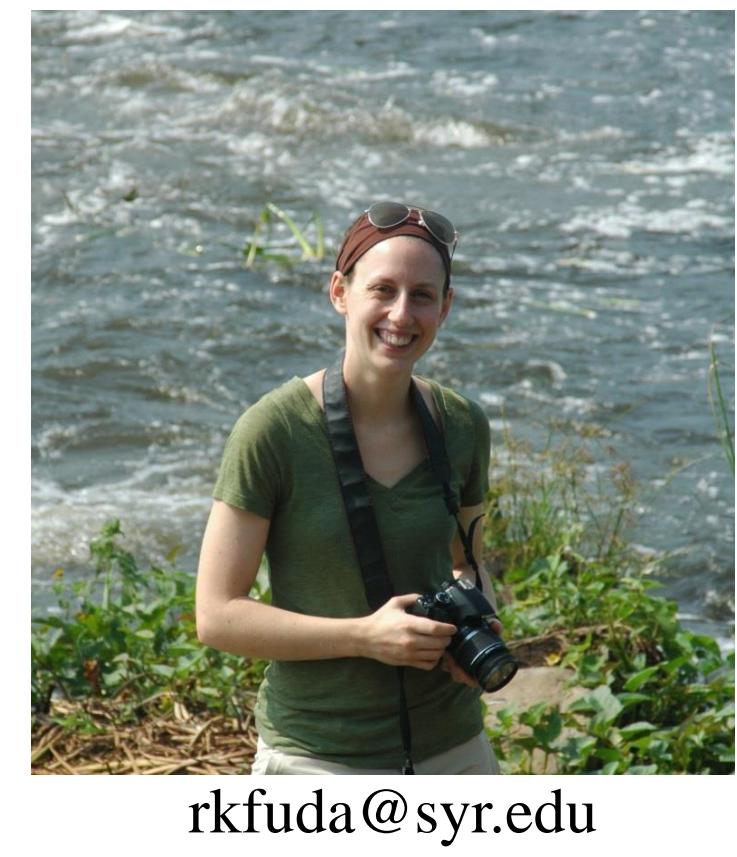


Carnivore Conservation in Northwest Uganda: Assessing Human Impacts and Attitudes



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INTRODUCTION

The decline of apex predators has been described as “human-kind’s most pervasive influence on the natural world” (Estes et al. 2011:301). Because of their large home range sizes, small populations, and persecution by humans, large carnivores are particularly vulnerable to local extirpation, especially in small reserves and fragmented landscapes (Woodroffe 1998).

As the human population has increased and natural habitats have increasingly been converted to agricultural land, carnivore numbers have declined throughout Uganda. Edge effects associated with villages that are adjacent to protected area boundaries can threaten the viability of wildlife populations, and carnivores are particularly vulnerable to these edge effects (Woodroffe 1998, Newmark 2008). In Murchison Falls Conservation Area (MFCA), in northwest Uganda, the challenges associated with increasing human populations are now coupled with the impacts of oil exploration (Figure 2). Considering the dire situation facing carnivore conservation in Uganda, this research will provide a much needed evaluation of the threats facing carnivores in Uganda’s largest and most visited protected area.

PILOT STUDY

CAMERA TRAP STUDY

Goals: (1) Obtain estimates of probabilities of detection and latency times

(2) Preliminary comparisons between strata

(3) Baseline data

3 weeks, 12 cameras, 3 strata

- Oil
 - Restored pad
 - Partially restored pad
 - Active pads
- Edge
 - Within 100 m of protected area boundary
- Undisturbed
 - Greater than 1 km from protected area boundary, roads, or other human structures

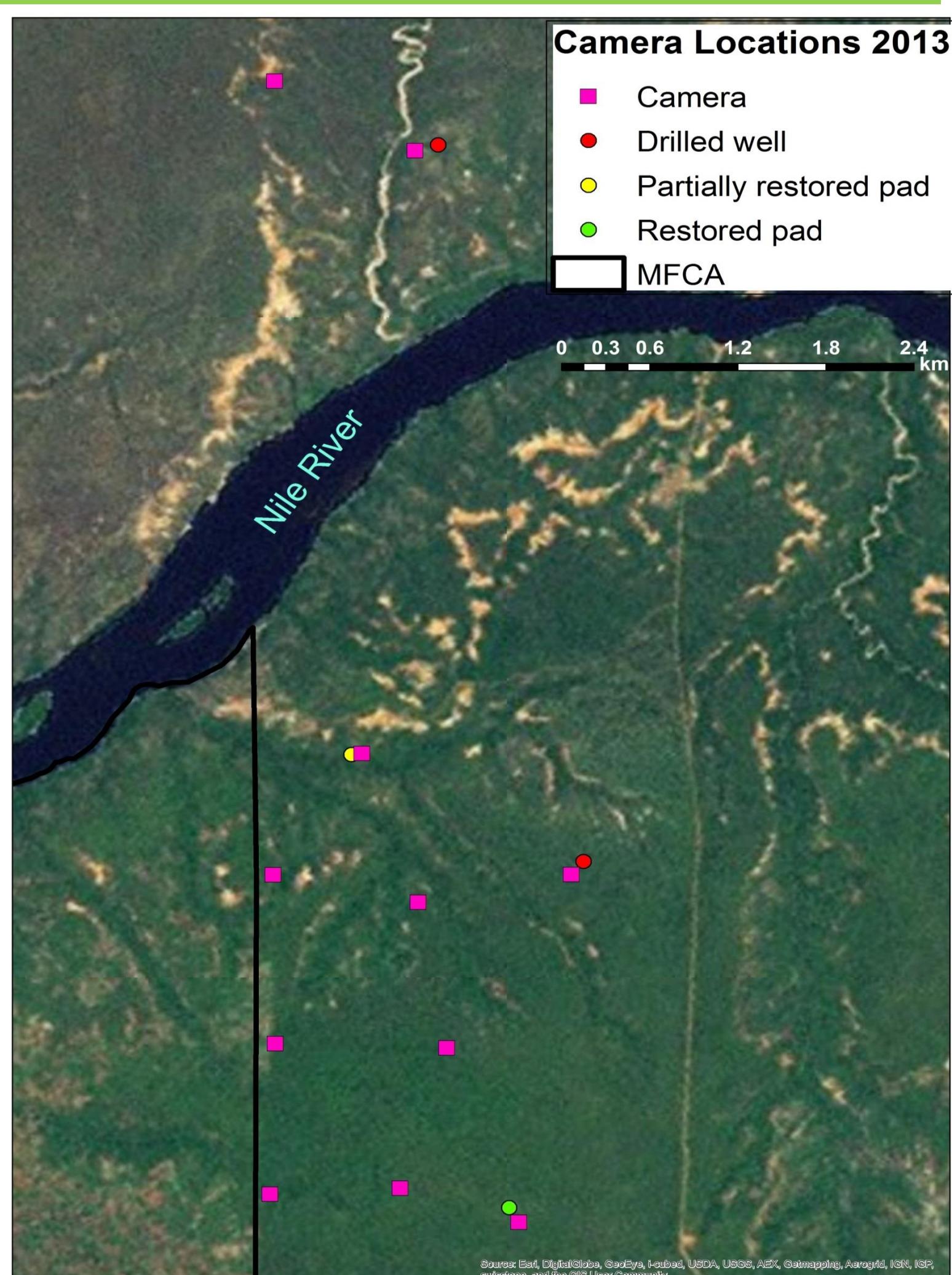


Figure 1. Location of camera traps during July-Aug 2013

INTERVIEWS

Goals:

(1) Assess the prevalence of human-carnivore conflict and identify current mitigation strategies

(2) Obtain anecdotal evidence of trends in population and movements of large carnivores

- 37 semi-structured interviews

- Local government officials
- Tourism operators and guides
- Uganda Wildlife Authority employees

- 6 focus groups

- Villages adjacent to MFCA



Preparing for a focus group.

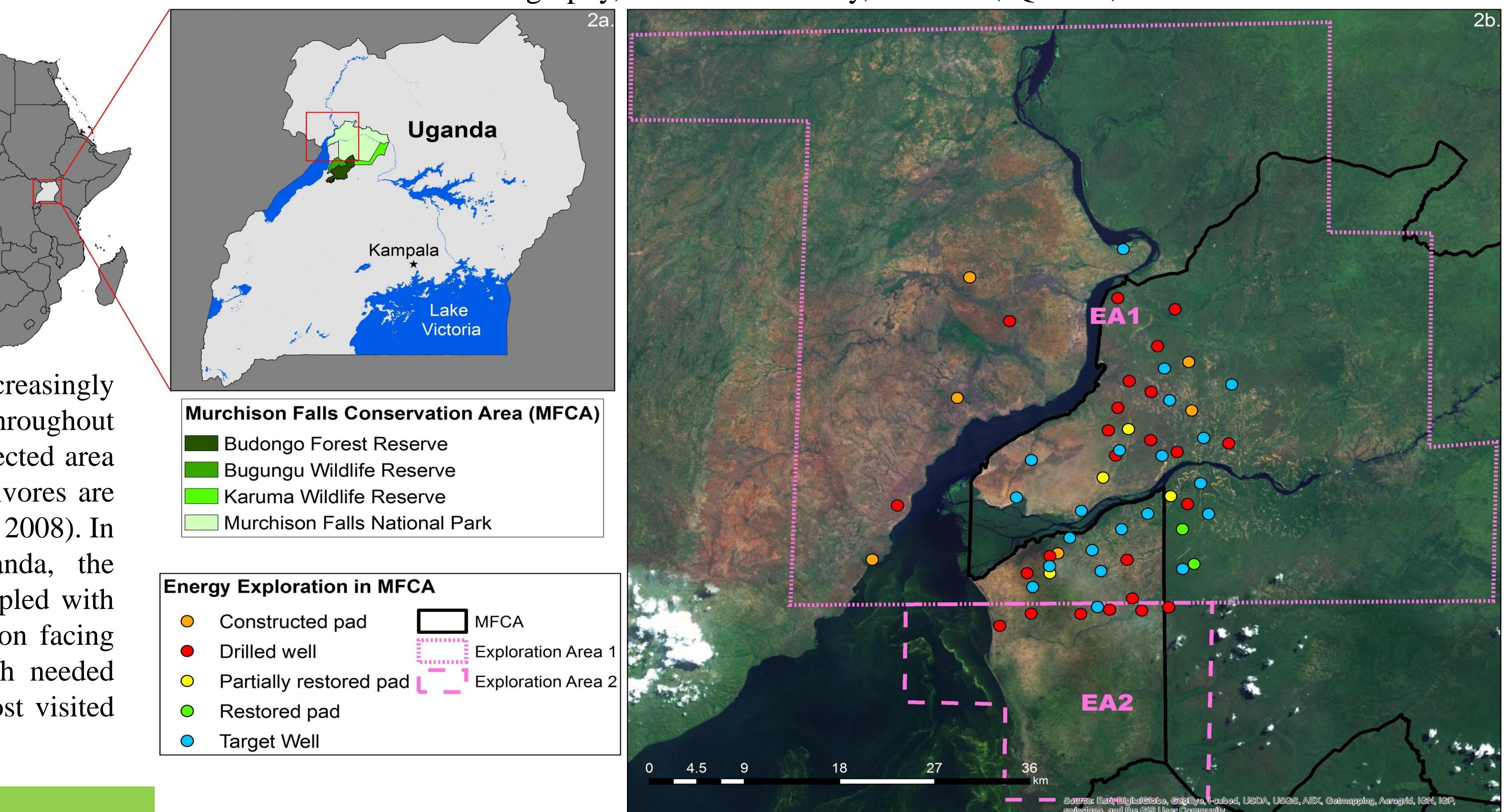


Figure 2a. Location of Murchison Falls Conservation Area (MFCA), comprising Murchison Falls National Park and 3 surrounding reserves

Figure 2b. Energy exploration in MFCA. Current, planned, and restored wells are depicted.

PROJECT OBJECTIVES

- To obtain baseline data such as species presence and occupancy rates of rare and nocturnal species via camera trap surveys in an understudied protected area
- To identify which species are most sensitive to human disturbance by modeling occupancy rates as a function of covariates, e.g.
 - Density of drill pads
 - Road density
 - Distance to edge
 - Noise levels
- To determine how human disturbances influence overall species richness at a site

PRELIMINARY RESULTS

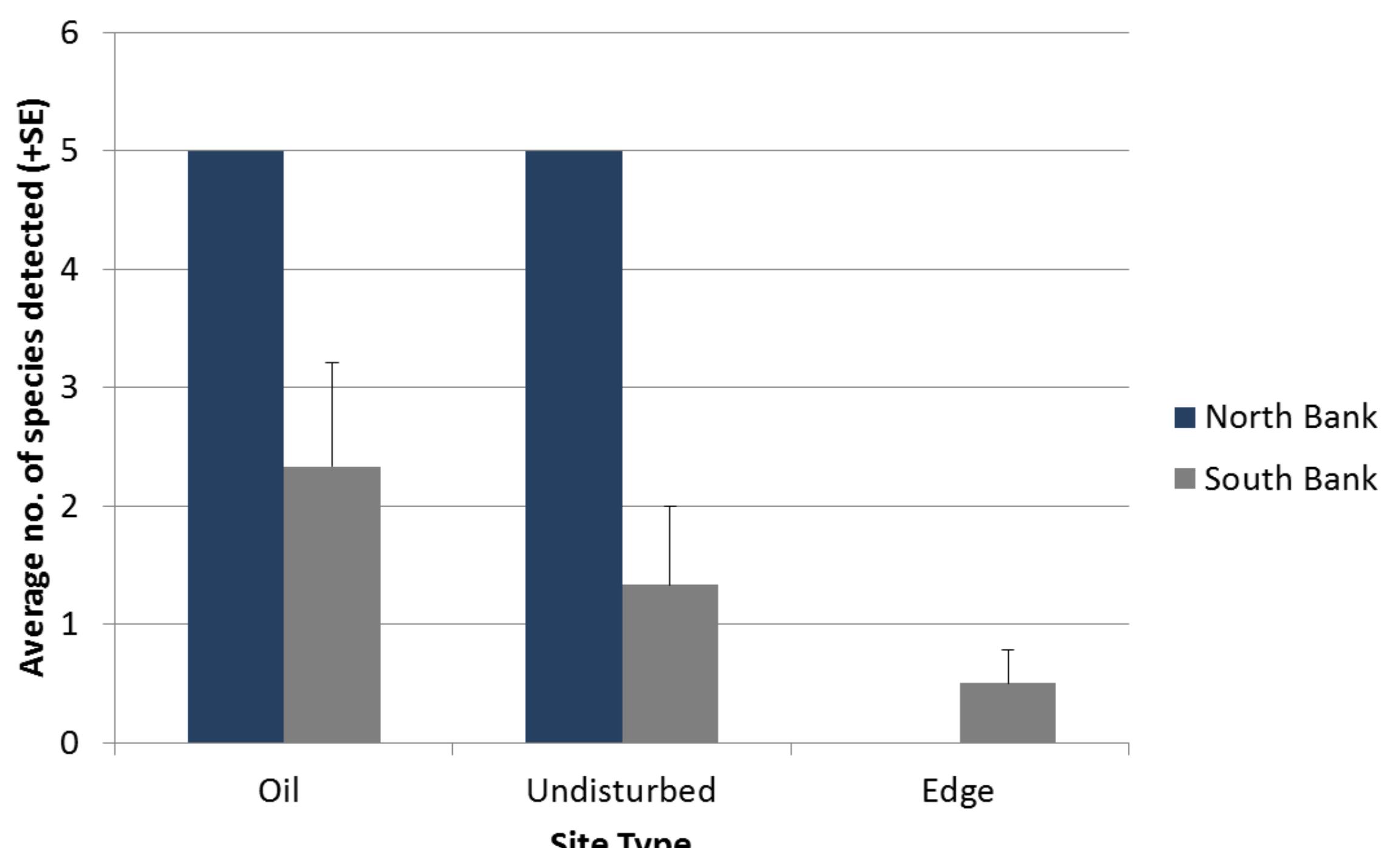


Figure 3. Average number of species (+SE) detected per camera in each stratum.

Note: North of the Nile, there was only 1 camera in the oil and undisturbed strata, and 0 edge cameras

Permits: Uganda National Council for Science and Technology NS 397, Uganda Wildlife Authority FOD /33/02

CAMERA TRAPS RESULTS

- 234 camera trap-nights
- 11 species detected
 - 9 north of the Nile River
 - 5 south of the Nile River
- 44 total detections

QUALITATIVE RESULTS

Livestock Ownership

- Livestock ownership near park borders consisted mainly of smaller livestock: goats and chickens
- The few cattle present were further from the park due to diseases transmitted by tsetse flies near the park



Human-carnivore conflict

- Most reported that livestock predation was uncommon, and several reported that it had formerly occurred more frequently
 - In the east, 2 reports of increases in predation
 - Since farming was the primary livelihood, people were generally much more concerned about crop raiding by elephants
- Only 1 reports of injuries or deaths caused by large carnivores
 - Large carnivores rarely seen outside the park

Large carnivore movements and populations

- Lions mentioned by 100% of tourism respondents as one of the most sought-after animals by tourists in MFCA
 - Most predators spotted in the Delta region, north of the river
- No consensus regarding population trends
- Reports of lions and other wildlife moving to the east
- Increased traffic driving large carnivores away from roads

CHALLENGES



- Unexpected wildlife damage to cameras (see photos above)
- Only 1 carnivore species detected!
- Extremely low estimates for occupancy rates and probabilities of detection for all species
- Very tall grass south of the river, complicating setup of cameras
- Oil exploration progressing very quickly, making it difficult to keep track of disturbances

FUTURE DIRECTIONS

1. Expand camera study both temporally and spatially
2. Expand study to total mammal species assemblage, not just carnivore focus
3. Explore disturbance soundscape by measuring noise level as an important covariate

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