Final Project Evaluation Report

Your Details	
Full Name	Tariku Mekonnen Gutema
Project Title	African wolf density in the Ethiopian highlands and its implication for Ethiopian wolf conservation
Application ID	24502-B
Grant Amount	£9,998
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1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To estimate maximum response range (% of African wolves responding to call-up method) using the 11 collared African wolves				To decide the distance between calling stations, call-ups methods require local calibration. Hence, we conducted calibration experiments for the African wolves to estimate maximum response range before the formal data collection. Since we had the collared African wolves from Guassa Community Conservation Area and Borena Saynt National Park, we did eight independent calibration experiments on 17 individuals of African wolves out of which 12 responded (0.71 probabilities) at radius of 2 km. Hence, using 2 km as response distance yielded a sampling area of 12.6 km^2 around each calling station were taken as standard (for more detail methods and result see the separate report attached).
To estimate the density of African wolves				A total of 83 African wolves were recorded at call stations. Over the entire study period, African wolves were recorded 20 (62, 5%) of the total 32 calling station sites. The GCCA had the largest density with 0.52 individuals km^{-2} of AWs; however the maximum individuals in one calling station were recorded from Bale. And the mean density of African wolves in Ethiopian Highlands was estimated as 0.43 km^{-2}. The density of spotted hyena ranges 0.2 to 0.3 km^{-2}.
To determine the distribution and habitat preference of African wolves on the Ethiopians Highlands				During the call-up, we recorded the number of African wolves observed, habitat type and GPS of the place. We recorded 96% of African wolf individuals near to human settlement (in the buffer of protected area and farmlands).

				This agrees with our former study using 11 collared African wolf individuals.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

Though we were successfully completed our objective, One difficult issue during our study of African wolves using 'calling up method' was, the environmental noise that disturb the community at the night, as African wolves live in areas near to human settlement. However, we tackled the problem by awareness raising the community what we do in the area.

3. Briefly describe the three most important outcomes of your project.

The study confirmed the following points; the population of African wolves:

The main outcomes of our study are as follows.

a) We determined the maximum response range of African wolves during call-up method. The response range is quite important for further study of African wolves and other similar canids such as jackals density. Since we had the collared African wolves it was a good opportunity to do the local calibration.

b) We determined the population or density of African wolves in the Ethiopian Highlands which is crucial in conservation of Ethiopian wolves.

c) We evaluated the distribution of African wolves in different Ethiopian Highlands and habitat use (Matrix, buffer and core).

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

During our transect surveys and call-up of African wolves, we managed to educate eight assistants from the community. We have also taken a few local children on our car, whenever possible, to introduce them to our work on how to estimate wolves. They have all been pleased about our enthusiasm to study something they consider. We are keen to use this momentum to plan an awareness campaign in the future.

5. Are there any plans to continue this work?

Yes, African wolves live in proximity to human settlement usually in the farmlands and buffer zone of the protected area with strong interaction with the human community. Though African wolves are considered as vermin due to sheep predation in the Ethiopian Highlands, they contribute in rodent pest management and environmental cleaning. And the conflict between African wolves and the community indirectly affects the Ethiopian wolf conservation by intensifying the interference conflict between the two species. Hence, we plan to increase the

awareness of the community about the role of African wolves and finding alternative source of lively hood to the community to mitigate the impact.

6. How do you plan to share the results of your work with others?

The results of this study will be widely shared with the policy makers and decision-making authorities to implement conservation measures. We are planning to publish our work in peer review journals. Most importantly, we will share outcomes of the study with the local community by conducting community workshops and audio-visual presentations and through the local media.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The RSG fund was used for 1 year according to the plan. However, we are continuously recording the conflict between African wolves and Ethiopian wolves. And also we will continue collecting the detail reproduction ecology of African wolves (den site selection, number of pups, number of pups successfully grow, major threats for their reproduction) which is crucial during management plan development for conservation.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	**Budgeted Amount (£)**	**Actual Amount (£)**	**Difference (£)**	**Comments**
Equipment (call-up materials and battery)	518	526	+8	Local (exchange rate 32,7 ETB)
Per diem for field assistants	1920	2020	+100	(exchange rate 32,7 ETB)
Per diem for Principal Investigator	1470	1360	-110	(exchange rate 32,7 ETB)
Transportation (car rent)	6090	6088	+2	(exchange rate 32,7 ETB)
Total	**9998**	**9994**	**-4**	

9. Looking ahead, what do you feel are the important next steps?

To promote the co-existence of African wolves and Ethiopian wolves in the Ethiopian highlands, local education efforts highlighting the role of African wolves in rodent

pest management and environmental cleaning is crucial to reduce the persecution of African wolves due to sheep predation. In addition, to preserve habitat preferred by Ethiopian wolves (the intact habitat), giving attention to this habitat is critical. Therefore, it is crucial to aware the community about the role of African wolves in ecosystem service and discussing method of mitigating the negative impact of carnivores to the community through predation.

African wolves prefer areas in proximity to human settlement and the community attacks the African wolves through killing pups (by closing the den site, smoking in the den and poisoning). Hence, identification of den cities and potential area for reproduction is quite important.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes we used all presentation undertaken, and RSFG will be acknowledge in all the upcoming publications and conference attended

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

I am working with my advisors:

Dr. Anagaw Atickem and Prof. Bekele Bekele: from Department of Zoological Sciences, Addis Ababa University, PO Box 1176, Addis Ababa, Ethiopia.

Prof. Claudio Sillero-Zubiri: from Wildlife Conservation Research Unit, Zoology Department, University of Oxford, Tubney House, Tubney OX13 5QL, UK.

Prof. Nils C. Stenseth: from Centre for Ecological and Evolutionary Synthesis (CEES), Department of Biosciences, University of Oslo, PO Box 1066, Blindern, NO-0316 Oslo, Norway.

12. Any other comments?

The current range of Ethiopian wolf is limited to seven isolated mountain ranges. The major threats of the Ethiopian wolf include disease (rabies), increasing pressure from expanding human populations (resulting in habitat degradation through overgrazing), and interbreeding from free-ranging dogs. Currently, we identified interference competition with African wolves as additional threats of Ethiopian wolves which is escalated by anthropogenic impacts. Despite the large size of Ethiopian wolves, using group size advantage, African wolves are usually the winner during antagonistic interaction. Ethiopian wolves were extinct from some of Ethiopian Highlands, such as Mount Choke, while African wolves are regularly observed. Moreover, there is a plan to re-introduce Ethiopian wolves to Mount Choke from Bale Mountains National park.

Therefore, more study is needed regarding the interaction of the African wolves and Ethiopian wolves to save the endangered Ethiopian wolves due to their low population.

Figure 1. Surveying African wolves in Guassa using Call-up methods during night

Figure 2. Surveying African wolves in Guassa using Call-up methods during late afternoon

Figure 3. Tariku adjusting the camera trap to capture the African wolves in Guassa Coomunity Conservation Area.

Figure 4. African wolf taken by camera trap on Guassa Community Conservation Area.