

Report submitted for Rufford Small Grants for nature conservation project by Tariku Mekonnen Gutema, Centre for Ecological and Evolutionary Synthesis, University of Oslo

Foraging ecology and trophic niche overlap between sympatric African wolf and Ethiopian wolf in the Ethiopian Highlands



Email: jtarikumg@gmail.com

November, 2015

Introduction

African wolves were first reported in the Ethiopian highlands in 2011 and later its presence confirmed in several African countries (Rueness et al. 2011, Gaubert et al. 2012, Waters et al. 2015). The African wolf was formerly confused with golden jackal. The recent genomic wide research reveals, it is a distinctive species with no sign of hybridization (Koepfli et al., 2015; Rueness et al. 2015). Koepfli et al. (2015) propose all the former African golden jackals in throughout African countries belong to the same African wolf species while Gaubert et al. (2012) suggest the co-occurrence of both African wolf and golden jackals in Africa.

This study is the first African wolf behavioral ecology study from individuals confirmed from DNA test. The study includes habitat use, ranging ecology, activity patterns, diet and foraging ecology. This study also provide unique insights into interactions between African wolves and sympatric Ethiopian wolves (*Canis simensis*), in particular with the exploitative and interference competition (CRELL 2001) between these two canid species. Across the Ethiopian Highlands, African wolf lived in sympatric with Ethiopian wolf. Ethiopian wolf feed primarily on rodents (Sillerozubiri and Gottelli 1995, Ashenafi et al. 2005) and if African wolf also feed on rodents as their primary food source, the potential of exploitative food competition is high.

Methodology

Study area

Guassa community conservation area ($10^{\circ}15'–10^{\circ}27'N; 39^{\circ}45'–39^{\circ}49'E$), is located at 265 km northeast of Addis Ababa by road and 135 km north of Debre Birhan, the capital of north Shoa Zone (Fig. 1). It is with an area of 111 km² Afroalpine grassland and protected by local community for the past 400 years. Guassa is home to important populations of several large mammalian species endemic to Ethiopia, including over 1,000 geladas (Peter and Norman, 2010) and 28–35 Ethiopian wolves, At least 111 bird species, including 14 endemic to Ethiopia, as well as numerous species endemic to the Horn of Africa, such as the thick-billed raven (Tilahun et al., 1996). It has also other relict biodiversity with significant natural forest and high altitude grassland flora and fauna.

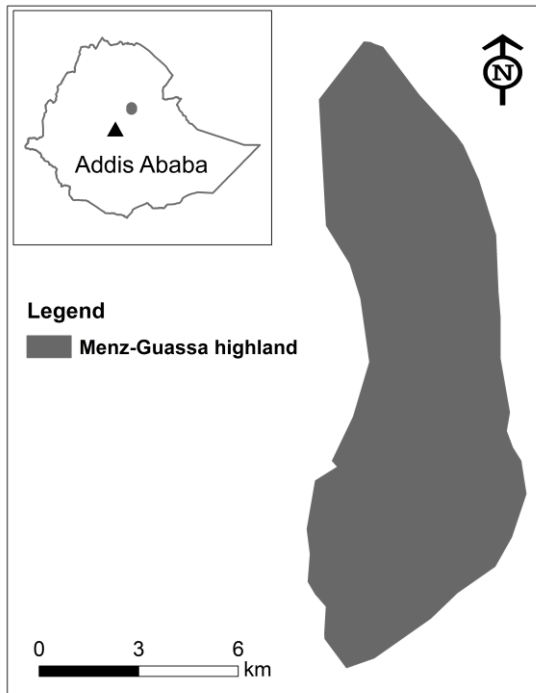


Figure. 1. Guassa Community Conservation Area

Methods

Collaring the African wolf

Preliminary survey was conducted in the Guassa community conservation areas (From January to March, 2015) to select an appropriate focal group in the vicinity of the Ethiopian wolf range for collaring. We bought 14 VHF collars (from Followit AB, Bandygatan 2, 711 34 Lindesberg, E-mail: wildlifesales@followit.se). Once the focal groups was identified, we set our two leg-hold traps (Figure 2) in a 1-m² trap-garden baited with meat assisted by very well experienced Ethiopian wolf Conservation Program (EWCP) experts. 7 African wolf individuals (two adult males, three adult and two sub adult females) were captured and successfully collared. Captured animals were covered with a blanket to induce passivity and allow physical restraint, and subsequently immobilized using a combination of medetomidine and ketamine during this time. And we took all important measurements (Fig.3). We have been tracking the collared individuals during day and night to record the GPS position, habitat use, activity pattern and any interaction with other species especially with Ethiopian wolf.



Figure 2. Two leg-hold traps used in capturing the African wolf borrowed from EWCP



Figure 3. Taking different measurements from African wolves

Preliminary results

Much of the data is still in the process of data entry in appropriate format and major analysis is still to be carried out. Manuscripts will be submitted to Rufford in few months from now. Here I will present preliminary results.

There were considerable variation between home ranges of individuals collared African wolves (Table 1, Fig.8).

Table 1. Home range of African wolf based on 100% minimum convex polygon.

Code	Home range (km ²)
Collar 490	7.09
Collar 290	10.92
Collar 550	1.82
Collar 450	2.20
Collar 310	2.28
Collar 530	12.52

African wolf feed on insects, vegetables, carcass, livestock, in particular sheep, and occasionally hunt on rodents. During barely season, African wolf in the vicinity of the barely crop depends much on rodents killed by traditional rodent traps, ‘difit’ as their main food source (Fig. 4). Difit is set by the local farmers to protect their crop from rodent pests.

March and April is the breeding season for African wolf giving puppies from 3 to 5. They keep their puppies in den site and change the site consistently to get them away from human persecution (Fig 5: photo taken by camera trap). Camera traps were used in dens of African wolf to gather data on the number of puppies. Though they lived in a group 3 to 7, they are solitary during much of the food search. African wolf are active both during day and night, but most active during evening and dawn.



Figure 5. Collared African wolf near to its den site



Figure 5. Local method of rodent killing from field crops ('Difit')

No Ethiopian wolf was observed coming to the farms to feed rodents killed by Difit.

African wolf is not efficient on rodent hunting and the exploitative food competition may not be significant. However, the interference competition is intense. In this study, Ethiopian wolf was usually sighted between the two groups of African wolf with in 4km range in center part of the protected area (Fig.8). All the observed interaction is agonistic. Ethiopian wolf dominate the interaction in their territory, while African wolf dominate the fight and chase away the Ethiopian wolf in its territory and it seems home range defence. I have the expectation that African wolf is subject for human persecution and its population is controlled by low survival rate of their juveniles due to human kills. What could be the fate of Ethiopian wolf if the African wolf was not persecuted by humans that keep the population low seemed uncertain. Could the African wolf displace the Ethiopian wolf? It is important to re-examine if the reason of the extermination of the Ethiopian wolf in Mount Choke and other Ethiopian highlands (Marino 2003) has something to do with the African wolf.

The African wolf is the most serious livestock predator, and keep eye on sheep on most of their search for food. Humans in the area respond by attempt to eradicate or at least keep them in low number by blocking den sites of the African wolf during their breeding period.

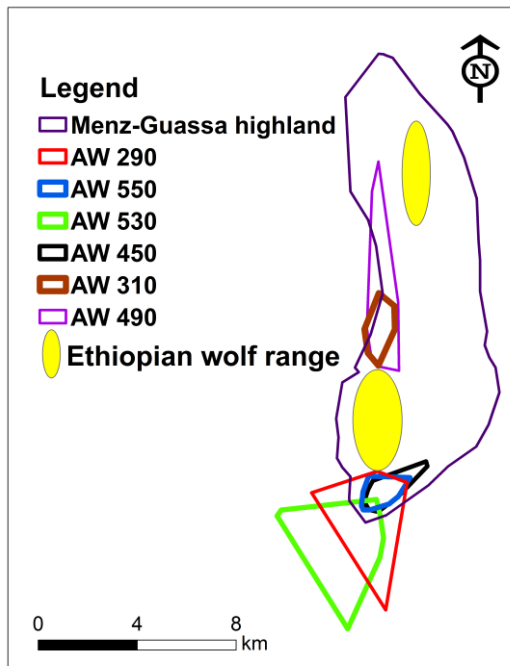


Fig 8. Home range of African wolf and range of Ethiopian wolf

References:

- Ashenafi, Z. T., T. Coulson, C. Sillero-Zubiri, and N. Leader-Williams. 2005. Behaviour and ecology of the Ethiopian wolf (*Canis simensis*) in a human-dominated landscape outside protected areas. *Animal Conservation* **8**:113-121.
- CRELL, S. 2001. Four Factors Modifying the Effect of Competition on Carnivore Population Dynamics as
- Illustrated by African Wild Dogs
- Conservation Biology* **15**:271-274.
- Gaubert, P., C. Bloch, S. Benyacoub, A. Abdelhamid, P. Pagani, C. A. Djagoun, A. Couloux, and S. Dufour. 2012. Reviving the African wolf *Canis lupus lupaster* in North and West Africa: a mitochondrial lineage ranging more than 6,000 km wide. *PLoS One* **7**:e42740.
- Rueness, E. K., M. G. Asmyhr, C. Sillero-Zubiri, D. W. Macdonald, A. Bekele, A. Atickem, and N. C. Stenseth. 2011. The cryptic African wolf: *Canis aureus lupaster* is not a golden jackal and is not endemic to Egypt. *PLoS One* **6**:e16385.
- Sillerozubiri, C., and D. Gottelli. 1995. Diet and Feeding-Behavior of Ethiopian Wolves (*Canis-Simensis*). *Journal of Mammalogy* **76**:531-541.
- Waters, S., A. El Harrad, Z. Amhaouch, L. Taiqui, and H. Senn. 2015. DNA analysis confirms African wolf in Morocco

Pages 15-17 *Canid Biology & Conservation*.