# Proposal to the African Elephant Fund

**1.1 Country:** Republic of Botswana

**1.2 Project Title:** Spatial and behavioural analyses of elephants roaming outside expected home range using modern monitoring tools

**1.3 Project Location:**
Central Kalahari, Kweneng and Central Botswana

**1.4 Overall Project Cost:** $102850.00
Amount Requested from African Elephant Fund: $34000.00

**1.5 Project Duration:**
10months

**1.6 Project Proponent:**
Botswana Wildlife Training Institute (Department of Wildlife and National Parks, Ministry of Wildlife Environment and Tourism)

**1.7 Name of Project Supervisor:**
Leungo B. Leépilé

**1.8 Address of Project Supervisor:**
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**1.10 Email:**
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**1.11 Fax:**
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**1.12 Date proposal submitted:**
21 August 2015

## 2.0 Project Summary

Elephants in Northern Botswana are internationally recognised to have the highest density worldwide with the 2012 population estimated at 207 545. This therefore results in repetitive human-wildlife conflicts. The current strategy to mitigate this has been the use of olfactory repellents, bees, electric fence and early maturing seeds. This is increasingly being perceived as short term solution requiring repetitive action. Increasing pastoralism, horticulture, climate change effects, tourism and urbanization continually drive the already dense elephants away from their current home range. The elephants are increasingly found in areas where they have not been seen in over half a century. Space use patterns in relation to human activity have been studied for areas with high density; data is however deficient for areas outside the expected home range. An estimation of habitat utilization and source populations would ideally enable informed and sustainable decision making by management. Rephrase :*For all we know the elephants are continually knocking from one hostile environment to another, presumably being driven right back to the same conditions that drove them out in the first place.*

Botswana Wildlife Training Institute is the training division of the national wildlife authority in Botswana, training pre and in-service rangers, wardens and officers. Through in-course monitoring exercises and supervised field projects, techniques would be used for training as well as data-collection purposes.

## 3.0 Which Priority Objectives and Activities in the African Elephant Action Plan does this project fall under?

The project is aligned to Objective 5: Strengthened Range States Knowledge on African Elephant Management

STRATEGY 5.1: Determine and monitor the status of African elephant populations and their habitat within and among elephant range States.
Activity 5.1.2. Conduct inventories for unknown/less known populations to ascertain their biological status and their habitats.
Activity 5.1.3. Provide satellite collars to monitor prioritized populations within and amongst range States.
Activity 5.1.4. Investigate new and economically viable methods for the study of elephants on the continent.

STRATEGY 5.2: Develop mechanisms of acquiring and disseminating information within and among elephant range States.
Activity 5.2.1. Maintain and update databases on elephant populations for management purposes.
Activity 5.2.2. Coordinate research efforts, compile and disseminate research findings.

## 4.0 Project Rationale

In the 2010-2014 period, 11070 elephant cases were recorded in the elephant range, and a total of BWP 9241794 (US$ 909135.14) spent compensating these (source: DWNP PAC registers). Given this scenario, there is possibly misdirected elephant-control effort due to lack of scientific information. This situation is bound to be worsened by increasing densities, increasing hostility on and by elephants. The 2005 elephant population was estimated at 151000, by then the range having expanded by 43% since 1994, and 297% change between 1992 and

2012. Without proactivity, the situation is already spiralling out of control. Antipoaching resources are understandably prioritised to high density areas, leaving a critical level of vulnerability elsewhere -prone to exploitation by elephant poachers.

At the training establishment, lack of equipment has consistently hindered complete transfer of knowledge which directly affects to field productivity. Through operational-capacity building, the current body of knowledge in Botswana elephant studies would no longer have to rely on data from private entities. Once these wildlife monitoring techniques have been fully demonstrated, the wildlife managers can be inspired to implement in their respective stations. With this being the case, it is easier for operatives to understand, appreciate and therefore implement appropriate mitigation measures. This furthermore fulfils the Institute's mandate of being the source of research data to wildlife managers in the Department.

**5.0 Detailed Proposal**

The general objective of this project is to enhance the understanding of space use by outlying elephants, focusing on aspects that can be investigated in the short term that could aid in formulating effective mitigation and management strategies.

Specifically wildlife operatives will be provided with hands on experience in monitoring their elephants thereby building operational capacity within the Department. We shall determine key influencers of elephant movement patterns by carrying out detailed ground surveys including track and dung . Lastly we will gain a wholistic appreciation of factors influencing habitat selection and space use by elephants outside their expected ranges.

First Quarter

*Planning*

The current Institutional training plan will be aligned to the project, ensuring regular practical exercises where trainees will be thoroughly trained on all aspects of the selected identified monitoring techniques. Protocol documentation will be provided for all techniques, detailing each stage from study design to data analysis and reporting. Sampling and collaring sessions will be scheduled in collaboration with veterinary, Problem Animal Control and other relevant units of the Department.

*Purchasing of training/research equipment*

GPS collars, camera-fitted quadcopter drones, GPS devices, camera-traps,
This identified equipment will be purchased during initial phase.

*Milestone:* All equipment purchased and arrived in store

*Timeline:* Mon 03 Jan 2016 – Fri 11 Mar 2016 (50days)

Second Quarter

*Coordinated data collection/training exercises*

In-course training exercises:

Spatial use: Collaring, identifying source populations
Distribution: Camera trapping in quadrants, corridors, & focal points
Habitat utilization: GPS, terrain mapping using aerial & ground images
Desktop research
Data collection and analysis

*Milestone:* 40 officers trained in each and every one of the techniques. Protocol documentation distributed to trainees.
*Timeline:* Mon 14 Mar – Fri 3 Jun 2016 (60 days)

Third Quarter

Supervised field projects; each focusing of a specific objective/technique

(This involved identification of elephants roaming outside their home ranges, collaring or using other identified techniques to carry out the spatial or behavioural analyses)

This draws from lessons learnt from Bennitt[1], Songhurst[2], and CTA (movement patterns of relocated lions)

Information dissemination through a series of seminar presentations.

Report writing.

*Milestone:* Data collection started. Report produced and submitted. Presentations
*Timeline*: Mon 6 Jun – Fri 30 Sep 2016 (83 days)

Fourth Quarter

*Evaluation*

Evaluation will be supervised by the Botswana CITES desk office

Verification –follow up exercises in liaison with relevant officers

*Reporting*

Consolidation of information

Proceeding & presentation footage will be hosted on the official website http://www.mewt.gov.bw/DWNP

A comprehensive report will be submitted by the proponent.

*Milestone*: Report produced, presentation footage uploaded
*Timeline*: Mon 3 Oct – Fri 16 Dec 2016 (55 days)

Benefits:

Enhanced understanding of factors influencing space use by elephants outside regular home ranges

Operational capacity in data collection and interpretation in relation to elephant populations outside regular home ranges

**6.0 Project Timeline**

Training will be carried out in synchrony with the Institute's training calendar, designed to coincide with the relevant subjects and courses. The data collection will be used for and beyond the project duration to ensure sustainability of the introduced studies and progression in information gathering.

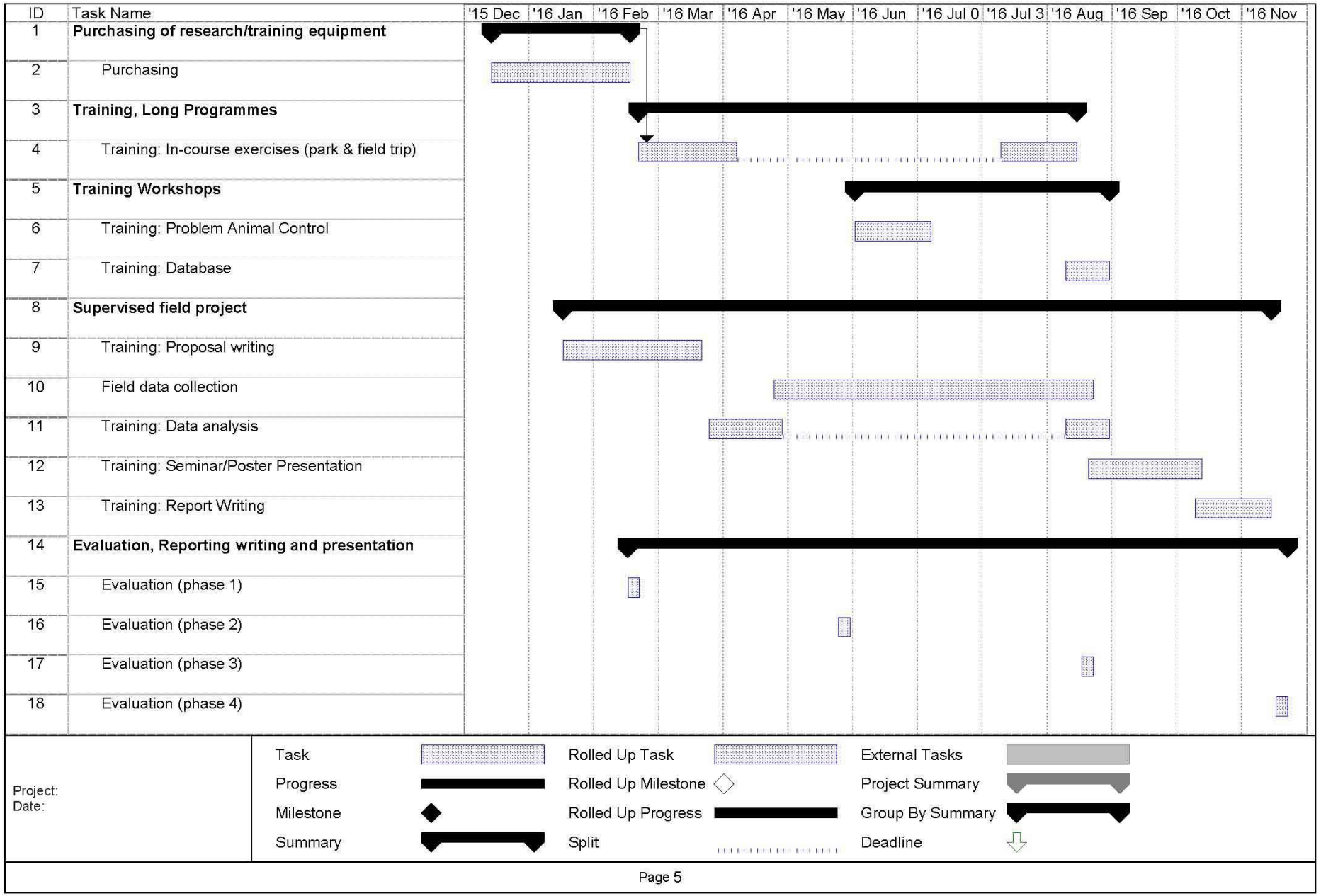
BUDGET

**7.0 Has this project received or been pledged any other sources of funding (external)?**

The institution receives approximately $10000.00 annually for equipment, which it is currently using for camera traps (10) SD cards (10) GPS devices (30). Open-source software is normally used for data analysis. Journal databases and other spatial analysis software are available through subscriptions from other government departments. Salaries, allowances, vehicle fuel, consumables, training and seminar-presentation costs will be paid for by the proponent.


1. Bennitt E, Bonyongo MC, Harris S (2014) Habitat Selection by African Buffalo (Syncerus caffer) in Response to Landscape-Level Fluctuations in Water Availability on Two Temporal Scales. *PLoS ONE* 9(7), 1-14

2. Songhurst, A., & Coulson, T. (2014). Exploring the effects of spatial autocorrelation when identifying key drivers of wildlife crop-raiding. *Ecology and evolution*, *4*(5), 582-593.


ID
Task Name
'15 Dec
'16 Jan
'16 Feb
'16 Mar
'16 Apr
'16 May
'16 Jun
'16 Jul 0
'16 Jul 3
'16 Aug
'16 Sep
'16 Oct
'16 Nov
1 Purchasing of research/training equipment
2 Purchasing
3 Training, Long Programmes
4 Training: In-course exercises (park & field trip)
5 Training Workshops
6 Training: Problem Animal Control
7 Training: Database
8 Supervised field project
9 Training: Proposal writing
10 Field data collection
11 Training: Data analysis
12 Training: Seminar/Poster Presentation
13 Training: Report Writing
14 Evaluation, Reporting writing and presentation
15 Evaluation (phase 1)
16 Evaluation (phase 2)
17 Evaluation (phase 3)
18 Evaluation (phase 4)
Project:
Date:
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Group By Summary
Deadline
Page 5

**7.1 Please provide a detailed proposed budget for this project (in US$).**

Phase 1 (Purchasing of research/training equipment): 40000.00
Phase 2 (In-course training): transport, accommodation, allowances
Phase 3 (Field data-collection): per diem, transport, accommodation, allowances
Phase 4 (Analysis, consolidation and presentations): accommodation, seminars, multimedia production and hosting

Details included in Table annexed to the document:

*Any other budget lines:*

7.2 Please specify the proponents contribution towards the project

Please submit the completed proposal, either by:

Email:

Fax:

You should receive acknowledgement of receipt of your proposal within 14 days. If you do not receive such an acknowledgement, please telephone:

Further details on any of the above details may be requested by the Steering Committee of the African Elephant Fund.

| Full Proposal Budget | | | | |
|---|---|---|---|---|
| | **Budget line** | **Expected source of funds and amounts** | | |
| | | **Proponent (GOVT.)** | **AEF** | **Other** ***(please specify)*** |
| 1. | **Field Equipment**<br><br>Elephant Iridium collar (3),<br>$ 18.75 – monthly subscription<br>$ 0.03 per transmitted GPS location (960)<br><br>Single collar cost– $3937.50 ex VAT and shipping | | $12000.00 | |
| | Immobilization & revival drugs | $500.00 | | |
| | Camera-fitted Quadcopter drones (3) | | $12000.00 | |
| | Rotating camera traps (20), | $3000.00 | $5000.00 | |
| | 12MP SLR camera with 80-400mm f/4.5-5.6 zoom lens | | $3500.00 | |
| | Project computer (1), | | $1000.00 | |
| | LaserJet color printer (1). | | $500.00 | |
| | GPS devices (30) | $3000.00 | | |
| 2. | **Meetings/workshop**<br>**Seminar presentation**<br>Conference facilities | $200.00 | | |
| 3. | **Production of Awareness and Education materials**<br>Video recording consumables | $10.00 | | |
| 4. | **Capacity building (Training)**<br>Short courses:<br>Problem Animal Control, Database management<br>Long Programmes:<br>Certificate & Diploma: Zoology, Database<br>Collaborative research work with Departmental PAC personnel and Veterinary officer.<br>Supervised field project | | | |
| 5. | **Consultancy /professional backstopping services** | | | |
| 6. | **Field supplies (e.g. Ranger Uniform, etc)** | $500.00 | | |
| 7. | **Transport, Accomodation, Allowances**<br>Student training allowance (40x10x15.00)<br>Student training allowance (4x60.00)<br>Vehicle fuel (2000x0.70)<br>Salary for trainers & others (4x10x1350.00) | $62000.00 | | |