

# EXPLORING LIONS AND THEIR PREY IN KENYA

2015  
FIELD  
REPORT

# Exploring Lions and their Prey in Kenya

## 2015 FIELD REPORT

### Background Information

**LEAD PI:** Dr. Jacob R. Goheen

**REPORT COMPLETED BY:** Caroline C. Ng'weno

**PERIOD COVERED BY THIS REPORT:** 6<sup>th</sup> August 2015 to 18<sup>th</sup> September 2015

#### **CHANGES TO:**

**PROJECT SCIENTISTS:** Two Research Assistants Nelson Kihumba and Patrick Kimaita left the project and were employed as Sales Assistant Chimpanzee Adoption at Ol Pejeta Conservancy in November 2014 and a tick project respectively. The staff were replaced by a young graduate from Kenya Wildlife Training Institute Nickson Ndiema.

**Contact Details:** Nickson Ndiema

**Job Title:** Carnivore Expert

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**RESEARCH SITE:** N/A

**RESEARCH SITE LATITUDE / LONGITUDE:** N/A

**PROTECTED AREA STATUS:** The site was green listed on the IUCN Green List of Protected Areas and now one of the only two wildlife conservancies in Africa to be awarded the honor (<http://olpejetaconservancy.cmail1.com/t/r-e-ctluldk-tkljbtddh-r/>.)



Dear 2015 Earthwatch Volunteer,

We would like to personally thank Earthwatch Institute for their immense support accorded to our project in the past years.

We are extremely thankful to have had helping hands from groups of intelligent, supportive and highly talented Earthwatch volunteers. Big thank you to our volunteers for choosing to work with us. Your kind assistance, patience and dedication in helping us collect data was our great achievement. The countless hours you put in image classification and lion identification showed how amazing you are. Your help proved to be invaluable because we would have been working through the night just to stay on top of everything. Because of your support we managed to achieve many of our scientific objectives;

- 84 cameras were deployed and 305,699 images classified
- Surveyed 17 kill sites and 17 control sites
- Monitored 15 herds of hartebeest
- Tracked lions, identified and confirmed 15 lions
- Relocated and set-up three predator-proof bomas

We also appreciate your gift of time and enthusiastic support given to Baraka Children's Home. It was the greatest gift for the children, as they felt loved during your visit to the home. Thanks again for providing stationaries, utensils and majorly installing electricity for them and now the kids can read, eat and play just like other children.

Additionally, many thanks to Pam Chesonis for her continued support for our Emerging Scientist Program. During the 2015 fielding period we were able to run an entire team of local students from Kenyan universities.

It was a great joy working with all of you and hope you carried with you good memories of Ol Pejeta scenic landscapes and off course the last three remaining Northern white rhinos, hiking Mount Kenya, our field activities among a few of the fascinating experiences offered at our project site. We encourage you to consider volunteering again to experience the same and urge you to recommend our expedition to your networks.

We take this opportunity to say a heartfelt "Asantel!" And we look forward to working with you again.

Karibu Tena.

Caroline C. Ng'weno

Co- Principal Investigator, *Exploring Lions and Their Prey in Kenya Expedition*

## SECTION ONE: Scientific research achievements

### TOP HIGHLIGHT FROM THE PAST SEASON

Deployment of camera traps to capture elusive carnivores is key to our ongoing research and we were delighted to learn that the activity was one of the most exciting activities noted by our volunteers. Due to numerous images captured in the field, the involvement of volunteers helped immensely in classifying the species on the cameras. Following their support, we were able to classify a total of **305,699 images** which would have otherwise taken our field crew tireless nights to process the images. We felt that once again through the activity we were able to satisfactorily provide opportunities for our volunteers to gain hands-on experience in various activities from data collection to data analysis and definitely some fun.

### REPORTING AGAINST RESEARCH OBJECTIVES

#### Objective 1: Working to Conserve a Critically Endangered Antelope

**KEY FINDINGS:** We have been intensively monitoring hartebeest demography with a focus on herds under two different predator scenarios in Ol Pejeta conservancy, Laikipia, Kenya. (OPC); (i.) Lions present, ii.) Lions absent. We are glad that we were able to complete a manuscript on this objective and the manuscript is currently under review. In this manuscript, we provide an update of findings regarding the ultimate factors underlying hartebeest declines in OPC. Our key finding was that predation is poised to cause hartebeest extinction if not checked, and the recovery of this species hinges ultimately on exploring alternative ways of promoting co-existence of livestock and wildlife so as to lower apparent competition. Based on our findings the hartebeest population in OPC continue to show a downward trend with an age-sex structure skewed to adults (Ng'weno et al., 2015 in review). Additionally, we found that rather than being mediated through food resources, the hartebeest decline was caused by increased predation. Therefore, based on our findings, we found that insulating hartebeests in predator-free zones helps population increase, thus the predator-free zones offer the potential of boosting populations of declining species which can consequently be used for restocking other areas.

We will be following up on additional research questions on the above objective that we were unable to address in our manuscript due to data deficiency. For instance, in 2016, we will continue collecting survival data to facilitate working on a population viability analysis (PVA) and we will also incorporate investigation on competition and assesment of parasite load from fecal pellets so as to better understand dynamics behind hartebeest decline

#### Objective 2: Where do OPC lions hunt?

We have been monitoring movement and identifying putative potential lion kill sites from our collared females. Preliminary findings from our analysis show that nine prey species were the most preferred by the lions with zebras constituting the bulk of the kills, followed by impalas and warthogs. Sekela's pride made most of the kills compared to other prides (Fig. 1). We continue to collect data on potential kill site and eventually we will be able to provide a comprehensive predictive map on lion resource selection indicating hotspots that are highly preferred by lions and consequently we will be able to recommend proper livestock corralling measures to be applied to enable shifting the distribution of lions. Details of these findings will be available in our report that we will share with partners in 2016.



**Figure 1:** Shows the distribution of Sekela pride kill sites and species killed and zebras are the most notable kill by the pride

### **CHANGES TO RESEARCH PLAN OR OBJECTIVES**

We just completed addressing objective 1 of our study and we have made slight changes to incorporate more factors as indicated in the description on the objective above. Given the slight changes we will be having an additional task of fecal pellet collection by the volunteers.

## SECTION TWO: Impacts

### INCREASING SCIENTIFIC KNOWLEDGE

#### MoS 1.2 Peer Reviewed Publications

Manuscript in prep: Ng'weno et al., 2015. Direct and indirect effects driving declines of Jackson's hartebeest (*Alcephalus busephalus jacksonii*), in Laikipia, Kenya - Earthwatch contribution was acknowledged in the paper

#### MoS 1.3 Grey Literature and Other Dissemination of Your Results

We continue to disseminate the results of our work in a variety of ways, including publications, formal and informal presentations, outreach efforts, and the media. Some of our field diaries are attached.

#### Talk & Posters Presentations

1. Presented a talk titled: Fading Roars - what is the future of African lions in the African Savanna? At the WWF fellows seminar in Washington DC in November 2015.
2. Presented a poster which focused on project achievements contributed by Earthwatch volunteers and interns at the at Desmond Tutu Conference Centre, Nairobi Kenya

#### Meetings and Conferences

1. Desmond Tutu Conference Centre, Nairobi Kenya, from 27th to 30th July, 2015. The conference was about Building Capacity for Conservation & Resource Management.
2. Fuller Symposium and Technology Fair hosted at the National Geographic in November 2015
3. The goal of our project is geared towards increasing the level of awareness on environment and natural resources in Kenya and beyond while building a network of young champions of sustainable practices. To scale our impact within the region, we continue to partner with our former intern Joshua Wambugu a Rufford fellow on use of video films to enhance conservation education in schools and surrounding communities. So far we have had over 10 meetings with communities. Additionally, through the initiative, we have partnered with the Laikipian an online media & creator of Hunt Me Not conservation a sustainability comic series to illustrate interactive wildlife color book for children between the ages of 7-13 years and an interactive conservation board game that will not only be fun and exciting to play but will impart conservation knowledge. Given the positive partnership we anticipate to hold a Let's Go Wild exhibition highlighting findings of our research as a means of enlightening our stake holders on what is happening in field of conservation using illustrations prepared by the Laikipian. We hope the comic will empower local communities and inspire global citizens, especially the youth, to be conservation-conscious in their daily activities to "conserve enough of everything."

## DEVELOPING ENVIRONMENTAL LEADERS

### MoS 2.1 Education

- **Camera Trap workshop:** Our project continues to offer authentic experiences for students seeking to improve their skills in field of conservation. In August, 2015 our project through our recently launched emerging scientist program supported by Pam's funding we were able to collaboratively work with five graduate students from different Kenyan Universities on camera trap report and we anticipate to publish in a scientific journal.
- **GIS Training;** field assistants, Emerging Scientists and Interns attended GIS (Geographic Information System) training and learned how to create maps (shape files), use GIS tools to calculate distances between two features, road and river lengths and home range analysis of various wildlife species.
- **Field Experience;** Students and Interns from wildlife field of studies and related studies have had an opportunity to implement class work in the field. They acquired various data collection, data organization, and processing and data analysis techniques. Gained a hands-on experience by carrying out field activities using various techniques like, lion monitoring using GPS collars, hartebeest monitoring using distance sampling, carnivore survey using camera trap and Identifying lion potential kill sites from GPS clusters.
- **Capacity Building;** the project helps emerging scientists and interns to improve their skills in the field of study by providing internship and mentorship programs.

## PARTNERSHIPS

### MoS 3.1 Organizations Actively Engaged

- **Earthwatch Institute:** We have immense support from Earthwatch Institute to this project through financial and volunteer support. The Earthwatch volunteers help in actual work of field data collection. Additionally, the project receives support from;
- **EFN Russell train fellow:** contributed towards funding on our ongoing research activities
- **OI Pejeta conservancy:** A part from being the project study site, we work closely with OPC Wildlife department through provision of additional field vehicle, armed guards, who oversee the general security of volunteers both in the field and at their camp sites. The PR and Marketing department help in editing our field videos and pictures and uploading the highlights of our project in OPC website.
- **Laikipia Wildlife Forum:** a non-government organization dedicated to providing solutions for wildlife-livestock compatibility.
- **University of Wyoming:** Both Kenya students and students from the University of Wyoming participate in field research in OPC. In 2014 Christian Bopp from the University of Wyoming worked in OPC for a period of three months.
- **Karatina University and Chuka University:** The project offers internship opportunities for students from Kenyan universities to assist in data collection and community work (environmental cleanup, tree planting and anti-jigger campaign).

## CONTRIBUTIONS TO POLICIES OR MANAGEMENT PLANS

### MoS 4.1 Informing Policies or Management Plans

- **International Policies or Management Plans:**
- **National or Regional Policies or Management Plans:**  
The Kenyan Wildlife Service (KWS) used some of our findings to help revise the carnivore strategy plan.
- **Local Policies or Management Plans:**  
The project goal is to provide opportunities for Emerging Scientists and local communities to experience and appreciate wildlife conservation as an important field of study in our contemporary society.

#### MoS 4.2 Actions or activities that enhance natural and/or social capital

C4C Project has a volunteer-led group that improve physical environment of local neighbourhoods of Ol Pejeta Conservancy. The group undertakes different activities that improve the conservancy and community environments. These activities include;

- **Environmental clean-up;** this is a monthly basis activity where the volunteer-led group including field assistants and school children visit communities around the conservancy to pick litter and sensitize them on importance of having a clean environment. The project also provide certificate for those who participate as a way to appreciate their work.
- **Tree-Planting;** trees are important in sustaining a healthy environment; therefore the project mobilizes school children and entire community to plant trees. The project has set a side Tree- Day where planting activity is done. This makes everyone gain a sense of real achievement of beautifying the environment.
- **Anti-jigger Campaigns;** Due to poor housing and poor sanitation in poverty stricken communities, some children infested by jiggers. Children were forced to drop out of school due to jigger infestation. The Project team visited these communities, provided direct services of washing feet and removing the jiggers. The Project also educated them on anti-jigger awareness and support for jigger eradication. The affected children received footwear from the Project.

### ENHANCING NATURAL AND SOCIO-CULTURAL CAPITAL

#### MoS 5.1 Conservation of Taxa

East African Oryx

Common Name: Oryx                      Scientific Name: *Oryx beisa*

Grevy's Zebra

Common Name: Grevy's Zebra      Scientific Name: *Equus grevyii*

**Are you enhancing, restoring, or maintaining populations of any species of conservation significance as part of your project? For each species include where possible:**

- **Scientific and common names:**

Jackson hartebeest (*Alcelaphus buselaphus jacksonii*) - Kongoni

Lions (*Panthera leo*) - Simba

- **Significance of the species:**

Jackson's hartebeest are endemic species of Laikipia and given that the species show downward trends, uncovering the cause of this is of critical importance. These flagship species also play significant role of balancing the ecosystem as its prey to various predators.

- **Impact on the species e.g. range increased, population size increased, improving population structure, and maintaining/enhancing genetic diversity:**

Jackson's hartebeest is a substantial species to the project has its monitoring help in answering research questions. Through monitoring, the project has been able to rule out the major causes of population decline including predator by lions. Some hartebeest populations have been enclosed in predator-free areas to enhance reduce predator rates and improve viable population. The Project has ensured there is improved genetic diversity by translocating adult males from herd to herd.

#### MoS 5.2 Conservation of Habitats

1. **Habitat affected (e.g. tropical rainforest, fen, coral reef, etc.):** Open grasslands
2. **Type of enhancement and resulting affect (e.g. extent maintained, condition achieved, restored, expanded, improved connectivity or resilience):** Establishing of grazing lawns creates an heterogeneous landscape which attract and aggregate ungulates given the high nutrient deposition.
3. **Area of habitat enhanced:** Grazing lawns established

#### MoS 5.3 Conservation of Ecosystem Services

No

#### **MoS 5.4 Conservation of Cultural Heritage**

**Cultural Tourism-** The Project team and volunteers visit cultural and historical sites where arts, crafts, traditions and lifestyle of local population are practiced. The volunteers buy jewelry and handicrafts, this in turn, benefits the local population and as Tourism earning in Kenya.

#### **MoS 5.5 Impacting Local Livelihood**

**Wildlife Conservation Training:** as part of field experience, the Project offers an opportunity to community fellow to gain experiences in conservation field. Maasai community has a perspective that lion hunting and killing is a rite of passage to manhood and the only way to become a warrior and also there is retaliatory poisoning of lions for eating the cattle. Since lions are at brink of extinction, the Project is trying to educate Maasai community on importance of wildlife, lion in particular. Maasai herders are involved in lion tracking activity in the Project so that they appreciate and placed as part of conservation.

**Pambazuka Warrior Women Initiatives;** to improve the livelihoods of communities, the Project supports Samburu women in their beadwork as a source of income. The Project is involved in buying the beads and training other women in beading various items including bead baskets, beaded jewelry, carvings e.g. animal carvings.

## **SECTION THREE: Acknowledgements, Funding and Appendices**

### **PROJECT FUNDING**

1. We received project funding from Pam Chesoni Foundation towards support of Community fellows in our project.
2. The World Wildlife Fund (WWF) awarded Russell E. Train Fellowship to Co- PI -- Caroline Ng'weno, to leverage the C<sub>4</sub>C project activities.

### **ANYTHING ELSE**

We would like to extend our heart-felt gratitude for your support towards the success of this project.

### **ACKNOWLEDGEMENTS**

Our research work would not have been possible without funding from Earthwatch, we salute you! We wish to thank the Kenya Wildlife Service for their unsolicited support of our project. Thanks a lot to:

- a. Ol Pejeta Conservancy who continue to provide logistic support,
- b. University of Wyoming's Berry Biodiversity Conservation Center, University of Wyoming's Haub School of Environment and CREOI for additional financial support.
- c. Earthwatch institute:
  - Kyle, Amanda and Stan for their continued project administration.
  - Earthwatch volunteers teams 2-4 in 2015, for choosing to work with our project.
- d. C<sub>4</sub>C programme personnel:
  - Field crew; Nelly Maiyo, Nickson Ndiema, Luke Kingetich, Philip Songok, Alfred Kibungei and Chris Waigwa for their unmatched field activities assistance.
  - Security personnel; Samuel Samali, Isaac Kipkoech, Edward Ombati and Patrick for assuring safety of Earthwatch volunteers.



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