

Human – Lion Conflict around Nairobi National Park, Kenya

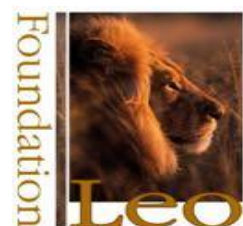
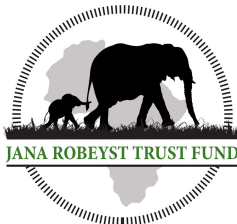
An analysis of lion population size and structure, diet and prey availability, and the relationship with human- lion conflict and wildlife conservation



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Introduction

Human – lion conflicts were studied around Nairobi National Park as a representation of an extreme case of humans and wildlife living in close proximity. Located just 7 km away from Kenya's capital city, Nairobi National Park is a small isolated protected area home to many of Africa's top predators, including the lion. At the park's founding in 1964, Nairobi consisted of 100,000 residents, it now has over 4 million inhabitants. The city is growing around the park, resulting in it being fenced on three sides to prevent wildlife from roaming across highways and into the city. The south side remains unfenced, as an important wildlife corridor to the park's permanent water sources. The wildlife in this park faces additional pressures of habitat fragmentation and destruction as railway lines are being built inside the park's borders and stone quarries are found throughout the land south of the park.

The location of this park leads to intense conflicts between the wildlife and pastoralist communities that live along the park's unfenced border. As livestock is the main source of income to a large percentage of the community, conflicts occur when lions predate on the livestock, endangering people and their livelihoods. Retaliatory killings of the lions occur as a result to these conflicts, threatening the already small lion population of Nairobi National Park.

Methods

This research combined a fundamental diet study with a sociological survey, to monitor the presence of livestock in the lions' diet, the drivers of livestock depredation, and evaluate effective methods for preventing livestock attacks to avoid retaliatory killings of lions. Diet was determined from lion kills and noninvasive hair morphology analysis on scats collected. The lion population size and prey availability were investigated to determine if lions substitute their diet with livestock when the park reaches its carrying capacity of lions or when less prey is available. The population structure was used to determine if certain prides prey on livestock more and prey preferences were calculated through Jacob's Indices to see if any livestock species consumed were considered preferred prey. Community interviews were conducted to assess the extent of the livestock depredation occurring in the land bordering the park and whether any husbandry methods were successful at preventing these attacks. This study specifically looked at the effectiveness of flashlights, a technology designed to repel lions from livestock enclosures by simulating a human patrolling the area with a torch.

Results

It was found that a combination of cows, sheep, and goats made up 11% of the lions' diet, signifying that livestock was an important component in the diet of lions in Nairobi National

Park. Despite these findings, prey preference calculations found that all livestock were considered avoided species, meaning they were consumed less than expected given their abundance. The surrounding community lands were found to have a higher available prey biomass per km² than inside the national park due to the presence of grazing livestock, which may be the cause of livestock depredation. With availability of livestock so high, it may be why livestock is not considered to be more of a preferred prey. This study confirmed that when the available biomass of wild prey was low, lions would supplement their diet with livestock.

Ways of caring for livestock that were previously thought to prevent lion attacks were found to not be successful in this study. The strength and visibility of enclosures, use of guard dogs, and lighting were all found to not effect the occurrence of attack on livestock in enclosures. Lighting is thought to be a successful deterrent of lions and is employed by NGOs in the area, however this study questions its long-term effectiveness and sustainability as a large portion of these lights were reported as malfunctioning.

These findings highlight the importance of implementing new mitigation methods to reduce human – lion conflicts in this park. Over half of the lion attacks were on grazing livestock due to their high presence in the community land, lions can opportunistically prey on weak livestock. These attacks will increase as railway construction pushes lions away from the park and mining activity degrades the resources around the park, causing livestock to go towards the park in search of water and pasture. Conservation initiatives should shift emphasis from the use of lighting on bomas to finding solutions for safer grazing practices that can benefit all community members.

Acknowledgements

This research would not have been possible without the grant provided by the Jana Robeyst Trust Fund. The money was used to fund transportation around the park and community land to collect data on the lions' diet and the human – lion conflicts occurring around Nairobi National Park. This research allowed me to continue Professor Hans de Iongh's crucial effort in mitigating human – wildlife conflicts across Africa.

Research Photos



Gathering data on lion kill carcass and collecting lion scats for later analysis.



Some of the study lions in Nairobi National Park eating fresh kills.