

The snake fauna of Togo: systematics, distribution and biogeography, with remarks on selected taxonomic problems

Gabriel Hoinsoude SEGNIAGBETO

Département de Zoologie et Biologie animale, Faculté des Sciences,
Université de Lomé, BP 1515, Lomé (Togo)
h_segniagbeto@yahoo.fr

Jean François TRAPE

Laboratoire de Paludologie et Zoologie médicale, UR 77,
Institut de Recherche pour le Développement (IRD),
Centre de Dakar, BP 1386, Dakar (Senegal)
jean-françois.trape@ird.fr

Patrick DAVID

Annemarie OHLER

Alain DUBOIS

UMR 7205 OSEB, Reptiles et Amphibiens,
Département de Systématique et Évolution,
Muséum national d'Histoire naturelle,
CP 30, 57 rue Cuvier, F-75231 Paris cedex 05 (France)
pdavid@mnhn.fr
ohler@mnhn.fr
adubois@mnhn.fr

Isabelle Adolé GLITHO

Département de Zoologie et Biologie animale, Faculté des Sciences,
Université de Lomé, BP 1515, Lomé (Togo)
iglitho@yahoo.fr

Segniagbeto G. H., Trape J. F., David P., Ohler A., Dubois A. & Glitho I. A. 2011. — The snake fauna of Togo: systematics, distribution and biogeography, with remarks on selected taxonomic problems. *Zoosystema* 33 (3): 325-360. DOI: 10.5252/z2011n3a4.

ABSTRACT

We present here an annotated list of the 91 snake species currently recorded from Togo, West Africa. Seven species are here recorded for the first time from this country: *Calabaria reinhardtii*, *Hapsidophrys lineatus*, *Lycophidion nigromaculatum*, *Philothamnus carinatus*, *Leptotyphlops cf. narirostris*, *Letheobia crossi* and *Typhlops lineolatus*. Main morphological data of examined specimens are provided. Some taxonomical problems are pointed out and discussed. The distribution of these species is detailed. We also provide a short discussion on the snake trade in Togo.

KEY WORDS

Reptilia,
Squamata,
snakes,
taxonomy,
Togo,
Africa,
conservation.

RÉSUMÉ

La faune des serpents du Togo: systématique, répartition et biogéographie, avec des remarques sur quelques problèmes taxonomiques.

Nous présentons une liste commentée des 91 espèces de serpents actuellement connues au Togo, Afrique occidentale. Sept espèces sont signalées pour la première fois dans ce pays: *Calabaria reinhardtii*, *Hapsidophrys lineatus*, *Lycophidion nigromaculatum*, *Philothamnus carinatus*, *Leptotyphlops* cf. *narirostris*, *Letheobia crossi* et *Typhlops lineolatus*. Nous indiquons les principaux caractères morphologiques des spécimens examinés. Quelques problèmes taxonomiques sont signalés et discutés. La répartition de chaque espèce est donnée en détails. Enfin, nous discutons brièvement le problème du commerce des serpents au Togo.

MOTS CLÉS

Reptilia,
Squamata,
serpents,
taxonomie,
Togo,
Afrique,
conservation.

INTRODUCTION

First investigations on snakes of Togo date back to the time of the German colonisation and Sternfeld (Werner 1898, 1899, 1902, 1929; Sternfeld 1908a, b, 1909). During the same period, the first list of Togolese snakes was established by Sternfeld (1908b), who included 75 species. However, many taxa listed by Sternfeld are no longer valid or refer to taxa that inhabit other African regions. Since Sternfeld's work, no extensive review of the Togolese snake fauna had been undertaken. During the years 1930-1950, Loveridge (1939, 1940, 1944, 1958) mentioned a few species occurring in Togo in his revisions of some African snake genera.

In the 1970s, three Belgian field missions investigated the reptile fauna of Togo (Hulselmans & Verheyen 1970; Hulselmans *et al.* 1970, 1971) and allowed the publication of a second list of Togolese snakes on the basis of specimens collected. Roman (1984) published a list of the 97 snake species recorded in the "Pays de l'Entente", namely Benin, Burkina Faso, Ivory Coast, Niger, and Togo. This work recorded 42 species from Togo.

In 2002, the monograph of the national survey of the biological diversity mentioned 101 snake species from the country (Anonymous 2002). However, a critical analysis of this work shows that it includes taxonomic mistakes and, just like Sternfeld (1909), listed nominal species not known from Togo, species unknown from this part of Africa and species that have now been synonymised

or renamed in recent taxonomic studies, such as that of Lenk *et al.* (1999). As a consequence, no recent overview of the Togolese snake fauna is available. In the present paper, we provide an up to date review of the snakes of Togo mainly based on voucher specimens.

On this basis, we undertook a detailed survey of the snake species occurring in Togo. This paper presents the first synthesis of our results. It is essentially based on the examination of preserved specimens as well as on a critical analysis of the literature. Main morphological characters of examined specimens are summarized. Some taxonomical problems are pointed out. The distributions of these species are detailed. The present paper is a continuation of works undertaken by the first author on the whole reptile fauna of Togo (Segniabeto *et al.* 2007). However, despite our extensive field work and literature analysis, this paper still represents a preliminary analysis; much remains to be discovered about the snake fauna of Togo.

GEOGRAPHY, CLIMATE AND ECOLOGY

Togo is a West African country bordering the Gulf of Guinea (Fig. 1). It is made up of a long strip of land located between a latitude of 6°-11°N and a longitude of 0°-2°E. The country stretches over 660 km from north to south. It is only 50 km wide along the coast, east-west. Its maximal width is 120 km between 7 and 8°N. The landscape is largely a gently undulating plain, with the exception of the Atakora range ("chaîne de l'Atakora"), which crosses the country in a northeast-southwest direction.

Some summits peak over 900 m in the southern part of the range. Peneplains between 100 and 400 m above sea level are found in the northern, central and southern parts of the country. From these peneplains rise tablelands such as Dapaong plateau and Bombouaka plateau, made of cuesta landscapes which reach 500 m on their northern edge. Bassar plateau (“plateau de Bassar”) is largely dominated by Voltaian sedimentary geologic beds of shale. The Kante hills is composed of shales of the structural beds of the Atakora range and, in its southernmost part, by the Akposso-Akebou plateau (“plateau d’Akposso-Akebou”). The main feature of Togolese hydrography is the basin of the Oti river and its tributaries (Keran, Kara, Assoukoko rivers and so on), which altogether cover nearly 45% of the northern part of the country. Other main hydrographic features are the Mono basin (21 300 km²) in the center and south of the country, and the Zio and Haho basins in the South.

Two kinds of wind predominate in Togo: the dry, hot northeastern trade winds (“alizés”) known as the Harmattan, and the wet and warm trade winds locally known as the Monsoon (“la Mouson”). The conflict between these two kinds of wind induces the Intertropical Convergence Zone (ITCZ) or the Intertropical Front. The variation in its location along the year induces two main climatic regimes: the tropical climate in the North with one rainy and one dry seasons, and the Guinean climate in the South. This latter climate is characterized by two rainy seasons and two dry seasons, all unequal. Between these two main climates, a transitional area presents a single rainy season with a slight decrease in rainfall in August or September.

As a consequence of its location, the Togolese landscape consists, from south to north, of a succession of various ecosystems ranging from coastal grasslands to equatorial and wet tropical forests and ending in Sudan savannahs in the North. According to Ern (1979), the vegetation of Togo can be divided into five ecological regions (Fig. 1). From north to south, the country is successively made up of ecological region I or zone of Sudan savannahs where leguminous plants of the family Mimosoideae (*Acacia* spp.) or Combretaceae (*Terminalia* spp.,

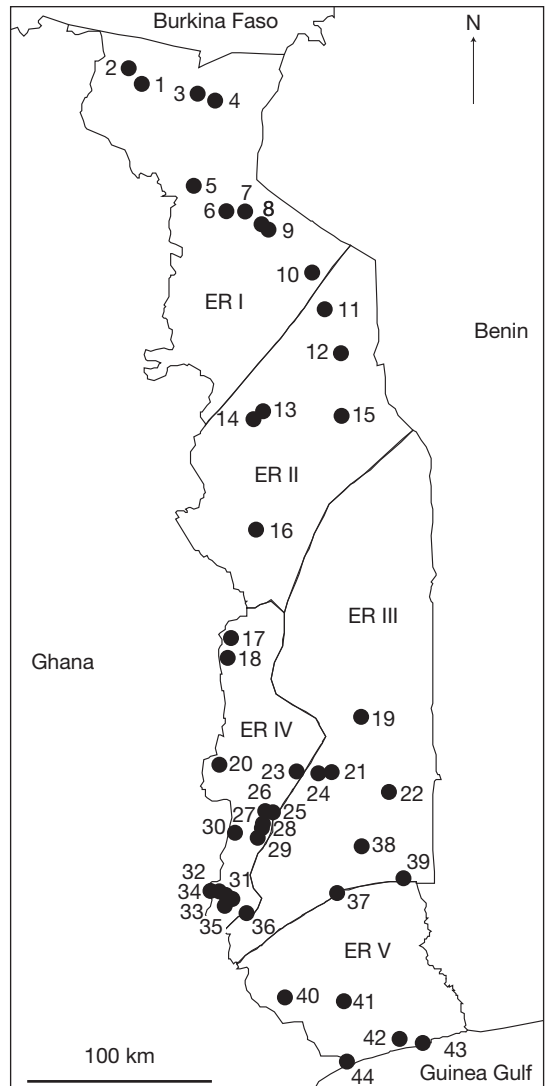


Fig. 1. — Ecological regions (ER) of Togo and collecting localities of snakes: 1, Dapaong; 2, Nanergou; 3, Namoudjoga; 4, Borgou; 5, Mango; 6, Sabiegou; 7, Payo; 8, N’Gambi; 9, Naboulgou; 10, Kanté; 11, Niamtougou; 12, Kara; 13, Bassar; 14, Binaparba; 15, Alédjo; 16, Fazao; 17, Yégué; 18, Diguingué; 19, Kolokopé; 20, Badou; 21, Atakpamé; 22, Nangbeto; 23, Koutoukpa; 24, Temedja; 25, Sodo Zion; 26, Sodo; 27, Agbanon; 28, Agoté; 29, Agavé; 30, Dzogbegan; 31, Kouma Tchamé; 32, Missahohé; 33, Yo (Agome Yo); 34, Kouma Tokpli; 35, Kpalimé; 36, Agou; 37, Notsé; 38, Huiléhui; 39, Tetetou; 40, Assahoun; 41, Tsévié; 42, Togoville; 43, Aného; 44, Lomé. Explanation of ER I to V: see text.

TABLE 1. — List of collecting localities.

Localities	Ecological region	Latitude	Longitude
Agavé (Kpele)	IV (centre-east)	07°14'02.80"N	00°47'25.70"E
Agbanon (Kpele)	IV (centre-east)	07°16'05.50"N	00°47'55.70"E
Agome (Atakpame)	III (centre)	07°31'27.24"N	01°07'29.05"E
Agoté (Kpele)	IV (centre-west)	07°15'16.80"N	00°47'48.80"E
Agou	IV (south-west)	06°50'60.00"N	00°43'01.20"E
Ahoue-Houe (Akposso)	IV (centre-west)	07°34'01.20"N	00°35'60.00"E
Alédjo Kadara	II (north)	09°15'00.00"N	01°11'60.00"E
Aného	V (south)	06°13'44.30"N	01°36'22.80"E
Assahoun	V (south-west)	06°26'49.75"N	00°54'26.60"E
Atakpamé	III (centre)	07°31'27.24"N	01°07'29.05"E
Badou (Akposso)	IV (centre-west)	07°34'60.00"N	00°36'00.00"E
Bafilo	II (north)	09°20'23.61"N	01°14'35.59"E
Bassar	II (north)	09°40'58.80"N	00°28'58.80"E
Binaparba	II (north)	09°13'58.80"N	00°46'01.20"E
Borgou	I (north)	10°50'55.77"N	00°16'30.76"E
Dapaong	I (north)	10°51'07.56"N	00°12'28.51"E
Diguingué (Adele)	IV (centre-west)	08°04'59.99"N	00°37'59.99"E
Dzogbegan (Akposso)	IV (centre-west)	07°34'22.96"N	00°40'47.00"E
Ebeva (Akposso)	IV (centre-west)	07°31'01.20"N	01°04'58.80"E
Edifou (Akposso)	IV (centre-west)	07°28'60.00"N	00°58'00.00"E
Evou (Akposso)	IV (centre-west)	07°30'00.00"N	01°01'00.00"E
Ezime (Akposso)	IV (centre-west)	07°29'14.48"N	00°57'26.38"E
Fazao	II (centre)	08°40'35.72"N	00°32'13.04"E
Huilehui	III (south-east)	06°59'26.02"N	01°17'54.19"E
Kamina	III (centre)	07°30'46.89"N	01°12'14.24"E
Kanté	I (north)	09°56'05.00"N	00°56'29.00"E
Kara	II (north)	09°32'51.20"N	01°11'05.70"E
Kebo-Dzigbe (Mont Agou)	IV (south-west)	06°46'43.78"N	00°43'09.76"E
Kolokopé	III (centre)	07°48'50.70"N	01°18'22.70"E
Kougnohou (Akebou)	IV (centre)	07°39'15.08"N	00°47'24.11"E
Kouma Konda (Kloto)	IV (south-west)	06°57'12.10"N	00°34'43.40"E
Kouma Tchamé (Kloto)	IV (south-west)	06°57'02.80"N	00°38'25.10"E
Kouma Tokpli (Kloto)	IV (south-west)	06°57'55.51"N	00°35'04.35"E
Koutoukpa (Akposso)	IV (centre-west)	07°31'00.00"N	00°58'59.99"E
Kpalime (Kloto)	IV (south-west)	06°54'08.16"N	00°37'57.23"E
Kpewa (Alédjo)	II (north)	09°13'42.36"N	01°11'42.99"E
Legbassito (Lomé)	V (south)	06°11'60.00"N	01°13'01.20"E
Lomé	V (south)	06°07'35.70"N	01°13'40.22"E
Mango	I (north)	10°21'33.00"N	00°28'15.00"E
Missahohe (Kloto)	IV (south-west)	06°56'60.00"N	00°34'58.80"E
Naboulgou	I (north)	10°09'28.50"N	00°49'45.70"E
Namoudjoga	I (north)	10°52'56.20"N	00°23'50.40"E
Nanergou	I (north)	10°54'15.44"N	00°08'54.81"E
Nangbeto	III (centre-east)	07°22'29.35"N	01°24'05.40"E
N'Gambi	I (north)	10°12'29.30"N	00°47'19.20"E
Niamtougou	II (north)	09°45'54.43"N	01°06'50.62"E
Notse	III (south)	06°56'31.38"N	01°10'17.33"E
Pagala (Adele)	IV (centre-west)	08°12'00.00"N	00°58'59.99"E
Payo	I (north)	10°13'50.70"N	00°41'56.90"E
Sabiegou	I (north)	10°14'43.90"N	00°38'38.80"E
Sodo (Akposso)	IV (centre-west)	07°18'50.80"N	00°48'45.80"E
Sodo Zion (Akposso)	IV (centre-west)	07°19'57.20"N	00°50'29.40"E
Sokode	II (centre)	08°59'02.43"N	01°08'58.12"E
Temedja (Akposso)	III (centre)	07°30'01.05"N	01°05'31.79"E
Tetetou	III (south-east)	07°00'31.71"N	01°30'00.25"E
Togoville	V (south)	06°13'43.59"N	01°28'24.93"E

TABLE 1. — Continuation.

Localities	Ecological region	Latitude	Longitude
Tomegbe (Kloto)	IV (south-west)	06°55'40.17"N	00°35'04.34"E
Tovegan	V (south)	06°33'56.77"N	00°53'05.98"E
Tsévié	V (south)	06°25'11.18"N	01°12'39.49"E
Woume (Kloto)	IV (south-west)	06°58'38.10"N	00°39'07.60"E
Yaokope	III (centre)	07°31'00.00"N	01°01'60.00"E
Yégué or Bismarburg (Adele)	IV (centre-west)	08°10'58.80"N	00°38'60.00"E
Yo (Agome Yo) (Kloto)	IV (south-west)	06°56'38.00"N	00°35'50.10"E

Combretum spp.) dominate, dry forests with *Anogeisus*, gallery forests and grasslands around temporary or permanent ponds. Region II is made up of hills covered in part with dense dry forests and open forests. Region III is the area of the Guinean savannahs. It is characterized by a relatively rich flora in which Combretaceae and Andropogoneae dominate. Region IV corresponds to the southern part of the country. It is characterized by a wet tropical climate similar to the equatorial climate and was originally largely covered with true tropical wet forests or semi-deciduous forests. Region V is restricted to the littoral area. It is a strongly disturbed landscape of littoral bushes, halophilous or marshy grasslands and mangroves. This diversity in the vegetal ecosystems is highly favourable to a great diversity of animal species, especially the snakes, most species of which are confined to precise biotopes.

MATERIAL AND METHODS

INVESTIGATIONS IN THE FIELD

During two years (from March 2006 to January 2008), we collected specimens of snakes in as many localities in Togo as possible, spread over all ecological areas of the country (Fig. 1; Table 1). We put a special emphasis on collections in the ecological region IV, in which collection localities are the most numerous. We deposited cans or buckets half filled with a 4% formaline solution or 95% ethanol in villages. Local villagers were made aware of our research and regularly deposited in these containers snakes encountered during their farming activities. Regular visits to these villages were

organized to retrieve the specimens. This proved a highly efficient way of gathering large numbers of specimens. During these visits, information on the habitat and ecology of the species were recorded. Geographic coordinates of each locality were obtained by a GPS receiver.

Besides the assistance of villagers, GHS and JFT also collected during field trips. Collections were made both by day and at night. Specimens collected alive were photographed in the laboratory. Specimens killed in the field, especially venomous species, were immediately photographed. All specimens were deposited in the collections of the "Département de Zoologie et de Biologie animale" of the Lomé University (Togo). We also made mere visual observations when we met species easy to identify or if we considered that the species was already adequately present in our collections. Lastly, we visited some snake farms housing snakes for the pet trade.

INVESTIGATIONS IN THE LABORATORY

All specimens collected during our field investigations were examined. We also had access to specimens deposited in the collections of some other museums. This study is based on a total of 917 snake specimens. In the results given below, we indicate collection numbers and localities of all specimens. Main morphological characters, depending on the snake family, were recorded in all specimens, especially head scales, number of dorsal scale rows, ventral and subcaudal scales and measurements.

Our identifications are largely based on the following major works (Loveridge 1939, 1940, 1944,

1958; de Witte & Laurent 1947; Villiers 1975; Meirte 1992; Chippaux 2006; Trape & Mané 2006b). The classification of snakes adopted in this paper follows Vidal *et al.* (2007), modified by Vidal *et al.* (2008). A similar classification at the familial level was also more recently proposed by Pyron *et al.* (2011). In these schemes, most African colubrid snakes are placed in the families Colubridae and especially Lamprophiidae. This latter family is divided into several subfamilies, the number of which differs between Vidal *et al.* (2008) and Pyron *et al.* (2011). We here follow the former authors and recognize four subfamilies: Lamprophiinae, Atractaspidinae (including the Aparallactinae recognized by Pyron *et al.* [2011]), Psammophiinae and Pseudoxyrhophiinae.

ABBREVIATIONS

Morphological characters

MSR	dorsal scale rows at midbody;
Sc	subcaudal scales;
Ven	ventral scales;
TL	total length.

Museums and collections

GHS-W & GHS-Togo	collections of Gabriel Hoinsoude Segniabeto, deposited in Lomé University;
IRD-T	collection of Institut de Recherche pour le Développement, Dakar, Senegal;
MNHN	Muséum national d'Histoire naturelle, Paris, France;
MRAC	Musée royal d'Afrique Centrale, Tervuren, Belgique;
T	collection of Jean François Trape, deposited in Institut de Recherche pour le Développement (IRD), Dakar, Senegal;
ZMB	Zoologisches Museum für Naturkunde der Humboldt-Universität zu Berlin, Berlin, Germany.

Other institutions

CITES	Convention on International Trade in Endangered Species of wild fauna and flora;
DFC	Direction de la Faune et de la Chasse, Ministère de l'Environnement et des Ressources forestières du Togo, Lomé.

Ecology

ER	ecological region (numbered I to V; see above).
----	---

RESULTS

CHECKLIST OF SNAKE SPECIES RECORDED FROM TOGO

Family BOIDAE Gray, 1825

Gongylophis muelleri Boulenger, 1892 (Fig. 2)

MATERIAL EXAMINED. — 1 adult ♀ (MRAC 29651), 1 juvenile (MRAC 29663), Borgou; 1 ♂ (MRAC 29472), Nanergou.

Three adult specimens obtained in Mango were examined in the FEXAS, a snake farm for the pet trade.

MORPHOLOGY. — TL of adult specimens 658 mm and 776 mm, juvenile 335 mm, 45-47 MSR, scales smooth; 175-182 Ven; 14-21 Sc, single; anal single; 2-3 loreals; 9-10 supralabials; 12-14 infralabials; 9-10 scales surrounding the eye and 6 interorbital scales.

DISTRIBUTION. — This burrowing species was recorded only in ER I. It was previously mentioned from Togo by Sternfeld (1908b, 1909: 9) from Mango and Borgou, Hulselmans *et al.* (1970, 1971) and Roman (1984).

Family CALABARIIDAE Vidal & David, 2004

Calabaria reinhardtii (Schlegel, 1851)

MATERIAL EXAMINED. — 1 adult (GHS-W 0247), Kpalime.

MORPHOLOGY. — LT 735 mm; 33 MSR, scales straight, 217 Ven, 21 Sc single.

DISTRIBUTION. — First record from Togo. This burrowing species has been observed in forests of ER IV. Localities are: Kloto, Kpele, Akposso, Akebou and Adele.

CONSERVATION STATUS. — According to reports of the CITES division of the Togo DFC, 638 living specimens were exported from the country between 2001 and 2005.

REMARK

This species was referred to the boine genus *Charina* Gray, 1849 by Kluge (1993), but Vidal & David (2004) showed that *Calabaria reinhardtii* is genetically distant from the American species of the genus *Charina*. As a consequence, *Calabaria*

Gray, 1858 was considered to be valid and placed in a separate family.

Family COLUBRIDAE Oppel, 1811

Bamanophis dorri (Lataste, 1888)

MATERIAL EXAMINED. — 2 specimens (MRAC 29513-29514), Namoudjoga.

MORPHOLOGY. — TL 426 and 590 mm; 30 and 31 MSR smooth; 236 and 246 Ven, smooth; 80 and 84 Sc, all paired; anal divided; 9 supralabials; 10 infralabials; 1 preocular; 2 postocular; 1 subocular; temporal scale formula 2 + 3.

DISTRIBUTION. — This species inhabits Sudanese savannahs. It is restricted to ER I. The specimens examined by us are probably those cited by Hulselmans & Verheyen (1970).

REMARK

The recent revision of Schätti & Trape (2008) based on external morphology, osteology, and hemipenis features transferred this species from the genus *Haemorrhhis* Boie, 1826 to their new genus *Bamanophis*.

Boiga blandingii (Hallowell, 1844)

MATERIAL EXAMINED. — 25 specimens (MRAC 29493, Binaparba; MRAC 29546, Aledjo; MRAC 29632, Togoville; MRAC 29721, Koutoukpa; MRAC 73014.0015, Notse [formerly Nuatja]; GHS-W 0034-35, Agave; GHS-W 0218, Atakpame; GHS-Togo 21, Kouma Tchame; GHS-W 0204, GHS-W 0207, GHS-W 0211, GHS-W 0216, GHS-W 0219, Lomé; GHS-Togo 61, Sodo; GHS-W 0022, GHS-W 0046, GHS-W 0060, GHS-W 1187, GHS-Togo 39, Sodo Zion; GHS-W 0065-66, Yo [Agome Yo], T 215, Huilehui; T 226, T 234, Bafilo).

MORPHOLOGY. — TL from 592 to 2073 mm; 19-24 MSR, smooth and oblique; vertebral row enlarged; 252-285 Ven, smooth; 102-159 Sc, paired; anal single or divided; 9 supralabials; 11-14 infralabials; 2 preoculars; 2 or 3 postoculars; temporal scale formula 2 (rarely 1) + 2 or 3 + 3 or 4.

DISTRIBUTION. — *Boiga blandingii* inhabits all ecological regions of Togo, although it is more common in the



FIG. 2. — *Gongylophis muelleri* Boulenger, 1892, Mango. Photo by G. Segniabeto.

forested area. Previously this species had been recorded from Togo by Sternfeld (1908b, 1909: 18), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970) and Roman (1984).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 20 specimens were exported from Togo in 2002.

REMARK

Following Welch (1982), African species of the genus *Boiga* are sometimes referred to the genus *Toxicodryas* Hallowell, 1857, for example by Chippaux (2006) and Trape & Mané (2006b). However, there has been no revision to substantiate the validity of *Toxicodryas*. We here follow Rasmussen (1979) and retain the African species in the genus *Boiga*, a position also adopted by, for example, Pauwels & Vande Weghe (2008).

Boiga pulverulenta (Fischer, 1856)

MATERIAL EXAMINED. — 12 specimens (MRAC A7036.0006, GHS-Togo 50, T 205, Sodo Zion; MRAC 29547, MRAC 29669, MRAC 29677, Missahohe; MRAC

29722, Kpalime; MRAC 29723-25, Atakpame; T 149, T 151, Diguingué).

MORPHOLOGY. — TL from 950 to 1040 mm; 19-20 MSR, smooth and oblique; vertebral row enlarged; 165-175 Ven, smooth; 110-116 Sc, paired; anal single; 8-9 supralabials; 10-11 supralabials; 1 preocular; 2 postoculars; temporal scale formula 2 + 2.

DISTRIBUTION. — This species is mostly known from the forested area of Togo but additional specimens were recently collected slightly farther north from Aledjo and other localities. The distribution of this taxon in Togo is probably wider. Previously it had been recorded from the country by Sternfeld (1908b, 1909: 18), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971) and Roman (1984).

REMARK

See under the account of *Boiga blandingii* for the generic position of this species.

Crotaphopeltis hippocrepis (Reinhardt, 1843)

MATERIAL EXAMINED. — 5 specimens (MNHN 2006.2204-2206, Nangbeto; GHS-W 1284, Diguingue, T 131, Fazaou).

MORPHOLOGY. — TL of our specimens from 350 to 825 mm; 19-20 MSR, scales smooth; 168-191 Ven, smooth; 45-52 subcaudals, paired; anal single; 8 supralabials; 9 infralabials; 1 preocular, 2 postoculars; temporal scale formula: 1 + 2.

DISTRIBUTION. — The range of this species in Togo remains poorly known. Our localities are in ER III and IV respectively but this species may also occur in ER II. Rasmussen *et al.* (2000) mentioned this species from Bismarkburg (ZMB 21346) and Pagala (USNM 223867). Chippaux (2006) did not give any specific locality.

Crotaphopeltis hotamboeia (Laurenti, 1768)

MATERIAL EXAMINED. — 42 specimens (MNHN 2006.2203, MRAC A7036.0017, A7036.0018-0019, GHS-W 0049, GHS-W 1017, GHS-W 1034, GHS-W 1079, GHS-W 1081, GHS-W 1085, GHS-W 1095, GHS-W 1208-1210, GHS-W 1404-1405, GHS-W 1410, GHS-W 1413, GHS-W 1415, GHS-W 1447, GHS-Togo 18, GHS-Togo 57, GHS-Togo 71, T 210, Sodo Zion; GHS-Togo 38, GHS-Togo 45, Sodo; GHS-W 0002, GHS-W 1190, GHS-Togo 59, Agave; GHS-W 1455, GHS-W 1457, GHS-W 1461, T 128, T 159,

Fazaou; GHS-Togo 42, Yo [Agome Yo]; GHS-Togo 33, Agote; T 197, Alédjo; MNHN 1989.0258, MNHN 1989.0268, Tsevie; MNHN 1982.0450, Togo; MNHN 1989.0196, "Togo ou Benin"; MNHN 1989.0243, "Cameroun").

MORPHOLOGY. — TL of our specimens from 145 to 780 mm; 19 MSR; scales keeled; 154-180 Ven, smooth; 34-49 Sc, paired; anal single; 7-8 supralabials; 8-11 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 ou 3.

DISTRIBUTION. — This species is widespread throughout the country. It mainly occurs in savannahs but also in wooded areas. Other specimens not yet deposited in collection were obtained from Aledjo, Bassar and Huilehui. The species was mentioned by Werner (1898, 1902) and Sternfeld (1908b, 1909: 19; from Missahohe, Kete-Kratchi, Bismarkburg, Atakpame, Sokode, and Mango). Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970) and Leaché *et al.* (2006) established the range of this species in ER II, III and IV of the country.

Dasypeltis confusa Trape & Mané, 2006

MATERIAL EXAMINED. — 13 specimens (MNHN 2006-2193, N'Gambi; MNHN 1989.0252, MNHN 1989.0255 and MNHN 1989.0264, Togo; GHS-W 1078, Sodo Zion, T 116 and T 165, Fazaou; T 153, Diguingue; T 176, T 181, T 191 and T 193, Alédjo, T 218, Huilehui).

MORPHOLOGY. — TL of our specimens from 368 to 710 mm; 21-22 MSR, scales keeled and oblique; 231-241 Ven, smooth; 58-68 Sc, paired; anal single; 7-8 supralabials; 8 infralabials; 1 preocular; 2 postoculars; temporal scale formula 2 + 2.

DISTRIBUTION. — First record from Togo. This recently described species is quite common. It was observed in the regions of Fazaou and Aledjo as well as in the South of the country. This species was long confused with *Dasypeltis scabra*.

Dasypeltis fasciata Smith, 1849
(Fig. 3)

MATERIAL EXAMINED. — 1 specimen (T 28), Yo (Agome Yo), near Kpalime in the forested region.

DISTRIBUTION. — This species occurs mostly in forested areas. In Togo it is known only from Yo. Its taxonomic status and its distribution are far from being clear. Hulselmans *et al.* (1970) collected a specimen at Ahoue-Houe, in the forest region, which may probably be referred to this species.

Dasypeltis gansi Trape & Mané, 2006

MATERIAL EXAMINED. — 7 specimens (MNHN 1982.453, Lomé; GHS-W 0264-0265, Nangbeto; GHS-W 1091, Sodo Zion, T 172 et T 179, Alédjo; T 158, Fazao).

MORPHOLOGY. — TL of our specimens from 290 to 670 mm; 21-23 MSR, keeled and oblique; 210-241 Ven, smooth; 68-81 Sc, paired; anal single; 7 supralabials; 7-8 infralabials; 1 preocular; 2 postoculars; temporal scale formula 2 + 2 + 3.

DISTRIBUTION. — This species is present throughout the country.

CONSERVATION STATUS. — According to the reports of the DFC, 121 living specimens of this species were exported from 2001 to 2005.

REMARK

The recent revision of Trape & Mané (2006a) clarified the taxonomy of the genus *Dasypeltis* Wagler, 1830. However, many specimens from Togo and West Africa have for long be identified as *Dasypeltis scabra*. Werner (1898, 1902), Sternfeld (1908b, 1909: 17), Hulselmans & Verheyen (1970) and Anonymous (2002) mentioned the occurrence of *D. scabra* in Togo. All those specimens cited by these authors should probably now be referred either to *D. confusa* or to *D. gansi*.

Dispholidus typus (Smith, 1829)

MATERIAL EXAMINED. — 9 specimens (GHS-W 0202, Nangbeto, GHS-W 0220, Legbassito, near Lomé, GHS-W 1220, Agave, GHS-Togo 25, T 22, Sodo Zion; GHS-Togo 58, Sodo; T 175, Alédjo; MRAC 29578, Koloko; MRAC 29636, Togoville).

MORPHOLOGY. — TL of our specimens from 1320 mm to 1710 mm; 19 MSR keeled and oblique; 171-192 Ven, smooth; 112-127 Sc; anal divided; 8-9 supralabials; 9-12 infralabials; 1 preocular; 3 postoculars; temporal scale formula 1 + 2 + 2 or 3.

DISTRIBUTION. — This species is widespread in Togo, in the South as well as in the North. Our northernmost specimen is from Alédjo but this species might be present at Bassar and Kara, and in ERI. Its occurrence in Togo had previously been mentioned by Sternfeld (1908b, 1909: 21), Hulselmans & Verheyen (1970), Roman (1984), Spawls & Branch (1995) and David & Ineich (1999).



FIG. 3. — *Dasypeltis fasciata* Smith, 1849, Yo (Agome Yo). Photo by G. Segniabeto.

Dipsadoboa unicolor Günther, 1858

MATERIAL EXAMINED. — No specimen was collected.

DISTRIBUTION. — This species was recorded from Togo by Werner (1898), Sternfeld (1908b, 1909: 18) from the locality of Missaoho, and by Anonymous (2002). According to Chippaux (2006), the distribution of this species is at the subregional levels (Western and Central Africa).

Dipsadoboa underwoodi Rasmussen, 1993

MATERIAL EXAMINED. — No specimen was collected.

DISTRIBUTION. — Rasmussen (1993: 174), Werner (1898), Sternfeld (1908b) (ZMB 13772A-B, 20399A-B, no specific locality) mentioned this species from Togo as *Dipsadoboa unicolor* Günther, 1858. Chippaux (2006) established a subregional level distribution of this species in Western and Central Africa.

Dipsadoboa viridis (Peters, 1869)

MATERIAL EXAMINED. — 1 specimen (MNHN 2008.0278), Sodo Zion.

MORPHOLOGY. — TL of our specimens 470 mm; 17 MSR smooth; 199 Ven, smooth; Sc 49, all single; anal single; 8 supralabials; 11 infralabials; 1 preocular; 1 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — This species occurs mostly in forested areas. It was previously mentioned from Togo by Matschie (1893; specimens ZMB 11246A-B, 13370A, from

Bismarckburg [currently Adele], Werner (1898) and Sternfeld (1908b) ZMB 17499, 21076, 22000, 22001 Togo (no specific locality), according to Rasmussen (1993).

Dipsadoboa weileri (Lindholm, 1905)

MATERIAL EXAMINED. — No specimen was collected.

DISTRIBUTION. — Werner (1898) and Sternfeld (1908b) mentioned this species from Togo as *Dipsadoboa unicolor* Günther, 1858. Rasmussen (1993) indicated that specimens ZMB 13771 (from Togo, no specific locality; Werner 1898 and Sternfeld 1908b) and ZMB 13770B (from Bismarckburg; Werner 1898) are *Dipsadoboa weileri* (Lindholm, 1905). Chippaux (2006) and Anonymous (2002) mentioned the occurrence of this species in Togo. Its regional distribution makes its occurrence in Togo quite certain.

Grayia smithi (Leach, 1818)

MATERIAL EXAMINED. — 3 specimens (ZMB 21986, “Togo” without precise locality; MRAC 29686, MRAC 29688, Missahohe).

MORPHOLOGY. — TL from 1035 to 1520 mm; 17 MSR smooth; 152-177 Ven, smooth; 51 (specimen MRAC 29688) to 98 Sc, paired; anal divided; 7 supralabials; 10-11 infralabials; 1 or 2 preocular; 2 postocular; temporal scale formula 2 + 3.

DISTRIBUTION. — This forest species is present in ER IV. It was recorded from Togo by Werner (1902), Sternfeld (1908b, 1909: 17) and Hulselmans *et al.* (1971).

Hapsidophrys lineatus Fischer, 1856

MATERIAL EXAMINED. — 2 specimens (MRAC 73 14 R 32, Agou; GHS-W 1245, Yo [Agome Yo]).

MORPHOLOGY. — TL 970 and 1095 mm; 15 MSR keeled and oblique; 159 and 165 Ven, keeled; 115 Sc, paired and smooth; anal single; 8-9 supralabials; 9 infralabials; 1 or 2 preoculars; 2 postoculars; temporal scale formula 2 + 2 + 3.

DISTRIBUTION. — This species is largely a forest-dweller as can be deduced from the collection localities. It is known only from ER IV. Previously it had been mentioned from Togo by Sternfeld (1908b: 215, 1909: 15).

Hapsidophrys smaragdinus (Schlegel, 1837)
(Fig. 4)

MATERIAL EXAMINED. — 17 specimens (MRAC 29585, Koloko; MRAC 29626, Togoville; MRAC 29715, Kpalime; MRAC 73017.0042, Agou; MRAC A7036.0016, MRAC A7036.0020, GHS- Togo 40, Sodo Zion; MRAC A7036.0004-0005, GHS-W 0016, GHS-W 0019, GHS- Togo 63, Agave; GHS-W 0061, GHS-W 1238, GHS-W 1253-1254, Yo (Agome Yo); GHS- Togo 23, Sodo).

MORPHOLOGY. — TL from 565 to 1150 mm; 15 MSR keeled and oblique; 154-172 Ven, keeled; 139-160 Sc, paired and keeled; anal divided; loreal subrectangular, longer than high; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is common in the forested area. It is present in the South of the country. Its northern limit is located in Mounts Aledjo. Previously, this species had been cited from Togo by Matschie (1893), Werner (1902), Sternfeld (1908b, 1909: 15), Hulselmans & Verheyen (1970) and Hulselmans *et al.* (1970).

Meizodon coronatus (Schlegel, 1837)

MATERIAL EXAMINED. — 7 specimens (MRAC 29718, Evou, near Atakpame; MRAC 29645, Ebeva; MRAC 29593, MRAC 29599 and MRAC 29604, Tetetou; MRAC 29575, Koloko; GHS-W 1440, Sodo Zion).

MORPHOLOGY. — TL from 170 to 400 mm; 19 MSR, smooth; 169-192 Ven, smooth; 63-74 Sc, paired; anal divided; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — This wide ranging species occurs mainly in savannahs throughout the country. It had previously been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909; from Missahohe, Kete [Kete Kratchi], and Mango), Werner (1929), Hulselmans *et al.* (1970, 1971; from Tetetou and Koloko) and by Roman (1984).

Meizodon regularis Fischer, 1856

MATERIAL EXAMINED. — 10 specimens (MRAC 29549, MRAC 29554, Missahohe; MRAC 29826, Koloko; GHS-W 1065, GHS-W 1088, GHS-W 1426, Sodo Zion; GHS-Togo 09, Sodo; GHS-W 1244, GHS-W 1257, Yo [Agome Yo]; GHS-W 1269, Fazaa).

MORPHOLOGY. — TL from 175 to 800 mm; 19 MSR, smooth; 183-204 Ven, smooth; 62-68 Sc, paired; anal divided; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is mostly present in ER III, IV and V of the country. Previously recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909; from Missahohe), Werner (1929) and Chippaux (2006).

Philothamnus carinatus (Anderson, 1901)

MATERIAL EXAMINED. — 3 specimens (GHS-W 0050, GHS-W 0080, Sodo Zion; GHS-W 1185, Agave).

MORPHOLOGY. — TL from 622 to 643 mm; 13 MSR smooth and oblique; 146-161 Ven, keeled; 87-94 Sc; anal single; 8-9 supralabials; 9-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 2 + 2.

DISTRIBUTION. — First record in Togo. Although it is known only from ER IV of the country, its presence in ER V is likely.

Philothamnus heterodermus (Hallowell, 1857)

MATERIAL EXAMINED. — 12 specimens (MRAC 29674, MRAC 29678, Missahohe; MRAC 29711, Atakpame; MRAC 29713, Kamina; MRAC 73014.0064, Agou; MRAC 29714, Edifou; GHS-W 0023, Agave; GHS-W 0627 and GHS-W 1249, Yo [Agome Yo]; GHS-Togo 49, Sodo; GHS-Togo 51, GHS-Togo 72, Sodo Zion).

MORPHOLOGY. — TL from 240 to 870 mm; 15 MSR smooth and oblique; 153-161 Ven, keeled; 84-87 Sc, paired; anal single; 8-9 supralabials; 9-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 2 + 2 or 3.

DISTRIBUTION. — This species inhabits mostly forests. It occurs in ER IV; however, specimens not yet deposited were recently collected near Aledjo in ER II. Previously, *Philothamnus heterodermus* had been cited from Togo by Matschie (1893), Werner (1902), Sternfeld (1908b, 1909) from Missahohe and Bismarkburg (now Yegue in Adele), Loveridge (1958), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1971), Hughes (1985) and Leaché *et al.* (2006).

Philothamnus irregularis (Leach, 1819)

MATERIAL EXAMINED. — 33 specimens (MNHN 1982.0445-0448, MNHN 1989.0256, MNHN 1989.0186-0187,



FIG. 4. — *Hapsidophrys smaragdinus* (Schlegel, 1837), Agave. Photo by G. Segniagbeto.

MNHN 1989.0189-0193, from Togo without precise locality; MNHN 2006.2191, Lomé, campus of the university; MRAC 29487, Binaparba; MRAC 29508, Niamtougou; MRAC 29710, Atakpame; MRAC A7036.0013, GHS-W 0020, GHS-Togo 30, GHS-Togo 53, Agave; MRAC A7036.0014, GHS-W 0048, GHS-W 1071, GHS-W 1077, GHS-W 1083, GHS-W 1087, GHS-W 1096, GHS-W 1188, GHS-W 1401, Sodo Zion; GHS-Togo 88, Agbanon; GHS-W 0887, Temedja; GHS-Togo 88, Agbanon; T 228, Bafilo; MNHN 1977.0329-0332, Ivory Coast).

MORPHOLOGY. — TL from 570 to 1130 mm; 15 MSR, smooth and oblique; 153-189 Ven, keeled; 99-145 Sc, paired; anal divided; 8-10 supralabials; 9-11 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species has been collected from various localities as well in the south as in the north of the country and from all its ecological regions. Additional specimens not yet deposited were obtained from Aledjo, Huilehui and Fazao. This species has repeatedly been mentioned from Togo by Werner (1898, 1902), Sternfeld (1908b, 1909), Loveridge (1958), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Roman (1984), Hughes (1985) and Chippaux (2006).

Philothamnus nitidus (Günther, 1863)

MATERIAL EXAMINED. — No specimen available.

DISTRIBUTION. — This species was mentioned from Togo by Matschie (1893), Werner (1899), Sternfeld (1908b, 1909: 15; from Kete-Kratchi and Bismarkburg (now Adele)) and Chippaux (2006). The specimens of Sternfeld (1908b) presented 160-161 Ven and a temporal scale formula 1 + 2. It is a forest-dwelling species, occurring in ER IV.

Philothamnus semivariiegatus (Smith, 1847)

MATERIAL EXAMINED. — 13 specimens (MNHN 2006.2287, GHS-W 0005, Yo [Agome Yo]; MRAC 29505, Niamtougou; MRAC 29646, Aledjo; GHS-W 0209, GHS-W 0228, GHS-W 0242, GHS-W 0250, GHS-W 0266, GHS-W 0284, GHS-W 0288, Nangbeto; GHS-W 0276, Lomé; GHS-W 1283, Diguingue; GHS-Togo 46, Agote; GHS-Togo 81, Woume, near Kouma Tchamé).

MORPHOLOGY. — TL from 768 to 1200 mm; 13-15 MSR, smooth and oblique; 171-214 Ven, keeled; 119-144 Sc, paired and strongly keeled; anal divided; 9 supralabials; 9-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 or 2 + 2 + 2 or 3.

DISTRIBUTION. — This species is common in the forested parts of Togo of ER III and V but is also found in other ecological regions. Previously it had been mentioned from Togo by Werner (1902), Sternfeld (1908b, 1909; from “Kete”, now Kete Kratchi but currently in Ghana), Loveridge (1958), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Roman (1984), Hughes (1985) and Leaché *et al.* (2006).

CONSERVATION STATUS. — Two specimens were exported from Togo in 2002 according to reports of the CITES Division of the DFC Togo.

Rhahnophis aethiopissa (Günther, 1862)

MATERIAL EXAMINED. — 1 specimen (MRAC 29717), Agome, near Atakpame.

MORPHOLOGY. — TL 840 mm; 17 MSR smooth and oblique, vertebral row keeled; 166 Ven, keeled; 146 Sc, paired; anal divided; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; 1 temporal.

DISTRIBUTION. — This species is a forest-dweller. On the basis of voucher specimens, Hulselmans *et al.* (1970) and Leaché *et al.* (2006) also mentioned its occurrence in ER IV. Werner (1898), Sternfeld (1908b) and Loveridge (1944) recorded it from Adele (Bismarkburg), Kete Kratchi and Missahohe.

REMARK

This species is sometimes placed in the genus *Thrasops* Hallowell, 1857. In absence of revision of this group of arboreal species, we follow Williams & Wallach (1989) and Pauwels & Vande Weghe (2008) and recognize the validity of the genus *Rhahnophis* Günther, 1862. It should be noted that the specific

nomen *aethiopissa* is not an adjective but a noun in apposition, meaning “an Aethiopian woman”.

Telescopus variegatus (Reinhardt, 1843)

MATERIAL EXAMINED. — 1 specimen (MNHN 2006.0199), Koloko.

MORPHOLOGY. — 19 MSR, smooth and oblique; 216 Ven, smooth; 66 Sc, paired; anal divided; 1 preocular; 2 postoculars; 8 supralabials; 10 infralabials; temporal scale formula 2 + 3 + 3.

DISTRIBUTION. — This species inhabits mainly savannahs but may also be encountered in forested areas. It had been mentioned from Togo by Werner (1898), Sternfeld (1908b, 1909: 17; from Kete-Kratchi, Mago, and Pama) and by Roman (1984). The sole available specimen, collected at Koloko in ER III, does not allow us to establish the distribution of the species in Togo.

Thelotornis kirtlandi (Hallowell, 1844)

MATERIAL EXAMINED. — 7 specimens (MRAC 29730, Sodo; GHS-W 0203, GHS-W 0206, Atakpame; GHS-W 0243, Kpalime; GHS-W 1263, Yo [Agome Yo]; GHS-Togo 43, Agbanon, T 204 Agou [Mont Agou]).

MORPHOLOGY. — TL from 745 to 1400 mm; 19 MSR, keeled and oblique; 176-206 Ven, smooth; 110-114 Sc, paired; anal divided; 7-8 supralabials; 11-12 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This arboreal species is mainly a forest-dweller. It inhabits ER IV but might be present in ER II. Previously, this species had been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909), Loveridge (1944; from Missahohe), Hulselmans *et al.* (1970), Harding & Welch (1980), Welch (1982), Roman (1984), Golay *et al.* (1993), Spawls & Branch (1995) and David & Ineich (1999).

Thrasops occidentalis Parker, 1940

MATERIAL EXAMINED. — 1 specimen (MRAC 29716), Tamedja, Atakpame.

MORPHOLOGY. — TL 675 mm; 19 MSR smooth and oblique; 171 Ven, smooth; 120 Sc; anal divided; 8 supralabials; 9 infralabials; 1 preocular; 3 postoculars; temporal scale formula 1 + 1.

DISTRIBUTION. — *Thrasops occidentalis* is mostly a forest-dwelling species. All specimens recorded from Togo were obtained in ER IV. Sternfeld (1908b) and Werner (1929; as *Thrasops jacksoni* Günther, 1895) collected this species from Missahohe. Loveridge (1944) and Hulselmans *et al.* (1970) mentioned its occurrence in the forested region of the country. This species was also listed in Anonymous (2002).

Family ELAPIDAE Boie, 1827

Dendroaspis jamesoni (Traill, 1843)

MATERIAL EXAMINED. — 1 ♂ (ZMB 28481), Togo, no precise locality.

MORPHOLOGY. — TL 1990 mm; 17 MSR, smooth and oblique; 225 Ven, smooth; 110 Sc, paired; anal divided; 8 supralabials; 9 infralabials; 3 preoculars; 3 postoculars; 1 subocular; temporal scale formula 2 + 2.

DISTRIBUTION. — This species is restricted to forested areas. The forested region between Togo and Ghana would mark the western limit of its range (Rasmussen 1994). Sternfeld (1908b, 1909: 24) mentioned a specimen from Missahohe. Villiers (1975), Harding & Welch (1980), Welch (1982), Roman (1984), Golay *et al.* (1993), Rasmussen (1994), Spawls & Branch (1995), David & Ineich (1999) and Chippaux (2006) also mentioned this species in Togo.

REMARK

Specimen ZMB 28481 is the sole specimen of this species recorded from Togo. In spite of the numerous field surveys that we have realized in ER IV, no further specimens have been collected. This species is probably disappearing in Togo because of the high degree of deforestation in the Togo-Volta Highlands, i.e. the border area of Ghana and Togo, where most of the forests have been highly degraded or destroyed and subsequently transformed into agricultural areas (Rödel & Agyei 2003).

Dendroaspis viridis (Hallowell, 1844)

MATERIAL EXAMINED. — 24 specimens (MRAC A7036.0001, GHS-W 0026-27, GHS-W 0041 and GHS-W 0055, Sodo Zion; MRAC 28289, MRAC 29734, Kpalime; MRAC 29680, MRAC 29689, Missahohe;

MRAC 29455, Badou; MRAC 29733, Akposso [Akposso Plateau]; MRAC 29683, Aledjo; MNHN 1982.455, Togo; GHS-W 0009-10, GHS-W 0040, GHS-W 1292, GHS-Togo 05, GHS-Togo 68, Agave; GHS-Togo 52, Agbanon; GHS-W 1047 Agou; GHS-Togo 82, Togo; GHS-W 0069, Yo [Agame Yo]).

MORPHOLOGY. — TL from 500 to 2180 mm; 13 MSR, smooth and oblique; 210-233 Ven, smooth; 94-127 Sc, paired; anal divided; 7-9 supralabials; 9-11 infralabials; 2 or 3 preoculars; 2 or 3 postoculars; 2 suboculars; temporal scale formula 2 (rarely 1) + 2 + 3.

DISTRIBUTION. — This arboreal species is very common in ER IV and also quite frequently encountered in ER II, III and V. The confirmed northern limit of its range is Aledjo but it might also occur in the region of the Kara, especially in forests of Djamdè and Sarakawa. Sternfeld (1909: 24) recorded this species from Missahohe and Kete-Kratchi, and from South Togo. Sternfeld (1908b, 1909), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Villiers (1975), Harding & Welch (1980), Welch (1982), Roman (1984), Rasmussen (1994), Spawls & Branch (1995), David & Ineich (1999) and Chippaux (2006) have mentioned its presence in Togo.

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 37 living specimens were exported from Togo between 2003 and 2005. In March 2007, we observed 52 specimens in the Mare snake farm, intended to be forwarded to a South African laboratory according to the manager of this farm. These specimens were collected in the vicinity of Tsevie in ER V.

Elapsoidea semiannulata Bocage, 1882

MATERIAL EXAMINED. — 5 specimens (MNHN 1989.0260, campus of the university, Lomé; MRAC 29533, MRAC 29471, Namoudjoga; MRAC 29660, Borgou; MRAC 29482, Payo).

MORPHOLOGY. — TL from 217 to 535 mm; 13 MSR, smooth; 153-164 Ven, smooth; 17-25 Sc, paired; anal single; 7 supralabials; 7 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — On the basis of available voucher specimens, this species is present throughout the country. Previously, it had been mentioned from Togo by Broadley (1971a, 1998), Harding & Welch (1980), Welch (1982), Roman (1984), Golay (1985), Golay *et al.* (1993), Spawls & Branch (1995) and David & Ineich (1999). Sternfeld (1908b: 220, 1909: 23) recorded *Elapechis guentheri* Bocage, 1866, now *Elapsoidea guentheri*, from

Mango (ER I) and Missahohe (ER IV), and Kete-Kratchi, now in Ghana. Subsequently, Hulselmans & Verheyen (1970) and Hulselmans *et al.* (1970, 1971) also included *Elapsoidea guentherii* Bocage, 1866 in the snake fauna of Togo. However, as *E. guentherii* is known from Congo to Angola and Zimbabwe (David & Ineich 1999; Chippaux 2006), we believe that these specimens should be referred to *Elapsoidea semiannulata*.

Naja katiensis Angel, 1922

MATERIAL EXAMINED. — 2 specimens (MRAC 29467, Nanergou; ZMB 22024, Togo, no precise locality).

MORPHOLOGY. — TL from 256 to 780 mm; 24-25 MSR, smooth and oblique; 169-172 Ven, smooth; 57-58 Sc, paired; anal single; 6-7 supralabials; 9 infralabials; 2 preoculars; 2-3 postoculars; temporal scale formula 2 + 3 + 5.

DISTRIBUTION. — *Naja katiensis* inhabits mostly Sudan savannahs in ER I of the country. Previously, it had been mentioned from Togo by Hulselmans *et al.* (1970), Roman (1984), Spawls & Branch (1995), Rasmussen (1995b) and David & Ineich (1999).

Naja melanoleuca Hallowell, 1857

MATERIAL EXAMINED. — 40 specimens (MRAC 29452, MRAC 29460 and MRAC 29463, Badou; MRAC 29561, Fazaou; MRAC 29731, Edifou; MRAC 29743, Atakpame; MRAC 73014.0017, 73014.0062-63, Notsé; MRAC A7036.0008-09, MRAC A7036.0022, GHS-W 0056, GHS-Togo 14, GHS-Togo 90, Sodo Zion; MRAC A7036.0007, GHS-W 0011, GHS-W 0037, GHS-W 0039, GHS-W 1001, GHS-W 1003-04, GHS-W 1184, GHS-W 1186, GHS-W 1201, GHS-W 1223-24, GHS-W 1299-1300, GHS-Togo 83, T 221, Agave; GHS-W 0001, GHS-W 1237, GHS-W 1239, GHS-W 1241-1242, GHS-W 1248, GHS-W 1251, and GHS-W 1287, Yo [Agome Yo], T 192, Alédjo).

MORPHOLOGY. — TL from 420 to 2070 mm; 17-21 MSR, smooth and oblique; 210-223 Ven, smooth; 62-73 Sc, paired; anal single; 7-8 supralabials; 8-9 infralabials; 1 preocular; 2-3 postoculars; temporal scale formula 1 + 2 or 3.

DISTRIBUTION. — This species is more abundant in the forested area of the country (ER IV), although it is common in ER II, III and V and also present in ER I. Sternfeld (1908b, 1909: 23) recorded this species from Missahohe and Bismarkburg (now Adele) and from the

Kete-Kratchi, now in Ghana. It was also mentioned from Togo by Broadley (1968), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Harding & Welch (1980), Roman (1984), Rasmussen (1995a), Spawls & Branch (1995), David & Ineich (1999) and Leaché *et al.* (2006).

REMARK

This species presents two morphs in Togo, namely a “savannah morph” observed in Aledjo (T 192) area and a “forest morph” in ER IV. They differ by the dorsal yellow rings, which are more contrasting in specimens of the savannah morph.

Naja nigricollis Reinhardt, 1843

MATERIAL EXAMINED. — 9 specimens (MNHN 1989.0267, MNHN 1982.0454, “Togo”, without precise locality; MRAC 29496, Aledjo; MRAC 29732, Atakpame; GHS-W 1202, Agave; GHS-W 0282, Lomé; GHS-W 0213, Nangbeto; GHS-W 0003, Yo [Agome Yo], T 211, Huilehui).

MORPHOLOGY. — TL from 390 to 1490 mm; 19-23 MSR, smooth and oblique; 195-207 Ven, smooth; 59-67 Sc, paired; anal single; 6-7 supralabials; 7-9 infralabials; 2 preoculars; 2 or 3 postoculars; temporal scale formula 1 or 2 or 3 + 2 or 3 or + 4.

DISTRIBUTION. — *Naja nigricollis* is present throughout the country in all ecological regions. Sternfeld (1909: 23) recorded it from Bismarkburg (now Adele) and Wegbe in Togo and from Kete-Kratchi in Ghana. It has also been mentioned from Togo by Sternfeld (1908b, 1909), Broadley (1968), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Roman (1984), Spawls & Branch (1995) and David & Ineich (1999).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 12 living specimens were exported from Togo between 2003 and 2005.

Pseudohaje nigra Günther, 1858

MATERIAL EXAMINED. — 4 specimens (GHS-W 1275-77, Sodo Zion; GHS-W 1236, Yo [Agome Yo]).

MORPHOLOGY. — TL from 510 to 1300 mm; 13 MSR, smooth and oblique; 181-188 Ven, smooth; 82-85 Sc, paired; anal single; 7 supralabials; 7-8 infralabials; 1 preocular; 3 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — This species is mostly a forest-dweller. Our voucher specimens were obtained in ER IV. Sternfeld (1908b, 1909: 23) recorded this species from Missaoho. It has also been mentioned from Togo by Hughes (1976), Harding & Welch (1980), Roman (1984), Golay (1985), Golay *et al.* (1993), Spawls & Branch (1995) and David & Ineich (1999).

Family LAMPROPHIIDAE Fitzinger, 1843

Amblyodipsas unicolor (Reinhardt, 1843)

MATERIAL EXAMINED. — 1 specimen (MRAC 29617), Togoville.

MORPHOLOGY. — TL 545 mm; 17 MSR, smooth; 202 Ven, smooth; 22 Sc, paired; anal divided; 6 supralabials; 7 infralabials; no preocular; 1 postocular; 1 anterior temporal, no posterior temporal.

DISTRIBUTION. — A single specimen of this species has been recorded in Togo from ER V. Additional specimens are necessary to precisely describe the Togolese distribution of this otherwise widespread species. Previously it had been recorded from Togo by Sternfeld (1908b, 1909), Loveridge (1944) and Hulselmans & Verheyen (1970).

Aparallactus lunulatus (Peters, 1854)

MATERIAL EXAMINED. — 20 specimens (Congo: MNHN 1916.0263-0265 [no specific locality], MRAC 8506, Yakoma; MRAC 10400, Iswa; MRAC 10952-10954, Karawa; Central African Republic: MNHN 1996.6463-6465, MNHN 1994.3234 [Seko] and MNHN 1992.4655, no specific locality; Kenya: MNHN 1904.0322 and MNHN 1901.0451, no specific locality; Democratic Republic of Congo [DRC]: MRAC 17366, Blakwa; Sudan: MNHN 2001.0141 and 2001.0182; Togo: MRAC 73 09 R 217, Binaparba; MRAC 29607, Bassar).

MORPHOLOGY. — TL from 278 to 310 mm; 15 MSR, smooth; 168 Ven, smooth; 46-47 Sc, all single; anal single; 6-7 supralabials; 7 infralabials; 1 preocular; 1 postocular; 1 temporal.

DISTRIBUTION. — This species inhabits mostly Sudanese savannahs and is thus restricted to ER I and II. Voucher specimens listed here are probably those mentioned by Hulselmans & Verheyen (1970) and Hulselmans *et al.* (1970).

REMARK

Sternfeld (1908a) identified a specimen from Mango (Sansane Mangu) in Togo as *Aparallactus bocagii* Sternfeld, 1908. However, this taxon, now a subspecies of *Aparallactus capensis* Smith, 1849, occurs in southeastern Africa, from Angola to southern RDC and Namibia. Parker (1933) described *Aparallactus liddiardae* from a specimen collected from Jos Plateau in Nigeria. Loveridge (1944: 191) referred the Togolese specimen to *A. liddiardae*. This species was subsequently synonymized with *Aparallactus lunulatus* (Peters, 1854) by de Witte & Laurent (1947). However, these authors pointed out that the synonymies proposed in their paper were provisional and that the various taxa placed in the synonymy of *A. lunulatus* probably deserved a subspecific rank.

Aparallactus lunulatus is widespread in nearly the whole of the savannah belt from Western to Eastern Africa (Chippaux 2006). De Witte & Laurent (1947) stated that *A. lunulatus liddiardae* Parker, 1933, with 170 to 174 ventral scales in Togo, might be the valid name for a western subspecies which would differ by a higher number of ventrals from *Aparallactus lunulatus nigricollaris* Chabanaud, 1916. This latter taxon has 133 to 140 ventrals and is known from Congo to Uganda. Furthermore, West African specimens are larger than those from Eastern Africa.

We compared our specimens of *Aparallactus lunulatus* from Togo with others from Central and East Africa (RCA: Seko, MNHN 1994.3234, MNHN 1996.6463-6465; Sudan: Boma, MNHN 2001.0141, MNHN 2001.0182; Congo: MNHN 1916.263-264; Kenya: MNHN 1901.451, MNHN 1904.322). Specimens from West (Togo) and Central Africa (RCA and Congo) agree very well with the diagnosis of *Aparallactus lunulatus* (Peters, 1854), the type locality of which is Tete, Mozambique. They differ from specimens from Kenya and Sudan by 1) lack of black nuchal collar, 2) specimens from Kenya have a suture between the prefrontal and the 2nd supralabial, which is lacking in specimens from Sudan, and 3) specimens from Kenya have a stouter body than those from Sudan and West Africa. In contrast, variation in the number of ventral scales as compiled by de Witte & Laurent (1947) does not seem to be

sound enough to regard these taxa as full species. It should be underlined that the descriptions provided by Chabanaud (1916) and Parker (1933) agree well with that of *Aparallactus lunulatus* (Peters, 1854).

On this basis and following Loveridge (1944: 191), we refer to *Aparallactus lunulatus* the specimens from Togo identified by Sternfeld (1908b) as *Aparallactus bocagii*. However, the systematic status of these West African populations should be re-evaluated on the basis of an adequate sample from throughout Africa.

Aparallactus modestus (Günther, 1859)

MATERIAL EXAMINED. — 14 specimens (Côte d'Ivoire: MNHN 1992.4286-4289; Togo: GHS-0042, Sodo Zion; GHS-W 1036, GHS-W 1038, GHS-W 1049-50, GHS-W 1058, MRAC A7036.0024, MRAC A7036.0026, T 142, Agou [Mont Agou]; ZMB 10725, Togo, no precise locality).

MORPHOLOGY. — TL from 210 to 640 mm; 15 MSR, smooth; 132-161 Ven, smooth; 19-46 Sc, all single; anal single; 7 supralabials; 7-8 infralabials; 1 preocular; 2 (seldom 1) postoculars; temporal scale formula 0 + 1.

DISTRIBUTION. — This species had been mentioned from Togo by Matschie (1893), Sternfeld (1908b, 1909) and Loveridge (1944) from Adele and Missahohe, as well as from Grand Popo, now in Benin, and Wegbe, now in Ghana. Available specimens suggest that this species occurs in ER III, IV and V of the country.

Atractaspis aterrima Günther, 1863

MATERIAL EXAMINED. — 14 specimens (MRAC 29590, Tetetou; GHS-W-Togo 86, Agave; GHS-W 1039, GHS-W 1045, Agou; GHS-Togo 01, Missahohe; GHS-W 0053, GHS-W 1067-68, GHS-W 1100, GHS-W 1418, GHS-W 1441, Sodo Zion; GHS-W 1259, Yo [Agome Yo], T 132, T 160, Fazao).

MORPHOLOGY. — TL from 325 to 720 mm; 19-21 MSR, smooth; 254-285 Ven, smooth; 18-27 Sc, all single; anal single; 5 supralabials (6 in specimens GHS-W 1039 and GHS-W 1045); 3-5 infralabials; 1 preocular; 1 postocular; 1 very large anterior temporal.

DISTRIBUTION. — This widespread species occurs in all ecological regions of the country. Previously, it had been mentioned from Togo by Sternfeld (1908b, 1909),

Hulselmans & Verheyen (1970), Spawls & Branch (1995), David & Ineich (1999) and Chippaux (2006).

Atractaspis dahomeyensis Bocage, 1887

MATERIAL EXAMINED. — 10 specimens (GHS-W 1082, GHS-W 1272-73, Sodo Zion; GHS-Togo 87, Agote; MNHN 1982.0452, Togo, no precise locality; MRAC 29742, Atakpame; MRAC 73014.0059, Notse, T 213, T 216-217, Huilehui).

MORPHOLOGY. — TL from 392 to 600 mm; 29-31 MSR, smooth; 221-236 Ven, smooth; 23-28 Sc, single anteriorly but paired near the tip of the tail; anal single; 5 supralabials; 5-7 infralabials; 1 preocular; 1 postocular; temporal scale formula 1 (very large) + 2.

DISTRIBUTION. — All specimens were obtained from localities in the forested area of the country. This species might be present in ER II, III and V. Previously, it had been mentioned from Togo by Sternfeld (1908b, 1909), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Roman (1984), Spawls & Branch (1995) and David & Ineich (1999).

Atractaspis irregularis (Reinhardt, 1843)

MATERIAL EXAMINED. — 12 specimens (MRAC 73 13 R 33, MRAC 73011.0088, Missahohe; MRAC A7036.0029, GHS-W 1037, GHS-W 1040, GHS-W 1054, Agou; ZMB 11256, Togo, no locality; GHS-W 1093, GHS-W 1419, GHS-W 1421, GHS-W 1434, Sodo Zion).

MORPHOLOGY. — TL from 240 to 680 mm; 25-27 MSR, smooth; 215-249 Ven, smooth; 24-27 Sc, paired; anal divided; 5 supralabials; 5-7 infralabials; 1 preocular; 1 postocular; 1 large temporal, no posterior temporal.

DISTRIBUTION. — All collect localities are in the forested area of the country. This species is still unknown out of the forests but it might be present in the southern part of ER II and in ER V. Previously it had been mentioned from Togo by Sternfeld (1908b, 1909), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Harding & Welch (1980), Golay *et al.* (1993) and Chippaux (2006).

Chamaelycus fasciatus (Günther, 1858)

MATERIAL EXAMINED. — 2 specimens (ZMB 21975, "Togo"; MRAC 73 14 R 58, Koloko).

MORPHOLOGY. — TL of our specimens from 274 to 415 mm; 17 MSR, scales smooth; 165 and 201 Ven, smooth; 39 and 41 Sc, paired; anal single; 6 supralabials; 7 infralabials; 1 preocular; 2 postoculars; temporal scale formula: 1 + 2 + 3.

DISTRIBUTION. — This species should be present in ER III, IV and V. Matschie (1893), Sternfeld (1908b, 1909 from Missahohe) and Chippaux (2006) recorded it from the forested area of Togo.

Gonionotophis granti (Günther, 1863)

MATERIAL EXAMINED. — 2 specimens (GHS-W 1090, Sodo Zion, T 135, Fazaou).

MORPHOLOGY. — Based on characters of GHS-W 1090: TL 475 mm; 15 MSR, keeled; 171 Ven, smooth; 69 Sc, paired; anal single; 1 subrectangular loreal, longer than high; 7 supralabials; 8 infralabials; 1 preocular; 1 postocular; temporal scale formula 1 + 2.

DISTRIBUTION. — This species inhabits mostly forested areas and was recorded from ER IV. It might be present in the South of ER II. Previously it had been mentioned from Togo by Sternfeld (1908b: 212, 1909: 11) and Loveridge (1939).

Gonionotophis klingi Matschie, 1893

MATERIAL EXAMINED. — 4 specimens (MRAC 29666, Dzogbegan; MRAC 29670, Missahohe; GHS-W 1059-1060, Agou).

MORPHOLOGY. — TL from 375 to 448 mm; 19 MSR, keeled; 168-174 Ven, smooth; 85-97 Sc, paired; anal single; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 or 2 + 2 + 2.

DISTRIBUTION. — The type specimen of this species described by Matschie (1893) was collected at Bismarkburg, currently Yegue, in Adele. This species is largely a forest-dweller occurring in ER IV. It might be present in the southern part of ER II. It had also been recorded from forested areas by Matschie (1893), Werner (1902), Sternfeld (1908b, 1909: 11) from Atakpame, Loveridge (1939), Hulselmans *et al.* (1971) and Leaché *et al.* (2006).

REMARK

Specimen MRAC 29670 has the loreal fused with the preocular. This character was already mentioned by Roux-Estève (1969).

Hemirhagerrhis nototaenia (Günther, 1864)

MATERIAL EXAMINED. — 1 specimen (T 103), Aledjo.

DISTRIBUTION. — Hulselmans *et al.* (1971) mentioned the collection of a specimen of *Hemirhagerrhis* aff. *nototaenia* (locality not given) during the third Belgian zoological mission to Togo. These authors stated that this specimen was to be described soon. To our best knowledge this specimen was never mentioned again. It was probably referable to *H. nototaenia*. This species was also cited from Togo by Roman (1984).

Hormonotus modestus

(Duméril, Bibron & Duméril, 1854)

MATERIAL EXAMINED. — 2 specimens (ZMB 11241, “Togo” without precise locality; MNHN 2006.2197, Sodo Zion).

MORPHOLOGY. — TL 502 mm and 665 mm; 15 MSR smooth and oblique, vertebral row enlarged; 228-245 Ven; 86 Sc, paired; anal single; 9 supralabials; 9 infralabials; 1 preocular; 3 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — This burrowing species occurs in the forested area of Togo. Previously, Matschie (1893), Sternfeld (1909: 13) and Chippaux (2006) had already recorded its occurrence in the country. Specimens mentioned by Sternfeld (1908b, 1909: 13) were collected at Bismarkburg, now Adele.

Lamprophis fuliginosus (Boie, 1827)

(Fig. 5)

MATERIAL EXAMINED. — 57 specimens (MRAC 29476, MRAC 29478, GHS-W 0528, Payo; MRAC 29503, Niamtougou; MRAC 29553, Tomegbe; MRAC 29560, MRAC 29573, T 130, T 134, Fazaou; MRAC 29582, MRAC 29586, Kolokope; MRAC 29609, MRAC 29615-16, MRAC 29619, Togoville; MRAC 29596, MRAC 29600, Tetetou; MRAC 29706, Ezime; MRAC 73014.0028, Agou; GHS-W 0032, GHS-Togo 73, T 225, Agave; GHS-W 1286, T 147, T 152, T 154, Diguingue; GHS-Togo 13, Sodo; MRAC A7036.0002, MRAC A7036.0011-0012, GHS-W 0024, GHS-W 1018-19, GHS-W 1033, GHS-W 1063, GHS-W 1066, GHS-W 1072-3, GHS-W 1076, GHS-W 1097-8, GHS-W 1203, GHS-W 1206-7, GHS-W 1412, GHS-W 1414, GHS-W 1424-5, GHS-W 1430, GHS-W 1433, GHS-W 1437, GHS-Togo 27, and GHS-Togo 41, Sodo Zion; GHS-W 1235, GHS-W 1288, Yo [Agome Yo], T 214, Huilehui; T 233, Bafilo).



FIG. 5. — *Lamprophis fuliginosus* (Boie, 1827), Lomé. Photo by G. Segniabeto.

MORPHOLOGY. — TL from 310 to 935 mm; 28-31 MSR, smooth; 202-248 Ven, smooth; 44-68 Sc; anal single; 8-9 supralabials; 8-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is very common and present in all ecological regions of the country. It occurs in all ecosystems: savannahs, forest, in urbanized areas, and so on. Additional specimens were collected in Aledjo, Fazao and Huilehui. The species had been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909: 11), from Missahohe, Kete (Kete-Kratchi currently in Ghana), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), and Roman (1984). Publications of Trape & Mané (2004, 2006b) and Chippaux (2006) mentioned the presence of this species throughout Western and Central Africa. However, Chirio & Ineich (2006) stated that this nominal taxon is a complex of two species which is in need of a taxonomical revision.

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 30 specimens were exported from Togo in 2005.

REMARKS

The genus is currently under revision by the senior author of this paper; the results will be presented elsewhere. Nevertheless, in Togo and West Africa, the characters of both *Lamprophis fuliginosus* and *Lamprophis lineatus* are quite constant. Both species can be easily separated by the condition of the contact

between the upper part of the preocular and the frontal. In all (57) examined specimens of *L. fuliginosus* from throughout West Africa, the preocular is in broad contact with the frontal, whereas these scales are separated in all (12) examined specimens of *L. lineatus*. On the basis of new characters, it appears that there are more than one species under the name *L. lineatus*, especially in Central Africa.

Lamprophis lineatus
(Duméril, Bibron & Duméril, 1854)

MATERIAL EXAMINED. — 12 specimens (MRAC 74013.0014, Kolokope; MRAC 73014.0026, Agou; ZMB 21104, GHS-W 0629, Missahohe; MRAC A7036.0021, GHS-W 1089, GHS-W 1402, GHS-W 1432, T 209, Sodo Zion; GHS-W 1280, T 148, Diguengue; GHS-W 1296, Agave).

MORPHOLOGY. — TL from 225 to 930 mm; 29-32 MSR, smooth; 217-243 Ven, smooth; 42-66 Sc, paired; anal single; 8 supralabials; 9 infralabials; 1 or 2 preoculars; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species, mainly nocturnal, has been observed in the forested area near water where it feeds on small amphibians and lizards. This snake inhabits forested areas and Guinean savannahs. It is present in ER II, III, IV, and V of the country. Previously, this species had been recorded from Togo by Matschie (1893), Werner (1898, 1902), Sternfeld (1908b, 1909: 11), and from Missahohe, Kete (Kete-Kratchi currently in Ghana), Atakpame and Mango, by Thorpe & McCarthy (1978), Roman (1984), and Leaché *et al.* (2006).

CONSERVATION STATUS. — See under *L. virgatus*.

REMARK

See the comments under *Lamprophis fuliginosus*.

Lamprophis olivaceus (Duméril, 1856)

MATERIAL EXAMINED. — No specimen available.

DISTRIBUTION. — *Lamprophis olivaceus* has been mentioned from Togo by Sternfeld (1908b, 1909: 11), from Missahohe. Chippaux (2006) also cited this species from Togo, probably on the basis of Sternfeld (1908b: 213, 1909). It is mostly a forest dwelling species which is widespread in Western and Central Africa.

CONSERVATION STATUS. — See under *L. virgatus*.

Lamprophis virgatus (Hallowell, 1856)

MATERIAL EXAMINED. — 10 specimens (MRAC 29555, MRAC 29675, Missahohe; MRAC A7036.0028, GHS-W 1046, Agou; MRAC A7036.0015, GHS-W 0045, GHS-W 1084, GHS-W 1086, GHS-W 1205, Sodo Zion; GHS-W 1260, Yo [Agome Yo]).

MORPHOLOGY. — TL from 240 to 860 mm; 23-25 MSR, smooth; 198-216 Ven, smooth, 43-62 Sc, paired; anal single; loreal longer than high; 8 supralabials; 8-10 infralabials; 2, sometimes 1 preoculars; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is mainly a forest-dweller. The northern limit of its range is in the region of Aledjo where new specimens were recently collected. It might also be present in the region of Kara. Previously this species had been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909: 12), Hulselmans & Verheyen (1970), and Hulselmans *et al.* (1971).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 50 live specimens of the genus *Lamprophis* were exported from Togo in 2001 and 2002 but the precise species was not stated.

Lycophidion irroratum (Leach, 1819)

MATERIAL EXAMINED. — 34 specimens (MRAC 29557, Missahohe; MRAC 29707, Koutoukpa; MRAC 29594, Tetetou; MRAC A7036.0023, GHS-W 1043, GHS-W 1048, T 144-145, Agou, GHS-W 1270, GHS-W 1453-4, GHS-W 1456, GHS-W 1458-1460, T 123, T 124-125, Faza; GHS-W 1070, GHS-W 1271, GHS-W 1274, GHS-W 1407-08, GHS-W 1416-17, GHS-W 1427, GHS-W 1431, GHS-W 1435, GHS-W 1439, GHS-W 1444, Sodo Zion; GHS-W 1189, GHS-W 1258, Yo [Agome Yo]; T 195, T 199, Alédjo).

MORPHOLOGY. — TL from 168 to 325 mm; 17 MSR, smooth; 159-184 Ven, smooth; 37-47 Sc; 8-9 supralabials; 9-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is widespread in the forested area but also inhabits the Guinean savannahs of ER III. Previously it has been recorded from Togo by Matschie (1893), Werner (1898, 1902), Sternfeld (1908b, 1909: 11), Hulselmans & Verheyen (1970) and Hulselmans *et al.* (1970).

Lycophidion laterale Hallowell, 1857

MATERIAL EXAMINED. — No specimen available.

DISTRIBUTION. — This forest species was mentioned from Togo by Sternfeld (1908b, 1909: 12) from Missahohe. Chippaux (2006) also cited this species from Togo probably on the basis of Sternfeld (1908b, 1909: 12).

Lycophidion nigromaculatum (Peters, 1863)

MATERIAL EXAMINED. — 5 specimens (MRAC A7036.0027, GHS-W 1042, GHS-W 1044, Agou; GHS-W 1442, Sodo Zion, Tr 138, Kebo-Dzigbe [Mont Agou]).

MORPHOLOGY. — TL from 302 to 480 mm; 17 MSR, smooth; 171-192 Ven, smooth; 41-50 Sc, paired; anal single; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2.

DISTRIBUTION. — First record from Togo. Localities cited in this paper mark the eastern limit of the range of this species. In Togo we found it in the forest area. Leaché *et al.* (2006) recorded this species in the forested area between Togo and Ghana.

Lycophidion semicinatum

Duméril, Bibron & Duméril, 1854

MATERIAL EXAMINED. — 12 specimens (MNHN 1989.0257, "Togo" without precise locality; MNHN 1989.0195, "Togo ou Benin" without precise locality; MNHN 2006.2198, GHS-W 1032, GHS-W 1075, Sodo Zion; MRAC 29592, Tetetou; GHS-W 1298, T 222, Agave; GHS-W 1228, GHS-W 1240, Yo [Agome Yo], T 189, Alédjo).

MORPHOLOGY. — TL from 460 to 670 mm; 17 MSR, smooth; 169-206 Ven, smooth; 37-54 Sc, paired; anal single; 7-8 supralabials; 8-9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species inhabits mainly Guinean savannahs but may also occur in forest. It has been recorded from ER III and IV of Togo by Werner (1898), Sternfeld (1908b, 1909: 12), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970) and Roman (1984). Recent specimens confirm its occurrence in the vicinity of Aledjo in ER II but its presence in ER V is uncertain.



Fig. 6. — *Mehelya guirali* (Mocquard, 1887), Kouma Konda. Photo by G. Segniabeto.

Mehelya crossii (Boulenger, 1895)

MATERIAL EXAMINED. — 8 specimens (MRAC 29639, Kpewa; MRAC 29708, Atakpame; MRAC 29709, Yaokope; GHS-W 0031, GHS-Togo 17, Agave; GHS-Togo 11, Yo [Agome Yo]; GHS-Togo 48, T 206, Sodo Zion).

MORPHOLOGY. — TL from 335 to 1305 mm; 17 MSR keeled, vertebral row enlarged and with two keels; 220-233 Ven, keeled; 52-62 Sc; anal single; 7-9 supralabials; 8-9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is mostly a savannah-dweller but it also occurs in the forested area. It is present throughout the country. Previously it had been recorded from Togo by Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970) and Roman (1984).

Mehelya guirali (Mocquard, 1887)
(Fig. 6)

MATERIAL EXAMINED. — 4 specimens (MRAC 73 14 R 30, Notse [previously Nuatja]; MNHN 1989.0184, “Togo ou Benin”; GHS-Togo 29, Kouma Konda, T 29, Missahohé).

MORPHOLOGY. — TL from 1170 to 1215 mm; 15 MSR keeled, vertebral row enlarged with two keels; 254-259 Ven strongly keeled; 61-67 Sc, paired; anal

single; 7-8 supralabials; 8-9 infralabials; 1 or 2 preoculars; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species was first recorded from Togo by Sternfeld (1908b), from Missahohe, and described as *Simocephalus baumanni* Sternfeld, 1908. It was subsequently synonymized with *Mehelya guirali* by Loveridge (1939). *Mehelya guirali* is mostly a forest-dweller occurring in ER IV. It had been recorded from Togo by Werner (1929) and Roman (1984).

Mehelya poensis (Smith, 1847)

MATERIAL EXAMINED. — 8 specimens (MRAC 29667, Missahohe; GHS-W 1250, GHS 1256, Yo [Agome Yo]; MRAC A7036.0003, GHS-Togo 16, Agave; GHS-Togo 02, Missahohe; GHS-Togo 55, Sodo Zion).

MORPHOLOGY. — TL from 780 to 1305 mm; 15 MSR keeled; 248-256 Ven, keeled; 108-147 Sc, vertebral row enlarged with two keels; anal single; 6-8 supralabials; 8 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is found mainly in forested regions or in savannahs associated with forested areas. It is present in ER IV and V but may occur in ER III. Previously the species had been recorded from Togo by Matschie (1893), Sternfeld (1908b; from Missahohe), Werner (1929), Loveridge (1939), and Hulselmans *et al.* (1970).

Mehelya stenophthalmus (Mocquard, 1887)

MATERIAL EXAMINED. — 2 specimens (MRAC 73 14 R 31, Agou; GHS-W 1279, Diguingue).

MORPHOLOGY. — TL from 620 to 690 mm; 15 MSR keeled, vertebral row enlarged with two keels; 213-216 Ven, keeled; 54 Sc, paired; anal single; 7 supralabials; 7-8 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is mostly a forest-dweller which occurs only in ER IV. Previously, it had been recorded from Togo by Sternfeld (1908b; from Missahohe), Werner (1929) and Loveridge (1939).

Polemon acanthias (Reinhardt, 1860)

MATERIAL EXAMINED. — 3 specimens (MRAC 29550, Kouma Tokpli; GHS-W 1041, Agou; GHS-W 1092, Sodo Zion).

MORPHOLOGY. — TL from 485 to 560 mm; 15 MSR, smooth; 184-186 Ven, smooth; 22-23 Sc, paired; anal single; 7 supralabials; 7 infralabials; 1 preocular; 2 postoculars (only 1 in GHS-W 1041); temporal scale formula 1 + 1.

DISTRIBUTION. — This species is mainly a forest-dweller. It had been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909), Loveridge (1944; from Misahohe), and Hulselmans & Verheyen (1970). Leaché *et al.* (2006) also mentioned the occurrence of the species in the forest area between Ghana and Togo.

Polemon newwiedi (Jan, 1858)

MATERIAL EXAMINED. — No available specimen.

DISTRIBUTION. — In Togo, this species has been mentioned from “Klien Popo”, now Aneho, by Sternfeld (1908a-b, 1909) and Loveridge (1944: 173). Werner (1898; as *Miodon gabonensis*) mentioned from Togo a specimen of *Polemon gabonensis* (Duméril, 1858). The current distribution of this species extends from eastern Nigeria to Congo (Chippaux 2006). It is hence likely that Werner’s specimen should be referred to *Polemon newwiedi*, although another taxon of the same genus cannot be ruled out. This confusion may also apply to the Togolese record of *Polemon collaris* (Peters, 1881) in Werner (1898). This author was merely followed by Sternfeld (1908b, 1909) but Loveridge (1944) doubted about the occurrence of this latter species in Togo.

Prosymna gregerti Mocquard, 1906
(Fig. 7)

MATERIAL EXAMINED. — 1 specimen (MNHN 2006.2190), Mango.

MORPHOLOGY. — TL 273 mm; 15 MSR, smooth; 151 Ven smooth; 35 Sc; anal single; 5 supralabials; 7 infralabials; 1 preocular; 2 postocular; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species inhabits Sudan savannahs (ER I). Previously it had been described from Togo (Mango) by Sternfeld (1908b) as *Prosymna meleagris* var. *collaris* Sternfeld, 1908. This form was subsequently synonymized with *Prosymna meleagris* (Reinhardt, 1843) by Loveridge (1958). Trape & Mané (2006b) revalidated *Prosymna gregerti* Mocquard, 1906 as a valid taxon. This species was mentioned from northern Togo by Villiers (1951) and Villiers & Condamin (2005).



FIG. 7. — *Prosymna gregerti* Mocquard, 1906, Mango. Photo by G. Segniagbeto.

Prosymna meleagris (Reinhardt, 1843)

MATERIAL EXAMINED. — 16 specimens (MRAC 29591, Tetetou; GHS-W 1055, GHS-W 1057, GHS-W 1061, Agou; GHS-W 1064, GHS-W 1403, GHS-W 1411, GHS-W 1428 and GHS-Togo 78, Sodo Zion, T 117-122, Fazao; T 188, T 202, Alédjo).

MORPHOLOGY. — TL from 140 to 273 mm; 15 MSR, smooth; 145-163 Ven smooth; 19-35 Sc; anal single; 5 supralabials; 7-8 infralabials; 1 preocular; 1 postocular; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is widespread throughout the country. Previously it had been mentioned from Togo by Werner (1929), Sternfeld (1908b, 1909: 16; specimens from Bismarkburg, now Yegue in Adele, Mango and Misahohe), Loveridge (1958), Hulselmans & Verheyen (1970) and Roman (1984).

Psammophis lineatus
(Duméril, Bibron & Duméril, 1854)

MATERIAL EXAMINED. — 7 specimens (MRAC 29625, Togoville; MRAC 29502, Niamtougou; MRAC 29659, Borgou; MRAC 29664, Bassar; MRAC 29597, Tetetou).

MORPHOLOGY. — TL from 270 to 905 mm; 17 MSR smooth; 142-151 Ven, smooth; Sc 88-105, paired; anal divided; 8 supralabials; 9 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is present in all regions of the country but it is more common in savannahs. Additional specimens were obtained from the localities of Aledjo and Huilehui. The occurrence of this species in Togo had previously been mentioned by Werner (1902), Sternfeld (1908b: 217, 1909) from Missahohe, Kete (currently in Ghana), Sokode, Mango (Sansane Mango), Loveridge (1940), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970) and Hughes (2004).

Psammophis praeornatus (Schlegel, 1837)

MATERIAL EXAMINED. — 6 specimens (MNHN 2006.2207, Yo [Agome Yo]; MRAC 29658, MRAC 29665, Borgou; MRAC 29464, Aledjo; GHS-W 1010, Sodo Zion; T 227, Bafilo).

MORPHOLOGY. — TL of our specimens from 480 to 640 mm; 15 MSR smooth; 172-197 Ven, smooth; 108-128 Sc, paired; anal divided but entire in specimen MNHN 2006.2207; 8-9 supralabials; 9-10 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — This species is widespread throughout the country but is more common in the savannah area. It had previously been cited from Togo by Sternfeld (1908b, 1909: 21) from Mango, Loveridge (1940) and Hulselmans *et al.* (1970, 1971).

Psammophis elegans (Shaw, 1802)

MATERIAL EXAMINED. — 27 specimens (MRAC 29691, Aledjo; MRAC 29728, Ezime; MRAC 73014.0048, Agou; GHS-W 0036, GHS-W 1005, GHS-W 1182, GHS-W 1291, GHS-W 1294, GHS-Togo 84, Agave; GHS-Togo 65, Agote; GHS-W 0229, Nangbeto; GHS-Togo 77, Sodo; GHS-W 0043, GHS-W 0047, GHS-W 1014-16, GHS-W 1179-80, GHS-W 1204, GHS-Togo 79, Sodo Zion; GHS-W 0062, GHS-W 1178, GHS-W 1181, GHS-W 1230 and GHS-W 1289, Yo [Agome Yo]; T 231, Bafilo).

MORPHOLOGY. — TL from 360 to 1670 mm; 17 MSR, smooth and oblique; 150 to 210 Ven, smooth; 109-172 Sc, paired; anal divided; 9-10 supralabials; 10-11 infralabials; 1 or 2 preoculars; 2 postoculars; temporal scale formula 2 + 2 or 3 + 3.

DISTRIBUTION. — This wide ranging species is known from all regions of the country but it might be more abundant in the forested area. Previously, it had been mentioned from Togo by Matschie (1893), Werner (1902), Sternfeld (1908b) and Loveridge (1940) from

the localities of Atakpame, Bismarckburg (now Adele), Missahohe and Kpalime, and Kete-Kratchi (now in Ghana). Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Roman (1984) and Chippaux (2006) also confirmed the occurrence of this species in the country.

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 55 specimens were exported from Togo in 2001.

Psammophis phillipsii (Hallowell, 1844) (Fig. 8)

MATERIAL EXAMINED. — 32 specimens (MNHN 2006.2285, GHS-W 0025, GHS-W 0029, GHS-W 0044, GHS-W 0051, GHS-W 1069, GHS-W 1080 and GHS-W 1423, Sodo Zion; MRAC A7036.0025, MRAC 73014.0019, Agou; MRAC 29558, MRAC 29687, Missahohe; MRAC 29608, Togoville; MRAC 29685, Borgou; GHS-W 1183, GHS-W 1219 and GHS-W 1221, Agave; GHS-W 1008, Assahoun; GHS-W 0825, Kouma Tokpli; GHS-Togo 44, Kpalime; GHS-Togo 47, Kouma Tchame; GHS-W 0205, Nangbeto; GHS-Togo 10, GHS-Togo 22, Sodo; GHS-W 1229, GHS-W 1233-34, GHS-W 1261, Yo [Agome Yo]; T 150, Diguingué; T 177, Alédjo).

MORPHOLOGY. — TL from 325 mm to 1540 mm; 17 MSR, smooth and oblique; 169-183 Ven, smooth; 84-115 Sc, paired; anal single or divided; 8-9 supralabials; 9-10 infralabials; 1 (sometimes 2) preocular; 2 postoculars; temporal scale formula 1 or 2 + 2 + 3.

DISTRIBUTION. — This species is present in all ecological regions but it is probably more common in the forested area of the country. Additional specimens not yet deposited were obtained from the villages of Aledjo, Huilehui, and Fazao. Previously this species had been mentioned by Werner (1902) and Loveridge (1940) from the localities of Atakpame, Missahohe and Kete-Kratchi, and by Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Roman (1984), Hughes & Wade (2004), Chippaux (2006) and Leaché *et al.* (2006).

Psammophis sibilans (Linnaeus, 1758)

MATERIAL EXAMINED. — 15 specimens (MNHN 2006.2189, MNHN 2006.2196, MNHN 2006.2284, Lomé; MNHN 1989.0185, "Togo ou Benin"; MRAC 29642, Lomé; MRAC 29507, Niamtougou; GHS-W 0210, GHS-W 0212, GHS-W 0267, GHS-W 0269, Nangbeto; GHS-W 0201, Atakpame; T 173, Alédjo; T 229, T 232, T 235.

MORPHOLOGY. — TL from 325 to 1170 mm; 17 MSR, smooth and oblique; 155-178 Ven, smooth; 88-120 Sc, paired; anal divided; 8 supralabials; 9-11 infralabials; 1 preocular; 2 postoculars; temporal scale formula 1 or 2 + 2 + 3.

DISTRIBUTION. — This species occurs throughout the country but is more abundant in ER III and V. Previously, it had been mentioned from Togo by Matschie (1893), Werner (1898, 1902), Sternfeld (1908b, 1909: 20) and Loveridge (1940) from Bismarckburg (now Adele), Kete-Kratchi, and Kantindi, as well as by Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971) and Roman (1984).

Psammophylax togoensis (Matschie, 1893)

MATERIAL EXAMINED. — 27 specimens (Cameroon: MNHN 1972.0151-0153, Wakwa [Ngaoundere]; MNHN 2002.0944 Ghata [Mungo Vill.]; Ivory Coast: MNHN 1977.0420-0429, MNHN 1990.4777 and MNHN 1995.9508, Lamto; Guinea: MNHN 1904.421, no specific locality; DRC [Democratic Republic of Congo]: MRAC 20445 [type of *Rhamphiophis garambensis* de Witte, 1959], Gangala; MRAC 30785-30790, National Park of Garamba; Togo: ZMB 13249, ZMB 11237 and ZMB 13828, no specific locality; no locality: MNHN 1990.4771).

MORPHOLOGY. — TL from 232 to 686 mm; rostral scale very prominent and well visible from above; 17 MSR, smooth; 170-181 Ven, smooth; 57-72 Sc, paired; anal divided; 7-8 supralabials; 9 infralabials; 2 preoculars; 2 postoculars; temporal scale formula 2 + 3.

DISTRIBUTION. — Very little is known on the status and distribution of this taxon. It was described by Matschie (1893) from Togo without a precise locality as *Rhamphiophis togoensis*. Werner (1898), Sternfeld (1908b), Roman (1984) and Chippaux (2006) also mentioned its presence in Togo. However, the lack of preserved specimens with a precise locality makes it impossible to describe exactly the distribution of this subspecies and the evaluation of its taxonomic status.

REMARK

Broadley (1971b) and Chirio & Ineich (1991) maintained *R. acutus togoensis* as a subspecies of *Rhamphiophis acutus* (Günther, 1888). We compared the characters of specimens referred to the subspecies *R. acutus togoensis* to those of the subspecies *Rhamphiophis acutus acutus* on the basis of the following specimens: Angola: BMNH 1945.1.2.81, Pungo Andongo; Congo: MNHN 1896.0069; Gabon (un-



FIG. 8. — *Psammophis phillipsii* (Hallowell, 1844), Sokode. Photo by G. Segniabeto.

certain according to Pauwels & Vande Weghe 2008): MNHN 1933.0170; RDC: MRAC 18611-18615, Mont Katanga. Results are presented in Table 2.

In spite of the limited sample of the taxon *acutus* available to us, we can separate *Psammophylax acutus* (Günther, 1888) from *Psammophylax togoensis* (Matschie, 1893) both on the basis of constant morphological characters, such as the presence of ventrolateral stripes, and of their geographical distribution. The non-parametric Mann-Whitney *U* test, implemented in SPSS 16.0 to compare the difference between the two species in the “BL/TaL” variable, shows a significant difference between the two samples (Mann-Whitney *U* test: $\chi^2 = 31.00$; $P = 0.03$; $P < 0.05$). Based on these results, we follow Chirio & Lebreton (2007) in considering the taxon *togoensis* to be a valid species. Recently, *Rhamphiophis acutus* was referred to the genus *Psammophylax* Fitzinger, 1843 by Kelly *et al.* (2008).

Rhamphiophis oxyrhynchus (Reinhardt, 1843)

MATERIAL EXAMINED. — 9 specimens (MNHN 1982.0449, MNHN 1989.0254, MNHN 1989.0265, “Togo”; MRAC 29495, Aledjo; MRAC 29559, Lomé; GHS-W 0262, Nangbeto, T 185, T 194, Alédjo; T 212, Huilehui).

TABLE 2. — A comparison of morphological characters between *Psammophylax acutus* (Günther, 1888) and *P. togoensis* (Matschie, 1893). Abbreviations: **BL**, body length, from the tip of snout to vent; **TaL**, tail length, from vent to the tip of the tail; **x**, mean \pm SD.

Characters	<i>Psammophylax acutus</i>	<i>Psammophylax togoensis</i>
	n = 6	n = 24
BL/TaL	3.96-4.54	2.93-4.76
	x = 4.26 \pm 0.22	x = 3.92 \pm 0.43
Preoculars	1 (3 specimens) or 2 (5 specimens)	Constant : 2
Postoculars	Constant : 2	Constant : 2
Temporal scale formula	1 + 3 (1 specimen) or 2 + 3 (7 specimens)	2 + 3 (24 specimens) or 1 + 3 (3 specimens)
Ventrals	163-190	170-188
Subcaudal Scales	54-66	57-72
Black ventrolateral stripes	Absent	Present
Habitats	Forest	Savannahs
Geographic distribution	Gabon (uncertain), Angola, Congo, southern Democratic Republic of Congo, Rwanda, Burundi, western Tanzania, Angola, Zambia, northern Malawi	Guinea, Ivory Coast, Ghana, Togo, Cameroon, RCA, southern Sudan, northern Democratic Republic of Congo, western Uganda

MORPHOLOGY. — TL from 450 to 1220 mm; rostral scale very prominent and clearly visible from above; 17 MSR, smooth; 170-197 Ven, smooth; 84-105 Sc, paired; anal divided; 8 supralabials; 10-11 infralabials; 1 or 2 preoculars; 2 postoculars; temporal scale formula 1 or 2 + 3 or 4.

DISTRIBUTION. — *Ramphiphis oxyrhynchus* had previously been mentioned from Togo by Sternfeld (1908b), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), and Roman (1984). This species is present in all ecological regions of the country but, on the basis of recently collected specimens, it seems to be more common in ER II along the Aledjo Mountain range.

Scaphiophis albopunctatus Peters, 1870

MATERIAL EXAMINED. — 1 ♀ (MRAC 73 14 R 16), Agou.

MORPHOLOGY. — TL 1020 mm; rostral scale very prominent; 22 MSR, smooth; 200 Ven, smooth; 60 Sc, paired; anal divided; 4 loreals arranged in two rows; 5 supralabials; 8 infralabials; 2 preoculars; 3 postoculars; 2 suboculars; 4 or 5 anterior temporals.

DISTRIBUTION. — The sole specimen examined, from Agou at the limit between ER III and IV, does not allow us to define the distribution of this species in Togo. Pending the collection of additional specimens, we consider it to be present in ER III and IV. The species was cited from Togo by Broadley (1994) from Agou, Atakpame, Ezime and Tohou.

Family LEPTOTYPHLOPIDAE Stejneger, 1891

Leptotyphlops bicolor Jan, 1860

MATERIAL EXAMINED. — 7 specimens (GHS-W 1094, Sodo Zion; T 97-101, Fazao; T 104, Alédjo; T 146, Agavé).

MORPHOLOGY. — Characters of GHS-W 1094: TL 115 mm; 14 MSR, smooth; 265 scales on a longitudinal row between the parietals and the tip of the tail.

DISTRIBUTION. — Additional specimens not yet deposited were obtained from Fazao and Aledjo (Aledjo Kadara). This species is thus present in ER II and IV but may also occur in other ecological regions of the country. Previously it had been mentioned from Togo by Matschie (1893), Sternfeld (1908b, 1909), Hulselmans & Verheyen (1970) on the basis of specimens collected at Kolokope in ER III. Trape & Mané (2006b) provided a regional distribution of this species.

Leptotyphlops narirostris (Peters, 1867)

MATERIAL EXAMINED. — 5 specimens (Alédjo, Tr 105-109).

DISTRIBUTION. — First record from Togo. These five specimens were collected at Alédjo Kadara (ER II). According to Chirio & Lebreton (2007), this species of dry forests and wet savannahs is distributed in West and Central Africa. Additional collection would allow us to establish the distribution of the species in Togo. However, results obtained during the field work suggest that the occurrence of this species in ER I, III and IV is likely.

Leptotyphlops sundevalli (Jan, 1862)

MATERIAL EXAMINED. — No available specimen.

DISTRIBUTION. — *Leptotyphlops sundevalli* was mentioned from Togo by Sternfeld (1909: 8; as *Glauconia sundevalli* Jan, 1862) from specimens collected at Missahohe, and Hughes & Barry (1969).

Sternfeld (1908b, 1909: 8; as *Glauconia conjuncta* Jan, 1861) also mentioned the presence in Togo of *Leptotyphlops conjunctus* (Jan, 1861), a valid species known from Southern Africa. Pending the re-examination of specimens obtained by Sternfeld, we cannot ascertain the identification of this specimen, which may be *Leptotyphlops bicolor*, or *L. sundevalli* or even another taxon.

Family NATRICIDAE Bonaparte, 1840

Afronatrix anoscopus (Cope, 1861)
(Fig. 9)

MATERIAL EXAMINED. — 10 specimens (MNHN 2006.2201-2202, GHS-W 0015, and GHS-Togo 07, Agave; GHS-W 0626, GHS-W 0689, Yegue; GHS-W 1281, Diguingue; GHS-Togo 34, GHS-Togo 64, Agote, T 207, Sodo-Zion).

MORPHOLOGY. — TL of our specimens between 160 and 750 mm; 20-22 MSR, scales keeled; 140-148 Ven; 51-81 Sc, paired; anal divided; 8 or 9 supralabials; 9-11 infralabials; 2 preoculars; 2 postoculars; 2 or 3 suboculars; temporal scale formula: 1 + 2 + 3 or 4. We have examined a specimen (GHS-W 0015) with the anal entire, which is not a character diagnostic of this species.

DISTRIBUTION. — This species is largely aquatic. It can often be seen hunting amphibians on the banks of streams in forested areas. This species, very common in ER II and IV, had previously been mentioned from forested areas of Togo by Werner (1902), Sternfeld (1908b, 1909: 11; from Missahohe and Atakpame), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971) and Leaché *et al.* (2006).

Natriciteres fuliginoides (Günther, 1858)

MATERIAL EXAMINED. — No available specimen.

DISTRIBUTION. — This species has been mentioned from Togo by Werner (1902), Sternfeld (1908b, 1909: 10; from Missahohe) and Loveridge (1958). According to Chippaux (2006) *N. fuliginoides* is indeed present in Togo. It was also cited in Anonymous (2002).



FIG. 9. — *Afronatrix anoscopus* (Cope, 1861), Akloa. Photo by G. Segniagbeto.

Natriciteres olivacea (Peters, 1854)

MATERIAL EXAMINED. — 4 specimens (GHS-W 1099, GHS-W 1429, GHS-W 1443, GHS-1445, Sodo Zion).

MORPHOLOGY. — TL from 250 to 320 mm; 19 MSR, smooth; 142-155 Ven, smooth; 65-88 Sc, paired; anal divided; 8 supralabials; 9-10 infralabials; 1 preocular; 3 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — The distribution of this species in Togo remains poorly known. The sole precise locality is Sodo Zion, in the Akposso. Sternfeld (1908b, 1909) recorded it from Missahohe. This species might be present in ER III and V. Its occurrence in Togo was also mentioned in Anonymous (2002) and Chippaux (2006).

Natriciteres variegata (Peters, 1861)

MATERIAL EXAMINED. — 24 specimens (MRAC 29548, MRAC 29551, MRAC 29668 and MRAC 29679, Missahohe; MRAC A7036.0030, GHS-W 1053 and GHS-W 1056, T 140-141, T 143, Agou; GHS-W 0052, GHS-W 1406, GHS-W 1420, GHS-W 1422, GHS-W 1436, GHS-W 1438, and GHS-W 1446, Sodo Zion; GHS-Togo 37, GHS-Togo 89, T 89, Sodo; T 126-127, Fazao, T 155, Diguingue; T 201, Alédjo).

MORPHOLOGY. — TL from 125 to 380 mm, 15 MSR, smooth; 130-139 Ven, smooth; 66-76 Sc; 8 supralabials;

9 infralabials; 1 or 2 preoculars; 2 or 3 postoculars; temporal scale formula 1 + 2 + 3.

DISTRIBUTION. — All known localities are in forested areas. It may also occur in savannahs and may be present in ER III and V. Previously it had been recorded from Togo by Matschie (1893), Sternfeld (1908b, 1909; from Missahohe and Kete-Kratchi), Loveridge (1958), Chippaux (2006) and Leaché *et al.* (2006).

Family PYTHONIDAE Fitzinger, 1826

Python regius (Shaw, 1802)

MATERIAL EXAMINED. — 12 specimens (GHS-W 0072, Legbassito [near Lomé]; GHS-Togo 08, GHS-Togo 36, Agbanon; MRAC A7036.0010, GHS-W 1216-1217, GHS-Togo 03, GHS-Togo 31, Togo 32, Agavé; GHS-Togo 19, Kuma-Tsamé; GHS-Togo 24, GHS-Togo 60, Sodo Zion).

MORPHOLOGY. — TL from 420 to 1178 mm; 53-55 MSR, scales smooth; 197-206 Ven; 31-36 Sc, paired; anal single; 3-4 loreals, 11-13 supralabials; 14-15 infralabials and 4 anterior temporals.

DISTRIBUTION. — This species is very common throughout the country, especially in the South. The Ewe people consider it to be the embodiment of a divinity. It is abundant around Lake Togo and in the Mono. This species is as common in the forested areas of ER IV as in the Guinean savannahs where it is the most frequently encountered. Visual observations were obtained in the South as well as in the North. Recorded morphological characters on collected specimens are identical with those of Sternfeld (1908b, 1909: 9), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Villiers (1975), Roman (1984), Chippaux (2006), Leaché *et al.* (2006) and Trape & Mané (2006b).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, the incredibly high number of 212 093 living specimens were exported out of Togo between 2001 and 2005.

Python sebae (Gmelin, 1789)

MATERIAL EXAMINED. — 5 specimens (ZMB 23836, 23802, “Togo”; ZMB 13804, “Togo, Kete Kratchi”, currently in Ghana; GHS-W 1267-1268 [juveniles, TL 755 and 760 mm], Tovegan).

MORPHOLOGY. — 77-86 MSR, scales smooth; 271-273 Ven, smooth; 59-61 Sc, paired; anal single; 3-4 loreals;

11-13 supralabials; 13-15 infralabials; 2 preoculars; 2 postoculars; 3 suboculars and 5 anterior temporals.

DISTRIBUTION. — Although the species occurs throughout the country, it is more common in the forested area and in the South around the Mono and Lake Togo. It had previously been recorded from Togo by Sternfeld (1908b, 1909: 9), Werner (1898), Hulselmans *et al.* (1970), Villiers (1975), Roman (1984), Chippaux (2006) and Trape & Mané (2006b).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo 3293 living specimens were exported between 2001 and 2005.

Family TYPHLOPIDAE Gray, 1825

Letheobia crossi (Boulenger, 1893)

MATERIAL EXAMINED. — 2 specimens (IRD 92-T, Fazao, IRD 102-T, Alédjo [Alédjo Kadara]).

MORPHOLOGY. — Morphological characters of these specimens were checked by Youssof Mané and appeared in Trape & Segniabeto (2008).

DISTRIBUTION. — First record from Togo. Fazao and Alédjo, both in ER II, are the sole localities recorded in Togo for this species. Previously, this species was considered to be endemic to Nigeria (Roux-Estève 1974).

Typhlops lineolatus Jan, 1863

MATERIAL EXAMINED. — 4 specimens (GHS-W 1051-52, GHS-W 1062, T 137, village of Kebo Dzigbe, Agou [Mont Agou]).

MORPHOLOGY. — Total length 175-395 mm, 24 MSR, smooth; 300-326 scales on a longitudinal row between the parietals and the tip of the tail; 6-8 Sc.

DISTRIBUTION. — First record from Togo. This species is known only from the region of Agou at the limit between ER III and IV.

Typhlops punctatus (Leach *in* Bowdich, 1819)

MATERIAL EXAMINED. — 32 specimens (MNHN 2006.2293-2297, GHS-W 0028, GHS-Togo 08, GHS-Togo 70, GHS-Togo 74-76, GHS-Togo 85, Agave;

MNHN 2006.2292, GHS-W 1231, Yo [Agome Yo]; GHS-Togo 69, Sodo; GHS-W 1409, GHS-W 1448, GHS-Togo 56, Sodo Zion, T 91, T 110-115, T 136, T 156, T 168, Fazaou; T 219-220, Huilehui, T 196, Alédjo, T 139, Agou [Mont Agou].

MORPHOLOGY. — TL from 200 to 420 mm; 30-33 MSR, smooth and straight; 377-432 scales on a longitudinal row between the parietals and the tip of the tail.

DISTRIBUTION. — This species is present throughout the country. Specimens from ER I, IV and V have been mentioned by Matschie (1893), Werner (1898, 1902), Sternfeld (1908b, 1909: 8), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971) and Leaché *et al.* (2006).

Family VIPERIDAE Opperl, 1811

Atheris chlorechis (Pel, 1851)

(Fig. 10)

MATERIAL EXAMINED. — 1 specimen (GHS-W 1035), Badou.

MORPHOLOGY. — TL 410 mm; 33 MSR, keeled; 153 Ven, smooth; 55 Sc, paired; anal single; 17 scales surrounding the eye; 12 interorbital scales on upper head surface; 12 supralabials; 11 infralabials.

DISTRIBUTION. — This species is essentially a forest-dweller. It has previously been mentioned from Togo by Sternfeld (1908b, 1909: 26), Harding & Welch (1980), Golay *et al.* (1993), David & Ineich (1999), Anonymous (2002), Ernst & Rödel (2002) and Chippaux (2006).

Atheris squamigera (Hallowell, 1854)

MATERIAL EXAMINED. — No available specimen.

DISTRIBUTION. — Werner (1898) recorded four specimens of this species from Togo. Ernst & Rödel (2002) confirmed the presence of this species in Togo on the basis of a specimen deposited in ZMB (ZMB 13777) and collected in "Togo" (no specified locality). If it really originates from the country as currently defined, this specimen would represent the westernmost locality of this arboreal viper which is otherwise characteristic of the forests of Central Africa. Additional collection would allow us to confirm the occurrence of this species within the modern borders of Togo.



FIG. 10. — *Atheris chlorechis* (Pel, 1851), Badou. Photo by G. Segniabeto.

Bitis arietans (Merrem, 1820)

MATERIAL EXAMINED. — 16 specimens (MNHN 1989.0134, MNHN 1989.0259, MNHN 1989.0263, "Togo", no precise locality; GHS-W 0208, Kolokope; GHS-W 0566, N'Gambi; GHS-W 1225, GHS-Togo 04, Agave; MRAC 29574, MRAC 29579, Kolokope; MRAC 29598, Tetetou; MRAC 29633, Togoville; MRAC 29737, Evou; MRAC 29738, Temedja; MRAC 29739, Kpalime; T 198, Alédjo; T 230, Bafilo).

MORPHOLOGY. — TL from 260 to 1047 mm; 29-34 MSR, keeled; 135-141 Ven, smooth; 19-28 Sc, paired; anal single; 14-15 supralabials; 15-16 infralabials; 14-15 scales surrounding the eye.

DISTRIBUTION. — This species inhabits savannahs and is present throughout the country. Previously it had been mentioned from Togo by Werner (1898), Sternfeld (1908b, 1909: 26), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Roman (1984), Spawls & Branch (1995) and David & Ineich (1999).

Bitis nasicornis (Shaw, 1802)

MATERIAL EXAMINED. — 1 juvenile (MNHN 1989.0194), "Togo ou Benin", no locality.



FIG. 11. — *Bitis rhinoceros* (Schlegel, 1855), Yo (Agome Yo). Photo by G. Segniabeto.

MORPHOLOGY. — TL 253 mm; 36 MSR, keeled; 129 Ven, smooth; 31 Sc, paired; anal single; 17 supralabials; 17 scales surrounding the eye; 16 infralabials.

DISTRIBUTION. — This species is a forest-dweller present only in ER IV. It has been mentioned from Togo by Harding & Welch (1980), Roman (1984), Spawls & Branch (1995) and David & Ineich (1999).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 20 living specimens were exported from Togo in 2005. The first author observed seven live specimens (5 adults, 2 juvenile snakes) in the Mare Snake farm in June 2007, all from Badou. These specimens were intended for the pet trade.

Bitis rhinoceros (Schlegel, 1855)
(Fig. 11)

MATERIAL EXAMINED. — 13 specimens (ZMB 19562, South Togo; ZMB 22007, MRAC 62412, “Togo”, no precise locality; ZMB 22006, Missahohe; MRAC 29454, MRAC 29456, Badou; MRAC 29741, Atakpame; GHS-W 0224, Diguingue; GHS-W 1285, GHS-W 1290, GHS-Togo 80, Yo [Agome Yo]; GHS-W 1293, Agave; GHS-Togo 35, Agbanon).

MORPHOLOGY. — TL from 265 to 725 mm; 36-40 MSR, keeled; 130-145 Ven, smooth; 18-27 Sc, paired; anal single; 14-15 supralabials; 18-19 scales surrounding the eye; 16-17 infralabials.

DISTRIBUTION. — This species is mostly found in forest. It has been recorded only in ER IV of the country.

REMARK

Bitis rhinoceros was long regarded as a synonym or a subspecies of *Bitis gabonica* (Duméril, Bibron & Duméril, 1854). Both taxa were separated at the species level by Lenk *et al.* (1999) on the basis of molecular analyses. *Bitis gabonica* has largely been mentioned from forested areas of Togo by Sternfeld (1908b, 1909: 25), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970), Harding & Welch (1980), Roman (1984), Rasmussen (1995c), Spawls & Branch (1995) and David & Ineich (1999). Dorandeu (1991) mentioned this taxon as *Bitis gabonica rhinoceros*. All specimens of “*Bitis gabonica*” from Togo examined by us are indeed referable to *Bitis rhinoceros*. On the basis of the ranges of both species given in Chippaux (2006), we believe that all literature mentions from Togo refer indeed to *Bitis rhinoceros*.

Causus maculatus (Hallowell, 1842)

MATERIAL EXAMINED. — 59 specimens (MNHN 1989.0253, MNHN 1989.0266, MNHN 1982.0456-60, MRAC 29692, “Togo”, no precise locality; ZMB 64192, MRAC 29676, MRAC 28694, Missahohe; GHS-W 0006, GHS-W 0013-14, GHS-W 1212-15, GHS-W 1218, GHS-W 1222, GHS-W 1226-1227, T 224, Agave; GHS-W Togo 62, GHS-W Togo 67, Agbanon; GHS-W 0214-15, MRAC 29735, Atakpame; GHS-W 1282, Diguingue; GHS-W 1211, GHS-Togo 15, GHS-W Togo 26, GHS-W Togo 54, Sodo Zion; GHS-W 0064, GHS-W 0067, GHS-W 0070, GHS-W 1232, GHS-W 1247, GHS-W 1252, GHS-W 1262, GHS-Togo 12, GHS-Togo 20, Yo [Agome Yo]; MRAC 29661, Borgou; MRAC 29647, T 171, Aledjo; MRAC 29643, MRAC 29515, MRAC 29534, MRAC 29544, Namoudjoga; MRAC 29621, Togoville; MRAC 29584, Kolokope; MRAC 29506, Niamtougou; MRAC 29490, Binaparba; MRAC 29468, Nanergou; MRAC 29461, Badou; MRAC 28291, Kpalime; MRAC 73014.0033, MRAC 73014.0053, Agou; T 129, Fazao).

MORPHOLOGY. — TL from 135 to 676 mm; 18-20 (usually 19) MSR, smooth and oblique; 129-144 Ven, smooth; 17-26 Sc, paired; anal single; 6-7 supralabials; 8-11 infralabials; 2 (rarely 1) preoculars; 2 postoculars; 2 suboculars; temporal scale formula 2 + 2 + 3.

DISTRIBUTION. — This species is widespread throughout the country, where it inhabits both savannahs and forested areas. *Causus maculatus* had previously been mentioned

from Togo by Hughes (1978), Roman (1984), de Masary (1993), Spawls & Branch (1995), David & Ineich (1999) and Leaché *et al.* (2006). However, specimens of *Causus rhombeatus* (Lichtenstein, 1823) were cited from Togo by Werner (1898), Sternfeld (1908b, 1909: 24), Hulselmans & Verheyen (1970) and Hulselmans *et al.* (1970). According to the ranges of these species (see Hughes 1978), they should be referred to as *Causus maculatus*.

Echis ocellatus Stemmler, 1970

MATERIAL EXAMINED. — 35 specimens (MNHN 2006.2194, Sabiegou; MNHN 2006.2195, N'Gambi; GHS-W 0248, Kolokope; MRAC 29473, Nanergou; MRAC 29477, MRAC 29479, Payo; MRAC 73014.0047, Agou; MRAC 29649, MRAC 29653-54, Borgou; MRAC 29510, MRAC 29520, MRAC 29525, MRAC 29539, Namoudjoga; MRAC 29498-99, Niamtougou; MRAC 29497, T 170, T 180, T 182-187, T 190, T 200, Aledjo; MRAC 29485, Kara, T 157, T 161-167, T 169, Fazao).

MORPHOLOGY. — TL from 155 to 342 mm; 26-30 MSR, keeled; 142-156 Ven, smooth; 28-32 Sc, single; anal single; 10 supralabials; 14-15 scales surrounding the eye; 9-11 infralabials.

DISTRIBUTION. — This species has a wide distribution in West Africa. In Togo, it is most common ER I and II. Previously it has been mentioned from Togo by Werner (1898), Sternfeld (1908b, 1909: 26; from Bismarkburg [now Adele], Mango, South Togo, and from Kete-Kratchi, in fact now in Ghana), Hulselmans & Verheyen (1970), Hulselmans *et al.* (1970, 1971), Hughes (1976), Harding & Welch (1980), Cherlin (1983), Roman (1984), Gasperetti (1988), Golay *et al.* (1993), Spawls & Branch (1995) and David & Ineich (1999).

CONSERVATION STATUS. — According to reports of the CITES Division of the DFC Togo, 112 live specimens were exported from Togo between 2003 and 2005.

DISCUSSION

SPECIES NEW FOR TOGO

The results of this study allow us to add seven new species to the snake fauna of Togo: *Calabaria reinhardtii*, *Hapsidophrys lineatus*, *Lycophidion nigromaculatum*, *Philothamnus carinatus*, *Leptotyphlops cf. narirostris*, *Letheobia crossi* and *Typhlops lineolatus*. All specimens of these species new to the country

were obtained in the forested area, with the exception of those of *Letheobia crossi* which were obtained in localities belonging to ER II. Additional collections in the forested parts of the country (ER III and IV) are necessary to improve our knowledge of the Togolese snake fauna. The survey of the Togolese snake fauna being still in its preliminary stages, the list will undoubtedly increase as more specimens are collected.

SPECIES PROBABLY PRESENT IN TOGO

On the basis of data in Villiers (1975), Roman (1980, 1984), Chippaux (2006), Trape & Mané (2006b), Leaché *et al.* (2006) and Ullenbruch *et al.* (2010), we can establish a list of eight additional species which are likely to occur in Togo. Species of this list should be searched for in priority. All of them are largely present in the West African subregion, as follows: *Bothrophthalmus lineatus* (Peters, 1863), *Dipsadoboa brevirostris* Sternfeld, 1908, *Philothamnus heterolepidotus* (Günther, 1863), *Atractaspis corpulenta* (Hallowell, 1854), *Aparallactus lineatus* (Peters, 1870), *Polemon barthii* Jan, 1858, *Dendroaspis polylepis* Günther, 1864, *Pseudohaje goldii* (Boulenger, 1895) and *Causus lichtensteini* (Jan, 1859). Most of these species are forest-dwellers.

BIOGEOGRAPHY OF TOGOLESE SNAKE SPECIES

Togo hosts a very diverse snake fauna. The diversity of habitats allowed Ern (1979) to recognize five ecological regions from the South to the North. This ecological diversity is at the origin of the faunal richness. Some snake species are restricted to one particular ecological region, although most species are present throughout the country. As a rule, ecological region IV, which covers the forested part of the country, is the richest in snake diversity (Fig. 12).

Forest species

Forest species are mainly those inhabiting ER IV of the country. Among them we include *Calabaria reinhardtii*, *Dasypteltis fasciata*, *Gonionotophis klingi*, *Hapsidophrys lineatus*, *Hormonotus modestus*, *Lycophidion irroratum*, *Lamprophis virgatus*, *Lamprophis olivaceus*, *Lycophidion nigromaculatum*, *Mehelya guirali*, *Mehelya stenophthalmus*, *Philothamnus*

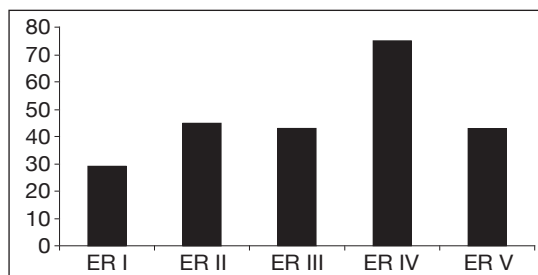


FIG. 12. — Distribution of 90 snake species of Togo by ecological region (ER).

carinatus, *Philothamnus heterodermus*, *Philothamnus heterolepidotus*, *Philothamnus nitidus*, *Rhamnophis aethiops*, *Atractaspis irregularis*, *Polemon acanthias*, *Dendroaspis jamesoni*, *Dendroaspis viridis*, *Pseudohaje nigra*, *Atheris chlorechis*, *Bitis rhinoceros*, *Bitis nasicornis*, and so on. These species are typical inhabitants of the forest systems of Western and Central Africa. As a rule, forested areas represent a highly favourable habitat for snakes, a factor which explains their high diversity. However, many species inhabiting savannahs are also quite common in the forested regions. This abundance of savannah dwelling species could result from the transformation of Togolese forest ecosystems into savannahs due to the intense exploitation of tree species. This phenomenon could explain both the diversity of species and the abundance of specimens in ER IV.

Species of the Sudanese savannahs

This category includes those species present only in ecological region I. It includes *Gongylophis muelleri*, *Bamanophis dorri*, *Hemirhagerrhis nototaenia*, *Aparallactus lunulatus*, *Naja katiensis*, and so on. Besides these typical species, other more widespread taxa are also very abundant in this region, such as *Psammophis lineatus*, *Elapsoidea semiannulata*, *Echis ocellatus*, and so on.

Species of the Guinean savannahs

These species, typical inhabitants of African Guinean savannahs, present a wide distribution over the whole of the ecological regions of the country. They are also present in Sudanese savannahs and even frequently found in the forested region. This

latter occurrence is one of the reasons of the high specific diversity of ER IV. Most species occurring in Togo belong to this category, such as *Python regius*, *Afronatrix anoscopus*, *Crotaphopeltis hotamboeia*, *Psammophis praeornatus*, *Hapsidophrys smaragdina*, *Lamprophis fuliginosus*, *Lamprophis lineatus*, *Lycophidion semicinctum*, *Mehelya crossii*, *Mehelya poensis*, *Meizodon coronatus*, *Meizodon regularis*, *Natriciteres variegata*, *Philothamnus irregularis*, *Philothamnus semivariiegatus*, *Prosymna meleagris*, *Psammophis elegans*, *Psammophis phillipsii*, *Psammophis sibilans*, *Rhamnophis oxyrhynchus*, *Thelotornis kirtlandii*, *Boiga blandingii*, *Boiga pulverulenta*, *Amblyodipsas unicolor*, *Aparallactus modestus*, *Atractaspis aterrima*, *Naja melanoleuca*, *Naja nigricollis*, *Causus maculatus*, *Typhlops punctatus*, and so on.

Biologically specialized species

Species may be separated according to their ecological region but it is also possible to classify them according to their biological requirements.

Some species are definitely aquatic or semiaquatic, namely *Afronatrix anoscopus*, *Psammophis lineatus*, *Grayia smithi* and *Natriciteres olivacea*.

Others are typically terrestrial and inhabitants of leaf litter or live underground, such as *Calabaria reinhardtii*, *Gongylophis muelleri*, *Hormonotus modestus*, *Lycophidion irroratum*, *Aparallactus lunulatus*, *Typhlops lineolatus*, *Typhlops punctatus* and *Leptotyphlops bicolor*.

A good number of species are tree-dwellers: *Dispholidus typus*, *Hapsidophrys lineatus*, *Hapsidophrys smaragdina*, *Philothamnus irregularis*, *Thelotornis kirtlandii*, *Rhamnophis aethiops*, *Thrasops occidentalis*, *Boiga blandingii*, *Boiga pulverulenta*, *Dendroaspis jamesoni*, *Dendroaspis viridis*, and *Atheris chlorechis*.

INFLUENCE OF THE DAHOMEY GAP ON THE DISTRIBUTION OF THE SPECIES

Togo is located in the “Dahomey gap” as defined by Jenik (1994), Salzmann & Hoelzmann (2005) and Ullenbruch *et al.* (2010). This gap is regarded as a major biogeographical barrier which separates the fauna of the West African forest blocks from the fauna of Central African forests (Booth 1958; Schiøtz 1967; Hamilton 1976). However, the forest

belt between Togo and Ghana which covers the Togo mountains lies in the middle of the Dahomey gap. This range, which peaks over 900 m asl, receives a substantial amount of precipitation. The vegetation of this area is composed of dense tropical semi-deciduous and montane forests. According to Leaché *et al.* (2006), this mountain range constitutes a virtual "island" surrounded by Guinean savannahs. It hosts many forest species which are thus isolated from the large tracts of tropical forests located on the western and eastern margins of the gap. This is especially noteworthy for amphibian species such as *Conraua derooi*, *Hyperolius baumanni* and *H. torrentis*.

The survey of the Togolese herpetological fauna being still in infancy, it is possible that some snake or reptile species are restricted to this montane forested area. As far as we know, most West African forest snake species have a wide range covering Sierra Leone, Guinea, southern Ivory Coast, and Ghana as well as Nigeria and Cameroon. So, if no snake species is really endemic to this mountain range, it nevertheless acts as a filter in the distribution of many other taxa. According to Villiers (1975), Lenk *et al.* (1999) and Chippaux (2006), the forested region between Togo and Ghana marks the eastern limit of the range of several species typical of the West African fauna: *Dendroaspis viridis*, *Lycophidion nigromaculatum*, *Aparallactus lineatus*, *Aparallactus niger*, *Atheris chlorechis*, and *Bitis rhinoceros*. In a similar way, the range marks the western limit of the range of largely Central African species: *Dendroaspis jamesoni*, *Bitis gabonica* and *Atheris squamigera*.

It is interesting to note that several typical savannah dwelling species such as *Psammophis praeornatus*, *Psammophis lineatus*, *Meizodon coronatus*, *Scaphiophis albopunctatus*, *Prosymna meleagris*, and so on, reach the coast in the regions of southern Togo, Benin and of south-eastern coastal Ghana, whereas this is not observed in Liberia, Ivory Coast, in the south-western coastal Ghana, in Nigeria and in Cameroon. The Dahomey gap makes possible the southwards projection towards the coast of northern savannahs at the level of Togo and Benin. As a result, these savannahs separate the West African forest into two blocks.

INFLUENCE OF THE FRAGMENTATION OF FORESTS ON THE DISTRIBUTION OF SPECIES

It is clear that the Dahomey gap allows species of the savannahs to reach the southern coastal areas of the country. However, the strong presence of these species in the forested ER IV is also due to the heavy fragmentation of forest ecosystems. It is well known that West African forests host a very large biodiversity (Myers *et al.* 2000). However, these ecosystems are nowadays heavily damaged by human activities. In Togo, 43.6% of forest ecosystems have been destroyed since 1990 (FAO 2006). Furthermore, according to this same source, between 2000 and 2005, Togo had the third highest rate of deforestation in the world, 4.5% per year. The forest region between Togo and Ghana is already severely disturbed if not destroyed. Much of its surface has been transformed into a cultivated area according to Rödel & Agyei (2003). Only some highly anthropically-impacted patches of forests remain in several localities of ER IV, such as Missahohe, Akposso-Akebou plateaus, Danyi mountains and Adele plateau. These patches are the last evidence of recently flourishing forests. The immediate result of the destruction of forest ecosystems in Togo is the transformation of ER IV into an area of savannahs. This phenomenon is accompanied by the extension of the range of typical savannah-dwellers into this (formerly) forested region. The corollary of this extension is that strict forest dwelling species are in regression and are replaced by ubiquitous, wide-ranging species. Our collections from the tropical forests only produced a few specimens of *Calabaria reinhardtii*, *Dasyeltis fasciata*, *Gonionotophis grantii*, *Gonionotophis klingi*, *Hapsidophrys lineatus*, *Lamprophis virgatus*, *Lamprophis olivaceus*, *Lycophidion nigromaculatum*, *Mehelya guirali*, *Mehelya stenophthalmus*, *Philothamnus carinatus*, *Philothamnus heterodermus*, *Philothamnus heterolepidotus*, *Philothamnus nitidus*, *Rhamnophis aethiopissa*, *Polemon acanthias*, *Dendroaspis jamesoni*, *Bitis rhinoceros* and *Bitis nasicornis*. Other potentially present species have not been found at all. Unfortunately, live specimens of some strictly forest dwelling species, such as *Calabaria reinhardtii*, *Atheris chlorechis*, *Bitis rhinoceros* and *B. nasicornis*, are collected for the international pet trade.

TABLE 3. — Number of exported specimens of three selected snake species between 2001 and 2005 (Ineich 2006 improved).

Species	2001	2002	2003	2004	2005	Total
<i>Python regius</i>	34 503	26 939	49 075	52 139	49 437	212 093
<i>Python sebae</i>	6	420	390	556	1 921	3 293
<i>Calabaria reinhardtii</i>	105	172	191	95	75	638

In contrast, specimens of savannah dwelling species were regularly collected in the forest region, for example *Crotaphopeltis hotamboeia*, *Lamprophis fuliginosus*, *Mehelya crossii*, *Philothamnus irregularis*, *Philothamnus semivariegatus*, *Prosymna meleagris*, *Psammophis elegans*, *Psammophis phillipsii*, *Rhamphiophis oxyrhynchus*, *Boiga blandingii*, *Naja melanoleuca* and *Causus maculatus*.

Our observations on the impact of the deforestation on the amphibian fauna of Togo are even more alarming and are addressed elsewhere (Hillers *et al.* 2009). According to the current rate of the destruction of natural biotopes of Togo, it is mandatory to survey the herpetological fauna and the whole of the biodiversity of the country before it is too late.

THE IMPORTANCE OF TOGOLESE REPTILES IN THE INTERNATIONAL PET TRADE

The trade of the wildlife has flourished in the whole of West Africa since the colonial period. From 1965 onwards, reptiles have been increasingly exploited for the pet trade, with a consequent increase in specimens exported. According to Roe *et al.* (2002), the development of commercial aviation throughout the world was one of the factors that allowed the increase of the pet trade during the last two decades. European countries, the United States and Japan constitute the most important outlet for this business. In these countries, the utilisation of wild animals as exotic pets is increasing. In spite of the drafting of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in March 1973, aimed at the regulation of the international trade of the wildlife, the number of exported specimens is ever increasing. The diversity in exported species is also increasing. In 1990, Togo exported a record number of 80 000 specimens of the Ball python (*Python regius*), more than any

other country worldwide (Affo 2001). This record led the CITES to impose to Togo an export quota for reptile species. Table 3 summarizes the trends in the trade of three selected species during the five recent years. In considering the record figures of 1990 and the results of our own investigations for the last five years, we note that the export of living reptile specimens is still significant for these three species.

The collection of a large number of living specimens of many species may prove to be prejudicial to the long-term survival of the animals in the wild. What is the impact of these collects on Togolese populations? In spite of the collection of a large number of specimens of *P. regius* in this trade, this species is largely distributed and very abundant in all ecosystems of the country. On the other hand, *C. reinhardtii* will be very threatened by this exploitation because of the destruction of its habitats.

CONCLUSION

This present survey should be considered as preliminary. In this study, we added seven species to the snake fauna of Togo. No species is endemic to this country. However, we have no doubt that new taxa will be added to the list presented here, inasmuch as both collections in the field and the examination of preserved specimens are still in progress. Nevertheless, these results already demonstrate that the snake fauna of Togo is rich and diverse. Among the 90 species considered in our study, a total of 80 species are based on voucher specimens, plus eight species mentioned in the literature. The present paper completes and updates the previous studies on the Togolese snake fauna published by Matschie (1893), Werner (1898, 1902), Sternfeld (1908b, 1909), Hulselmans & Verheyen (1970),

Hulselmans *et al.* (1970) and Anonymous (2002). This latter publication listed a higher number of species than our own counts but this report included either taxa currently considered to be synonyms or others, which occur in Central, Eastern and Southern Africa, but are definitely not present in Western Africa.

On the other hand, forest dwelling specimens of wide ranging species such as *Dasyplectis fasciata*, *Psammophis sibilans*, *P. phillipsi*, *Meheya guirali*, *Philothamnus heterodermus* and *Naja melanoleuca* show interesting taxonomic variation. However, due to the high rate of destruction of forest ecosystems caused by the exploitation of wood out of any control by the relevant authorities, we may have concerns about the rapid disappearance of these forest habitats before the Togolese herpetofauna can be adequately surveyed. Besides the destruction of forest ecosystems, another potentially serious threat to the snake fauna is the international trade of wildlife. In Anonymous (2002) it was stated that “although the international trade of wildlife is regulated by the CITES convention, the collection in the wild of a high number of species or of specimens of the same species is harmful to the survival and the sustainable exploitation of the biological diversity in the wild”.

An improved knowledge on the diversity, distribution and abundance of the venomous taxa might lead to improved medical treatments, for example by the production of specific antivenomous serums, and a decrease in human fatal cases in these areas.

Acknowledgements

The first author is indebted to the “Service de Coopération et d’Action culturelle” (SCAC) of the French embassy in Togo for its financial support during his training stay in France, and to the “Centre d’Information sur la Biodiversité africaine” (CIBA) of the “Musée royal de l’Afrique Centrale” in Tervuren, Belgium, for its financial support which made our visits possible. We thank sincerely the Netherlands IUCN Committee through AGBO-ZEGUE NGOs for their financial support which made possible our collect in Keran National Park in the northern part of Togo.

We are also grateful to Pr. Koffi Akpagana (Laboratoire de Botanique et Écologie végétale appliquée, Université de Lomé) for his precious scientific advice and his moral and material supports ever provided. We thank sincerely Dr Danny Meirte and Mr Garin Cael (Département des Vertébrés, Musée royal de l’Afrique Centrale, Tervuren, Belgium) for their very useful assistance during our stay in this museum, Dr Rainer Günther and Mr Langer of ZMB for their useful assistance during our stay in this museum. We also thank Drs Mark-Oliver Rödel, Wolfgang Wüster, Stephen Spawls, John Measey and Steve Spawls for their careful reading of the manuscript and their assistance, which allowed us to greatly improve this text.

REFERENCES

- AFFO A. A-B. 2001. — *Commerce international des reptiles élevés en captivité au Togo: cas des pythons, tortues et caméléons*. Unpublished training report, School for the training of wildlife specialist, Garoua, Cameroon: 1-41.
- ANONYMOUS [PNAE-TOGO]. 2002. — *Monographie nationale sur la diversité biologique. Rapport intégral*. Lomé, MERF-Togo: 172 p.
- BOOTH A. H. 1958. — The Niger, the Volta and the Dahomey Gaps as geographic barriers. *Evolution* 12 (1): 48-62.
- BROADLEY D. G. 1968. — A review of the African cobras of the genus *Naja* (Serpentes: Elapidae). *Arnoldia Rhodesia* 3 (29): 1-14.
- BROADLEY D. G. 1971a. — A revision of the African snake genus *Elapsoidea* Bocage (Elapidae). *Occasional Papers of the National Museum of Rhodesia* (B) 4 (32): 577-626.
- BROADLEY D. G. 1971b. — A review of *Rhamphiophis acutus* (Günther) with the description of a new subspecies from Zambia (Serpentes: Colubridae). *Arnoldia Rhodesia* 5 (8): 1-8.
- BROADLEY D. G. 1994. — A revision of the African genus *Scaphiophis* Peters (Serpentes: Colubridae). *Herpetological Journal* 4 (1): 1-10.
- BROADLEY D. G. 1998. — A review of the African *Elapsoidea semiannulata* complex (Serpentes: Elapidae). *African Journal of Herpetology* 47 (1): 13-23.
- CHABANAUD P. 1916. — Énumération des Ophidiens non encore étudiés de l’Afrique occidentale appartenant aux collections du Muséum avec la description des espèces et des variétés nouvelles. *Bulletin du Muséum national d’Histoire naturelle* 22: 362-382.
- CHERLIN V. A. 1983. — New facts on taxonomy of

- snakes from the *Echis* genus. *Vestnik Zoology* 1983 (2): 42-46.
- CHIRIO L. & INEICH I. 1991. — Les genres *Rhamphiophis* Peters, 1854 et *Dipsina* Jan, 1863 (Serpentes, Colubridae): revue des taxons reconnus et description d'une nouvelle espèce. *Bulletin du Muséum national d'Histoire naturelle* (4) 13 (1-2): 217-235.
- CHIRIO L. & INEICH I. 2006. — Biogeography of the reptiles of the Central African Republic. *African Journal of Herpetology* 55 (1): 23-59.
- CHIRIO L. & LEBRETON M. 2007. — *Atlas des reptiles du Cameroun*. Collection Patrimoines naturels n°67, Muséum national d'Histoire naturelle, IRD, Paris, 688 p.
- CHIPPAUX J.-P. 2006. — *Les serpents d'Afrique Occidentale et Centrale*. Collection Faune et Flore tropicales, Paris, IRD Éditions 35: 311 p.
- DAVID P. & INEICH I. 1999. — Les serpents venimeux du monde: systématique et répartition. *Dumerilia* 3: 3-499.
- DORANDEU F. 1991. — Les grandes vipères africaines du genre *Bitis* Gray, 1842 et leur venin. Aperçus zoologique, biochimique et clinique. *Médecine tropicale* 51 (3): 293-306.
- ERN H. 1979. — Vegetation Togos. Gliederung, Gefährdung, Erhaltung. *Willdenowia* 9: 295-312.
- ERNST R. & RÖDEL M.-O. 2002. — A new *Atheris* species (Serpentes: Viperidae), from Taï National Park, Ivory Coast. *Herpetological Journal* 12: 55-61.
- FAO (FOOD AND AGRICULTURE ORGANIZATION) 2006. — *Global forest resources assessment 2005; progress towards sustainable forest management*. Rome, FAO, FAO Forestry Paper, 147, 320 p.
- GASPERETTI J. 1988. — Snakes of Arabia. *Fauna Saudi Arabia* 9: 169-450.
- GOLAY P. 1985. — *Checklist and Keys to the Terrestrial Proteroglyphs of the World (Serpentes: Elapidae-Hydrophiidae)*. Genève, Fondation culturelle Elapsoïdea, ix + 91 p.
- GOLAY P., SMITH H. M., BROADLEY D. G., DIXON J. R., MCCARTHY C. J., SCHATTI B. & TORIBA M. 1993. — *Endoglyphs and Other Major Venomous Snakes of the World. A Checklist*. Aïre-Genève, Azemiops S. A. Herpetological Data Center, xv + 478 p.
- HAMILTON A. 1976. — The significance of patterns of distribution shown by forest plants and animals in tropical Africa for the reconstruction of Upper Pleistocene palaeoenvironments: a review. *Palaeoecology of Africa and of the Surrounding Islands and Antarctica* 9: 63-97.
- HARDING K. A. & WELCH K. R. G. 1980. — *Venomous Snakes of the World. A checklist*. Pergamon Press, Oxford, x + 188 p.
- HILLERS A., BOATENG C. O., SEGNIAGBETO G. H., AGYEI A. C. & RÖDEL M.-O. 2009. — The amphibians in the forests of southern Ghana and western Togo. *Zoosystematic and Evolution* 85 (1): 127-141.
- HUGHES B. & BARRY D. H. 1969. — The snakes of Ghana: a checklist and key. *Bulletin de l'Institut fondamental d'Afrique Noire* 31 (3): 1004-1041.
- HUGHES B. 1976. — Notes on African carpet vipers, *Echis carinatus*, *E. leucogaster* and *E. ocellatus* (Viperidae, Serpentes). *Revue suisse de Zoologie* 83: 359-371.
- HUGHES B. 1978. — Latitudinal clines and ecogeography of the West African night adder, *Causus maculatus* (Hallowell, 1842), Serpentes, Viperidae. *Bulletin de l'Institut fondamental d'Afrique Noire* (A), 39 (2): 358-384 (dated 1977, published 1978).
- HUGHES B. 1985. — Progress on a taxonomic revision of the African green tree snakes (*Philothamnus* spp.), in SCHUCHMANN K.-L. (ed.). Proceeding of the International Symposium on African Vertebrates. *Zoologisches Forschungsinstitut & Museum Alexander Koenig*, Bonn: 511-530.
- HUGHES B. 2004. — Misidentification of *Dromophis lineatus* (Duméril & Bibron, 1854) as *Psammophis sibilans* (Linne 1758) and the perpetuation of error. *African Journal of Herpetology* 53 (1): 63-76.
- HUGHES B. & WADE E. 2004. — Is *Psammophis sibilans occidentalis* Werner, 1919 a junior synonym of *P. phillipsi* (Hallowell, 1844)? (Squamata: Serpentes: Colubridae). *Herpetozoa* 16 (3-4): 127-132.
- HULSELMANS J. L. J. & VERHEYEN W. N. 1970. — Contribution à l'herpétologie de la République du Togo: Liste préliminaire des serpents récoltés par la deuxième mission zoologique belge au Togo. *Revue de Zoologie et de Botanique africaines* 82 (1-2): 200-204.
- HULSELMANS J. L. J., DE ROO A. & DE VREE F. 1970. — Contribution à l'herpétologie de la République du Togo: liste préliminaire des serpents récoltés par la première mission zoologique belge au Togo. *Revue de Zoologie et de Botanique africaines* 81 (1-2): 193-196.
- HULSELMANS J. L. J., DE VREE F. & VAN DER STRAETEN E. 1971. — Contribution à l'herpétologie de la République du Togo: liste préliminaire des serpents récoltés par la troisième mission zoologique belge au Togo. *Revue de Zoologie et de Botanique africaines* 84 (1-2): 46-49.
- INEICH, I. 2006. — *Les élevages de reptiles et de scorpions au Bénin, Togo et Ghana, plus particulièrement la gestion des quotas d'exportation et la définition des codes « source » des spécimens exportés*. Projet CITES A-251: 1-113.
- JENIK J. 1994. — The Dahomey gap: an important issue in Africa phytogeography. *Mémoire de la Société de Biogéographie* (3) 4: 125-133.
- KELLY C. M. R., BARKER N. P., VILLET M. H., BROADLEY D. G. & BRANCH W. R. 2008. — The snake family Psammophiidae (Reptilia: Serpentes): phylogenetics and species delimitation in the African sand snakes (*Psammophis* Boie, 1825) and allied genera. *Molecular*

- Phylogenetics and Evolution* 47: 1045-1060.
- KLUGE A. G. 1993. — *Calabaria* and the phylogeny of erycine snakes. *Zoological Journal of the Linnean Society* 107 (4): 293-351
- LEACHÉ A. D., RÖDEL M.-O., LINKEM C. W., DIAZ R. E., HILLERS A. & FUJITA M. K. 2006. — Biodiversity in a forest island: reptiles and amphibians of the West African Togo hills. *Amphibian and Reptile Conservation* 4: 22-45.
- LENK P., HERRMANN H.-W. & JOGER U. 1999. — Phylogeny and taxonomic subdivision of *Bitis* (Reptilia: Viperidae) based on molecular evidence, in U. JOGER (ed.), *Phylogeny and systematics of Viperidae*. *Kaupia* 8: 31-38.
- LOVERIDGE A. 1939. — Revision of the African snakes of the genera *Mehelya* and *Gonionotophis*. *Bulletin of the Museum of Comparative Zoology* 86 (3): 131-162.
- LOVERIDGE A. 1940. — Revision of the African snakes of the genera *Dromophis* and *Psammophis*. *Bulletin of the Museum of Comparative Zoology* 87 (1): 1-70.
- LOVERIDGE A. 1944. — Further revisions of African snake genera. *Bulletin of the the Museum of Comparative Zoology* 95: 121-247.
- LOVERIDGE A. 1958. — Revision of five snake genera. *Bulletin of the Museum of Comparative Zoology* 119 (1): 1-198.
- MASSARY J.-C. DE 1993. — *Apport de la biométrie à la compréhension de la systématique et de l'évolution du genre Causus (Serpentes, Viperidae)*. Unpublished Ms thesis, Muséum national d'Histoire naturelle, Paris: 55 p.
- MATSCHE P. 1893. — Die Reptilien und Amphibien Togogebietes. *Mitteilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten, mit Benutzung amtlicher Quellen* 6: 207-215.
- MEIRTE D. 1992. — Clés de détermination des serpents d'Afrique. *Annales du Musée royal de l'Afrique Centrale, Sciences zoologiques* 267: 1-152.
- MYERS N., MITTERMEIER R. A., MITTERMEIER C. G., DA FONSECA G. A. B. & KENT J. 2000. — Biodiversity hotspots for conservation priorities. *Nature* 403: 853-858.
- PARKER H. W. 1933. — Some African snakes. *Annals and Magazine of Natural History* 12 (10): 544-548.
- PAUWELS O. S. G. & VANDE WEGHE J. P. 2008. — *Les Reptiles du Gabon*. Washington, Smithsonian Institution: 272 p.
- PYRON R. A., BURBRINK F. T., COLLI G. R., NIETO MONTES DE OCA A., VITT L. J., KUCZYNSKI C. A. & WIENS J. J. 2011. — The phylogeny of advanced snakes (Colubroidea), with discovery of a new subfamily and comparison of support methods for likelihood trees. *Molecular Phylogenetics and Evolution* 58 (2): 329-342.
- RASMUSSEN J. B. 1979. — An intergeneric analysis of some boigine snakes. Bogert's groups XIII and XIV (Boiginae, Serpentes). *Videnskabelige Meddelelser Dansk Naturhistorisk Forening* 141: 97-155.
- RASMUSSEN J. B. 1993. — A taxonomic review of the *Dispsadoboa unicolor* complex, including a phylogenetic analysis of the genus (Serpentes, Dipsadidae, Boiginae). *Sreenstrupia* 19: 129-196.
- RASMUSSEN J. B. 1994. — Afrikanske slanger (2). *Dendraopsis viridis*. *Nordisk Herpetologisk Forening* 37 (2): 25-28.
- RASMUSSEN J. B. 1995a. — Afrikanske slanger (7). *Naja melanoleuca*. *Nordisk Herpetologisk Forening* 38 (2): 89-96.
- RASMUSSEN J. B. 1995b. — Afrikanske slanger (8). *Naja katiensis*. *Nordisk Herpetologisk Forening* 39 (2): 41-44.
- RASMUSSEN J. B. 1995c. — Afrikanske slanger (6). *Bitis gabonica*. *Nordisk Herpetologisk Forening* 38 (2): 55-63.
- RASMUSSEN J. B., CHIRIO L. & INEICH I. 2000. — The herald snakes (*Crotaphopeltis*) of Central Africa Republic, including a systematic review of *C. hippocrepis*. *Zoosystema* 22 (3): 585-600.
- ROE D., MULLIKEN T., MILLEDGE S., MREMI J., MOSHA S. & GRIEG-GRAN M. 2002. — Making a killing or making a living? Wildlife trade, trade controls and rural livelihoods. *Biodiversity and Livelihoods Issues* 6. IIED, London, UK, 128 p.
- ROMAN B. 1980. — *Serpents de Haute-Volta*. C.N.R.S.T., Ouagadougou, 132 p.
- ROMAN B. 1984. — *Serpents des Pays de l'Entente*. C.N.R.S.T., Ouagadougou, 45 p.
- RÖDEL M.-O. & AGYEI A. C. 2003. — Amphibians of the Togo-Volta highlands, Eastern Ghana. *Salamandra* 39: 207-234.
- ROUX-ESTÈVE R. 1969. — Les serpents de la région de Lamto (Côte d'Ivoire). *Annales de l'Université d'Abidjan* (E) 2: 81-140.
- ROUX-ESTÈVE R. 1974. — Révision systématique des Typhlopidae d'Afrique, Reptilia-Serpentes. *Mémoires du Muséum national d'Histoire naturelle* (A) 87: 1-313.
- SALZMANN U. & HOEZLMANN P. 2005. — The Dahomey gap: an abrupt climatically induced rain forest fragmentation in West Africa during the late Holocene. *The Holocene* 15: 190-199.
- 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* 115 (4): 595-615.
- SCHIÖTZ A. 1967. — The treefrogs (Rhacophoridae) of West Africa. *Spolia Zoologica Musei Haunienses* 25:1-346.
- SEgniAGBETO G. H., BOWESSIDJAOU J. E., DUBOIS A. & ÖHLER A. 2007. — Les amphibiens du Togo: état actuel des connaissances. *Alytes* 24 (1-4): 72-90.
- SPAWLS S. & BRANCH B. 1995. — *The Dangerous Snakes of Africa*. *Natural History. Species Directory. Venoms*

- and Snakebite. Blanford, London, 192 p.
- STERNFELD L. 1908a. — Neue und ungenügend bekannte afrikanische Schlangen. *Sitzungsberichte der Gesellschaft naturforschender Freunde Berlin* 1908: 92-95.
- STERNFELD L. 1908b. — Die Schlangenfaua Togos. *Mitteilungen Zoologischen Museum in Berlin* 4: 207-236.
- STERNFELD L. 1909. — Die Schlangen Togos, in *Die Fauna der deutschen Kolonien* 1 (1): iv + 29 p., map.
- THORPE R. S. & MCCARTHY C. J. 1978. — A preliminary study, using multivariate analysis, of a species complex of African house snakes (*Boaedon fuliginosus*). *Journal of Zoology*, London, 184: 489-506.
- TRAPE J.-F. & MANÉ Y. 2004. — Les serpents des environs de Bandafassi (Sénégal oriental). *Bulletin de la Société herpétologique de France* 109: 5-34.
- TRAPE J.-F. & MANÉ Y. 2006a. — Le genre *Dasyptelis* Wagler (Serpentes: Colubridae) en Afrique de l'Ouest: description de trois espèces et d'une sous-espèce nouvelles. *Bulletin de la Société herpétologique de France* 119: 5-24.
- TRAPE J.-F. & MANÉ Y. 2006b. — *Guide des serpents d'Afrique occidentale (savane et désert)*. IRD Éditions, Paris, 226 p.
- TRAPE J.-F. & SEGNIABETO G. H. 2008. — Geo-distribution of *Letheobia crossi* (Serpentes: Typhlopidae). *Herpetological Review* 39 (4): 384.
- ULLENBRUCH K., GRELL O. & BÖHME W. 2010. — Reptiles from southern Benin, West Africa, with the description of a new *Hemidactylus* (Gekkonidae), and a country-wide checklist. *Bonn Zoological Bulletin* 57 (1): 31-54.
- VIDAL N., BRANCH W. R., PAUWELS O. S. G., HEDGES S. B., BROADLEY D. G., WINK M., CRUAUD C., JOGER U. & NAGY Z. T. 2008. — Dissecting the major African snake radiation: a molecular phylogeny of the Lamprophiidae Fitzinger (Serpentes, Caenophidia). *Zootaxa* 1945: 51-66.
- VIDAL N. & DAVID P. 2004. — New insights into the early history of snakes inferred from two nuclear genes. *Molecular Phylogenetics and Evolution* 31: 783-787.
- VIDAL N., DELMAS A.-S., DAVID P., CRUAUD C., COULOUX A. & HEDGES S. B. 2007. — The phylogeny and classification of caenophidian snakes inferred from seven nuclear protein-coding genes. *Comptes Rendus Biologies* 330: 182-187.
- VILLIERS A. 1951. — Mission A. Villiers au Togo et au Dahomey (1950) II. — Ophidiens. *Études dahoméennes, Centre IFAN* 5: 17-46.
- VILLIERS A. 1975. — *Les serpents de l'Ouest Africain*. Troisième édition. Nouvelles Éditions africaines, Dakar, 196 p.
- VILLIERS A. & M. CONDAMIN 2005. — *Les serpents de l'Ouest Africain*, édition 2005. Université Cheikh Anta Diop de Dakar, I.F.A.N. Nouvelles Éditions Africaines du Sénégal, Dakar, 205 p.
- WELCH K. R. G. 1982. — *Herpetology of Africa: a Checklist and Bibliography of the Orders Amphisbaenia, Sauria and Serpentes*. Robert E. Krieger, Malabar, Florida, ix + 293 p.
- WERNER F. 1898. — Über Reptilien und Batrachier aus Togoland, Kamerun und Tunis dem Kgl. Museum für Naturkunde in Berlin. *Verhandlungen der kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien* 58: 191-230, 1 plate.
- WERNER F. 1899. — Über Reptilien und Batrachier aus Togoland, Kamerun und Deutsch-Neu-Guinea, grösstentheils aus dem Kgl. Museum für Naturkunde in Berlin. *Verhandlungen der kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien* 49: 132-157.
- WERNER F. 1902. — Über westafrikanische Reptilien. *Verhandlungen der kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien* 52: 332-348.
- WERNER F. 1929. — Übersicht der Gattungen und Arten der Schlangen aus der Familie Colubridae. III. Teil (Colubrinae). *Zoologische Jahrbücher (Systematik)* 57 (1/2): 1-196.
- WILLIAMS K. L. & WALLACH V. 1989. — *Snakes of the World*. Vol. 1. *Synopsis of Snakes Generic Name*. Krieger Publishing Company, Malabar: viii + 234 p.
- WITTE G.-F. DE & LAURENT R. F. 1947. — Révision d'un groupe de Colubridae africains, genres *Calamelaps*, *Miodon*, *Aparallactus* et formes affines. *Mémoire du Musée royal d'Histoire naturelle de Belgique* (2) 29: 1-134.

Submitted on 26 July 2010;
accepted on 24 March 2011.