

CONTRIBUTION TO THE KNOWLEDGE OF THE GAMBIAN HERPETOFAUNA

OLIVIER PAUWELS AND DANNY MEIRTE

Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium

ABSTRACT

During two short visits to the Gambia (08/91 and 07/93), under the auspices of the Herpetological Service at the Musée Royal d'Afrique Centrale, Tervuren, 21 reptiles and 26 adult amphibians were collected. For some species previously unknown from the Gambia these provide physical evidence for their occurrence. The first *Amblyodipsas* (*Calamelaps*) *unicolor* for the Gambia is recorded. The collections also provide a good series of the rarely collected Amphisbenid-species *Cynisca feae*, showing a large variation in head-scaling.

INTRODUCTION

Rochebrune (1884) in his work dealing with the fauna of the 'Sénégalie' made a first attempt to list the herpetofauna of the region. The first documented list however, was published by Andersson (1937), and contained only 2 crocodiles, 3 turtles, 8 lizards, 15 snakes and 4 amphibian species. Håkansson (1981) reported a total of 39 species of reptiles. However, no collection sources were indicated and therefore most of the determinations cannot be verified. He also added a list of 21 species he expected to occur in the Gambia, hence admitting that a more profound herpetological exploration of the area was badly needed.

Gruschwitz, Lenz & Böhme (December, 1991) made up a list with 40 amphibian and reptile species for the Gambia. Their list is supported by photographic evidence but only limited collection material (deposited in the Museum Alexander Koenig in Bonn). They record for the "first time" in the Gambia, 3 species of amphibians and 8 species of reptiles. However, '*Graya silurophaga*' (for *Grayia smithii*) and '*Dactylethra calcaratus*' (for *Xenopus tropicalis*) were already listed by Rochebrune (1884) for 'Gambie' and *Dispholidus typus* from Albrede (in Gambia). Also, two species (*Telescopus variegatus* and *Elapsoidea semiannulata*) they found to be new for the list of Gambian terrestrial reptiles, were not even listed in the "expectation"-list of Håkansson. Only the additional amphibian species and only two snakes were documented by collection material (fortunately the two 'unexpected' species). The authors announced some new discoveries for the Gambia.

Some additional documentation for the herpetofauna of the Gambia and overlooked by some authors is found in Gans (1987) who records *Cynisca feae*, in Hughes (1983) for *Grayia tholloni*, and in Chabanaud (1917) who mentions *Echis carinatus* collected at Guenoto (specimen at the MNHNP, apparently lost -A. Ohler, pers. comm.). Jones (1991) claims to list 8 new records for the Gambia but in reality he only adds 3 species: *Atractaspis aterrima* and *Atractaspis dahomeyensis*, (although the known *Atractaspis irregularis* is not listed) and *Elapsoidea semiannulata moebiusi*. Jones *et al* (1990), Stossl (1993), Moiser & Barber (1994) and Starin & Burghardt (1992), dealing with the Gambian herpetofauna, do not add first records for the country.

For many species their occurrence in the Gambia has been deduced from their presence in Senegal, for which many studies are available (Mertens, 1938; Grandison, 1956; Loveridge, 1956; Villiers, 1956; Condamin & Villiers, 1962; Lamotte, 1969; Cissé, 1974; Böhme, 1978; Miles, Thomson & Walters, 1978; Cissé & Karns, 1978; Joger, 1981, 1982). The herpetofauna of the Gambia itself remains very poorly documented. This is a deplorable situation if one considers its probable importance in the distribution limits of many West-African tropical forest species. Even for amphibians that are rather easy to collect, one can only guess the reason of their absence among faunistic studies (Schlötter, 1969).

During two herpetological visits to the Gambia, in July 1991 and in July 1993, 21 reptiles and 26 adult amphibians were collected by one of us (O.P.), pertaining to 14 different species. Many tadpoles (298 specimens) were also collected, but these are not treated here.

NEW MATERIAL

All specimens are deposited at the Musée Royal d'Afrique Centrale, Tervuren, Belgium, they are indicated by their registration number.

Amphibia

Pipidae

Xenopus tropicalis

MRAC 93-092-B-13-15 : Lamin, 10/07/1993

MRAC 93-092-B-24-27 : Makumbaya, 11/07/1993

This species was first observed in the Gambia by Gruschwitz *et al.* (1991) at two localities (Abuko and Lamin). The specimens we report from Lamin, were found in one particular drinking hole for cattle. This site, in contrast with all the other water holes situated close to the mangrove, was not polluted by brackish water. At Makumbaya, the species was found in a natural pool near the forest.

This species was already known to occur in Senegal (de Rochebrune, 1884); however, Böhme (1978) provides the first 'certain' citation for Senegal.

Bufonidae

Bufo regularis

MRAC 93-092-B-9 : near Bakoteh, 09/07/1993 (juv)

MRAC 93-092-B-17 : Lamin, 10/07/1993

Ranidae

Ptychadena trinodis

MRAC 93-092-B-32 : Mandinaba, 18/07/1993

From this species many were gathered in a pond, filled by the first rains of the retarded rainy season, from 17 and 18/07. At an earlier visit at the same site (16/07) not even a single individual could be detected as the pond was still completely dried out.

After two days of mating activity many egg deposits were visible. These were clearly of two different types, which are very probably referable to the two species found active in the neighbourhood: *Ptychadena trinodis* and *Phrynobatrachus francisci*.

Dicroglossus occipitalis

- MRAC 93-092-B-1 : Bakoteh, 05/07/1993 (male)
MRAC 93-092-B-5 : Mandinaba, 08/07/1993 (female - holding many eggs)
MRAC 93-092-B-16 : Lamin, 10/07/1993
MRAC 93-092-B-18 : Makumbaya (1 km from Mandinari), 11/07/1993 (male)

Phrynobatrachus francisci

- MRAC 92-007-B-1 : near Bakoteh, 14/08/1991
MRAC 93-092-B-2-4 : near Bakoteh, 6/07/1993
MRAC 93-092-B-6-8 : near Bakoteh, 9/07/1993
MRAC 93-092-B-29-31 : near Bakoteh, 16/07/1993
MRAC 93-092-B-33-34 : Mandinaba, 18/07/1993

One specimen from Mandinaba contained 7 rather large (8 mm long) termites (Isoptera, genus *Nasutitermes* - determination by Mr Ruelle 1995).

Reptilia

Chelonia

Cheloniidae

Lepidochelys olivacea

One dead specimen was found on the beach of Kololi, 07/1993. Many carapaces and bones from Cheloniidae were present in the large waste belt in the fishermen's village of Brufut (13/07/1993); the meat of the turtles is eaten; the carapaces, however, are only rarely proposed for sale to tourists. The fishermen often catch small individuals (of hatchling-size) within the Gambian coastal waters.

Lacertilia

Agamidae

Agama agama

- MRAC 92-007-R-1 : near Bijilo Forest Park, 15/08/1991 (female)

A female in breeding colouration.

This species was present at all localities visited, often abundant, in dry environment as well as in humid forest.

Scincidae

Mabuya perrotetii

- MRAC 92-007-R-2 : Abuko, 19/08/1991 (male)
MRAC 93-092-R-11 : Brikama, 12/07/1993

Mabuya affinis

- MRAC 92-007-R-3 : near Bijilo Forest Park, 21/08/1991
MRAC 93-092-R-12-13 : Mandinaba, 18/07/1993

In contrast to our first visit to the Bijilo Forest Park (08/1991), when both *M. affinis* and *M. perrotetii* were visible in large numbers, we could only find few *M. affinis* during our second visit (07/1993). By this time, due to the late arrival of the rainy season, the forest vegetation was not as extensive. The density of *M. perrotetii* seemed not affected by the drier conditions as *M. perrotetii* is more resistant to drought and also inhabits open and

dry places, where *M. affinis* is not encountered. These observations agree with those of Gruschwitz *et al.* (1991a). Böhme (1978) states that adults of *M. perrotetii* aestivate during the dry season. Probably the Bijilo Forest Park population of *M. affinis* starts aestivating (but in less arid conditions).

Gekkonidae

Tarentola ehippiata

MRAC 92-007-R-5-6 : near Bakoteh, 21 and 22/08/1991

MRAC 93-092-R-7-8 : near Bakoteh, 8 and 9/07/1993

Hemidactylus brookii

MRAC 92-007-R-7 : near Bakoteh, 8/07/1993

MRAC 93-092-R-9-10 : near Bakoteh, 8 and 12/07/1993

Ophidia

Colubridae

Psammophis sibilans (cfr. *rukwae*)

MRAC 92-007-R-4 : near Bakoteh, 21/08/1991

Many observations in the Bijilo Forest Park, both in 1991 and 1993.

Total length: 345 mm; tail length: 101 mm; 1 + 162 ventrals; 98 sub-caudals; 13 scale rows at midbody.

Amblyodipsas (Calamelaps) unicolor

MRAC 93-092-R-6 : Makumbaya, 11/07/1993

This specimen was captured in primary forest in the leaf litter on the forest floor. Only a few metres away the same day an amphisbenid was found. It seems to be the first specimen of the species to be reported for the Gambia, and adds the northernmost point to the present distribution of this tropical forest species.

Total length: 365 mm; tail length: 32 mm; 3 + 193 ventrals; 25 sub-caudals; 17 scale rows at midbody.

Remark on *Grayia*:

The occurrence of *Grayia smithii* (for discussion on the scientific name, see Meirte, 1992: 113) in the Gambia, published by Gruschwitz *et al.* (1991) as a first record was based upon their field observations. They refer for its presence in the Abuko-Reserve to the photograph published in Brewer (1985), showing a swimming snake with a colouration that can be attributed to *G. smithii*.

The species was already mentioned for the Gambia by de Rochebrune in 1884, as *Graya* (sic) *silurophaga*, a synonym of *Grayia smithii*, also without referring to supporting collection material. The presence of *G. tholloni* in the Gambia, on the other hand, is better documented: Hughes (1983: 327) states an "unpublished specimen in the British Museum, 1955, 1.4.70, from Kotu stream, south of Bathurst", verified by us. One should insist on the necessity of good collections in order to be able to verify the determinations, especially when first records of rare species are involved.

Remark on *Causus*:

Andersson (1937) mentions three specimens of *Causus rhombeatus* in his analysis of a collection from MacCarthy Island. In his checklist of reptiles of the Gambia, Håkansson (1981) refers to this citation, without noting that Andersson did not distinguish

C. rhombeatus from *C. maculatus*. Hughes' monograph on *Causus maculatus* (Hughes, 1977) attributes all specimens of *Causus* from the Gambia, including one from MacCarthy Island (although not from the Håkansson-Series), to *C. maculatus*. He states that only one species of *Causus* occurs in the Gambia (Hughes, 1977, 1983).

Amphisbaenia
Amphisbaenidae

Cynisca feae

MRAC 93-092-R-1	: Makumbaya (at 1 km from Mandinari), 11/07/1993
MRAC 93-092-R-2	: Brikama, 12/07/1993
MRAC 93-092-R-3	: Brufut, 13/07/1993
MRAC 93-092-R-4	: Kiti, 14/07/1993
MRAC 93-092-R-5	: Mandinaba, 18/07/1993

At the same locality as for MRAC 93-092-R-3 some remnants of sloughed skin were found.

All specimens were found in the same biotope, a few centimetres down the soft soil in the most covered and humid parts of the forest. One specimen (MRAC 93-092-R-5) and the sloughed skin were found in decomposing stumps of dead trees. In all collecting sites the abundance of earthworms was striking, as well as the astonishing resemblance of both worms and amphisbenids by their pink colour and the similar reaction when exposed. We agree with Gans (1987), that these animals are probably not as rare as their low numbers within collections suggest. It is more a question of looking in the right places.

The illustrations found in in the original description of *Cynisca feae* (Boulenger, 1905: 203) are too schematic, especially as the ventral view is concerned.

The head scaling of the five specimens corresponds nicely with the scheme given by Gans (1987: 35), as far as the ventral view is concerned. Dorsally the headscaling resembles more with the illustration in Condamin & Villiers (1962: 902 Fig. 1). The dorsal view illustrated in Gans (1987: 35) shows no fusion of the frontal-parietal with the occipital shields. In the five specimens presented here the fusion of frontal-parietal-occipital is complete (see Figure 1C). (For definition of scale-names, see Gans, 1987: 8).

Among this series the variation in post-supralabial arrangement is large:

MRAC 93-092-R-1:	two post-supralabials both left and right, with two additional small shields at the left side (see Figure 1A)
MRAC 93-092-R-2:	two post-supralabials both left and right
MRAC 93-092-R-3:	post-supralabials fused both left and right (see Figure 1B)
MRAC 93-092-R-4 & 5:	two post-supralabials left; post-supralabials fused right

All specimens present 6 preanal pores on 6 distinct scales (but on 5 scales in MRAC 93-092-R-1 which has the central preanal scales fused).

Other meristic data are given in Table 1.

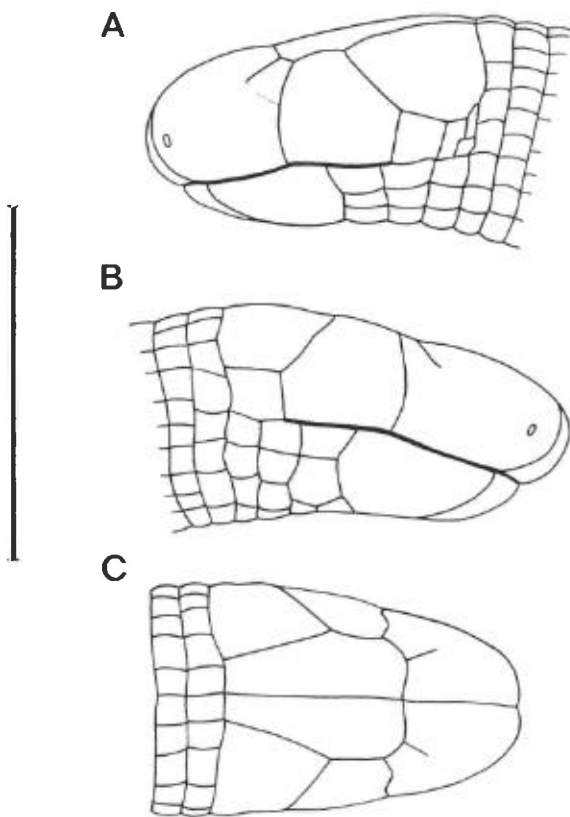


Fig. 1. Variation in head scalation in *Cynisca feae*. Scale bar represents 5 mm.

A. Lateral view of the head of MRAC 93-092-R-1 (left side), showing the post-supralabial followed by two additional small shields. B. Lateral view of the head of MRAC 93-092-R-3 (right side), showing the fusion of the post-supralabial shields. C. Dorsal view of the head of MRAC 93-092-R-2, showing the fusion of the frontal, parietal and occipital shield.

Table 1. Measurements and scale counting for *Cynisca feae* specimens of the Gambia.

Specimen Number	body length (mm)	tail (mm)	approx. mid-body width (mm)	body annuli	tail annuli
MRAC 93-092-R-1	150	16	4	251	22
MRAC 93-092-R-2	156	16	4	260	22
MRAC 93-092-R-3	146	16	4	254	22
MRAC 93-092-R-4	152	15	4	256	21
MRAC 93-092-R-5	75	9	2.5	254	22

All specimens and the sloughed skin showed at midbody 14 dorsal and 9 ventral

segments, the latter including the central segment, in fact corresponding with the fusion of 2 segments (Boulenger, 1905; Laurent, 1947).

This small series illustrates the important variation in cephalic scaling found in the species (Gans, pers. comm.; Condamin & Villiers, 1962), a common situation found among burrowing reptiles.

Until now only two specimens were known from Gambia, both are presented by Gans (1987), apparently overlooked by Jones (1991) who indicates his listing of *Cynisca feae* for the Gambia as 'previously unrecorded from the Gambia'.

CONCLUSION

The collection presented here was made during two rather short visits and is only a small contribution to the study of the herpetofauna of the Gambia. Nevertheless an additional first record for the Gambia (*Amblyodipsas (Cala melaps) unicolor*) was detected. We hope that the richness of its nature can be documented and studied in the near future as deforestation and desertification are helping to eradicate species before their presence could even be confirmed.

ACKNOWLEDGEMENTS

We would like to acknowledge our colleagues and friends F. Cherot and J.-F. Van der Donckt who assisted in the collecting of specimens. Prof. C. Gans (University of Michigan) commented on the manuscript and provided additional information on *Cynisca*. We thank Dr. A. Ohler (MNHN, Paris) who kindly checked the *Echis* specimens in the Paris Museum and Dr Ruelle (MRAC) for determination of the termites. We highly appreciated the support of the Belgian Consul in the Gambia, Mr M.J.M. Decraeye, to whom we are indebted for obtaining the necessary authorisations and passing all customs administration.

REFERENCES

- Andersson, L.G. (1937). Reptiles and Batrachians. Collected in the Gambia by Gustav Svensson and Birger Rudebeck (Swedish Expedition 1931). *Arkiv für Zoologi* **29**(16), 1-28.
- Böhme, W. (1978). Zur Herpetofaunistik des Senegal. *Bonn. zool. Beitr* **29**(4), 360-417.
- Boulenger, G.A. (1905). Report on the Reptiles collected by the Late L. Fea in West Africa. *Annali Mus. civ. Stor. nat. Genova. ser. 3 a, Vol. 2* (42), 196-216.
- Brewer, E.F. (1985). *The Gambia - Abuko Nature Reserve* (Guide Book). Wildlife Conservation Department.
- Chabanaud, P. (1917). Note complémentaire sur les Ophidiens de l'Afrique occidentale, avec la description d'une espèce nouvelle. *Bull. Mus. natn. Hist. nat., Paris.* **23**, 7-14.
- Cissé, M. (1974). Les geckos du Sénégal. *Notes afr.*, **144**, 90-95.
- Cissé, M. and D. R. Karns (1978). Les Sauriens du Sénégal. *Bull. I.F.A.N.*, **40**, sér A, No.11, 144-211.
- Condamin, M. and Villiers, A. (1962). Contribution à l'étude de la faune de la basse Casamance, II. Reptiles. *Bull. I.F.A.N.*, sér. A, No.3, 897-908.
- de Rochebrune, A.-T. (1884a). *Faune de la Sénégalie. Amphibiens*. Ed. Octave Doin, Paris. 1-48, Plates i-x.
- de Rochebrune, A.-T. (1884a). *Faune de la Sénégalie. Reptiles*. Ed. Octave Doin, Paris. 1-221, Plates i-xx.

- Gans, C. (1987). Studies on Amphisbaenians (Reptilia). 7. The Small Round-headed Species (*Cynisca*) from Western Africa. *Amer. Mus. Novit.*, 2896, 1-84.
- Grandison, A.G.C. (1956). on a collection of lizards from West Africa. *Bull. I.F.A.N.*, 18, sér. A, No. 1, 224-245.
- Gruschwitz, M., S. Lenz & W. Böhme (1991a). Zur Kenntnis der Herpetofauna von Gambia (Westafrika). Teil 1: Einführung, Froschlurche (Amphibia, Anura), Schildkröten (Reptilia, Chelonia), Krokodile (Crocodylia) und Echsen (Sauria). *Herpetofauna*, 13(74), 13-22.
- Gruschwitz, M., S. Lenz & W. Böhme (1991b). Zur Kenntnis der Herpetofauna von Gambia (Westafrika). Teil 2: Schlangen (Reptilia, Serpentes), herpetofaunistische Bewertung. *Herpetofauna*, 13(75), 27-34.
- Håkansson, N.T. (1981). An annotated checklist of reptiles known to occur in the Gambia. *J. Herp.* 15(2), 155-161.
- Hughes, B. (1977). Latitudinal clines and ecogeography of the West African Night Adder, *Causus maculatus* (Hallowell, 1842), Serpentes, Viperidae. *Bull. I.F.A.N.*, 39 sér. A, no. 2, 358-384.
- Hughes, B. (1983). African snake faunas. *Bonn. zool. Beitr.* 34(1-3), 311-356.
- Joger, U. (1981). Zur Herpetofaunistik Westafrikas. *Bonn. zool Beitr.* 32(3-4), 297-340.
- Joger, U. (1982). Recherches scientifiques dans les Parc Nationaux du Sénégal, XIV. Quatre Lézards nouveaux pour la faune du Parc National du Niokol-Koba. *Mém. I.F.A.N.*, 92, 177-183.
- Jones, S. (1991). The Gambian Dwarf Crocodile Project. Preliminary Report 1990. *S.W.H.S. Journal* 2(1), 11-17.
- Jones, S., M. Morton, G. Jones, L. Chamberlain, D. Clarke, M. Day, R. Budden, P. Hughes, S. Shepherd & H. Hurford, (1990). The Gambian Dwarf Crocodile Project. *Brit. Ecol. Soc. Bull.* 21(2), 108-113.
- Lamotte, M. (1969). Le Parc National de Niokolo-Koba (Sénégal). XXX. Amphibiens (deuxième note). *Mém. I.F.A.N.*, 84, 421-426.
- Laurent, R. (1947). Note sur les Amphisbaenidae d'Afrique. - I. Le genre *Amphisbaena* et les formes affines. *Rev. Zool, Bot. Afr.* 40, 52-63.
- Loveridge, A. (1956). Le Parc National de Niokolo-Koba. VI Amphibiens. *Mém. I.F.A.N.*, 48, 163-166.
- Meirte, D. (1992). Clés de détermination des Serpents d'Afrique. *Ann. Mus. r. Afr. centr. / Ann. Kon. Mus. Midd. Afr.* 267, 1-152.
- Mertens, R. (1938). Über eine Froschsammlung aus Westafrika. *Zool. Anz.* 123, 241-245.
- Miles, M.A., A.G. Thompson and G.W. Walters (1978). Amphibians and Reptiles from the vicinity of Boughari, Casamance (Senegal), and the Gambia. *Bull. I.F.A.N.* 40, sér. A., No. 2, 437-456.
- Moiser, C.M. and A.D. Barber (1994). The Crocodile Pools of the Western Division, The Gambia. *Brit. Herp. Soc. Bull.* 47, 16-22
- Schiøtz, A. (1969). The Amphibia of West Africa. A Review - *The Nigerian Field* 34(1), 4-17.
- Starin, E.D. and G.M. Burghardt (1992). African Rock Pythons (*Python sebae*) in the Gambia: Observations on natural history and interactions with Primates. *Snake* 24(1), 50-62.
- Stossl, T. (1993). Heilige Krokodile und andere Reptilien von Gambia. *DATZ* 46(1), 43-45.
- Villiers, A. (1956). Le Parc National de Niokolo-Koba. V Reptiles. *Mém. I.F.A.N.* 48, 143-162.