

Annex 2 – Interim Progress Report

1. Identification:

Partners Name: Kenya Wildlife Service

Title of the approved PRC project:

Building capacity and developing tools for elephant censusing and elephant mortality monitoring in tropical montane and forest habitats in Kenya

SSFA starting date: 01/May /2017

Reporting period: from 01/May /2017 to 31/12/2017

Background information

Survey techniques using dung counts is a well-established technique for censusing elephants in forested or heavily wooded habitat where limited visibility prohibits the use of direct observation based methods such as aerial counts and road transects. However, accurate and precise population estimates are dependent on good estimates of the dung defecation rates and dung decay rates. Most estimates of dung decay and defecation rates have been estimates for lowland tropical rainforest and there is a dearth of information for elephant defecation rates in tropical montane forests or coastal forests where most elephants in Kenya reside (Walsh and White 2005, Hedges et al. 2013). Recent studies show that DNA based capture recapture methods produce elephant population estimates that are more precise and reliable (Hedges et al. 2013).

In addition to the need to regularly update elephant population trends, there is an international requirement by CITES to standardize elephant monitoring, which was to be implemented through the CITES-MIKE program. To achieve this, the MIKE program developed a monitoring protocol for elephant populations within the designated MIKE sites.

In Kenya, Mt Elgon ecosystem is one of the designated MIKE sites, alongside Tsavo, Meru and Samburu-Laikipia and hence the need for a standardized monitoring program, especially on monitoring of illegal killing of elephants. This document therefore reports on the status of implementation of the fecal DNA capture recapture, and training of monitoring rangers for the Mt. Elgon ecosystem and Mt Kenya and aberdares.

Expected Accomplishment(s):

1. To estimate elephant dung counts, and age structures from dung measurements for Simba hills, Mau forest and Mt Elgon forest and Mt. Kenya forests.
2. Reports on elephant mortality and causes by the MIKE officers in all the Key elephant conservation areas
3. Collect dung from all the study area and properly preserve in ethanol and submit to the forensic ad genetics laboratory for analysis
4. Genotyping, and elephant genotype profiles have been optimized generated
5. Dung sample tagging and monitoring dung decay rates and conduct elephant defecation studies
6. Staff training on elephant dung census procedures and MIKE protocols, and produce training manuals
7. Procure field materials (GPS units, range finders and Campuses and tape measures) and laboratory analytical reagents procured

Output(s):

1. Reports on elephant dung estimates have been completed for Mt Elgon, Mt Kenya and aberdares are complete. The others are ongoing other are still on-going
2. Report on age structures from dung measurements and counts for Mt Elgon, Mt Kenya and aberdares are complete. The others are ongoing other are still on-going
3. Reports on elephant mortality and causes are regularly updated by the MIKE officers already trained
4. Dung samples collected and properly preserved in ethanol and submitted to the forensic ad genetics laboratory for analysis
5. Genotyping, and elephant genotype profiles have been optimized generated for Mt Elgon, Mt Kenya and aberdares are complete. The others are ongoing other are still on-going
6. Dung samples are tagged and monitored, dung decay rates established for Mt Elgon, Mt Kenya and aberdares are complete. The others are ongoing other are still on-going
7. Elephant defecation studies conducted, and elephant defecation rates estimated
8. Elephant defecation studies conducted, and elephant defecation rates estimated
9. Staff are trained on elephant dung census procedures and MIKE protocols, training manuals produced for Mt Elgon And Mt Kenya (See Training reports)

10. Materials (GPS units, range finders and Campuses and tape measures) procured

2. Summary of Status:

3. Activity delivery status

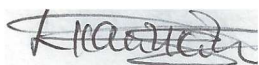
Activity	Description of work undertaken during reporting period	Deliverables	Delivery date	Status of Activity (complete/ on-going/ delayed)	Comments - brief description of implementing challenges, strategy/actions which have been adopted to address these challenges and planned actions to mitigate any identified risks
Activity 1 – Determining population status of forest elephants			01/05/2017-ongoing		
1.1 Dung surveys in Forest areas	Line transect were established in Mt. Elgon, Mt. Kenya, Mau Forest, Shimba Hills, Arabuko Sokoke and Aberdares protected areas and stratified to altitude and elephant density	Estimation of elephant populations	01/05/2017-ongoing		Dense forest and difficult terrains Bad weather
1.2 Age structure estimation	Diameter of dung bolus and footprint dimensions were measured	Approximate age of elephants	01/05/2017-ongoing	Samples from Mt Kenya, Aberdares and Mt Elgon have been done, the rest are ongoing	Collected samples were old and destroyed which were difficult to estimate
1.3 Monitoring illegal Killing of elephants (MIKE)	Opportunistic collection sighting of carcasses and elephant death reports.		5	Ongoing in all the protected areas	Carcasses were predated on, making it difficult to identify. Predation also caused sample contamination
Activity 2- Validate accuracy of Population estimation					
2.1 Fresh dung	Fecal DNA capture-recapture methods were	150 dung samples from	01/07/2017-	Mt Kenya, Mt	Cross-contamination of samples

sample collection	used to survey forested habitats.	each protected area.	ongoing	Elgon and Aberdares are 50% complete. The others are ongoing	making it challenging to attribute a particular sample to individual elephants
2.2 DNA extraction	Extraction using standardized methods and protocols	300 dung samples from Mt Kenya, Elgon and Aberdares	01/07/2017-ongoing	Extraction has been optimized and all the samples have been extracted	Old samples that had been exposed to environmental conditions were difficult to extract, and wherever it was successful the DNA yield was low
2.3 Genotyping and genetic profiling	PCR using previously validated elephant specific primers	5 polymorphic microsatellite loci for individual recognition and sex specific loci for sex identification	01/07/2017-ongoing	The assays have been optimized and 300 dung samples from Mt Kenya, Elgon and Aberdares have been tested	Low DNA yield and reduced DNA quality was challenging to amplify. This required extra optimization of assays to suit the low quality DNA samples
Activity 3- Developing elephant censusing tools					
3.1 Monitoring dung decay rates	30 -40 fresh dung piles were marked and monitored for decay and visibility	Estimation of dung disappearance rates	01/07/2017-ongoing	Was accessed and 50% has been accomplished for Mt Kenya, Mt Elgon and Aberdares. The others are ongoing	Environmental conditions such as rains accelerated the dung disintegration which fluctuates during dry seasons
3.2 Monitoring elephant defecation rates	2 – 5 elephants were located and tracked, all defecations were recorded	Defecation and dung deposition rates	01/07/2017-ongoing	50% complete for Mt Kenya, Mt Elgon and Aberdares. Others are ongoing	The difficult terrain and dense forest cover proved challenging while tracking elephant populations
Activity 4- Capacity development for animal censusing					
4.1 Recruit,	5 MIKE officers have been recruited from	To collect and maintain	01/05/2017-	Mt Kenya, Mt	Ranger turnover due to frequent

training and equipping officers	existing KWS field staffs in respective protected areas	MIKE databases and report to conservation area management.	ongoing	Elgon and Aberdares are 50% complete. The others are ongoing	transfers
4.2 Train field officers in design of line transects	Officers were trained on use of campuses, range finders and GPS units	To provide navigational skills and safety survival skills in forested habitats	01/07/2017-	Accomplished for Mt Kenya, Mt Elgon and Aberdares. The others are ongoing	No challenges
4.3 Procurement of field equipment and gears for elephant censusing	5 pedometers, 5 range finders, 5 50-metre tape measures and 5 binoculars were procured 2500	To be used on routine elephant monitoring and dung censusing in forested landscapes in Kenya	01/05/2017-	50% complete for Mt Kenya, Mt Elgon and Aberdares. The others are ongoing	Delayed procurement of equipment

4. List of attached documents

- 1. Laboratory analysis report**
- 2. Dung decay report and preliminary results**
- 3. Training report for Mt Elgon and Samburu laikipia MIKE sites**



Signature:

Date: 8/2/2018

Name and title of signing officer: Linus Njeru kariuki .

Project supervisor