

# Site report: Gambella

Part of the NABU / Zoo Leipzig Project

'Field research and genetic mapping of large carnivores in Ethiopia'



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## Preamble

Zoo Leipzig and NABU joined forces in order to tackle the status of carnivores like lions, leopards and wild dogs in three important regions of Ethiopia and in addition to clarify the genetics of the lion in Ethiopia. In the field, they will be supported by Hans Bauer, a leading expert on carnivores in Ethiopia who works with Mekele University to implement student projects, especially on lions and hyenas

## Introduction

Ethiopia has a rich carnivore community. Lion, cheetah, leopard and wild cat (family Felidae), wild dog and Ethiopian Wolf (family Canidae), spotted hyena, striped hyena and aardwolf (family Hyaenidae) and other small carnivores like genets and mongooses are found in the country. However, their current distribution, status, and the processes and interactions that affect their distribution remain contentious. Additionally, in all of Ethiopia threats to wildlife are increasing with the growing human population but their impacts are not being investigated fully. The lack of such important baseline knowledge complicates and hinders effective planning, execution, and monitoring of any conservation efforts. Therefore, this study proposes to collect data on the presence and habitat use of the African lion (*Panthera leo*), leopard (*Panthera pardus*), cheetah (*Acinonyx jubatus*) and the African wild dog (*Lycan pictus*).

Originally, the study areas were defined as Babile Elephants Sanctuary (BES), Kafa Biosphere Reserve (KBR) and the Bale Mountains National Park (BMNP). However, in response to unforeseen developments we decided to maintain KBR but shift other activities. First, the project anticipated a wider funding base with contributions from another institution, but this has is no longer the case and under the present conditions the study in BES is no longer part of the project's expectations. Furthermore, the NGO Wildlife Act recently started an extensive study in Haremma Forest of BMNP that we were unaware of, and we do not want to duplicate their efforts. We decided to have Gambela National Park (GNP) as a second site instead. The choice for GNP was primarily motivated by the fact that there is considerable dynamism in the area. The NGO African Parks is implementing a project to support EWCA in the conservation of GNP, and this creates opportunities for the implementation of activities that are limited in other Protected Areas. Our objective was to contribute to conservation strategies, and these are being developed in KBR and in GNP, so that our findings and capacity exchange contribute to ongoing processes.

## Objective

The overall objective is:

To determine genetic status, presence, distribution and habitat use of lions, leopards, cheetahs and wild dogs in Gambella NP.

More specifically, we aimed to confirm the presence and describe the distribution of lion, leopard, cheetah and wild dog, in the context of their ranging patterns and habitat requirements. Our findings can contribute to conservation strategies for each site.

## Description of Gambella NP

Gambella National Park (GNP) is located in Gambella Region 850 km west of Addis Ababa. It had a total area of 5061 km<sup>2</sup>, and was the largest from Ethiopian National Parks in terms of total land area. However, after the redemarcation process in 2011, its present area is 4575 km<sup>2</sup> (Rolkier, 2015). However, agro-investment areas and settlements are easily spotted inside the park. The average altitude is about 500 m asl. The general topography of the Park is flat, with some areas of higher elevation where deciduous woodland and savanna occur. The most distinct feature of the park, however, is the floodplain, as the Park is situated between Baro and Gilo Rivers, where biodiversity is highest. The Park harbors a transboundary migratory ecosystem (Amare, 2015), hence the initiative to advance it to a transboundary protected area system with Boma NP in South Sudan (HoARECN, 2013).

It was in the 1960s that the special ecology of the region, thus its importance, came to the attention of the Ethiopian government. However, efforts to protect the wildlife did not start till early 1970s. Reports of excessive killing prompted the sending of an evaluator, Duckworth, of the situation in April 1973 (Duckworth, 1973). After a grim assessment of the situation, he recommended the establishment of a National Park, Reserve Area and Controlled Hunting Areas, following which the Gambella National Park was established in 1974.

The first survey of the locality in 1960s and following surveys too (Duckworth, 1973; TFCI, 2010; Amare, 2015; Rolkier et al., 2015) document that the area has a unique biodiversity, and potential to attract tourists and raise a significant amount of foreign currency. Wildlife in the Park is abundant, and the migration of the hundreds of thousands of white-eared kob between Gambella and South Sudan is especially breathtaking. In addition to mammals (listed below), numerous bird and fish species are also found, including rare bird species such as shoe-billed stork, black-winged pratincole and basra reed warbler. In the rivers, huge Nile perch (weighing up to 100kg), crocodiles and hippos are found.

The main threats include habitat fragmentation and encroachment due to the expansion of mechanized agriculture (TFCI, 2010) and poaching (Amare, 2015). Poaching is currently being practiced by the 'Special Force' military groups based in the region. If a local individual is caught killing wildlife, park staff will confiscate the kill. Since law enforcement is very weak, offenders may not get more than a scolding speech though. However, during our fieldwork stay in 2015, we have witnessed multiple killings of

wildlife by these government soldiers. Park scouts are afraid of these soldiers and when the regional administrations were notified in 2014, no action was undertaken and the problem persists (Pers comm. Be'emnet Regasa, Acting Warden in 2015). During our current stay in Gambella, we were informed that another round of negotiations with regional and federal responsible bodies was about to undergo regarding this issue (Pers. Comm. Henok, Chief scout). Additionally, the Park is not legally gazetted, which means that portions of its existing land can once again be leased to investors.

## Methodology

We visited the area from 24 December 2015 – 6 January 2016 ( Fikirte Gebresenbet Erda and Habteyesus Mathewos), and 1-6 January 2016 (Dr Hans Bauer), respectively. We had invited a staff member from EWCA headquarters, Girma Ayalew, but he was unfortunately not able to join us. We used the following methods:

### Camera trapping

4 nights with 4 cameras (Bushnell Trophy Cam) around Puju Camp

### Callups

1 night with 3 callups around Puju Camp

### Secondary information

Sources include co-authors' archives of previous visits, documents by African Parks, interviews with Park Warden and scouts.

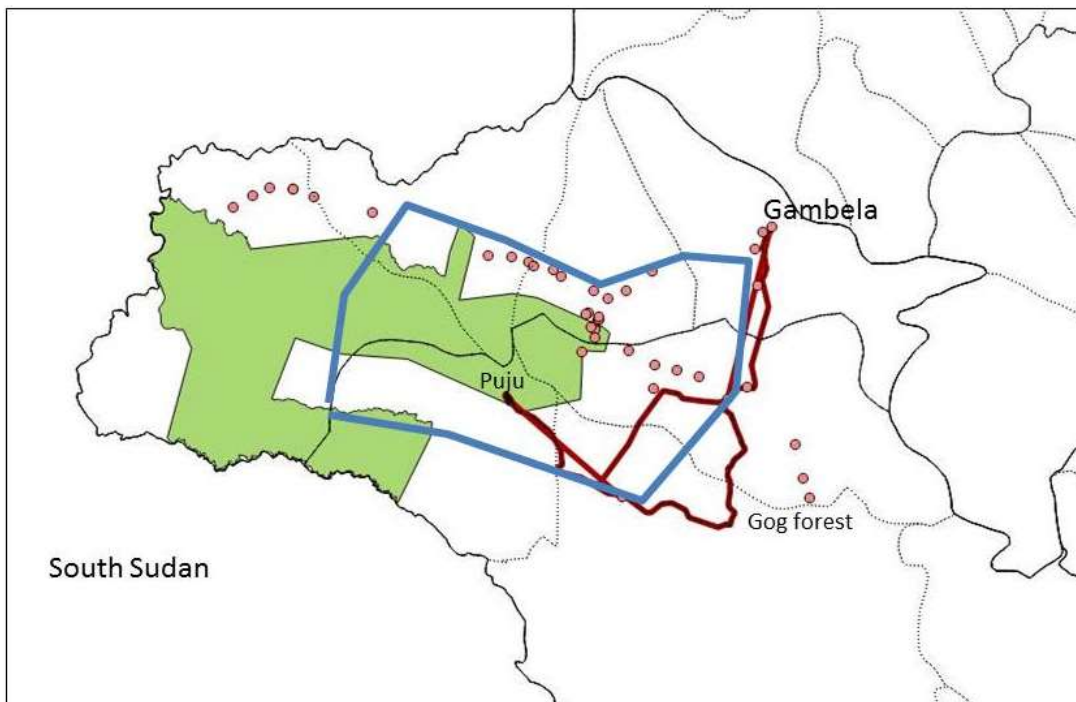


Figure 1: map of Gambella NP (green, with the blue line showing the approximate park boundaries before redemarcation) and tracks and waypoints

## Results

### Information on Gambella NP

The park was redemarcated a few years ago, some of the agricultural investment areas were degazetted and the area adjacent to the border with South Sudan was gazette instead. This configuration is shown in Figure 1, we did not have the 'shape-file' but the blue polygon is an approximation of the old boundaries. The old boundaries followed some of the public roads, but those areas accessible by public road were mostly made available for agriculture. The new park boundaries were shifted into areas that are mostly inaccessible, since the park does not have any road. However, these boundaries are just lines on a map, in reality the landscape is much more complex. The redemarcation added a lot of habitat on the South Sudan border in view of having a transboundary park in the future, but with the current condition in South Sudan those areas are probably highly affected by refugees. In contrast, most of the areas that were excised from the park were never converted to agriculture and still have extremely high biodiversity value. As a pragmatic approach, it is advisable to consider the entire ecosystem as a conservation unit, very much like the concept of a Biosphere Reserve.. With the pressure on land, the park boundaries may be more important in the future, and if the boundary is ever really respected than the current configuration will be much better for wildlife in the long term, since the land earmarked for agriculture may lose its importance for biodiversity conservation, whereas the border area is of prime importance in view of the migration between the Gambella and Boma ecosystems in Ethiopia and South Sudan, respectively. For our survey, we used all available public roads and considered all natural areas as carnivore habitat, whether in- or outside the new park boundaries.

### Large carnivores found in Gambella NP

Lion – definitely present, we have observed lions at several occasions, though not during the present trip. Lions are probably resident throughout the park, although they may avoid wetlands during the rainy season. Lions are territorial and not migratory, that means their abundance is limited by lean season prey biomass. The additional seasonally available additional prey during the Kob migration should therefore not be included in speculation about lion carrying capacity, like in the Serengeti where only resident herds of zebra and wildebeest are counted, not the migratory herds. From the resident prey biomass, we speculate that lion density is likely to be 2-5 lions per 100 km<sup>2</sup>. The population is likely to be in the order of magnitude of 100 lions as a very crude approximation; based on our activities we cannot be more exact but African Parks is planning a systematic survey later this year that will give more information on lion abundance.

Spotted hyena – definitely present. We have seen live specimens on previous visits, during the present trip we only observed indirect signs (a skull, see annex 2). Spotted hyena occur widely across Ethiopia, both in lowland and in highland (Yirga et al., 2015). There is no reason to assume they are threatened in Gambella NP.

Leopard – definitely present. We have seen various skins confiscated from poachers by Park Management at Park Headquarters. This species is famously elusive and it is impossible to speculate about numbers, but looking at habitat size and integrity and looking at prey availability it is likely that the species can thrive in Gambella NP.



Cheetah – we have not made any direct or indirect observation of this rare large carnivore, but various informants are confident that they occur in Gambella NP.

African wild dog - we have not made any direct or indirect observation and the information from various informants was unconvincing. We are doubtful about their continued occurrence in Gambella NP. Malcolm & Sillero-Zubiri (2001) place the last confirmed sighting of African wild dogs in Gambella NP in 1987. Although local people and scouts claim it is present in the region, no unambiguous sightings have been recorded for several years.

### Other mammals in Gambella NP

Several aerial and ground counts have been performed, most notably in 2010 for which the report was found on the internet ([http://www.ewca.gov.et/sites/default/files/Gambella%202009-10%20Wildlife%20Survey\\_1.pdf](http://www.ewca.gov.et/sites/default/files/Gambella%202009-10%20Wildlife%20Survey_1.pdf))(TFCI, 2010). HoAREC and African Parks have done more work and we are trying to collect more information, but at the time of writing their reports were not available. From our own observations, discussions with scouts and available literature, we compiled a mammal list (Table 1)

Table 1: Mammal species of Gambella NP. Direct observations are personal sightings since 2010, many of them also during this trip as indicated by an asterix (\*). Indirect observations are photos, skins or other remains.

English name	Scientific name	Source
Carnivores	Carnivora	
Lion	<i>Panthera leo</i>	Direct observation
Spotted hyaena	<i>Crocuta crocuta</i>	Direct observation*
Cheetah	<i>Acynonix jubatus</i>	Scout information
Leopard	<i>Panthera pardus</i>	Indirect observation
African wild dog ??	<i>Lycaon pictus</i>	No obs.: <i>Presence doubtful</i>
African wolf and/or golden jackal	<i>Canis lupus lupaster</i> ( <i>Canis aureus</i> )	Direct observation
Common Genet	<i>Genetta qenetta</i>	Direct observation*
Striped hyena ?	<i>Hyaena hyaena</i>	No obs., presence suspected
Bat-eared fox	<i>Otocyon megalotis</i>	Direct observation*
Civet	<i>Civettictis civetta</i>	Direct observation*
Serval	<i>Felis serval</i>	Direct observation*
Caracal	<i>Felis caracal</i>	Direct observation
Ratel	<i>Mellivora capensis</i>	Indirect observation
Slender mongoose	<i>Herpestes sanguinea</i>	Direct observation*
Rodents	Rodentia	
Crested Porcupine	<i>Hystrix cristata</i>	Direct observation*
Ungulates, even-toed	Artiodactyla	
Warthog	<i>Phocochoerus aethiops</i>	Direct observation*
Bushbuck	<i>Tragelaphus scriptus</i>	Direct observation*
Grey duiker	<i>Sylvicapra grimmia</i>	Scout information
Greater kudu	<i>Tragelaphus strepsiceros</i>	Scout information
White-eared kob	<i>Kobus kob leucotis</i>	Direct observation*
Tiang	<i>Damaliscus lunatus</i>	Direct observation

Nile lechwe	<i>Kobus megaceros</i>	Direct observation
Roan	<i>Hippotragus equinus</i>	Direct observation
Lesser kudu	<i>Tragelaphus imberbis</i>	Scout information
Reedbuck	<i>Redunca redunca</i>	Scout information
Oribi	<i>Ourebia ourebia</i>	Direct observation*
Waterbuck	<i>Kobus ellipsiprymnus</i>	Direct observation
Hartebeest	<i>Alcelaphus buselaphus</i>	Literature
Buffalo	<i>Syncerus caffer</i>	Direct observation
Giraffe	<i>Girafa camelopardalis</i>	Literature
Afrotheria	Afrotheria	
Elephant	<i>Loxodonta africana</i>	Scout information
Aardvark	<i>Orycteropus afer</i>	Scout information
Primates	Primates	
Olive baboon	<i>Papio anubis</i>	Direct observation*
Patas	<i>Cercopithecus patas</i>	Direct observation*
Vervet	<i>Cercopithecus aethiops</i>	Direct observation*
Guereza colobus	<i>Colobus guereza</i>	Direct observation*

## Conclusion

Human population expansion is a major cause of species decline and biodiversity loss. Large carnivores are specifically vulnerable to human encroachment because they often come into conflict with people (Jackson & Nowell, 1996; Woodroffe, 2000; Treves & Karanth, 2003; Shehzad et al., 2015). In places where carnivores and people co-exist, challenges for conserving the carnivores are significant and include indiscriminate killing by local communities (Kissui, 2008). The killings could be retaliatory or defensive, regardless; they contribute to the carnivores' population decline.

We failed to find any proof for the presence of african wild dog, this is not proof of absence but it does indicate that, if still present, the status of this species is alarming. To some degree this is also true for cheetah, which is rarely observed. The two species are often considered in combination, since they have very similar requirements. They can generally persist in areas with some human disturbance, as long as the crucial requirement of space is met; both species require very vast ranges. Ethiopia has an action plan for both species (EWCA,2012), but this has only partially been implemented. An important step was the recognition that the area should evolve into a transboundary conservation area, as demonstrated by the redemarcation. Gambela NP by itself is not large enough for the conservation of these species, but the entire Boma-Gambela ecosystem would be. Important steps have been made on the Ethiopian side, the situation in South Sudan is beyond our scope but we hope for peace and stability which are conditions for further conservation planning.

Lions are more sensitive to human disturbance and livestock conflict, but on the other hand their spatial requirements are more modest. If properly managed and if occasional dispersal to and from nearby conservation areas remains possible, Gambela NP could potentially host a viable lion population, even in a worst case scenario of collapse on the South Sudan side. For lion conservation, we have no indication that very sophisticated conservation actions are urgently required; the most important recommendation

is law enforcement. We have no figures or references, but we observed that there is quite a bit of hunting in Gambela. Some of it could be poaching that is aimed at high value species, including lion and elephant, but mostly it is for bushmeat. The latter could suppress prey densities and become a limiting factor for lions. Gambela NP still mostly exists on paper, its current relatively good conservation status is mostly attributable to lack of access and low human population impact in the past. Local people mostly consumed fish, but with the rapid increase of population, especially with the influx of with refugees and immigrants, the pressure on the park's other resources is increasing. The law enforcement capacity of park management institutions is very weak, we have not observed any rangers going on patrols and it would seem that there has never been any legal prosecution of trespassers. It seems that there is an unstoppable evolution from a mosaic landscape of integrated subsistence settlements and prime undisturbed habitat to a more distinct spatial segregation of people and wildlife, in which Gambela NP needs to play the role of wildlife sanctuary and needs to be managed as such.

Given the rapid decline of large carnivore populations in Ethiopia, conservation planning requires a systematic and adaptive approach that is substantiated by scientific findings. Understanding the dynamics that influence the distribution of the carnivores within and outside protected areas, and identifying the factors that affect the distributions, are key to effective conservation planning. The present report can be considered as a 'scoping' report that gives all readily available information, but more thorough studies are required.

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**Annex 1: Camera Trap photos from this site visit**



White eared kob



Bushbuck



Patas monkey



Warthog



Porcupine



White eared kob (male)



Mongoose

**Annex 2: other photos from Gambella**



Hyena skull, found around Puju



Typical habitat around Puju



Oribi roadkill



Cattle on the road



Lion observed at callup in Gambella NP in 2010