

Bonn. zool. Beitr.	Bd. 49	H. 1–4	S. 101–114	Bonn, Dezember 2000
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# Notes on the mammal fauna of the southern part of the Republic of Mali, West Africa

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**Abstract.** During two short surveys the mammalian fauna of the southern part of the Republic of Mali (West Africa) in the sub-Saharan belt was investigated. 46 species were recorded altogether. At least nine of them (*Crocidura lamottei*, *Chaerephon pumila*, *Scotophilus leucogaster*, *Eptesicus rendalli*, *Rhinolophus fumigatus*, *Nycteris macrotis*, *Rattus norvegicus*, *Acomys cineraceus*, *Steatomys caurimus*) are first records for the country. One other species is documented for the second time (*Tatera* cf. *kempfi*), one for the third time (*Crocidura lusitania*). The known range of *Gerbillus* cf. *gerbillus* in Mali was extended further to the south. *Rattus norvegicus* was found for the first time in mainland Africa; formerly it was only known to occur in harbour towns. The most common rodent in the area was a yet unidentified form of *Mastomys*. By morphological characters the species is close to *Mastomys natalensis* and not to *M. erythroleucus*, a name applied by many authors. The commensal small mammal coenoses of some larger towns (Mopti, Djenné, Ségou, Bamako) are compared.

**Key words.** Mali, West Africa, mammals, distribution, morphology, Insectivora, Chiroptera, Primates, Carnivora, Hyracoidea, Artiodactyla, Rodentia, Lagomorpha.

## Introduction

Mali has been part of French West Africa until 1960 but its mammalian fauna is still poorly known. Only some general works like Dekeyser (1955) or Happold (1973) without particular items on finding sites or works on very small geographic areas (e.g. Wilson 1987) are available. During two short surveys from 14 December 1993 to 25 January 1994 and from 23 January 1995 to 27 February 1995 the author investigated the mammalian fauna of the southern part of Mali.

## Material and methods

Information on mammals was obtained by snap-trapping, by collecting roadkills and other animals found dead, by purchase from local hunters and also by collecting owl-pellets.

The visited localities (Fig. 1 and gazetteer) are situated in the sub-Saharan belt with a vegetation of moist or wooded savannah, the banks of the rivers Niger and Bani are overgrown with gallery forests. The localities Kita and Bamako are in an area with dense tree-savannah, dominated by *Adansonia digitata*, *Kaya senegalensis* and *Bombax costatum*. The natural plant cover of the localities Ségou, Bla and Bandiagara is a light tree-savannah with *Adansonia digitata*, *Butyro spermumpakii*, *Acacia albida*, *Lannea acida*, *Terminalia macroptera* and *Andropogon* grass communities. Most landscapes are affected by intensive agricultural use. Millet and cotton are the dominant crops, in the area of the inland delta of the river Niger rice is being cultivated as well.

Annual precipitation varies between 1200 mm in the south (Kita) and 500 mm in the north (Plateau de Bandiagara). The main part of the rain falls during the months June to September. During the dry period in winter hardly any rainfall occurs. The mean annual temperature is between 25° and 29°C. The highest temperatures are recorded in May with nearly 40°C, the lowest during the dry period in winter (December and January), they lie between 6° and 10°C (all data from Barth 1986).

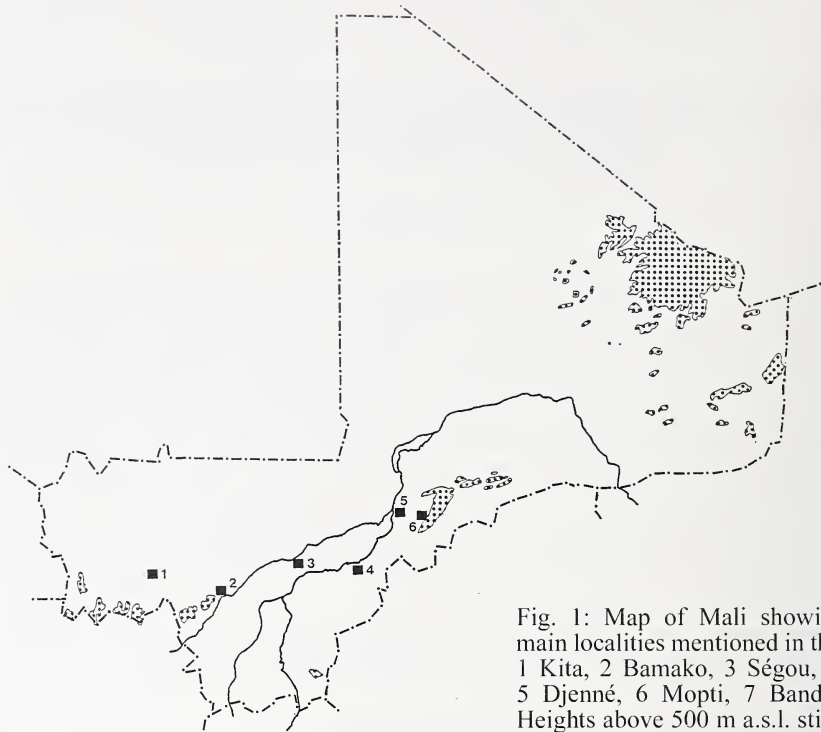


Fig. 1: Map of Mali showing the main localities mentioned in the text. 1 Kita, 2 Bamako, 3 Ségou, 4 Bla, 5 Djenné, 6 Mopti, 7 Bandiagara. Heights above 500 m a.s.l. stippled.

### Gazetteer

Kita	13° 02' N, 9° 29' W
Bamako	12° 39' N, 7° 58' W
Ségou	13° 26' N, 6° 15' W
river Bani between Ségou and Bla	13° 12' N, 5° 54' W
Bla	12° 56' N, 5° 45' W
Dogulu, Arrdt. Bla	12° 55' N, 5° 38' W
Kemeni, Arrdt. Bla	12° 58' N, 5° 33' W
Wakoro, Arrdt. Bla	12° 56' N, 5° 39' W
Yamena, Arrdt. Bla	12° 57' N, 5° 45' W
Djenné	13° 54' N, 4° 33' W
Bandiagara	14° 20' N, 3° 36' W
Ireli, Arrdt. Bandiagara	14° 34' N, 3° 15' W
Kani-Kombole, Arrdt. Bandiagara	14° 08' N, 3° 35' W
Kema, Arrdt. Bandiagara	14° 25' N, 3° 49' W
Nombori, Arrdt. Bandiagara	14° 20' N, 3° 24' W
Teli, Arrdt. Bandiagara	14° 32' N, 3° 14' W
Tireli, Arrdt. Bandiagara	14° 23' N, 3° 21' W

In 1993 the rain-season brought normal precipitation. In 1994 nearly the double was measured (e.g. in Bla 1080 mm to the normal 650 mm, M. Schinke pers. comm.). In 1993/94 the river Yameé in Bandiagara was dry except for some little ditches. In 1995 the river was flowing permanently with a height of 20 to 40 cm. In 1994 harvests were very good. As a consequence, the densities of Insectivora, bats and rodents were much higher than during the

first survey. In many species, e.g. *Crociodura olivieri*, reproduction took place even during the winter. While during the first survey it was hardly possible to catch specimens, many animals were observed alive or slayed in the streets of larger cities in 1995 (for the influence of high precipitation on small mammal populations in the Sahel see Hubert & Adam 1983, 1985, and Leirs 1995).

Body measurements were taken in the field and noted in mm, body mass was measured by a digital balance to the nearest gram. Skull measurements were taken with a digital calliper (Mitutoyo digimatic) to the nearest 0.01 mm. Voucher specimens will be deposited in the collection of the Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn (ZFMK).

The nomenclature follows Wilson & Reeder (1993).

Abbreviations used in the text: Arrdt. = Arrondissement; CB = condylobasal-length; CH = coronoid height; CL = Crown-rump length; E = ear; FA = forearm; HB = head and body length; HF = hindfoot; I<sup>1</sup>-M<sup>2</sup> = length of upper toothrow, alveolar; I<sub>1</sub>-M<sub>3</sub> = length of lower toothrow, alveolar; IoC = interorbital constriction; M<sup>1</sup>L = length of first upper molar; MxT = maxillary tooth row; NL = nasalia length; RBr = rostrum breadth; SHC = skull height with sagittal crest; T = tail; Th = thumb; TLM = total mandible length, infradentale to processus condyloideus; Tr = Tragus; W = weight; ZBr = zygomatic breadth.

## Results

### Notes on the species observed or collected

Two series of barn owl (*Tyto alba*) pellets were collected from a hollow baobab-tree (*Adansonia digitata*) near Kemeni, Arrdt. Bla (Tab. 1). The place seemed to be used by the owl during the dry season only. No nest could be detected and a control during the wet season brought no results (E. Schinke, pers. comm.). A pellet of an unspecified owl was found in the Falaise de Bandiagara.

Table 1: Contents of two series of barn owl (*Tyto alba*) pellets from Kemeni, Arrdt. Bla.

Spezies	19. 01. 94	%	04. 02. 95	%
<i>Crociodura fuscomurina</i>	2	1,59	10	7,81
<i>Crociodura lamottei</i>	4	3,17	6	4,69
<i>Crociodura lusitania</i>	14	11,11	2	1,56
<i>Crociodura nanilla</i>	—	0	1	0,78
<i>Tatera guineae</i>	1	0,79	3	2,34
<i>Taterillus cf. pygargus</i>	10	7,94	8	6,25
<i>Mus (Nanomys) haussa</i>	45	35,71	41	32,03
<i>Mastomys</i> sp.	41	32,54	53	41,41
<i>Myomys daltoni</i>	9	7,14	2	1,56
<i>Steatomys caurinus</i>	—	0	2	1,56
Totals	126	100	128	100

### Insectivora: Erinaceidae

#### *Atelerix albiventris* (Wagner, 1841)

The only hedgehog species observed in the southern part of Mali. Seems to be very common and is occasionally eaten by locals. Two animals were collected on 22 December 1993 in Bandiagara (no. 1516–17). Further observations were made near Yamena (18 January 1994) and Wakoro (21 January 1994), both Arrdt. Bla, and in Bla (18 February 1995). Remains of the white-bellied hedgehog occurred frequently in the garbage heaps in Djenné during both periods.

Measurements (no. 1516 ♂, 1517 ♂): HB: 151, 163; T: 16.0, 11.5; HF: 26.0, 24.0; E: 25.0, 23.0; W: 204, 296; CB: 38.4, 39.8.

## Insectivora: Soricidae

*Crocidura olivieri* (Lesson, 1827)

In 1993/94 in spite of intensive trapping only two old males were collected in Bamako on the banks of the Niger. In 1995 densities were much higher (Tab. 2). At least three age classes could be differentiated. In Djenné in 1994 only an old mummy was found. In 1995 many animals were observed and found slayed in the streets. One animal was found in Ségou on 22 February 1995 (no. 1818). All animals were of the *manni* colour type.

Table 2: Measurements of *Crocidura olivieri* from Bamako (January and February 1995).

Col. No.	HB	T	HF	E	W	CB	sex
1838	122	78.0	22.0	12.0	36	31.7	♂
1839	152	94.0	22.3	15.0	76	32.7	♂
1840	93.5	53.0	18.2	8.0	9	26.8	♂
1960	140	79.0	20.0	11.0	53	31.7	♀
1961	143	86.0	20.3	14.0	61	32.1	♂
1964	138	87.0	21.2	15.0	61	—	♀
1974	149	80.0	21.0	11.0	44	—	♂
1975	123	75.0	20.0	12.0	42	—	♀
1977	125	80.0	21.5	13.0	40	30.9	♂
1978	107	66.0	20.0	15.0	23	28.8	♂

*Crocidura nanilla* (Thomas, 1909)

A single specimen in owl pellets from Kemeni, Arrdt. Bla, in 1995 (Tab. 1). The mummy of a young animal was collected on 6 January 1994 in the garden of the National Museum, Bamako.

*Crocidura lamottei* (Heim de Balsac, 1968)

The species was only found in the owl pellets from Kemeni, Arrdt. Bla (Tab. 1). New record for Mali (see Hutterer 1986).

*Crocidura fuscounurina* (Heuglin, 1865)

The species was only found in the owl pellets from Kemeni, Arrdt. Bla (Tab. 1).

*Crocidura lusitania* (Dollmann, 1915)

Only found in the owl pellets from Kemeni, Arrdt. Bla (Tab. 1). Third record from Mali (see Hutterer 1986, Wilson 1987, Sidiyène 1989).

## Chiroptera: Pteropodidae

*Eidolon helvum* (Kerr, 1792)

In January 1994 a colony of ca. 2000 animals lived in Bamako between the Grand Hotel and the railway station in high trees in private gardens. In February 1995 this place was nearly empty. Small colonies were observed near the Niger in the area of the building of the West African Central Bank. A female was collected as a roadkill (13 January 1994) (no. 1471). Measurements: HB: 161, T: 14, E: 28.5, FA: 120, Th: 26, CB 55.7, ZBr: 32.0. Another animal (no. 1781) was found as a mummy (26 February 1995); CB: 55.7, ZBr: 33.5.

*Micropterus pusillus* (Peters, 1867)

One male (no. 1496) was netted on 11 January 1994 over a small pond in Kita under Mango trees. The species occurred together with *Epomophorus gambianus*, *Scotophilus leucogaster* and *Rhinolophus fumigatus*. Measurements: HB: 89, E: 16.3, FA: 52, T: 12.7, CB: 27.80, ZBr: 18.70.

*Epomophorus gambianus* (Ogilby, 1835)

This widespread species was very common in Kita (no. 1527–28, 1532–33) and along the Niger in Bamako (no. 1474). Further north no observations were made (Tab. 3).



Table 3: Measurements of *Epomophorus gambianus*.

Col. No.	HB	E	FA	T	CB	ZBr	sex
1474	152	24.0	80.5	21.7	49.3	26.2	♀
1527	138	21.7	77.5	20.0	47.6	23.8	♂
1528	141	23.0	86.7	21.0	55.5	27.2	♂
1532	157	23.0	85.0	18.8	55.1	26.2	♂
1533	142	24.5	83.0	16.0	53.0	25.3	♂

## Chiroptera: Molossidae

*Chaerephon pumila* (Cretzschmar, 1826)

In both years animals were collected only over a clay (banko) ditch near Wakoro, Arrdt. Bla (Tab. 4). In 1993/94 the species occurred together with *Chaerephon major*, in 1995 also *C. cf. nigeriae*, *Scotophilus leucogaster* and *Eptesicus rendalli* were netted. No. 1829 (5 February 1995) is a juvenile male, whose epiphyseal fuses are not yet closed. The coloration of the animals is very uniform. The back is a dark brown, the belly a dark grey. The two adult males showed active testes (no. 1530: 5 X 2.5 mm, no. 1531: 3.2 X 1.8 mm, both 20 January 1994). New record for Mali (see Skinner & Smithers 1990).

Table 4: Measurements of *Chaerephon pumila*.

Col. No.	HB	T	HF	E	FA	Th	CB	ZBr	W	sex
1511	56.5	31.5	—	15.0	36.5	5.2	14.8	9.6	—	♀
1530	57.0	29.0	—	14.7	31.2	4.5	14.8	9.8	—	♂
1531	55.0	28.0	—	15.2	35.5	6.0	14.7	9.5	—	♂
1829	54.0	31.0	10.2	16.0	35.5	6.0	14.0	9.1	17.0	♂
1830	58.5	36.0	9.0	17.0	37.5	8.0	14.9	9.6	11.0	♀
1959	60.4	29.3	9.0	16.0	37.5	6.0	14.4	9.4	10.0	♀

*Chaerephon major* (Trouessart, 1897)

The species was netted in both years in Wakoro, Arrdt. Bla. Both animals have blackish brown backs and slightly lighter bellies. Ventral and lateral stripes occur in both specimens. Measurements (no. 1462 ♀, 1832 ♀): HB: 76, 73; T: 36, 40; HF: —, 10.5; E: 20.2, 21.0; FA: 44.7, 50.2; Th: 5.9, 7.0; CB: 18.1, 17.6; ZBr: 11.9, 11.8.

*Chaerephon cf. nigeriae* (Thomas, 1913)

A female of this widespread species was collected in Wakoro, Arrdt. Bla, on 5 February 1995. Measurements (no. 1831 ♀): HB: 75.3, T: 37.0 E: 18.2, FA: 48.3, Th: 10, CB: 18.4, ZBr: 12.2.

## Chiroptera: Vespertilionidae

*Nycticeius schlieffeni* (Peters, 1859)

A male was netted in a private garden in Bandiagara on 23 December 1993. Measurements (no. 1514): W: 5.5, HB: 46, T: 31, E: 13.2, FA: 30.3; Th: 5.0, Tr: 4.5, CB: 12.3, ZBr: 8.2.

*Scotophilus leucogaster* (Cretzschmar, 1826)

The species is regarded as a distinct species, *S. dinganii*, by some authors (see Koopman 1993). In 1993/94 only two animals could be netted in Kita in the Sudan steppe zone over a small pond under mango trees. In the moister year of 1995 the species appeared in places it had not been found the year before (Wakoro, Arrdt. Bla, Bla). One animal was netted during hunting above the river Yameé in Bandiagara (13 February 1995, no. 1835). The other animals were netted while drinking shortly after dawn. New record for Mali (see Skinner & Smithers 1990) (Tab. 5).

Table 5: Measurements of *Scotophilus leucogaster*.

Col. No.	HB	T	HF	E	Tr	FA	Th	CB	ZBr	W	sex
1488	78.0	40.0	–	–	6.5	51.0	4.5	17.1	13.3	–	♂
1529	78.0	45.0	–	13.0	6.8	51.2	6.7	17.5	13.3	–	♀
1833	80.0	42.0	12.0	14.3	7.0	52.0	6.0	16.8	13.1	25.0	♀
1835	76.5	48.5	10.0	14.3	8.0	52.0	5.0	17.1	13.5	–	♂
1863	75.0	40.0	11.2	14.2	7.0	52.2	7.0	–	–	23.0	♂
1957	68.0	44.0	10.8	14.0	7.0	40.8	6.0	17.0	13.1	21.0	♂
1958	82.0	46.0	12.0	16.0	9.0	52.2	6.0	17.4	13.5	23.0	♂

***Eptesicus rendalli*** (Thomas, 1889)

The species occurred very frequently in 1995 over banko ditches and small ponds. In 1993/94 no observations were made. Most animals were observed shortly after dawn during drinking. *Eptesicus rendalli* occurred together with *Scotophilus leucogaster* in Bla and together with *S. leucogaster*, *Chaerephon pumila*, *C. major* and *C. cf. nigeriae* in Wakoro, Arrdt. Bla. New record for Mali (see Skinner & Smithers 1990). Measurements (no. 1834 ♂, 1836 ♂, 1956 ♂): HB: 57.0, 53.5, 56.0; T: 31.0, 35.0, 31.0; HF: 8.0, 7.0, 7.2; E: 11.5, 13.0, 12.0; Tr: 4.0, 6.0, 5.0; FA: 34.8, 33.8, 34.0; Th: 6.0, 6.0, 5.3; CB: 13.0, 12.5, 12.8; ZBr: 9.03, 9.04, 9.04; W: 6, 6, 6.

## Chiroptera: Rhinolophidae

***Hipposideros caffer*** (Sundevall, 1846)

A male (no. 1515) with a broken skull was collected in the city of Djenné on 2 January 1994 (FA: 43).

***Rhinolophus fumigatus*** (Rüppell, 1842)

A female was netted in Kita (11 January 1994) over a small pond. New record for Mali (see Skinner & Smithers 1990). Measurements (no. 1510 ♀): HB: 65.5; T: 25; E: 20; FA: 51; Th: 4.6; CB: 20.09, ZBr: 11.95.

## Chiroptera: Nycteridae

***Nycteris macrotis*** (Dobson, 1876)

In 1993/94 a lot of colonies of up to 60 animals could be observed in dry wells, a known roosting place of the species (De Winton 1901), in Bla. In 1995 numbers were much lower, the maximum was 15 animals. Two animals were netted. A further animal was netted in Bandiagara (25 December 1993), but released again. The finding places slightly extend the known range of the species to the North (Van Cakenberghe & de Vree 1985). New record for Mali (see Skinner & Smithers 1990). Measurements (no. 1512 ♂, 1513 ♀): FA: 48.0, 50.0; Th: 7.4, 7.2; E: 29.5, 27.0; CB: 18.9, 18.2; W: 14, 14.

## Primates: Galagonidae

***Galago senegalensis*** (E. Geoffroy, 1796)

Two animals were observed near Yamena, Arrdt. Bla, 3 February 1995, in an area with dense tree vegetation. A pair was shot by a local hunter on the 4 February 1995 in the surroundings of Bla. Measurements (no. 1783 ♂): W: 172; HB: 150; T: 260; HF: 67; E: 39; CB: 33, 71; (no. 1955 ♀): T: 250; HF: 65.

## Primates: Cercopithecidae

***Papio hamadryas*** (Linnaeus, 1758)

A group of 15–20 animals was observed 10 January 1994 in the Madingo mountains near Kita.

***Chlorocebus aethiops*** (Linnaeus, 1758)

Only few sightings of single animals or groups of up to 15 individuals could be accomplished, such as on 6 January 1994 20 km north of Bamako, on 10 January 1994 in Kita and on 16 January 1994 in Bani between Ségou and Bla. The animals are very shy as they seem to be hunted, heads and skins of the species being on constant offer by fetish dealers.

Carnivora: Canidae

*Canis adustus centralis* (Schwarz, 1915)

One male was purchased on 10 February 1995 from a local hunter near Nombori, Falaise de Bandiagara, who had caught the animal with a coneybear trap. I saved the skin, skull and baculum while the rest was consumed. The animal shows the colour pattern typical for the species. But the skull differs very much from the nominate form in that it is much slenderer and the teeth are reduced in size. The species was not observed on offer by fetish dealers. There is no information available whether the species is rare or not, only that it does exist in Mali (Happold 1973). Wozencraft (1993) concluded that the West African population is largely unknown. Measurements (no. 1779 ♂): HB 700; T: 280; HF: 145; E: 73; CB: 144.6; ZBr: 74.8; RBr: 26.8; IoC: 25.0; SHC: 39; I1-M2: 76.9; TLM: 114.1; CH: 39.8, I1-M3: 78.2.

Carnivora: Viverridae

*Ichneumia albicauda* (G. Cuvier, 1829)

The mummy of an old male was found in a garbage place in Djenné (3 January 1995) on the banks of the river Bani. Measurements (no. ♂ 1468): CB: 110.7.

*Herpestes ichneumon* (Linnaeus, 1758)

The species is often offered on fetish markets. During the two surveys only two observations were made: on the banks of the river Bani near the road between Ségou and Bla (15 January 1994) and on 18 January 1994 near Kemeni, Arrdt. Bla.

Hyracoidea: Procaviidae

*Procapia capensis* (Pallas, 1766)

The species was observed several times in the cliffs of Kema, Arrdt. Bandiagara (M. & M. Ohletz, pers. comm.).

Artiodactyla: Hippopotamidae

*Hippopotamus amphibius* (Linnaeus, 1758)

A female with her young was observed on 16 January 1994 near Ségou. The animals had a flight distance of nearly 500 m. The species, although legally protected, is still hunted (E. Schinke pers. comm.).

Artiodactyla: Bovidae

*Gazella rufifrons* (Gray, 1846)

A young female was presented to the author 1993 in Bandiagara and documented on photographs (Fig. 2). The donors said that the animal had been found as a lamb nearby and then was raised by hand. Bandiagara is within the known range of the species (Sayer 1977). The species was formerly widespread in the Sahel, extending southwards into the northern woodlands. It is now very localized due to overhunting, agricultural expansion and environmental degradation resulting from overgrazing by domestic livestock as well as from droughts (Heringa 1990).

Rodentia: Sciuridae

*Xerus erythropus* (Desmarest, 1817)

The species is very common. Observations were made near Dogulu, Arrdt. Bla; between Ségou and Bla; Kema, Arrdt. Bandiagara; Kita and Bamako. One unsexed skeleton was found 28 December 1995 in Kani-Kombole, Arrdt. Bandiagara (no. 1467: CB 55.89). The species is hunted and eaten by locals. I obtained the head of one animal by a hunter 11 February 1995 (no. 1780: E: 14, CB: 54.36).

*Heliosciurus gambianus* (Ogilby, 1835)

One animal was observed near Kemeni, Arrdt. Bla, 18 January 1994. A free living family was observed 23 February 1995 in a barn, built of concrete with a flat metal roof in Bamako zoo. Several nests between wall and roof were used. The species is much rarer than *Xerus erythropus*, with which it co-occurred in the Bamako zoo.



Fig. 2: *Gazella rufifrons*, female from Bandiagara (photo by the author).

Rodentia: Muridae: Gerbillinae

***Gerbillus* cf. *gerbillus*** (Olivier, 1801)

The species lives in the isolated soft-sand-belt southeast of the Falaise de Bandiagara (Teli, 29 December 1993, no. 1465; Tireli, 12 February 1995, no. 1787). Up to now it was known only from the North of Mali (Musser & Carleton 1993). On the leeward side of the Falaise, sand from the northwind Harmattan falls down and forms a narrow band of soft-sand-dunes of 50–200 m in diameter close to the cliffs. This is the only suitable habitat for the sand-dwelling species in the area. Measurements (no. 1465 ♂, 1787 ♀): HB: 93, 90; T: 106, 110; HF: 24.3, 22.3; E: 13.8, 14.0; CB: –, 25.1.

***Tatera guineae*** (Thomas, 1910)

A female was trapped in a thorn-scrub area near Bla (20 January 1994) (no. 1463 ♀). Measurements: HB: 118, T: 179, HF: 34, E: 19, CB: 30.96, ZBr: 17.2. Further specimens were found in the owl pellets (Tab. 1).

***Tatera* cf. *kempi*** (Wroughton, 1906)

One animal was found in an owl pellet in the Falaise de Bandiagara near Nombori. This constitutes the second record of the species for Mali (Wilson 1987).

***Taterillus* cf. *pygargus*** (F. Cuvier, 1838)

A female was collected near Kemeni, Arrdt. Bla (21 January 1994). The animal lived in an area near a dry riverbed. The place was nearly without any vegetation except some sparse grass nests. As no chromosomal data have been taken the differentiation of *T. pygargus* and the following *T. gracilis* is based on the geographic finding places. Measurements (no. 1464 ♀): HB: 120, T: 151, HF: 28, E: 17.2, ZBr: 16.75.

***Taterillus* cf. *gracilis*** (Thomas, 1892)

Two females were trapped in a hedge near Bandiagara, together with *Mastomys* cf. *natalensis* (15/16 February 1995). One animal (no. 1788) was carrying three embryos (2/(1)) with a crown-rump length of 3.6 mm. The animals show somewhat lighter dorsal colouration than the *Taterillus* cf. *pygargus* from Bla. Measurements (no. 1788 ♀, 1789 ♀): HB: 108, 129; T: –, 160; HF: 30.0, 30.0; E: 19.0, 19.0; W: 45, 56; CB: 30.1, 30.5; ZBr: 17.4, 17.8.



## Rodentia: Muridae: Murinae

*Arvicanthis* sp.

The genus *Arvicanthis* inhabits a vast range in subsaharan Africa between Western and Eastern Africa, the valley of the Nile and the Republic of Yemen (Ducroz et al. 1998). Formerly all forms were included in *A. niloticus* (e.g. Honacki et al. 1982). Morphological, biochemical, genetic and chromosomal studies of the last years have shown *Arvicanthis* to be a species-complex (e.g. Capanna et al. 1996, Corti et al. 1996, Fadda & Corti 1998). Though it is now possible to determine the East-African species, for the West-African species no valid names are available at the moment. One young adult male was trapped in Bandiagara (10 February 1995) (no. 1786). Due to its geographical finding place it has to be assigned to the "western lineage" of Ducroz et al. (1998), that was based on material from Senegal, Burkina Faso and Mali.

This form is known to occur in the area of the inland delta of the Niger (Wilson 1987) and the Sudanese zone (e.g. Sicard et al. 1992) (referred to as *A. niloticus*). In 1995 it was abundant on the banks of the Yameé in Bandiagara, in the year before there have been no records. Measurements (no. 1786 ♂): HB: 135, T: 121, HF: 30, E: 17, W: 75, CB: 31.35, ZBr: 16.6.

*Rattus norvegicus* (Berkenhout, 1769)

So far the brown or Norwegian rat is known only from seaports in West Africa. For Senegal Hubert et al. (1973) postulated that the species lives in all great harbour towns, but does not penetrate into the inner part of the country. From Nigeria there exist data on brown rats from the 1930s, but only from Lagos, also a harbour town (Buxton 1936). In the list of the rodents of Burkina Faso it is not mentioned (Gautun et al. 1985). In general the species is thought to be restricted to seaports and islands in Africa (Misonne 1971).

In Bamako the species was found to be very numerous along the banks of the Niger. But it was also found in other parts of the city, such as the area around the railway station. All rats observed alive or found slayed or as roadkills were brown rats; black rats *Rattus rattus* do not seem to occur. In Bamako *Rattus norvegicus* was offered by fetish-dealers, in other places only the black rat was offered. Despite intensive trapping no other murid could be collected in Bamako. The brown rat occurred together with *Crocidura olivieri*; both species were trapped in the same hedgerow in the same night.

In Bamako there is fresh water available throughout the year, a resource that seems to be a presupposition for the species. The irrigation channels and the canalization make it possible for the brown rat to colonize the entire city, a development foreseen by Rosevear (1969). It can be assumed that the brown rat was imported to Bamako by railway transports from the harbour town Dakar (Senegal) along the only railway line of the country. Joger (1980) explained the range extension of the gekkonid lizard *Tarentola parvicarinatus* by the same railway.

Measurements (no. 1522 ♀, 1819 ♂, 1820 ♂): HB: 127, 211, 215; T: 116, 192, 168; HF: 34.0, 44.7, 43.2; E: 17.0, 21.0, 21.0; W: —, 315, 268 (cranial measurements: see Tab. 6).

Table 6: Cranial measurements of *Rattus norvegicus*.

Col. No.	CB	ZBr	IoC	NL	MxT	M'L	sex
1472	—	17.4	5.7	13.8	6.5	3.13	♀
1473	40.5	19.9	6.3	16.8	6.7	3.26	♀
1481	—	—	6.5	—	6.9	3.17	—
1522	33.3	—	5.6	11.8	6.6	3.22	♀
1784	45.3	23.0	6.3	17.7	6.6	3.13	—
1798	—	—	—	19.0	6.8	3.22	—
1799	51.5	25.2	7.6	19.6	7.3	3.57	—
1800	—	—	—	—	6.5	3.13	—
1819	44.5	—	7.2	19.0	7.0	3.22	♂
1820	45.8	23.7	6.4	17.6	7.0	3.43	♂

***Rattus rattus* (Linnaeus, 1758)**

The black rat was found in Ségou, Djenné and in the village Ireli, Falaise de Bandiagara. In Bamako it does not seem to occur. In 1993/94 not one specimen was found in Djenné while in 1995 the density was very high and many slayed animals were found in the streets. All animals observed were of the *frugivorous* colour type.

***Mus (Nannomys) haussa* (Thomas & Hinton, 1920)**

The species was abundant in the barn owl pellets from Kemeni (Tab. 1). Only one female was caught by hand in an abandoned house in Bla (no. 1785 ♀). Measurements: HB: 50.0, T: 38.0, HF: 11.0, E: 8.0, CB: 14.22, W: 2.

***Mastomys* cf. *natalensis* (Smith, 1834)**

During the two journeys this has been the most common animal trapped (Tab. 7). By most authors the species is regarded as *Mastomys erythroleucus* (e.g. Böhme & Hutterer 1978, Le Berre 1990), but comparisons in the Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn (ZFMK) showed clearly that the material does not represent *erythroleucus*. Karyotypes not having been taken, the animals have to be regarded as *natalensis* in morphological terms, a point of view also Rosevear (1969) advocated. *M. natalensis* also is reported to occur in Senegal (Duplantier et al. 1990). The conspecificity of animals from Senegal and South Africa, from where the species was described, recently was shown by Granjon et al. (1996) by crossbreeding, karyology and biometry.

Table 7: Measurements of adult *Mastomys* cf. *natalensis* from different localities.

Col. No.	HB	T	HF	E	W	CB	sex
1485	122	112	23.5	17.0	56	28.2	♀
1486	117	107	22.0	18.0	52	28.7	♂
1524	130	111	24.0	18.0	68	29.8	♀
1525	118	110	22.5	17.3	54	28.2	♀
1823	111	102	22.6	18.0	42	27.0	♂
1824	129	104	22.0	18.5	57	28.8	♂
1825	129	105	23.0	19.0	49	28.1	♂
1826	111	109	22.7	18.0	37	27.4	♂
1827	99	103	20.0	20.0	33	26.0	♂
1902	127	109	21.8	—	—	28.4	♀

Except from Djenné and Bamako the species was collected in every place visited (Bandiagara, Mopti, Bla, Kemeni; Arrdt. Bla, Ségou, Kita). Rosevear (1969) stated *Mastomys* is not living in large towns but in more rural surroundings. In the case of Bamako it seems also to be possible *Rattus norvegicus* is a competitive species, that supresses the occurrence of *Mastomys*, as collection also was done in areas with agricultural landuse on the banks of the Niger. In Djenné *Mastomys* seems to be replaced by *Myomys daltoni*.

***Mastomys hildebrandtii* (Peters, 1878)**

One male, that has to be regarded as *M. hildebrandtii* by external appearance, was collected in a private house in Bla on 4 February 1995 (no. 1828). Measurements: HB: 260, T: 133, HF: 24, E: 18, CB: 29.3, W: 49.

***Mastomys* sp.**

A female multimammate rat was caught on the banks of the river Yameé in Bandiagara, back and belly of the specimen are dark grey. It occurred together with *Arvicanthis* sp.. The animal, according to tooth abrasion, is a young adult (no. 1822 ♀). Measurements: HB: 141.5, T: 107, HF: 24, E: 18, CB: 28.9, ZBr: 15.1, MxT: 4.75, W: 61 (see also Tab. 1).

***Myomys daltoni* (Thomas, 1892)**

Single specimens of *Myomys daltoni* have been trapped in Bla and Bandiagara. Also in the Barn owl pellets from Kemeni there have been some animals but the species occurred less

frequent than *Mastomys* sp. (Tab. 1). In Djenné it was the only muroid species of mouse size and very abundant in both periods in houses as well as in the open.

***Acomys cineraceus* (Fitzinger & Heuglin, 1866)**

The species is by some authors (e.g. Sicard & Tranier 1996) regarded as *A. johannis*. 5 specimens of *Acomys cineraceus* have been collected 29 December 1993 in a boulder field near the village Teli / Falaise de Bandiagara (Tab. 8). *A. cineraceus* is known to occur in Burkina Faso (Musser & Carleton 1993, Sicard & Tranier 1996), from Mali there have been no records up to now.

Table 8: Measurements of *Acomys cineraceus* from Teli / Falaise de Bandiagara.

Col. No.	HB	T	HF	E	W	CB	sex
1489	88.5	86.5	27.0	15.0	—	23.8	♀
1492	106	96.0	26.0	15.5	—	26.4	♀
1493	98	—	27.2	16.0	—	23.8	♂
1525	93	84.0	27.0	15.8	—	23.6	♂
1823	116	—	27.2	—	—	27.7	♀

Rodentia: Muridae: Cricetomyinae

***Cricetomys gambianus* (Waterhouse, 1840)**

The species is hunted and eaten by the non-Islamic part of the population as "rat de brousse". An adult female with active mammae (no. 1469 ♀) was found in Djenné (3 January 1994). Measurements: HB: 335, T: 380, HF: 64, E: 35.5, CB: 65.24, ZBr: 33.16, MxT: 10.53. A male was collected from an empty swimming pool in Kita 10 January 1994 (no. 1470 ♂). Measurements: ZBr: 30.96, MxT: 9.59. Here the species was also observed alive. In 1995 many slayed animals could be found in Djenné, one juvenile male was collected 18 February 1995 (no. 1802). Measurements: HB: 220, T: 196, HF: 53, E: 31, CB: 46.52, MxT: 10.1. Also in other parts of the country, in the vicinities of Bla and Bandiagara, *Cricetomys gambianus* is known, but it was not possible to collect material. The finding site Djenné extends the known range of the species in Mali further to the North, until now the most northern locality was Bamako (Rosevear 1969).

Rodentia: Muridae: Dendromurinae

***Steatomys caurinus* (Thomas, 1912)**

Two skulls could be detected in the pellets from Kemeni (Tab. 1). The species was not reported for Mali so far (see Swanepoel & Schlitter 1978).

Lagomorpha: Leporidae

***Lepus victoriae* (Thomas, 1893)**

This species, called by some authors *Lepus crawshayi* (e.g. Petter 1971), was the only hare detected in the southern part of Mali. It seems to be common although it is hunted intensively. I obtained the head of an unsexed specimen (no. 1782) from a hunter in Bandiagara (11 February 1995) (Tab. 9). Another animal was found as a roadkill on the road between Mopti and Djenné (2 January 1994). A female (no. 1466 ♀) carrying an embryo (1/0), close to

Table 9: Measurements of *Lepus victoriae*.

Col. No.	HB	T	HF	E	CB	ZBr	MxT	sex
1466	430	90	102	91	73,4	38,6	13,4	♀
1539	—	—	78	88	—	—	—	—
1782	—	—	—	92	70,4	36,9	13,8	—
1837	375	72	90	84	—	37,2	—	♂



birth (Measurements: CL: 140; E: 29; HF: 36), was shot 18 January 1994 in Bla. I also obtained a male (no. 1837 ♂) on 4 February 1995 from a hunter in Bla. A juvenile animal (no. 1539) was found as a roadkill 17 km from Kita on the road to Bamako 12 January 1994.

### Discussion

The mammal fauna of the Republik of Mali is very poorly known. Nine of the 46 species collected or observed were first records for Mali, others were reported for the second time, or their known range could be extended. This poor knowledge also concerns the commensal species and their coenoses. A better knowledge especially of these species would be of great interest in the purpose of pest control and public health service in one of the poorest countries in the world.

The small mammal coenosis of Bamako differs from that of other Malian cities. In Mopti and Ségou a community of *Rattus rattus*, *Mastomys* cf. *natalensis* and *Crocidura olivieri* was observed. In Djenné *Mastomys* was replaced by *Myomys daltoni*. In Bamako, although intensively surveyed, no murid other than *Rattus norvegicus* could be detected. It seems possible that the brown rat is displacing other murids, a mechanism discussed also to be responsible for the decline of *Rattus rattus* in central Europe since the middle of this century (Bülow 1984). The brown rat should be controlled before other cities along the Niger are reached by inland traffic.

*Atelerix albiventris*, *Cricetomys gambianus*, *Xerus erythropus* and *Lepus victoriae* are regularly eaten by the non-Islamic part of the population, however, their populations do not seem to be threatened. Other species (*Hippopotamus amphibius*, *Gazella rufifrons*), although legally protected, appear to be overhunted. Due to the poor knowledge the status of other species is hardly possible to judge.

Finally a suggestion for conservation: dry or abandoned wells should not be filled up because they are used as roosts by insectivorous bats which may be useful in biological pest control especially of malaria transmitting mosquitos. Instead of that, the wells could be secured by old lorry tires.

### Acknowledgements

I thank the volunteers B. Halle, Kita, now Elsdorf/Rheinl., M. and M. Ohletz, Bandiagara, now Erfstadt, and E. and M. Schinke, Bla, now Hattingen, for their help, hospitality and tolerance. Many thanks to M. Kaufmann and C. Katzenmeier, both Hattingen, for their company during the first stay and to H. Rathjen, Hamburg, during the second. I am very obliged to Dr. R. Hutterer, Bonn, for his help in determination work, for providing access to specimens in his care and for his comments on an earlier draft of the manuscript. J. Helbeck, Wuppertal, checked the English language.

### Zusammenfassung

Während zweier Kurzzeituntersuchungen wurde die Säugetierfauna des südlichen Teils der Republik Mali (West-Afrika) untersucht. Insgesamt konnten 46 Arten nachgewiesen werden. Mindestens neun davon (*Crocidura lamottei*, *Chaerephon pumila*, *Scotophilus leucogaster*, *Eptesicus rendalli*, *Rhinolophus fumigatus*, *Nycteris macrotis*, *Rattus norvegicus*, *Acomys cineraceus*, *Steatomys caurimus*) wurden zum ersten Mal für Mali nachgewiesen, obwohl sie teilweise über ausgedehnte Gebiete in Afrika verbreitet sind. Eine weitere Art wurde zum zweiten Mal nachgewiesen (*Tatera* cf. *kempii*), eine andere zum dritten Mal (*Crocidura lusitania*). Das bekannte Verbreitungsgebiet von *Gerbillus* cf. *gerbillus* in Mali konnte erheblich nach Süden ausgedehnt werden. Dies alles belegt, wie gering die Kenntnisse der Säugetierfauna dieses Teils von Westafrika noch sind. *Rattus norvegicus* wurde zum ersten Mal im Inneren Afrikas festgestellt; bislang war die Art ausschließlich aus Küstenstädten bekannt. Das



häufigste Nagetier war eine *Mastomys*-Art. Nach morphologischen Gesichtspunkten ist die Form als *M. cf. natalensis* zu determinieren und nicht als *M. erythroleucus*, wie von einigen Autoren angenommen. Die kommensalen Kleinsäugergesellschaften einiger größerer Städte (Mopti, Djenné, Ségou, Bamako) werden verglichen.

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Jahr/Year: 2000

Band/Volume: [49](#)

Autor(en)/Author(s): Meinig Holger

Artikel/Article: [Notes on the mammal fauna of the southern part of the Republic of Mali, West Africa 101-114](#)