Maasai would have increased until most of the agricultural tribes in this land were decimated. Hobley 1910: 157.

For the most part, land was communally owned in pre-colonial Tsavo and cases of landlessness were almost absent. Land was owned by social-political groups (family, clan, sub-clan) and membership in a social-political group provided for access and use rights of land. Elders played an important role in settling disputes and enforcing communal rights and responsibilities. The use of land was enmeshed in beliefs and taboos that discouraged exploitation. Resource use practices such as elephant hunting and utilization of grazing pastures were controlled by customs enforced by local elders. Killing a wild animal without a good cause was prohibited and was regarded as a bad omen (Waithaka 2012).

Prior to 1900, Tsavo was mainly utilized by elephant hunters, mainly the Waata and the Kamba. The Waata were a hunter gatherer tribe who lived on elephant meat and honey until around the 1950s. The Waata are referred to as the Waliangulu in other literature (Sheldrick 1973). The Waata who I talked to consider the name Waliangulu, which means tortoise eaters), as pejorative. They explained that the name was used by neighboring tribes to show contempt for the Waata. The Waata were experts in elephant hunting and honey gathering and mostly occupied the southern plains of what is today Tsavo East National Park. One elderly Waata male participant narrated:

> Our forefathers came from Ethiopia a long time ago and settled along the Galana River. For a long time, the Waata hunted elephants for food and gathered honey. We did not cultivate crops. Most of the names used to identify places in Tsavo East National Park are Waata names. For example, Aruba is a Waata name for elephants, Satao is a Waata name for giraffe. We hunted elephants for survival.

Elephants were key to the survival of the Waata, they camped around an elephant kill until all the meat was exhausted, before moving to the next kill. Elephant meat, fat and honey

were the diet of the Waata for many generations. The Waata developed technologies to preserve elephant meat, they would dry meat in the sun and crush it into powder. The meat was then put into traditional wooden bowls. The bowls were covered with animal fat and honey to prevent the meat from going bad. Killing an elephant was also an important rite of passage from childhood to adulthood for Waata young males who were groomed to become skillful elephant hunters. During the dry season, the Waata collected water in holes made by elephants in dry river beds, as explained by a Waata elderly woman: "when it was so dry, and the river was not flowing elephants dug holes in sandy river beds to collect water. After the elephants left the hole, we would go and fetch water for cooking."

Nomadic pastoralists, the Maasai and Orma, moved seasonally in the Tsavo lowlands with their animals in search of water and pasture. This movement with livestock prevented permanent human settlement and allowed the co-existence of elephants and people in the same landscape. According to an explanation by a Maasai informant, people and wildlife did not occupy the same geographic space but elephants would move into an area when humans and their livestock moved off. He put it as follows:

> The Maasai are friendly to elephants. In the past, elephants and other smaller animals occupied areas that we abandoned as we moved around with our livestock. This is becoming difficult because the Maasai are now building permanent homes. Elephants keep away from areas with permanent human settlements. For many years, livestock shared the same grass and fields with elephants without much conflict.

Pastoral tribes living in Tsavo in the 19th century rarely killed elephants or other wildlife for food. They mainly subsisted on meat, milk, and blood of their livestock and wild vegetables. The Maasai believed that consuming game meat would bring disaster to their livestock. Their awareness of the ecological role played by elephant was reflected by one Orma herder who narrated:

> I have been grazing cows and goats all my life. As elephants move in thick Acacia-Commiphora woods, they create trails which we use while grazing. It would be very difficult for herders and their animals to penetrate in thorny bushes in the absence of elephants.

Agricultural tribes in Tsavo adopted more diverse subsistence strategies. The Kamba, who mainly occupied Ngulia Hills in Tsavo West National Park engaged in a mixture of agriculture, livestock husbandry, and hunting and gathering. Like the Waata, the Kamba were also reputed for using bows and poisoned arrows to hunt elephants for food. Poison was made by boiling the bark and roots of arrow poison tree (*Acokanthera schimperi),* a small tree locally known as *kivai*. They also participated in long distance trade and transported elephant tusks to mainly Arab and Swahili ivory traders in Mombasa (Stone 1972). Hunting elephants among the Kamba was guided by a set of traditional rules and beliefs that prevented exploitation of the resource. A Kamba informant whose father was a prominent hunter described the preparation for a hunting expedition as follows:

> Prior to the day of hunting, no hunter was allowed to sleep with his wife as this would bring bad luck. The hunters would visit a witchdoctor who gave them "treatment" to keep them safe from any danger. The witchdoctor also gave instructions about where to sleep on the journey and which elephant to kill.

Kamba witchdoctors were believed to possess powers to foretell what the hunters would encounter in their journey. This predictive ability was recorded by Hobley, an early British colonial official, when a local witchdoctor foretold what his team would encounter on their journey through Tsavo. The witchdoctor prophesied that the team would encounter three things: a wild animal unfit for food, a supply of ready food, and a large animal. The following morning, Hobley's team came across a puff adder, a pile of green bananas, and finally a hartebeest (shot by Hobley). This experience was perplexing to Hobley, he wrote:

> I give this simply as an example of native attempts at prognostication of events. Whether the fulfillment was anything more than coincidence, I cannot pretend to say. One can always explain these sort of things by talking of coincidence. I have however given the facts as they occurred. Hobley 1895: 552.

Other agricultural tribes of Tsavo, the Taita and the Taveta, occupied the hills (Dawida, Sagalla and Kasigau, commonly known as the Taita Hills) that are found in Taita Taveta county. Here, they took advantage of relatively higher moisture conditions in the hills and productive soils to cultivate crops such as sorghum, sugar cane, millets, maize, cowpeas, plantains, sweet potatoes and cassava. The Taita and Taveta were not pre-dominantly hunters but they occasionally hunted elephants and other smaller game in the lowlands using pit traps, bows and poisoned arrows made locally. On his diary of May 9, 1847, Rebmann writes: "After travelling for a few hours we came to an area where the Taita had dug many pits to catch elephants, buffalo and other kind of game" (Krapf 1860: 29).

Participants from all cultural groups reported uses for different elephant parts (Figure 9). The Kamba and Waata recorded more uses than other cultural groups. Towards the end of the 19th century, those two groups were also more relatively involved in commercial exploitation of elephant ivory than the others.

Elephant uses in Tsavo ranged from food and medicine to ritualistic and ceremonial uses. Other than providing material benefits, elephants played an important psycho-spiritual role in the cultures of pre-colonial Tsavo communities. With the story of *Ivonya Ngia* as an example, elephants are prominent in the mythology and oral literature of cultural groups in Tsavo. Elephants were revered because of their intelligence and sometimes regarded as closer to people than other wild animals. One Kamba woman explained:

> Our ancestors believed elephants have a superior memory because they can remember the routes they used many years back. I grew up in this village and when I was young, I

would see elephants immigrating from Mbirikani pass near that big tree (pointing to an old baobab tree). They still do the same today and that is why you see the trunk of the tree is debarked on the left side.

Body part	Maasai uses	Kamba uses	Waata/Orma uses	Taita/Taveta uses
Tooth/tusk	Exchanged for ornaments, spears.	Exchanged for dowry, clothing, livestock.	Traded for clothes, spices, jewelry.	Traded for arrows, spears.
Skin	Covering the body, making sleeping mats.	Making blankets, sleeping mats, sleeping mats, sandals, covering the body, water holders.	Used as hut walls, covering the body.	Covering the body.
Meat	Food in bad times.	Food.	Staple food for Waata.	Food but rare.
Fat	Boiled to make medicine for cold, flu.	Food, medicine.	Medicine for fever, Eaten with honey, Rubbed on necklaces in male initiation ceremonies.	———
Foot	Made container to hold salt for cattle.	Sitting stool.	Fat extracted from foot.	———
Tail	To fend off flies.	Status symbol, fend of flies.	Making bracelets for new couples, given to boys after initiation.	Carried by elders as status symbol.
Dung	Used as cooking fuel, dung smoke inhaled by cattle to cure foot and mouth disease.	Cure for allergies, lack of appetite, skin diseases, burnt to repel mosquitoes.	Burnt to repel mosquitoes.	Burnt pieces spread around farms to keep away elephants, robbers, sorcerers. Dung smoke inhaled to cure illnesses.

——— No use reported.

Figure 9. Pre-colonial elephant uses among different cultural groups as reported in interviews.

Among the Taita, one had to undergo a cleansing a ceremony after killing an elephant. Killing an elephant was considered “murder” as elephants were seen as people. However, the Taita would kill elephants which posed a threat to crops and human lives. The mammary glands of a female elephant which are morphologically similar with women breasts were one of the reasons the Taita identified elephants as having close identity with humans. The Taita also believed that elephant dung is a repellent and therefore sprinkled elephant dung around cultivated fields to keep away thieves and sorcerers. Oral accounts indicate that the Maasai rarely killed elephants for food. Killing of elephants among the Maasai was mostly defensive and

symbolic. The Maasai would kill elephants and other predators, mainly lions and hyenas, when they posed a threat to their cattle.

By the beginning of the 19th century prior to the colonial era, East Africa had become a major source of ivory for overseas markets. Tsavo was an ideal location to source elephant ivory due to its proximity to Mombasa. In the last half of the 19th century, demand for ivory in Zanzibar, an important ivory conduit, reached its peak. The Waata and the Kamba got enrolled in harvesting, transportation, and sale of elephant ivory to Arab and Swahili ivory traders in Mombasa (Steinhart 2001). In 1844, Krapf estimated that about 6000 elephant tusks were taken to Mombasa annually (Krapf 1860). The Kamba[9] emerged as long distance ivory traders and would take a 300-kilometer walk from Tsavo to Mombasa to supply ivory. Due to their experience in bush travel, Kamba men were also hired as guides for the caravans that moved from Mombasa to the interior in search of elephant ivory, precious stones, and slaves for overseas markets. Ivory became an important medium of value in Tsavo and was used to obtain cattle and wives. Ivory was also used to buy beads, cowrie shells, and cloth. These items were highly coveted by pre-colonial Tsavo tribes especially the Kamba. Some of the Kamba interviewed during this study also suggested that hunting for ivory in the 19th century was an important response mechanism to economic shocks such as cattle loses after a drought or cattle raiding by neighboring tribes. One Kamba elder reported:

> My father once told me a story that when he was a young man of about 18, my grandfather owned about 300 head of cattle. There came a drought and almost all his animals died. My grandfather mobilized his friends and they went to Galana[10] to hunt for

[9] The Kamba are also referred to as Akamba in other literature.
[10] Galana here refers to areas near the Galana River which today occur within Tsavo East National Park.

> elephant ivory. This was a few years before the arrival of Europeans. He exchanged his ivory for 50 cows and several bulls.

The narrative above refers to the severe drought that occurred in Kenya in the 1890s. This and other narratives by Kamba participants suggest that hunting for ivory in the 19th century and early 20th century was not necessarily a strategy for accumulating wealth but only became important when other subsistence strategies failed. Clearly, hunting elephants for ivory was more significant to the Kamba and the Waata but less important to the Taita and Taveta and almost non-existent among the pastoral Maasai and Orma people. However, elephant ivory was important for trade within and between tribes especially in the pre-colonial period. Elephants were also a major subject of local traditions and folklore of pre-colonial Tsavo tribes.

Conflicts over land use between humans and elephants in Tsavo was very minimal before the 20th century. We can infer from oral narratives and traveler diaries that the 'military' domination of Tsavo by the Maasai precluded the cultivation of lowlands, thus reducing cases such as crop depredation and threats to elephant populations by local tribes and outsiders. Charles Hobley, described this situation as follows:

> The people on the South side (Taita) seem to live in considerable fear of the Maasai raiders, who occasionally pass on their way from Arusha. On this account the inhabitants of the mountain are afraid to open up for cultivation the plains at its base.
>
> Hobley 1892:555.

The martial prowess of the Maasai also made it difficult for ivory traders to pass through Tsavo in their ivory ventures. This slowed down the killing of elephants for ivory in Tsavo for the better part of the 19th century. This would all change after the rinderpest epidemic that ravaged Africa towards the end of the 19th century. This epidemic which begun in 1890 had significant ecological effects on people, wildlife, livestock and vegetation in East Africa (Reader 1999). It is estimated that by 1892, the Maasai of Tsavo lost about two-thirds of their livestock,

thus ruining their economy (Tyrell 1985; Tyrrell 1987). Oral accounts of the Kamba described the period between 1892 and 1902 as the worst drought in their memory (*Yua ya ngomanisye*). The drought, epidemic and the establishment of European authority in East Africa towards end of the 19th century marked the end of Maasai dominance in Tsavo and ushered in the colonial era.

Colonial period 1900-1963

Kenya became a British protectorate in 1895 and was later declared a colony in 1920. Before 1890, there were no modern roads, railway lines or towns in Tsavo. Travelers relied on cattle tracks, goods, especially ivory and cloves, used to be head-loaded by porters and slaves from the interior of East Africa through Tsavo to Mombasa. In 1890, the Imperial British East African Company (IBEAC) began constructing a 600-mile ox cart track from Mombasa to the Kenya- Uganda border town of Busia through Tsavo in 1890, this project was completed in 1895. The second major infrastructure project to touch Tsavo was the Mombasa-Uganda railway. For geo-strategic reasons, the British government financed this massive project. Construction work began in the port city of Mombasa in 1896 and stopped in Kisumu on the eastern shore of Lake Victoria in 1901. The railway line was important for the transportation of raw materials from Kenya and Uganda to Mombasa from where they would be shipped to factories overseas. The two infrastructure projects played a major role in opening up Tsavo to outside influence. Several railway towns sprang up along the new rail truck including Voi, Kibwezi and Makindu towns. Ivory merchants, mainly Swahili traders, established ivory buying centers in the towns and purchased ivory from local hunters. The rail made it easier to transport ivory to Mombasa by replacing porters.

In the early colonial period, several regulations were passed in the Kenyan colony that affected land tenure in Tsavo. The crown land ordinances of 1901-1902 later amended in 1915, declared land in the Kenyan colony as "crown land"; this meant that all land belonged to the state. Under the ordinance, the colonial administration delimited land available to native tribes through a "native reserves" policy. This policy recognized ownership of native land by agricultural and pastoral tribes but did not recognize ownership of land by hunting and gathering tribes in Tsavo (Wijngaarden 1985). Hunting was not considered a legitimate land use. In 1926, boundaries of all land occupied by Africans were defined and gazetted as native reserves across the Kenya Colony. Areas outside the reserves that were sparsely occupied were declared the property of the state and subject to the Governor's powers of alienation. Under the crown land ordinance, and the recommendation of the report by the Kenya Land Commission of 1934, land that was sparsely occupied or did not have observable settlements or cultivation in Tsavo was alienated for wildlife conservation[11]. This land would later be converted to Tsavo National Park in 1948. Land policy under British rule also allowed the colonial government to annex the well-watered areas in Tsavo and grant land rights to settlers for establishment of sisal plantations and other private farms. Colonial land policies disregarded claims of land used on a seasonal basis by pastoral and hunting groups. The Waata and the Kamba lost their traditional elephant hunting grounds, the Maasai and Orma lost their dry season pastures to other land uses, including settler agriculture and wildlife conservation.

[11] At the dawn of the 20th century, there was high population density in the hills within Tsavo where agricultural tribes inhabited. Due to drought and epidemics, human and livestock populations had decreased in the lowlands. This coupled with arid conditions, so that the lowlands in Tsavo looked like an inhabited wasteland. This perception of Tsavo as a desert, a wasteland, was important in informing land use decisions made by the colonial government.

Colonial game laws and the establishment of Tsavo National Park

By 1910, the new colonial administration in Kenya had claimed ownership of wildlife for the state. The Kenya Game Department was formed in 1907 to enforce game laws in game reserves and to mitigate human-wildlife conflict. In the first quarter of the century, officials of the game department killed thousands of elephants and other wildlife species in Tsavo to create room for settlement and agricultural development (Hunter 1952; Steinhart 1989). The period between 1900-1940 in Kenya is referred to as the 'Era of big game hunting[12]' when sport hunting was introduced in Kenya. During this period, elephants were hunted for pleasure and profit from the sale of skins and trophies. Only licensed hunters who owned fire arms could hunt legally. However, the cost of buying fire arms, and hunting license fees were beyond the reach of local people (Parker and Amin 1983). Legal hunting of big game especially elephants therefore became a preserve of European and Asian hunters and a few well to do Africans. The game department officials regarded unlicensed native hunters as "poachers". Local hunters were jailed or forced to pay fines to the colonial government. This set the stage for claims of marginalization by colonial game laws among local people and changing attitudes towards wildlife.

The establishment of Tsavo National Park in 1948 was an important decision that impacted relations between humans and elephants in Tsavo. All human activities within the park boundaries were outlawed. None of the people who managed Tsavo National Park at its infancy were wildlife specialists. Ken Beaton, an administrator in the colonial government, was appointed the first chief warden of Tsavo National Park in 1948. He was determined to develop the park into a remarkable tourist attraction (KNA NPK 16/7/Vol. 11)[13]. He divided Tsavo into

[12] See Hunter 1952.
[13] Archival source at Kenya National Archives in Nairobi. See references.

two, Tsavo East and Tsavo West National Parks, and appointed new wardens to take charge of the two parks. The first wardens of Tsavo were former British military officers in the protectorate, and they relied on their own intuition to run the parks, having had no formal training in park management (Schauer 2015). Their first mission was to stop human activities within the boundaries of the national parks. One Waata participant in this study still remembers the role of David Sheldrick, the first warden of TENP, in removing people from the park. He said of him:

> We had given him (David Sheldrick) the name "*saa nane*" (Swahili for two o'clock) because all his meetings with local people were held at 2p.m. He came to Ndololo and told our elders that the place we had settled belonged to the government. Our elders told the people to disobey him. He mobilized a team of security personnel and vehicles to drive us out. They forced us into the trucks and set our huts on fire.

Although colonial records depict the eviction from the park boundaries as peaceful, local narratives suggest that there was strong resistance and this sometimes resulted in use of violence by government officials. A letter from the Royal National Parks, written in 1962 described the evictions of the Waata from Tsavo East National Park as follows:

> In 1949, Ndololo settlers who had settled on crown land were compensated and moved out by government. The Waliangulu were given land near Mangea. The government also provided them with transport for the move and they were given every opportunity to remove their building materials *(*Royal National Parks letter to Tony Cullen, July 13, 1962, KNA NPK/16/1/4008).

The new park managers focused on curbing illegal elephant hunting within park boundaries. Through their intelligence networks, they identified the Kamba and the Waata hunters as the people responsible for elephant deaths in the parks. The wardens set up anti-poaching units to eliminate elephant poaching. Some of the rangers recruited in the anti-poaching units had worked for the Kenya Regiment of the British Army in the Mau Mau counter insurgency efforts in central Kenya in the 1950s. Their bush experience was vital in the fight

against elephant hunters. The crackdown on native hunters in Tsavo was "completed" in 1957 and was described as the most successful anti-poaching operation in Africa (Schauer 2015).

Early post-colonial period: 1963-1990.

Kenya gained independence from Britain in 1963. There was apprehension among those who worked in national parks about the future of the national parks in post-colonial Kenya. Daphne Sheldrick in her book, *Animal Kingdom: A Story of Tsavo the Great African Game Park*, describes this anxiety:

> As far as the future of the National Parks was concerned, some people feared that with independence, the land-hungry tribes that surrounded these areas would be permitted to walk in and do as they pleased, and several political speeches made by politicians seemed to support this disturbing conjecture. Sheldrick 1973: 135.

However, the independence government inherited colonial conservation policies and structures. No alterations of national park boundaries drawn during the colonial period were made. Park managers continued to enforce park rules to the letter, and kept human activities in the Tsavo parks to the minimum. Local communities continued to perceive parks as a threat to their livelihoods especially elephant hunters who now faced more organized anti-poaching teams.

The drastic reduction of human activities in the park upset the ecological balance that had existed between humans, elephants and vegetation. By the 1960's scientists had begun to notice that high elephant density in Tsavo was negatively impacting woody vegetation (Laws 1970, 1971). By the late 1960's, some sections within TENP had significantly lost vegetation to elephant trampling. Other factors led to high elephant density. First, due to natural increase and expanding human settlements in areas adjacent to the parks, elephants' movement patterns were affected. Secondly, killing of elephants by licensed hunters in trophy hunting blocks adjacent to

parks caused a migration of elephants into the parks where they felt relatively safer. The "trapping" effect of elephants in the parks caused overutilization of woody vegetation (KNA KW/24/32)[14]. The original bush was being replaced with continuous grass cover over large areas (Botkins 1990; Leuthold 1996). Drastic changes in vegetation conditions in Tsavo caused malnutrition for elephants and other animal species in Tsavo. Some scientists led by Richard Laws, proposed culling of elephants in Tsavo to reduce their population. However, scientists and park management could not agree on a policy action and very minimal cropping of elephants took place (Sheldrick 1973). David Sheldrick, the warden in charge in TENP was strongly opposed to cropping. Daphne Sheldrick, who worked together with David Sheldrick in TENP explains the conservation philosophy that guided management decisions in Tsavo. She wrote:

> It remains David's contention that the conservation policy for Tsavo should be directed toward the attainment of a natural ecological climax, and that our participation towards this aim should be restricted to such measures as the control of fires, poaching and other forms of human interference that tend to lessen the energy flux. It is his belief that herein lies the safest course for the wise management of the park, and indeed, in a continent like Africa, for its very survival. Sheldrick 1973: 283.

In 1970/1971 a severe drought occurred in Kenya, and an estimated 5,000 elephants and 300 rhinoceroses died in Tsavo (Sheldrick 1973). The negative effects of drought on Tsavo elephant population continued after 1971. The drought had also affected most parts of Kenya causing serious food insecurity. Communities in Tsavo, most notably the Kamba, Maasai and Orma, suffered massive livestock losses during the drought and were left vulnerable. Word had spread among local communities and other parts of the country about elephant deaths in the parks. The Somali, people whose livestock had been severely affected by the drought, began immigrating to Tsavo in in order to escape the drought. Locals and immigrants especially the

[14] Archival source at Kenya National Archives in Nairobi. See references.

Somali took advantage of the situation and began collecting elephant ivory from the die offs. By the mid- 1970's, no more ivory was available for collection and people began killing elephants to sustain the ivory income. This marked the beginning of armed poaching in Tsavo. One Kamba informant reported:

> One day in 1975, on an early morning, my neighbor and I entered Tsavo West National Park to collect ivory from elephants that had died of drought. We did not find any ivory to collect. On our journey back, we saw two fresh elephant carcasses, whose ivory had been chopped off. It was clear that the elephants had been shot for ivory. I did not go to the park again but in the next few weeks I heard stories about rampant killing of elephants until a ban on hunting was put in place by the government in 1977. Most of those who killed elephants with guns came from other parts of the country.

Illegal killing of elephants continued in the late 1970s and spilled over to the 1980s. A presidential ban on elephant hunting in Kenya in 1973 and another ban on all animal hunting without a permit put in place in 1977 did not deter the killing of elephants in Tsavo. Countrywide, Kenya's elephant population declined from 275, 000 in the 1970s to only 20,000 in 1989 (Parker 2004). In Tsavo, a more open landscape played into the hands of poachers. A reduction of Acacia-Commiphora bush made it easy for hunters to spot herds of elephants and easily escape with their loot. Official reports indicate that Tsavo had lost about 80% of its elephants between 1970 and 1978 (Figure 10).

The upsurge in poaching in the 1970s and 1980s coincided with a sharp increase in ivory prices at the world market. The price of one kilogram of ivory in the black market had risen from one hundred Kenya Shillings (US $ 1) in the 1960s to three hundred Kenya shillings (US $ 3) in the mid 1970's (Parker 2004).

Census year	Number of elephants
1962	40275
1965	20300
1967	25000
1969	23926
1970	30000
1972	25377
1973	20674
1978	5900
1988	5365
1991	8300
1989	6980
1994	7371
1999	9447
2002	9284
2005	11742
2008	11733
2011	12573
2013	11107
2014	11076

Data source: Various reports of periodic elephant census done by the Kenya Wildlife Service. Data was available only for years when aerial or ground elephant censuses were carried out.

Figure 10. Elephant population in Tsavo in selected years since 1962.

A rise in the price of ivory created an ivory rush in East Africa. Urban elites including powerful government officials in the new post-independence government in Kenya joined the ivory export business. Corrupt officials of the then Wildlife Conservation and Management Department (WCMD) also colluded with poachers to illegally benefit from the ivory windfall (Hall 1995). According to local narratives, local elephant hunters who did the actual killing of elephants benefitted little from ivory.

For a kilogram of ivory, middlemen in the bush would pay peasant poachers about three hundred Kenya Shillings (US $ 3) and later sell it at three thousand shillings (US $ 30) at illegal

ivory export centers. In 1990, the Kenya government created a more effective law enforcement agency, the Kenya Wildlife Service (KWS), headed by Richard Leakey. KWS halted the illegal killing of elephants in Tsavo. Since then, elephant populations in Tsavo have stabilized although threats to elephant populations still remain.

Human-elephant conflict and fences

Human-elephant relations since the 1990's have largely been characterized by conflict. The period after 1980's saw rapid human population growth in Tsavo due to both natural increase and rural-to-rural migration. As Tsavo became more integrated into the cash economy, more land was cleared for settlement and agriculture. Traditional elephant migration corridors were converted to farms: people found themselves competing with elephants for space and resources. Today, Tsavo records the highest incidences of human wildlife conflict in Kenya. The most common type of conflict is depredation of crops by elephants that stray from national parks and ranches adjacent to parks into private farms. Conflicts between people and elephants are mediated by unequal relations between humans, elephants and state institutions as narrated by one participant in Taveta:

> When we take our animals to the park for grazing, KWS rangers are quick to arrest us, but when wildlife comes to our farms they do not rush to drive them out. We also wonder why when one is killed by an elephant, KWS officials are not in a hurry to respond, but when one elephant dies, you see many cars and helicopters coming within a short time. People here suffer from elephants.

Due to high levels of human-elephant conflict in Tsavo, KWS has collaborated with its partners to construct electric fences in the areas worst affected by human-elephant conflict. Fences are symbolic of new human-elephant relations in the Tsavo landscape. These electric barriers have significantly reduced the movement of elephants into farms and also reduced human encroachment into national parks. However, the future ecological consequences of the

fences with regard to movement patterns of elephants and other migratory species is not clear. Electric fences in Tsavo have blocked elephant migration routes, reduced elephant range as well as prevented access to critical water sources during dry seasons. The fences also limit the ability of elephants to escape from threats such as fires and poachers. Some scientists are concerned that insularization of the Tsavo landscape might also cause inbreeding and overpopulation of elephants in Tsavo (personal communication).

Discussion

Elephants and people shared the lowlands of Tsavo in the pre-colonial period; this mutual interaction was important for survival. Local people in Tsavo were aware of the relatively higher intelligence of the African elephant than other wild animals and the important ecological role they played in the landscape. Elephants made trails in thorny bush that herders and hunters relied on for movement. The people of Tsavo relied on elephants to dig for water in the dry season. The use of elephant dung by local people to cure illnesses and protect landscapes suggest awareness of the chemical composition of elephant dung. Hunting elephants for food and ivory in Tsavo continued in the 19th century with no significant threat of depletion of elephant populations or degradation of their habitat. As the oral histories of the Kamba and Waata indicate, elephant hunting was guided by communally agreed upon rules. Hunting leaders (*athiani* in the case of Kamba), sanctioned and supervised elephant hunting missions. This ensured that over-exploitation of the resource did not occur. Among the Kamba, hunters also went to traditional witchdoctors for "treatment" before they could go out hunting. Among the Taita, killing elephants was a taboo because elephants were regarded as people. Narratives from Taita informants supported earlier anthropological accounts of the people of Tsavo (Ville 1996; Kasiki

2001). In 20th century, significant changes in human and elephant population occurred (Figure 11).

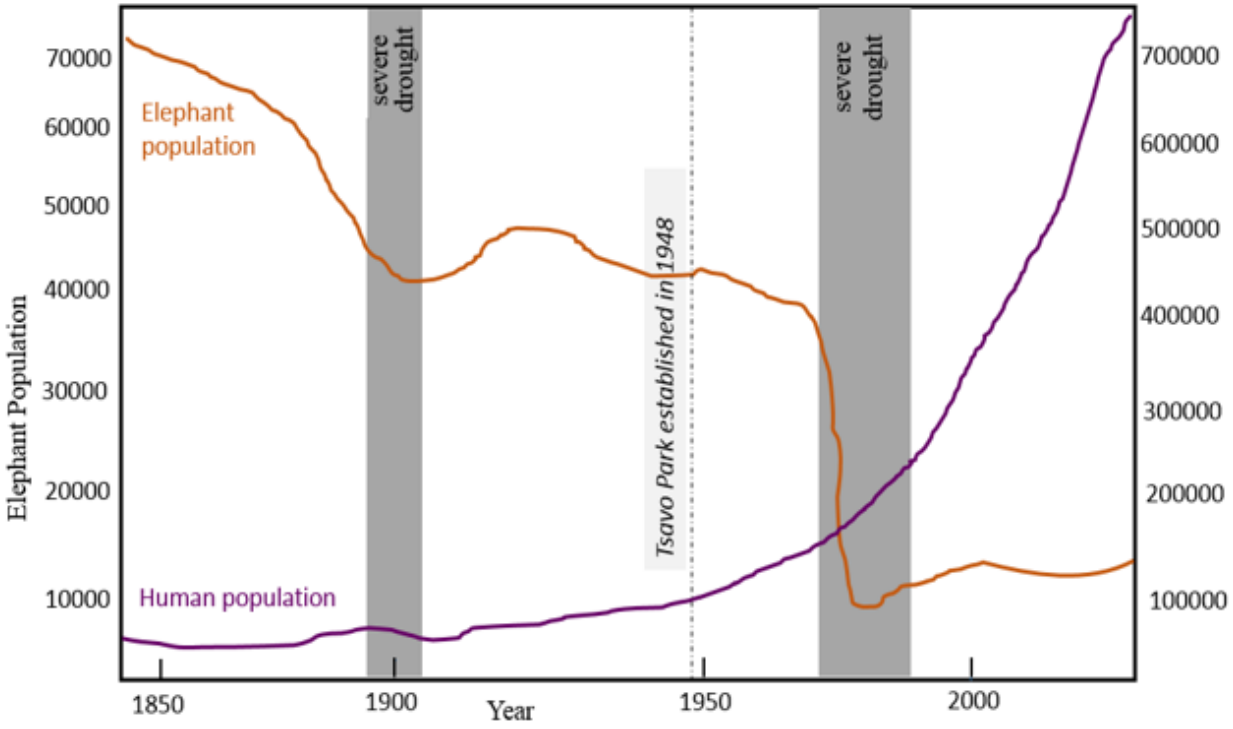

Figure 11. Human and elephant population change in Tsavo, Kenya.

British colonial rule in Kenya changed human-elephant relations in Tsavo by undermining indigenous land management practices and customary rights over resources including elephants. The rearrangement of the Tsavo landscape (Figure 11 and Appendix A) during the colonial period set the stage for land scarcity and livelihood insecurity. The restriction of certain human activities under colonial conditions, including elephant hunting and livestock grazing in Tsavo brought unintended ecological and social consequences. The most important ecological consequence was an increase in elephant density especially in the green belts of the TENP. This caused habitat degradation and loss of browse for other ungulates.

High elephant density puts pressure on woody vegetation in savannah ecosystems. This is corroborated by research in other African elephant range states (Dublin et al. 1990; Eckhardt et al. 2000). Local people in Tsavo lost material benefits such as grazing and hunting lands. While the protection of charismatic megafauna especially elephants is critical for Tsavo's tourism industry, conservation plans implemented during the colonial period overlooked the negative impacts of parks to local people. This is the root cause of human-elephant conflicts in Tsavo. People living adjacent to national parks in Tsavo have perceived elephants and other wildlife species as having more political and economic advantage over humans. When Kenya gained independence in 1963, local grievances over access to resources within the parks were not addressed. In fact, another park, Chyulu Hills National Park, in Tsavo was declared in 1983. Although the environmental benefits of the CHNP are indisputable, its establishment has exacerbated the problem of landlessness in Tsavo, and increased conflicts between local people and elephants.

Extra local-forces, for example, the integration of Tsavo into Kenya's cash economy, immigration of "outsiders" (especially the entry of Somali herders into Tsavo), and increased prices of ivory in the world market, contributed to overharvesting of elephants in the 1970s and 1980's. This resulted in a drastic decline of elephant populations in Tsavo (Figure 11). While only a very small group of local people participates in commercial elephant poaching, local narratives indicate that most elephant poaching, currently and historically, is done by people from other parts of the Kenya. A rapidly growing population and poverty in Tsavo are current threats facing elephants. Also, high demand for elephant ivory in China and other Asian countries has fueled elephant poaching in rural parts of Africa, including Tsavo. Poachers have taken advantage of the logistical challenges of policing vast elephant ranges such as Tsavo.

Conclusion

This study focused on shifting human-elephant relations in Tsavo since the mid-19th century. As oral histories gathered in this study indicate, elephants and people were "friends" in the pre-colonial Tsavo landscape. This relationship was important not just for their mutual survival but also for the survival of other wildlife species. Hunting of elephants was a cultural practice well adapted to Tsavo's physical environment; hunting kept an ecological balance by controlling elephant populations.

A stable elephant population maintained a healthy balance between grass and woody vegetation. Although some local people hunted elephants for food and ivory as in the case of the Waata and Kamba, this did not threaten elephant survival. The emergence of new actors in the Tsavo landscape including ivory merchants, the colonial and post-colonial state, and local immigrants disrupted the relationship between people and elephants. Local narratives suggest that conservation policies implemented to protect elephants and other species have marginalized local people, thereby creating negative perceptions of elephant conservation in Tsavo.

Guided by the analytical framework of political ecology, this study sought to better understand the changing relations between humans and elephants in Tsavo and the resultant conflicts. Our analysis shows that colonial and post-colonial conservation and development policies disrupted pre-colonial human-elephant relations with far reaching consequences for the survival of elephants. My efforts to present local historical perspectives of these relations is aimed at reviving cultural memories that still survive in Tsavo. I argue that returned attention to historical human-elephant relations will more likely promote the long term survival of elephants and shared ecological landscapes in Tsavo. This study shifts the blame over the decline of elephants in Tsavo from local people to extra-locally derived conservation plans and policies. It

also brings out the voices of local people in Tsavo. These voices have been systematically denigrated in Tsavo's conservation literature.

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CHAPTER THREE
COMPARING LOCAL PERCEPTIONS OF ELEPHANTS AROUND CHYULU HILLS AND MOUNT KASIGAU IN TSAVO, SOUTHERN KENYA

Introduction

Although African elephants have a global appeal and donors, especially in the global North, significantly support their protection, rural Africans' attitudes towards elephant conservation are complex, and discouraging in certain locations. A proper understanding of the attitudes of people living around protected areas towards elephants is important for designing successful elephant conservation programs. Using a political ecology framework, this study compared attitudes towards elephants between two communities living near protected areas in the Tsavo region of Kenya: the Kamba who live around Chyulu Hills National Park and the Kasigau Taita who live around Mt. Kasigau Forest, Kenya. We conducted in-depth interviews with local residents to examine the link between local attitudes towards elephants with the political ecological history of extra-local effects, especially the establishment and management of protected areas. Our results show that residents around Mt. Kasigau had more favorable attitudes towards elephants than those around the Chyulu Hills National Park. This article concludes that local perceptions about elephants in the Tsavo region are political, they are embedded in issues of rights to livelihood and access to and control over lands and resources. We conclude that local meanings and concerns about elephants need to be integrated in the management plans of protected areas.

In Africa, elephants are a high profile species and the symbol of wildlife conservation; they are also perceived as "enemies of rural development" by people living around protected areas in elephant range states. At the dawn of the 20th century, when human population density

was low in Africa, elephants freely roamed the continent. Today, they have to compete for space with rapidly growing human settlements and other land uses (Kangwana 1996). Elephant numbers have also declined in Africa in the last few decades and this has raised concerns that the African elephant is facing the threat of extinction in the near future (Leakey and Lewin 1995). Between 2011 and 2013 approximately 100,000 elephants were killed illegally in Africa for their ivory, which has a high commercial value (Wittemyer et al. 2014).

Elephants are intelligent social animals; as a keystone species, they support the survival of all other species in the ecosystem. Elephants open up forests and dense bushland, thus creating mosaic habitats of bushlands and grasslands that support other species. In drought conditions, they dig holes in dry river beds to access water that is used by other animals. Due to their migratory nature, elephants effectively disperse seeds through their dung, therefore enhancing plant diversity (Chapman et al. 1992; Kerley and Landman 2006). Elephants are also important for wildlife tourism that supports the economy of many African countries. Not surprisingly, the decline of elephant population in Africa has caught the attention of local, regional and international state and non-state actors (Martin 2007).

The world's first ivory burning event took place in Kenya in 1989 (Leakey and Morrell 2001). In April 2016, Kenya burnt the largest ivory stockpile (5 tons) in world history. Other African elephant range states have followed Kenya's example, with Gabon, Malawi, and Republic of the Congo burning their ivory stockpiles in 2012, 2014, and 2015 respectively. However, it is not yet clear how these widely popularized ivory burning events often held in African capitals affect local perceptions of elephants. Other African elephant range states have followed Kenya's example, with Gabon, Malawi, and Republic of the Congo burning their ivory stockpiles in 2012, 2014, and 2015 respectively. However, it is not yet clear how these widely

popularized ivory burning events often held in African capitals affect local perceptions of elephants.

Global perceptions that tend to idealize the African elephant are often in sharp contrast with local perceptions of elephants. People who live in villages adjacent to protected areas encounter elephants in their day-to-day lives and their opinions about elephants are based on their historical and current experiences. Elephants destroy crops that peasant farmers depend on for survival; they also injure and kill people who live near them. In Kenya, revenge killings of elephants by local communities are common (Western and Waithaka 2005). Local people have to contend with the reality of conservation policies implemented around protected areas. For the most part, conservation policies in Africa prohibit local people from using traditional methods to mitigate conflict caused by charismatic species such as elephants and lions. These policies also often ignore the political-ecological contexts of local resource use (Peluso 1993). The perception that local people are a threat to wildlife justifies coercive security measures in order to protect species considered threatened by poaching. When such policies fail, and species continue to decline, conservationists blame local people for their so called "ignorance" about the need for conservation (Schauer 2015). Reports about the status of charismatic wildlife species by state and non-state actors only highlight the declining population trends of these species without paying attention to the historical and socio-economic context of conservation in Africa (KWS 2013; KWS 2014). Africa inherited a colonial institutional and legal framework of wildlife conservation that emphasizes the ecological and economic benefits of wildlife while ignoring the "negative" social and economic impacts of wildlife conservation (Robbins 2004; Adams and Hutton 2007).

Consequently, local communities have perceived wildlife, especially elephants as having political, economic and land use advantage over humans. Indeed, conservation authorities in Africa have been accused of being more concerned with the plight of animals than that of people (Lee and Graham 2006; Sifuna 2009). More importantly, conservation policies in Africa ignore local attitudes and treat local communities as passive actors who should naturally support conservation programs imposed on them.

There is abundant literature on the relationship between humans and elephants (Hetfield 2006; Kioko et al. 2006). Most of this literature has outlined various factors that influence people's attitudes towards elephants in different locales. Research by De Boer and Baquete (1993) around Maputo Elephant Reserve found that farmers who had suffered crop losses to elephants were more negative towards elephants and the reserve than those who did not. Some studies have found out that tangible benefits promote positive attitudes towards elephants among people who suffer losses from elephant trampling (Gillingham and Lee 1999; Infield and Namara 2001). Other studies have maintained that traditional cultural values are more important in shaping local people's perceptions of elephants. For example, Kuriyan (2002) conducted ethnographic studies among the Samburu pastoralists of Kenya and found that traditional beliefs about the importance of elephants and not monetary incentives were behind the community's support for elephant conservation.

Although considerable research has been done on human-elephant conflict in Tsavo (Kasiki 1998; Omondi et al. 2004; Waweru and Oleleboo 2013; Gathungu 2015) and on factors shaping local people's attitudes towards elephants (Kagwa 2011), much less attention has been devoted to investigating the link between attitudes towards elephants and the political ecological histories of protected areas in the Tsavo region. The political, ecological and social history of

protected areas can be important in explaining people's attitudes towards elephants and landscapes (Carruthers 1995; Njogu 2004; Kideghesho et al. 2007).

This study investigated attitudes towards elephants among the Kamba, who live around Chyulu Hills National Park (CHNP), and the Kasigau Taita people, who live around Mt. Kasigau in Kenya. While the two places have many geographical similarities, their social and ecological histories differ. The Kasigau Taita originally lived on Mt. Kasigau. They voluntarily left the mountain and settled in the lowlands around the mountain in the early 20th century (Kalibo and Medley 2007). On the other hand, some Kamba people living on the eastern slopes of the Chyulu Hills (CH) were forcefully evicted from the hills to pave the way for the establishment of CHNP in the 1980s and 1990s (Muriuki et al. 2011). Management regimes in the two places also differ: residents of CHNP face strict park regulations and cannot legally access park resources such as grass and firewood. In contrast, around Mt. Kasigau, local residents have some level of access to resources in Kasigau forest. Both places are in the Tsavo Conservation Area, the biggest national park system in Kenya, comprising Tsavo East National Park (TENP), Tsavo West National Park (TWNP), and Chyulu Hills National Park (CHNP) (Figure 12). The Kamba and the Taita who live in the study area both face crop damage and sometimes human death and injury caused by elephants. Periodically, elephants stray from neighboring protected areas and enter Kamba and Taita villages in search of pastures and water.

This study was guided by two research questions:

1. What are the local perceptions of elephant conservation among the Kamba living near Chyulu Hills and the Kasigau Taita living around Mount Kasigau and what factors influence these perceptions?

2. Are there any differences in attitudes towards elephants among the Kamba living near Chyulu Hills and the Kasigau Taita living around Mount Kasigau and what accounts for these differences?

The first question sought to gain local views about elephants in Chyulu Hills and Kasigau with a focus on how elephants have impacted on local livelihoods. The second research question compared the attitudes towards elephants between the Kamba of CH and the Taita living around Mt. Kasigau. We focused on understanding the factors behind the differences in these attitudes by investigating the historical relations between the people and their landscape resources.

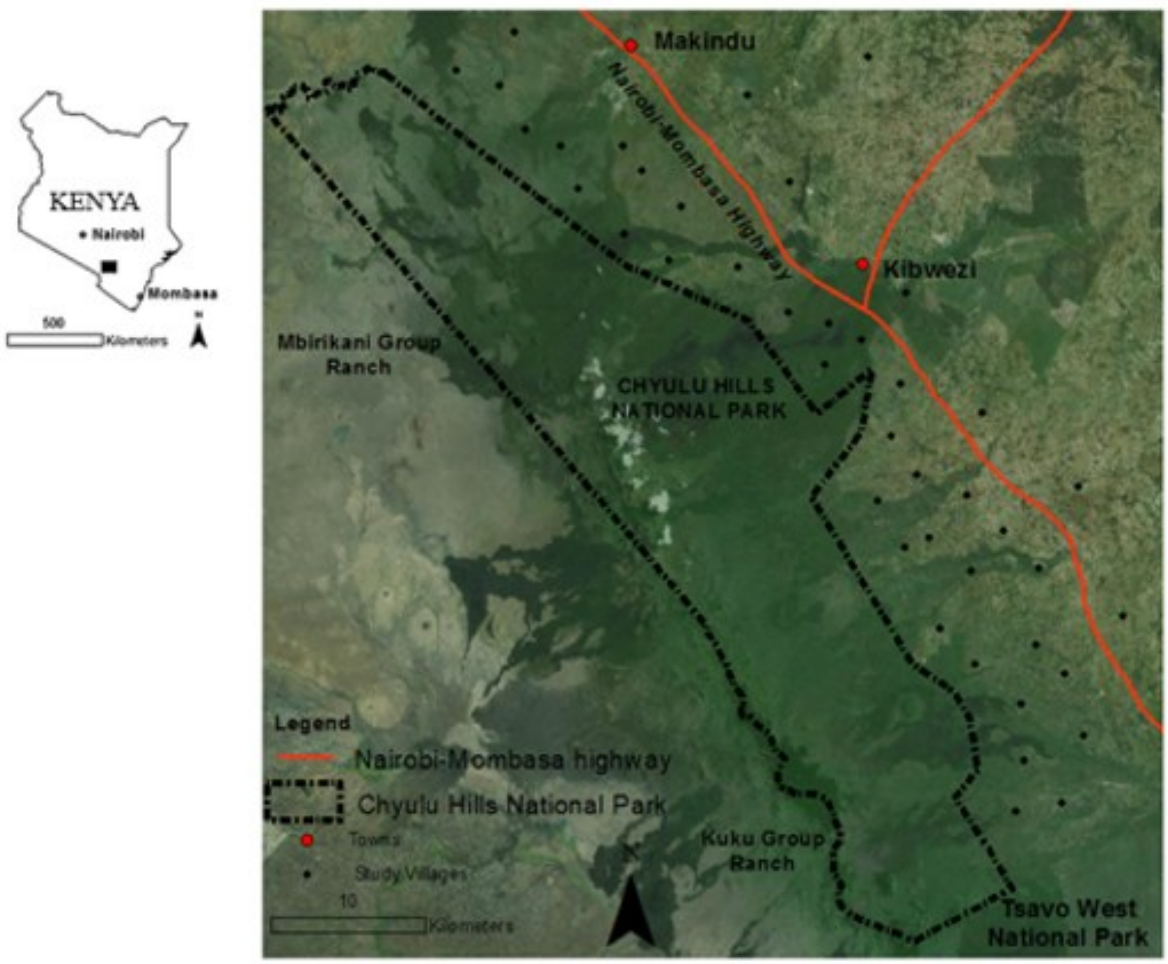

Figure 12. Map showing study villages East of Chyulu Hills National Park.

Study Site and Methods

Study areas

This study was conducted in two study sites: five Kamba villages lying between the eastern boundary of CHNP and the Nairobi-Mombasa highway, and five villages around Mt. Kasigau in southern Kenya. CHNP occurs in Makueni County while Mt. Kasigau occurs in Taita Taveta County.

The five Kamba villages are located on the eastern flank of the Chyulu Hills (CH) just northwest of Tsavo West. Chyulu Hills are an important regional water tower that provides water to local streams and are the source of Mzima Springs, which supplies water to the coastal city of Mombasa. CHNP is managed by the Kenya Wildlife Service (KWS), the government agency in charge of managing wildlife in Kenya. The area East of CHNP is arid to semi-arid and receives between 400 to 500 mm of rainfall during the long rains (March-May) and short rains (October-December). These rainfall amounts are too low to support reliable rain-fed agriculture. Crop failures and food insecurity are common in the area. The poorest households in the region rely on food relief during the dry seasons.

The dominant vegetation type in this area is Acacia-Commiphora bushland and grassland savannah. The area is a historic range for a variety of wildlife including elephants, rhinoceros, and different types of antelopes. Most of the Kamba residents are "first or second generation immigrants" who came into the area after 1960 from other Kamba counties (Machakos and Kitui) due to high population and land scarcity in their area of origin (Muriuki et al. 2001). The Kamba are agro-pastoralists, who practice small-scale farming as well as rearing cattle, goats, and sheep. The crops mainly grown in this study area are maize, green grams, pigeon peas, and beans. About 15% of the local population is engaged in informal sector businesses such as

operating small retail shops and restaurants (ROK 2013). Residents with at least high school education have joined formal employment as teachers, nurses, and other government jobs. In order to escape extreme poverty, some residents illegally extract woody vegetation for charcoal burning and wood carving and khat-*miraa* (*Catha edulis*) from CHNP (Kamau and Medley 2014). Human-elephant conflict is common in the area: elephants damage crops and pose a threat to human life (Mosse 2003; Kioko et al. 2006).

Mount Kasigau is located in Taita Taveta County in southern Kenya and is one of the Eastern Arc Mountains, a chain of mountains that run northeast to southwest in Kenya and Tanzania (Figure 13). Four Eastern Arc Mountains are located in Tsavo, and are commonly known as the Taita Hills. Mt. Kasigau rises about 1600 meters above savannah plains and is in a corridor of private and communal lands between Tsavo East and Tsavo West National Parks (Kalibo and Medley 2007). The 203 hectares of evergreen forest in Mount Kasigau is gazetted forest and is managed by the Kenya Forest Service (KFS) in conjunction with local people. The mountain captures enough moisture from the Indian Ocean to support an evergreen forest above 1000 meters. However, the plains surrounding the mountain receive only between 300 and 500 mm of rain per year and are generally arid to semi-arid. Several streams around the mountain have been harnessed to provide drinking water to local people. The vegetation in the plains is mainly Acacia-Commiphora bushland (Kalibo and Medley 2007). This bushland supports a variety of wildlife including elephants, lions, zebras, giraffes, ostriches, and antelopes of all sizes from the little dik-dik to the large eland. Most of the bushland at the foot of Mt. Kasigau that provided habitat for wildlife is under small scale cultivation. The wildlife is mainly found in nearby parks and communal ranches. The majority of people living around Mt. Kasigau are the

Kasigau Taita, a sub-tribe of the Taita ethnic group that mainly inhabits Taita Taveta County of Kenya.

The Kasigau Taita, also sometimes referred to as Wakasigau, are predominantly small-scale farmers but they also keep cows, sheep, goats and chicken. They mainly cultivate maize, beans, cassava and pigeon peas. A section of the local people engages in informal business such as operating small shops and restaurants and selling handicrafts, while others have joined formal employment locally or in other parts of Kenya. Human-elephant conflict is common in the area, where elephants damage crops and pose a threat to human life (Kagwa 2011).

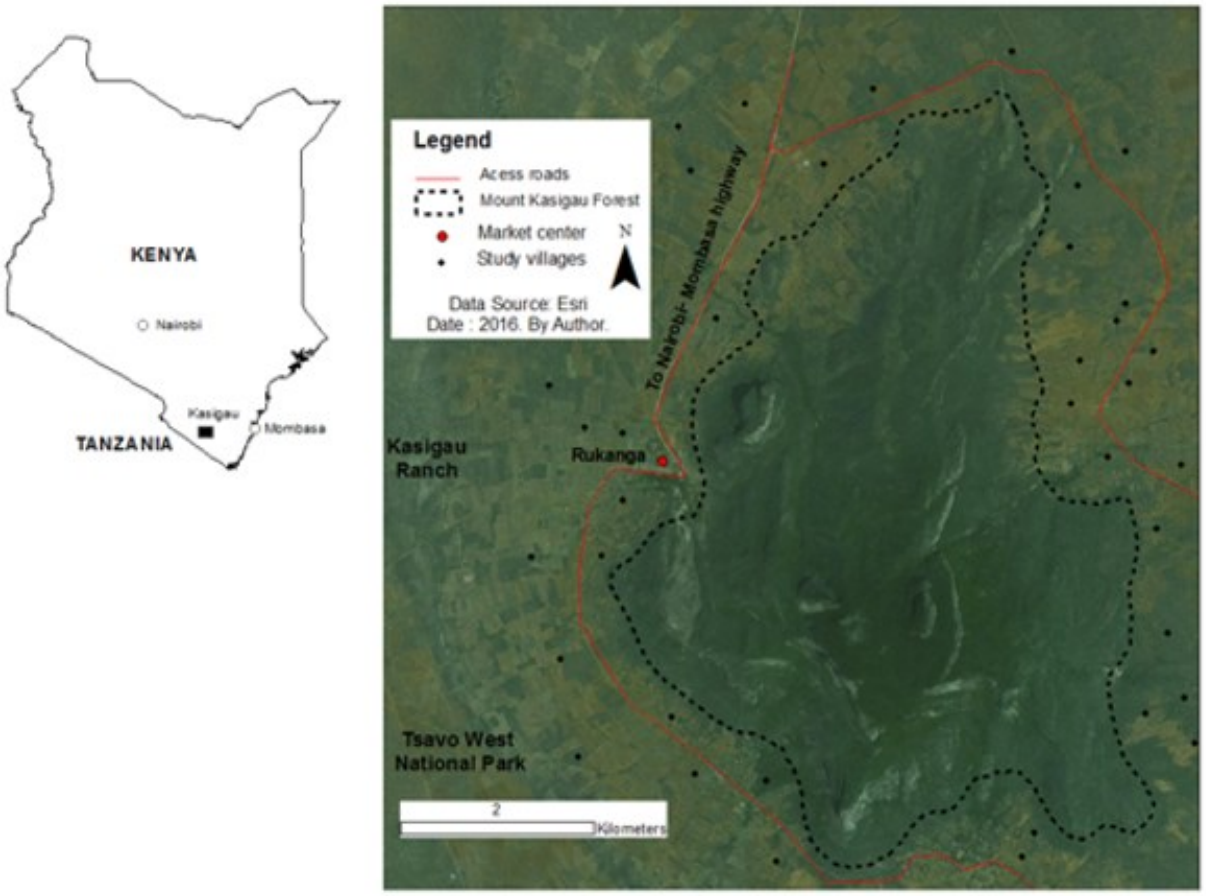

Figure 13. Map showing study villages around Mount Kasigau in southern Kenya.

CHNP and Kasigau Forest are managed under different laws. The forest is managed by KFS under the Forest Act, of 2005. This law governs the management of public forests in Kenya; it allows communities to utilize forests for activities such as cattle grazing and firewood collection for minimal fees. In contrast, CHNP is management by KWS, under the Wildlife Conservation and Management Act, of 2013. Under this law, no human activities other than tourism are allowed in the national parks. Local communities are not allowed to obtain resources from CHNP.

Data and methods

The purpose of this study was to gain local perspectives about elephants and understand the factors that shape local attitudes towards elephants among people living around Chyulu Hills and Mt. Kasigau. To achieve this objective, I conducted fieldwork in the two study sites between June and August 2015, and December 2015. More fieldwork was conducted in June and July 2016 using semi-structured questionnaires administered by trained research assistants. The field work covered ten villages: five villages stratified north to south along the eastern boundary of CHNP, and five villages around Mt. Kasigau. The author held in-depth semi-structured interviews with 100 respondents in the ten villages; five men and five women from each of the ten villages (n=10 for each group, total=100 participants). I sought the help of local administrators (chiefs and assistant chiefs), to select participants from existing village groups. Participants were selected from villages groups with a local focus in their mission, such as farming and tree nursery self-help groups. Consideration was given to the spatial extent of village groups to ensure a broad range of experience with elephants.

Participants were asked for voluntary consent; they were also assured that any information they shared would not identify them as individuals or by their villages. Interviews

with the informants involved a list of twenty questions that focused on their views on elephants and the histories of protected areas around them. They were also asked about their interactions with the Kenya Wildlife Service (KWS) for the case of people living around CHNP, and Kenya Forest Service (KFS) for the case of people living around Mt. Kasigau. The questions were intended to assess respondents' attitudes and tolerance for crop losses from elephants and also evaluate how their attitudes relate to the management of protected areas. Two open-ended questions formed the subject of the interviews: 1, What are your views about elephants, and how do they impact on your livelihood? 2, How does your relationship with the protected area around you affect your attitude toward elephants? We also asked for suggestions to promote coexistence between people and elephants. Interviews with individual informants lasted about one hour on average. Conversations were held in Swahili and local research assistants helped translate from local languages to Swahili where necessary. Interview sessions were tape recorded and later transcribed to ensure all information gathered was captured.

Results

Attitude towards elephants in Kamba villages along CHNP

Fifty respondents were interviewed in five villages near the eastern boundary of CHNP. Interviews with respondents in Kamba villages revealed that crop raiding by elephants plays an important role in shaping local attitudes towards elephants. When asked about her views on elephants, a response by a female participant whose farm is adjacent to CHNP illustrates the general perception of elephants by local people: "Elephants are my biggest problem. Every year, I cultivate crops but I share the harvest with elephants. They wait until the maize is ready for harvest, then they come and eat almost everything."

The majority of respondents reported that elephants are the major cause of human-wildlife conflict around CHNP. Forty-six percent (n= 23) of respondents said that elephants had entered their farms at least once between July 2014 and July 2015. The main crops destroyed by elephants were pigeon peas and maize. In the villages under study, crop raiding is mostly seasonal; elephants invade farms around the months of February and March and June and July, when maize crops and pigeon peas are about to mature. This corroborates official reports from KWS which shows that incidences of human-wildlife conflict around CHNP are highest in the months of February and July (KWS 2008). The frequency of crop raiding and extent of damage done by elephants in individual farms varied with the distance from the national park boundary. Respondents whose farms were less than one kilometer from the national park boundary reported more losses than those whose farms are located farther from the CHNP. The majority of participants reported that they tried different measures to prevent crop damage by elephants, such as guarding their farms at night, erecting scarecrows and leaving buffer zones at the edge of their farms. No measure was a total deterrent to crop raiding by elephants and some farmers said they relied on KWS officials to drive away elephants when they invaded their farms. However, due to reasons such as limited capacity, bad terrain, and high number of incidents, KWS officials are not able to attend to all crop raiding incidents reported by villagers.

Lack of compensation for crop damages caused by wildlife was found to be important in shaping views about elephants around CHNP. Seventy-six percent of respondents (n= 38) mentioned that lack of compensation for crop damage reduced their tolerance towards elephants. Respondents said that no farmer had received compensation for crops damaged by elephants despite filing compensation claims with the KWS. Some farmers reported that they had filed several compensation claims in the previous two years hoping to be compensated for losses. One

respondent said: “I have filled compensation forms four times since 2014 and taken them to KWS offices but I have not received compensation. Recently, I made a call at the KWS offices and was told to continue waiting.”

It was clear that there was high expectation of getting compensation for damage to crops by wildlife among local people around CHNP. In 2013, the Kenya government passed a new wildlife law: The Wildlife Conservation and Management Act 2013, which provides for compensation from wildlife damage or loss. Although, the law became operational in January 2014, we confirmed that the government had not yet released money for compensation (personal communication with the warden in charge of CHNP). There was no doubt that unfulfilled promises about compensation have created negative attitudes towards both elephants and the KWS.

Local perceptions of CHNP and the history of its establishment shaped views of village residents about elephants around CHNP. Fifty-eight percent of respondents (n= 29) reported that the establishment of CHNP increased the population of elephants within the park. Sixty-four percent of participants (n= 32) in oral interviews said the reasons for the park’s establishment was to create room for elephants. Other respondents mentioned that elephants were translocated from other parks and brought into CHNP after the park was gazetted. However, an inquiry with the KWS confirmed that no such relocation of elephants ever took place. Elephants occasionally move to CHNP from the neighboring Tsavo West National Park and Maasai group ranches in search of water and pasture. After the establishment of CHNP, movement into CHNP increased as elephants felt safer to roam where there are no human settlements.

The harsh experiences of eviction to pave way for the establishment of CHNP, and the loss of access to vital resources such as firewood and grass was found to be a cause of indifference to wildlife especially elephants. Fifteen out of the 50 respondents interviewed reported to have been evicted; they described how they suffered economic losses by losing fertile lands, structures such as houses as well as social disruption when they were forced to separate from their kin and neighbors. One elderly man, a retired teacher narrated:

> We had worked hard to build primary schools in the Chyulu Hills and the government sent its teachers to the schools. Our village was named "Canaan", after the biblical Canaan due to the fertility of the soils. During the evictions, we were not given enough time to move. We lost most of our livestock to wild animals, our houses were demolished by government forces. Those who had no means of transporting their food especially maize lost it to fire when granaries were set ablaze by security forces. When people see elephants on their farm, they remember those brutal experiences.

Attitudes towards elephants were also linked to the perception that local people do not share in the many economic benefits that elephants bring. Seventy-four percent of respondents (n= 37) in Kamba villages said that they do not realize any benefits from elephants. They argued that revenue accrued from elephant conservation should be used to initiate projects that help local people, such as providing bursaries to school children. One man said:

> Our fathers used to kill elephants for food, but these days, killing an elephant is illegal. When Jomo Kenyatta was president, game wardens would kill wildlife and the meat would be given to those who attended national celebrations such as Madaraka (Independence) day. That does not happen anymore. We know elephants bring money to the government, why can't the government use that money to fund development projects in this area? The government says that elephants are beneficial, but we have not seen those benefits here.

Landlessness and extreme poverty among a section of the population around CHNP have contributed to the perception that the government cares more about elephants than it does about people. This study revealed that this perception is driven by the so called squatter crisis (Figure 14) that resulted in part from the establishment of CHNP. After the evictions in 1990 and again

in 2000, about 10 % of the evictees did not get alternative land mainly due to corruption and inefficiency among government officers in charge of the resettlement program. The Kenyan government attempted to solve the squatter problem in 2005 by hiving off public land in Kiboko to issue to squatters. Again, not all squatters were resettled in the new settlement scheme.

Figure 14. A squatter dwelling near the eastern boundary of Chyulu Hills National park. Photo taken on June 12, 2015.

Those who missed out claimed that majority of those who were allocated land in 2005 were supposedly powerful individuals connected to local politicians who already owned land elsewhere. Some evictees or their next of kin who have never been resettled live as squatters in lands adjacent to CHNP. These squatters are extremely poor and encroach into the park to extract resources for survival. Some squatters engage in charcoal burning, wood carving, and game meat

poaching. The squatter problem around the eastern boundary of CHNP has been linked to land degradation around CHNP (Muriuki et al. 2011).

The relationship between local people and the KWS was found to be important in shaping attitudes towards elephants in CHNP. The majority of respondents (74 %) mentioned that elephants are resented due to incidences of arrests and fines or imprisonment of local people found in the park burning charcoal or extracting other resources. Participants argued that some people are forced to enter the park to extract resources when elephants damage crops which they depend on for food. They said that these people perceived elephants as their source of problems, and therefore have negative attitudes towards them. Narratives of respondents indicated that conflicts over access to resources were the cause of confrontations between local people and KWS rangers who patrol the park. While the majority of informants praised KWS officials for their efforts to reduce crop damage by elephants around CHNP, they castigated the officials for being insensitive to local needs. This study also revealed that there was a general misunderstanding of park regulations among the local community. About half of informants were unaware that by law, no human activities are allowed in a national park, and that KWS officials were mere custodians of wildlife resources. A majority of participants referred to elephants as "belonging to KWS" (*hao ndovu wa* KWS) during their conversations and this suggest that they did not consider themselves to be stakeholders in elephant conservation, but rather victims of their existence.

Historical conflicts over land and grazing resources between the agro-pastoral Kamba and their western neighbors the pastoral Maasai also influence attitudes towards elephants among the Kamba. Before the establishment of CHNP, the Kamba and the Maasai contested over the ownership of lands on the eastern slopes of the Chyulu Hills. Respondents narrated that since

CHNP was established, KWS has been more tolerant of cattle grazing in the national park by the Maasai than the Kamba, who allegedly hunt small game for bush meat and also illegally harvest woody plants in the national park. This situation has led to the perception among the Kamba that the Maasai are allowed to graze in the national park by KWS officials while the Kamba are harassed and arrested for the same offence. However, arrest records obtained by the author showed that more Maasai than Kamba herders were arrested for illegal grazing in 2014. KWS officials in CHNP denied any official policy of favoring the Maasai. However, the perception among the Kamba was widespread and hurtful to elephants as illustrated by this remark by a Kamba respondent: "The government want us to co-exist with elephants yet it does not allow the Kamba to graze their livestock in the park. Since the government allows the Maasai to graze their livestock in the national park, it should extend the same favor to the Kamba."

Elephant-proof fence and attitudes toward elephants

Recently, KWS and David Sheldrick Trust, a local conservation Non-Governmental Organization (NGO), have partnered to construct an elephant proof fence along the Eastern boundary of CHNP. About 60 km of elephant proof fence has been constructed. Interviews with informants revealed that the frequency of crop raiding by elephants has reduced in villages already covered by the fence. Informants who came from these villages had more positive views about elephants and KWS than those villages that have not yet been covered. A majority of respondents said that the fencing project would be a lasting solution to the problem of elephants. They also added that the fence would curtail their access to the park to collect fire wood, construction materials, and other resources and appealed for gates that will allow access to the park. One woman said: "I collect dry firewood from the park, if the fence is constructed, I will

not be able to get into the park. I ask KWS to erect a few gates along the park boundary so that women can gain access to firewood."

Although some participants were aware that no human activities were allowed in a national park and collecting any material from the park was illegal, they considered their access to woody plant resources found in the park to be necessary. Eighteen out of the fifty respondents confessed to having either grazed their animals or cut grass in the park for their animals. It was also reported that the park was the only remaining source of trees such as *muvingo* (*Dalbergia melanoxylon*) which is an important raw material for the wood carving industry. While the long term impact of the fence on local livelihoods was not immediately clear, some participants expressed concerns that lack of access to resources in the park will negatively affect people's attitude towards elephants and other wildlife.

Attitude towards elephants in Taita villages around Mount Kasigau Forest

Fifty respondents were interviewed in five villages around Mt. Kasigau forest. Forty-four percent of respondents (n= 22) reported that elephants had trampled on their crops at least once between July 2014 and July 2015. Crop raiding by elephants mostly occurred when crops were ready for harvesting. This is twice a year due to the bimodal rainfall pattern in the study area, in the month of February and in July and August. The most common crops damaged by elephants are maize (*Zea mays*), cow peas (*Vigna unguiculata*) and pigeon peas (*Cajanus cajan*) Figure 15).

Elephants also damage fruit trees such as mango and banana trees, and villagers said this discouraged people from planting fruit trees. During field work for this study, very few fruit trees were observed in villages around Mt. Kasigau. The frequency of raiding varied among villages

and individual farms. Villages and farms along traditional elephant migration routes were more frequented by elephants than those that were away from these routes. Villagers narrated that, during the dry seasons when water is scarce, elephants rely on permanent natural springs that occur in the villages at the bottom of Mt. Kasigau. During the night when villagers are sleeping, elephants come to drink water in the springs; after drinking water, they enter the farms but always leave the farms before dawn.

Figure 15. Maize plants in a village at the bottom of Mt. Kasigau, in southern Kenya. Photo taken on January 7, 2016.

Participants also mentioned that other wild animals were also responsible for the loss of crops in the farms. However, the bulk of crop raiding was attributed to elephants and this played a major role in shaping attitudes towards elephants. A majority of informants, especially women, said that elephants were a threat to their livelihoods. They lamented that it was futile to plant fruit trees in the farms because they would be damaged by elephants, a situation they said contributed to poor human health in the area. One woman whose village was reportedly the most besieged by elephants said: "Majority of us in this village are farmers but our children do not eat fruits because our paw paws and mango trees have been damaged by elephants. Fruits are very expensive in the market and some of us who are unemployed cannot afford to buy fruits every day."

The history of human settlements in the villages was found to be a significant influence on local attitudes towards elephants. There was a general agreement among the majority of participants that when their ancestors lived on the mountain, elephants and other wildlife utilized the bushland below the mountain without much interference from humans. A majority of respondents said that the major reason for settling in the bushland was the decreasing size of farms in the mountain as human population increased. Oral histories from participants indicate that human-elephant conflict began when people left the mountain and started living in the bushland. Due to the awareness of this history most respondents in villages around Kasigau said that they have a moral obligation to co-exist with elephants. One of the interviewees, a village elder narrated:

> I was born in Ndomokonyi, a former village in the mountain. We left the mountain with our cattle, cleared the bushland and erected huts in this village. There were plenty of elephants, buffaloes, dik-diks, and many other types of animals. Most of the animals migrated when we started living here. So wildlife belongs here, elephants come from the bush to drink water in streams. Although they destroy our crops, we co-exist with them.

Although KWS does not have a camp nearby, respondents said that they usually made calls to KWS officers whenever elephants invaded their farms. A majority of respondents said that often times, KWS rangers responded quickly to their calls and drove away elephants back to the park. However, a majority of respondents accused KWS of allowing people from other parts of the country to graze their animals within TWNP while they don't extend the same privilege to local people. This perception among local people contributed to negative attitudes toward elephants. Seventy-six percent of respondents (n=38) mentioned that people from the Somali community bring large herds of livestock into TWNP park and this reduces the amount of vegetation available in the park. They argued that lack of browse in the park encouraged elephants to move out of the park and raid local farms. However, KWS officials in TWNP denied the allegation that they allowed the Somali to bring their animals into the park and insisted that all livestock animals entered the park illegally.

When asked about their relationship with KFS officials, forty percent (n=20) of respondents reported that local people have a good relationship with KWS officials. Eighty-four percent of respondents (n= 42) reported that local people have a good relationship with KFS officials who are responsible for patrolling the gazetted Kasigau forest. Most respondents said that there was less conflict between local people and KFS officials than with KWS officials. Respondents said they obtained permission from KFS officials to enter the forest to collect medicinal plants or to guide visitors who want to enter the forest for research and tourism.

The impact of REDD+ projects on attitude towards elephants

Kasigau region is among the first locations in the world where the REDD+ idea has been implemented. REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is an international scheme to assign financial value to carbon stored in forests, whereby forest owners

receive money (carbon credits) as an incentive to conserve forests and therefore combat climate change (Corbera and Schroeder 2010). The Kasigau Corridor REDD+ Project (KCRP) was commissioned in 2009 and has a project period of 30 years (KCRP 2011). The aim of the project is to avoid emissions of over 48 million metric tons of carbon dioxide over the project period through reducing forest degradation and discouraging cutting down of trees in private lands for charcoal burning (KCRP 2011).

The project is run by Wildlife Works, an American-based private company which according to its website, applies "innovative market based solutions to the conservation of biodiversity" (www.widllifeworks.com). Money generated through carbon financing has been used to fund community development projects around Mt. Kasigau. These projects include classrooms and desks for local schools, scholarships, water provision, and employment of local people as forest and game scouts. The scouts hired by Wildlife Works supplement the efforts of KWS and KFS rangers. Narratives from informants indicated that the REDD+ project has increased public participation in the management, protection and conservation of natural resources in Kasigau, and that this has influenced positive attitudes towards elephants.

Comparing attitudes towards elephants between villages around CHNP and Mt. Kasigau.

Attitudes towards elephants differ among the Kamba living near the eastern boundary of CHNP and the Kasigau Taita living around Mt. Kasigau. Generally, positive attitudes and tolerance towards elephants were higher among the Kasigau than the Kamba (Figure 16).

The two cultural groups are both small scale farmers who plant similar crops in a dryland environment and experience an almost similar magnitude of crop raiding by elephants. Forty-eight percent (n= 22) of respondents in CHNP said that elephants have a serious impact on the

food security in their households while thirty percent (n=15) of respondents in Mt. Kasigau gave a similar response. Seventy-four percent (n=37) of respondents in villages along CHNP reported that elephants do not benefit their community compared to thirty-six percent in villages around Mt. Kasigau.

Issue	% of respondents in CHNP	% of respondents in Mt. Kasigau
1. Elephants have entered my farm in the previous 6 months (July –Dec 2015).	46	44
2. Elephants have a serious negative effect on food security in my household.	48	30
3. Incidences of crop raiding by elephants have increased in the last 10 years.	60	40
4. My community benefits from elephants.	26	64
5. Lack of compensation for crop damage shapes my views towards elephants.	76	66
6. The relationship between local people and KWS or KFS affects attitudes towards elephants.	80	64

Figure 16. Comparing attitudes towards elephants between residents of CHNP and Mt. Kasigau.

For the most part, the different histories of settlements and establishment of the two protected areas account for the difference in attitudes towards elephants. Residents in four out of five villages covered around Kasigau forest narrated that they voluntarily moved from the mountain to the bushland between the 1960s and 1990s, due to decreasing farm sizes as their population went up. Only residents in one village reported that they were ordered by the government to leave the mountain. The people living in this village at that time left without resistance. In contrast, narratives by respondents in villages adjacent to CHNP indicated that people were forced to leave the park by armed government security personnel. There was also a stronger sense of ownership of the forest, mountain, and landscape resources among people in Kasigau as compared to CHNP.

People around Kasigau also considered themselves to be key stakeholders in the conservation of the forest and wildlife including elephants. Narratives by respondents in CHNP suggested that elephants and the park are viewed as threats to local livelihoods. When talking about the park, some respondents in Kamba villages, used the words "*huko kwa* KWS" (that place belonging to KWS). In contrast, the Kasigau did not refer to the mountain or forest as belonging to KFS despite the forested mountain being gazetted and under the management of KFS. Narratives from CHNP also indicated that some people still "feel the pain of eviction" and these feelings affect their general attitude towards elephants and conservation.

Dependency on local woody plant resources had a significant effect on local people's attitudes towards elephants in CHNP and Mt. Kasigau. More people reported relying on grass and woody plants obtained illegally from CHNP. In contrast, people around Mt. Kasigau obtained these resources from their farms and the bushland at the bottom of the mountain and Kasigau Ranch where they graze their animals for a small fee. Participants around CHNP reported more conflicts between them and conservation authorities, especially the KWS than in Kasigau. These conflicts occur when local people are arrested by KWS rangers for illegal utilization of resources in the park, such as grass for livestock or woody plants.

Several community projects with a conservation component have been initiated in Mt. Kasigau. The most prominent one, the Kasiagu Corridor REDD + project, has financed initiatives such as greenhouse farms for women groups and desks for schools in villages around Kasigau. Although only a few people have benefited individually, this study reveals that these initiatives have promoted positive perceptions towards wildlife and made local people more tolerant of elephants. Although, a similar REDD+ project around CHNP has been proposed, it has not yet materialized. Respondents from villages along the eastern boundary of CHNP

complained that their appeal for support for community projects has been ignored by donors. One local leader of an existing village group commented:

> I am the leader of a bee-keeping self-help group. We have put forward several proposals for support on various community projects to donors but none has been funded. Other people who live near a national park and face crop depredation by elephants, get a lot of support from donors, we don't know why we do not get support.

While we could not verify this particular claim, it was clear that narratives by the majority of respondents in CHNP show that they have high expectations of getting financial benefits from the government and other sources as compensation for human-elephant conflict. There was a strong perception that benefits such as support for income-generating projects have the potential of alleviating poverty. When such expectations are not met, local enthusiasm for wildlife, especially elephants, diminish.

This study also noted a special bond between the Taita, the Kasigau forest, and other landscape resources. Narratives from respondents about their mythology and religious practices indicated that Taita have deep local ecological knowledge about the connection between the mountain, forests, rivers, and wildlife. It was clear that despite problems with elephants, they regarded elephants as very important to their culture and customs.

Discussion

The relationship between protected areas and people who live adjacent to them has attracted attention from geographers and anthropologists (Anderson and Grove 1985; Neumann 1998; Adams and Hutton 2007). Their findings have suggested the complexity of people-protected area relationships especially in landscapes where protected areas are nestled within dense human settlements and crop lands. Often, the majority of people who live in these landscapes directly depend on natural resources (cultivated crops, forests, wildlife) for their

livelihoods. Due to protected area regulations, communities living adjacent to protected areas face restrictions on access to natural resources they need for survival such as woody plants, and pasture for domestic stock (Lepp and Holland 2006). Exclusion from protected area resources, crop damage, and livestock depredation by wildlife influence perceptions towards wildlife (Ite 1996; Paraskevopoulos et al. 2003). A growing body of literature has indicated the difficulties of achieving species protection where local people's attitudes about their conservation are negative (Neumann 1992; Broch-Due 2000; Robbins et al. 2009).

This study drew insights from political ecology to investigate the link between attitudes towards elephants and the political ecological histories of protected areas. We compared the attitudes of two communities which live near protected areas with different histories of establishment and management regimes. This study found that local perceptions of elephants around Mt. Kasigau were more positive than those around CHNP. Narratives from respondents in this study indicated that in villages where tangible social and economic benefits have been realized, people tended to have more positive attitudes towards wildlife than people in villages where such benefits are minimal or missing. This trend was evident regardless of the magnitude of crop damage and threat to human life posed by wildlife. The study also revealed that local communities in Tsavo are embracing the so called neoliberal idea that they need to individually benefit economically from natural resources in order to improve their livelihoods. Similar patterns have been noted in other studies where people living around protected areas are discontented that the many costs they incur from wildlife damage are not matched by benefits accrued mainly to wildlife tourism (Emerton 2001; Igoe 2006; Lepp and Holland 2006; Kidegesho et al. 2006). Our findings also support research that has positively correlated positive attitudes towards wildlife with conservation benefits (Gillingham and Lee 1999; Gadd 2005).

However, monetary incentives might not be appropriate in certain contexts. Based on his research in West Africa, Oates has given a powerful argument against the economic valuation of wildlife as a basis for conservation (Oates 1999). He has argued that the transformation of conservation to an economic activity is one of the reasons why conservation projects fail in West Africa. Other studies have lamented the "neo-liberalization" of the elephant and the new forms of elephant commodification such as tourism because they reinforce the unequal sharing of costs and benefits of elephant conservation (Moore 2009).

As fears about the extinction of elephants in Africa increase, strategies to protect elephants and their habitats have become more militaristic (Duffy 2014; Lunstrum 2014). This has not escaped the attentions of researchers; Brockington has sarcastically written that coercion has become a long-term conservation strategy in Africa (Brockington 2004). Local narratives in CHNP and Mt. Kasigau shows that the relationship between protected area managers and local communities significantly impact on attitudes towards elephants. Where the relationship is marked with past and current conflict, for example, as reported in some villages around CHNP, attitudes towards elephants were found to be very negative. Around Mt. Kasigau, local people described their relationship with KFS and KWS officials as cordial and this enhanced cooperation in efforts to protect the forest and deal with crop raiding by elephants. Other studies have also found that regular contact between conservation authorities and local people improves attitudes towards wildlife (Hulme 1997; Holmes 2003; Thirgood et al. 2005).

The process of establishing protected areas and the magnitude of population displacement are important in shaping how people view protected areas and protected area resources. Robbins and McSweeney have argued that when protected areas are established in conditions of conflict and forced relocations, these conflicts are more likely to persist even after people are resettled

(Robbins et al. 2009). As revealed by narratives in CHNP, the resettlement exercise was handled inefficiently and this allowed influential individuals to take land that was set aside for evictees thus creating squatters who live along the boundaries of CHNP. Narratives gathered during this study suggest that human right abuses and violence against residents of CHNP during the time of relocation have partly engendered mistrust and resentment towards conservation of elephants. This finding concurs with those of other studies that have pointed out the direct impacts of displacement on livelihoods (Brechlin et al. 2003; McElwee 2006) and the risk of impoverishment of displaced people.

This study also highlights the fact that although African governments' efforts in regulating people and nature (Foucault 1977; Foucault et al. 1991) through protected areas have succeeded to a large extent, local people continue to assert their rights to livelihood resources in protected area landscapes. The study also supports Scott's research on peasant-state relations in south-east Asia. (Scott 1985). Despite KWS efforts to keep people away from CHNP, the level of illegal utilization of forest resources is higher in CHNP than in Kasigau forest. Around Mt. Kasigau, where no forced relocations occurred, the majority of local people have decided to voluntarily stay away from the protected forest.

Conclusion

By conducting in-depth interviews, this study gave local people around CHNP and Mt. Kasigau an opportunity to share their knowledge about elephants. It compared local perceptions of elephants in the two study sites in relation to their different political-ecological histories of protected area establishment. Around Mt. Kasigau, residents are more tolerant of elephants compared to CHNP. Although residents in villages around Mt. Kasigau experience almost similar levels of crop damage as those around CHNP, they were more supportive of elephant

conservation. The establishment of Mt. Kasigau forest was done with the support of local people. The Kasigau Taita also manage their own ranch; Kasigau Ranch, which they utilize for livestock grazing and therefore have less need to extract resources from Kasigau Forest or Tsavo West National Park. Initiatives such as REDD+ and resultant benefits in the form of community projects around Mt. Kasigau have promoted relatively more positive attitudes towards wildlife. The events surrounding the establishment of CHNP including displacement of people and the emergence of squatters have contributed to negative perception of wildlife especially elephants. A section of local residents believe that the park was established to protect elephants. The need to illegally extract resources from CHNP by a component of the local population has led to constant conflicts between KWS and residents of CHNP. Elephants also pose a significant threat to local livelihoods when they damage crops and other facilities such as water pipes. This has contributed to a lower level of tolerance towards elephants.

By analyzing local views towards elephants in the two study sites, this article has demonstrated that local perceptions about elephants among communities living around protected areas are political; they are embedded in issues of right to livelihood, and access to and control over land and resources. The history of protected area establishment and the actions of actors including state conservation agencies and conservation NGOs shape local perspectives about elephants. This study also revealed that local places are being impacted by democratization and liberalization trends; local communities have started to demand that they should share in the economic benefits that elephants bring.

In order to secure the future for elephants, deliberate efforts need to made to improve local attitudes towards elephants. Narratives from respondents in this study suggest that improving the distribution of costs and benefits of conservation will increase tolerance towards wildlife

especially elephants. Local support for electric fences that keep elephants away from farms was high in the two study sites. A majority of respondents favored the involvement of local communities during the implementation of fencing projects. Streamlining the compensation process for crop damage, death, or injury by elephants will also improve attitudes. Solutions to challenges such as over-reporting of losses, and delays in release of funds must be sought.

This chapter contributes to the political ecology literature by providing local insights to wider debates and concerns about human-elephant conflict and the conservation of elephants. It also challenges dominant accounts that portray the African elephant as a gentle, apolitical, and charismatic species that is threatened by local people's practices.

As human population and climate disasters in Africa increase, the future of the African elephant is uncertain. The actions of people who live with elephants in Africa's rural landscapes are critical to the future survival of elephants. I argue that elephant conservation efforts around CHNP and Kasigau should be framed at a more local level and should take into consideration the livelihood concerns of local residents.

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CHAPTER FOUR
CAN ELEPHANTS AND LIVESTOCK COEXIST? SOLVING GRAZING CONFLICTS THROUGH ADAPTIVE COLLABORATIVE MANAGEMENT IN TSAVO, KENYA

Introduction

Although pastoralism supports many livelihoods in East Africa, and domestic and wild animals have for a long time coexisted in Africa's savannah landscapes, livestock is perceived by conservation authorities as a major threat to the survival of key wildlife species, especially elephants. Drawing on ethnographic data, this study gains local insights from the Maasai pastoralists who live west of Tsavo West and Chyulu Hills National Parks in Kenya on the role of livestock and elephants in their landscapes and livelihoods. The study explored how solving grazing conflicts between the Maasai and KWS can promote cooperation in elephant conservation. I used narratives from twenty-four key informants and sixty participants in focus group meetings drawn from six villages within Mbirikani, Kuku, and Rombo group ranches which neighbor the parks. I also interviewed four park officials working in Tsavo West and Chyulu Hills National Parks about grazing conflicts and collaboration with the Maasai. The views of the Maasai on livestock and wildlife are deeply cultural and differ markedly from those of park officials. Using an applied research design that supports adaptive co-management, this study validates Maasai socio-cultural knowledge in promoting coexistence between livestock and elephants. I argue that resolving grazing conflicts between the Maasai and Kenya Wildlife Service will ensure the long term survival of elephants. This study will promote opportunities for shared learning between the Maasai of Tsavo and the Kenya Wildlife Service. The oral histories gathered in this study about pre-colonial movement patterns with livestock are important resource for adaptive solutions for grazing conflicts.

Below is an excerpt from a memorandum written by the then Minister of Tourism, Forests and Wildlife, Mr. Howard Williams, on September 7, 1961. I use this excerpt to show that conflicts over grazing resources in Tsavo, Kenya are longstanding.

> The Taita and Akamba are likely to press for grazing within the Tsavo National Park if this is done [pumping water from Lake Jipe to Tsavo West National Park]. But they have not suffered losses of cattle as the Maasai, and are agrarian in any event. The problem is political as well as administrative. The Provincial Commissioner, Southern Province, supports this solution, which will meet the emergency that has arisen, relieve the distressed Maasai in the area and avoid extension of famine relief.
>
> Kenya National Archives. KL/1/54.

Conflicts between pastoralists and protected area managers are widespread in the rangelands of East Africa (Homewood and Rodgers 1991; Neumann 1997; Lore and Mulder 1999; KWS 2014). Most of these conflicts occur in arid and semi-arid areas. For many generations, East African pastoralists utilized arid and semi-arid areas to produce livestock products for subsistence, trade and cultural purposes (Herskovits 1926). For these people, access to critical livelihood resources such as water and grazing pastures has always been vital. In the past, these groups relied on livestock mobility and communal management of natural resources to sustain their livestock and their livelihoods. Pastoralists and their livestock used the same lands with wild animals with minimal conflict. However, this ancient tolerance of wildlife by pastoral communities is under threat. Growing human population and the introduction of new land use such as farming and wildlife conservation in pastoral rangelands have increased competition for water and pastures among people, livestock and wildlife.

Several studies have focused on the interactions between pastoralists and their environments in East African savannahs (Lamprey and Waller 1990; Homewood and Rogers 1991; Little 1996). Most studies indicate a long history of pastoralist activities in these savannahs and emphasize the manipulation of savannah vegetation through grazing and burning

(Sheuyange et al. 2005; Laris 2006). Despite studies that show the ecological benefits of livestock grazing in East Africa rangelands (Western 1994; Reid 2012), there is a still a widespread perception that livestock grazing is inherently detrimental to savannah landscapes. Arguably, this perception emanates from ideas such as the "tragedy of the commons" (Harding 1968) which holds that individuals acting in their own self-interest will tend to overuse a common resource, thereby depleting the resource and consequently hurting all the users.

In East Africa, the "tragedy of the commons" paradigm has provided a strong rationale for government efforts to protect natural habitats and "wilderness" from anthropogenic disturbances. Since the 1940s, former grazing lands and drought refuges have been given protected area status such as national parks, thus excluding any use by livestock within them (Neumann 1998; Brockington 2005). In the post-colonial era, development efforts in pastoral areas focused on the establishment of group ranches. These group ranches, which confine pastoralists to particular blocks of land, do not provide adequate gazing resources, especially in drought periods.

Conservationists working in East Africa's rangelands, perceive livestock as a major threat to charismatic megafauna, especially elephants, in major protected areas including Tsavo in Kenya and Serengeti in Tanzania. Also, although there is inadequate evidence of desertification in the East African region, the real or perceived livestock induced vegetation loss has caused fears among environmentalists about potential desertification in northern parts of Kenya and Somalia (UNEP 1991; Eriksen 2001).

Also popular, is the equilibrium view of East African pastoral systems and the widely held perception that these stable systems are under threat from overstocking and other human

activities which destabilize the equilibrium. Ellis and Swift (1988**)** examine this view in detail. Those who support this view recommend the reduction of livestock numbers and other measures such as eliminating fires from savannah ecosystems in order to return them to stable states (Walter 1971; Johnson and Tothill 1985).

However, the tragedy of the commons and equilibrium theories have been discredited. Scholars have pointed out that Harding was confusing commons with a "no-man's land" with no boundaries and rules for access. In a strong critique of the tragedy of the commons theory, Ostrom (1990) has argued that local people often come up with solutions to the commons problems, but when common resources are taken over by extra local forces such as the state, those solutions do not work (Ostrom 1990). Non-equilibrium theories have replaced equilibrium views of savannah ecosystems. In non-equilibrium paradigms, change and not stability is the norm in savannah ecosystems, and disturbances including human induced fires and livestock grazing have played an important role in the evolution of savannahs (Dublin 1995). Other studies have rejected simplistic assumptions about the negative impacts of pastoralism on savannah landscapes and suggested that herding is often compatible with wildlife. For example, Reid (2002) has shown that livestock grazing enriches East African savannah landscapes and is important for biodiversity. Other studies have found that grazing reduces fire fuel loads and therefore lowers fire frequency and intensity (Roquest et al. 2001; Ward 2005). Augustine (2003) found that livestock grazing promotes the redistribution of nitrogen and phosphorous in soils and plants. These studies suggest that livestock can have positive impacts on savannah ecosystems.

In Kenya, conflicts between pastoralists and conservation authorities have received significant attention from scholars (Norton-Griffiths 2000; Oketch 2010; Waweru and Oleleboo 2013). However, the bulk of research conducted in Kenya on these conflicts, has given little

attention to the role played by African elephants in shaping these conflicts. On the one hand, elephants are the most important tourist attraction and therefore the center of conservation efforts in Kenya. On the other hand, elephants pose a threat to pastoral peoples' lives and livelihoods. The conflict between tourism and pastoralism is exemplified in the Tsavo landscape in southern Kenya. Tsavo hosts the largest concentration of elephants in East Africa and is key to Kenya's tourism industry. Although livestock grazing is outlawed in all national parks in Kenya, local people occasionally graze their livestock illegally in Tsavo parks (Tsavo West, Tsavo East and Chyulu Hills National Parks), thus causing tension between local pastoralists and the Kenya Wildlife Service (KWS). KWS is the state agency responsible for managing national parks in Kenya.

Grazing in national parks by the local Maasai has been a controversial issue since the establishment of the Tsavo West National Park in 1948. Past and current government officials have blamed the Maasai herds for competing with wildlife for grazing resources in the national park especially during the dry seasons. The District Commissioner in Kajiado lamented in a 1964 report:

> Furthermore, when the Maasai were desperate for grazing in the drought of 1961, they claimed that most of the western section of the park (Tsavo West) was their traditional dry-weather grazing, and in spite of strong protests by the trustees they invaded many thousands of acres and plundered most of the grazing which was equally necessary for wild animals. May 1964. KL/1/32.

Recently, the KWS blamed the decline of hippopotamus in Mzima springs on livestock grazing in Tsavo West National Park. The Chairman of KWS, Dr. Richard Leakey, said in an interview;

> The domestic stock took most of the grass and pushed the wildlife further and further into the heart of the park and by the time the hippos get out to feed, they find the grass is gone. If we had kept cattle out of the park, which we must do if we want a national park,

> that would not have happened (January 2016 interview with a Kenyan television channel, Nation TV).

Each year, KWS spends a significant amount of resources to apprehend herders and drive out livestock that encroaches into the parks. However, elephants continue to use lands adjacent to national parks for water, browse and dispersal to other areas. This generates conflict between KWS and local people and also undermines opportunities for collaboration.

This study focused on the Maasai people who are residents in three group ranches located in the region west of Tsavo West and Chyulu Hills National Parks. This chapter will refer to the research subjects as the Maasai of Tsavo. The Maasai living in the three ranches are a microcosm of the larger Maasai cultural group that forms about 2.5% of Kenya's total population of 44 million people.

The study was designed to achieve two research objectives. First, it sought to better understand the perspectives of the Maasai of Tsavo on the role and impact of livestock on local livelihoods. Secondly, this research explored how local knowledge of livestock management can contribute to a collaborative grazing management plan that solves grazing conflicts between the Maasai and KWS. This study hypothesizes that solving grazing conflicts in the study area will promote elephant conservation. The study employed an applied research design that supports Adaptive Collaborative Management (ACM) and aims at creating knowledge sharing opportunities between local people and park authorities regarding livestock grazing and elephant conservation. The ACM approach is based on the premise that there are no strict instructions regarding natural resource management. ACM assumes that knowledge about how socio-ecological systems work is never adequate and recognizes the need for adaptive learning

processes that accommodate local knowledge in conservation decision making (Olsson and Folke 2001; Sluyter 2002).

Study Site and Methods

Study area: Geographic setting

This study was conducted in Maasai villages adjacent to the western boundaries of Tsavo West National Park (TWNP) and Chyulu Hills National Park (CHNP), in southern Kenya (Figure 17).

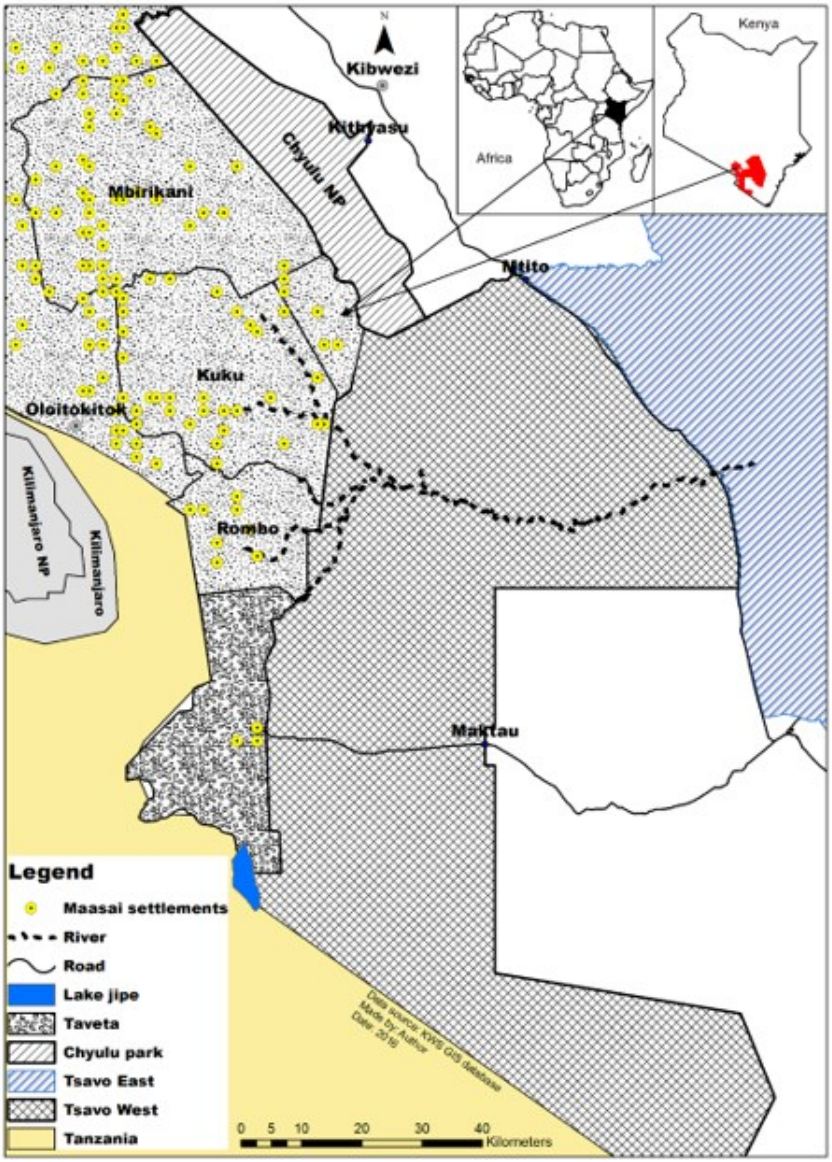

Figure 17. Location of study villages in Mbirikani, Kuku, and Rombo group ranches in southern Kenya.

The study villages are within the Mbirikani, Kuku and Rombo group ranches and fall within a 20 km buffer zone from the CHNP and TWNP boundaries. This area is approximately 5,000 km^2 and falls within Kajiado county in Kenya. The general topography of the area is low and flat, but the north of the study area lies on the western slopes of Chyulu Hills and is hilly. The study area is arid to semi-arid. The rainfall pattern is bimodal: about 200-600 mm of precipitation fall during the long rains (March-May), and 300-700 mm during the short rains (November and December). Higher elevations in areas near the Chyulu Hills, receive more rainfall and have cooler temperatures. Acacia-Commiphora savanna is the most dominant vegetation type in the study area. This Acacia-Commiphora savanna comprises varying densities of trees and shrubs, open grassland, woodlands, scrub, and thicket. Montane evergreen forests also occur on the spine of the Chyulu Hills.

The study area is 85-100% arid and semi-arid (ASAL) and about 40 % of resident population live below the poverty line-less than $ 2 a day (ROK 2013). Droughts are recurrent in this area. In the past, droughts have occurred in 1933-35, 1943-46, 1948-49, 1952-53, 1960-61, 1972-76, 1983-84, 1992, 2005-2006, and 2009-08. During these periods, range productivity was low and there was increased competition for water and pasture resources. Livestock mortality is also common during drought periods (Nkendianye et al. 2011). Despite the arid conditions, the area has a unique grassland landscape that supports a variety of wildlife species including the iconic "big five": The African elephant *(Loxodonta africana*), the African buffalo *(Syncerus caffer*), the African lion (*Panthera leo)*, the African leopard (*Panthera pardus pardus*), and the black rhinocerous (Diceros bicornis). People, wildlife, and livestock (Figure 18) compete for scarce pastures and water in the semi-arid area sometimes resulting to conflicts.

Figure 18. A Maasai herder in Mbirikani group ranch drives his herd home after a day in the pastures. Photo taken on July 17, 2015.

The three group ranches in the study area are also a wet season dispersal area for wildlife in Amboseli National Park, West of CHNP, and other parks in Tsavo. As a critical habitat for endangered plant and animal species, the area receives immense attention globally for tourism, scientific and conservation reasons. Two high-end lodges among other tourist facilities are found on the western slopes of the Chyulu Hills. These facilities create jobs for local people and generate revenues, some of which are reinvested in conservation and community projects. There is also a predator compensation scheme in the area funded by Western donors which pays for livestock killed by wildlife, especially lions.

People and land resources

The study area is traditional land of the Maasai who lived a transhumant lifestyle before the advent of British colonialism in Kenya in the 1890s. Traditionally, the Maasai relied solely on a subsistence economy of keeping livestock. Livestock was owned by individual families and livestock products including meat, milk and blood were the staple foods of the Maasai. Other than being a source of food, livestock also played an important social and political role among the Maasai. Even today, livestock is an important measure of wealth and social status and also a medium of exchange. For example, cows may be used to pay dowry to a bride's family. Individual, family or clan ties are strengthened by using livestock as gifts. For many generations, land tenure in the study area was communal; the Maasai had institutions and practices that allowed for extensive livestock grazing. Seasonal migration with livestock ensured their survival even during extreme dry seasons. Recently, a few Maasai residents have begun engaging in small scale farming in the group ranches. However, the bulk of food consumed in the study villages (maize, rice, cabbage) is grown by non-Maasai immigrants from other parts of Kenya who cultivate fertile areas around Loitoktok town (Ntiati 2002). The Maasai living in the study area are also gradually venturing into small scale businesses such as shops and restaurants, selling milk locally and also selling beads, masks and carvings to tourists.

The traditional grazing range for the Maasai has, however, shrunk due to the introduction of new land uses in their traditional lands (Bekure and de Leeuw 1991). Wildlife conservation as a land use reduced grazing areas for the Maasai. Tsavo West National Park was established in 1948 under British colonial rule. Chyulu Hills National Park was gazetted in 1983, two decades after Kenya attained independence. The boundaries for these parks were drawn without adequate

consideration of Maasai movements during the dry seasons. The boundaries also blocked routes used by the Maasai to trade with their agro-pastoral eastern neighbors, the Kamba.

In the 1970's, the Kenyan government began a programme in pastoral rangelands to replace communal ownership of land with private land ownership in the form of individual and group ranches (Ntiati 2002; Campbell et al. 2003). Group ranches were introduced in the study area to sedentarize the Maasai and modernize livestock production. Mbirikani, Rombo and Kuku group ranches were established in 1981, 1973 and 1975, respectively, and currently have an estimated 87,000 head of cattle (Figure 19). There are other Maasai group ranches, which fall outside the study area. Group ranches are managed by a committee elected by group ranch members. Due to modernization pressures, the group ranches are facing the threat of subdivision. Some local Maasai, especially young men, are frustrated with the way group ranches are run and prefer to have their own parcels of land rather than a share of family land.

Group Ranch	Area in Sq km	Human population	Persons per Sq km	Heads of cattle (2016)	Date of establishment
Mbirikani	1228	10225	8.32	25,000	1981
Kuku A and B	1446	11200	7.74	17,000	1975
Rombo	526	21510	41.12	45,000	1973
Total	3200	42935		87,000	

Human and livestock population data extracted from reports by Kenya National Bureau of Statistics, and Kajiado County Integrated Development plan, 2013-2017

Figure 19. Showing human and livestock population in Mbirikani, Kuku, and Rombo group ranches.

For cultural reasons, gender inequality in the study area is still prevalent. During this study, we found that the level of illiteracy among middle aged women was higher than that of

men. Property ownership, especially cattle was for the most part vested in men who head the majority of households in the area.

Methods

The purpose of this study was to explore how local views about livestock grazing among the Maasai living adjacent to TWNP and CHNP can contribute to an adaptive management plan with the KWS. To achieve this objective, field research was conducted in different periods: June to August 2012; June to August 2015 and December 2015. The research covered 6 villages stratified north to south in Mbirikani, Kuku and Rombo group ranches occurring within a 20 km buffer zone from CHNP and TWNP. During the research periods, twenty-four in depth interviews were conducted with key informants: two men, and two women from each of the 6 villages. I also held one focus group meeting in each of the six villages. Each focus group meeting comprised of five men, and five women (n = 10 for each group, total = 60 participants). Local administrators (chiefs and assistant chiefs) helped to select participants from their villages. Participants in interviews and focus group meetings were asked for voluntary consent; they were also assured that any information they shared would not identify them as individuals or their villages. Interviews with key informants involved four key research questions (Figure 20) that focused on their perspectives on livestock grazing and land conditions in their villages.

Focus group meetings explored how the knowledge shared by the key informants might contribute to an adaptive co-management plan with the KWS with respect to livestock grazing. All the meetings started by introducing the concept of Adaptive Collaborative Management (ACM). During focus group meetings, some of the data gathered during interviews with key informants was shared and discussed. Two open ended questions guided focus group meetings: 1., What information on livestock grazing do you want to share with KWS? 2., How will an

adaptive co-management plan with KWS resolve grazing conflicts and promote elephant conservation? I moderated the meetings, which took about three hours on average. I also gave equal opportunities for participation by both genders and representatives across the three ranches. Discussions were held in Swahili and local research assistants helped translate from Maasai to Swahili and vice versa where necessary. Formal interviews were also held with four senior park officials in TWNP and CHNP. The officials are employees of the KWS who are conversant with park laws and regulations.

Key research question	Type of data collected	Tool used
What is the importance of livestock in your household?	Reasons for owning livestock and the economic and cultural uses of livestock.	Interviews with key informants
Where do you graze your animals during the wet and dry seasons?	Areas where local residents take their animals to graze according to seasons.	Interviews with key informants
What grazing concerns/information would you like KWS to know?	Issues about livestock grazing	Focus group discussion with Maasai participants.
What are your views about an ACM KWS that resolves grazing conflicts and promotes elephant conservation?	Views on how local people and KWS can collaborate to resolve grazing conflicts	Focus group discussion with Maasai participants.

Figure 20. Key research questions and type of data collected.

Results

Interviews with key informants

Interviews with key informants who are village residents in the Mbirikani, Kuku, and Rombo group ranches revealed a strong attachment to their landscape and cattle. Cattle are an important element in the culture of the Maasai, and the "Cattle complex in East Africa" described by Herskovits (1926) cannot be overemphasized among the people I interviewed. Eighteen out of the twenty-four key informants interviewed (75%) reported that they owned at

least ten heads of cattle. Key informants gave, seven key reasons why livestock ownership is important for their livelihoods (Figure 21).

Reasons for owning livestock	Men key informants (out of 12 men)	Women key informant (out of 12 women)
1. For food (milk and meat).	12	12
2. For income for other daily needs.	12	12
3. Cultural tradition (Maasai should own cattle).	12	8
4. Land conditions suitable for livestock rearing.	10	8
5. For marriage ceremonies (to pay for brides).	8	6
6. As a form of wealth, security/safety net).	7	4
7. For circumcision ceremonies (food, gifts).	6	5

Figure 21. Key reasons for owning livestock reported by Maasai informants and ranked by the total number of key informants (men and women) who mentioned each reason.

According to both men and women key informants, the most important reasons for owning livestock was food and nutrition (milk and meat) and a source of income for daily food needs. The majority of participants reported that income from livestock and livestock products, especially milk, is used to purchase other foods, mainly maize and beans. Income from livestock was also reported to serve for other non-food needs such as buying clothes, books and school fees for school children. Women participants highlighted the importance of livestock in providing income to meet emergency needs. Seven out of twelve women (58%) mentioned that they sell their goats to pay for health care when their children get sick. It was also clear from narratives that while men are ordinarily the owner of livestock in male headed households, women milk cows and have more control over the sale of milk. Cultural reasons for owning livestock were also reported by the majority of informants who said that owning cattle is a moral responsibility of the Maasai. Eleven out of all twelve men interviewed mentioned this reason as compared to eight out of all twelve women interviewed.

The arid and semi-arid conditions of the area that are more compatible with pastoralism than other land uses were also mentioned as a main reason residents own livestock. Participants

emphasized that livestock grazing is more sustainable than farming in the group ranches. Other reasons mentioned include the use of livestock as social security and ceremonies such as marriage and circumcision events. Perhaps due to cultural reasons, male interviewees gave more reasons than did women; men also seemed to have well-rehearsed talking points about the questions asked. Generally, key informants, both men and women had sufficient knowledge of local issues, and their insights helped the researcher shape the agenda of focus group discussions.

Local perspectives on grazing

I asked key informants about their activity schedules and seasonal calendars to show where they graze their animals at certain periods of the year (Figure 22). There was considerable consensus among different informants about grazing patterns in the landscape. Responses given by local pastoralists suggest that their livestock production system depends on herd mobility.

During the wet season, most of the livestock is grazed in the ranches. At the beginning of the dry season, livestock is moved to areas with higher herbaceous biomass. The areas most relied on during the dry seasons are the higher elevations on the slopes of the Chyulu Hills. The hills experience higher rainfall than do lower elevations in the group ranches where permanent settlements are located. It was clear from narratives by key informants that the Maasai perceive the green undulating Chyulu Hills as an area with high grass biomass and a grass bank for their livestock during the dry season. The hills are free of tsetse flies and are less prone to serious cattle diseases such as East Coast Fever. One male participant who was forceful and articulate said:

> The only place where grass does not get depleted is Chyulu Hills. We prefer grazing our animals in the hills from October to December, during this time the grass has a "high libido" effect on bulls. This causes intense mating between bulls and cows in the hills and this increases the chances of getting new born calves in the following wet season. Also,

due to higher levels of moisture in the hills, animals can survive for 12 days without being supplied with water.

Season	Areas commonly grazed	Explanation
Jan- April	Group ranches in study area, at the foot and western slopes of Chyulu Hills	This is the middle of the wet season and there is grass in the hilly areas of the ranches. If the rains are good, and there is enough grass in ranches, animals are moved to lowland pastures
May- June	Group ranches in the study area	This is the beginning of the dry season. Most livestock are in the ranches, when new calves are born
Jul –Sep	Ranches in the study area. Other neighbor ranches	This is during the dry season and pasture in ranches begin to decline Livestock is gradually moved to other group ranches around Amboseli National Park and later to CHNP and TWNP
Oct-Dec	CHNP, TWNP, ranches around Amboseli	The short rains begin, very little grass is available in ranches. The parks have nutritious grass that has a high libido effect on bulls, this increases mating

CHNP- Chyulu Hills National Park
TWNP- Tsavo West National Park

Figure 22. Common grazing locations through a calendar year in the study area.

Other than the Chyulu Hills, livestock is also taken to other lands including parts of Tsavo West National Park and Kiboko Range Research Station. The Maasai also move their livestock to other ranches adjacent to the Mbirikani, Kuku, and Rombo group ranches. Local narratives indicate that the Maasai would like to have access rights to pasture and water resources in protected lands which they referred to as former “Maasai grazing lands”. Interviews with local informants also revealed a culturally grounded understanding among the local people that, during dry seasons, livestock owners should be allowed access to other grazing lands in order to sustain their herds. A woman informant said: “We know that the park belongs to the

government and we are not allowed to graze in the parks but we request that when we exhaust grass in the ranches, the government should open up the park for the Maasai to graze.*"*

Local informants gave a nuanced explanation of the relationship between the Maasai, livestock and wildlife. Nineteen out of the twenty-four informants (79%) mentioned that since elephants and other wildlife graze on pasture in the Maasai owned ranches during the wet season, livestock should also be allowed into the parks during the dry season. It was clear that this mutual reciprocal right of use is a customary practice whereby the local Maasai allow user rights of their resources to those who also extend them the same rights. Furthermore, local ecological wisdom holds that while individuals own the livestock; the land, pasture and wildlife are the collective property of the community. One man who is also a local administrator argued:

> We the Maasai regard the animals including elephants, leopards and lions as part of our environment, these animals are our property. We have lived with these animals and we have protected them in so far as they do not threaten our lives and that of our livestock. If you look at the area between Tsavo and Amboseli, there are many animals outside the park sharing pasture with livestock. KWS should allow us to graze in the parks in the dry season when we exhaust grass in the ranches. If they don't care about our cows, why should we care about theirs? But if there are people with too many animals, they should only be allowed to bring a limited number of animals into the park.

Three Maasai informants also mentioned that livestock grazing was an important check on fires. They explained that grazing prevents the accumulation of dry grass and other fuel over large areas. They noted that high fuel loads in the Chyulu Hills often result in high intensity fires that negatively affect wildlife and vegetation.

Focus group meetings and ACM as a planning strategy

I used focus group meetings with Maasai village representatives and interviews with officials of the KWS to gather views on the possibility of employing the co-management approach to solve grazing conflicts in Tsavo. This research hypothesized that solving grazing

conflicts would ensure more cooperation in elephant conservation between the Maasai and the KWS. Two focus group meetings were held in each of the three group ranches. Each of the six meetings consisted of five men and five women local participants. The researcher moderated the discussions and ensured equal participation by both genders. The concept of ACM was introduced to the participants in Swahili, a language that most participants understood.

The researcher prepared the following script in Swahili language and read it to introduce the concept of ACM in all focus group meetings with the Maasai: *Ningetaka kumweleza mbinu mpya ya usimamizi wa maliasili kama sehemu za malisho, wanyama wa pori, miti na mazingira kwa ujumla. Hii mbinu inaitwa "Adaptive Collaborative Management" ama 'Kusimamia kwa kushirikiana' Hii njia mpya inahusu washika dau mbali kuketi chini na kuzungumza na kugawana majukumu na faida zinazotokana na usimamizi wa rasilimali hizo. Mbinu hii inaweza kutumiwa kusuluhisha mizozo baina yenu na KWS kuhusu ulishaji mifugo ndani ya mbuga za wanyama*. (I would like to introduce to you a new approach to management of natural resources such as grazing lands, wildlife, vegetation and the environment in general. This new approach is called "Adaptive Collaborative Management" It involves the sharing of rights and responsibilities in the management of resources among a group of stakeholders who have a stake in those resources. This approach can be used to resolve conflicts between you and the KWS over grazing in the national parks).

Participants were given an opportunity to ask questions in order to clarify the concept of ACM. At first, participants asked questions revolving around the relationship between local people and KWS. For example, one participant wondered why KWS responded quickly when a wild animal is killed by poachers or dies of other means while showing a slow response when a villager is attacked by wildlife. I explained that ACM has the potential to address such questions

because it supports dialogue and information sharing among stakeholders. I also further explained the meaning and goals of ACM.

To set the tone for the discussion, participants in focus group meetings were also asked to rank the major reasons for livestock ownership given by key informants. All the seven reasons were read and displayed on a manila paper. Participants were given twenty minutes to discuss amongst themselves and rank the seven reasons by consensus. The most important reason was assigned rank one while the least important was assigned rank seven (Figure 23).

Village focus group	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7
# 1	A	B	D	C	E	G	F
# 2	A	B	C	D	F	E	G
# 3	A	B	D	F	C	E	G
# 4	A	B	D	C	E	F	G
# 5	A	B	F	C	D	E	G
# 6	A	B	C	F	E	G	D

(A) For food (milk and meat) (B) Source of income for other daily needs. (C) Cultural tradition (Maasai should own cattle) (D) Land conditions suitable for livestock rearing (E) For marriage ceremonies (to pay for brides) (F) As a form of wealth, security/safety net (G) For circumcision ceremonies (food, gifts)

Figure 23. Reasons A-G for owning livestock as ranked by Maasai participants in 6 village focus group meetings. Rank 1 is assigned the most important reason while rank 7 is assigned the least important reason.

For the most part, the views of focus group participants on the role of livestock corroborated those of key informants. Like key informants, participants in focus groups selected food and source of income as the most important reasons for owning livestock. Their ranking also indicated a strong perception that livestock rearing provides employment opportunities in arid and semi-arid environments where other land uses such as agriculture would not be viable. Participants in the focus group meetings stressed that local people are key stakeholders and custodians of wildlife. They emphasized the distinction between the pastoral culture of the Maasai and neighboring cultures that practice cultivation and traditionally hunted game.

It was clear from the discussions that although the Maasai are beginning to venture into small scale agriculture, their traditions still regard the opening up of soil for cultivation as sacrilege. They perceive pastoralism as a more reliable source of income than farming. One elderly man in the second focus group meeting said:

> The Maasai are only interested in grass for their cattle, just grass. We are not cultivators like our Kamba and Taveta neighbors. Cultivation diminishes grass and makes the land look empty when trees are cut. Those who cultivate harvest only once or twice a year but the Maasai have animals throughout the year and this provides us with a regular source of income from sales. We are surprised that when Maasai herders are caught grazing in the national parks, they are made to pay fines like someone who has killed wildlife.

What information on livestock grazing do you want to share with KWS officials*?*

Participants were then asked to mention the issues they would like to share with KWS with regard to the issue of grazing both in the ranches and national parks. I outlined to each group some of the reasons KWS does not allow livestock grazing in the national parks. Some of the reasons I mentioned included: competition for grass and browse between wildlife and livestock, that livestock is a cause of park degradation, and that herders have sometimes colluded with elephant poachers (Figure 24).

Participants in focus groups acknowledged the damage a large number of livestock can have on local vegetation and soils. There was general agreement in all the meetings that cattle have contributed to degradation in some parts of group ranches and the TWNP. But most participants expressed the view that the majority of local Maasai own livestock only for subsistence and have grazed responsibly. Participants blamed "immigrant livestock" for the influx of livestock in TWNP. They alleged that livestock from other parts of the country are brought to Tsavo with the full knowledge and cooperation of government officials.

Impacts of grazing	Maasai	KWS officials
Competition for resources	Our animals graze without depleting forage for wild animals.	Parks are for wild animals. Livestock reduces pasture available for wildlife.
Woody plants	Eliminates invasive species that compete with native grass species.	Livestock tramples on grass and woody plants and can make land bare.
Fires	Reduces fire occurrence by reducing fuel loads.	During the dry season, herders lights fires in the park to promote new shoots for their animals.
Wildlife	Opens up the landscape, small herbivores can easily see their predators and vice versa.	Livestock compete with wild animals for grass.
Park security	Our herders look out for poachers and report suspicious activity to KWS officials.	Some Maasai herders are used as local guides by poachers who kill elephants for ivory in parks.
Disease interaction	We inoculate our livestock to reduce disease attacks.	Livestock can transmit diseases such as east cost fever to wildlife.

Figure 24. Contrasting Maasai and KWS views about livestock grazing in Tsavo.

The Maasai explained that Taita Taveta County where most of TWNP lie was declared a livestock disease free zone. This has encouraged livestock owners from arid northern parts of Kenya, especially the Somali, to bring their animals to community ranches within Taita Taveta County. When grazing pastures diminishes in the ranches that neighbor the parks in Tsavo, the "immigrant livestock" is grazed illegally in national parks. Attempts by the Kenya Wildlife Service to drive out domestic animals from national parks are sometimes frustrated by local and national politics. Some participants alleged that senior government officials with high level political connections owned some of the "immigrant livestock."

Participants conceded that Maasai herders were responsible for some of the dry season fires that occurs in parts of Chyulu Hills which often spread into CHNP. They however, suggested that fires were necessary for killing ticks and other disease-causing pests. They added that fires promoted faster grass regeneration and ensured palatable grass for livestock and wildlife. When asked about the possible threat of disease transmission from livestock to wildlife,

some informants reported that the Maasai inoculate their animals against infectious diseases. They reported that cows are regularly dipped in acaricides to control ticks. Livestock grazing was also reported to reduce invasive species in the landscape and also prevent encroachment of bush.

During the meetings, there were disagreements among participants in focus group meetings on issues of grazing and access to local resources. Some participants felt that the Maasai do not have to graze in the parks if they had a good plan to utilize pasture in the group ranches. This group of participants seemed to blame group ranch management committees for the mismanagement of pasture in the group ranches. They argued that local disagreements and inequality in livestock ownership were the causes of overgrazing and unequal access to pasture in the ranches. They stated that local wealthy livestock owners kept large herds of livestock and therefore took more than their fair share of group ranch resources. Such sentiments among "poorer" livestock owners have motivated calls for group ranch subdivision. One youthful Maasai said:

> If we utilize our pasture well in the ranches, we do not have to go to the park. But the leadership of the ranches have failed to come up with a good grazing management plan that ensures that pasture do not get depleted. Those who own big herds take all the grass. I support calls to subdivide the group ranches because we don't get any benefit from them. If the land is subdivided and I get my share, I will lease it to wealthy livestock owners who need it to graze their animals and I will make some income. Those who own many cattle such as 300 heads, are the only ones who benefit from group ranches.

Participants also pointed out that TWNP and CHNP block traditional and historic routes of trade and transportation. Although a right of way has been granted through TWNP by KWS, participants said the route is not convenient for most local people. It was also revealed in the focus group meetings that despite a right of way across CHNP having been granted to the Maasai

to take their livestock to markets in Kibwezi area by a former district commissioner, sometimes the Maasai are refused permission to take their animals through the park by KWS officials.

Focus group discussions also revealed that the relationship between local people and the KWS in relation to grazing is not always confrontational. Some participants explained that, at times there is "cooperation" between KWS rangers and local Maasai, where herders are allowed to graze in the park after giving "gifts" to KWS rangers**.** Most participants were hesitant to admit that such gifts offered to KWS rangers were a form of bribery. They insisted that park officials are their neighbors and as good neighbors they were expected to show mutual support and fellowship with the Maasai. Participants also reported that the majority of herders who take their animals in the park escape arrest from KWS rangers by taking vantage positions where they spot rangers from a distance and hide in the bush. It was also reported that young school-age boys are sent out to graze cattle in the park because KWS rangers are hesitant to arrest minors. And in any case, if the minors get arrested by KWS rangers, local police stations lack special facilities to handle underage offenders and they end up being released at the police station.

How will an ACM plan with KWS resolve conflicts and promote elephant conservation?

Participants were asked about the kind of ACM plan they would like to have with KWS that resolves grazing conflicts as a strategy for promoting elephant conservation. The issue of elephant poaching was mentioned by a majority of participants during the focus group meetings. Most participants underscored the role that the Maasai have played in protecting elephants in the ranches. They blamed elephant poaching on non-Maasai immigrants, especially from Tanzania, who recruit very poor Maasai (*dorobo*) as accomplices in poaching in ranches and parks. Participants also insisted that elephant poaching is more common in the parks than in Maasai group ranches, and attributed this to their vigilance in the group ranches. There was unanimous

agreement in all focus group meetings that community projects have boosted local people's support for elephant conservation. Members of Mbirikani and Kuku group ranches have collaborated with investors who have set up luxury tented cottages and suites in their ranches. Part of the tourism revenue generated from these facilities directly supports community projects. One of the successful projects is the game scout's project whereby local people are recruited to provide security for wildlife. Such benefits from wildlife have enhanced local support for conservation. One participant said:

> The Maasai are helping the government to protect elephants. The eyes of KWS rangers cannot be everywhere because this area is vast and they are few, but we are many and we see more things than them. We have enjoyed some benefits of conservation, we now have schools and hospitals in this area which were built using money from wildlife tourism. We would like KWS to engage us more in protecting elephants.

Participants insisted that their ranches are also wet season wildlife dispersal corridors and that elephants need the ranches for pasture and water. They pointed out that the survival of elephants will depend on the willingness of the Maasai to tolerate elephants in their villages. Some participants said that KWS should be mindful of the losses local people incur when predators kill their livestock or when elephants damage crops. The majority of participants felt that an adaptive co-management plan with KWS should recognize the role local people play in wildlife conservation. One participant said:

> We have been very active in protecting wildlife especially elephants and lions and we want to collaborate with KWS. They should listen to us when we tell them that livestock and wildlife can coexist. Our collaboration will work if they allow us some areas to graze our livestock.

Participants suggested that in order to reduce grazing conflicts between them and KWS several steps were necessary. They preferred adaptive steps that are sensitive to their grazing concerns. Local participants unanimously agreed on seven steps (Figure 25) that they thought

would support an ACM plan with the KWS. The seven steps in Figure 25, are in the context of the ACM approach, experiments that will be adjusted to new realities in future.

1. KWS and other government agencies to ensure that no 'immigrant livestock' is allowed in the Tsavo area.
2. Residents of the study area who own large numbers of livestock to voluntarily reduce their herds.
3. KWS to zone parts of TWNP and CHNP that have low tourism potential and designate these areas for livestock grazing during the dry season.
4. KWS and group ranch officials to establish joint grazing committees in each ranch comprising of KWS officials and local elders.
5. Introduce a grazing fee per head of cattle grazing in the park to be paid to KWS. This grazing fee to be used for catering administrative costs of grazing committees such as paying allowances to committee members.
6. KWS to develop training programs for local people to build capacity for participation in grazing committees.
7. Hold regular meetings between KWS officials and the Maasai.

Figure 25. Steps to an Adaptive Collaborative Management plan between the Maasai and the KWS as agreed by focus group participants.

If the steps are implemented, new experiences will arise that might require new decisions or steps. During the discussions, participants agreed that the steps are not cast in stone; they will need continual feedback and evaluation. For instance, getting rid of "immigrant livestock" in Tsavo might encourage local people to increase their livestock herds. This might lead to the unintended consequence of more human-elephant conflicts. The steps outlined are therefore just the beginning of a learning process, all the feedback generated during their implementation will be used to improve future actions. The steps create new institutions; joint grazing management committees comprising of KWS and group ranch officials. This is an important adaptive tool for monitoring changes, proposing new actions and solving disputes that may arise.

Unlike the current practice where KWS uses its legal powers to enforce rules with regard to grazing, with little regard to the views of the Maasai, the ACM plan depends on the good will of the Maasai. In the spirit of ACM, the steps will be continuously validated and revalidated by

the Maasai and KWS in order to produce the best outcomes acceptable to both parties. This will require negotiation and constant engagement between the Maasai and KWS. These steps towards an ACM plan are more likely to generate better outcomes than current practices which are hampered by confrontational power relations between KWS and the Maasai.

Village representatives were optimistic that adaptive plans with KWS would promote cooperation in elephant conservation. They also pointed out that such plans should only involve registered members of the three group ranches who are local residents. Participants were confident that an adaptive plan that focuses on livestock grazing would help solve the problem of "immigrant" livestock since local communities would ensure that livestock from other parts of the country were not allowed in the parks.

However, local views about co-management with KWS varied across villages and group ranches and among individuals. In Mbirikani and Kuku group ranches where there are active conservation programs driven by hotel and lodge operators, village representatives were more familiar with co-management ideas due to community based conservation programs in the area spearheaded by powerful conservation based non-governmental organizations such as the Big Life Foundation. Village representatives from the Rombo group ranch, where such programs were not active, seemed skeptical about whether KWS would agree to discuss grazing issues with the Maasai.

Interview with KWS officials on an ACM plan with the Maasai.

Three KWS officials working in TWNP and CHNP were interviewed separately. The officials were in agreement that the Maasai are efficient livestock producers and are good protectors of their land. Two out of the three officials interviewed supported the proposal that the

Maasai can be allowed to graze in the national park during the dry season but also added that such a move might invite the incursion of livestock from other parts of Kenya. The officials were in agreement that an ACM plan with the Maasai would work best if the government first solved the problem of "immigrant livestock." One of the KWS officials added that, there was a provision in Kenya's wildlife law that allows local communities to graze in the park in drought conditions. Section 102, subsection 4 of The Wildlife Conservation and Management Act, 2013 states that: "The Cabinet Secretary shall make guidelines in consultation with the Service with respect to accessing national parks for purposes of grazing and watering livestock in times of drought and other natural disasters."

KWS officials explained that this legal provision has not been implemented because the number of livestock that entered the park illegally already exceed the "carrying capacity" of the parks. Most of these livestock is "immigrant" and is not owned by the local people. "Even if the Cabinet Secretary gave such a directive, it would be difficult to enforce", one KWS official concluded. The comments by KWS officials point to the conflicting views between local people and state resource agents about grazing in Tsavo. Their comments also indicated the willingness for dialogue and information sharing between the two parties.

Discussion

Past conservation and development policies affecting East African pastoral rangelands were imposed from above (Schroeder 1999). Very little or no effort was made to include the views of pastoralists in policy making and planning processes (Lamprey 1983; Lindsay 1987; Boyd et al. 1999). For the most part, policies implemented in pastoral rangelands resulted in the disruption of access to seasonal water and pasture resources. This disruption is the genesis of contemporary conflicts between local pastoralists and conservation authorities. Despite the

overwhelming evidence that the root cause of these conflicts is failure by planners to acknowledge features that are inherent in pastoral societies, East African governments, development experts, and conservationists continue to blame pastoralists for being ignorant, primitive and too stubborn to change their ways of life.

Pastoralists have lived with wildlife in savannah landscapes of East Africa for several millennia. This mutual coexistence had ecological benefits for people, livestock and wildlife. National park regulations in East Africa have outlawed livestock grazing within park boundaries. However, wildlife, especially elephants, often stray out of parks, sometimes posing a threat to livestock, crops and human life. As a result, pastoralists have perceived elephants as having a political advantage over humans, and have sometimes killed them in retaliation when elephants kill people or damage property (Norton-Griffiths 2000).

The narratives of the Maasai of Tsavo about the role of livestock grazing in their landscape resonate with views of other pastoralists across the world who give their own subsistence top priority. Just like other pastoralist in East Africa (McCabe 1990; Halderman 2013), the Maasai of Tsavo believe that wildlife and livestock can share grazing resources and co-exist with minimal conflict. Narratives from participants in this study suggest that cattle and elephants are at the heart of Maasai culture. Among the Maasai, livestock is historically a source of nourishment and currently a source of income. Local narratives indicate that traditionally, elephants were valued for customary reasons and were never used for economic reasons. Killing of elephants was a taboo in Maasai culture. Neighboring tribes who hunted and consumed elephant meat were seen as dirty and "uncivilized." This research supports other findings where pastoralists tolerate wildlife in their lands as a traditional cultural obligation. A good example is research done among the Samburu pastoralists of Kenya (Kuriyan 2002). It was clear during this

research that although KWS officials emphasized the importance of elephants for tourism**,** local narratives were more focused on the role of elephants in cultural and natural heritage**.**

The study also revealed differences in perceptions of corruption between KWS officials and the Maasai. Senior KWS officials interviewed in this study stated categorically that it is a malpractice for any KWS officer to accept gifts in exchange for allowing livestock access in the park. However, the Maasai do not perceive KWS rangers who accept their "gifts" in exchange for livestock access to the park as corrupt. Despite their awareness of park regulations, the Maasai perceive such rangers as good neighbors who embrace the need for cooperation and mutual aid. This finding about "mutuality" in peasant societies echoes other political ecology research such as Neumann's work around Arusha National Park in Tanzania (Neumann 1998). Paying small bribes to rangers by the Maasai can be understood within theories of "village moral economy" and "every day forms of peasant resistance" elaborated by Scott (Scott 1976; Scott 1985). The Maasai resist park policies that threaten their livelihoods by grazing illegally in the parks.

Balancing KWS and Maasai interests through Adaptive Collaborative Management

The shift from equilibrium to non-equilibrium views of social ecological systems provided support for management approaches that embrace more adaptive and collaborative forms of natural resource management (Mclain and Lee 1996; Berkes and Folke 1998; Sluyter 2002; Holling et al. 2002). One such approach that has emerged in natural resource management is Adaptive Collaborative Management (ACM). Although there is no single universally accepted definition of ACM, it emerged from two concepts: co-management and adaptive management. Co-management emphasizes that stakeholders who have a claim to a certain natural resource should share rights and responsibilities of managing such a resource (Colfer 2005). ACM also

recognizes that human knowledge is imperfect and incomplete because the world keep changing and presenting new surprises. Some of the recent changes affecting natural resource management include; rapidly changing human population, land use and climatic patterns, new resource conservation laws, etc. Therefore, in ACM, policy choices are treated as experiments which can succeed or fail. When policies fail, policy makers learn from past experiences and adjust management actions in a continual cycle of action, learning and adjusting policies (Armitage et al. 2008b). ACM is now widely recognized as a tool that can be applied to solve complex natural resource conservation problems.

ACM supports the shift from the "fences and fines" approach to people-focused approaches in natural resource management (Holmes 2003). It emphasizes not just the co-operation of various stakeholders but also their contribution of knowledge (Fisher 2001). Focus group discussions held in this study show that the Maasai are willing to share their knowledge about elephants and livestock grazing with the KWS. It is clear that the Maasai would support opportunities to work with the KWS to resolve grazing conflicts through an agreed ACM plan. The seven adaptive steps suggested by participants in focus group meetings (Box 1) represent important first steps towards an adaptive collaborative plan. However, since no human activities are allowed in national parks, according to current national park regulations in Kenya, the success of such a collaborative plan will require changes in policy. These policy changes should embrace local participation and integration of local knowledge in conservation planning. The new policies should be a break away from the prevailing "command and control" approaches that marginalize, ignore, and devalue Maasai knowledge and culture.

Maasai views on livestock and elephants support the "polycentric" governance, and "citizen science" approaches (Ostrom 2005; Ostrom 2010; Dickinson et al. 2010), whereby

governments at multiple scales interact with community organizations so that management decisions are made at local places by a diversity of actors. In some of the success stories where the polycentric approach has been applied in resource management, local groups have been given the independence to make and enforce rules within a specified geographical area (Singleton 1998; Acheson 2003). In these cases, community groups have worked together with governments to devise rules to manage natural resources on which they rely for livelihood. Such co-management systems enhance localized control over resources and may reduce resource conflicts. Our research shows that the Maasai prefer an adaptive co-management plan that gives birth to new local institutions to co-manage livestock and wildlife resources in the study area.

Conclusion

The goal of this study was to gain local perspectives on the role of livestock grazing in Maasai villages adjacent to CHNP and TWNP in Kenya and validate those perspectives towards an adaptive collaborative management plan between the Maasai and KWS that enhances the protection of elephants. Using a participatory learning approach, I investigated local knowledge on livestock grazing and sought to understand how this knowledge relates to the conservation of elephants. I also explored how resolving grazing conflicts between the Maasai and KWS can be an avenue for ensuring the future survival of elephant populations in Tsavo. Results shows that local people regard livestock as a critical component of their pastoral livelihoods, their views differs from official perceptions that portray livestock as a threat to key wild species, especially elephants.

According to the narratives of Maasai participants in this study, shared grazing between livestock and wildlife is mutually beneficial and also supports grassland ecosystems. Livestock grazing prevents the spread of invasive species and also maintains savannah grasslands by

curbing the encroachment of bush. Local knowledge of the Maasai dictates that the ability to move to other lands to exploit pastures and water resources is a key survival mechanism for livestock in times of droughts. Currently, most of the traditional grazing frontiers for the Maasai fall in national parks, where cattle grazing is officially prohibited. Participants in this study expressed the need to graze in national parks during times of severe droughts in order to protect their livelihoods. This might require the adjustment of national park policies. Although the extent of landscape transformations in Tsavo will not allow for a return to traditional grazing patterns, there is need for grazing plans in the region to build on traditional grazing practices.

This study validates Maasai knowledge and argues for its inclusion in adaptive co-management plans with the KWS. Clearly, the Maasai residents of Tsavo would like greater participation in conservation decision making. Successful biodiversity conservation in East Africa will depend on cooperation between state conservation officials, local farmers, and pastoralists to protect wild species. This chapter asserts that negotiations between the Maasai and KWS officials in Tsavo, Kenya to jointly forge new conservation plans will safeguard local livelihoods and promote the survival of elephants. As Daniel Wildcat argues in his book *Saving the Planet with Indigenous Knowledge,* indigenous traditions and world views must be acknowledged for us to be successful in saving the last great species and places on earth (Wildcat 2009). Resolving grazing conflicts between the Maasai of Tsavo and the KWS will promote the long term conservation of elephants in the Tsavo region.

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CHAPTER FIVE
SUMMARY AND SYNTHESIS

"The study of wildlife policy and indeed all conservation policy-thus requires an understanding of politics." Clark Gibson 1999: 164.

This study focused on the interactions between people and elephants in Tsavo, it had three aims. First, it sought to provide a critical analysis of the changing human-elephants relations within the context of landscape transformations since the mid-19th century in Tsavo, Kenya. Secondly, it aimed at understanding local views on elephants among communities living in Tsavo and establishing connections between local perceptions of elephants and the political-ecological histories of protected areas. Thirdly, this study also intended to explore how local knowledge of elephants and livelihoods can contribute to adaptive collaborative management plans between local people and the Kenya Wildlife Service, the state agency responsible for managing national parks in Kenya. In the study, two main themes are interwoven: the first is what I label the historical context theme; and the second is the elephant conservation and sustainable rural development theme. The two themes are connected but I will discuss them separately.

The Historical Context Theme

This study provides a historical context that challenges dominant accounts that blame local people for the decline of elephants in Tsavo. As this study indicates, pre-colonial residents of Tsavo had occupied it for hundreds of years and utilized the landscape for hunting, gathering and livestock grazing without significantly affecting elephant populations. Prior to park establishment, the Kamba, and the Waata kept elephant population in check through hunting elephants for food, ivory and other uses. A stable elephant population in turn ensured a healthy balance between grass and woody vegetation in the arid Tsavo landscape. The Maasai and the

Orma had a purely pastoral lifestyle that was compatible with wildlife. A combination of changes in the Tsavo landscape in the 20th century altered Tsavo's ecology, especially the spatial distribution and population of people and elephants. The disruption of traditional subsistence practices through hunting bans, and park formation changed the ecological balance between elephants, grass and woody plants in Tsavo. One of the major consequences of landscape changes in Tsavo evident in the 1960's and 1970's was high elephant density. The concentration of elephants in certain pockets of the Tsavo landscape, especially around artificial dams, caused a decline of woody vegetation and favored the expansion of grass.

New land uses in Tsavo such as sisal plantations and growing human settlements during the colonial period interfered with elephant movement and this also contributed to high elephant densities. A drought that occurred in Kenya in the years 1970-1973 revealed that elephants had become more vulnerable to climate disasters. This drought led to the death of about 5,000 elephants in the 1970s, a situation that sparked a scientific debate and media attention internationally (Laws 1970; Corfield 1973). The historical context provided by this study overturns the popular image of Tsavo from a "pristine wilderness" to a cultural artefact created by an entanglement of human and non-human actors, processes and agencies (Latour 2004; Hinchliffe 2007). Our analysis of archival records, published documents, and local narratives show that like most protected area landscapes, Tsavo is a social space, that is both highly valued and contested.

Landscape transformations that have taken place in Tsavo since the colonial period to the present are indeed human actions. These transformations are accompanied by shifts in human elephant relations. This study has shown that relations between people and elephants in Tsavo have generally deteriorated over time. Local people are increasingly viewing elephants as having

more political and land use advantage over people. This is evident in the many protests over human elephant conflicts that have taken place in Tsavo in the last few years. It is important to note that local people have not protested against elephant poaching or other wildlife crimes. A similar pattern has been described by Adam and McShane (1996) in their book, the *Myth of Wild Africa.* In this interesting book, they describe a scenario that unfolds in a village surrounding Vwaza Marsh game reserve in Malawi. When game scouts entered a village to pursue a poacher, the villagers did not cooperate with the law enforcers. Instead, an angry mob of villagers attacked the law enforcers by hurling stones at them causing two game scouts to drown in a river (Adam and McShane 1992: 134).

This and similar acts by villagers who live adjacent to protected areas across Africa reflect a pattern of defiance against state conservation programs. This defiance has roots in the colonial period in Africa: it began when colonial administrators disrupted existing African spatial practices to create landscapes for wildlife conservation and other uses. As Neumann (1998) has argued, displacing populations to create protected areas is essentially an act of reordering social space. Displaced communities living adjacent to protected areas resist these attempts by the state to obliterate their social spaces. In Tsavo, resistance has taken many forms such as trespass into protected areas, collecting wood in forest reserves, grazing livestock in national parks, and protests over human wildlife conflicts. Some of these illegal activities in Tsavo parks are carried out with widespread community sanction.

Due to the special protection they enjoy from the state, elephants in Tsavo are now the subject of "every day acts of resistance" (Scott 1985) by local people. Elephants have become a symbol of state monopoly over wildlife resources and a perceived source of threat to local livelihoods in Tsavo. Narratives, provided by participants in this study clearly indicate that local

people are concerned that state officials give more attention to elephant poaching than crop depredation and other threats by elephants. This was not an outcome that the pioneers of wildlife conservation in Kenya ever predicted. Tsavo will continue to present new challenges for wildlife managers, especially the KWS. Human population growth in Tsavo due to natural increase and immigration will lead to an increase in human-elephant conflicts.

Further transformation of Tsavo will increase human-elephant conflicts. At the present, Kenya is striving to modernize infrastructure, including roads and rail tracks. A modern rail track that passes through Tsavo is being constructed between Mombasa and Nairobi. This track, popularly known as the Standard Gauge Railway (SGR), will be elevated three to four meters above the ground. Although culverts and bridges (underpasses) have been incorporated in the SGR design, this project will interfere with traditional wildlife corridors in Tsavo. The SGR will also affect elephant movement especially between Tsavo West and Tsavo East National Parks due to the proposed electric fence along the track. The funneling effect of the fence will expose elephants and other wildlife to higher risk of poaching and over-predation.

Tsavo's colonial history has shaped its modern day conservation challenges. The division imposed between human and nature during the colonial period in Africa, was non-existent in the pre-colonial Tsavo landscape. As Latour (1993) has argued, since the human-nature boundary does not exist in reality, human societies inevitably create phenomena that are both social and cultural. He refers to this phenomena as quasi-objects, for example domesticated plants and entire landscapes (Sluyter 2002: 220). Tsavo is an example of a quasi-object created by purifying the nature and society poles. The equilibrium approach to wildlife management in Tsavo has precipitated the very problems it intended to solve. Removing human influences after the establishment of protected areas in the Tsavo landscape and the provision of water to elephants

and other wildlife has proved harmful to elephant populations, especially in the dry season (Owen-Smith and Chafota 2012).

Elephant Conservation and Sustainable Rural Development Theme

This study also explored the problem of reconciling elephant conservation and rural development. I will further address this theme by briefly discussing two approaches to community based natural resource management (CBNRM). These approaches are; Community Based Conservation (CBC) and Adaptive Collaborative Management (ACM). These two approaches recognize that local participation in natural resource management is key to biodiversity conservation. They are based on the assumption that purely "top-down" conservation approaches are anachronistic and there is need for new innovative approaches to prevent biodiversity loss, especially in rural developing contexts. The approaches embrace the idea that local people are capable of managing natural resources; if they are provided with incentives to do so.

One of the central arguments made for CBC is that reducing poverty among communities living with wildlife is necessary for wildlife conservation. CBC as a conservation approach therefore aims at shifting the locus of wildlife use from national to local by transferring wildlife user rights from national governments to community based organizations (CBO's) recognized by the government. These user rights are either consumptive in form of hunting and non-consumptive for example setting up ecotourism facilities which generate tourist dollars. A good example of such as project is CAMPFIRE in Zimbabwe. Despite the theoretical attractiveness of CBC, critiques have described it as more myth based than the "preservationist" view of Africa as a primeval wilderness challenged in the book *The Myth of Wild Africa by* Adams and Mcshane (1992). Oates (1999) has argued that policies that advocate greater community control assume

that rural people live in harmonious cooperative communities with long term ties to the land in which they occupy. The reality is that African rural societies, just like other societies elsewhere, are not socially homogenous. They are also differentiated by factors such as gender, level of income, and unequal access to land and other resources. As rural societies undergo change, they assume a hierarchical structure dominated by powerful individuals whose personal interests often override the community's interests (Neumann 2005).

The other people-focused approach is ACM. ACM is a natural resource management strategy based on two core principles. First, is the principle of sharing rights and responsibilities among different actors at various scales (e.g. forest user group in Tsavo and KWS officials) who have a stake in a given natural resource. The second principle is treating policy choices as experiments and recognizing that policies sometimes fail to achieve their stated objectives. In ACM, management of a resource becomes a continual cycle of action, learning among stakeholders and adjusting policies. ACM has been implemented in the management of fishery resources with a fair degree of success in enlisting local knowledge and support (Johnson et al 2001; Guerrero and Pinto 2001). However, the approach is so far more influential as an idea than for its real world application. The main cause of its implementation failure has been lack of leadership to carry out the hard task of turning the vision into reality (Walters 2007).

This study recognizes the limitations of the two approaches; however, it emphasizes that the success or failure of projects based on CBNRM depends on the spatio-historical and political-economic contexts in which they are implemented (Tsing et al. 2005). The two approaches can have a positive impact on social welfare and conservation goals, as the case of CAMPFIRE in Zimbabwe has shown. They provide an opportunity for negotiations over access to resources among rural communities and between communities and state resource agents. The

information shared by participants in this study reveal that the two approaches have potential to build positive relationships between local people and the state conservation officials. Improving relations between local people and the KWS in Tsavo will promote the protection of elephants and local livelihoods. It is clear that excluding local people from the management of resources reduces their incentives to conserve the same resources. I summarize this position by outlining four points based on the narratives gathered among local residents during field work in Tsavo.

1. Elephant ecology. By their nature, elephants are migratory and require large spaces that go beyond the boundaries of national parks. The traditional migratory routes of elephants in Tsavo are today blocked by dense human settlements. A majority of the people who live in these corridors are peasant farmers and pastoralists. As elephants roam the landscape, they come across crop farms and homes outside national park boundaries. People who suffer crop losses due to elephant damage, or their relative is killed by elephants, develop negative attitudes towards elephant conservation. These attitudes are compounded by the fact that local residents are not adequately involved in the management of wildlife resources. This study has made it clear that local communities believe wildlife officials value wildlife more than people. Regardless of the validity of this perception, it has made cooperation between the KWS and local people more difficult. In Tsavo, and other parts of Kenya, human-elephant conflict has increasingly become a hot political issue. In several cases, local politicians have mobilized local people to protests against the KWS further straining the relationship between local people and KWS officials.
2. Local Knowledge. Narratives shared by participants in this study indicate that some of the park rules implemented by the KWS do not “make sense” to the local people. This

study has shown that, although grazing in national parks is illegal, local knowledge of the Maasai dictates mobility with animals in neighboring lands in search of grazing pastures and water. This explains why the many extreme measures KWS has taken over the years to get rid of Maasai livestock in Tsavo parks have not succeeded. This study has made it clear that local meanings of conservation are in stark contrast to conservation policies implemented by the KWS. More meaningful collaboration between KWS and local communities have the potential of bridging this gap between scientific and local knowledge.

3. Poverty and aridity. About 60% of Tsavo's rural residents lack income and productive resources to ensure sustainable livelihoods. Due to Tsavo's semi-arid conditions, rain fed agriculture is only marginally successful. In recent years, frequent droughts have led to a serious decline in food and livestock production, forcing some residents to rely on relief food. Food security in the region is also threatened by crop depredation by wildlife, especially elephants. Climate related disasters are likely to intensify in Tsavo, thus making life more difficult for the most vulnerable groups. This will mean that people will continue to exploit local resources in order to survive for example natural vegetation. At present, Tsavo is a major source of charcoal used in Nairobi and Mombasa, Kenya's first and second largest cities respectively. Charcoal burning provides income to the unemployed people in Tsavo. Despite the severe measures taken by state authorities (KWS and KFS) to prevent the burning of charcoal in protected areas, local people continue to illegally extract woody plant resources to put food on the table. The people who engage in these activities understand that cutting vegetation is damaging to wildlife habitats. However, some have to choose between risking arrest and going to bed hungry.

This situation calls for a fundamental shift in conservation policy, such that benefits accrued from conservation trickle down to communities who live with wildlife. It was evident in this study that villages that had received benefits from wildlife had more positive attitudes towards elephants than those that had not.

4. Limited capacity of the KWS. Despite the good intentions of the KWS to protect wildlife from harm and also to minimize wildlife threats and damage to people and their property, the institution cannot do the job alone. Problems such as inadequate staffing and financial constraints arising from low budgetary allocations undermine the capacity of the organization to effectively carry out its mandate. Parks in Tsavo are so vast that adequate policing is almost impossible. Also, protecting migratory animals such as elephants is a daunting task. This means that local communities will have to get involved in wildlife protection and also the management of human-wildlife conflict. This can be done through collaborative plans such as community scouts programs where local youth are empowered to provide security to wildlife and also deal with problem animals.

Towards a More Afro-Centric Conservation Approach in Tsavo.

The population of African elephants have declined in the last decades. The most recent continent-wide survey of African savannah elephants shows that elephant populations are decreasing at a rate of 8% per year (Chase et al. 2016). This survey was conducted in 18 savannah elephant range states and estimated the elephant population to be at 352, 271. The concern that African elephants are on the verge of extinction has led to the proliferation of studies investigating questions such as, what is causing elephant decline, what is the best policy strategy to conserve elephants, and how can rural communities live peacefully with elephants? Most studies address these questions without bringing out the voices of people who encounter

elephants in their day-to-day lives. In contrast, this dissertation brought to the center of discussion the views of people who have been ignored and marginalized in elephant conservation debates and plans. In this context, this study concludes by imagining a more "Afro-centric" conservation ethic. I define an afro-centric conservation ethic as norms that take into account African ideas about non-capitalist human relations to nature and are acceptable to local communities. As this study reveals, indigenous cultural groups in Tsavo view elephants and landscapes as sacred entities with lives that need to be revered and cared for. As the story of *Ivonya Ngia* in chapter 2 shows, elephants were revered and regarded as people due to their intelligence. Elephant hunting in pre-colonial Tsavo was guided by religious rules and ceremonies. Kamba participants in this study narrated that pre-colonial elephant hunters were required to seek permission from a medicine man and abstain from sex before a hunting mission. These examples suggest indigenous groups in Tsavo did not perceive elephants as animals existing simply to be exploited and dominated but as sentient beings that required human care. An Afro-centric conservation ethic will require that conservation policies in Africa be rethought and restructured to better reflect the lived realities and world view of rural Africans. This dissertation imagines a Tsavo in which:

1. Park managers (KWS officials) and local communities enter into adaptive co-management plans that frame the management of wildlife resources at a more local level, if possible, at village level. This study envisages a Tsavo where park managers and local people develop co-management initiatives such as employing community wildlife scouts. These scouts will work together with KWS officials to improve wildlife security and also manage human wildlife conflict.

2. Park managers take advantage of new institutional reforms such as Kenya's new constitution which provides for devolution of power from the central government to county governments. The ward, which is the lowest political unit in the devolved system of government is represented by a popularly elected Member of County Assembly (MCA). Park managers should work together with MCA's to mobilize local conservation action.
3. Park managers value the ecological knowledge of local communities and incorporate it in conservation plans for elephants and other wildlife species.
4. Park managers, conservation NGO's, investors, tourists and other players change their attitudes towards local communities and treat them as equal partners in conservation.
5. Park managers together with local leaders establish a mechanism to support the poorest and most vulnerable people in the park environs especially those who rely on park resources for their survival. Efforts should be made to identify those who do not have alternative means of securing food and other basic needs. Such support might be in the form of food pantries at various locations across the Tsavo region to benefit park neighbors who struggle to put food on the table.
6. Livestock that does not belong to members of the local communities is not allowed into the parks or ranches neighboring parks in Tsavo. The incursion of livestock from other areas into the Tsavo region is a threat to the survival of wildlife, especially elephants, due to competition for browse. In addition, livestock owned by "outsiders" is a source of conflict between local people and KWS due to the perception that KWS officials allow outsiders to graze in the parks while denying local people the same privilege. While there

is no evidence to support this claim, it undermines collaboration between local communities and KWS.

7. Local pastoralists and relevant government officials agree on livestock carrying capacity on private lands and group ranches. Incentives are given to livestock owners whose herds have exceeded their land carrying capacity to down size their herds.
8. In the spirit of sustainable use, park managers allow local pastoralists to graze their animals in areas with low tourism use within the parks especially in severe drought conditions. This will promote unity and collaboration in wildlife management.
9. The profits accrued from tourism are used to promote development activities such as income generating projects for local community based organizations and educational support for needy children.

Suggestions for Further Research

This study has revealed that local ecological knowledge and perspectives increase the understanding of human-environment relations and support adaptive management solutions. Local knowledge can enhance information sharing between local communities and state resource agents and this is important for co-management initiatives. It is not possible to go back to pre-colonial patterns of resource use in the Tsavo landscape, for example, the free movement of Maasai livestock across the Tsavo landscape. However, the social memories of Maasai livestock movement around Tsavo in response to spatial and temporal land productivity can inspire collaboration between the Maasai and KWS. Revisiting pre-colonial patterns of land use especially how pre-colonial Tsavo inhabitants shared the landscape with elephants helps shift the question of human-elephant relations away from one of technical management or enforcement,

to one of complex social, political, and material interconnections with another highly intelligent and ecologically powerful species.

Oral histories of living elders among the Kamba, Taveta, Taita, Waata, Orma, and Maasai are therefore a fundamental resource for ACM initiatives and can inspire adaptive management solutions. These stories will help change the views of the current generation and new immigrants in Tsavo who perceive elephants as nuisances or ivory sources. They also challenge widespread perceptions among resource managers that elephants are just economic and scientific resources. This study suggests that any ACM initiative in Tsavo should have a strong oral history component. Oral histories have the potential to provoke stakeholders to imagine new resource management systems that do not depend on the hardening of nature and culture boundaries. There is need for comprehensive studies of Tsavo's environmental history and historical geography. These studies can greatly support ACM initiatives for Tsavo especially if they use oral histories to document local traditional ecological knowledge.

Envoi

This study responds to the decline of elephant population in Africa by providing case studies that contribute to the understanding of human-elephant relations in Tsavo, Kenya. I argue that solutions to the problem of elephant decline in the African continent will mostly depend on collaborative plans between local people and conservation authorities. This study recognizes that there are no easy solutions to complex natural resource management problems, and elephant conservation debates will not be solved in the abstract. By recognizing the diversity of people's experiences with elephants, we suggest that elephant conservation debates need to be held in the villages with local people. There must be deliberate efforts to win local support for elephant conservation and ensure that rural residents are the first protectors of elephants. There is no

doubt the future of elephants in Tsavo will depend on positive attitudes towards elephants among people who live adjacent to protected areas in the region. By placing elephants and the people of Tsavo at the heart of this study, I hope that my work will help both the people and elephants in their struggles for a peaceful coexistence. I dream of a Tsavo which is conflict free.

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APPENDIX A
HISTORICAL TIMELINE

Historical timeline of important events in Tsavo in the 20th century.

Year	Event
1901	The Mombasa Uganda railway line and the Nairobi-Mombasa road cut through Tsavo.
1903	The Church Missionary Society established the first church in Tsavo in Wundanyi.
1914	The First World War begins and the British set up a camp in Mount Kasigau.
1915	The Kasigau people are relocated to Malindi by the colonial government
1915	The Voi Taveta railway line is constructed in preparation for the First World War.
1932	Voi is given township status. It had emerged as the center of trade between local people and people from other areas. It was home to laborers working for the railway company and sisal estates.
1948	Tsavo National Park is established, people are evicted from the park.
1950	Kandecha dam created along Voi River.
1951	Aruba dam created along Voi River.
1953	The Nairobi-Mombasa road which passes through Tsavo is fully tarmacked.
1961	Intense flooding occurs in Galana River.
1962	Establishment of the Taita Ranch, the first ranch in Tsavo. 29 other ranches under different forms of ownership were subsequently formed within the Tsavo region.
1967	Elephant population in the Tsavo ecosystem is estimated between 35,000-40,000.
1970	A severe drought occurs. An estimated 5000 elephant and 300 rhinos perish.
1971	Kasigau group ranch is formed.
1972	Water holes are dug in Mukwanju, Dika plains, Bachuma and Kono Moju, Dida Harea and Nadra areas.
1972	An estimated 3000 elephants die of malnutrition.
1975	Poachers collect tusks from elephant die offs.
1976	Tusks from dead elephants decreases and poaching of live elephants goes up.
1977	Hunting is banned in Kenya and this reduces pressure of elephants in Tsavo.
1983	The Chyulu Hills National Park was gazette expanding the size of protected area in Tsavo by 741 sq. km.
1988	Aerial survey of Tsavo put the elephant population in Tsavo at 5,363.
1994	50% of buffaloes die in Tsavo East.
1997	A 32km elephant proof fence is erected from Mbololo to Ngutuni on the western boundary of Tsavo East N.P.
1997	A 30km elephant proof fence is erected from Bura to Maktau and on the eastern boundary of Tsavo West N.P.
1997	El nino rains in Kenya damage roads in Tsavo and causes serious flooding in some areas of Tsavo.

Source: Information obtained from park management plans, annual reports, and published sources.

APPENDIX B
IRB APPROVAL

ACTION ON EXEMPTION APPROVAL REQUEST

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

TO: Peter Kamau
Geography and Anthropology

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: May 25, 2015

RE: **IRB#** E9363

TITLE: Elephants, Livelihoods and Landscape Change in Tsavo, Kenya

New Protocol/Modification/Continuation: New Protocol

Review Date: 5/25/2015

Approved X **Disapproved**

Approval Date: 5/25/2015 **Approval Expiration Date:** 5/24/2018

Exemption Category/Paragraph: 2a

Signed Consent Waived?: No

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Dennis Landin, Chairman

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE:**

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb*

VITA

Peter Kamau was born and brought up in Waitua village in Murang'a County, Kenya. He entered the University of Nairobi, Kenya in 2002 and graduated with a Bachelor of Arts degree in Geography and Environmental Studies in 2006. In 2008, he began to work as a community warden with the Kenya Wildlife Service (KWS), the government agency responsible for wildlife conservation in Kenya. In 2011, Peter enrolled in a Masters' program in Geography at Miami University, Ohio-USA. He later moved to Louisiana State University in Baton Rouge-USA for a doctoral program in Geography and Anthropology, where he studied under Dr. Andrew Sluyter. Peter Kamau is interested in studying the complex interactions between society and nature through a specific focus on people who live adjacent to protected areas in Africa. For this doctoral research, he has employed historical and ethnographic methods to study the linkages between elephants, livelihoods and landscape change in Tsavo, Kenya. Peter Kamau has previously published his work in *Landscape and Urban Planning*.