



## **A Rapid Survey of the Mammals of Boké Préfecture, Northwestern Guinea**

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## Chapter 8

### A rapid survey of the mammals of Boké Préfecture, northwestern Guinea

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#### SUMMARY

We surveyed three sites in the Boké Préfecture from April 22 to 10 May 2005 to assess the biological diversity of mammals in the region. Using tracks, sound and visual observations, and camera phototraps we confirmed the presence of 11, 12 and 16 mammals in Sites 1, 2 and 3 of Boké Préfecture, respectively. In total, we confirmed the existence of 18 mammals in these forests. The three sites are under immense pressure from slash-and-burn, and are all over-exploited for bushmeat. At Site 3, Boullère, bushfires were not uncommon. Large mammals such as pigs and duikers were only rarely directly observed. The major threat has been slash-and-burn farming, plantation agriculture (i.e. palm oil, banana) and bushmeat hunting. Our results show that Sites 1 and 2 are relatively not biologically significant for conservation of large mammals. Site 3 however has more contiguous forest and offers good opportunities for conservation of large mammals.

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#### INTRODUCTION

Mammals play an important role within forest ecosystems. The Guinean Forest Hotspot has the highest diversity of mammals in the world with an estimated 551 species known to occur (Myers 1998, Bakarr et al. 2000). Although endemic species are low, the forest is still important to the global conservation of mammals (Sayer et al. 1992, Kingdon 1997, Mittermeier et al. 1999) and is one of the two highest priority regions in the world for primate conservation. The conservation of large mammals in Upper Guinea remains a daunting challenge and the populations of large mammal species are decreasing at an alarming rate.

In review of 26 papers, Barnett and Prangley (1997) listed 190 species of mammals for Guinea. None of the papers covered the species of the Boké Préfecture, as very little ecological information exists for this region. The majority of mammalogical field studies in Guinea have been conducted in Mount Nimba and complemented by studies in adjacent areas of Liberia and nearby Sierra Leone (Barnett and Prangley 1997). IUCN (1988) gives a partial list of mammals recorded from Mount Nimba and lists ten species as threatened for Guinea. Though large mammals such as Bongo (*Tragelaphus euryceros*) and endemic carnivores such as Johnston's civet (*Genetta johnstoni*) and Liberian mongoose (*Liberiictis kuhni*) are known from small populations in Guinea (Barnett et al. 1994b; Rosevear 1974; and Coe 1975), Liberia and Côte d'Ivoire; large mammals have not yet been systematically surveyed. In the order Artiodactyla, two threatened duikers in the genus *Cephalophus* (*C. jentinki*, and *C. zebra*) and the small Royal antelope, *Neotragus pygmaeus*, are endemic (Kingdon 1997) reinforcing the importance of the Upper Guinea "hotspot" as a conservation priority.

Some of the large mammal species are either threatened or endangered as a result of hunting for bushmeat and habitat loss (Oates 1986, Lee et al. 1988, Bakarr et al. 2001). Other important large mammals include the Leopard (*Panthera pardus*) and Elephant (*Loxodonta africana*). The forest elephants in Taï are considered to be priority baseline populations for West Africa (IUCN 1990).

We surveyed for mammals using direct observation, sounds, track, dung and other information, and camera phototraps in the northwestern region of Guinea. The three survey sites are within Boké Préfecture in northwest Guinea. The Boké Préfecture is highly degraded and fragmented with little remaining forest. The future of large mammals in this region is bleak, especially as mining activities and improved roadways provide a ready market for bushmeat.

## MATERIALS AND METHODS

### Study Area

We conducted our surveys at the end of the dry season in three sites of the Boké Préfecture: Site 1 which included the lowlands of Sarabaya (10°45.248'N, 14°26.980'W) from April 23 to April 27, 2005; Site 2 - Kamsar, which included five localities in the Kamsar sub-préfecture, (10°39.29'N, 14°36.08'W) from April 29 to May 3, 2005 and Site 3 - Boulléré in the Sangaredi sub-préfecture (11°6.558'N, 13°57.401'W) from May 5 to May 9. The three sites were approximately 30 m in altitude. In Guinea the Rio Kapat-chez (Site 1) is an Important Bird Area (IBA) and Ramsar site with virtually no forest left. At the time of the survey, slash-and-burn agriculture, with a very short fallow period (five to seven years), was the main activity in all three sites. The Sarabaya area (Site 1), normally wetter and more humid, was particularly dry during the survey period as a result of seasonality. At Site 2 the mangrove forests were being cleared for farming, mainly for rice cultivation. In addition, during our survey in Boulléré (Site 3), fields were being burned in preparation for cultivation.

### METHODS

We used active and passive methods to document the presence of mammals. The active method included direct observation of species and tracks, vocalizations, nests, dung and other indirect information to determine presence of mammalian species in the two study areas. Direct observations and track and sound identification were made during daily excursions from base camp. Surveys were carried out at night using a spotlight. Because our colleagues also collected records opportunistically, some observations may have been repeated. We therefore used this information only to document species presence.

The passive method included the use of two CamTrakker phototraps (CamTrakker Atlanta, Georgia) and three PhotoScout phototraps operated at Site 1 and three CamTrakkers and five PhotoScout at Site 3. Both PhotoScout and CamTrakker phototraps are triggered by heat-in-motion. Each camera trap used a Samsung Vega 77i 35mm camera set on auto-focus and loaded with FUJICOLOR 200 print film. Time between sensor reception and a photograph was 0.6 seconds and one minute for CamTrakkers and PhotoScout, respectively. Cameras were set to operate

**Table 8.1.** Mammals whose presence was confirmed in the three sites in Boké Préfecture in 2005. Abbreviations: TW= Taigbé West, Taigbé East, KA= Kaiboutou, TA= Tarénsa, H = heard, S = seen, Ne = nests, Knuckle, P = photographed, D = dung, F = fur, T = tracks, h = horns and numbers = counts. Scientific names are based on Kingdon (2004).

Order	Family	Species	Common name	Sarabaya	Kamsar				Boulléré
					TW	TE	KA	TA	
Lagomorpha	Leporidae	<i>Lepus saxatilis</i>	Scrub hare						2
Rodentia	Sciuridae	<i>Euxerus erythropus</i>	Striped ground squirrel	(9)	4	5	5	4	5
		<i>Funisciurus pyrrhopus</i>	Fire-footed rope squirrel	(6)	1			2	2
		<i>Heliosciurus rufobrachium</i>	Red-legged sun squirrel	(4)	1	2		1	
		<i>Heliosciurus gambianus</i>	Gambian sun squirrel	1					1
	Hystriidae	<i>Atherurus africanus</i>	Brush-tailed porcupine						T
	Thryonomyidae	<i>Thryonomys swinderianus</i>	Giant pouched rat	T&F	F			1	T&F
	Muridae	<i>Cricetomys emini</i>	Rat géant d'Emin	1				1	T&F
	Hystriidae	<i>Hystrix cristata</i>	Crested porcupine					1	Den
	Lutrinae	<i>Aonyx capensis</i>	African clawless otter			F			
	Herpestidae	<i>Cricetomys emini</i>	Rat géant d'Emin	(1& F)				1	F
Carnivora		<i>Atilax paludinosus</i>	Marsh mongoose	(1 & T)	T	T	T	T	1&T
		<i>Genetta tigrina</i>	Blotched genet	T			f		2V
	Viverridae	<i>Civettictis civetta</i>	African civet	(T)	T	T	T	T	T
		<i>Nandinia binotata</i>	Nandinie						E
Artiodactyla	Suidae	<i>Potamochoerus porcus</i>	Red river hog						2+
		<i>Phacochoerus africanus</i>	Common warthog						4+T&F
	Bovidae	<i>Tragelaphus scriptus</i>	Bushbuck	(T&F)	T,F&c	T&F	T&F	T	2 & E
	Antelopinae	<i>Cephalophus maxwellii</i>	Maxwell's duiker	(T&F)	T&F	T&F	T&F	T&F	T&F

continuously (control switch 1 on) and to wait a maximum of 20 seconds between photographs (control switches 6 and 8 on). Cameras were placed at sites suspected of being frequented by various mammalian species. Den sites, trails, watercourses and feeding stations such as fruiting trees were typically chosen for camera placement. Cameras were located approximately 500 m apart and at least 1 km from base camp. We used this method to calculate observation rates for each site just as standard transects are used. Instead of the observer making observations along a route, "observations" moved along routes in front of fixed cameras (observers). For shy mammals under severe hunting pressure camera trapping methods might be more effective than walking transects, especially when observers have different and varied levels of expertise.

## RESULTS

We observed, identified by sound, tracks, dung and/or photographed 11, 12 and 16 species of mammals from Sites 1, 2 and 3 of the Boké Préfecture respectively for a combined total of 18 species of mammals (Table 8.1). The camera photo traps obtained no photograph at Site 1 and five photographs, all of red river hogs, at Site 3. No yellow-backed duiker, black duiker, bay duiker, water chevrotain, pangolins, red river hog, warthog and leopard were observed but local poachers reported that these species occurred in the three sites. A high percentage of the people living near these sites consume all species of large mammals and perceive populations as having declined drastically over the last ten years. Some of the local hunters at Site 3 also claimed that yellow-backed duiker, bay duiker, black duiker, serval, golden cat, leopard, zorilla, ratel, and armadillo were present in the Bouléré area. The guide for the primate team reported killing a serval on the last night of our survey. Gunshots were heard through the night of May 9, 2005 after the first rains that marked the onset of the rainy season.

At Taïgbé East we found the dung of the African clawless otter. Mammals documented to occur only at Site 3 included: the scrub hare, African palm civet, red river hog and common warthog. We believe these differences were due to differences in hunting pressure and level of habitat degradation.

## DISCUSSION

Large mammals in Guinea and throughout much of West Africa are extremely rare as a result of unregulated exploitation, habitat loss and the increasing demand for bushmeat (Lowes 1970, Davies 1987a, Starin 1989, Njiforti 1996, Martin 1991, McGraw 1998, Fa et al. 2000). In addition, the rising human population is accelerating the conversion of the remaining forest habitats into human-dominated settlements and agricultural landscapes. Local pressure for bushmeat, farm- and cropland, and global demand for min-

eral resources such as bauxite and iron ore is reducing the size and future potential of remaining forests throughout West Africa. Primary forests outside protected areas are targeted for mining extraction and secondary forests are being encroached upon (Lebbie 2002). The forest in this region continues to be fragmented and has undergone vast changes in composition as large mammals are extirpated. What remains of the high forest is a mix of evergreen and semi-evergreen species, mostly in secondary forests. However, global demand for valuable minerals and timber continues to spur degradation in what remains of these forests. The secondary impacts of mining are equally destructive to the forest. Due to high population pressure, slash-and-burn agriculture (with reduced fallow periods) has accelerated forest fragmentation and facilitated the loss of large mammals.

Hunting in the Boké Préfecture is legal and the pressure to hunt in these areas is therefore very great. Based on discussions with local hunters and guides, primates, duikers and hogs are the most frequently hunted and trapped species, which is also reported to be common in other West African countries (Ausden and Wood 1990, Lebby 1998 and Eves and Bakarr 2001). The large body sizes of these species make them ready targets. Bushmeat is an important protein source in West Africa and the demand for it is high (Ajayi 1971, Asibey 1976, Jeffrey 1977, Martin 1983, Falconer and Koppell 1990, Njiforti 1996, Brown-Jones and Pendry 1999). The demand for bushmeat continues to increase in urban populations in regions where alternative protein costs are high (Wilkie et al. 1992). Most households in rural and urban areas in some West African countries like Ghana, Liberia, Senegal, Equatorial Guinea and Sierra Leone consume bushmeat on a regular basis, with hunting and poaching reported to be a lucrative business (Cremoux 1963, Ajayi 1979, Martin 1983, Addo et al. 1994 and Barrie 2002). Bushmeat hunting and habitat loss are a major threat to the survival of mammals in West Africa (Bakarr et al. 2001). Recently, the extinction of *Ptilocobus badius waldroni* was blamed on hunting and the demand for bushmeat in this region (Oates et al. 2000). If bushmeat hunting is not controlled most large endemic mammalian species will be threatened with extinction.

Mining is locally intense and destructive in many countries in West Africa including Guinea and has been cited as the primary cause of habitat destruction in Sierra Leone (Bakarr 1992). Moreover, miners often support themselves and their families on bushmeat, extract trees for fuelwood, and create extensive networks in forests to exploit them. These destructive forces operating throughout greater West Africa are occurring in the Boké Préfecture.

To conduct our survey we utilized an extensive road system through villages, farmlands and trails in these sites. Damage from farming and bush fires is extensive. We also made use of an elaborate network of trails within the forests that were familiar to our guides in the three sites.

Gunshots were heard regularly at Sites 1 and 3. At Site 3 we heard several gunshots on the night before our departure

(after the first rains). We found two shotgun shells at Site 1 and three at Site 3. No snares were found, as these would also affect the cattle. Several villages were located within 1 km of Sites 1 and 2. The combination of indiscriminate farming practices, bushfires, illegal poaching, and mangrove conversion gravely threaten the perpetuation of large mammals in these sites. Our results for Sites 1 and 2 suggest that some of the large mammals are either extinct or are in such small populations that they are not viable. A large percentage of the local people did acknowledge the loss of mammalian species in Sites 1 and 2. The habitat is degraded and large mammal populations are, one by one, reduced in density and finally extirpated from these areas. Our results for Site 3, Boulléré, and the information gathered from local people suggest that the populations of many species are viable and the diversity is still high.

### CONSERVATION RECOMMENDATIONS

Slash-and-burn practices and bushmeat hunting are destroying what remains of the habitats outside protected areas in West Africa. Many parks and classified forests in Guinea lack adequate protection and are so-called "paper parks." Unsustainable agriculture, bushfires and the possibility of full-scale mining operations of alumina and bauxite threaten the future of large mammals in these sites. Unless national parks such as Ziama, Mont Nimba and Badiar can be fully protected, there is little hope for protecting habitats outside protected areas and implementing large protected area systems. There is an urgent need to adequately protect the savannah habitat in Boulléré, or the large mammals will be irrevocably lost. Local community engagement, awareness raising and bushfire control measures are important for the restoration and conservation of mammalian species. We urgently recommend a more detailed inventory for large mammals at Boulléré (Site 3) as it potentially still offers a great opportunity for the conservation of large mammals in West Africa.

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