# Mpem & Djim NP, Cameroon; field mission to assess presence of large carnivores - 8-20 April 2019

Preliminary Report – Yaounde and Oxford, April 2019

Prof. Hans Bauer, Ms. Iris Kirsten and Dr. Serge Alexis Kamgang

# Preliminary report by: Prof. Hans Bauer, Ms. Iris Kirsten and Dr. Serge Alexis Kamgang

## In collaboration with:

- Ministry of Forests and Wildlife (MINFOF), represented by **Mr. Jean Pierre BISSEK**, warden of MDNP, and his rangers; and by **Mr. Douzamy ONDO NGBWA**, Mbam and Kim subdivision Delegate, and his agents;
- University of Oxford, Wildlife Conservation Research Unit (WildCRU), represented by **Prof. Hans BAUER** and **Prof. Claudio SILLERO-ZUBIRI**
- Garoua Wildlife College (EFG), represented by **Dr. Serge Alexis KAMGANG**;
- German Development Cooperation (GIZ), represented by **Ms. Iris KIRSTEN, Mr. Didier BASTIN** and co-workers.
- Born Free Foundation (BFF), represented in the UK by **Dr. Liz GREENGRASS**.

## Introduction

Mpem and Djim National Park (MDNP) is a mosaic of savanna, forest, swamp, gallery forests and rivers in the transition zone between savanna and rainforest. It is located in the Central Region of Cameroon, within the Guinea-Congo/Sudan regional transition zone, between the Sudanian regional centre of endemism to the north and the Guinea-Congolian forest block to the south (White 1983). While it is only 200km from the capital Yaounde, it is a small biodiversity hotspot that is naturally inaccessible and rarely visited. Little research has been done, but opportunistic sightings include full assemblages of both savanna and forest species found in the region. The park is not hard-edged at all, the wider landscape extends over a 100km around it and is highly varied, including various production and communal forests that serve as buffer zones. There are many pockets of intact habitat and extensive rangeland with natural prey that is not often observed but that does feed a substantial bushmeat trade. The MDPN is managed by a warden and 36 rangers, but they lack suitable means of transport, firearms, training and infrastructure. There has never been a formal inventory, but MDNP has a very rich biodiversity with chimpanzee (*Pan troglodytes*), giant pangolin (*Smutsia gigantea*) and golden cat (*Profelis aurata*) as flagship species. Carnivore species expected to occur include leopard (Panthera pardu) and jackal (*Canis aureus / Canis adustus*), but there have been no recent records of lion (*Panthera leo*) or any of the hyaena species (*Crocuta crocuta*, *Hyaena hyaena*). There have been reports of lion presence in the area in the early 1970-ies. When local residents started complaining about livestock depredation by large carnivores, there was confusion about the species that may be involved. The warden approached us with some pictures of footprints taken with mobile phones; these pictures did not give certainty as to the culprit, but were enough reason for us to plan an expedition to the area.

With funding from the Born Free Foundation in the UK and logistically supported by GIZ a fact-finding mission to the area was swiftly organised. Upon arrival in Ntui, the division capital and also the temporary MDNP Headquarters, we received information from the Departmental Delegation of MINFOF in Ntui, describing several attacks on cattle by large carnivores in the area, over the last few weeks. These attacks took place in a mosaic landscape of forest and savanna approximately 50km South and East of MDNP. In this area, people practice forestry, agriculture and animal husbandry. Due to improved access, the area is experiencing rapid conversion, many farmers are encroaching on

the natural habitat, also leading to frequent and severe conflict between farmers and herders when cattle trample crops on their traditional grazing areas. Our informants indicated that the area was uninhabited until 2006 when herders arrived with their cattle; agricultural settlers started appearing in 2008.

Similar attacks had taken place for short periods in 2017 and in 2018, and local people claimed that lions were responsible for the attacks. In previous years, it was considered impossible that lions would disperse into an area so far from their current distribution and into an area that appears marginally suitable for the species. The nearest known lion population is in Adamaoua Region, which is the southern tip of the population centred on the Benoue Complex. Due to the recurrence of these reports the MINFOF initiated this fact-finding mission.

## Methodology

We used the following methods (see Annex 1 for pictures):

1. Camera traps (total 15 cameras)
2. Calling stations (total of 11 stations)
3. Footprint (spoor) analysis
4. DNA sampling (hair and scat, 4 samples total for lab analysis)
5. Forensic analysis of cattle carcasses
6. Participant observation, living among and interviewing various ethnic groups in settlements closest to depredation incidents.

Starting from the area of the last known attack in Ndimi Savanna (see map in Fig 1), we followed the tracks of the lions and set out camera traps at sites where repeated passage of lions was considered probable. At night we deployed call-up stations, using lion and prey sounds played at high volume in places where we hoped lions could be hiding, to attract them (Ogutu & Dublin 1998). Since the population is anxious about the presence of lions, they were very interested and cooperative; every incident was quickly reported so that we could follow up. This way, we 'followed in the lion footsteps' for ten days.

## Results

We observed two male lions at a calling station on 17 April from 18:30 to 21:00h in Meloke Savanna (Fig 1; all meaningful coordinates listed in Annex 2); they stayed at a distance of between approximately 50 and 100m from the car for several hours. The distance and darkness made observation of any detail difficult. One lion briefly came closer (~30m) to the car but ran away immediately when a light was switched on. We specifically looked at the lion behaviour with regard to a possible immobilisation operation later on; it will be very hard to create suitable conditions within a reasonable time span.

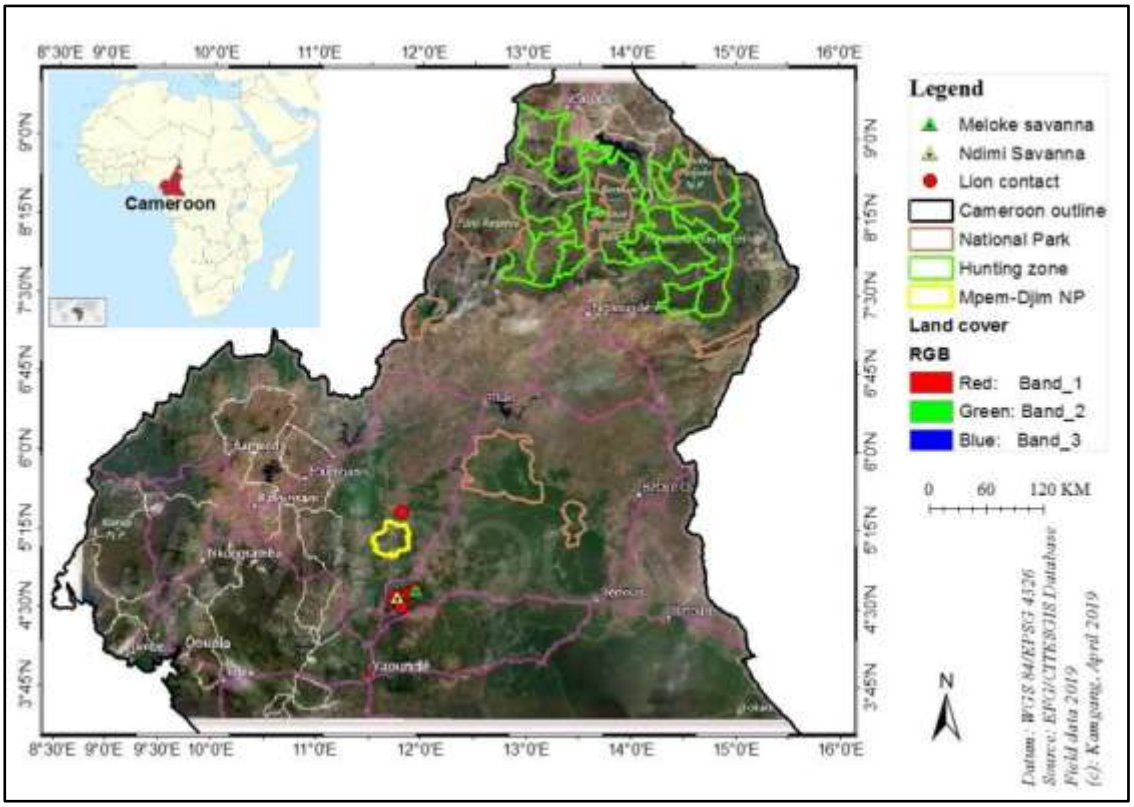


Figure 1: Map of the study area, showing lion observations far from their known range in Cameroon.

Our camera trapping efforts were inconclusive. We observed lion spoor at various locations; many of those footprints were clear and unambiguous and left no doubt that they were indeed of lions (all pictures in Annex 1). The tracks, 13.5cm and 14.5cm long, respectively (exact sizes vary with substrate and lion movement pattern) suggested that most likely two male lions were involved. There was no indication that there were any more lions other than these two anywhere in the landscape.

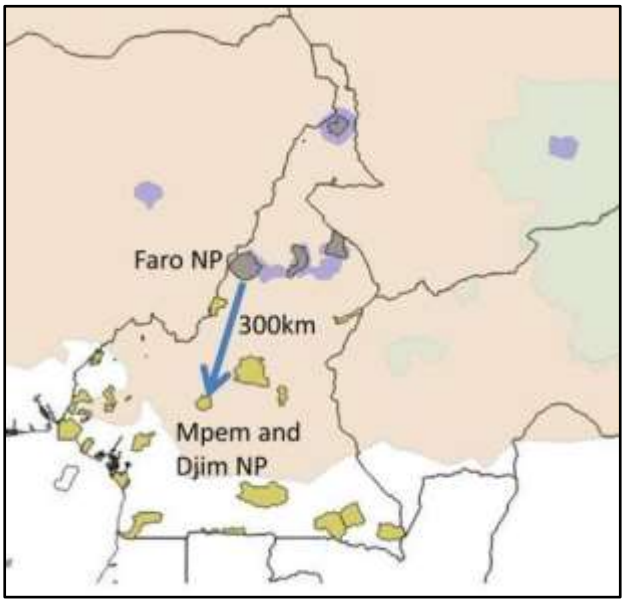
We did not observe any medium or large wildlife, but we did observe a set of buffalo (*Syncerus caffer*) and lion tracks and those tracks indicated that lions had been hunting the buffaloes. However, it seems that these lions mostly hunt livestock, killing one or two heads of cattle every 3-5 days. Livestock is almost exclusively kept by Mbororo ethnic groups in this region, and many herders were upset about the depredation incidents that affect their livelihoods. However, they were equally concerned about their loss of rangeland – more and more plots are cleared for small-scale farming, leading to extensive agro-pastoral conflict. Many of the farmers indicated that they were concerned about their safety, but some of them mentioned a positive side to the presence of lions: they hoped the lions will chase the Mbororo off their land so that they do not lose crops to trampling by cattle. The area has been divided into rangeland and cropland zones, but this zonation is not always respected.

We collected samples of hair and scat. Scat is not regulated by CITES, but the hair sample will stay in Cameroon until a CITES expert permit has been delivered.

## Discussion

We were surprised by the presence of such a rich biodiversity hotspot so close to major urban centres. MDNP is a very valuable resource for the region, and for Cameroon; the current efforts of road building and habitat conversion to agriculture need to be part of a land use planning effort. If a sufficient amount of land is conserved and managed for biodiversity conservation, there is no reason why there should not be viable populations of key species such as lion. Lions have been absent from the Central Region of Cameroon for at least 30 years.

Cryptic lion behaviour is common in human dominated landscapes, and it is not surprising that the lions are rarely observed directly. It is common for lions in such areas to develop a pattern of hunting livestock once every 3-4 days. They normally kill one head, but when cattle are packed closely together there can be surplus killing (Kruuk 1972); a reflex of carnivores in chaotic incidents to kill any animal they can, even if this is more than they can eat.




We are almost certain that both lions observed were male, we assumed that they were a male coalition that has dispersed from the nearest potential source, which is the Adamaoua plateau, or the Faro NP in the North Region some ~300km North of MDNP (Fig 2). Normally, dispersal over such distances is undertaken by males only, either alone or as part of a male coalition. If females disperse at all, it is typically to the area neighbouring their own territory. It is therefore likely that most long-distance dispersal events are male only, and that the arrival of a female will be an exceptional and welcome singularity if it ever happens.

Fig 2: Map showing possible dispersal route; known lion range in dark blue

Lions do disperse over long distances (Elliot et al. 2014), some venture into new lands, hoping to find nearby lion populations or at least prey and safety. Usually it does not end well, but a few times it may lead to genetic exchange that is very important for otherwise fragmented populations. And just sometimes, these are the seeds of new lion populations, this is how the species naturally colonises suitable habitat. In this case, it seems that a few lions have made it across an astonishing ~300 km of grazing land that no one ever thought a lion could cross undetected and unharmed.

While the incidents reported here are typical cases of human-wildlife conflict, there is a dimension of human-human conflict in the background. This is often the case, and mitigating lion conflict without addressing the agropastoral conflict would be too narrow and short term. For the long term future of peaceful coexistence of biodiversity, animal husbandry and cropland agriculture, an integrated approach is necessary.

There is already a GIZ support project for MDNP in the making, however, they were never anticipating work on large carnivores. It is foreseen that the project will mainly work around the periphery of the park, trying to increase the livelihood of the surrounding villages, thereby reducing the pressure on the park. Moreover, the construction of the nearby dam at Nachtigal has an environmental impact compensation program that will allow for the elaboration of a park management plan, and support to some anti-poaching strategies.

## Recommendations

1. Our mandate was to find facts and to make recommendations to MINFOF for options to mitigate conflict. The following recommendations are primarily targeted at MINFOF, but their implementation may necessitate involvement of various stakeholders, including ourselves, under the coordination of relevant authorities.
2. Our main recommendation would be to attempt to chase the lions toward the MDNP, with the expectation that they will settle there and establish a new population there, assuming that there is enough prey and safety for them there. This option is not the easiest, but it is the one with the best balance of human and wildlife interest. As a precondition, MDNP needs to be secured and developed (see below).
3. As an alternative, translocation of lions to MDNP can be considered, but it will be extremely difficult. A boma would need to be constructed in MDNP for a soft release (i.e. keeping them in a boma for a few weeks, to increase the probability that they will stay inside the park, once released. Translocation has been shown to be ineffective over distances of <100km with lions systematically returning to their area of origin, and there is a risk of that happening here. Moreover, immobilisation requires a clear shot opportunity at ~25m. and the presence of several backup vehicles, plus an access road to an appropriate release site in MDNP. This would require substantial investments, and would take time.
4. MDNP is lacking the most basic management structures and its biodiversity is far from secure. Bringing park management up to standards of sufficient effectiveness and efficiency will require major investments and support by technical and financial development partners. There will need to be an inventory of biodiversity and an assessment of the prey base; eventually there needs to be a management plan.
5. This would be a win-win outcome, whereby Cameroon, and even the Central African region, can pride itself in the natural establishment of a new lion population in Central Africa, where the species is Endangered (Bauer et al. 2015); with the emergence of a Protected Area of international acclaim, with high commercial tourism potential due to its proximity to the capital; and with the development of human wildlife coexistence with high potential gains for local people. This will take efforts from many different stakeholders over an extended time period.
6. An information and education campaign aimed at the local people is necessary. Lion dispersal into the area has been observed for three years on row and is likely to continue in future. Local people are not used to the presence of lions and there are many misconceptions that need to be addressed. For the farmers, they should know that lions are active at dusk, night and dawn, but that there is very limited risk for their life and livelihood when basic precautions are taken. For the Mbororo, they are aware that their ancestors, and many of their contemporary tribesman in the North of Cameroon, coexist with lions. There is a cost to this coexistence, both in terms of investment to prevent and mitigate damage and

in terms of tolerating unavoidable residual damage. Herding practices, improved bomas and zonation are important tools, and support must be given to facilitate the transition. However, the biggest threat to animal husbandry in the area, if not an existential threat, is the relentless encroachment of the cropland frontier, and the associated agropastoral conflict. There may be a win-win if these problems can be addressed in an integrated approach.

7. Until decisions are made and implemented, it is important to inform the local population to bear with the situation, and perhaps propose some emergency relief measures in case of further depredation incidents.
8. This case has many elements that make it an attractive media story, which would help in raising awareness and funds. A press release at very short notice should be considered.

## Annex1: pictures

Lion spoor

Calling station

Camera trap

## Annex2: List of meaningful GPS coordinates

| Name | lat | lon | alt |
|---|---|---|---|
| Cattle Carcass | 4.6001 | 11.8257 | 603 |
| Spoor | 4.61043 | 11.8165 | 616 |
| Ndimi Savanna | 4.60611 | 11.7844 | 614 |
| Ndimi  Yahale | 4.61206 | 11.7438 | 629 |
| Spoor | 4.61523 | 11.8171 | 589 |
| Lion claw | 4.56834 | 11.7508 | 561 |
| Nkol Go'ok | 4.55225 | 11.791 | 620 |
| Donga Savanna | 4.64383 | 11.8898 | 613 |
| Lion incident | 4.60613 | 11.7844 | 592 |
| Spoor | 4.64947 | 11.924 | 607 |
| Spoor | 4.6444 | 11.9139 | 583 |
| Spoor | 4.64384 | 11.8899 | 613 |
| Spoor | 4.64944 | 11.9236 | 607 |
| Cattle carcass | 4.66827 | 11.9523 | 595 |
| Cattle carcass | 4.66732 | 11.9517 | 591 |
| Loin heard | 4.66732 | 11.9528 | 590 |
| Spoor | 4.66811 | 11.9523 | 594 |
| Spoor | 4.66721 | 11.9518 | 590 |
| Scat | 4.67333 | 11.9535 | 591 |
| Observed | 4.6709 | 11.9594 | 568 |
| Meloke Savanna | 4.6709 | 11.9594 | 568 |
| Resting place | 4.67262 | 11.9574 | 588 |
| Sleeping place | 4.66734 | 11.9529 | 585 |
| Spoor | 4.67386 | 11.9529 | 600 |
| Cattle carcass | 4.52823 | 11.8094 | |
| Cattle carcass | 4.52081 | 11.8207 | |
| Cattle carcass | 4.52079 | 11.8207 | |
| Cattle carcass | 5.41777 | 11.8148 | |

## References


Bauer H, Packer C, Funston P, Henschel P, Nowell K. 2015. Panthera leo. The IUCN Red List of Threatened Species.

Elliot NB, Cushman SA, Macdonald DW, Loveridge AJ. 2014. The devil is in the dispersers: predictions of landscape connectivity change with demography. Journal of Applied Ecology **51**:1169-1178.

Kruuk H. 1972. Surplus killing by carnivores. Journal of Zoology **166**:233-244.

Ogutu JO, Dublin HT. 1998. The response of lions and spotted hyaenas to sound playbacks as a technique for estimation population size. African Journal of Ecology **36**:83-95.

White, F. 1983. The vegetation of Africa, a descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa (3 Plates, Northwestern Africa, Northeastern Africa, and Southern Africa, 1: 5,000,000). Unesco, Paris. DOI: 10.2307/633318.