

# Pilot carnivore survey in Borana National Park, Oromiya Region, southern Ethiopia

March 2023



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10-26 March 2023

Report published in Oxford, May 2023

Wildlife Conservation Research Unit - University of Oxford (WildCRU); Ethiopian Wildlife Conservation Authority (EWCA); Oromia Forest and wildlife enterprise (OFWE). Under the umbrella of the Large Carnivore Survey of Ethiopia (LCSE), a project hosted by the Ethiopian Wolf Conservation Programme (EWCP) in collaboration with Ethiopian wildlife Conservation Authority (EWCA).

Funded by the Born Free Foundation and Zoo Leipzig.



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Cover picture: cheetah in Sarite block, Borana NP.

## Summary

The objective of this mission was to gather information on the status and ecology of Borana National Park (BNP) in southern Ethiopia, with special reference to its ecological potential for large carnivores. We observed spotted and striped hyaenas (*Crocuta crocuta*, *Hyaena hyaena*), and although we did not find evidence of lions (*Panthera leo*) the regular occurrence of livestock depredation by lions as reported by many credible sources is an indication of their presence in the southern parts of BNP only. Leopards (*Panthera pardus*) were recognised by several informants and are definitely present around most mountain areas. We found a surprising abundance of cheetah (*Acynonix jubatus*) footprints and the species is possibly the most abundant larger carnivore in the area and definitely a flagship species. We found no evidence for the presence of African wild dogs (*Lycaon pictus*); the park ecologists claim that the species is present and will continue camera trapping efforts in selected locations. We did no quantitative experiments and cannot speculate about densities of any of the species listed here.

Borana Zone experienced a 3 year drought, as a coincidence the first rain since 3 years fell on the day of our arrival and it rained abundantly in subsequent days. As part of the humanitarian relief efforts, livestock were exceptionally allowed into the park and indeed we found livestock almost everywhere. The Borana culture and livelihoods system is not hostile to wildlife and with proper management and continued rain the park should be able to recover in the Gamedo-Sarite block. The other blocks experience more severe encroachment and may require further attention. People are very tolerant to limited livestock losses from cheetahs, but lions were extirpated from most areas in retaliation for conflict and their absence may have further boosted cheetah densities. Lions are currently only possibly present in an area where armed rebels may also have been operating at night and therefore we were unable to use call-ups.

We used 25 camera traps but two malfunctioned and three were removed by local people so only 20 were functional throughout; over a total of approximately 200 trap-nights and 10 days of driving around, we recorded 29 species.

## Team

The team was composed of:

1. Hans Bauer (WildCRU)
2. Jarso Denge (OFWE / Borana NP expert)
3. Scouts: Obda Bule, Kushu Okayo, Dida Golicha
4. Park staff: Negussie Fayiso, Galgalo Dadacha, Okutu Dida
5. Tsyon Asfaw (PhD student – support from Addis Abeba)
6. Fikirte Gebresenbet (Postdoc – support from New Hampshire)
7. Claudio Sillero (WildCRU – support from UK)

## Introduction

The lion is a charismatic species and there is considerable international interest in its status. Recent publications have highlighted declines of lion range and numbers across Africa, especially in West, Central and East Africa (Bauer et al, 2015a). The lion is listed as Vulnerable on the IUCN Red List of Threatened Species (Bauer et al, 2015b). The other large carnivores found in Ethiopia are spotted hyaena (Least Concern), leopard (Vulnerable), cheetah (Vulnerable) and African wild dog (Endangered). The distribution of these large carnivores across Ethiopia is poorly documented, and WildCRU in partnership with EWCA and sponsors endeavours to carry out a series of field surveys collectively referred to as the 'Large Carnivore Survey of Ethiopia', in line with national action plans for lion cheetah and African wild dog endorsed by EWCA (EWCA, 2012 a & b).

The mission was undertaken with permission from the Ethiopian Wildlife Conservation Authority and from Oromia Forest and Wildlife Enterprise. It was implemented in partnership with the Wildlife Conservation Research Unit, University of Oxford (WildCRU), the Ethiopian Wolf Conservation Programme (EWCP) and Antwerp University in Belgium (PhD student Tsyon Asfaw). The operational costs were generously covered by the Born Free Foundation and Zoo Leipzig.



*Figure 1: Livestock is common throughout the region*

## Methods

We used the following methods:

1. Call-ups, or calling stations; broadcasting animal sounds at high volume to attract carnivores.
2. Camera traps; fixed to trees, these automatically take a picture whenever their sensor detects movement in front of the camera). The cameras were operational for a total of 200 trapping-nights.
3. Surveying for tracks and signs (walking transects looking for footprints in sand or clay substrate, or looking for scats).
4. Listening for roars and other sounds.
5. Interviews with park staff and community members (using a set of pictures of animals found in the area, Annex 1).
6. Reviewing unpublished reports.

We were in BNP 12/3 – 24/3 of 2023, camera traps were placed throughout as indicated in Fig. 2.

## Area description

The BNP is one park administratively but it is composed of five blocks that are not connected, although efforts are being made to link up the two most important blocks with a corridor in future. There is a paucity of information despite the long history of at least the block that was previously called Yabello Wildlife Reserve. The entire park is located in Borana zone, southern Oromia, and currently has a surface area of circa 2500 km<sup>2</sup>. The only detailed monograph we were able to find is an unpublished report of a Ethio-Russian mission to the area by Prof. Lavrenchenko and Prof. Afework in 2016. That report lists species found in Arsi Mountains and in Borana NP and it is not clear which species is found where, but it lists some important bird species: Ethiopian Bush Crow (*Zavattariornis stresemanni*), White-tailed Swallow (*Hirundo megaensis*), Prince Ruspoli's turaco (*Tauraco ruspalii*) and Salvadori's serin (*Serinus xantholaema*). Borana NP is well known as a site of ornithological importance, but here we focus on terrestrial wildlife (Lavrenchenko et al. 2016).

Borana zone is part of a larger area in East Africa that experience a severe drought, with not a single drop of rain since 2020 (<https://www.icpac.net/fsnwg/joint-statement-november-2022/> accessed 19/4/23). By coincidence, the first rain fell on the day of our arrival in Yabelo and we experienced rain almost every day, which gave us the opportunity to see vegetation change. It is possible that wildlife occurrence will also change in response, our pilot survey should be interpreted as a 'snapshot' at a very particular point in time.

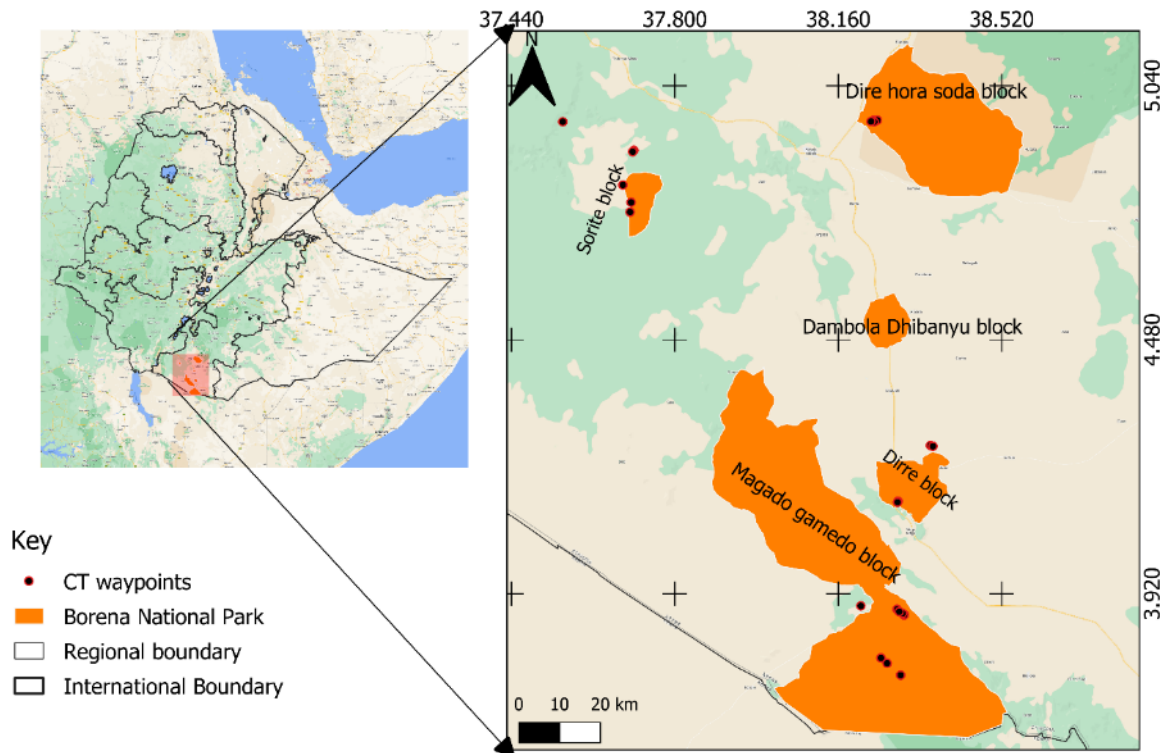


Figure 2: Location of BNP in southern Ethiopia, showing GPS points of camera traps.

## Results

In 200 trapping nights and all our transects and drives, we observed the mammal species listed in Table 2; evidence of most entries is given in Annex 2. We highlight the evidence for lion, leopard, cheetah, spotted hyaena and striped hyaena making this an important area for large carnivore conservation. We observed many cheetah footprints across the ecosystem and cheetah were typically recognised by people we encountered. We admit that the camera trap image of leopard is unclear, but add that we also observed leopard spoor. The status of wild dog (*Lycaon pictus*) is uncertain, some informants claim that it is present but due to ambiguities we do not accept this as sufficient evidence. Note that this was a pilot survey and that camera traps were not placed in a grid but opportunistically, and for a short period of time. We do not make any inference about abundance of any species, only presence/absence.

Table 2: mammal species observed during our mission to the BNP

English name	Scientific name	Source
Carnivores	Carnivora	
Lion	<i>Panthera leo</i>	Interviews – Magado only
Cheetah	<i>Acynonix jubatus</i>	Camera trap, footprints
Leopard	<i>Panthera pardus</i>	Camera trap, footprints
African Civet	<i>Civettictis civetta</i>	Camera trap
Black backed jackal	<i>Canis mesomelas</i>	Camera trap
Striped hyaena	<i>Hyaena hyaena</i>	Camera trap
Spotted hyaena	<i>Crocuta crocuta</i>	Sound, footprints
Banded mongoose	<i>Mungos mungo</i>	Camera trap
White-tailed mongoose	<i>Ichneumia albicauda</i>	Camera trap
Caracal	<i>Caracal caracal</i>	Camera trap
Bat eared fox	<i>Otocyon megalotis</i>	Road kill
Slender mongoose	<i>Herpestes sanguineus</i>	Direct observation
Honey badger	<i>Mellivora capensis</i>	Camera trap
Common genet	<i>Genetta genetta</i>	Camera trap
Ungulates, even-toed	Cetartiodactyla	
Common warthog	<i>Phacochoerus africanus</i>	Direct observation, camera trap
Guenther's dikdik	<i>Madoqua guentheri</i>	Direct observation, camera trap
Giraffe	<i>Giraffa camelopardalis</i>	Footprint – Magado only
Beisa oryx	<i>Oryx beisa</i>	Direct observation
Grant's gazelle	<i>Nanger granti</i>	Direct observation
Gerenuk	<i>Litocranius walleri</i>	Direct observation, camera trap
Lesser kudu	<i>Tragelaphus imberbis</i>	Direct observation, camera trap
Greater kudu	<i>Tragelaphus strepsiceros</i>	Carcass
Ungulates, even-toed	Perissodactyla	
Common zebra	<i>Equus quagga</i>	Direct observation, camera trap
Grevy zebra	<i>Equus grevyi</i>	Direct observation, camera trap
Primates	Primates	
Olive baboon	<i>Papio anubis</i>	Direct observation, camera trap
Grivet monkey	<i>Chlorocebus aethiops</i>	Direct observation, camera trap
Other		
Crested porcupine	<i>Hystrix cristata</i>	Camera trap
Aardvark	<i>Orycteropus afer</i>	Road kill, camera trap
Somali ostrich	<i>Struthio molybdophanes</i>	Direct observation

## Discussion

Borana NP is very important for birds (many endemic species, plus large numbers of Somali ostrich), large carnivores (almost complete guild) and herbivores (one of only three sites in the world with Grevy zebra). As one drives around, the maximum time between wildlife observations will not exceed one hour in all blocks, except Dambala-Dhibaya block which is more degraded. These observations are mostly dikdik, gerenuk, gazelle and ostrich which are common, plus zebra in Sarite. However, our camera traps have shown a remarkable biodiversity, and our observations of cheetah tracks suggest that this might be another flagship species. Surprisingly, both tourism and research appear to be poorly developed.

We were unable to find evidence of lions, but we were confident that they are present in the South of Magado block and that the area should be mapped as lion range. Magado block is different from the other blocks in that it is lowland (ca. 800 masl as opposed to 1000 – 1200 masl in the other blocks), appears to be less densely populated and is generally more remote. We had the impression that there could be armed rebels in the area and did not go up to the Kenya border and did not do any callups. As a result, we do not have evidence of lion presence, but all the herders we interviewed locally stated that they observe lions and that they lose livestock to lion depredation. In all other blocks, however, people did not think lions were resident and any dispersers would not be able to settle. In fact, in Sarite, one of our team members had participated as a young boy in the persecution of lions until they disappeared from Sarite two decades ago.

Sarite block appears to be an important block, with daily observations of the flagship species Grevy zebra. This block is currently used extensively for livestock grazing, but may recover after the drought. Sarite may also be connected to Magado block through a newly gazetted corridor, which would probably be the backbone of Borana NP. The three other blocks have abundant wildlife, but they seem to be more encroached. As people coexist well with wildlife, this may not be a short term problem.

We observed dikdik on numerous occasions, according to Lavrenchenko et al. (2016) the area has Salt's dikdik, but every dikdik we spotted was a Guenther's dikdik. We also believe Lavrenchenko et al. (2016) may have confused a striped hyaena (definitely present) with an aardwolf (not observed). As for the smaller mammals, we recognise the great expertise of Lavrenchenko et al. (2016) in this field and have nothing to add to their elaborate descriptions.

We speculate that the exceptional biodiversity value of Borana NP is at least partly due to the culture of the Borana people. Even after losing much of their cattle, people did not resort to poaching zebra or any other large herbivore. The occasional loss of a sheep or goat to cheetah appears to be widely tolerated, although that same tolerance does not extend to lion. The Borana are now in the 72nd cycle of the Gaadaa system whereby villages elect their 'Abba Gaadaa' every 8 years, making for close to 6 centuries of stable democratic governance (Angassa and Oba 2008). Wildlife protection is apparently part of the bylaws that are effectively implemented, similar to what has been documented in Senkele Sanctuary (Asefa, Mengesha et al. 2019). This is outside of our scope, but it is important to note and requires further study.



## Acknowledgements

The Born Free Foundation and Zoo Leipzig kindly funded this mission, WildCRU and EWCP provided logistical support. We thank OFWE and EWCA for their collaboration and permits to carry out the mission. Special thanks go to the warden Nigusse Wata and his dynamic team of experts Jarso Deng, Okutu Dida and Galgalo Dacha. We thank Fikirte Gebresenbet and David Mallon for assistance in photo identification.

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## Annex 1: Picture recognition sheet



## Annex 2: Additional pictures



Figure 3: Large felid, most probably leopard



Figure 5: Caracal



Figure 7: Common genet



Figure 4: Striped hyaena



Figure 6: Guenther's dikdik



Figure 8: White-tailed mongoose



Figure 9: Aardvark



Figure 10: Honey badger



Figure 11: Black backed jackal



Figure 12: Crested porcupine



Figure 13: Warthog



Figure 14: Lesser kudu (female)



Figure 15: Lesser kudu (male)



Figure 16: Banded mongoose



Figure 17: Gerenuk



Figure 18: Baboon



Figure 19: Grivet monkey



Figure 20: Kori bustard



Figure 21: Grevy zebra



Figure 22: Burchell zebra



Figure 23: Giraffe footprint



Figure 24: Tortoise



Figure 25: Bat eared fox



Figure 26: Variable skink



Figure 27: Image of drought



Figure 28: Camera trap on singing well



Figure 29: Lake Soda



Figure 30: Somali ostrich



Figure 31: Grant's gazelle



Figure 32: View of Sarite plain