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Amphibian and reptilian records from south-central Mali and western Burkina Faso

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Abstract. Some amphibians and reptiles from southern Mali and southwestern Burkina Faso have been deposited in the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) since the year 2000. Supplemented by some photographic voucher material they contain several remarkable, in some cases even new records for the two respective countries. Malian specimens were collected mainly in the region between Douentza and Bandiagara in the south-central part of the country, while those from Burkina Faso are from the Bobo Dioulasso area in the southwestern part of the country. Three amphibian species are new for Mali's faunal list (*Leptopelis bufonides, Ptychadena trinodis, Pyxicephalus* sp. as the first representative of its genus). Two specimens of a small-sized *Agama* species cannot yet be assigned to a described species with certainty but are in any case of zoogeographical interest. A specimen of *Chamaeleo gracilis* documents the second record of this species for Burkina Faso, the first one in the western part of the country. The slender blind snake *Leptotyphlops albiventer* is recorded for the first time for this country.

Key words. West Africa: Mali, Burkina Faso; herpetofauna, first country recordss.

INTRODUCTION

While the forests of the Upper Guinean region of West Africa have been the focus of much herpetofaunal attention in recent decades (e.g., Penner et al. 2011), many areas of landlocked West Africa remain under-surveyed. Some work has been done on a number of these countries, for example, Guinea-Bissau (Auliya et al. 2012), Senegal (Joger & Lambert 2002), Guinea (Böhme 2000, Rödel et al. 2004, Greenbaum & Carr 2005, Hillers et al. 2008, Böhme et al. 2011); relatively little, however, has been published on the herpetofauna of Mali and Burkina Faso when compared with their southern neighbours. For Mali, Joger & Lambert (1996, 1997) provided an annotated checklist and analysis of the diversity and biogeography of the herpetofauna, while Böhme et al. (1996) provided some additional records for both countries. Rödel (2000) described the West African frog fauna and listed country records for each species, including Mali and Burkina Faso. Chirio (2009) gave records for the geographic triangle formed by Niger, Benin and Burkina Faso where the border-crossing "W Transfrontier Biosphere Reserve" ("Réserve de Biosphère Transfrontalière du W", RBTW) is situated. More recently, Trape & Mané (2006) and Trape et al. (2012) provided updated distribution maps at a one-degree scale for snakes and other reptiles respectively, for all West African countries. Mediannikov et al. (2012) revised the genus *Agama* all over West Africa with an integrative approach which is, however, partly in conflict with the results of Wagner et al. (2009) and Leaché et al. (2014). Finally, Trape & Mané (2017) published a summarising paper on the snake fauna of Mali.

Here, we report on some herpetological voucher material from Mali and Burkina Faso (Fig. 1) that has entered the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) in Bonn after 1996, since the publication of a first note on this topic happened 22 years ago (Böhme et al. 1996).

Our Malian records were made by Jeffrey Heath and two native collaborators (Seydou Moro and Oumar Pergourou, see below) in September 2009, July 2010 and on various occasions in 2011 and 2012 in the Dogon Province, southern Mali, at Sévaré near Mopti (14°32'N, 04°06'W) and in the following villages of the area between Douentza and Bandiagara:

– Anda near Douentza (14°49'N, 03°01'W) is nested at the base of a small rocky hill (inselberg). Between the inselbergs are sandy fields, but there are also some creeks and waterholes so that there are several microenvironments (Fig. 2).
– between Douentza (15°00'N, 01°22'W) and Boni (15°07'N, 01°22'W) on pasture ground with wetlands;
– Pergué (14°85'N, 03°02'W) near Douentza (Fig. 3) which is on a rocky shelf forming part of an inselberg. In the outskirts of the village, to the south of the inselberg, there are sandy plains.
– Kikara (15°12'N, 02°44'W) near Douentza, on the northern slope of Gandamia inselberg (750 m a.s.l.), mountain top.
– Koporo-Pen (14°08'N, 03°11'W), sandy plains east of Bandiagara.

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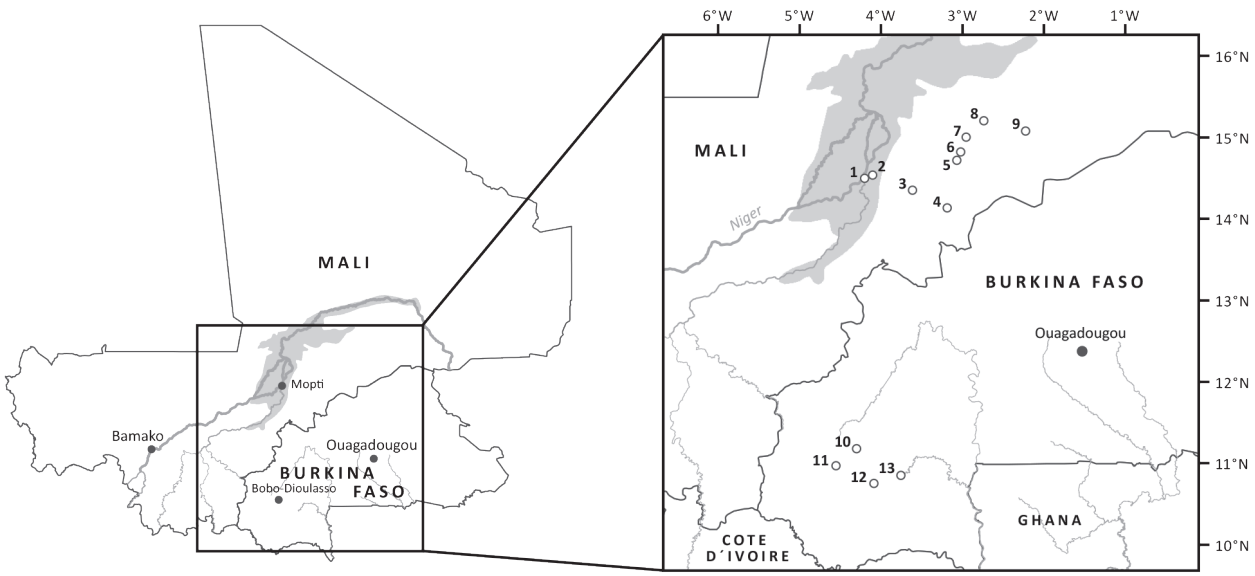

Fig. 1. Map of Mali and Burkina Faso. Inset: Study area. Localities (Mali): 1. Mopti; 2. Sévaré; 3. Bandiagara; 4. Koporo Pén; 5. Pergué village; 6. Anda village; 7. Douentza; 8. Kikara village; 9. Boni; (Burkina Faso); 10. Bobo Dioulasso; 11. 10 km SE Tiéfora; 12. Dérégoué; 13. Karankasso Vigué. Drawing: Morris Flecks.

Fig. 2. Anda village, Mali.

Fig. 3. Pergué village, Mali.

The area between Douentza and Bandiagara was visited several times, in 2009 (September), 2010 (July) and in 2011/2012, in the course of Dogon linguistic studies carried out by Jeffrey Heath in the Dogon Province. Some amphibians and reptiles were seen, photographed and – by focal sampling – collected. These voucher specimens are deposited in ZFMK's herpetological collection, as are the photographs in ZFMK's herpetological photo archive.

In 2015, J. Heath also visited Burkina Faso and was able to gather some photographic vouchers of herpetological specimens which stemmed from Karankasso-Vigué (10°61'N, 03°54'W), southeast of Bobo Dioulasso, and from Dérégoué (locally also spelled Dérégboué; 10°45'N, 04°05'W, 295 m a.s.l.), 50 km east of Bobo Dioulasso.

From the latter locality (4 km NE) we also received some specimens collected in 1985 by Harald Schreiber and co-workers, who was earlier the responsible curator of the herpetological collection of the University of Saarbrücken (Paul Müller collection). Harald Schreiber and co-workers collected also10 km SE of Tiéfora (10°58'N,

04°33'W), in Bobo Dioulasso and in Ouagadougou itself. In 2010, the entire Paul Müller collection which had initially been transported to the University of Trier, was finally deposited in Bonn where it is now integrated in the ZFMK herpetological collection (Böhme 2014). This small part of the Paul Müller collection together with the records made by J. Heath complements ZFMK's previous holdings from Burkina Faso and Mali which had been collected by Ulrich Joger, Harald Meier and Holger Meinig. Their materials which contained also interesting records including new ones for these two countries have been published earlier (Joger 1979, 1981, Böhme et al. 1996). The present paper is an update of these earlier contributions.

COMMENTED SPECIES LIST

AMPHIBIANS

Xenopus (Silurana) tropicalis (Gray, 1864)

Burkina Faso: ZFMK 93959–965, 4 km NE Dérégoué, gallery forest at Koba River.

The first record of this West African forest-dwelling pipid species (Loumont 1984, Rödel 2000) from Burkina Faso was published by Böhme et al. (1996) based on ZFMK specimens collected 1983 from Bobo Dioulasso by Harald Meier. Our newly acquired series from Dérégoué corroborates the distribution of this zoogeographical outlier far from the forested coast in the arid savannas of interior West Africa. However, the gallery forest enables its survival in this environment, as it has also been found in Senegambia (Böhme 1979) and northern Ivory Coast (Comoé National Park: Rödel 2000).

Leptopelis bufonides Schiøtz, 1967

Mali: ZFMK 93766–767, from between Douentza and Boni, pasture ground with swamps.

Known from few localities from the open, relatively dry savannas of West Africa, and seemingly patchily distributed (Hillers et al 2008). Joger & Lambert (1996) indicated that it is likely to occur in Mali, since it is known from Senegal and Burkina Faso, see also Rödel 2000). However, our records listed here (Fig. 4) are apparently the first confirmed ones for Mali.

Sclerophrys regularis (Reuss, 1834)

Burkina Faso: ZFMK 93968-969, 10 km SE Tiéfora, gallery forest at Sinlo River; ZFMK 101292-293, Dérégoué.

A comment to be made on this widely distributed and common species refers to the generic nomenclature. After the partition of the collective genus *Bufo*, the Afrotropical species were accommodated in an own genus *Amietophrynus* (Frost et al., 2006), a name that has been in use since then and has been established in numerous papers which means that nomenclatural stability was again achieved. Recently, however, Ohler & Dubois (2016) found an old specimen described as *Sclerophrys capensis* Tschudi, 1838 to be assignable to *Bufo* (or respectively *Amietophrynus*) *rangeri*, and synonymized the latter generic nomen with *Sclerophrys*. They were right in stating that, despite only few citations, *Sclerophrys* was not a nomen oblitum, so that this name has currently to be used as the oldest available one for these toads.

Fig. 4. *Leptopelis bufonides* from between Douentza and Boni, Mali.

Phrynobatrachus* cf. *latifrons Ahl, 1924

Burkina Faso: ZFMK 93966, 4 km NE Dérégoué, gallery forest at Koba River.

The taxonomy of these little puddle frogs is complicated since a sibling species from the more forested regions (*P. accraensis*) is involved. In addition, there are numerous synonyms to be evaluated. These frogs are in need of revision, so that our assignment above is tentative.

Fig. 5. *Ptychadena trinodis* from between Douentza and Boni, Mali. Left: ZFMK voucher; right: specimen not collected.

Fig. 6. Plate from Boettger (1881) showing the (presumably lost) type specimens of his *Rana* (currently *Ptychadena*) *trinodis* (lower left) and *Maltzania* (currently *Pyxicephalus*) *bufonia* (upper).

Hoplobatrachus occipitalis (Günther, 1859)

Burkina Faso: ZFMK 93958, 4 km NE Dérégoué, gallery forest at Koba River; ZFMK 93967, 10 km SE Tiéfora, gallery forest at Sinlo River.

A very common species in sub-Saharan Africa, entering both desert habitats in the north and forest habitats in the south. Represented by voucher material from several localities in the ZFMK collection (see Böhme et al. 1996).

Ptychadena trinodis (Boettger, 1881)

Mali: ZFMK 93770-771 from between Douentza and Boni, pasture ground with swamps.

According to Frost (1985) distributed from Senegal to the Democratic Republic of Congo, Mali being listed as one of the countries with published records (Rödel 2000). However, M.-O. Rödel (pers. comm.) kindly verified the identification of our specimens (Fig. 5) and informed us that they should actually be the first proven voucher specimens for Mali. The single holotype of this species (Fig. 6), collected by Hermann and Agnes von Maltzan for the Senckenberg Museum in Frankfurt am Main, seems to be lost as it is not included in the type list of this collection by Mertens (1967). For some details about the collectors see below under *Pyxicephalus*.

Fig. 7. Four specimens of *Pyxicephalus* sp. from between Mopti and Sévaré, Mali, to show the variability in color pattern. The specimen on lower left is a juvenile (not on scale).

***Pyxicephalus* sp.**

Mali: ZFMK 93763, 93772-773, Sévaré near Mopti.

Our new records are the first ones of this genus for Mali and bridge a large geographical gap between Senegal (Rufisque: Boettger, 1881; south of Rosso: Böhme et al. 2001), Gambia (Frost 2017) and Mauritania (Abdul Behru and Chlim: ZFMK vouchers: 76773 and 76781–782 respectively) on the one hand, and Benin and Nigeria (Rödel 2000, Nago et al. 2006) on the other. West African *Pyxicephalus* are in high need of revision. Currently, the West African populations of this frog are still assigned to *P. edulis* Peters, 1854 (type locality Mozambique!) (Rödel 2000, Böhme et al. 2001, Nago et al. 2006, Frost 2015), but Rödel (2000) who listed as westernmost occurrence only Nigeria, regarded it as not unlikely that the West African *Pyxicephalus* might not be *edulis* but a distinct species, citing an older personal communication by one of us (WB). Boettger (1881) described a Senegalese specimen as the sole member of his new genus *Maltzania* from Rufisque in westernmost Senegal (Fig. 7) and assigned it to his new species *M. bufonia*. This is the oldest and geographically closest name applicable to the West African members of *Pyxicephalus*. Also Monard's (1951) name *reiensis* (from Rey Bouba, northern Cameroon) must be taken into consideration once a systematic revision of Central and West African *Pyxicephalus* will yield taxonomic differences between these two regions (for the East African forms see Scott et al. 2013). But if the Central and West African populations proved to be identical, Boettger's name would have high priority over that of Monard (1951). Figure 7 documents the variable colour pattern in the Malian population.

Boettger (1881) himself already regarded his often overlooked new genus *Maltzania* as closest to *Pyxicephalus*. He dedicated this name to Baron Hermann von Maltzan (1843–1892) and his wife, Baroness Agnes von Maltzan, who both had collected in Senegambia for the Senckenberg Museum in Frankfurt am Main. The single holotype of *M. bufonia* (Fig. 6) evidently shared the fate of the other new frog described by Boettger (1881) in the same paper, viz. *Ptychadena trinodis* (see above),

and seems to be lost, since it is not included in Mertens' (1967) type catalogue. Also, von Maltzan's frogs cannot be traced in the natural history museum of Waren/Mecklenburg, the so-called Maltzaneum (today called Müritzeum) which had been founded by him in 1866 (Gebhardt 1964, Hauff 2016).

Hildebrandtia ornata Nieden, 1907

Mali: ZFMK 93768-069, from between Douentza and Boni, pasture ground with swamps.

Despite its large distribution area in the sub-Saharan savanna belt, this species "is rarely encountered" (Rödel 2000), so our record is of faunistic interest.

Amnirana galamensis (Duméril & Bibron, 1841)

Mali: ZFMK 90468, between Douentza and Bandiagara.

A. galamensis is widely distributed in sub-Saharan Africa, the typical form (type locality Lake Galam in Senegal) being confined to West and Central Africa and replaced by *A. g. bravoana* in eastern Africa und further south. A photographic voucher from Burkina Faso is mentioned in the appendix (see below).

REPTILES

Pelusios castaneus (Schweigger, 1812)

Burkina Faso: ZFMK 93957, 4 km NE Dérégoué, H. Schreiber and B. Basten, II.–IV. 1985.

The map sketch of *Pelusios castaneus* in Branch (2008) leaves Burkina Faso outside the distribution range of this species, while the text says only "from Senegal to northwestern Angola, and inland to Central African Republic". However, the latter country (CAR) is also far outside the drawn range so that the small map sketches by Branch (2008) are not reliable. Apart from a record from the Burkina Faso part of RBTW (Chirio 2009), *P. castaneus* is also registered in the grid map by Trape et al. (2012) in the southwest of Burkina Faso, i.e., in the area of our voucher specimen.

Agama agama (Linnaeus, 1758)

Mali: ZFMK 91052, male, Douentza, J. Heath, VII.2010; **Burkina Faso**: ZFMK 93950–955, 2 males, 1 female, 3 subadults, 4 km NE Dérégoué, near gallery forest of the Koba River; ZFMK 93970, Ouagadougou.

The taxonomy of this widespread and anthropophilous lizard is complicated, since it represents a species complex of closely related forms. Moreover, its Linnean type series, composed of three different species, has been differently interpreted by Wagner et al. (2009) and by Mediannikov et al. (2012). In the light of the results by Leaché et al. (2014) we follow the concept of the former authors.

Fig. 8. *Agama sankaranica* from NE of Dérégoué (left) and from Ouagadougou (right), Burkina Faso. Note the absence of a light vertebral line in the right specimen.

Agama sankaranica Chabanaud, 1918

Burkina Faso: ZFMK 93956, 4 km NE of Dérégoué, near gallery forest at the Koba river.

A former voucher specimen from Burkina Faso (ZFMK 39032) was the first country record of this species (Böhme et al. 1996). The two voucher specimens (Fig. 8) differ in that one (ZFMK 93956) has a white middorsal line as described to be typical for this species (Trape et al. 2012), the other belongs to the less common morphotype without such a stripe. The specimens bridge a distributional gap between two records in Mali and one each in NE Ivory Coast and NW Ghana. From Burkina Faso, there is only one earlier record on the map by Trape et al. (2012) in the centre of the country. It may be noted that the easternmost records of *A. sankaranica* in this map are situated in central Nigeria (Jos Plateau), ignoring a record from Minim, Adamaoua Plateau, Cameroon (Böhme & Schneider 1987) which extends the distribution range of this species for more than 500 km further towards the

Fig. 9. *Agama* sp. from Dérégoué, Burkina Faso. Left: male, and right: female.

southeast. Recorded also for the Burkina Faso part of the RBTW in the east of the country (Chirio 2009).

***Agama* sp.**

Burkina Faso: ZFMK 93948–949, male and female, 4 km NE of Dérégoué, near gallery forest at the Koba River.

The two specimens (Fig. 9) seem to be interesting because they are small and nonetheless seemingly adult, having a head-body length of only 69 and 65 mm respectively. They are not yet assignable to a described species. Since they also belong to the *A. agama* species complex, their identity can only be cleared by extensive interspecific comparisons for which the present faunistic study is not the right place.

Chamaeleo gracilis Hallowell, 1842

Burkina Faso: ZFMK 101235, 4 km NE Dérégoué, gallery forest at the Koba River.

Although stated to be widely distributed in Africa, from Senegal to Ethiopia and Tanzania (Trape et al. 2012), there is no locality record for this chameleon in Burkina Faso on the grid map of these authors, although it was recorded from Burkina Fasoan part of the RBTW in the easternmost part of the country and only one in southern Mali. From *C. senegalensis* which is known from several localities in both countries, our *C. gracilis* female is distinguished by the shape of the casque and the rudimentary occipital flaps which are virtually absent in the former species. It seems that our specimen is the second documented voucher specimen from Burkina Faso, next to a record given by Chirio (2009) for the easternmost edge of the country, just at the border to Benin which is not included in the map by Trape et al. (2012). It documents thus a much wider potential distribution in this country than assumed before.

Chalcides ocellatus (Forskål, 1775)

Mali: ZFMK 90467, 91055–056) from Anda village between Douentza and Bandiagara.

The three voucher specimens of this widely distributed species are the second record of this species from Mali. Before, this skink was only once reported from Mali by Greenbaum et al. (2006) from two localities, viz. Tombouctou and between Kona and Sévaré (Joger & Lambert 1997, see also Trape et al. 2012).

Chalcides delislei (Lataste & Rochebrune, 1876)

Mali: ZFMK 93764, Pergué, sand dunes outside the village.

A Saharan element with several records in south-central Mali where also our voucher specimen comes from.

Leptotyphlops albiventer Hallermann & Rödel, 1995

Burkina Faso: ZFMK 97767, 4 km NE Dérégoué, near gallery forest at the Koba River.

This species was described from the Comoé National Park in northern Ivory Coast (Hallermann & Rödel 1995) and subsequently recorded from Guinea Bissau and Mali (Trape & Mané 2006, 2017). In Trape & Mané (2017) the authors used the new generic name *Myriopholis* Hedges, Adalsteinsson & Branch, 2009, created in the course of a family-wide new molecular phylogeny by Adalsteinsson et al. (2009). *Myriopholis albiventer* was, however, placed in this genus without molecular data, and a micro-CT scan of ZFMK 97767 showed that its skull characters do not fit the pattern of the other *Myriopholis* species but rather resemble the situation in *Leptotyphlops* in the strict sense (Claudia Koch, unpubl. data), so that we maintain here its original genus name. Our specimen has a total length of 120 mm, which is near the maximum for this species, and the relations of its total length to tail

Fig. 10. *Leptotyphlops albiventer* from Dérégoué, Burkina Faso.

length as well as to its body diameter, the midbody scale count, the number of subcaudals and the color pattern of a brownish dorsal and a whitish ventral side fit the characteristics of this species as described by Hallermann & Rödel (1995) and Trape & Mané (2006). ZFMK 97767 (Fig. 10) documents thus the fourth record from a fourth country, but the first for Burkina Faso.

Lamprophis fuliginosus (Boie, 1827)

Burkina Faso: ZFMK 93971, Bobo Dioulasso.

A widespread, partly anthropophilous snake (vernacular name "house snake") distributed in sub-Saharan West Africa from the forest belt up to the Sahelian savanna (Trape & Mané 2006).

Lamprophis lineatus (Duméril, Bibron & Duméril, 1854)

Burkina Faso: ZFMK 101291, Bobo Dioulasso.

This close relative of the former species is known to be broadly sympatric in West Africa including Burkina Faso (Trape & Mané 2006).

Naja nigricollis Reinhardt, 1843

Burkina Faso: ZFMK 101547, Dérégoué (a mutilated adult specimen).

Widely distributed in in the sahelian, sudanian and guinean savanna types of West and Central Africa. In both Mali and Burkina Faso *N. nigricollis* is represented in most parts of these countries (see the map in Trape & Mané 2006). According to these authors, West African specimens are entirely black above and below, except some light ventral crossbands below the neck and the anterior part of the body. ZFMK 101547 corresponds to this characterization.

Bitis arietans (Merrem, 1820)

Burkina Faso: ZFMK 101290, 10 km SE Tiéfora.

As the former species widely distributed in West Africa including Burkina Faso (Trape & Mané 2006).

Echis leucogaster Roman, 1972

Mali: ZFMK 91055 (head and forepart only) 91056 (mutilated subadult), Douentza.

This Sahelian species is common and widely distributed both in Mali and in Burkina Faso. Our two specimens are badly damaged and thus not suitable for providing scale counts which would be necessary to corroborate their identification against the sympatric congeners *E. jogeri* and *E. ocellatus* (Trape & Mané 2006, 2017). However, head and neck size of ZFMK 91055 and the unspotted white underside in both specimens argue for *E. leucogaster*, as does the locality Douentza which is situated in a center of Malian records (Trape & Mané 2006).

APPENDIX: PHOTOGRAPHIC VOUCHERS

Some locality records which are based on photographs only have been separated from the species list above since the physical specimens are absent. However, in all cases except *Tarentola* cf. *ephippiata*, their specific identification is indubitable.

Hemisus marmoratus (Peters, 1854)

Burkina Faso: Photo voucher (Fig. 11), Karankasso-Vigué, pasture ground with swamps.

The first record of this burrowing frog in Burkina Faso was made by M.-O. Rödel in 1992 (Böhme et al. 1996) from halfway between Ouagadougou and Bobo Dioulasso. This photographic record extends the range southwestwards towards Ivory Coast where Rödel (2000) recorded it from the Comoé National Park. It has not yet been listed for Mali so far.

Ptychadena schubotzi (Sternfeld, 1917)

Burkina Faso: Photo voucher from Karankasso-Vigué.

Ptychadena schubotzi is the savanna sibling of the forest-dwelling *P. longirostris* with which it has often been mixed up in the past (Perret 1981, Rödel 2000). It is widely distributed over the sub-Saharan savanna belt countries and was first discovered in Mali by Schätti (1986) and in Burkina Faso by Böhme et al. (1996).

Amnirana galamensis (Duméril & Bibron, 1841)

Burkina Faso: Photo voucher, Karankasso-Vigué.

Not to be mistaken and thus a reliable locality record.

Fig. 11. *Hemisus marmoratus* from Karankasso-Vigué, Burkina Faso.

Tarentola* cf. *ephippiata O'Shaugnessy**,** 1857

Mali: Photo voucher from Douentza.

Tarentola ephippiata turned out to be a species complex, and some forms described as subspecies have been lifted to specific rank (Trape et al. 2012). According to these authors, the Bandiagara-Douentza area has two forms of this complex (*T. ephippiata* sensu stricto and *T. hoggarensis*) occurring in sympatry, thus corroborating their specific status. The identification of these two close relatives after a photograph only is difficult, so the above assignment remains tentative.

Tropiocolotes tripolitanus Peters, 1880

Mali: Photo voucher from Kikara near Douentza, near mountain top, under stones.

This Saharan faunal element has a disjunct distribution on the southwestern and northeastern margins of the Sahara. In the southwestern part of its range, it is distributed in Mauritania and Mali (Trape et al. 2012). The identification of the photographed specimen as *T. tripolitanus* is unproblematic since only two well distinguishable species are possible to occur in the area.

Agama boueti Chabanaud, 1917

Mali: Photo vouchers from Douentza, Tupéré near Boni, and Koporo Pén.

This ground-dwelling *Agama* was described after two specimens from Gao on the Niger River in Mali and considered to be so rare that even its validity was questioned (Wermuth 1967). But six decades later it was found to be very common close to Dakar, Senegal (Böhme 1979), and subsequently also recorded from the Air Mountains, Republic of Niger (Joger 1981). Today it is known to be continuously distributed in the Sahelian belt from Senegal to Niger (Mediannikov et al. 2012, Trape et al. 2012),

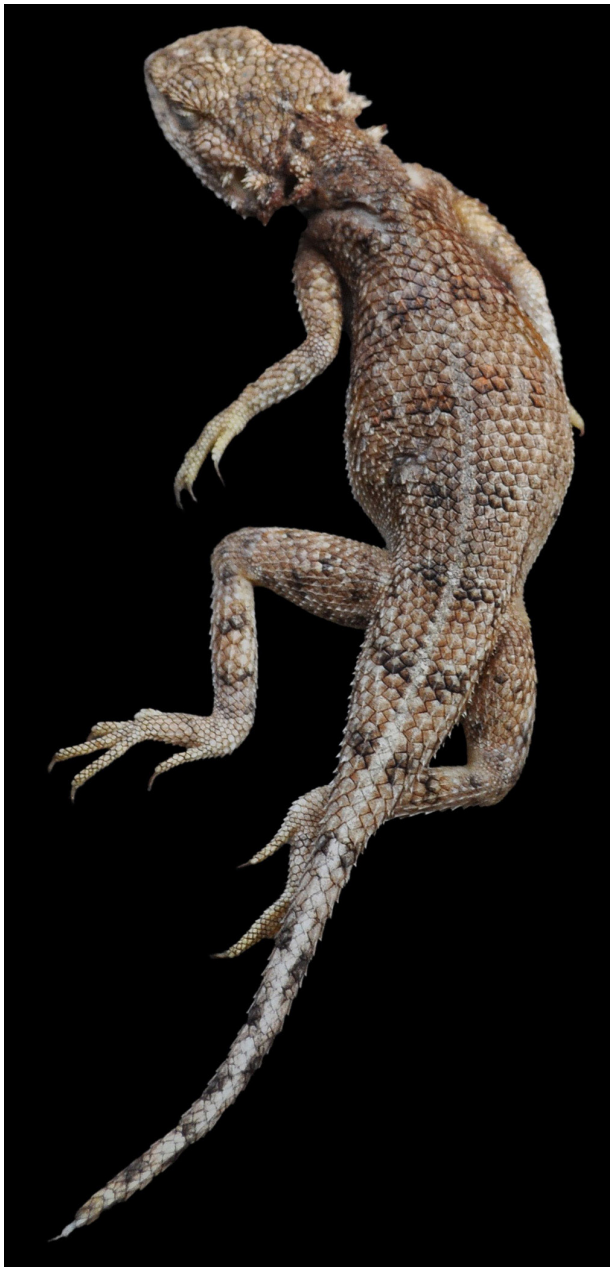

Fig. 12. *Agama boueti* from Douentza, Mali.

and our records from the Douentza area (Fig. 12) in Mali fit well into this pattern.

Latastia longicaudata (Reuss, 1834)

Mali: Photo voucher, Douentza.

This long-tailed lacertid lizard has a wide sub-Saharan distribution across the Sahelian savanna belt. For West Africa, the grid map in Trape et al. (2012) shows a concentration of records in western Senegal and northern Cameroon, connected by scattered grid cells in Mali,

Fig. 13. *Latastia longicaudata* from Douentza, Mali.

Niger and northern Nigeria. For Mali, there are only two grid cells given (Trape et al. 2012) which evidently refer to Goundam and south of Gao (see Joger and Lambert 1996) and their distance from each other is bridged by our record (Fig. 13) from Douentza.

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