

# EARTHWATCH INSTITUTE ANNUAL FIELD REPORT

**Date completed:** 30 January 2008

**Completed by:** Dr. Barbara McKnight, Dr. Samuel Kasiki

**Period covered by this report:** February - November 2007

1 February 2008

Dear Earthwatch Volunteers,

Thank you for your participation in the Elephants of Tsavo Research of 2007. I appreciate the many long hours you spent in the field helping to collect the data, sometimes under difficult conditions. As you found out patience, a bit of luck and attention to details are requirements for a successful study on elephants. We accomplished all of our objectives during the 2007 surveys. With your help we were able to collect more data and covered the majority of the study area per team in a shorter amount of time than I could on my own. In addition, your participation provided an opportunity to look for known individuals, much like being in two places at one time, to increase the chances of finding someone I know.

We made some discoveries on sightings of recognized elephants that I haven't seen in many months. Bulls - Ethan (in musth), Hogan, Sundance and Rudolf who was seen back in his typical dry season range. Females - N.T., Shadow, Twyla, Hope and Panama was recorded near Voi River where the previous sighting was Galana River.

Our data set on wildlife diversity, spatial and temporal distribution is now complete and will assist KWS in addressing the escalating commercial bush meat trade. Starting with the April team we collected data only on rare, threatened, endangered wildlife or species in an unusual-atypical location. Some discoveries we made were the rare sightings of Wild dogs, Hiriola, Ratel, Bushbuck, Melonistic Serval and Hippos far from the Galana River.

Our data on temporal and spatial distribution of available water resources will assist KWS as they address water development. In addition our livestock data provided empirical evidence that is crucial for KWS to address this issue of habitat use and encroachment into the National Park.

Thank you again for making our second year a success.

Warm regards,

Dr. Barbara McKnight

Dr. Samuel Kasiki

## Research objectives

### *Progress toward original objectives*

*Objective 1: Define seasonal elephant distribution, group size and composition related to habitat utilization.*

The data collected on this objective is transferred to a map to show elephant seasonal distribution related to the habitat.

*Objective 2: Identification of known elephants and new elephants to the Tsavo* Taking photographs and sketching elephant features for identification was unsuitable for volunteers to accurately accomplish. PI and team leader meet this objective.

### *Objective 3: Determine Seasonal Boundary Crossing - Elephant Paths*

This objective is related to elephants that utilize both the National Park and private land and to determine paths across the boundary. This objective could not be met due to the high concentration of livestock utilization and thus undetectable elephant paths or footprints.

### *Objective 4: Wildlife Census*

This objective was accomplished - determine diversity, totals and temporal and spatial distribution.

## Summary of results

### *Elephant Census - Distribution*

Fires caused by humans in the National Park and private land during the dry season (July-September) and the changes in the timing and amount of rainfall due to global warming influence elephant movements. These fires and climate-change affect the vegetation (food/shade) and water resources which influence elephant spatial and temporal distribution. Far fewer elephants were recorded within private land than the National Park.

The total number of elephants sighted in the southern region of the Tsavo Ecosystem fluctuated with the fires and rains (subsequent changes in the vegetation) and available water resources. Individual elephants sighted during the dry season (dry vegetation): 1,034 - 1,246; light rains (mixed vegetation): 695 - 1,434; and rains (green/mixed vegetation) 331 - 762. With the onset of the rains in early October, elephants moved away from the rivers and dispersed to their seasonal green-vegetation ranges.

### *Group Composition*

Of the 903 groups recorded this year, families (56.1%; n=507) and lone bulls (18.5%; n=167) were most frequently sighted within the National Park. Lone bulls (3.4%; n=31) and bull group (3.3%; n=30) sightings dominated within private land (however, footprints of families were frequently seen, but not sighted). A group of 4 bulls crossed the Nairobi-Mombasa main road from the National Park, heading west toward the water trough on private land in Sagala (early dry season-May). This sighting provided a crossing point between the National Park and private land. This data is critical to KWS; it provides empirical evidence that Tsavo elephants need to have access to a large range.

### *Re-sightings of Known Individuals*

Sighting of known individuals were confirmed with photographs and sketches. During this year, data was collected on 104 known individuals (43 ♂ and 61 ♀ with their offspring). The majority of the known elephants were sighted within a family (57 females and males) and

bull groups (16). Of particular interest were the re-sightings of individuals that have not been recorded in many months or years; Ethan (in musth), Hogan, Lunar, Twyla, Phoebe, Tundra and Hope. In addition, the sightings of individuals in “distant” locations from previous sightings - Livingstone: Galana/Mbololo River - Voi River - 33.6km; Rudolf: Dika Plains-Irima - 61.8km; Rasputin: Mzingu - Maungu - 40.9km and Panama: Galana River/Punda Malia - Voi River - 37.6km.

#### *Wildlife - Livestock Census*

The diversity, spatial and temporal wildlife data set was completed with the March survey; 3 dry seasons, 3 wet seasons and 3 mixed seasons. The sightings of threatened, rare or species recorded in an unusual location include: Wild Dogs, Hirola, Kori Bustard, Topi, Melonistic Serval and Ratel. The wildlife and livestock data was given to KWS and Rukinga management to monitor habitat utilization and the commercial bush meat trade.

## **Contribution to Conservation**

- *Tsavo Conservation Area Management Plan*  
The data collected by Earthwatch volunteers contributed to the Kenya Wildlife Service management plans to protect and conserve Tsavo elephants and the habitat. Specifically to make decisions on: water development (artificial, scooping waterholes), fencing (elephant boundary crossings), livestock encroachment into the National park and status of wildlife related to the commercial bush meat trade in this region.
- *Rukinga Wildlife Sanctuary*  
Data on elephant numbers and utilization of the sanctuary provided management with information to protect this area for the elephants, which is an important dispersal area. Further, wildlife diversity and numbers help them monitor and protect wildlife related to poaching for the bush meat trade.

## **Significance/ benefits of the research**

- *Local - Research Site*  
Tsavo National Park and Rukinga Wildlife Sanctuary - the data collected during this year provided temporal and spatial distribution of the elephants. The data on known individual elephants provide information on population dynamics which is critical information to monitor the health of an elephant population. Known elephants utilizing both national park and private land illustrate the necessity for the Tsavo elephant to have access to these areas on a seasonal basis.

Our data on water resources will assist conservation managers in making decisions about water development (providing artificial water or scooping existing waterholes). The wildlife-livestock data provides information to monitor the bush meat trade and land use.

- *National / Regional*  
The Tsavo elephants comprise 1/3 of the total number of elephants in Kenya and is therefore one of the most important populations to monitor. The seasonal data collected on elephants complements the periodic Tsavo Elephant aerial surveys.

The data collected (elephants, wildlife, livestock) benefited KWS management in providing data to address the country-wide issues of elephant dispersal, health of the other wildlife (commercial trade in bush meat) and livestock number; land use for ranching and encroachment inside the National Parks.

- *International*

Tsavo is one of the 45 regions in Africa chosen by CITES (Convention on the International Trade in Endangered Species) as a MIKE (Monitor the illegal killing of Elephants) sites. This research compliments and contributes to monitoring this important population.

## Communication of Results

### *Printed:*

- Workshop - Tsavo Conservation Management Plans.
- Quarterly Reports - KWS Nairobi and Tsavo Headquarters.
- Annual Report - KWS Research Station
- Annual Report - Ministry of Education, Science and Technology, Republic of Kenya.
- Reports - Rukinga Wildlife Sanctuary management.

### *Mass media:*

- Audubon - Sept-Oct 2007. *Walk This Way*. Photo Essay by Kim Hubbard Team V-2006
- Newsweek International - 08 January 2007. *The Good Life*. Advertisement for volunteer vacations. Photograph of an Earthwatch volunteer collecting data on an elephant in Tsavo.

### *Meetings and conferences:*

- Tsavo Conservation Area Management Planning - July. Attended final management plan meeting where research data and reports were utilized to draw-up plans for the conservation of the Tsavo area.
- Elephant Management - Tsavo Stakeholders meeting - April. Met with community members to discuss elephant utilization of areas outside park boundaries, elephant-human conflict and water resources.
- KWS Wildlife Conference - April. Met with conference participants during the three day conference to discuss elephant research, human-elephant conflict and water resources.

## Educational Opportunities

### *Local communities - student - early career scientist*

This research involves the participation and employment/education of the team leader from the local community. The additional two field assistants/drivers, employed on the project, are gaining the necessary education and skills to fulfill their objectives as professional safari guides; educating visitors to Kenya on elephant behavior and the complex conservation issues in the Tsavo region.

*Has your project contributed to the completion of Masters' or PhD theses or degrees, or other educational research findings?*

No

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