

## Project Update: May 2022

### Activity period: September - December

#### 2021 Introduction

Uzungwa-scarp forest reserve form part of the Eastern Arc and Coastal Forests of Tanzania and Kenya. The reserve is a reservoir of species heritage in Tanzania and the world at large hosting rare, endemic and endangered flora and fauna. Various studies highlight wildlife hunting practices for local markets and household consumption, continuing anthropogenic disturbances and illegal activities related to timber production and trade, collection of firewood, charcoal pits, poaching, bush-meat hunting and small-scale agricultural encroachment are major threats facing the forest reserve. During this quarter, we deployed camera trap survey to monitor and report the current population data and population size of endangered Abbott's duiker. Population ecology data is essential for monitoring population trends of a species, and most important its response to management and indicators of the threats to survival of the species under study.

#### Camera Trap Sites and Settings

Camera traps were set during the dry season (September - November 2021). Preference of this period were due to easy vicinity and availability of forest mammals in localised areas such as riverbeds, water sources, path junctions and river confluence. The sampling region and camera trap sites were located along sub-montane and montane forest vegetation at 700-1,800 m elevation where Abbott's duiker is likely to be found (Grimshaw et al. 1995). Eight camera traps were installed beginning southwest of the forest reserve higher gradient elevation.

Table 1: Locations and site description of the camera trap placement

ID	Site description	Location		Elevation
CT3	Ikule river	35.964	-8.3775	985
TM0	Chita trail	35.9922	-8.3617	997
CT6	Ikule montane	35.9821	-8.3637	987
TM5	Mkangawale ridge	36.0114	-8.3363	1011
TM1	Mkangawale	36.0081	-8.3033	991
CT5	Uluti valley	36.0181	-8.3093	951
CT2	Mkangawale border	36.0202	-8.3192	1069
TM2	Uluti wildlife trail trail	36.0039	-8.3192	1025

We mounted un-baited traps with motion detecting, infrared triggered HCO Scoutguard SG565 camera 1.5m above ground at an average density of 1.5 camera/km<sup>2</sup>. Each camera was place at least 500m from one another and set to take one photograph per second after the object/animal passes within the field of view. Coordinate points and description of each camera trap station was taken and recorded respectively.



Fig: 1 Project team during camera trap setting and installation.

### **Sampling efforts and Image analysis**

Sampling duration for camera trapping took a total of 44 days, and therefore, making camera- trapping efforts of 364 trap days, which were distributed between September and November 2021. Photos were grouped into sequences that represented the same visit of an animal that triggered the same camera one or multiple in 1 hour (one event) and cumulative numbers of photo-capture events for each species trapped were tallied and trap rate was estimated. Capture events (frequencies) was represented according to Palmer et al (2018) as the number of sightings per camera trap days, which is the number of cameras times number of days operational. Capture events were used to establish capture rates, calculated as the number of captures divided by the number of trap-days per site (Rovero and Sanderson, 2005).

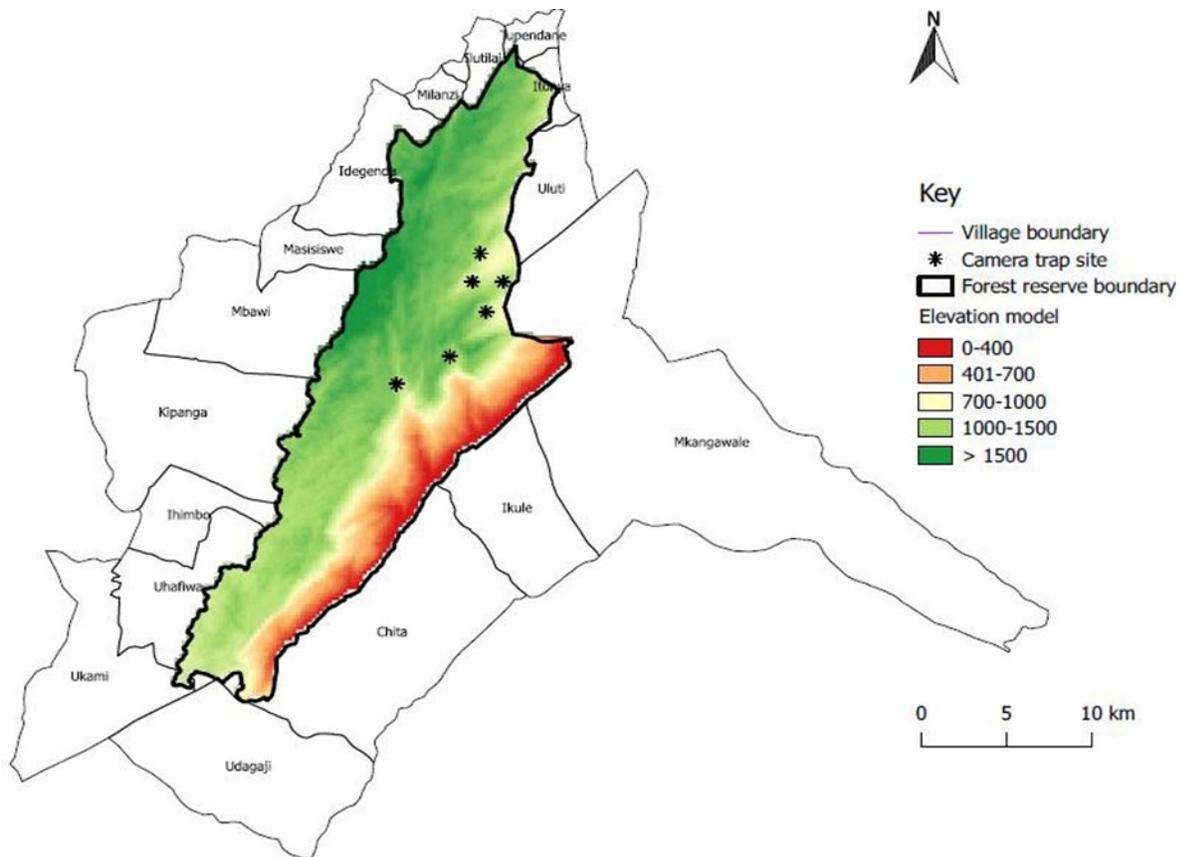


Fig. 2: Elevation map of Uzungwa forest reserve showing position of camera trap sites and villages surrounding the forest reserve.

Trap rates were used to evaluate Relative Abundance Index (RAI). As an index, RAIs is presumed to linearly correlate with overall abundances of forest mammal species and can be calibrated against independent counts to provide correlation coefficients between the index and population size. Preference to use RAIs is because the indices is easy to calculate, intuitive to understand, and can be applied to a wide variety of sampling regimes (Palmer et al, 2018) Therefore, RAI can easily be used to estimate population ecology data for Abbots' duiker and other forest mammals using descriptive statistics.

Table 2: Camera trap sampling efforts in Uzungwa scarp forest reserve

Category	Effort description
Number of camera set	8
Number of functional cameras	6
Camera trap days (per 24hr period)	264
Mean camera-trap days (per camera)	44
Total number of events (per 1 hour interval)	87
Total number of images recorded	141

### Findings and observations

In six camera trap sites, a total of 141 images were captured, representing forest wildlife behavioral activities in the forest over the trapping period. During this period, a total of 17 mammal species were trapped including primates, antelopes, small carnivores, rodents and human being incidences. Most recorded events were of red duiker (19.5%) followed by small carnivores (10.5%) and primates (6.9%). Endangered Abbots' duiker was recorded in two sites at TM5 (1011) and CT6 (987). Additional observations of mammal species not from cameras were also made in the course of camera-trap installation and visits which indicated presence of other forest mammals.

Table 3: Photo trapping results summary for wild animals in Uzungwa forest reserve indicating events, Capture Rates (R) and Relative Abundance Index (RAI) (N = 87)

Common name	Scientific name	# Of events	R (%)	RAI
Mole rat	<i>Heterocephalus glaber</i>	3	3.4	0.03
Red Colubus monkeys	<i>Procolobus gordonorum</i>	5	5.7	0.06
Red duiker	<i>Cephalophus harveyi</i>	17	19.5	0.20
Wild cat	<i>Felis silvestris</i>	2	2.3	0.02
Porcupine	<i>Hystrix africaeaustralis</i>	9	10.3	0.10
Bushbuck	<i>Tragelaphus scriptus</i>	4	4.6	0.05
Abbots' duiker	<i>Cephalophus spadex</i>	3	3.4	0.03
Giant shrew	<i>Rhynchcyon udzungwensis</i>	3	3.4	0.03
Yellow baboon	<i>Papio cynocephalus</i>	6	6.9	0.07
Giant rat	<i>Cricetomys gambianus</i>	9	10.3	0.10
Sanje mangabey	<i>Cercocebus sanjei</i>	3	3.4	0.03
Honey badger	<i>Mellivora capensis</i>	4	4.6	0.05
Banded Mongoose	<i>Mungos mungo</i>	2	2.3	0.02
Hyena	<i>Crocuta crocuta</i>	5	5.7	0.06
Human being	<i>Homo sapiens</i>	2	2.3	0.02
Tree hyrax	<i>Dendrohyrax validus</i>	1	1.1	0.01

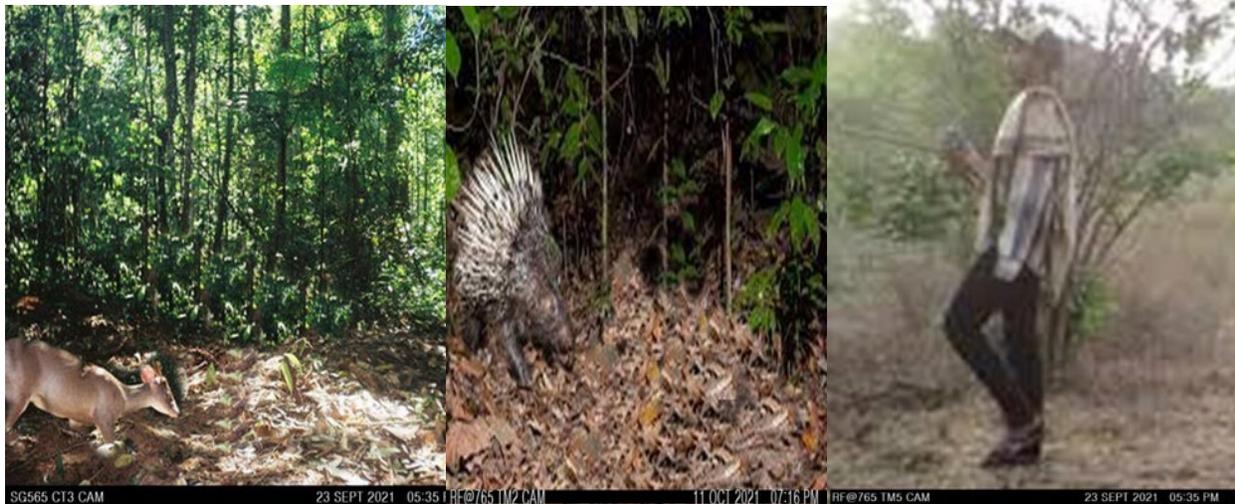


Fig 3: Some photographs taken during camera trap survey between Sept- Nov 2021.

