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Reptiles from southern Benin, West Africa, with the description of a new *Hemidactylus* (Gekkonidae), and a country-wide checklist

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Abstract. We report on a collection of reptiles made in southern Benin, mostly in the vicinity of Lama Forest, a relict rain forest surrounded by savannah habitats within the the so-called Dahomey gap. 48 species (3 chelonian, 20 saurian and 25 ophidian species were encountered) are listed with the respective voucher material and commented in respect to taxonomic or ecological information. Five lizard species (*Agama sylvanus*, *Hemidactylus ansorgei*, *H. lamaensis* n. sp., *Holaspis guentheri*, *Varanus ornatus*) and two snake species (*Natriciteres variegata*, *Amblyodipsas unicolor*) are new for the fauna of Benin, the second *Hemidactylus* species being even new to science. Some other species are reported from Benin for only the second time.

This commented list of species collected from southern Benin is followed by a general country-wide checklist, which is based on literature data and also some unpublished records from northern Benin, among them the remarkable rediscovery of *Agama gracilimembris*, 9 decades after its original description from this country.

Key words. Reptilia: Chelonia, Crocodylia, Squamata; Benin, West Africa, new country records; *Hemidactylus lamaensis* n. sp.; country-wide checklist

INTRODUCTION

Herpetologically, Benin is among the most insufficiently known countries in Africa. Bordered by Togo in the west, Burkina Faso and Niger in the north, and Nigeria in the east, Benin is best-known by its old name Dahomey, because of the denomination of the huge savannah gap that separates the Upper Guinean rain forests from those of the Lower Guinean-Congolian forest block as Dahomey Gap.

Among the first authors who dealt especially with Benin reptile material within the framework of West African herpetology is Chabanaud (1916, 1917). During his curatorship in the Museum of Natural History in Paris he published on acquisitions from this former part of French West Africa by the following collectors: Dr. G. Bouet, Health Inspector of French West Africa (“Dahomey”, 1910–1913), Dr. Brot (“Haut-Dahomey”, 1908), Mr. A. Chevalier (“Dahomey”, 1909–1910), Mr. de Gironcourt (“Haut-Dahomey”, 1910), Mr. Gruvel (“Dahomey”, 1913), Mr. Primot (“Dahomey”, 1914), and Mr. Waterlot (“Dahomey”, 1914). The next important step in the exploration of this country was the mission to Togo and

Dahomey carried out by A. Villiers in 1950 (see Villiers 1951, Loveridge 1952) which covered all important biotopes of these two countries. In 1999, Sinsin & Bergmans (1999) edited a book on rodents and snakes in Benin under mostly agricultural aspects. The table on the West African snake fauna including Benin provided for this book by Meirte is not considered here because it marks many species in this table as occurring in Benin without any reference to the source on which the information is based; on the other hand, several species are marked as questionably or not at all occurring in Benin (e.g. *Scaphiophis albopunctatus*, *Telescopus variegatus*, *Toxicodryas blandingii*, *Psammophis* cf. *sibilans*, *P. phillipsi*: Meirte 1999) although they have been documented by museum voucher specimens in the earlier works cited above (see also the country checklist at the end of this paper).

Where the savannah reaches the southern coast of West Africa the Dahomey gap stretches from roughly between Accra (Ghana) to Lagos (Nigeria), thus making Benin a seemingly pure savannah country. However, some forest

remnants such as Forêt de Dan, Forêt de Lama and Forêt de Lokoli are still present in the southern part of Benin. The senior author of this paper (KU) had the opportunity to work on a herpetological survey of the most important of these relict forest remnants, viz. Forêt de Lama. This work took place within the framework of a project (“Biolama”) of the University of Basel, Switzerland, guided by Prof. Dr. Peter Nagel (see Lachat et al. 2006). The herpetological voucher material of this survey, which included also specimens obtained from neighbouring forest and savannah areas (Ullenbruch 2003) is deposited in the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn, Germany. The amphibian part of this collection contained some important first country records of rain forest species (e.g. *Ptychadena aequiplicata*) and has already been included in a recent paper by Rödel et al. (2007). Amphibians collected by O. Grell in the Pendjari National Park, northern Benin (Grell 2003) have been incorporated in the study by Nago et al. (2006). The reptilian records of this last-mentioned survey, mostly documented by photographs, are included here only in the country-wide checklist at the end of this paper. The faunistic and ecological information on the reptiles of southern Benin (mission K. Ullenbruch) is presented here in a systematically arranged, commented species list. This list further contains some voucher material collected and donated to ZFMK by Dr. Werner Schröder, Göttingen, in 1984.

The commented regional species list which contains also the description of one new species, is supplemented by a general, country-wide checklist that tries to summarize all literature data for Benin as a whole.

REPTILES FROM LAMA FOREST, SOUTHERN BENIN, AND NEIGHBOURING AREAS

Lama Forest or Forêt de Lama is situated within a depression bearing the same name, 80 km north of Benin’s capital Cotonou (Figure 1). It is bordered in the north by the plateau of Abomey and in the south by the plateau of Al-lada. Lama Forest comprises a total area of 16.250 ha of “forêt classée”, 9.750 ha of which belong to the Département Atlantique (Sous-préfecture Toffo) and 6.500 ha belonging to the Département Zou (Sous-préfecture Zogbodomé) (Emrich et al. 1999). The center of this protected area – the protectional status exists since 1947 – is formed by the Noyeau Central (4.777 ha) which is composed of primary forest (1.937 ha), degraded forest (1.388 ha) and of teak plantations and fallow grounds (together 1.452 ha) (Figure 2). The Noyeau Central is surrounded by ca 9.000 ha of forestry plantations. In earlier times, the primary forest covered the whole Lama depression which stretches over the south Benin in a west-east direction. Un-



Fig. 1. View on Forêt de Lama, South Benin. Photo: K. Ullenbruch

til 1946, large areas of natural forest were already destroyed, and only 11.000 ha remained. Since the 1960ies reforestations are taking place which favoured, however, mainly teak plantations. The natural vegetation has been protected only from 1988 onwards (Emrich et al. 1999). Mean annual precipitation is 1100 mm with two peaks (big and small rainy seasons) in March to June and September to October respectively. The annual mean temperature lies between 25–29°C. The eastern part of the Lama depression is crossed – in north-south direction – by the Ouémé River valley. Close to Lama Forest, there are only few smaller creeks. During the rainy seasons, however, large parts of the area are changed into overflowed marshlands. Due to these repeated inondations and stagnant waters, there are only six dominant tree species in Lama Forest, viz. *Dialium guineense*, *Diospyros mespiliformis*, *Albizia zygia*, *Azelia africana*, *Khaja senegalensis*, and *Anogeissus leiocarpus*. The Noyeau Central consists mainly of a mixture of relicts of a semideciduous forest which floristically approaches the “Forêt de Samba”



Fig. 2. Primary forest of Forêt de Lama (Noyeau central) (left) with bordering teak plantations (right) Photo: K. Ullenbruch



Fig. 3. Landscape round the village of Didja, southern Benin. Photo: K. Ullenbruch

type (Mondjkannagni 1969) and of secondary forest in various developmental stages. Within this dynamic system, the South American fast-growing asteracean neophyte *Chromolaema odorata* is commonly found along small roads and paths and at the forest edges. In smaller plantations, next to the larger ones with teak, trees such as *Gmelina arborea*, fraké (*Terminalia superba*), samba wood (*Triplochiton skleroxylon*) and, especially in the Toffo sector, the fire-resistant *Cassia siamea* are cultivated (Specht 2002).

The remaining collecting sites in southern Benin were:

- Didja village, situated ca. 25 km NW of Bohicon and largely surrounded by an agriculturally formed landscape. The area north of Didja is characterised by bush and tree savannas (Figure 3).
- Dan Forest or Forêt de Dan is situated ca. 15 km NE of Didja and is regularly visited by hunters from Didja.



Fig. 4. Gallery forests at the Zou River, southern Benin. Photo: K. Ullenbruch

- Za-Kpota, 18 km NE of Bohicon, is likewise largely surrounded by an agricultural area, replaced in the north-west by large tree savannas. 7 km N of Za-Kpota, the Zou River is running, being accompanied on its banks by a small strip of dense and degraded gallery forest which belongs to the hunting grounds of the villagers (Figure 4).
- Lokoli Forest or Forêt de Lokoli, a 500 ha large forest on the Hounto River, ca. 100 km N of Cotonou. Numerous sidearms of the Hounto River run through Lokoli Forest so that it is penetrable only by boat (Figure 5). For further details, in the context of an amphibian survey, see Rödel et al. (2007).



Fig. 5. Flooded forest of Forêt de Lokoli. Photo K. Ullenbruch

Finally, some reptiles were collected also in Cotonou and Bohicon, on house walls and in gardens, and markets were visited to inspect the reptile species offered. Most of the reptiles were collected by UK by visual encounter and focal sampling. Moreover, specimens were brought by the locals, particularly by two snake hunters from Didja and Za-Kpota respectively who even received an alcohol-filled bucket in order to keep interesting snake finds for some days. The Swiss zoologists of the Biolama project provided us with few, but very important voucher specimens (e.g. *Hemidactylus* sp.n., *Holaspis guentheri*) taken in trunk ectlectortraps used for the entomological survey.

The survey of the reptile fauna of Lama Forest, South Benin, and the neighbouring localities mentioned above revealed the existence of 48 species (2 turtle, 1 tortoise, 20 lizard, and 25 snake species) which are listed and discussed in the following.

ANNOTATED LIST OF SOUTHERN BENINIAN REPTILES

Testudinidae

Kinixys belliana nogueyi (Lataste, 1886)

Material examined. photographic voucher only (Figure 6).

Remarks. This specimen was brought to KU by a local hunter. It was taken near Bohicon and was released after photographic documentation.



Fig. 6. *Kinixys belliana nogueyi* from near Bohicon, southern Benin. Photo: K. Ullenbruch

Pelomedusidae

Pelomedusa subrufa (Lacépède, 1788)

Material examined. photographic voucher only (Figure 7).

Remarks. Specimen taken by local hunter near Bohicon, photographed and afterwards released.

Pelusios castaneus (Schweigger, 1812)

Material examined. photographic voucher only (Figure 8).

Remarks. Specimen taken by local hunter near Bohicon, photographed and afterwards released.

Agamidae

Agama aff. *agama* (Linnaeus, 1758)

Material examined. ZFMK 42019-024 (3 males, 3 females), Godomey near Cotonou, coll. by W. Schröder, Au-

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Fig. 7. *Pelomedusa subrufa* from near Bohicon, southern Benin. Photo: K. Ullenbruch

gust/September 1984; ZFMK 77061-062, Bohicon, ZFMK 77063-064, Cotonou, all coll. by K. Ullenbruch, May/June 2002.

Remarks. This common and widespread species was observed in all habitats including human settlements where vertical structures such as tree trunks and/or house walls were preferred. It was, however, never seen in the closed forest.



Fig. 8. *Pelusios castaneus* from near Bohicon, southern Benin. Photo: K. Ullenbruch

Agama sylvanus Macdonald, 1981

Material examined. ZFMK 77065, Forêt de Lama (Noyeau Central), coll. by K. Ullénbruch, 6 June 2002.

Remarks. The single juvenile specimen was obtained in an arthropod trap fixed at the trunk of a dead tree (trunk eclector) in dense primary forest. A second juvenile was observed at about 5 m height and escaped upwards. During the three months of the survey, no further specimen of this agama was seen which argues for either a secretive lifestyle or a general rarity, at least in this season of the year.

The morphological characters of ZFMK 77065 lie within the range of variation of *A. sylvanus* which was described by Macdonald (1981) from Ghana. Joger (1990) recorded the species also from Cameroon (as *A. paragama sylvanus*). The disjunction between these two countries is partially bridged by our specimen which represents the first country record for Benin.

Chamaeleonidae*Chamaeleo gracilis* Hallowell, 1842

Material examined. ZFMK 77056-057, environs of Didja, coll. by a native hunter, 10 and 30 May 2002 resp.

Remarks. The two males were obtained from a native hunter on the market of Abomey who certified their origin as close to Didja. *C. gracilis* is widespread in the Sudan and Guinea savannah belt south of the Sahara. The rudimentary occipital flaps distinguish it from the following, only recently described species.

Chamaeleo necasi Ullénbruch, Krause & Böhme, 2007

Material examined. ZFMK 77058, male, Za-Kpota, ZFMK 77059-060, 2 females, Houégbo, all coll. by K. Ullénbruch, May/June 2002.

Remarks. The three specimens form part of the type series of this species which is otherwise known only from Togo (Ullénbruch et al. 2007). The Togolese localities (Kpalimé, Missaboué) as well as the two Benin localities are situated close to relict forest patches within the arid Dahomey gap. Za-Kpota is an agriculturally shaped site not far from the river Zou which has some degraded gallery forest vegetation, while Houégbo is not far from Lama Forest.

C. necasi belongs to the *C. dilepis* group and differs from the south Nigerian populations of the closely related *C. quilensis* mainly by hemipenial characters (see Ullénbruch et al. 2007).

Chamaeleo senegalensis Daudin, 1802

Material examined. ZFMK 42025 (male), Bohicon, coll. by W. Schröder, August/September 1984; ZFMK 77052-055, environs of Didja, coll. by a native hunter, 10 May 2002.

Remarks. The four specimens were obtained from a native hunter on the market of Abomey who certified their origin as close to Didja. *C. senegalensis* – a species of the *C. dilepis* group without any traces of occipital flaps – was found on all markets in southern Benin and proved to be much more common than *C. gracilis*.

Eublepharidae*Hemitheconyx caudicinctus* (Duméril, 1851)

Material examined. ZFMK 77066, near Didja, ZFMK 77067, Za-Kpota, both coll. by native collectors, 27 May and 18 June 2002, respectively.

Remarks. A West African species distributed from Senegal to Cameroon which has its southernmost localities in Benin. In Benin, it is termed “snake with two heads” by the locals and thought to be very dangerous.

Gekkonidae*Hemidactylus ansorgii* Boulenger, 1901

Material examined. ZFMK 77073-075, Lama Forest (Noyeau Central), coll. by K. Ullénbruch, 18. (77073) and 28. April 2004.

Remarks. This slender, narrow-headed forest gecko with a long, cylindrical tail has only rarely been encountered and is known with certainty only from Liberia, Ivory Coast, Nigeria, and Cameroon (Henle & Böhme 2003). Bauer et al. (2006) expected *H. ansorgii* to occur in Benin, due to its wide West African distribution but stressed that there are no confirmed records from this country. Thus, our specimens represent the first record for Benin (Figure 9). The geckos were found in the late morning (11.30h–12.30h) on tree trunks in dense primary forest at about 1.7 m height.



Fig. 9. *Hemidactylus ansorgei* from Lama Forest (Noyeau central), first country record. Photo: K. Ullenbruch

Hemidactylus angulatus Hallowell, 1852

Material examined. ZFMK 42006-009, Godomey near Cotonou, coll. by W. Schröder, August/September 1984; ZFMK 77070, Bohicon, coll. by K. Ullenbruch, 17 April 2002; ZFMK 82813-814, Cotonou, coll. by Thibault Lachet, 22/23 April 2004.

Remarks. Thys van den Audenaerde (1967) distinguished between Hallowell's forest-dwelling species *Hemidactylus angulatus* and the savannah form *H. brookii guineensis* Peters, 1868. Since the African taxa of the former concept of an Afro-Indian species *H. brookii* Gray, 1845 are not at all close relatives of the true *H. brooki* from India (Carranza & Arnold 2006), it is still unclear whether the name *guineensis* should be treated as a synonym or a subspecies of *angulatus*, or possibly even a species. According to Bauer & Günther (1991), it is a synonym of *angulatus* (understood by these authors still as a subspecies of *H. brookii*).

Examination of the lectotype (Figure 10) of *H. guineensis* Peters, 1868 [described from "Ada Foah, Guinea" (= Adafoa, Ghana; **not** Adafér, Mauritania, as suggested by Loveridge 1947 and Wermuth 1965!) and compared by Peters (1868) only with *H. verruculatus* (= *H. turcicus*)] revealed that despite its provenance from coastal West Africa, it resembles the savannah form rather than the forest form which would strengthen a partial sympatry with the forest-dwelling *H. angulatus*. However, the distinguishing key character between both forms, i.e. the number of granules bordering the nostril above rostral and first supralabial (Thys van den Audenaerde 1967), has been disproved already by Böhme (1978), and other scalation differences also seem to be insufficient for a clear separation of both forms. Habitus differences could possibly be found in colour pattern, which often seems to consist of



Fig. 10. *Hemidactylus angulatus* / *guineensis* complex: lectotype of *Hemidactylus guineensis* Peters, 1868. Photo: P. Wagner

paired dorsal bars interrupted on the dorsal midline in the savannah populations, combined with more distinctly white-coloured single tubercles in the flank region. In the forest-dwelling populations, it consists of smaller, less symmetrically arranged darker elements, with less obvious white flank tubercles in the forest populations.

Steindachner (1870) described *H. affinis* from Gorée and Dagana, Senegal, and diagnosed it also only against *H. verruculatus* (= *H. turcicus*). He stressed the similarity of these two species, particularly concerning the size of their strongly keeled tubercles. The type series of *H. affinis* closely resembles the savannah-dwelling *H. guineensis*. In his description of *H. stellatus*, Boulenger (1885) compared it with *H. brookii* and *H. gleadowii* and stressed the presence of pure-white tubercles intermixed with a majority of dark brown ones which inspired him to the name *stellatus* (= starred). These white tubercles are indeed more obvious in the savannah-dwelling form (Figure 11) and



Fig. 11. *Hemidactylus angulatus* / *guineensis* complex: lectotype of *Hemidactylus stellatus* Boulenger, 1885. Photo: C. McCarthy



Fig. 12. *Hemidactylus angulatus* (s.str.) from Godomey near Cotonou (left), *H. mabouia* from Cotonou (center) and *H. aff. mabouia*, also from Cotonou (right). Photo: P. Wagner

brought also Chabanaud (1917 a) to the conclusion that there are two different species in this group of geckos, viz. “*H. brookii*” (certainly meaning *angulatus*) and “*H. stellatus*” (= *H. guineensis*), at Agouagon, Benin, even in sympatry.

Preliminary genetic support for two species within a *H. angulatus/guineensis* complex may be deduced from the tree in Carranza & Arnold (2006) where a Kenyan Rift Valley sample is closer to dry savannah samples from Mauritania and Mali (*guineensis*) than to a forest sample from Bioko (*angulatus* s.str.). Moreover, as already pointed out by Thys van den Audenaerde (1967), the forest species *H. angulatus* does not occur in Central and East Africa.

Bauer et al. (2006) who provided locality data for many specimens of their *H. angulatus* (sensu lato) from all over Benin, did not distinguish between the two forms thus implying morphological uniformity, except their variable colour pattern. They stressed that the sympatric *H. mabouia* could be easily mixed up with *H. angulatus* what we also found to be true (but only for the forest form: *angulatus* s.str.) particularly when the diagnostic (see the key in Bauer et al. 2006) characters of tubercles on head and dorsum are concerned. Here, again the colour pattern of the dark phases of *H. angulatus* and *H. mabouia* may prove to be more reliable than the scalation (Figure 12). Concluding it becomes clear that *Hemidactylus angulatus* s.l. is in urgent need of a taxonomic revision throughout its range.

ZFMK 77070 was captured on a house wall on 19.30 h, i.e. 30 min. after sunset.

Hemidactylus fasciatus Gray, 1842

Material examined. ZFMK 82808, Forêt de Lama (Noyeau Central), coll. by Lamidi Konetche, April 2004.

Remarks. This species was first documented for Benin by Bauer et al. (2006) who recorded specimens from the vicinity of Kétou. Our record, the second for Benin, is from dense primary rain forest.

Hemidactylus mabouia Moreau de Jonnés, 1818

Material examined. ZFMK 77068-09, Cotonou, coll. by K. Ullenbruch, Datum; 82809-812, Cotonou (Maison des Stagnaires), coll. by Thibault Lachet, 22/23 April 2004.

Remarks. Not found by W. Schröder in 1984 and documented for the first time in Benin by Bauer et al. (2006). This species was considered to be rare in Nigeria and believed to be introduced in port cities by Dunger (1968). Also, Rödder & Böhme (2008) regarded it as endemic only in Central and East Africa, while it is an invasive species – next to South America, the Caribbean region and Florida – also in West Africa.

ZFMK 77068-09 differ from typical *H. mabouia* by lacking the very characteristic dark pattern of oblique curved cross stripes (Figure 12). Similar phenotypes have been found in western Guinea (Böhme et al., unpubl. data). As no scalation differences could be detected, we regard these specimens currently as a colour morph of *H. mabouia*, pending new material for genetic analyses.

The two specimens were collected by UK at noon time (12.00h) from house walls during a heavy thunderstorm rain. The geckos were observed to hunt for insects which were beaten to (or at least close to) the ground by the rainwater. The reduced daylight – a consequence of the dense clouds – might have helped the geckos to become active and to forage during midday. The masses of insects concentrating under these conditions within the lower two meters above the ground were also used and exploited by *Agama* aff. *agama* and *Mochlus guineensis*.

Hemidactylus lamaensis new species

Holotype. ZFMK 77072, adult female, Forêt de Lama (teak plantation), coll. from a pitfall by Klaus Ullenbruch, 16 April 2002.

Diagnosis. A small *Hemidactylus* with a SVL of about 5.0 cm. Characteristic is the dorsal scalation which consists of numerous irregular rows of large, convex, keeled tubercles which are nearly juxtaposed on the dorsal hindpart and on the tail root, separated mostly by only one row of surrounding, rather coarse granular scales. Also the temple is covered by large, juxtaposed tubercles with only few or even without granules between them. Moreover, the subdigital lamellae of the first digit and toe are very low in number, the terminal unpaired lamella of digit I (manus) being the only adhesive element while digit I (toe) has two scansors: one divided proximal and one undivided terminal one.

Description of the holotype (Figure 13). Habitus stout, head small with an elongated snout. Head & body length 47.7 mm, length of (regenerated) tail 34 mm. Snout elongate: distance from anterior margin of tympanum to hindmargin of eye 4 mm, from anterior margin of eye to tip of snout 5.5 mm; eye diameter 2.5 mm. Rostral broad, with a deep notch on its anterior midline which continues as a vertical suture but does not separate the rostral completely. Nostril bordered by rostral, a 1st labial, three postnasal scales, and a supranasal which is separated from its fellow by one single median scale. Scales on snout small but polygonal rather than granular, keeled, passing backwards into a tuberculate scalation of the frontal and parietal region which becomes intermixed with granules from the occipital region towards the neck and dorsum. Temple covered with conical tubercles with only few intermixed granules between them. Mouthline straight and not uplifted in its hindpart. Supralabials (left/right) 10/10, sublabials (left/right) 8/8. Mental triangular, followed by two pairs of postmentals, the first of them broadly meeting at the midline behind mental. Gulars small, smooth, passing posteriorly gradually into the semicircle-shaped, subimbricate and likewise smooth chest and ventral scales. The conical and weakly keeled dorsal tubercles are arranged in 16–18 irregular longitudinal rows, circumdated by rather coarse granular scales which separate the tubercles by 1–3 rows, while on sacrum and tail root the tubercles are even nearly juxtaposed with only few scattered granules between them. Limbs covered above with coarse granular scales intermixed with conical, weakly keeled tubercles. Palmar scales smooth. All fingers and toes with distinct claws, and with divided adhesive lamellae (scansors) beneath, except the terminal one which is simple. Also the basal subdigital scales are undivided and are added to the number of subdigital lamellae when they are twice as large than the palmar scales. The values are: 1-5-6-7-6 (left manus), 1-5-6-7-5 (right manus), 2-6-7-8-7 (left pes), and 2-6-6-7-6 (right pes). The regenerated tail is dorsally covered with very regular subimbricate smooth scales which gradually pass into several longitudinal rows of obliquely enlarged, imbricate subcaudal plates.



Fig. 13. *Hemidactylus lamaensis* n. sp., holotype from Lama Forest (Noyeau central) in dorsal (a), ventral (b) and lateral (c) view. Photo: P. Wagner

Colour in preservative. Upper side rather uniformly light brownish, with a darker brown head, and one indistinct darker crossband on the neck and on the shoulder respectively. Underside uniform whitish-yellowish.

Etymology. The species name refers to Lama Forest, so far the only known locality of the new *Hemidactylus*. It is intended to stress the importance of this relict forest within the Dahomey gap also in conservational aspect as it may harbour still more unknown rain forest species.

Distribution and natural history. Only known from the type locality. The single female was taken from a pitfall on the forest floor in a young teak plantation bordering the primary forest of the Noyeau Central. This does not argue against an arboricolous lifestyle, because also tree-dwellers like *H. fasciatus* were observed to climb down from their shelter in big fig trees and to forage on the ground some hours after sunset (Böhme 1975).

Comparisons. This unique single specimen cannot be assigned to any West African species (see Bauer et al. 2006). Its snout is elongated but not to the extent observed in *H. ansorgei*. Its most obvious character is the possession of densely arranged, large, keeled tubercles which are less numerous as compared to those of the *H. angulatus/guineensis* complex. On the hindpart of the dorsum and the tail root, they are even nearly juxtaposed. Also in contrast to the situation found in the former complex is the dense coverage with tubercular scales of the temporal region. Moreover, it has the lowest number of subdigital lamellae of all Beninian and West African *Hemidactylus*.

Assuming that the original tail in this species has also series of tubercles (not present in the regenerated tail of the unique holotype), the key given by Bauer et al. (2006) for the geckos of Benin can be completed as follows:

13a. Dorsal tubercles prominent, keeled 14

13b. Dorsal tubercles not, or only weakly keeled, separated by one another by a distance greater than by tubercle width; dorsum of head atuberculate or with few small tubercles; color variable, the typical pattern of a series of dark curved crossbands distinct in the dark phase only *Hemidactylus mabouia*

14a. Dorsal tubercles separated by one another by approximately the width of one tubercle; tubercles usually prominent on dorsum of head; temple granular *Hemidactylus angulatus/guineensis* complex

14b. Dorsal tubercles separated by one another by less than a tubercle width, on sacrum and tail root even abutting; temple covered with conical tubercles *Hemidactylus lamaensis* **sp. nov.**

Scincidae

Panaspis togoensis (Werner, 1902)

Material examined. ZFMK 77079-080, Forêt de Lama, coll. by K. Ullenbruch, 24 and 28 April 2002.

Remarks. Both voucher specimens were collected in a transition zone of primary forest and a *Chromolaema* clearing, after heavy rainfalls around noon time. Considered to be ombrophilous by Perret (1973), activity after rains was also observed by Rödel et al. (1997). According to Fuhn (1972) and Schmitz et al. (2005), *Lygosoma (Riopa) dahomeyense* Chabanaud 1917 is a synonym of *P. togoensis*.

Mochlus guineensis (Peters, 1879)

Material examined. ZFMK 77076, Forêt de Lama; ZFMK 77077-078, Cotonou, all coll. by K. Ullenbruch, 16 and 13 April 2002 respectively.

Remarks. The specimen from Lama Forest was taken in a pitfall trap placed in an old teak plantation close to the primary forest. The two specimens from Cotonou were caught in the garden of a house during heavy rainfall when they were foraging for prey negatively influenced by the rains (see above, under *Hemidactylus mabouia*).

Remarkably, the specimen from Lama Forest differs in some characters from the two Cotonou specimens. It is more delicately built, having thinner limbs and a longer and slimmer tail. Moreover, the eyes seem to be smaller, the overall colouration is distinctly darker, and the subcaudal scales are spotted with black, while the Cotonou specimens have the underside of their tails purely white. More material is necessary to evaluate these differences (Figure 14).

Trachylepis affinis (Gray, 1838)

Material examined. ZFMK 42004-005, Godomey near Cotonou, coll. by W. Schröder, August/September 1984; ZFMK 77081-090, Forêt de Lama, coll. by K. Ullenbruch, 16 April to 1 May 2002.

Remarks. The two specimens from Godomey come from a farmland/garden environment, the Lama Forest individuals, however, were all collected within dense primary forest (Noyeau Central), on clearings grown with *Chromolaema*, and in the neighbouring teak plantations. The lizards were found either in leaf litter and on the grassy floor, or on tree trunks. When disturbed they tried almost



Fig. 14. *Mochlus guineensis*, from Cotonou (above) and Lama Forest (Noyeau central) (below). Photo: P. Wagner

invariably to escape upwards. They were mainly active between 11.00h and 15.00h, at air temperatures of 31–32°C.

Half of the Lama Forest sample has a distinctly striped colour pattern with a conspicuous, white sublabial stripe running along the lower flank towards the tail, while the other half lacks this stripe.

Trachylepis perroteti (Duméril & Bibron, 1839)

Material examined. ZFMK 41998-999 (2 males), Godomey near Cotonou, coll. by W. Schröder, August/September 1984.

Remarks. According to Mausfeld-Lafdhya et al. (2004) and Chirio & LeBreton (2007), *T. perroteti* consists of at least two distinct species which require further study (see also Stoll 2008). But because the true *T. perroteti* (s.str.) is the more southernly distributed form of the two cryptic siblings in Cameroon, the two males from near Cotonou are most likely belonging to this latter species. Whether this is also true for the North Beninian populations (see the country checklist below) remains to be studied.

Lacertidae

Holaspis guentheri Gray, 1863

Material examined. ZFMK 77071, Forêt de Lama (teak plantation), coll. by K. Ullenbruch, 26 June 2002.

Remarks. The only voucher specimen was obtained from an arthropod trap (trunk eclector) fixed on a dead teak tree (*Tectona grandis*) within an old teak plantation bordering the primary forest of Forêt de Lama. This little lacertid

with the ability of gliding flight has not been recorded so far from Benin, thus representing the first country record.

Varanidae

Varanus exanthematicus (Bosc, 1792)

Material examined. ZFMK 77004-005, near Didja, coll. by local hunter, 1 May 2002.

Remarks. Both specimens were obtained from a local hunter at Abomey who certified their origin as being close to Didja.

Varanus niloticus (Linnaeus, 1766)

Material examined. ZFMK 42200, Godomey near Cotonou, coll. by W. Schröder, August/September 1984; ZFMK 77001, juv., Ouémé River near Togbota, coll. by local hunter, 15 April 2002.

Remarks. ZFMK 77001 was found under a heap of dry wood on the bank of a small tributary of the Ouémé River, close to the settlement of Togbota.

Varanus ornatus (Daudin, 1803)

Material examined. ZFMK 77002-003, near Didja, coll. by native hunter, 10 and 30 May 2002 respectively.

Remarks. Both specimens were obtained from local hunters at Abomey who had collected them in the vicinity of Didja. One of them originated from Lakpo, 8 km NE of Didja, which is in immediate vicinity of a further relict forest patch, viz. Forêt de Dan. A big, adult specimen was seen in hectic flight in Lama Forest and could not be caught.

On markets, *V. ornatus* was much less commonly seen than *V. niloticus* which reflects also the scarcity of relict forest patches in the Dahomey gap which serve as refugia for this forest species. For Benin, our specimens represent the first country record (Böhme & Ziegler 1997).

Pythonidae

Python regius (Shaw, 1802)

Material examined. ZFMK 41993-995, Godomey near Cotonou, coll. by W. Schröder, August/September 1984; Photographs from Za-Kpota and Forêt de Lama.

Remarks. Of ZFMK 41995, only head and neck are preserved. This species was seen in great numbers on all markets visited. These great numbers certainly pose a serious conservation problem which could be buffered by farming royal pythons for the international pet trade. However, such farms will be very difficult to be controlled as far as wild-caught specimens are concerned.

Python sebae (Gmelin, 1788)

Material examined. None.

Remarks. Rock pythons could be seen only twice on markets by UK during his survey. He was told by the people that they fear the large snakes and normally kill them whenever possible. This species is subject to superstitious beliefs by the local people. For instance, a scientific assistant of the BIOLAMA project even told that rock pythons are capable to cast out a net out of their mouth to catch humans and to eat them subsequently.

Colubridae (sensu lato)

Afronatrix anoscopus (Cope, 1861)

Material examined. ZFMK 77006 (juvenile), Forêt de Lokoli, coll. by K. Ullenbruch, 5 May 2002.

Remarks. The existence of this aquatic species in Benin was considered as likely by Chippaux (2001). Our specimen (Figure 15) was the first documented record from Benin until very recently Chirio & Ineich (2009) published a find from Atakora Province which makes our specimen the 2nd published record. It is, however, still interesting to note that both new records of this species are very distant from each other, ranging from a relict, swampy rain forest to dry Sudan savannah.

Crotaphopeltis hotamboeia (Laurenti, 1768)

Material examined. ZFMK 42001-002 (juveniles), Godomey near Cotonou, coll. by W. Schröder, August/September 1984.

Remarks. None.

Dasypeltis gansi Trape & Mané, 2006

Material examined. ZFMK 77014, Za-Kpota, coll. by native hunter, May 2002.



Fig. 15. *Afronatrix anoscopus*, juvenile, from Lokoli Forest, first country record. Photo: K. Ullenbruch

Remarks. Trape & Mané (2006 a) partitioned the West African egg-eater snakes formerly referred to as *D. scabra* into 3 different species, one of them with a likewise new subspecies: *D. confusa*, *D. gansi* (with *D. g. gansi* and *D. g. latericia*), and *D. sahelensis*. According to the original description and to the key and colour plates of Trape & Mané (2006 b) the specimen from Za-Kpota clearly represents the nominotypic subspecies of *D. gansi*. It is the second voucher from Benin, the first (Trape & Mané 2006 a) Benin record being from Lanta (where it is, according to the same authors, sympatric with *D. confusa*). The record of Chabanaud (1916) of "*D. scabra palmarum*" refers very likely also to *D. g. gansi* which is the only of the newly described taxa which tends to be patternless.

Dispholidus typus (Smith, 1829)

Material examined. ZFMK 77029, between Bohicon and Didja, coll. by K. Ullenbruch, May 2002.

Remarks. Found dead on the road between the two above-mentioned places.

Lamprophis fuliginosus (Boie, 1827)

Material examined. ZFMK 77011, Didja; 77015-017, Za-Kpota; 77041, Forêt de Lama; 77051, Forêt de Dan, all coll. by K. Ullenbruch, 14–18 June 2002.

Remarks. ZFMK 77041 was found dead on a path within Lama Forest, just between primary forest and the neighbouring teak plantation. Although still rather fresh, its head was already badly damaged by ants.

Lycophidion semicinatum Duméril, Bibron & Duméril, 1854

Material examined. 77007, near Didja, coll. by native hunter, May 2002; ZFMK 77050, near Bohicon, coll. by K. Ullénbruch, May 2002.

Remarks. The Bohicon specimen was found dead on a road.

Meizodon regularis Fischer, 1856

Material examined. ZFMK 42003, Godomey near Cotonou, coll. By W. Schröder, August/September 1984.

Remarks. Known from, among else, Ghana (where the type locality is situated), and Togo west of Benin, as well as from Cameroon further east (Roux Estève 1969), this species was to be expected in Benin but was obviously only indicated for Benin by Chippaux (2001). ZFMK 42003 represents the second country record and first published voucher specimen for Benin.

Natriciteres olivacea (Peters, 1854)

Material examined. ZFMK 77039, Forêt de Lama, coll. by K. Ullénbruch, May 2002.

Remarks. Found on a cloudy day at 11.20h on the forest floor. This underlines that this species is not confined to savannah habitats as claimed by Broadley (1983) but that at least in West Africa also forests are inhabited (see Villiers 1975, Chippaux 2001: distribution map).

Natriciteres variegata (Peters, 1861)

Material examined. ZFMK 77042-046, Forêt de Lama, coll. by K. Ullénbruch, May 2002.

Remarks. All five individuals were found on the forest floor. The species proved to be rather common but was never seen outside the forest. Also Dunger (1972a), Broadley (1983) and Chippaux (2001) regard *N. variegata* as a forest species. The only earlier record of it was Chabanaud's report from "Dahomey", thus our small series represents the first documented locality record for Benin.

Philothamnus irregularis (Leach, 1819)

Material examined. ZFMK 77025-026, Za-Kpota, coll. by native snake hunter, May 2002; ZFMK 77040, Forêt de Lama: Koto village, coll. K. Ullénbruch, May 2002.

Remarks. The last mentioned specimen was killed by a local farmer in the presence of KU on a sun-exposed grassy area.

Philothamnus semivariiegatus (Smith, 1847)

Material examined. ZFMK 77034-035, Bohicon, coll. by K. Ullénbruch, May 2002.

Remarks. Both snakes were encountered on the compound of a mill. One of them was found on the floor of a house belonging to that compound. Encounters in human habitations and even within buildings were also reported from Nigeria by Dunger (1973a).

Psammophis elegans (Shaw, 1802)

Material examined. One specimen, uncatalogued, Cotonou (stored in the private collection of M. Serge Attignon, Cotonou), coll. by a S. Attignon, 11 May 2002.

Remarks. The only available specimen of this snake was found in front of a house in the outskirts of Cotonou.

Psammophis phillipsi (Hallowell, 1844)

Material examined. ZFMK 41996, Godomey near Cotonou, coll. by W. Schröder, August/September 1984.

Remarks. The large adult, dark-brown unicoloured female is allocated to Hallowell's species because the mid-region of its ventral plates has a broad median zone shaded with bluish-grey colour. We think that this is a species of forested and moist savannahs which is unicoloured above already as a juvenile has and lacks the typical striped juvenile dress of the following form (Böhme et al. 1996).

Psammophis cf. *phillipsi* (Hallowell, 1844)

Material examined. ZFMK 77024 & 77028, Za-Kpota, coll. by a native snake hunter, May 2002; ZFMK 77047, Abomey, coll. by K. Ullénbruch, May 2002.

Remarks. The three specimens belong to the big-growing form of the *Psammophis sibilans* species complex which is dorsally striped as a juvenile and unicoloured above and below as a large, old adult. It inhabits the dry Sudanian and Sahelian savannahs and is mostly referred to as *P.* cf. *phillipsi* (e.g. Böhme 1978, Böhme et al. 1996) or, recently, again as true *P. sibilans* (Trape & Mané 2006 b). Al-



Fig. 16. *Psammophis sudanensis* from Bohicon, southern Benin. Photo: K. Ullenbruch



Fig. 17. The same specimen from below. Photo: K. Ullenbruch

so earlier records of *P. sibilans* from West Africa (e.g. Chabanaud 1916) refer to this form which, in our opinion, is not conspecific with the true *P. sibilans* from Egypt. Many not yet fully grown but nonetheless adult (mature) specimens may retain more or less distinct reddish dorsolateral stripes along the body. The belly is light whitish to yellowish and patternless (no dark hairlines along the ventral plates), but supralabials, sublabials and gulars show some dark pigmented spots (see Böhme et al. 1996). The anal shield is entire. Its taxonomic status and nomenclatural status needs still to be assessed.

Psammophis sudanensis Werner, 1919

Material examined. ZFMK 77012, Didja, coll. native hunter; ZFMK 77018-019; ZFMK 77036-038, Bohicon, and ZFMK 77047, Abomey, all coll. by K. Ullenbruch, May 2002.

Remarks. The specimens represent various age classes. All have distinct hairlines along the outer parts of the ventral shields, however, these hairlines are brownish in younger and darker in the older individuals. The zone between these hairlines is differently coloured than the two outer, ventrolateral zones, the latter being white while the inner is yellowish-whitish. This ventral pattern is therefore of the “*subtaeniatus* type” and agrees with the type specimen of *sudanensis* Werner, 1919 (NMW 1986 from Kadugli, Kordofan) which actually was described as *P. subtaeniatus sudanensis* (Werner 1919, Böhme 1987). In all specimens, the anal shield is divided.

ZFMK voucher specimens from e.g. northern Senegal (Dakar, Fété Olé), Algeria (Tamanrasset), North Cameroon (Mokolo) (see Böhme 1986) and Chad (ZFMK 74520) are

very close to typical *P. sudanensis* but differ in having either faint, light brown hairlines (instead of blackish ones) or no hairlines at all; their undersides are in both cases of a uniform, bright porcellanic white. They correspond to the type specimen of *P. leucogaster* Spawls, 1983 (BMNH 1980: 261, from Wa, northern Ghana, see Spawls 1983), and further sampling must show whether both forms have zones of intergradation. It seems that if there is a distinction between typical *sudanensis* and *leucogaster* in West Africa, this is a question of a north-south rather than a west-east disjunction.

ZFMK 77036-038 were found on the compound of a mill at Bohicon. One of them was lying in the afternoon on the terrace of a house, the other two were killed during grass mowing (Figs 16 and 17).

Rhamphiophis oxyrhynchus (Reinhardt, 1843)

Material examined. ZFMK 41997, Godomey near Cotonou, coll. by W. Schröder, August/September 1984; ZFMK 77020-023, Za-Kpota, coll. by a native hunter, May 2002.

Remarks. None.

Scaphiophis albopunctatus Peters, 1870

Material examined. ZFMK 77009-010 (juvenile and adult), Didja, collected by a local snake hunter, May 2002.

Remarks. The juvenile specimen contained 3 newborn mice which could not be identified to the familial or generic level.

Atractaspididae*Amblyodipsas unicolor* (Reinhardt, 1843)

Material examined. ZFMK 77027, Za-Kpota, coll. by native hunter, May 2002.

Remarks. When fixing this snake, some white nematodes appeared between the scales and tried to leave the specimen. This was not observed in any other snake during preparation.

Elapidae*Dendroaspis viridis* (Hallowell, 1844)

Material examined. ZFMK 77049, Bohicon (market), coll. by K. Ullenbruch, May 2002.

Remarks. Since this snake was found on a market, no further information on its precise provenance is available.

Elapsoidea semiannulata Bocage, 1882

ZFMK 77013, near Didja, coll. by a native snake hunter, May 2002.

Remarks. Represents the West African subspecies *E. s. moebiusi* Werner, 1897 (Trape & Mané 2006).

Naja nigricollis Reinhardt, 1843

Material examined. ZFMK 77032, Forêt de Lama; ZFMK 77033, Bohicon, both coll. by K. Ullenbruch, May 2002.

Remarks. One of the two juvenile specimens was found dead on a road at the margin of Lama Forest, the other was killed during grass mowing in the mill compound of Bohicon.

Viperidae*Bitis arietans* (Merrem, 1820)

Material examined. ZFMK 77048, environs of Abomey, coll. by native hunter, May 2002.

Remarks. *B. arietans* is very commonly offered on markets. Usually, the head is cut off, dried and used for Voodoo ceremonies while the rest of the animal is used as food.

Causus maculatus (Hallowell, 1842)

Material examined. ZFMK 77030, between Bohicon and Didja, ZFMK 77031, 9 km east of Abomey, both coll. by K. Ullenbruch, May 2002.

Remarks. The first specimen of this ubiquitous species was found dead on the asphalt road between Bohicon and Didja, the second one was killed by locals next to the street to Abomey in a crop field.

Echis ocellatus Stemmler, 1970

Material examined. ZFMK 77008, near Didja, coll. by local snake hunter, May 2002.

Remarks. None.

CONCLUSIONS

Of the 48 species recorded above from several localities in southern Benin, including the relict rain forests Forêt de Lama and Forêt de Lokoli, only eight can be regarded as true forest species. These are: *Agama sylvanus*, *Hemidactylus ansorgei*, *H. fasciatus*, *H. mabouia*, *H. lamaensis* sp. n., *Holaspis guentheri*, *Varanus ornatus*, and – as the only snake – *Psammophis phillipsi*. Two of them, *Hemidactylus fasciatus* and *H. mabouia*, are recorded from Benin for the second time, *H. mabouia*, however, being a recent invasive colonizer. The remaining five lizard species, all from Lama Forest, are first country records for Benin, one of them, *H. lamaensis* sp. n., being new to science.

Three snake species, viz. *Afronatrix anoscopus*, *Amblyodipsas unicolor*, and *Natriciteres variegata*, are found in both forest and savannah habitats. Of these, *Afronatrix anoscopus* is recorded here for the second time from Benin, but for the first time from southern Benin (the very recent first record being from the Atakora chain in the northwestern part of the country). *Amblyodipsas unicolor* and *Natriciteres variegata* are both representing the respective first country records documented by voucher specimens.

The remaining 40 species are widely distributed in the West African savannas and have in most cases been recorded from Benin before. Nonetheless, particularly some snakes have been listed and/or plotted in maps of review papers and books by e.g. David & Ineich (1999), Chippaux (1999, 2001, 2006), or Trape & Mané (2006 b) without locality and voucher documentation of the respective country records, so that our specimens are in some

cases nonetheless the first documented records, despite earlier citations of the respective species from Benin.

In the following country-wide checklist, we included also some new data derived from the mission to Pendjari National Park by one of authors (OG). Among these, the by far most remarkable find is the rediscovery of *Agama gracilimembris* in Benin, from where it was first described about ninety years ago.

COUNTRY-WIDE CHECKLIST OF THE REPTILES OF BENIN

The following list contains several records of species collected by the Lama Forest survey of the senior author which have not been documented before from the territory of Benin. However, as nearly all these species were already known from the neighbouring countries in the west (Togo) and in the east (Nigeria), their presence in Benin is not surprising and was already regarded as probable in several cases by Villiers (1951), Chippaux (2001) or Bauer et al. (2006). More general books on West Africa or even Africa as a whole (e.g. Villiers 1976, Welch 1982, Chippaux 1999, 2001, 2006, Trape & Mané 2006 b) often pose the problem that a species is assumed to occur in a specific country (e.g. formulations as “from Senegal to Uganda”) rather than being documented from a specific locality within the respective country; or that it is plotted on a map without documentation of the origin of the respective data.

For completeness' sake, we included in this list some species recorded by Chabanaud (1916) which are definitely lacking in West Africa and thus are probably due to misidentifications. They are marked with an asterisk (*). A re-examination of the respective voucher material as far as still extant was, however, beyond the scope of this paper. It is also noted here that the most important place of origin of Chabanaud's material collected by Dr. Bouet is constantly spelled Agouag**on** in his papers, as it is also by Villiers (1951). However, more recent authors (e.g. Hoogmoed 1974, Salvador 1982) spell it “Agouag**ou**” under which name it is also found on modern road maps. Here, we follow the original spelling.

It was reflecting the still poor state of knowledge of the reptilian fauna of Benin when Loveridge (1952) stated that among the turtles and lizards from the A. Villiers mission (1950) no less than 8 species were new for the country, among them even *Agama agama*! More than five decades later Bauer et al. (2006) recorded – next to more first records of geckos and a new species of *Hemidactylus* –

also the common *H. mabouia* as new for the country, and in this paper, we can list – again next to another new *Hemidactylus* – further 8 species as new for Benin's reptile fauna. Our reference to Pendjari NP and to Bemberéké are based on data and photographic documentations collected by one of us (OG) and of a small donation of snakes to ZFMK by T. & M. Imthurn (2000). For the latter, the ZFMK catalogue numbers are given.

Geoemydidae

**Mauremys leprosa* – Chabanaud (1917): Porto Novo (as *Clemmys leprosa*). Not in Fritz & Havas (2007). According to Fritz (pers. comm.) this record is certainly due to an error and should be deleted from the country's species list.

Testudinidae

Kinixys belliana nogueyi – Loveridge (1951): Bassila; this paper: Bohicon-Abomey area; Pendjari NP.

Pelomedusidae

Pelomedusa subrufa – Loveridge (1951): Bassila; Zagnanado; this paper: Lama Forest surroundings; Pendjari NP.

Pelusios castaneus – Sinsin et al. (1999): Benin, unspecified (as *P. subniger*); Branch (2008): on map, but without locality data; this paper: Lama Forest surroundings; Pendjari NP (ZFMK 83613).

Trionychidae

Cyclanorbis elegans – Gramentz (2008): “Benin”, without specific locality.

Cyclanorbis senegalensis – Gramentz (2008): Pendjari NP (based on Grell 2003); this paper: Pendjari NP (Figure 18).

Crocodylidae

Crocodylus suchus – This paper: Pendjari NP (Figure 19).

Osteolaemus tetraspis – Sinsin et al. (1999): “Sud-Bénin” including the Departments of Zou, Mono, Ouémé, and Atlantique.



Fig. 18. *Cyclanorbis senegalensis*, juvenile from Pendjari NP, northern Benin. Photo: O. Grell

Eublepharidae

Hemitheconyx caudicinctus – Chabanaud (1917 a): “Haute Dahomey”; Agouagon (as *Psilodactylus caudicinctus*); Bauer et al. (2006): Kétou; Diho (=Idiho); this paper: Didja; Za-Kpota.

Gekkonidae

Hemidactylus ansorgei – This paper: Lama Forest (1st country record).

Hemidactylus angulatus/guineensis complex – Chabanaud (1917 a): Agouagon (as *H. brookii* and *H. stellatus*); Grandison (1956, in part): “Dahomey”; Loveridge

(1947): Ajuda; Godomey; Grand Popo; Porto Novo; Zomai; Loveridge (1952): Abomey; Bassila; Kous-soukoingou; Bauer et al. (2006): Attogon; Niaouli; Abomey; Collines du Dassa-Zoumè; Manigri; Pendjari NP; this paper: Godomey; Bohicon.

Hemidactylus beninensis – Bauer et al. (2006): Collines du Dassa-Zoumè (new species description).

Hemidactylus fasciatus – Bauer et al. (2006): near Kétou; this paper: Lama Forest (2nd country record).

Hemidactylus mabouia – Bauer et al. (2006): Godomey, Abomay, Niaouli; this paper: Cotonou (2nd country record).

Hemidactylus muriceus – Bauer et al. (2006): near Kétou.

Hemidactylus lamaensis – This paper: Lama Forest (new species description).

Lygodactylus conraui – Bauer et al. (2006): Lokoli Forest.

Phyllodactylidae

Ptyodactylus ragazzii – Bauer et al. (2006): Chutes de Koudou, PN du W.

Tarentola ehippiata – Bauer et al. (2006): Pendjari NP.



Fig. 19. *Crocodylus suchus*, Pendjari NP. Photo: O. Grell



Fig. 20. *Agama gracilimembris*, Pendjari NP, first rediscovery in Benin after its first description from this country nine decades ago. Photo: O. Grell

Agamidae

Agama agama complex – Loveridge (1952): Bassila; Koutiacou; Zagnanado; this paper: Godomey nr. Cotonou; Cotonou; Bohicon; Pendjari NP.

Agama sylvanus – This paper: Lama Forest (1st country record).

Agama gracilimembris – Chabanaud (1918): “Dahomey” (original description); this paper: Pendjari NP.

Note: This little agama with unresolved intrageneric relationships was subsequently found in Nigeria and in the Central African Republik (Grandison 1968, 1969, Joger 1990), the gap between these two records being bridged by a find in northern Cameroon (Böhme 1975). The photographic record from Pendjari NP (Figure 20) is the first find of this rare agama in Benin since its original description in 1918, a rediscovery after 9 decades!

Chamaeleonidae

Chamaeleo africanus – This paper: Atakora chain (1st country record, based on photograph).

Note. A photograph of a “chameleon” published in a popular book on Benin by Englebert (1973, cited after Conrad 1999) without identifying the species shows clearly a specimen of *C. africanus*. Its inclusion by Conrad (1999) into her unpublished thesis means that it is still the first published country record for Benin.

Chamaeleo gracilis – This paper: Abomey-Didja; Pendjari NP.

Chamaeleo necasi – Ullénbruch et al. (2007), this paper: Bohicon-Za-Kpota, Houegbo.

Chamaeleo senegalensis – Loveridge (1952): Zagnanado; this paper: Bohicon; Abomey-Didja; Pendjari NP.

Scincidae

Chalcides thierryi – Loveridge (1952): Koussokoingou (as *Chalcides ocellatus thierryi*).

Mochlus guineensis – Chabanaud (1917): Agouagon; this paper: Lama Forest; Cotonou.

Panaspis togoensis – Chabanaud (1917): Agouagon (as *Lygosoma (Riopa) dahomeyense*, syn. fide Schmitz et al. 2005); Loveridge (1952): Bassila (as *Lygosoma (Panaspis) breviceps togoense*) Grandison (1956): “Dahomey” (as *P. breviceps togoense*); Fuhn (1972): “Dahomey: Agouagou” (as *Panaspis kitsoni*); this paper: Lama Forest; Pendjari NP.

Trachylepis affinis – Chabanaud (1917): Satadougou (as *Mabuia raddonii*); Loveridge (1952): Abomey; Bassila; Koussokoingou; Tanogou (as *Mabuia blandingii*); this paper: Godomey nr. Cotonou; Lama Forest; Pendjari NP.

Trachylepis perroteti – Chabanaud (1917): Agouagon (in part as *Mabuia albilabris*, fide Hoogmoed 1974); Loveridge (1952): Abomey; Bassila; Koussokoingou (as *Mabuia perroteti*); this paper: Godomey nr. Cotonou; Pendjari NP.

Trachylepis maculilabris – Chabanaud (1917): Agouagon; Loveridge (1952): Bassila.

Trachylepis quinquetaeniata sharica Sternfeld, 1917 – Chabanaud (1917): Agouagon (in part as *Mabuia albilabris*, fide Hoogmoed 1974); Loveridge (1952): Bassila (as *Mabuia quinquetaeniata sharica*); this paper: Pendjari NP.

Gerrhosauridae

Gerrhosaurus major zechi – Loveridge (1952): Koussokoingou.

Lacertidae

Acanthodactylus boueti – Chabanaud (1917): Agouagon (as *A. (Latastia) boueti*); Loveridge (1952), Salvador (1982): Bassila.

Heliobolus nitidus – Loveridge (1952): Bassila (as *Eremias n. nitida*); this paper: Pendjari NP.

Holaspis guentheri – This paper: Lama Forest (1st country record).

Amphisbaenidae

Cynisca leucura – Chabanaud (1917a): Agouagon; “Dahomey” (as *Amphisbaena leucura*); Loveridge (1952): Natitingou.

Varanidae

Varanus exanthematicus – This paper: Abomey-Didja.

Varanus niloticus – Chabanaud (1917a): Agouagon; “Haut Dahomey”; this paper: Godomey nr. Cotonou; Ouémé River near Togbota; Pendjari NP (photographic voucher of an unusually pale olive-coloured juvenile, Figure 21).

Varanus ornatus – This paper: Abomey-Didja; Lama Forest (1st country record).

Leptotyphlopidae

Leptotyphlops bicolor – Chabanaud (1916): Porto Novo (as *Glauconia. b. grueveli*).

Leptotyphlops brevicauda – Bocage (1887): “Dahomey” (as *Stenostoma brevicauda*); Hahn (1980): “Dahomey” (as *Leptotyphlops brevicaudus*).

**Leptotyphlops nigricans* – Chabanaud (1916): “Dahomey” (Identification probably erroneous, taxon not in west Africa).

Typhlopidae

Ramphotyphlops braminus – Trape & Mané (2006 b): Cotonou.

Typhlops punctatus – Chabanaud (1916): “Dahomey”; Chabanaud (1917a,b): Ouidah, Agouagon.

Boidae

Gongylophis muelleri – Trape & Mané (2006 b): on grid map but without specific locality.



Fig. 21. *Varanus niloticus*, subadult, unusually light-coloured specimen from Pendjari NP. Photo: O. Grell

Python regius – Villiers (1951): “très commun”, voucher specimen from Abomey; this paper: Godomey nr. Cotonou; Za-Kpota; Lama Forest.

Python sebae – Villiers (1951): “Très commun partout”, specimens from Abomey; this paper: South Benin.

Colubridae

Afronatrix anoscopus – Chirio & Ineich (2009): Niangou NE of Tanguieta; Atakora Prov.; this paper: Lokoli Forest (2nd published country record, regarded already as probably present by Villiers 1951 and Chippaux 2001).

Bamanophis dorri – Chippaux 1999, 2006; N Benin: unspecified (as *Coluber dorri*); Trape & Mané (2007): on grid map but without specific locality (as *Hemorrhhois dorri*; Schätti & Trape (2008): unspecified.

Crotaphopeltis hippocrepis – Rasmussen (2000): Soubroukou.

Crotaphopeltis hotamboeia – Chabanaud (1916): “Dahomey” (as *Leptodira hotamboeia*); Chabanaud (1917 b): Agouagon (as *Leptodira hotamboeia*); this paper: Godomey nr. Cotonou.

Dasypeltis gansi – Chabanaud (1916): “Dahomey” (as *D. scabra palmarum*); Trape & Mané (2006 a): Lanta; this paper: Za-Kpota.

Dispholidus typus – This paper: Bohicon-Didja (1st country record; regarded as probably present by Villiers 1950).

Grayia smythii – Chabanaud (1916): near Sakété, Porto Novo.

Hormonotus modestus – Chabanaud (1916): “Dahomey”; Chabanaud (1917 b): near Lac Azzi.

Lamprophis fuliginosus – Chabanaud (1916): “Dahomey” (as *Boaedon fuliginosus*); Chabanaud (1917b): Agouagon (as *Boodon fuliginosus*); Villiers (1951): Koussokoin-gou/Atakora (as *Boaedon fuliginosus*); this paper: Dan Forest; Lama Forest; Didja, Za-Kpota.

Lamprophis lineatus – Chabanaud (1916): “Dahomey” (as *Boaedon linatus*); Chabanaud (1917b): Agouagon (as *Boodon lineatus*); Villiers (1951): Abomey (as *Boaedon lineatus*).

**Lycophidion capense* – Chabanaud (1916): “Dahomey” (listing of *capense* and *capense multimaculatum* probably due to identification error: both taxa not in West Africa).

Lycophidion semicinctum – Villiers (1951): Abomey; this paper: Bohicon; Didja.

Mehelya crossi – Chabanaud (1916): “Haut-Dahomey” (as *Simocephalus capensis*); Loveridge (1940): Bassila; Villiers (1951): Abomey.

Meizodon coronatus – Trape & Mané (2006 b): on grid map but without specific locality.



Fig. 22. *Psammophis elegans* from Pendjari NP, dorsal pattern. Photo: O. Grell

Meizodon regularis – Chippaux (2001): Benin (on map, without documented locality); this paper: Godomey nr. Cotonou (2nd country record).

Natriciteres olivacea – Chabanaud (1916): “Dahomey” (as *Tropidonotus olivaceus*); this paper: Lama Forest (1st documented locality record for Benin).

Natriciteres variegata – This paper: Lama Forest (1st country record).

Philothamnus irregularis – Trape & Mané: on grid map but without specific locality; this paper: Lama Forest.

Philothamnus semivariegatus – Chabanaud (1916): “Dahomey”; Chabanaud (1917a): Cotonou, Agouagon; Villiers (1951): Abomey; this paper: Lama Forest.

Polemon newwiedii – Chabanaud (1916): “Dahomey” (as *Miodon newwiedi*); Agouagon (as *Miodon newwiedi*).

Prosymna meleagris – Chabanaud (1916): “Dahomey”; Chabanaud (1917a): Agouagon.

Psammophis elegans – Loveridge (1941): Ouidah; this paper: Cotonou; Bembéréké ZFMK 72885); Pendjari NP (Figure 22).

Psammophis lineatus – Chabanaud (1916): “Dahomey”; Chabanaud (1917 b): Agouagon.

Psammophis cf. *phillipsi* – Chabanaud (1916) “Dahomey” (as *P. sibilans*); this paper: Abomey; Za-Kpota; Pendjari NP (Figure 23).

Psammophis phillipsi (s.str.) – Chabanaud (1916): “Dahomey” (as *P. regularis*); this paper: Godomey near Cotonou.

Psammophis praeornatus – Chabanaud (1916): “Dahomey” (according to Villiers 1951 not documented).

Psammophis schokari – Chabanaud (1916): “Dahomey” (as *P. shokari*: considered to be of doubtful provenance by this author).

Psammophis sudanensis – This paper: Didja; Za-Kpota, Abomey, Bohicon (1st country record).

Rhamphiophis oxyrhynchus – Chirio & Ineich (1991): Benin, unspecified; Trape & Mané (2006): on grid map, but without specific locality; this paper: Godomey nr. Cotonou; Za-Kpota.



Fig. 23. *Psammophis* cf. *phillipsi* from Pendjari NP, showing the characteristic reddish dorsilateral stripes. Photo: O. Grell

Scaphiophis albopunctatus – Bocage (1895, 1896): Ajuda; Chabanaud (1916): “Dahomey”; Chabanaud (1917a): Agouagon; Broadley (1994): Parakou, and Segbana; this paper: Lama Forest (Didja).

Telescopus variegatus – Chabanaud (1916): “Dahomey” (as *Tarbophis variegatus*); Chabanaud (1917a): Agouagon (as *Tarbophis variegatus*); Villiers (1951): Abomey (as *Tarbophis variegatus*).

**T. semiannulatus* – Chabanaud (1916): “Dahomey” (as *Tarbophis semiannulatus*. Repeated by Villiers (1951), but probably due to misidentification, as taxon not in present in West Africa).

Thelotornis kirtlandii – Villiers (1951): Bassila.

Toxicodryas blandingii – Chabanaud (1916): “Dahomey” (as *Dipsadomorphus blandingii*); Villiers (1951): Zagnanado, Abomey (as *Boiga blandingii*).

Toxicodryas pulverulentus – Chabanaud (1917b): Porto Novo (as *Dipsadomorphus boueti*, syn. fide Villiers 1951).

Atractaspididae

Amblyodipsas unicolor – Considered to be probably in Benin by Villiers (1950) and Meirte (1999); Chippaux (2001): On map, but without documented locality; this paper: Za-Kpota (first documented country record).

Aparallactus modestus – Boettger (1898): Grand Popo; Witte & Laurent (1947): “Gross Popo”.

Atractaspis aterrima – Villiers (1951): Abomey; Rasmussen (2005): “Benin, without locality”.

Atractaspis dahomeyensis – Barboza du Bocage (1887): Zomai; Villiers (1951): Abomey; Trape & Mané (2006b): Parakou.

Atractaspis watsoni – Trape & Mané (2006 b): on grid map but without specific locality.

Elapidae

Dendroaspis viridis – Chabanaud (1916): “Dahomey” (as *Dendroaspis viridis*); this paper: Bohicon.

Elapsoidea semiannulata moebiusi – Chabanaud (1916): “Dahomey” (as *Elapechis guentheri*); Chabanaud (1917 b): Agouagon (as *Elapechis guentheri*); this paper: Lama (Didja).

Naja melanoleuca – Chabanaud (1916): “Dahomey”; Villiers (1951): Abomey.

Naja nigricollis – Chabanaud (1916): “Dahomey”; Chabanaud (1917): Agouagon; Villiers (1951): Abomey; this paper: Lama Forest; Pendjari NP.

Naja senegalensis – Trape et al. (2009): Niénié.

Viperidae

Bitis arietans – Chabanaud (1916): “Dahomey”; Chabanaud (1917 b), Villiers (1951): Koussokoingou/Atakora, Zagnanado (as *B. lachesis*); this paper: Abomey; Bembéréké (ZFMK 72886).

Bitis nasicornis – Chabanaud (1916): “Dahomey”.

Causus maculatus – Chabanaud (1916): “Dahomey” (as *C. rhombeatus*); Chabanaud (1917b): Agouagon (as *C. rhombeatus*); Villiers (1951): Koussokoingou/Atakora (as *C. rhombeatus*); this paper: Bohicon/Didja, Abomey.

Echis ocellatus – Chabanaud (1916): “Dahomey” (as *E. carinatus*); Chabanaud (1917 b): Agouagon (as *E. carinatus*); Villiers (1951): Koussokoingou/Atakora (as *E. carinatus*); this paper: Didja; Bembéréké (ZFMK 72867, 73091); Pendjari NP.

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REFERENCES

- Angel F (1933, "1932") Les serpents de l'Afrique occidentale française. Bulletin du comité d'études historiques et scientifiques de l'AOF15 (4): 613–858
- Bauer AM, Günther R (1991) An annotated type catalogue of the geckos (Reptilia: Gekkonidae) in the Zoological Museum, Berlin. Mitteilungen aus dem Zoologischen Museum in Berlin 2: 279–310
- Bauer AM, Tchiboza S, Pauwels OSG, Lenglet G (2006) A review of the gekkotan lizards of Bénin, with the description of a new species of *Hemidactylus* (Squamata: Gekkonidae)
- Bocage JV Barboza du (1887) Mélanges erpetologiques. II. Reptiles de Dahomey. Journal de la science de Lisbon 44: 192–197
- Bocage JV Barboza du (1895) Herpétologie d'Angola et du Congo. Lisbon, Imprimerie Nationale
- Bocage JV Barboza du (1896) Reptiis de alguma possessões Portuguezas d'Africa que existem no Museu de Lisboa. Journ. Sci. Math. Phys. Nat., Sér. 2: 65–104
- Böhme W (1975) Zur Herpetofaunistik Kameruns, mit Beschreibung eines neuen Scinciden. Bonner zoologische Beiträge 26: 2–48
- Böhme W (1978) Zur Herpetofaunistik des Senegal. Bonner zoologische Beiträge 29: 360–417
- Böhme W (1986) Preliminary note on the taxonomic status of *Psammophis leucogaster* Spawls, 1983 (Colubridae, Psammophiini). Litteratura Serpentiaria, Utrecht, 6: 171–180
- Böhme W (1987) Zur Kenntnis von *Psammophis subtaeniatus* Peters, 1882 an seinem nordöstlichen Arealrand (Serpentes: Colubridae: Psammophiini). Salamandra, Frankfurt am Main 23: 84–89
- Böhme W, Meinig H, Rödel, M-O (1996) New records of amphibians and reptiles from Burkina Faso and Mali. British Herpetological Society Bulletin London 56: 7–26
- Böhme W, Ziegler, T (1999) A taxonomic review of the *Varanus (Polydaedalus) niloticus* (Linnaeus, 1766) species complex. Herpetological Journal, London 7: 155–162
- Boettger O (1898) Katalog der Reptilien-Sammlung im Museum der Senckenbergischen naturforschenden Gesellschaft in Frankfurt am Main. II. Teil (Schlangen). Frankfurt am Main (Knauer), 160 pp
- Boulenger GA (1885) Catalogue of the lizards of the British Museum. London (Trustees of the British Museum), vol. 1: 436 pp
- Branch WR (2008) Tortoises Terrapins & Turtles of Africa. Cape Town (Struik Publishers), 128 pp
- Broadley DG (1983) Fitzsimons' snakes of southern Africa. – Goodwood/Cape (Delta Books), 376 pp
- Broadley DG (1994) Revision of the African genus *Scaphiophis* Peters (Serpentes: Colubridae). Herpetological Journal, London 4: 1–10
- Bonn zoological Bulletin 57 (1): 31–54
- Carranza S, Arnold EN (2006) Systematics, biogeography, and evolution of *Hemidactylus* geckos (Reptilia: Gekkonidae) elucidated using mitochondrial DNA sequences. Molecular Phylogenetics and Evolution 38: 531–545
- Chabanaud P (1916) Énumération des ophidiens non encore étudiés de l'Afrique Occidentale, appartenants aux collections du Muséum, avec la description des espèces et des variétés nouvelles. Bulletin du Muséum de Histoire Naturelle de Paris 22: 362–382
- Chabanaud P (1917 a) Énumération des reptiles non encore étudiés de l'Afrique Occidentale, appartenants aux collection du Muséum, avec la description des espèces nouvelles. Bulletin du Muséum de Histoire Naturelle de Paris 23: 83–105
- Chabanaud P (1917 b) Note complémentaire sur les ophidiens de l'Afrique de occidentale, avec la description d'une espèce nouvelle. Bulletin du Muséum de Histoire Naturelle de Paris 1917: 7–14. (zit n. Villiers 1951)
- Chabanaud, P. (1918) Étude complémentaire de deux *Agama* de l'Afrique occidentale et description de quatre espèces nouvelles de reptiles de la même région. Bulletin du Muséum de Histoire Naturelle de Paris 24: 104–112
- Chippaux JP (1999) Les serpents de l'Afrique occidentale et centrale (Collection Faune et Flore tropicales 35). Paris (IRD) 278 pp.
- Chippaux JP (2001) Les serpents de l'Afrique occidentale et centrale. Paris (Éd. IRD), 2nd. ed. 292 pp
- Chippaux JP (2006) Les serpents de l'Afrique occidentale et centrale. Paris (IRD) 3rd. ed. 311 pp
- Chirio L, Ineich I (2009) Geographical distribution. *Afonatrix anoscopus* (Cope, 1861) Brown water snake. African Herp News 47: 44–45
- Chirio L, LeBreton M (2007) Atlas des reptiles du Cameroun. Paris (IRD. MNHN), 686 pp
- Conrad S (1999) Untersuchungen zur Systematik und Verbreitung des Basiliskenchamäleons (*Chamaeleo africanus*). State exam. thesis, University Bonn, 93 pp
- David P, Ineich I (1999) Les serpents venimeux du monde: systématique et répartition. Dumerilia, Paris, 3: 3–499.
- Dunger GT (1972a) The snakes of Nigeria, Part 3: The harmless water and marsh snakes of Nigeria. The Nigerian Field 37: 31–38
- Dunger GT (1973a) The snakes of Nigeria, Part 4: The harmless green snakes of Nigeria. The Nigerian Field 38: 54–80
- Emrich A, Mühlberg M, Steinhauer-Bukart B, Sturm HJ (1999) Évaluation écologique intégrée de la forêt naturelle de Lama en République du Bénin. Rapport de Synthèse (Unpublished report for ÉCO, supp. by ONAP, KfW and GTZ).
- Fritz U, Havas P (2007) Checklist of chelonians of the world. Vertebrate Zoology, Dresden 57: 149–368
- Fuhn IE (1972) Révision du phylum forestier du genre *Panaspis* Cope (Reptilia, Scincidae, Lygosominae). Revue Roumaine de Biologie (Zoology) 17: 257–271
- Grandison ACG (1956) On a collection of lizards from West Africa. Bulletin de l'Institut de française de Afrique Noire, Paris/Dakar 43 ser. A: 224–245
- Grandison ACG (1968) Nigerian lizards of the genus *Agama*. Bulletin of the British Museum (Natural History), Zoology, London 17: 1–90
- Grandison ACG (1969) *Agama weidholzi* (Sauria: Agamidae) of West Africa and its relationship to *Agama gracilimembris*. Bulletin de l'Institut fondamental de Afrique Noire, Dakar 31 (sér. A) 2: 666–675
- Grell O (2003) Untersuchung zum Vorkommen und zur Biotopbindung der Avi-, Herpeto- und Ichthyofauna im Pendjari-Nationalpark, Benin – West-Afrika – und Konsequenzen für den

- Managementplan. Unpublizierter Report für GTZ, Kiel, 49+11 pp
- Hahn DE (1980) Liste der rezenten Amphibien und Reptilien: Anomalepididae, Leptotyphlopidae, Typhlopidae. Das Tierreich, Berlin, 101: I–XII + 1–93
- Henle K, Böhme W (2003) A new species of *Hemidactylus* (Squamata: Gekkonidae) from West Africa, and comments on species hitherto confused with *H. muriceus*. African Journal of Herpetology 52: 23–38
- Hoogmoed MS (1974) Ghanaese lizards of the genus *Mabuia* (Scincidae, Sauria, Reptilia). Zoologische Verhandlungen, Leiden 138: 1–62, pls
- Joger U (1990) The herpetofauna of the Central African Republic, with description of a new species of *Rhinotyphlops* (Serpentes: Typhlopidae). Pp. 85–102 in: Peters G & Hutterer R (eds): Vertebrates in the Tropics. Bonn, Museum A. Koenig, 424 pp
- Lachat T, Attignon S, Djego J, Goergen G, Nagel P, Sinsin B, Peveling R (2006) Arthropod diversity in Lama forest reserve (South Benin), a mosaic of natural, degraded and plantation forests. Biodiversity and Conservation 15: 3–23
- Loveridge A (1940 “1939–1940”) Revision of the African snakes of the genera *Mehelya* and *Gonionotophis*. Bulletin of the Museum of Comparative Zoology, Harvard/Massachusetts 86: 131–162
- Loveridge A (1941, “1940–1941”) Revision of the African snakes of the genera *Dromophis* and *Psammophis*. Bulletin of the Museum of Comparative Zoology, Harvard/Massachusetts 87: 1–69
- Loveridge A (1947) Checklist of the African lizards of the family Gekkonidae. Bulletin of the Museum of Comparative Zoology, Harvard/Massachusetts 98: 1–469
- Loveridge A (1952) Mission A. Villiers au Togo et au Dahomey (1950). XII. Tortoises and lizards. Bulletin de l’Institut de française de Afrique Noire, Paris/Dakar 14: 229–242
- Macdonald MR (1981) A new species of agamid lizard from Ghana. Journal of Zoology, London 193: 191–199
- Mausfeld-Lafdhya P, Schmitz A, Ineich I, Chirio L (2004): Genetic variation in two African *Euprepis* species (Reptilia, Scincidae), based on maximum-likelihood and Bayesian analyses: taxonomic and biogeographic conclusions. Bonner zoologische Beiträge 52: 159–177
- Meirte D (1999) Les reptiles de l’Afrique de l’Ouest et la positions biogéographique du Bénin. Pp. 147–152 in: Sinsin B & Bergmans W (eds): Rongeurs, ophidiens et relations avec l’environnement agricole du Bénin. Cotonou (Éd. Flamboyant), 199 pp
- Mondjkannagni A. (1969) Contribution à l’étude des paysages végétaux du Bas Dahomey. Annales d l’Université d’Abidjan, GI. No. 2
- Nago SGA, Grell O, Sinsin B, Rödel M-O (2006) The amphibian fauna of the Pendjari national park and surroundings, northern Benin. Salamandra 42: 93–108
- Peters W (1868) Über neue Säugethiere (*Colobus*, *Rhinolophus*, *Vesperus*) und neue oder weniger bekannte Amphibien (*Hemidactylus*, *Herpetodryas*, *Spilotes*, *Elaphis*, *Lamprophis*, *Erythrolamprus*). Monatsberichte der Königlichen Akademie der Wissenschaften Berlin 1868: 637–642
- Rasmussen JB, Chirio L, Ineich I (2000) The herald snakes (*Crotaphopeltis*) of the Central African Republic, including a systematic review of *C. hippocrepis*. Zoosystema 22: 585–600
- Rasmussen JB (2005) A review of the slender stiletto-snake, *Atractaspis aterrima* Günther 1863 (Serpentes Atractaspididae). Tropical Zoology, Firenze 18: 137–148
- Rödter D, Böhme W (2008) Predicting the potential distributions of two alien invasive housegeckos (Gekkonidae: *Hemidactylus frenatus*, *Hemidactylus mabouia*). North-Western Journal of Zoology, Oradea 4: 236–246
- Rödel M-O, Brede C, Schiefenhövel P, Penner J, Sinsin B, Nago SGA (2007) The amphibians of the Lokoli Forest, a permanently inundated rain forest in the Dahomey Gap, Benin. Salamandra 42: 231–238
- Roux-Estève R (1969) Étude comparée de *Meizodon coronatus* Schlegel (sic) et de *Meizodon regularis* Fischer (Colubridés – Serpentes). Bulletin du Museum National d’Histoire Naturelle, Paris (2) 41: 395–409
- Salvador A. (1982) A revision of the lizards of the genus *Acanthodactylus* (Sauria: Lacertidae). Bonner Zoologische Monographien 16: 1–167
- Schätti B, Trape J-F (2008) *Bamanophis*, a new genus for the West African colubrid *Periops dorri* Lataste, 1888 (Reptilia: Squamata: Colubrinae). Revue suisse de Zoologie, Genève 115: 595–615
- Schmitz A, Ineich I, Chirio L (2005) Molecular review of the genus *Panaspis* sensu lato (Reptilia: Scincidae) in Cameroon, with special reference to the status of the proposed subgenera. Zootaxa, 863: 1–28
- Sinsin B, Ahokpe E, Daouda I, Kindomihou V, Hounngandan O (1999) Capture et commercialisation des reptiles dans les Départements du Zou, du Mono, de l’Ouémé et de l’Atlantique. Pp. 163–177 in: Sinsin B & Bergmans W (eds): Rongeurs, ophidiens et relations avec l’environnement agricole du Bénin. Cotonou (Éd. Flamboyant), 199 pp
- Sinsin B, Bergmans W (eds, 1999) Rongeurs, ophidiens et relations avec l’environnement agricole du Bénin. Cotonou (Éd. Flamboyant), 199 pp
- Spawls S (1983) A new *Psammophis* from northern Ghana. British Journal of Herpetology, London 6: 311–312
- Specht I (2002) La forêt de la Lama SIG-basé sur Landsat 7. Opuscula biogeographica basiliensia, Basel, 2: 1–98
- Steindachner F (1870) Herpetologische Notizen (II). Sitzungsberichte der Akademie der Wissenschaften in Wien, (1) 62: 326–355
- Stoll F (2008) Taxonomie afrikanischer Skinke: Morphologische und genetische Variation von *Trachylepis affinis* und *Trachylepis perroteti* (Reptilia; Squamata; Scincidae). Unpubl. MSc thesis, University of Darmstadt, 128 + 18 pp
- Thys van den Audenaerde DFE (1967) Les Gekkonidae de l’Afrique Centrale. Revue de Zoologie et de Botanique africaines, Bruxelles 76: 163–172
- Trape J-F, Chirio L, Broadley DG, Wüster W (2009) Phylogeography and systematic revision of the Egyptian cobra (Serpentes: Elapidae: *Naja haje*) species complex, with the description of a new species from West Africa. Zootaxa 2236: 1–25
- Trape J-F, Mané Y (2006 a) Le genre *Dasyplepis* Wagler (Serpentes: Colubridae) en Afrique de l’Ouest: description de trois espèces et d’une sous-espèce nouvelles. Bulletin de la Société Herpetologique de France 119: 27–56
- Trape J-F, Mané Y (2006 b) Guide des serpents d’Afrique occidentale. Savane et désert. Paris (IRD Éd.) 226 pp
- Ullrich K (2003) Untersuchungen zur Biodiversität der Reptilien und Amphibien eines isolierten Regenwaldes in der Dahomey Gap, Benin. Unpubl. MSc Thesis, University of Bonn, 231 pp
- Ullrich K, Krause P, Böhme W (2007) A new species of the *Chamaeleo dilepis* group (Sauria Chamaeleonidae) from West Africa. Tropical Zoology, Firenze 20: 1–17
- Villiers A (1951) Mission A. Villiers au Togo et à Dahomey. Études dahomeyennes (IFAN), 5: 1–25

- Wermuth H (1965) Liste der rezenten Amphibien und Reptilien. Gekkonidae, Pygopodidae, Xantusiidae. Das Tierreich, Berlin 80: i–xxii + 1–246
- Werner F (1919) Wissenschaftliche Ergebnisse der mit Unterstützung der Kaiserlichen Akademie der Wissenschaften in Wien aus der Erbschaft Treitl von F. Werner unternommenen zoologischen Expedition nach dem Anglo-Ägyptischen Sudan (Kordofan) 1914. IV. Bearbeitung der Fische, Amphibien und Reptilien. Denkschriften der Kaiserlichen Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse 96: 437–509
- Witte GF de, Laurent R (1947) Révision d'un groupe de Colubridae africains. Mémoires du Muséum Royal d'Histoire Naturelle de Belge, Bruxelles (2) 29: 1–134

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