

Distribution Update

Evidence of African wild dogs in the Central African Republic

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Abstract

Endangered African wild dogs *Lycaon pictus*, once present throughout sub-Saharan Africa except in lowland rainforests, have been extirpated throughout most of their range. Although interviews with local hunters had suggested the existence of wild dogs in the southeast of the Central African Republic (CAR), no direct evidence had been documented prior to this study. Using camera traps and recording spoor - tracks, droppings and direct sightings - on walked line transects, we documented the first records of a wild dog population in the poorly known Chinko/Mbari drainage basin - a region in the CAR that is largely unexplored. Therefore, we extend the known occurrence range of the species further south in the CAR than previously reported.

Introduction

Central Africa in general, and the Chinko/Mbari drainage basin of eastern Central African Republic (CAR) in particular, represent one of the least scientifically investigated areas of Africa. There is a dearth of data for many organisms in the CAR, specifically for large carnivores (Woodroffe and Sillero-Zubiri 2012). Therefore, the status of the endangered African wild dog *Lycaon pictus*, a species once present throughout sub-Saharan Africa and now extirpated from most of its range, remains largely unknown in Central Africa.

Woodroffe and Sillero-Zubiri (2012) reported no wild dogs in the CAR further than 8°12'14.57"N and 21°59'11.55"E (Figure 1). The first biological survey in the Zemongo Faunal Reserve in 2007 indicated their possible presence based on reports from local hunters, but this was not confirmed (Roulet et al. 2007) and thus the status of the species in this region remained unknown.

African wild dog populations have suffered a dramatic decline since the 1950s, and today are Africa's second most threatened large predator after the Ethiopian wolf *Canis simensis* (Sillero-Zubiri et al. 2004). Conservation efforts to date have focused on eastern and southern Africa where the largest known wild dog populations exist (Lindsey et al. 2005). The species has been virtually eradicated from western Africa, and along with very little current information available for large parts of central Africa (Delvingt and Tello 2004, Sillero-Zubiri et al. 2004, Woodroffe and Sillero-Zubiri 2012), the few existing records of wild dogs in Central Africa are restricted to northern Cameroon, southern Chad and north-western CAR (Breuer 2003, Croes et al. 2012).

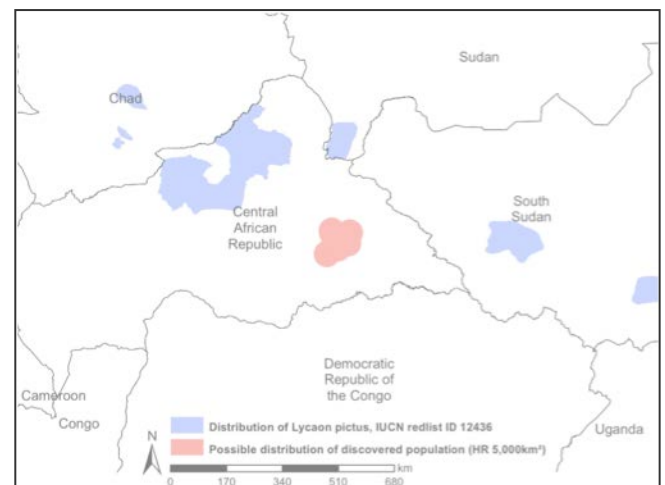


Figure 1. Possible distribution of African wild dogs in eastern CAR. For the newly discovered population a home range size (HR) of 5,000km² was assumed; each such HR is mapped here as a circle of 39.8km radius.

Low human density, relatively undisturbed habitats and a virtually undisturbed vegetation and associated land conversion had led us to speculate that African wild dogs may exist in the Chinko/Mbari drainage basin. Prior to our expedition we interviewed staff from a hunting safari operator - Central African Wildlife Adventures (CAWA)

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- about the presence of wild dogs in their hunting area. They confirmed the presence of wild dogs, with sightings ranging from solitary individuals to packs of up to 23 individuals. They estimated that approximately five packs resided within their hunting zone concessions, collectively comprising approximately 10,000km² east of the Zemongo Faunal Reserve (E. Mararv and A. Parkison, pers. comm.).

From February to May 2012, we conducted an expedition to the Chinko/Mbari drainage basin, in the hunting areas then leased by CAWA. The objectives of the expedition were to compile a list of all large and medium-sized mammals in this area, and to collect information on the habitat preferences and abundance of certain species in this savannah/rainforest ecotone. Special focus was put on some individually marked species including leopard *Panthera pardus*.

In this report we present the first records of African wild dogs in the Chinko/Mbari drainage basin - a sparsely populated mosaic of wooded savannah and lowland rainforest in the CAR with high potential for wildlife conservation.

Methods

The drainage area of the river Chinko and Mbari belongs to one of the last continuous savannah and rainforest ecosystems in Africa. Remotely accessible via an 800km unpaved road from Bangui, the area encompasses nearly 80,000km² of sparsely inhabited Medio-Sudanese and Sudano-Guinean savannah with some patches of Congolian lowland rain forest in the east of the CAR (Myer 2012) (Figure 1). Average annual precipitation varies between 1,200 and 1,600mm on a gradient from north-west to south-east (Roulet et al. 2007). There is a rainy season between April and October, peaking in August followed by a dry season from November to March. Fires occur frequently during the dry season.

The entire Chinko river basin and adjacent regions in the eastern part of the CAR (excluding the officially protected Zemongo Faunal Reserve) are active or abandoned hunting zones managed by different international safari hunting companies. Currently Central African Wildlife Adventures (CAWA) is the only active hunting company in the area. Despite the estimated 3,000km road network of this local safari company, there are no roads crossing the area. Public transport or other vehicle movements are non-existent.

No permanent settlements exist at the headwaters of the rivers Mbari, Chinko, Ouarra and Kotto. The vegetation is therefore virtually undisturbed by humans with currently limited but massively increasing temporal grazing from transhumant cattle, goats, sheep and donkeys. Research completed in March-May 2012 allowed us to document trespassing by professional Sudanese herdsmen groups (i.e. four to six herdsmen looking after more than 1,000 cattle). Some, but only few, are traditional nomadic Central African herdsmen families taking their cattle to market in Bangui, but these have much smaller herds (i.e. 100-200 cattle). We encountered other herdsmen poaching for bush meat, and met well-equipped groups of Sudanese elephant poachers (i.e. groups consisting of more than 30 poachers armed with AK-47 rifles). Illegal mining associated with local poaching and movements of different armed groups have also been reported in the region. Currently there is no forestry or agricultural exploitation of the area.

In the 2012 expedition we walked 500km of line transects, recording direct sightings and spoor indices (tracks and droppings) to document occurrence of wild dogs in the study area (Figure 1). For estimation of pack size based on tracks we conservatively used the numbers guesstimated by our trackers. In addition, we used 50 camera traps, covering an area of 240km² (10km² buffer size, and on average 25 camera days per site). In this specific camera trapping area we spent a minimum of 36 days checking and collecting camera traps (ten days to set up, five days of camera checks after three weeks, another five days after six weeks, and 12 days for collection in December 2012), as well as testing the line transect method (40km on four days). The 50 camera traps consisted of 38 Bushnell (TrophyCam 119436c) and 12

Reconyx (HC 500 Hyperfire) models. The line transects were spread over an area of 7,000km²; see http://bit.ly/chinko_coverage for an interactive version of the map illustrating our research activity (Figure 2).

Results

We confirmed the presence of African wild dogs in the entire study area in the Chinko-Mbari drainage system (Figure 2). During our field research from March to May 2012 we observed 17 individual wild dogs directly on three different occasions (two observations by the authors, and one by CAWA staff) and recorded one observation in a camera trap. Additionally, we photographed and geo-referenced more than 25 sets of wild dog tracks. From the combination of the methods used (direct sightings, record of tracks and droppings and camera traps), we were able to demonstrate the occurrence of wild dogs over the entire study area (see Figure 2). All records were distributed among five locations spread over 7,000km² (Figure 2, Table 1).

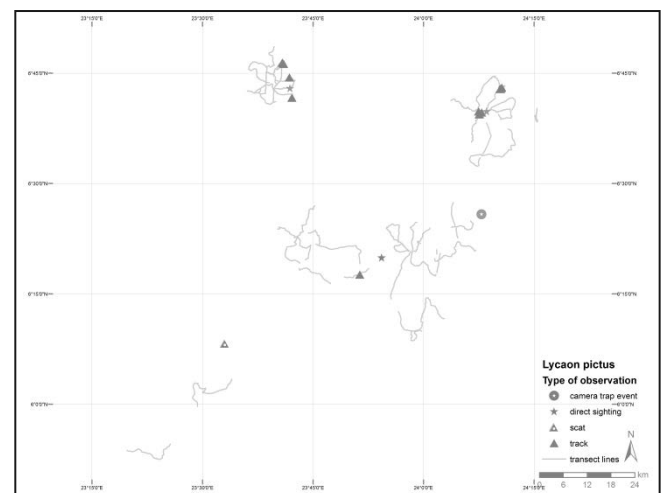


Figure 2. Area of observations of African wild dogs in the Chinko/Mbari drainage basin, including recordings off the line transects. An interactive map (where the pins include links to imagery proofs) is available at http://bit.ly/chinko_lypi_map.

We present a chronological description of the events below:

29 February: We documented ten droppings and several tracks of approximately ten different African wild dog individuals on a road between the Mbari and Chinko watershed.

13 March: In the morning at approximately 1015h at least two individuals hid in a strip of vegetation near a creek at the headwaters of the Mbari River, and fled after being disturbed. Visual identification was not possible, but their tracks, accompanied by a strong odour typical of wild dogs confirmed their presence. Three days later we found three sets of tracks within 7km of this record. At one particular track site, we identified at least four independent sets of tracks, and concluded that several individuals had been present.

17 March: Approximately 50km east of the Mbari River sighting we encountered one wild dog. It ran up a hill, and quickly disappeared into cover. Due to approaching darkness, there was no time for further investigation. In the following three days we discovered sets of tracks in five locations, which were again not far away from the first sighting or within 7km. At one site, tracks from at least two adults and one juvenile were identified. Additionally, we found tracks on the main road very close to a safari camp with a high volume of motor vehicle traffic.

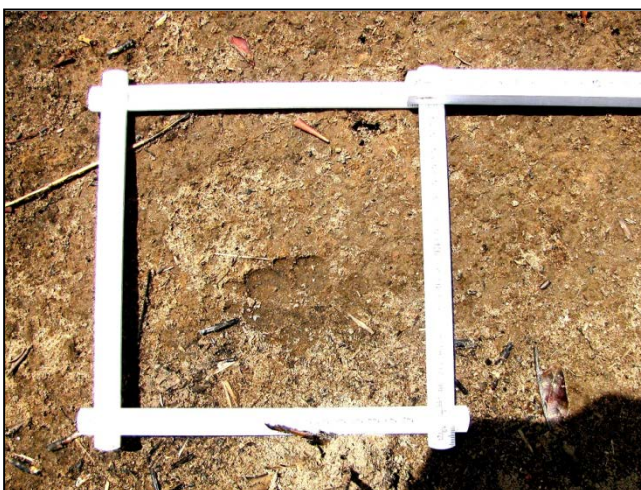
Table 1. African wild dog sightings. All records can be verified by the links in the outer right column (per zone).

Long	Lat	Obs	Observation type	Zone	# (subad.)	Date	Imagery Proof
23.54897	6.13727	Aeb/Hic	track, scat	Bonga		29/02/12	http://bit.ly/chinko_lypi_bonga
23.69620	6.74030	Aeb/Hic	track	Yassa	4	13/03/12	
23.69757	6.71523	Aeb/Hic	direct sighting, track	Yassa	2	13/03/12	http://bit.ly/chinki_lypi_yassa
23.70215	6.69433	Aeb/Hic	track	Yassa		14/03/12	
23.68353	6.77078	Aeb/Hic	track	Yassa		15/03/12	
24.14264	6.66284	Aeb/Hic	direct sighting	Mboutu	1	17/03/12	http://bit.ly/chinko_lypi_mboutu
24.12437	6.66322	Aeb/Hic	track	Mboutu	3 (1)	19/03/12	
24.13123	6.66092	Aeb/Hic	track	Mboutu		19/03/12	
24.17288	6.71395	Aeb/Hic	track	Mboutu		20/03/12	
24.17673	6.71710	Aeb/Hic	track	Mboutu		21/03/12	
24.12590	6.65663	Aeb/Hic	track	Mboutu		23/03/12	
24.13085	6.43035	Aeb/Hic	camera trap	Chinko	1	29/03/12	
23.85573	6.29363	Aeb/Hic	track	Ngoy		04/04/12	http://bit.ly/chinko_lypi_ngoy
23.90505	6.33192	CAWA	direct sighting	Ngoy	14 (10)	04/05/12	

: number of individuals (thereof subadults)

camera trap: Bushnell TrophyCam

29 March: At 0641h, a camera trap approximately 10km west of the Chinko River registered an individual wild dog (Figures 3a and b).



Figures 3a and 3b. Camera trap picture and an example of a track record.

4 May: Hunting guides observed a wild dog pack on a frequently-used dirt connecting road, 40km south of the other direct sighting locations. From their vehicle they observed a pack of 14 individuals. The hunting guides independently reported observing four adult and ten

juvenile wild dogs walking along the road for several minutes. At the same location in 2011 a pack of wild dogs consisting of 23 individuals was observed, some of which were photographed (A. Parkison, pers. comm. - see Figure 4).



Figure 4. African wild dogs on the connecting road close to camp Kocho, Chinko/Mbari, 2011 (Photograph: A. Parkison).

Discussion

During our study in the Chinko/Mbari drainage system we detected the presence of African wild dogs in a previously undocumented area through a variety of methods, the most successful being direct observation with photographic confirmation. Wild dogs have not previously been recorded from this region of the CAR, and we suggest that our records extend the known range of the species in the country. Wild dogs were present in the camera trapping area, where we conducted line transects (paying particular attention to the tracks of large predators) and checked all camera traps for several weeks. While the camera traps recorded wild dogs, we did not find any tracks in the camera trapping area, or at the location of the last direct sighting, although wild dogs were certainly present during this time. We assume therefore that overall our detectability of wild dogs was low, even though the roads often had a favourable dusty substrate and wild dogs used them. To ensure that our sightings and tracks were from wild dogs, we looked for evidence of other Canidae in the area which could be confused with wild dogs, and found none. Even though we encountered and photographed several cattle herds with herdsmen, and poachers, we never once observed a domestic dog.

Side-striped jackals *Canis adustus* and golden jackals *C. aureus* are not present in the region (Erik Marav, CAWA, pers. comm.), and we found no evidence of these species in our camera traps or along our extensive line transects. The only confusion could have potentially arisen from the tracks of spotted hyaenas *Crocuta crocuta* which occur in the area, but these can be eliminated by careful analysis of photographed tracks (see links to geo-referenced track photographs in Table 1).

Although we have no photographs of pups or juveniles there is circumstantial evidence that the Chinko/Mbari drainage system harbours a breeding population of African wild dogs. While our study confirmed the presence of this endangered carnivore in southeastern CAR we were unable to fully assess their population size and conservation status. Additional research is needed to provide insight into population size and structure, particularly in light of impending increases in human activity that may negatively influence wild dogs in this remote area. We plan to continue camera trap surveying in the Chinko/Mbari drainage basin and will report further sightings and evidence of breeding.

From our observations and the fact that permanent human settlements and public roads are more than 100km away from the sighting locations, we can assume that the Chinko/Mbari drainage might harbour a potentially sizable population of wild dogs. This assumption is supported by the fact that according to our observations on the line transects and the results of our camera trap study, there are still many large and medium-sized mammals in considerable numbers in this area (Aebischer and Hickisch, in prep.). Based on our findings during spring 2012 the most abundant small and medium-sized potential prey species in the area were red-flanked duiker *Cephalophus rufilatus*, common duiker *Sylvicapra grimmia*, eastern blue duiker *Philantomba monticola aequatorialis*, yellow-backed duiker *Cephalophus silvicultor*, Nile bushbuck *Tragelaphus scriptus bor*, Sudan oribi *Ourebia ourebi montana*, common warthog *Phacochoerus africanus*, red river hog *Potamochoerus porcus*, defassa waterbuck *Kobus ellipsiprymnus defassa*, Bunyoro rabbit *Poelagus marjorita* and scrub hare *Lepus saxatilis*. Potential competition occurs with spotted hyaenas and leopards which are both very common in the area, and possibly less so with rare lions *Panthera leo*. We believe this information supports a positive perspective for this particular population of wild dogs in this remote area. However, reporting the occurrence of wild dogs in this region includes reference to increased pressure on wildlife and habitat from transhumant herders increasingly seen entering the area (not on roads) - a fact that will inevitably lead to conflicts with wild dogs (Woodroffe and Ginsberg 1999, Woodroffe et al. 2005, Aebischer and Hickisch in prep.).

In many regions of Central Africa, hunting safari organisers are often the only stakeholders with an interest in pristine ecosystems and large and medium-sized mammals - all of which are crucial components for a healthy thriving African wild dog population. Regardless of the political situation or weather impediments, professional hunters are in the field for the entire dry season (six months of the year), observing wildlife and maintaining logistical access to remote areas. We recommend enlisting the future collaboration of researchers and local safari hunting companies, which are able to generate basic information as well as help monitor and implement conservation action in this remote part of the world. Please visit <http://chinkoproject.com> for further details of sustainable nature management in the Chinko/Mbari drainage basin.

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Biographical sketches

Raffael Hickisch completed his MSc on the efficiency of carbon sequestration in gum arabic plantations in Senegal at the Social Ecology Group Vienna. He holds a Bachelors degree in Computer Science, and conducted research on CBNRM projects in Malawi in 2007. In 2013 he received a research fellowship at the World Agroforestry Centre, Nairobi, and was awarded the Panthera Kaplan grant for field research projects in the Chinko/Mbari drainage basin, which he organises and implements together with Thierry Aebischer.

Thierry Aebischer completed his MSc in ecology and evolution at the EAWAG in Lucerne, Switzerland. For his BSc thesis, he analysed vegetation ecology data from Mount Kilimanjaro, Tanzania. In 2007 he participated in a conservation project in Nki-Boumba-Bek National Park, Cameroon. Since 2012 he has spent more than six months exploring the mammals and birds of the Chinko/Mbari drainage basin.